CFA INSTITUTE INVESTMENT SERIES

INTERNATIONAL FINANCIAL STATEMENT ANALYSIS

Third Edition

Thomas R. Robinson, CFA ▪ Elaine Henry, CFA
Wendy L. Pirie, CFA ▪ Michael A. Broihahn, CFA

Foreword by Anthony T. Cope, CFA

INTERNATIONAL FINANCIAL STATEMENT ANALYSIS

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WILEY

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FOREWORD

The stated objective of the International Accounting Standards Board (IASB) is to produce accounting standards that are principle-based, internally consistent, and internationally converged. The resulting financial statements should provide a framework that gives capital market participants the tools to make rational and intelligent decisions. The role of the analyst as an interpreter of the numbers that appear in the financial statements is critical in this process.

Making valuation estimates and the accompanying decisions in an international context is, in principle, no different from a purely domestic one. In both cases, the financial reporting model is the primary source of the information required. Recommendations and decisions have to be made based on careful analysis. The learning outcomes and techniques described in this volume are designed to enable the analyst to do just that.

Collecting and analyzing data is the core analytical function, but communication is also critical. The best and most rigorous analysis has to be supplemented by an understanding of how investment decisions are made, or it will fail its purpose. It must be communicated to the intended recipient in a way that explains the logic behind the valuation estimate or recommendation and promotes understanding and action. Communication skills, in addition to analytical methods, are discussed in the readings.

The readings also point to the necessity of exercising judgment as part of the analytical process. This is particularly important in the context of International Financial Reporting Standards (IFRS). As noted, an important element of IFRS is that the standards are principle-based and not unduly prescriptive (as some perceive US Generally Accepted Accounting Principles to be). The objective is to allow a degree of flexibility that permits company management to present corporate results in the most meaningful way, while preserving the spirit intended—substance over form. However, this presents the analyst with an additional challenge in interpreting the published figures and comparing them with those of other entities.

CFA Institute and its members have long supported the development of a global set of accounting standards; the benefits, in terms of improved comparability for investors and lowered cost of capital for corporations, are evident. IFRS are now accepted or required, in whole or in part, in some 100 or more jurisdictions around the world. (So far, in the United States, only a few foreign registrants with the SEC are permitted to use the Standards.) Achieving comparability between companies reporting in Tokyo, Toronto, or Turin would seem to meet the cherished goal of a global financial reporting system. But a word of caution is warranted. Few countries want to give up sovereignty to an independent authority based in London, no matter how high the quality of the output may be. Standard setting is ultimately a political process, and powerful constituencies abound that have objectives that may differ from the provision of decision-useful information for investors. And in order to become law in many jurisdictions, some sort of endorsement mechanism has to be established. Endorsements can, in some cases, exclude provisions in standards, or offer exceptions or options not present in the original text. The result can be deviations from the published standards. While there may be one language,

various dialects can emerge, and the analyst must be vigilant to discern these differences, and their significance.

Addendum: 30 September 2014
Regrettably, Tony Cope, author of the preceding foreword, passed away in November 2013. As we prepare for the third edition and review his foreword to the second edition of the book, we cannot help but note how well his comments stand the test of time.

Tony was on the forefront of advocating for convergence in international accounting standards and for assuring consistency and transparency in how company performance is reported. Tony was a member of the US Financial Accounting Standards Board from 1993 to 2001. After playing a leading role in the Strategy Working Party that led to the creation of the International Accounting Standards Board (IASB) in 2001, Tony served as a member of the IASB from 2001 through 2007.

Tony made substantial, long-lasting contributions to the quality of global financial reporting. More than that, he was a friendly, caring person and is deeply missed by his many friends and colleagues.

Sandra Peters, CFA
11 November 2014

PREFACE

International Financial Statement Analysis is a practically oriented introduction to financial statement analysis. Each chapter covers one major area of financial statement analysis and is written by highly credentialed experts. By taking a global perspective on accounting standards, with a focus on international financial reporting standards (IFRS), and by selecting a broad range of companies for illustration, the book well equips the reader for practice in today's global marketplace.

The content was developed in partnership by a team of distinguished academics and practitioners, chosen for their acknowledged expertise in the field, and guided by CFA Institute. It is written specifically with the investment practitioner in mind and is replete with examples and practice problems that reinforce the learning outcomes and demonstrate real-world applicability.

The CFA Program Curriculum, from which the content of this book was drawn, is subjected to a rigorous review process to assure that it is:

- Faithful to the findings of our ongoing industry practice analysis
- Valuable to members, employers, and investors
- Globally relevant
- Generalist (as opposed to specialist) in nature
- Replete with sufficient examples and practice opportunities
- Pedagogically sound

The accompanying workbook is a useful reference that provides Learning Outcome Statements, which describe exactly what readers will learn and be able to demonstrate after mastering the accompanying material. Additionally, the workbook has summary overviews and practice problems for each chapter.

We hope you will find this and other books in the CFA Institute Investment Series helpful in your efforts to grow your investment knowledge, whether you are a relatively new entrant or an experienced veteran striving to keep up to date in the ever-changing market environment. CFA Institute, as a long-term committed participant in the investment profession and a not-for-profit global membership association, is pleased to provide you with this opportunity.

THE CFA PROGRAM

If the subject matter of this book interests you, and you are not already a CFA charterholder, we hope you will consider registering for the CFA Program and starting progress toward earning the Chartered Financial Analyst designation. The CFA designation is a globally recognized standard of excellence for measuring the competence and integrity of investment professionals.

To earn the CFA charter, candidates must successfully complete the CFA Program, a global graduate-level self-study program that combines a broad curriculum with professional conduct requirements as preparation for a career as an investment professional.

Anchored by a practice-based curriculum, the CFA Program Body of Knowledge reflects the knowledge, skills, and abilities identified by professionals as essential to the investment decision-making process. This body of knowledge maintains its relevance through a regular, extensive survey of practicing CFA charterholders across the globe. The curriculum covers 10 general topic areas, ranging from equity and fixed-income analysis to portfolio management to corporate finance—all with a heavy emphasis on the application of ethics in professional practice. Known for its rigor and breadth, the CFA Program curriculum highlights principles common to every market so that professionals who earn the CFA designation have a thoroughly global investment perspective and a profound understanding of the global marketplace.

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Production

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One of the most prominent texts over the years in the investment management industry has been Maginn and Tuttle's *Managing Investment Portfolios: A Dynamic Process*. The third edition updates key concepts from the 1990 second edition. Some of the more experienced members of our community own the prior two editions and will add the third edition to their libraries. Not only does this seminal work take the concepts from the other readings and put them in a portfolio context, but it also updates the concepts of alternative investments, performance presentation standards, portfolio execution, and, very importantly, individual investor portfolio management. Focusing attention away from institutional portfolios and toward the individual investor makes this edition an important and timely work.

The New Wealth Management: The Financial Advisor's Guide to Managing and Investing Client Assets is an updated version of Harold Evensky's mainstay reference guide for wealth managers. Harold Evensky, Stephen Horan, and Thomas Robinson have updated the core text of the 1997 first edition and added an abundance of new material to fully reflect today's investment challenges. The text provides authoritative coverage across the full spectrum of wealth management and serves as a comprehensive guide for financial advisers. The book expertly blends investment theory and real-world applications and is written in the same thorough but highly accessible style as the first edition.

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INTERNATIONAL FINANCIAL STATEMENT ANALYSIS

CHAPTER 1

FINANCIAL STATEMENT ANALYSIS: AN INTRODUCTION

Elaine Henry, CFA
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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- describe the roles of financial reporting and financial statement analysis;
- describe the roles of the key financial statements (statement of financial position, statement of comprehensive income, statement of changes in equity, and statement of cash flows) in evaluating a company's performance and financial position;
- describe the importance of financial statement notes and supplementary information—including disclosures of accounting policies, methods, and estimates—and management's commentary;
- describe the objective of audits of financial statements, the types of audit reports, and the importance of effective internal controls;
- identify and describe information sources that analysts use in financial statement analysis besides annual financial statements and supplementary information;
- describe the steps in the financial statement analysis framework.

1. INTRODUCTION

Financial analysis is the process of examining a company's performance in the context of its industry and economic environment in order to arrive at a decision or recommendation. Often, the decisions and recommendations addressed by financial analysts pertain to providing capital to companies—specifically, whether to invest in the company's debt or equity securities and at what price. An investor in debt securities is concerned about the company's ability to pay interest and to repay the principal lent. An investor in equity securities is an owner with a residual interest in the company and is concerned about the company's ability to pay dividends

and the likelihood that its share price will increase. Overall, a central focus of financial analysis is evaluating the company's ability to earn a return on its capital that is at least equal to the cost of that capital, to profitably grow its operations, and to generate enough cash to meet obligations and pursue opportunities. Fundamental financial analysis starts with the information found in a company's financial reports. These financial reports include audited financial statements, additional disclosures required by regulatory authorities, and any accompanying (unaudited) commentary by management. Basic financial statement analysis—as presented in this chapter—provides a foundation that enables the analyst to better understand information gathered from research beyond the financial reports.

This chapter is organized as follows: Section 2 discusses the scope of financial statement analysis. Section 3 describes the sources of information used in financial statement analysis, including the primary financial statements (balance sheet, statement of comprehensive income, statement of changes in equity, and cash flow statement). Section 4 provides a framework for guiding the financial statement analysis process. A summary of the key points and practice problems in the CFA Institute multiple-choice format conclude the chapter.

2. SCOPE OF FINANCIAL STATEMENT ANALYSIS

The role of financial reporting by companies is to provide information about a company's performance, financial position, and changes in financial position that is useful to a wide range of users in making economic decisions.[1] The role of financial statement analysis is to use financial reports prepared by companies, combined with other information, to evaluate the past, current, and potential performance and financial position of a company for the purpose of making investment, credit, and other economic decisions. (Managers within a company perform financial analysis to make operating, investing, and financing decisions but do not necessarily rely on analysis of related financial statements. They have access to additional financial information that can be reported in whatever format is most useful to their decision.)

In evaluating financial reports, analysts typically have a specific economic decision in mind. Examples of these decisions include the following:

- Evaluating an equity investment for inclusion in a portfolio.
- Evaluating a merger or acquisition candidate.
- Evaluating a subsidiary or operating division of a parent company.
- Deciding whether to make a venture capital or other private equity investment.
- Determining the creditworthiness of a company in order to decide whether to extend a loan to the company and if so, what terms to offer.

[1] The role of financial reporting is specified in International Accounting Standard (IAS) 1 *Presentation of Financial Statements*, paragraph 9, and paragraph 12 of the *Framework for the Preparation and Presentation of Financial Statements*. An updated framework is currently a joint project between the International Accounting Standards Board (IASB), which issues International Financial Reporting Standards (IFRS), and the Financial Accounting Standards Board (FASB). The FASB issues US generally accepted accounting principles (US GAAP) contained in the FASB Accounting Standards Codification™ (FASB ASC). The set of accounting standards that a company uses to prepare its financial reports depends on its jurisdiction. The IASB and FASB will be discussed further in a later chapter.

- Extending credit to a customer.
- Examining compliance with debt covenants or other contractual arrangements.
- Assigning a debt rating to a company or bond issue.
- Valuing a security for making an investment recommendation to others.
- Forecasting future net income and cash flow.

These decisions demonstrate certain themes in financial analysis. In general, analysts seek to examine the past and current performance and financial position of a company in order to form expectations about its future performance and financial position. Analysts are also concerned about factors that affect risks to a company's future performance and financial position. An examination of performance can include an assessment of a company's profitability (the ability to earn a profit from delivering goods and services) and its ability to generate positive cash flows (cash receipts in excess of cash disbursements). Profit and cash flow are not equivalent. Profit (or loss) represents the difference between the prices at which goods or services are provided to customers and the expenses incurred to provide those goods and services. In addition, profit (or loss) includes other income (such as investing income or income from the sale of items other than goods and services) minus the expenses incurred to earn that income. Overall, profit (or loss) equals income minus expenses, and its recognition is mostly independent from when cash is received or paid. Example 1 illustrates the distinction between profit and cash flow.

EXAMPLE 1 Profit versus Cash Flow

Sennett Designs (SD) sells furniture on a retail basis. SD began operations during December 2009 and sold furniture for €250,000 in cash. The furniture sold by SD was purchased on credit for €150,000 and delivered by the supplier during December. The credit terms granted by the supplier required SD to pay the €150,000 in January for the furniture it received during December. In addition to the purchase and sale of furniture, in December, SD paid €20,000 in cash for rent and salaries.

1. How much is SD's profit for December 2009 if no other transactions occurred?
2. How much is SD's cash flow for December 2009?
3. If SD purchases and sells exactly the same amount in January 2010 as it did in December and under the same terms (receiving cash for the sales and making purchases on credit that will be due in February), how much will the company's profit and cash flow be for the month of January?

Solution to 1: SD's profit for December 2009 is the excess of the sales price (€250,000) over the cost of the goods that were sold (€150,000) and rent and salaries (€20,000), or €80,000.

Solution to 2: The December 2009 cash flow is €230,000, the amount of cash received from the customer (€250,000) less the cash paid for rent and salaries (€20,000).

Solution to 3: SD's profit for January 2010 will be identical to its profit in December: €80,000, calculated as the sales price (€250,000) minus the cost of the goods that were sold (€150,000) and minus rent and salaries (€20,000). SD's cash flow in January 2010 will also equal €80,000, calculated as the amount of cash received from the customer (€250,000) minus the cash paid for rent and salaries (€20,000) *and* minus the €150,000 that SD owes for the goods it had purchased on credit in the prior month.

Although profitability is important, so is a company's ability to generate positive cash flow. Cash flow is important because, ultimately, the company needs cash to pay employees, suppliers, and others in order to continue as a going concern. A company that generates positive cash flow from operations has more flexibility in funding needed for investments and taking advantage of attractive business opportunities than an otherwise comparable company without positive operating cash flow. Additionally, a company needs cash to pay returns (interest and dividends) to providers of debt and equity capital. Therefore, the expected magnitude of future cash flows is important in valuing corporate securities and in determining the company's ability to meet its obligations. The ability to meet short-term obligations is generally referred to as **liquidity**, and the ability to meet long-term obligations is generally referred to as **solvency**. Cash flow in any given period is not, however, a complete measure of performance for that period because, as shown in Example 1, a company may be obligated to make future cash payments as a result of a transaction that generates positive cash flow in the current period.

Profits may provide useful information about cash flows, past and future. If the transaction of Example 1 were repeated month after month, the long-term average monthly cash flow of SD would equal €80,000, its monthly profit. Analysts typically not only evaluate past profitability but also forecast future profitability.

Exhibit 1 shows how news coverage of corporate earnings announcements places corporate results in the context of analysts' expectations. Panel A shows the earnings announcement, and Panel B shows a sample of the news coverage of the announcement. Earnings are also frequently used by analysts in valuation. For example, an analyst may value shares of a company by comparing its price-to-earnings ratio (P/E) to the P/Es of peer companies and/or may use forecasted future earnings as direct or indirect inputs into discounted cash flow models of valuation.

EXHIBIT 1 An Earnings Release and News Media Comparison with Analysts' Expectations

Panel A: Excerpt from Apple Earnings Release

Apple Reports Second Quarter Results
Record March Quarter Revenue and Profit
iPhone Sales More Than Double

CUPERTINO, California—April 20, 2010—Apple® today announced financial results for its fiscal 2010 second quarter ended March 27, 2010. The Company posted revenue of $13.50 billion and net quarterly profit of $3.07 billion, or $3.33 per diluted share. These results compare to revenue of $9.08 billion and net quarterly profit of $1.62 billion, or $1.79 per diluted share, in the year-ago quarter. Gross margin was 41.7 percent, up from 39.9 percent in the year-ago quarter. International sales accounted for 58 percent of the quarter's revenue.

EXHIBIT 1 (Continued)

Apple sold 2.94 million Macintosh® computers during the quarter, representing a 33 percent unit increase over the year-ago quarter. The Company sold 8.75 million iPhones in the quarter, representing 131 percent unit growth over the year-ago quarter. Apple sold 10.89 million iPods during the quarter, representing a one percent unit decline from the year-ago quarter.

"We're thrilled to report our best non-holiday quarter ever, with revenues up 49 percent and profits up 90 percent," said Steve Jobs, Apple's CEO. "We've launched our revolutionary new iPad and users are loving it, and we have several more extraordinary products in the pipeline for this year."

"Looking ahead to the third fiscal quarter of 2010, we expect revenue in the range of about $13.0 billion to $13.4 billion and we expect diluted earnings per share in the range of about $2.28 to $2.39," said Peter Oppenheimer, Apple's CFO.

Source: www.apple.com/pr/library/2010/04/20results.html

Panel B: Excerpt Downloaded from FOXBusiness.com Report: Tuesday, 20 April 2010

"Apple Earnings Surge by 90% in Second Quarter" by Kathryn Glass

In what's beginning to become its trademark, Apple Inc. (AAPL: 238.7911, –9.5489, –3.85%) delivered much better-than-expected second-quarter earnings, but gave third-quarter guidance below expectations.

The personal-technology behemoth said it expects third-quarter earnings in the range of $2.28 to $2.39 per share on revenue between $13 billion and $13.4 billion. Analysts were expecting third-quarter earnings of $2.70 a share on revenue of $12.97 billion, according to a poll by Thomson Reuters.

Apple reported second-quarter profit of $3.07 billion, or $3.33 per share, compared with year-ago profit of $1.62 billion, or $1.79 per share. Revenue rose to $13.5 billion, compared with revenue of $9.08 billion, one year ago. The tech giant said 58% of revenue came from international sales.

The results soared above expectations; analysts' second-quarter profit estimates were for $2.45 per share on revenue of $12.04 billion.

Analysts are also interested in the current financial position of a company. The financial position can be measured by comparing the resources controlled by the company (**assets**) in relation to the claims against those resources (**liabilities** and **equity**). An example of a resource is cash. In Example 1, if no other transactions occur, the company should have €230,000 more in cash at 31 December 2009 than at the start of the period. The cash can be used by the company to pay its obligation to the supplier (a claim against the company) and may also be used to make distributions to the owner (who has a residual claim against the company's assets, net of liabilities). Financial position is particularly important in credit analysis, as depicted in Exhibit 2. Panel A of the exhibit is an excerpt from an April 2010 announcement by a credit rating agency of an upgrade in the credit ratings of Teck Resources Ltd., a Canadian

mining company. The rating agency explained that it upgraded the credit rating of the company (its "corporate credit rating") and the credit rating of the company's debt securities (the "issue-level rating") because the company had repaid its debt quickly ("accelerated debt repayment"). Panel B of the exhibit is an excerpt from the company's second quarter 2010 earnings announcement in which the company's CEO describes the company's repayment of debt. Panel C of the exhibit is an excerpt from the company's financial report illustrating the change in the company's financial position in June 2010 compared with December 2009. As shown, the amount of the company's debt liabilities relative to the amount of its equity declined substantially over the period.

EXHIBIT 2

Panel A: Excerpt from Announcement by Standard & Poor's Ratings Services: 16 April 2010

Teck Resources Ltd. Upgraded to "BBB" from "BB+" On Improved Financial Risk Profile; Removed from CreditWatch

We are raising our long-term corporate credit rating on Vancouver-based mining company Teck Resources Ltd. to "BBB" from "BB+."… We are also raising the issue-level rating on the company's notes outstanding to "BBB" from "BB+."… We base the upgrade on Teck's materially improved financial risk profile following the accelerated debt repayment in the past year. The stable outlook reflects our opinion that Teck will maintain relatively stable credit metrics in the medium term, despite inherent volatility in the commodities market.

Source: Market News Publishing.

Panel B: Excerpt from Earnings Announcement by Teck Resources Limited: 28 July 2010

Teck Reports Second Quarter Results for 2010

Vancouver, BC—Teck Resources Limited (TSX: TCK.A and TCK.B, NYSE: TCK) announced quarterly earnings of $260 million, or $0.44 per share, for the second quarter of 2010. Our operating profit before depreciation was approximately $1.0 billion and EBITDA was $844 million in the second quarter.

Don Lindsay, President and CEO said, "During the quarter we eliminated the outstanding balance of our term bank loan and have now repaid the US$9.8 billion bank debt related to the Fording acquisition in less than 18 months, just over two years ahead of schedule. In addition, all of our operations performed well, and we met or exceeded the guidance given in our previous quarterly report. Our second quarter benefitted from a substantial increase in coal sales to 6.4 million tonnes and the higher benchmark prices negotiated for the second quarter. In addition, in the quarter we re-established our investment grade credit ratings from all of the major rating agencies and declared a semi-annual dividend of $0.20 per share."

Source: Teck Resources form 6-K, filed 11 August 2010.

EXHIBIT 2 (Continued)

Panel C: Financial Position of Teck Resources Limited: 28 July 2010 and 31 December 2009

(in millions of Canadian $)	28 July 2010	31 December 2009
ASSETS	$ 28,570	$ 29,873
LIABILITIES		
Debt	5,678	8,004
All other liabilities	7,273	7,288
Total liabilities	12,951	15,292
EQUITY	15,619	14,581
Debt divided by equity	0.36	0.55

In conducting a financial analysis of a company, the analyst will regularly refer to the company's financial statements, financial notes, and supplementary schedules and a variety of other information sources. The next section introduces the major financial statements and some commonly used information sources.

3. MAJOR FINANCIAL STATEMENTS AND OTHER INFORMATION SOURCES

In order to perform an equity or credit analysis of a company, an analyst collects a great deal of information. The nature of the information collected will vary on the basis of the individual decision to be made (or the specific purpose of the analysis) but will typically include information about the economy, industry, and company as well as information about comparable peer companies. Much of the information will likely come from outside the company, such as economic statistics, industry reports, trade publications, and databases containing information on competitors. The company itself provides some of the core information for analysis in its financial reports, press releases, investor conference calls, and webcasts.

Companies prepare financial reports at regular intervals (annually, semiannually, and/or quarterly depending on the applicable regulatory requirements). Financial reports include financial statements along with supplemental disclosures necessary to assess the company's financial position and periodic performance. Financial statements are the result of an accounting recordkeeping process that records economic activities of a company, following the applicable accounting standards and principles. These statements summarize the accounting information, mainly for users outside the company (such as investors, creditors, analysts, and others) because users of financial information inside a company have direct access to the underlying financial data that are summarized in the financial statements and to other information that is collected but not included in the financial reporting process. Financial statements are almost always audited by independent accountants who provide an opinion on whether the financial

statements present fairly the company's performance and financial position in accordance with a specified, applicable set of accounting standards and principles.

3.1. Financial Statements and Supplementary Information

A complete set of financial statements include a statement of financial position (i.e., a balance sheet), a statement of comprehensive income (i.e., a single statement of comprehensive income or an income statement and a statement of comprehensive income), a statement of changes in equity, and a statement of cash flows.[2] The balance sheet portrays the company's financial position at a given point in time. The statement of comprehensive income and statement of cash flows present different aspects of a company's performance over a period of time. The statement of changes in equity provides additional information regarding the changes in a company's financial position. In addition, the accompanying notes or footnotes to the financial statements are required and considered an integral part of a complete set of financial statements.

Along with the required financial statements, a company typically provides additional information in its financial reports. In many jurisdictions, some or all of this additional information is mandated by regulators or accounting standards boards. The additional information provided may include a letter from the chairman of the company, a report from management discussing the results (typically called management discussion and analysis [MD&A] or management commentary), an external auditor's report providing assurances, a governance report describing the structure of the company's board of directors, and a corporate responsibility report. As part of his or her analysis, the financial analyst should read and assess this additional information along with the financial statements. The following sections describe and illustrate each financial statement and some of the additional information.

3.1.1. Balance Sheet

The **balance sheet** (also called the **statement of financial position** or **statement of financial condition**) presents a company's current financial position by disclosing the resources the company controls (assets) and its obligations to lenders and other creditors (liabilities) at a specific point in time. **Owners' equity** represents the excess of assets over liabilities. This amount is attributable to the company's owners or shareholders. Owners' equity is the owners' residual interest in (i.e., residual claim on) the company's assets after deducting its liabilities.

The relationship among the three parts of the balance sheet (assets, liabilities, and owners' equity) can be expressed in the following equation form: Assets = Liabilities + Owners' equity. This equation (sometimes called the accounting equation or the balance sheet equation) shows that the total amount of assets must equal or *balance* to the combined total amounts of liabilities and owners' equity. Alternatively, the equation may be rearranged as follows: Assets – Liabilities = Owners' equity. This formulation emphasizes the residual claim aspect of owners' equity. Depending on the form of the organization, owners' equity may be referred to as "partners' capital" or "shareholders' equity."

Exhibit 3 presents the balance sheet of the Volkswagen Group (FWB: VOW) from its Annual Report 2009.

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[2]The names of the financial statements are those in IAS 1. Commonly used terms for these financial statements are indicated in parentheses. Later chapters will elaborate on each of these financial statements.

EXHIBIT 3 Balance Sheet of the Volkswagen Group

€ million	Note	31 Dec. 2009	31 Dec. 2008
Assets			
Non-current assets			
Intangible assets	12	12,907	12,291
Property, plant, and equipment	13	24,444	23,121
Leasing and rental assets	14	10,288	9,889
Investment property	14	216	150
Equity-accounted investments	15	10,385	6,373
Other equity investments	15	543	583
Financial services receivables	16	33,174	31,855
Other receivables and financial assets	17	3,747	3,387
Noncurrent tax receivables	18	685	763
Deferred tax assets	18	3,013	3,344
		99,402	**91,756**
Current assets			
Inventories	19	14,124	17,816
Trade receivables	20	5,692	5,969
Financial services receivables	16	27,403	27,035
Other receivables and financial assets	17	5,927	10,068
Current tax receivables	18	762	1,024
Marketable securities	21	3,330	3,770
Cash and cash equivalents	22	20,539	9,474
Assets held for sale	23	—	1,007
		77,776	**76,163**
Total assets		**177,178**	**167,919**
Equity and liabilities			
Equity	**24**		
Subscribed capital		1,025	1,024
Capital reserves		5,356	5,351
Retained earnings		28,901	28,636
Equity attributable to shareholders of Volkswagen AG		35,281	35,011
Minority interests		2,149	2,377
		37,430	**37,388**

(continued)

EXHIBIT 3 (Continued)

€ million	Note	31 Dec. 2009	31 Dec. 2008
Noncurrent liabilities			
Noncurrent financial liabilities	25	36,993	33,257
Other noncurrent liabilities	26	3,028	3,235
Deferred tax liabilities	27	2,224	3,654
Provisions for pensions	28	13,936	12,955
Provisions for taxes	27	3,946	3,555
Other noncurrent provisions	29	10,088	9,073
		70,215	**65,729**
Current liabilities			
Current financial liabilities	25	40,606	36,123
Trade payables	30	10,225	9,676
Current tax payables	27	73	59
Other current liabilities	26	8,237	8,545
Provisions for taxes	27	973	1,160
Other current provisions	29	9,420	8,473
Liabilities associated with assets held for sale	23	—	766
		69,534	**64,802**
Total equity and liabilities		**177,178**	**167,919**

Note: Numbers are as shown in the annual report and may not add because of rounding.

In Exhibit 3, the balance sheet is presented with the most recent year in the first column and the earlier year in the second column. Although this is a common presentation, analysts should be careful when reading financial statements. In some cases, the ordering may be reversed, with years listed from most distant to most recent.

At 31 December 2009, Volkswagen's total resources or assets were €177 billion. This number is the sum of non-current assets of €99 billion and current assets of €78 billion.[3] Total equity was €37 billion. Although Volkswagen does not give a total amount for all the balance sheet liabilities, it can be determined by adding the non-current and current liabilities, €70,215 million + €69,534 million = €139,749 million, or €140 billion.[4]

[3] Current assets are defined, in general, as those that are cash or cash equivalents; are held for trading; or are expected to be converted to cash (realized), sold, or consumed within 12 months or the company's normal operating cycle. All other assets are classified as non-current.

[4] Current liabilities are defined, in general, as those that are expected to be settled within 12 months or the company's normal operating cycle. All other liabilities are classified as non-current.

Referring back to the basic accounting equation, Assets = Liabilities + Equity, we have €177 billion = €140 billion + €37 billion. In other words, Volkswagen has assets of €177 billion, owes €140 billion, and thus has equity of €37 billion. Using the balance sheet and applying financial statement analysis, the analyst can answer such questions as

- Has the company's liquidity (ability to meet short-term obligations) improved?
- Is the company solvent (does it have sufficient resources to cover its obligations)?
- What is the company's financial position relative to the industry?

Volkswagen, a German-based automobile manufacturer, prepares its financial statements in accordance with International Financial Reporting Standards (IFRS). IFRS require companies to present classified balance sheets that show current and non-current assets and current and non-current liabilities as separate classifications. However, IFRS do not prescribe a particular ordering or format, and the order in which companies present their balance sheet items is largely a function of tradition. As shown, Volkswagen presents non-current assets before current assets, owners' equity before liabilities, and within liabilities, non-current liabilities before current liabilities. This method generally reflects a presentation from least liquid to most liquid. In other countries, the typical order of presentation may differ. For example, in the United States, Australia, and Canada, companies usually present their assets and liabilities from most liquid to least liquid. Cash is typically the first asset shown, and equity is presented after liabilities.

As a basis for comparison, Exhibit 4 presents the balance sheet of Wal-Mart Stores, Inc., or Walmart (NYSE: WMT) from its 2010 Annual Report.

EXHIBIT 4 Walmart Consolidated Balance Sheet

	31 January	
(Amounts in millions except per share data)	2010	2009
ASSETS		
Current assets:		
Cash and cash equivalents	$7,907	$7,275
Receivables, net	4,144	3,905
Inventories	33,160	34,511
Prepaid expenses and other	2,980	3,063
Current assets of discontinued operations	140	195
Total current assets	**48,331**	**48,949**
Property and equipment:		
Land	22,591	19,852
Buildings and improvements	77,452	73,810
Fixtures and equipment	35,450	29,851
Transportation equipment	2,355	2,307

(continued)

EXHIBIT 4 (Continued)

	31 January	
(Amounts in millions except per share data)	2010	2009
Property and equipment	137,848	125,820
Less accumulated depreciation	(38,304)	(32,964)
Property and equipment, net	**99,544**	**92,856**
Property under capital leases:		
Property under capital leases	5,669	5,341
Less accumulated amortization	(2,906)	(2,544)
Property under capital leases, net	**2,763**	**2,797**
Goodwill	**16,126**	**15,260**
Other assets and deferred charges	**3,942**	**3,567**
Total assets	**$170,706**	**$163,429**
LIABILITIES AND EQUITY		
Current liabilities:		
Short-term borrowings	$523	$1,506
Accounts payable	30,451	28,849
Accrued liabilities	18,734	18,112
Accrued income taxes	1,365	677
Long-term debt due within one year	4,050	5,848
Obligations under capital leases due within one year	346	315
Current liabilities of discontinued operations	92	83
Total current liabilities	**55,561**	**55,390**
Long-term debt	**33,231**	**31,349**
Long-term obligations under capital leases	**3,170**	**3,200**
Deferred income taxes and other	**5,508**	**6,014**
Redeemable non-controlling interest	**307**	**397**
Commitments and contingencies		
Equity:		
Preferred stock ($0.10 par value; 100 shares authorized, none issued)	—	—
Common stock ($0.10 par value; 11,000 shares authorized, 3,786 and 3,925 issued and outstanding at 31 January 2010 and 31 January 2009, respectively)	378	393

EXHIBIT 4 (Continued)

	31 January	
(Amounts in millions except per share data)	2010	2009
Capital in excess of par value	3,803	3,920
Retained earnings	66,638	63,660
Accumulated other comprehensive loss	(70)	(2,688)
Total Walmart shareholders' equity	70,749	65,285
Non-controlling interest	2,180	1,794
Total equity	**72,929**	**67,079**
Total liabilities and equity	**$170,706**	**$163,429**

Walmart has total assets of $170.7 billion. Liabilities and other non-equity claims total $97.8 billion, and equity is $72.9 billion. A later chapter will cover the analysis of the balance sheet in more depth. The next section describes and illustrates the statement of comprehensive income.

3.1.2. Statement of Comprehensive Income

The statement of comprehensive income, under IFRS, can be presented as a single statement of comprehensive income or as two statements, an income statement and a statement of comprehensive income that begins with profit or loss from the income statement. The Volkswagen Group chose the latter form of presentation rather than a single statement.

3.1.2.1. Income Statement The income statement presents information on the financial results of a company's business activities over a period of time. The income statement communicates how much **revenue** and other income the company generated during a period and the expenses it incurred to generate that revenue and other income. Revenue typically refers to amounts charged for the delivery of goods or services in the ordinary activities of a business. Other income includes gains, which may or may not arise in the ordinary activities of the business. **Expenses** reflect outflows, depletions of assets, and incurrences of liabilities that decrease equity. Expenses typically include such items as cost of sales (cost of goods sold), administrative expenses, and income tax expenses and may be defined to include losses. Net income (revenue plus other income minus expenses) on the income statement is often referred to as the "bottom line" because of its proximity to the bottom of the income statement. Net income may also be referred to as "net earnings," "net profit," and "profit or loss." In the event that expenses exceed revenues and other income, the result is referred to as "net loss."

Income statements are reported on a consolidated basis, meaning that they include the income and expenses of subsidiary companies under the control of the parent (reporting) company. The income statement is sometimes referred to as a **statement of operations** or **profit and loss (P&L) statement**. The basic equation underlying the income statement is Revenue + Other income – Expenses = Income – Expenses = Net income.

In general terms, when one company (the parent) controls another company (the subsidiary), the parent presents its own financial statement information consolidated with that of the subsidiary. (When a parent company owns more than 50 percent of the voting shares of a subsidiary company, it is presumed to control the subsidiary and thus presents consolidated

financial statements.) Each line item of the consolidated income statement includes the entire amount from the relevant line item on the subsidiary's income statement (after removing any intercompany transactions); however, if the parent does not own 100 percent of the subsidiary, it is necessary for the parent to present an allocation of net income to the minority interests. Minority interests, also called non-controlling interests, refer to owners of the remaining shares of the subsidiary that are not owned by the parent. The share of consolidated net income attributable to minority interests is shown at the bottom of the income statement along with the net income attributable to shareholders of the parent company. Exhibit 5 presents the income statement of the Volkswagen Group from its Annual Report 2009.

EXHIBIT 5 Income Statement of the Volkswagen Group for the Period 1 January to 31 December*

€ million	Note	2009	2008
Sales revenue	**1**	**105,187**	**113,808**
Cost of sales	2	–91,608	–96,612
Gross profit		**13,579**	**17,196**
Distribution expenses	3	–10,537	–10,552
Administrative expenses	4	–2,739	–2,742
Other operating income	5	7,904	8,770
Other operating expenses	6	–6,352	–6,339
Operating profit		**1,855**	**6,333**
Share of profits and losses of equity-accounted investments	7	701	910
Finance costs	8	–2,268	–1,815
Other financial result	9	972	1,180
Financial result		**–595**	**275**
Profit before tax		**1,261**	**6,608**
Income tax income/expense	10	–349	–1,920
Current		–1,145	–2,338
Deferred		796	418
Profit after tax		**911**	**4,688**
Minority interests		–49	–65
Profit attributable to shareholders of Volkswagen AG		960	4,753
Basic earnings per ordinary share in €	11	2.38	11.92
Basic earnings per preferred share in €	11	2.44	11.98
Diluted earnings per ordinary share in €	11	2.38	11.88
Diluted earnings per preferred share in €	11	2.44	11.94

*The numbers are as shown in the annual report and may not add because of rounding.

Exhibit 5 shows that Volkswagen's sales revenue for the fiscal year ended 31 December 2009 was €105,187 million. Subtracting cost of sales from revenue gives gross profit of €13,579 million. After subtracting operating costs and expenses and adding other operating income, the company's operating profit totals €1,855 million. Operating profit represents the results of the company's usual business activities before deducting interest expense or taxes. Operating profit (also called operating income) is thus often referred to as earnings before interest and taxes (EBIT). Next, operating profit is increased by Volkswagen's share of the profits generated by certain of its investments (€701 million) and by profits from its other financial activities (€972 million) and decreased by finance costs (i.e., interest expense) of €2,268 million, resulting in profit before tax of €1,261 million. Total income tax expense for 2009 was €349 million, resulting in profit after tax (net income) of €911 million.

After allocating the losses attributable to minority interest ownership in Volkswagen subsidiary companies, the profit attributable to shareholders of Volkswagen for 2009 was €960 million. Allocating the losses attributable to minority interest ownership resulted in the allocation to shareholders of the parent company, Volkswagen AG, exceeding net income (profit after tax). Volkswagen's disclosures indicate that its minority interests relate primarily to Scania AB, a subsidiary in which Volkswagen owns about 72 percent of the voting rights (with the minority interests owning the remaining 28 percent).

Companies present both basic and diluted earnings per share on the face of the income statement. Earnings per share numbers represent net income attributable to the class of shareholders divided by the relevant number of shares of stock outstanding during the period. Basic earnings per share is calculated using the weighted-average number of common (ordinary) shares that were actually outstanding during the period and the profit or loss attributable to the common shareowners. Diluted earnings per share uses **diluted shares**—the number of shares that would hypothetically be outstanding if potentially dilutive claims on common shares (e.g., stock options or convertible bonds) were exercised or converted by their holders—and an appropriately adjusted profit or loss attributable to the common shareowners.

Volkswagen has two types of shareholders, ordinary and preferred, and presents earnings per share information for both, although there is no requirement to present earnings per share information for preferred shareowners. Volkswagen's basic earnings per ordinary share was €2.38. A note to the company's financial statements explains that this number was calculated as follows: €960 million profit attributable to shareholders of Volkswagen, of which €703 million is attributable to ordinary shareholders and €257 million is attributable to preferred shareholders. The €703 million attributable to ordinary shareholders divided by the weighted-average number of ordinary shares of 295 million shares equals basic earnings per share for 2009 of €2.38. Similar detail is provided in the notes for each of the earnings per share numbers.

An analyst examining the income statement might note that Volkswagen was profitable in both years. The company's profitability declined substantially in 2009, primarily because of lower sales and reduced gross profit. This was not unexpected given the global financial and economic crisis in that year. A better understanding of Volkswagen's profitability could likely be gained by examining income statements over a longer time period. The analyst might formulate questions related to profitability, such as the following:

- Is the change in revenue related to an increase in units sold, an increase in prices, or some combination?

- If the company has multiple business segments (for example, Volkswagen's segments include passenger cars, light commercial vehicles, and financial services, among others), how are the segments' revenue and profits changing?
- How does the company compare with other companies in the industry?

Answering such questions requires the analyst to gather, analyze, and interpret information from a number of sources, including, but not limited to, the income statement.

3.1.2.2. Other Comprehensive Income Comprehensive income includes all items that impact owners' equity but are not the result of transactions with shareowners. Some of these items are included in the calculation of net income, and some are included in other comprehensive income (OCI). Under IFRS, when comprehensive income is presented in two statements, the statement of comprehensive income begins with the profit or loss from the income statement and then presents the components of other comprehensive income. Although US generally accepted accounting principles (US GAAP) indicate a preference for this type of presentation when a single statement of comprehensive income is not presented, they permit companies to present the components of other comprehensive income in the statement of changes in equity.[5]

Exhibit 6 presents the statement of comprehensive income of the Volkswagen Group from its Annual Report 2009.

EXHIBIT 6 Statement of Comprehensive Income of the Volkswagen Group for the Period 1 January to 31 December

€ million	2009	2008
Profit after tax	**911**	**4,688**
Exchange differences on translating foreign operations:		
Fair value changes recognized in other comprehensive income	917	–1,445
Transferred to profit or loss	57	
Actuarial gains/losses	–860	190
Cash flow hedges:		
Fair value changes recognized in other comprehensive income	683	1,054
Transferred to profit or loss	–908	–1,427
Available-for-sale financial assets (marketable securities):		
Fair value changes recognized in other comprehensive income	200	–330
Transferred to profit or loss	71	100
Deferred taxes	216	145

[5] See FASB ASC paragraphs 220-10-45-8 to 220-10-45-10. However, the IASB and the FASB have each issued a jointly developed proposal that would require entities to present a continuous statement of total comprehensive income. The continuous statement would include separate sections for profit or loss and other comprehensive income.

EXHIBIT 6 (Continued)

€ million	2009	2008
Share of profits and losses of equity-accounted investments recognized directly in equity, after tax	30	–188
Other comprehensive income	**406**	**–1,901**
Total comprehensive income	**1,317**	**2,787**
Of which attributable to		
Shareholders of Volkswagen AG	1,138	3,310
Minority interests	179	–523

Exhibit 6 shows that other comprehensive income, although smaller in absolute terms than profit after tax (net income), had a significant effect on total comprehensive income. In 2009, other comprehensive income represented approximately 31 percent of total comprehensive income and was approximately 45 percent of the size of profit after tax (net income). In 2008, other comprehensive income was negative (a loss) and was approximately 41 percent of the size of profit after tax (net income) in absolute terms. The statement of comprehensive income will be discussed in greater detail in a later chapter. The next section briefly describes the statement of changes in equity.

3.1.3. Statement of Changes in Equity

The statement of changes in equity, variously called the "statement of changes in owners' equity" or "statement of changes in shareholders' equity," primarily serves to report changes in the owners' investment in the business over time. The basic components of owners' equity are paid-in capital and retained earnings. Retained earnings include the cumulative amount of the company's profits that have been retained in the company. In addition, non-controlling or minority interests and reserves that represent accumulated other comprehensive income items are included in equity. The latter items may be shown separately or included in retained earnings. Volkswagen includes reserves as components of retained earnings.

The statement of changes in equity is organized to present, for each component of equity, the beginning balance, any increases during the period, any decreases during the period, and the ending balance. For paid-in capital, an example of an increase is a new issuance of equity and an example of a decrease is a repurchase of previously issued stock. For retained earnings, income (both net income as reported on the income statement and other comprehensive income) is the most common increase and a dividend payment is the most common decrease.

Volkswagen's balance sheet in Exhibit 3 shows that equity at the end of 2009 totaled €37,430 million, compared with €37,388 million at the end of 2008. The company's statement of changes in equity presents additional detail on the change in each line item. Exhibit 7 presents an excerpt of the statement of changes in equity of the Volkswagen Group from its Annual Report 2009.

In Exhibit 7, the sum of the line items total comprehensive income (€1,102 million) and deferred taxes (€216 million) equals the amount of total comprehensive income reported in the statement of comprehensive income, except for a rounding difference. Using the balance

EXHIBIT 7 Excerpt from Statement of Changes in Equity of the Volkswagen Group for the Period 1 January to 31 December 2009*

€ millions	Subscribed Capital	Capital Reserves	Retained Earnings: Accumulated Profit	Retained Earnings: Currency Translation Reserve	Retained Earnings: Reserve for Actuarial Gains/Losses	Retained Earnings: Cash Flow Hedge Reserve	Retained Earnings: Fair Value Reserve for Securities	Retained Earnings: Equity-Accounted Investments	Equity Attributable to Shareholders of VW AG	Minority Interests	Total Equity
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
Balance at 1 Jan. 2009	**1,024**	**5,351**	**31,522**	**–2,721**	**–672**	**1,138**	**–192**	**–439**	**35,011**	**2,377**	**37,388**
Capital increase	0	4							4		4
Dividend payment			–779						–779	–95	–874
Capital transactions involving change in ownership			–76						–76	–316	–392
Total comprehensive income			960	839	–851	–361	271	30	888	214	1,102
Deferred taxes					247	83	–80		250	–34	216
Other changes			–21		2				–18	4	–15
Balance at 31 Dec. 2009	**1,025**	**5,356**	**31,607**	**–1,881**	**–1,274**	**860**	**–1**	**–409**	**35,281**	**2,149**	**37,430**
			28,902 (total of retained earnings columns)								

*Numbers are as shown in the annual report and may not add and cross-add because of rounding.

at 31 December 2009, the sum of the columns accumulated profit through equity-accounted investment equals the amount of retained earnings on the balance sheet (€28,901 million in Exhibit 3), except for a rounding difference. Dividends (€779 million) are reported in this statement and reduce retained earnings. Explanatory notes on equity are included in the notes to the consolidated financial statements. The next section describes the cash flow statement.

3.1.4. Cash Flow Statement

Although the income statement and balance sheet provide measures of a company's success in terms of performance and financial position, cash flow is also vital to a company's long-term success. Disclosing the sources and uses of cash helps creditors, investors, and other statement users evaluate the company's liquidity, solvency, and financial flexibility. **Financial flexibility** is the ability of the company to react and adapt to financial adversities and opportunities. The cash flow statement classifies all cash flows of the company into three categories: operating, investing, and financing. Cash flows from **operating activities** are those cash flows not classified as investing or financing and generally involve the cash effects of transactions that enter into the determination of net income and, hence, comprise the day-to-day operations of the company. Cash flows from **investing activities** are those cash flows from activities associated with the acquisition and disposal of long-term assets, such as property and equipment. Cash flows from **financing activities** are those cash flows from activities related to obtaining or repaying capital to be used in the business. IFRS permit more flexibility than US GAAP in classifying dividend and interest receipts and payments within these categories.

Exhibit 8 presents Volkswagen's statement of cash flows for the fiscal years ended 31 December 2009 and 2008.

EXHIBIT 8 Cash Flow Statement of the Volkswagen Group: 1 January to 31 December

€ million	2009	2008
Cash and cash equivalents at beginning of period (excluding time deposit investments)	**9,443**	**9,914**
Profit before tax	1,261	6,608
Income taxes paid	–529	–2,075
Depreciation and amortization of property, plant, and equipment, intangible assets and investment property	5,028	5,198
Amortization of capitalized development costs	1,586	1,392
Impairment losses on equity investments	16	32
Depreciation of leasing and rental assets	2,247	1,816
Gain/loss on disposal of noncurrent assets	–547	37
Share of profit or loss of equity-accounted investments	–298	–219
Other non-cash expense/income	727	765
Change in inventories	4,155	–3,056
Change in receivables (excluding financial services)	465	–1,333

(continued)

EXHIBIT 8 (Continued)

€ million	2009	2008
Change in liabilities (excluding financial liabilities)	260	815
Change in provisions	1,660	509
Change in leasing and rental assets	–2,571	–2,734
Change in financial services receivables	–719	–5,053
Cash flows from operating activities	**12,741**	**2,702**
Investments in property, plant, and equipment, intangible assets and investment property	–5,963	–6,896
Additions to capitalized development costs	–1,948	–2,216
Acquisition of equity investments	–3,989	–2,597
Disposal of equity investments	1,320	1
Proceeds from disposal of property, plant, and equipment, intangible assets and investment property	153	95
Change in investments in securities	989	2,041
Change in loans and time deposit investments	–236	–1,611
Cash flows from investing activities	**–9,675**	**–11,183**
Capital contributions	4	218
Dividends paid	–874	–722
Capital transactions with minority interests	–392	–362
Other changes	23	–3
Proceeds from issue of bonds	15,593	7,671
Repayment of bonds	–10,202	–8,470
Change in other financial liabilities	1,405	9,806
Finance lease payments	–23	–15
Cash flows from financing activities	**5,536**	**8,123**
Effect of exchange rate changes on cash and cash equivalents	190	–113
Net change in cash and cash equivalents	**8,792**	**–471**
Cash and cash equivalents at end of period (excluding time deposit investments)	**18,235**	**9,443**
Cash and cash equivalents at end of period (excluding time deposit investments)	18,235	9,443
Securities and loans (including time deposit investments)	7,312	7,875
Gross liquidity	**25,547**	**17,318**
Total third-party borrowings	–77,599	–69,555
Net liquidity	**–52,052**	**–52,237**

The operating activities section of Volkswagen's cash flow statement begins with profit before tax,[6] €1,261 million, subtracts actual income tax payments, and then adjusts this amount for the effects of non-cash transactions, accruals and deferrals, and transactions of an investing and financing nature to arrive at the amount of cash generated from operating activities of €12,741 million. This approach to reporting cash flow from operating activities is termed the indirect method. The direct method of reporting cash flows from operating activities discloses major classes of gross cash receipts and gross cash payments. Examples of such classes are cash received from customers and cash paid to suppliers and employees.

The indirect method emphasizes the different perspectives of the income statement and cash flow statement. On the income statement, income is reported when earned, not necessarily when cash is received, and expenses are reported when incurred, not necessarily when paid. The cash flow statement presents another aspect of performance: the ability of a company to generate cash flow from running its business. Ideally, for an established company, the analyst would like to see that the primary source of cash flow is from operating activities as opposed to investing or financing activities.

The sum of the net cash flows from operating, investing, and financing activities and the effect of exchange rates on cash equals the net change in cash during the fiscal year. For Volkswagen, the sum of these four items was €8,792 million in 2009, which thus increased the company's cash, excluding amounts held in time deposit investments, from €9,443 million at the beginning of the period to €18,235 million at the end of the period. As disclosed in a note to the financial statements, the time deposit investments are €42 million and €2,304 million for the years 2008 and 2009, respectively. The note also disclosed that €11 million of cash and cash equivalents held for sale [sic] are included in the cash and cash equivalents as reported in cash flow statement but are not included in the cash and cash equivalents as reported in the balance sheet in 2008. When these amounts are included with the amounts shown on the cash flow statement, the total cash and cash equivalents for the years 2008 and 2009 are €9,474 (= 9443 + 42 – 11) million and €20,539 million. These are the same amounts reported as cash and cash equivalents on the balance sheets in Exhibit 3. The cash flow statement will be covered in more depth in a later chapter.

3.1.5. Financial Notes and Supplementary Schedules

The notes (also sometimes referred to as footnotes) that accompany the four financial statements are required and are an integral part of the complete set of financial statements. The notes provide information that is essential to understanding the information provided in the primary statements. Volkswagen's 2009 financial statements, for example, include 91 pages of notes.

The notes disclose the basis of preparation for the financial statements. For example, Volkswagen discloses in its first note that its fiscal year corresponds to the calendar year, that its financial statements are prepared in accordance with IFRS as adopted by the European Union, that the statements are prepared in compliance with German law, that the statements are denominated in millions of euros unless otherwise specified, and that the figures have been rounded, which might give rise to minor discrepancies when figures are added. Volkswagen also discloses that its financial statements are on a consolidated basis—that is, including Volkswagen AG and all of the subsidiary companies it controls.

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[6] Other companies may choose to begin with net income.

The notes also disclose information about the accounting policies, methods, and estimates used to prepare the financial statements. As will be discussed in later chapters, both IFRS and US GAAP allow some flexibility in choosing among alternative policies and methods when accounting for certain items. This flexibility aims to meet the divergent needs of many businesses for reporting a variety of economic transactions. In addition to differences in accounting policies and methods, differences arise as a result of estimates needed to record and measure transactions, events, and financial statement line items.

Overall, flexibility in accounting choices is necessary because, ideally, a company will select those policies, methods, and estimates that are allowable and most relevant and that fairly reflect the unique economic environment of the company's business and industry. Flexibility can, however, create challenges for the analyst because the use of different policies, methods, and estimates reduces comparability across different companies' financial statements. Comparability occurs when different companies' information is measured and reported in a similar manner over time. Comparability helps the analyst identify and analyze the real economic differences across companies, rather than differences that arise solely from different accounting choices. Because comparability of financial statements is a critical requirement for objective financial analysis, an analyst should be aware of the potential for differences in accounting choices even when comparing two companies that use the same set of accounting standards.

For example, if a company acquires a piece of equipment to use in its operations, accounting standards require that the cost of the equipment be reported as an expense by allocating its cost less any residual value in a systematic manner over the equipment's useful life. This allocation of the cost is known as **depreciation**. Accounting standards permit flexibility, however, in determining the manner in which each year's expense is determined. Two companies may acquire similar equipment but use different methods and assumptions to record the expense over time. An analyst's ability to compare the companies' performance is hindered by the difference. Analysts must understand reporting choices in order to make appropriate adjustments when comparing companies' financial positions and performance.

A company's significant accounting choices (policies, methods, and estimates) must be discussed in the notes to the financial statements. For example, a note containing a summary of significant accounting policies includes how the company recognizes its revenues and depreciates its non-current tangible assets. Analysts must understand the accounting choices a company makes and determine whether they are similar to those of other companies identified and used as benchmarks or comparables. If the policies of the companies being compared are different, the analyst who understands accounting and financial reporting can often make necessary adjustments so that the financial statement data used are more comparable.

For many companies, the financial notes and supplemental schedules provide explanatory information about every line item (or almost every line item) on the balance sheet and income statement, as illustrated by the note references in Volkswagen's balance sheet and income statement in Exhibits 3 and 5. In addition, note disclosures include information about the following (this is not an exhaustive list):

- financial instruments and risks arising from financial instruments,
- commitments and contingencies,
- legal proceedings,
- related-party transactions,
- subsequent events (i.e., events that occur after the balance sheet date),
- business acquisitions and disposals, and
- operating segments' performance.

EXHIBIT 9 Excerpt from Notes to the Consolidated Financial Statements of the Volkswagen Group for Fiscal Year Ended 31 December 2009: Selected Data on Operating Segments (€ millions)

2008	Passenger Cars and Light Commercial Vehicles	Scania	Volkswagen Financial Services	Total Segments
Sales revenue from external customers	98,710	3,865	10,193	112,768
Segment profit or loss	6,431	417	893	7,741
Segment assets	91,458	10,074	74,690	176,222

2009	Passenger Cars and Light Commercial Vehicles	Scania	Volkswagen Financial Services	Total Segments
Sales revenue from external customers	86,297	6,385	11,095	103,777
Segment profit or loss	2,020	236	606	2,862
Segment assets	87,786	9,512	76,431	173,729

An analyst uses a significant amount of judgment in deciding how to incorporate information from note disclosures into the analysis. For example, such information as financial instrument risk, contingencies, and legal proceedings can alert an analyst to risks that can affect a company's financial position and performance in the future and that require monitoring over time. As another example, information about a company's operating segments can be useful as a means of quickly understanding what a company does and how and where it earns money. The operating segment data shown in Exhibit 9 appear in the notes to the financial statements for Volkswagen. (The totals of the segment data do not equal the amounts reported in the company's financial statements because the financial statement data are adjusted for intersegment activities and unallocated items. The note provides a complete reconciliation of the segment data to the reported data.) From the data in Exhibit 9, an analyst can quickly see that most of the company's revenues and operating profits come from the sale of passenger cars and light commercial vehicles. Over 80 percent of the company's revenues was generated by this segment in both years. In 2008, this segment accounted for over 80 percent of the company's total segment operating profits, although the percentage declined to 70 percent in 2009 because of higher sales growth in the other two segments. Experience using the disclosures of a company and its competitors typically enhances an analyst's judgment about the relative importance of different disclosures and the ways in which they can be helpful.

3.1.6. Management Commentary or Management's Discussion and Analysis

Publicly held companies typically include a section in their annual reports where management discusses a variety of issues of concern, including the nature of the business, past results, and future outlook. This section is referred to by a variety of names, including management report(ing), management commentary, operating and financial review, and management's discussion and analysis. Inclusion of a management report is recommended by the International

Organization of Securities Commissions and frequently required by regulatory authorities, such as the US Securities and Exchange Commission (SEC) or the UK Financial Services Authority. In Germany, management reporting has been required since 1931 and is audited. The discussion by management is arguably one of the most useful parts of a company's annual report besides the financial statements themselves; however, other than excerpts from the financial statements, information included in the management commentary is typically unaudited. When using information from the management report, an analyst should be aware of whether the information is audited or unaudited.

To help improve the quality of the discussion by management, the International Accounting Standards Board (IASB) issued an exposure draft in June 2009 that proposed a framework for the preparation and presentation of management commentary. Per the exposure draft, that framework will provide guidance rather than set forth requirements in a standard. The exposure draft identifies five content elements of a "decision-useful management commentary." Those content elements include 1) the nature of the business; 2) management's objectives and strategies; 3) the company's significant resources, risks, and relationships; 4) results of operations; and 5) critical performance measures.

In the United States, the SEC requires listed companies to provide an MD&A and specifies the content.[7] Management must highlight any favorable or unfavorable trends and identify significant events and uncertainties that affect the company's liquidity, capital resources, and results of operations. The MD&A must also provide information about the effects of inflation, changing prices, or other material events and uncertainties that may cause the future operating results and financial condition to materially depart from the current reported financial information. In addition, the MD&A must provide information about off-balance-sheet obligations and about contractual commitments such as purchase obligations. Companies should also provide disclosure in the MD&A that discusses the critical accounting policies that require management to make subjective judgments and that have a significant impact on reported financial results.

The management commentary or MD&A is a good starting place for understanding information in the financial statements. In particular, the forward-looking disclosures in an MD&A, such as those about planned capital expenditures, new store openings, or divestitures, can be useful in projecting a company's future performance. However, the commentary is only one input for the analyst seeking an objective and independent perspective on a company's performance and prospects.

The management report in the Annual Report 2009 of Volkswagen Group includes much information of potential interest to an analyst. The 78-page management report contains sections titled Business Development; Shares and Bonds; Net Assets; Financial Position; Results of Operations; Volkswagen AG (condensed, according to German Commercial Code); Value-Enhancing Factors; Risk Report; and Report on Expected Developments.

3.1.7. Auditor's Reports

Financial statements presented in companies' annual reports are generally required to be audited (examined) by an independent accounting firm in accordance with specified auditing standards. The independent auditor then provides a written opinion on the financial statements.

[7] Relevant sections of SEC requirements are included for reference in the FASB ASC. The FASB ASC does not include sections of SEC requirements that deal with matters outside the basic financial statements, such as the MD&A.

This opinion is referred to as the audit report. Audit reports take slightly different forms in different jurisdictions, but the basic components, including a specific statement of the auditor's opinion, are similar. Audits of financial statements may be required by contractual arrangement, law, or regulation.

International standards for auditing have been developed by the International Auditing and Assurance Standards Board of the International Federation of Accountants. These standards have been adopted by many countries and are referenced in audit reports issued in those countries. Other countries, such as the United States, specify their own auditing standards. With the enactment of the Sarbanes–Oxley Act of 2002 in the United States, auditing standards for public companies are promulgated by the Public Company Accounting Oversight Board.

Under international standards for auditing (ISAs), the objectives of an auditor in conducting an audit of financial statements are

A. To obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, thereby enabling the auditor to express an opinion on whether the financial statements are prepared, in all material respects, in accordance with an applicable financial reporting framework; and
B. To report on the financial statements, and communicate as required by the ISAs, in accordance with the auditor's findings.[8]

Publicly traded companies may also have requirements set by regulators or stock exchanges, such as appointing an independent audit committee within its board of directors to oversee the audit process. The audit process provides a basis for the independent auditor to express an audit opinion on whether the information presented in the audited financial statements present fairly the financial position, performance, and cash flows of the company in accordance with a specified set of accounting standards. Because audits are designed and conducted using audit sampling techniques and financial statement line items may be based on estimates and assumptions, independent auditors cannot express an opinion that provides absolute assurance about the accuracy or precision of the financial statements. Instead, the independent audit report provides *reasonable assurance* that the financial statements are *fairly presented*, meaning that there is a high probability that the audited financial statements are free from *material* error, fraud, or illegal acts that have a direct effect on the financial statements.

The standard independent audit report for a publicly traded company normally has several paragraphs under both the international and US auditing standards. The first or "introductory" paragraph describes the financial statements that were audited and the responsibilities of both management and the independent auditor. The second or "scope" paragraph describes the nature of the audit process and provides the basis for the auditor's expression about reasonable assurance on the fairness of the financial statements. The third or "opinion" paragraph expresses the auditor's opinion on the fairness of the audited financial statements.

An *unqualified* audit opinion states that the financial statements give a "true and fair view" (international) or are "fairly presented" (international and US) in accordance with applicable accounting standards. This is often referred to as a "clean" opinion and is the one that analysts would like to see in a financial report. There are several other types of opinions. A *qualified* audit opinion is one in which there is some scope limitation or exception to accounting

[8] See the International Auditing and Assurance Standards Board (IAASB) *Handbook of International Quality Control, Auditing, Review, Other Assurance, and Related Services Pronouncements*.

standards. Exceptions are described in the audit report with additional explanatory paragraphs so that the analyst can determine the importance of the exception. An *adverse* audit opinion is issued when an auditor determines that the financial statements materially depart from accounting standards and are not fairly presented. An adverse opinion makes analysis of the financial statements easy: Do not bother analyzing these statements, because the company's financial statements cannot be relied on. Finally, a *disclaimer of opinion* occurs when, for some reason, such as a scope limitation, the auditors are unable to issue an opinion. Exhibit 10 presents the independent auditor's report for Volkswagen. Note that Volkswagen received an unqualified or clean audit opinion from PricewaterhouseCoopers for the company's fiscal year ended 31 December 2009.

EXHIBIT 10 Volkswagen's Independent Audit Report

Auditors' Report

On completion of our audit, we issued the following unqualified auditors' report dated February 17, 2010. This report was originally prepared in German. In case of ambiguities the German version takes precedence:

Auditors' Report

We have audited the consolidated financial statements prepared by VOLKSWAGEN AKTIENGESELLSCHAFT, Wolfsburg, comprising the income statement and statement of comprehensive income, the balance sheet, the statement of changes in equity, the cash flow statement and the notes to the consolidated financial statements, together with the group management report, which is combined with the management report of the Company for the business year from January 1 to December 31, 2009. The preparation of the consolidated financial statements and the combined management report in accordance with the IFRSs, as adopted by the EU, and the additional requirements of German commercial law pursuant to § (article) 315a Abs. (paragraph) 1 HGB ("Handelsgesetzbuch": German Commercial Code) are the responsibility of the Company's Board of Management. Our responsibility is to express an opinion on the consolidated financial statements and on the combined management report based on our audit.

We conducted our audit of the consolidated financial statements in accordance with § 317 HGB and German generally accepted standards for the audit of financial statements promulgated by the Institut der Wirtschaftsprüfer (Institute of Public Auditors in Germany) (IDW). Those standards require that we plan and perform the audit such that misstatements materially affecting the presentation of the net assets, financial position and results of operations in the consolidated financial statements in accordance with the applicable financial reporting framework and in the combined management report are detected with reasonable assurance. Knowledge of the business activities and the economic and legal environment of the Group and expectations as to possible misstatements are taken into account in the determination of audit procedures. The effectiveness of the accounting-related internal control system and the evidence supporting the disclosures in the consolidated financial statements and the combined management report are examined primarily on a test basis within the framework of the audit. The audit includes assessing the annual financial statements of those entities included in consolidation, the determination of the entities to be included in

EXHIBIT 10 (Continued)

consolidation, the accounting and consolidation principles used and significant estimates made by the Company's Board of Management, as well as evaluating the overall presentation of the consolidated financial statements and the combined management report. We believe that our audit provides a reasonable basis for our opinion.

Our audit has not led to any reservations.

In our opinion, based on the findings of our audit, the consolidated financial statements comply with the IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Article 315a paragraph 1 HGB and give a true and fair view of the net assets, financial position, and results of operations of the Group in accordance with these requirements. The combined management report is consistent with the consolidated financial statements and as a whole provides a suitable view of the Group's position and suitably presents the opportunities and risks of future development.

Hanover, February 17, 2010

PricewaterhouseCoopers
Aktiengesellschaft
Wirtschaftsprüfungsgesellschaft

Harald Kayser
Wirtschaftsprüfer

ppa. Martin Schröder
Wirtschaftsprüfer

Source: Volkswagen's Annual Report 2009.

In the United States, under the Sarbanes–Oxley Act, the auditors must also express an opinion on the company's internal control systems. This information may be provided in a separate opinion or incorporated as a paragraph in the opinion related to the financial statements. The internal control system is the company's internal system that is designed, among other things, to ensure that the company's process for generating financial reports is sound. Although management has always been responsible for maintaining effective internal control, the Sarbanes–Oxley Act greatly increases management's responsibility for demonstrating that the company's internal controls are effective. Management of publicly traded companies in the United States are now required by securities regulators to explicitly accept responsibility for the effectiveness of internal control, evaluate the effectiveness of internal control using suitable control criteria, support the evaluation with sufficient competent evidence, and provide a report on internal control.

Although these reports and attestations provide some assurances to analysts, they are not infallible. The analyst must always use a degree of healthy skepticism when analyzing financial statements.

3.2. Other Sources of Information

The information described in Section 3.1 is generally provided to shareholders at least annually. In addition, companies also provide information on management and director compensation,

company stock performance, and any potential conflicts of interest that may exist between management, the board, and shareholders. This information may appear in the company's annual report or other publicly available documents. Public companies often provide this information in proxy statements, which are statements distributed to shareholders about matters that are to be put to a vote at the company's annual (or special) meeting of shareholders.

Interim reports are also provided by the company either semiannually or quarterly, depending on the applicable regulatory requirements. Interim reports generally present the four basic financial statements and condensed notes but are not audited. These interim reports provide updated information on a company's performance and financial position since the last annual period.

Companies also provide relevant current information on their websites, in press releases, and in conference calls with analysts and investors. One type of press release, which analysts often consider to be particularly important, is the periodic earnings announcement. The earnings announcement often happens well before the company files its formal financial statements. Such earnings announcements are often followed by a conference call in which the company's senior executives describe the company's performance and answer questions posed by conference call participants. Following the earnings conference call, the investor relations portion of the company's website may post a recording of the call accompanied by slides and supplemental information discussed during the call.

When performing financial statement analysis, analysts should review all these company sources of information as well as information from external sources regarding the economy, the industry, the company, and peer (comparable) companies. Information on the economy, industry, and peer companies is useful in putting the company's financial performance and position in perspective and in assessing the company's future. In most cases, information from sources apart from the company is crucial to an analyst's effectiveness. For example, an analyst studying a consumer-oriented company will typically seek direct experience with the products (taste the food or drink, use the shampoo or soap, visit the stores or hotels). An analyst following a highly regulated industry will study the existing and expected relevant regulations. An analyst following a highly technical industry will gain relevant expertise personally or seek input from a technical specialist. In sum, thorough research goes beyond financial reports.

The next section presents a framework for using all this information in financial statement analysis.

4. FINANCIAL STATEMENT ANALYSIS FRAMEWORK

Analysts work in a variety of positions within the investment management industry. Some are equity analysts whose main objective is to evaluate potential investments in a company's equity securities (i.e., the shares or stock it issues) as a basis for deciding whether a prospective investment is attractive and what an appropriate purchase price might be. Others are credit analysts who evaluate the credit-worthiness of a company to decide whether (and with what terms) a loan should be made or what credit rating should be assigned. Analysts may also be involved in a variety of other tasks, such as evaluating the performance of a subsidiary company, evaluating a private equity investment, or finding stocks that are overvalued for purposes of taking a short position. This section presents a generic framework for financial statement analysis that can be used in these various tasks. The framework is summarized in Exhibit 11.[9]

[9] Components of this framework have been adapted from van Greuning and Bratanovic (2003, p. 300) and from Benninga and Sarig (1997, pp. 134–156).

EXHIBIT 11 Financial Statement Analysis Framework

Phase	Sources of Information	Output
1. Articulate the purpose and context of the analysis.	• The nature of the analyst's function, such as evaluating an equity or debt investment or issuing a credit rating. • Communication with client or supervisor on needs and concerns. • Institutional guidelines related to developing specific work product.	• Statement of the purpose or objective of analysis. • A list (written or unwritten) of specific questions to be answered by the analysis. • Nature and content of report to be provided. • Timetable and budgeted resources for completion.
2. Collect input data.	• Financial statements, other financial data, questionnaires, and industry/economic data. • Discussions with management, suppliers, customers, and competitors. • Company site visits (e.g., to production facilities or retail stores).	• Organized financial statements. • Financial data tables. • Completed questionnaires, if applicable.
3. Process data.	• Data from the previous phase.	• Adjusted financial statements. • Common-size statements. • Ratios and graphs. • Forecasts.
4. Analyze/interpret the processed data.	• Input data as well as processed data.	• Analytical results.
5. Develop and communicate conclusions and recommendations (e.g., with an analysis report).	• Analytical results and previous reports. • Institutional guidelines for published reports.	• Analytical report answering questions posed in Phase 1. • Recommendation regarding the purpose of the analysis, such as whether to make an investment or grant credit.
6. Follow-up.	• Information gathered by periodically repeating above steps as necessary to determine whether changes to holdings or recommendations are necessary.	• Updated reports and recommendations.

The following sections discuss the individual phases of financial statement analysis.

4.1. Articulate the Purpose and Context of Analysis

Prior to undertaking any analysis, it is essential to understand the purpose of the analysis. An understanding of the purpose is particularly important in financial statement analysis because of the numerous available techniques and the substantial amount of data.

Some analytical tasks are well defined, in which case articulating the purpose of the analysis requires little decision making by the analyst. For example, a periodic credit review of an investment-grade debt portfolio or an equity analyst's report on a particular company may be guided by institutional norms such that the purpose of the analysis is given. Furthermore, the format, procedures, and/or sources of information may also be given.

For other analytical tasks, articulating the purpose of the analysis requires the analyst to make decisions. The purpose of an analysis guides further decisions about the approach, the tools, the data sources, the format in which to report the results of the analysis, and the relative importance of different aspects of the analysis.

When facing a substantial amount of data, a less experienced analyst may be tempted to just start making calculations and generating financial ratios without considering what is relevant for the decision at hand. It is generally advisable to resist this temptation and thus avoid unnecessary or pointless efforts. Consider the questions: If you could have all the calculations and ratios completed instantly, what conclusion would you be able to draw? What question would you be able to answer? What decision would your answer support?

The analyst should also define the context at this stage. Who is the intended audience? What is the end product—for example, a final report explaining conclusions and recommendations? What is the time frame (i.e., when is the report due)? What resources and resource constraints are relevant to completion of the analysis? Again, the context may be predefined (i.e., standard and guided by institutional norms).

Having clarified the purpose and context of the financial statement analysis, the analyst should next compile the specific questions to be answered by the analysis. For example, if the purpose of the financial statement analysis (or, more likely, the particular stage of a larger analysis) is to compare the historical performance of three companies operating in a particular industry, specific questions would include the following: What has been the relative growth rate of the companies, and what has been the relative profitability of the companies?

4.2. Collect Data

Next, the analyst obtains the data required to answer the specific questions. A key part of this step is obtaining an understanding of the company's business, financial performance, and financial position (including trends over time and in comparison with peer companies). For historical analyses, financial statement data alone are adequate in some cases. For example, to screen a large number of alternative companies to find those with a minimum level of profitability, financial statement data alone would be adequate. But to address more in-depth questions, such as why and how one company performed better or worse than its competitors, additional information would be required. As another example, to compare the historical performance of two companies in a particular industry, the historical financial statements would be sufficient to determine which had faster-growing sales or earnings and which was more profitable; however, a broader comparison with overall industry growth and profitability would obviously require industry data.

Furthermore, information on the economy and industry is necessary to understand the environment in which the company operates. Analysts often take a top-down approach

whereby they 1) gain an understanding of the macroeconomic environment, such as prospects for growth in the economy and inflation, 2) analyze the prospects of the industry in which the subject company operates based on the expected macroeconomic environment, and 3) determine the prospects for the company in the expected industry and macroeconomic environments. For example, an analyst may need to forecast future growth in earnings for a company. To project future growth, past company data provide one basis for statistical forecasting; however, an understanding of economic and industry conditions can improve the analyst's ability to forecast a company's earnings on the basis of forecasts of overall economic and industry activity.

4.3. Process Data

After obtaining the requisite financial statement and other information, the analyst processes these data using appropriate analytical tools. For example, processing the data may involve computing ratios or growth rates; preparing common-size financial statements; creating charts; performing statistical analyses, such as regressions or Monte Carlo simulations; performing equity valuation; performing sensitivity analyses; or using any other analytical tools or combination of tools that are available and appropriate for the task. A comprehensive financial analysis at this stage would include the following:

- Reading and evaluating financial statements for each company being analyzed. This includes reading the notes and understanding what accounting standards have been used (for example, IFRS or US GAAP), what accounting choices have been made (for example, when to report revenue on the income statement), and what operating decisions have been made that affect reported financial statements (for example, leasing versus purchasing equipment).
- Making any needed adjustments to the financial statements to facilitate comparison when the unadjusted statements of the subject companies reflect differences in accounting standards, accounting choices, or operating decisions. Note that commonly used databases do not make such analyst adjustments.
- Preparing or collecting common-size financial statement data (which scale data to directly reflect percentages [e.g., of sales] or changes [e.g., from the prior year]) and financial ratios (which are measures of various aspects of corporate performance based on financial statement elements). On the basis of common-size financial statements and financial ratios, analysts can evaluate a company's relative profitability, liquidity, leverage, efficiency, and valuation in relation to past results and/or peers' results.

4.4. Analyze/Interpret the Processed Data

Once the data have been processed, the next step—critical to any analysis—is to interpret the output. The answer to a specific financial analysis question is seldom the numerical answer alone. Rather, the answer to the analytical question relies on the analyst's interpretation of the output and the use of this interpreted output to support a conclusion or recommendation. The answers to the specific analytical questions may themselves achieve the underlying purpose of the analysis, but usually, a conclusion or recommendation is required. For example, an equity analysis may require a buy, hold, or sell decision or a conclusion about the value of a share of stock. In support of the decision, the analysis would cite such information as target value, relative performance, expected future performance given a company's strategic position, quality of management, and whatever other information was important in reaching the decision.

4.5. Develop and Communicate Conclusions/Recommendations

Communicating the conclusion or recommendation in an appropriate format is the next step. The appropriate format will vary by analytical task, by institution, and/or by audience. For example, an equity analyst's report would typically include the following components:[10]

- summary and investment conclusion;
- earnings projections;
- valuation;
- business summary;
- risk, industry, and competitive analysis;
- historical performance; and
- forecasts.

The contents of reports may also be specified by regulatory agencies or professional standards. For example, the CFA Institute *Standards of Practice Handbook* (*Handbook*) dictates standards that must be followed in communicating recommendations. According to the *Handbook*:

> Standard V(B) states that members and candidates should communicate in a recommendation the factors that were instrumental in making the investment recommendation. A critical part of this requirement is to distinguish clearly between opinions and facts. In preparing a research report, the member or candidate must present the basic characteristics of the security(ies) being analyzed, which will allow the reader to evaluate the report and incorporate information the reader deems relevant to his or her investment decision making process.[11]

The *Handbook* requires that limitations to the analysis and any risks inherent to the investment be disclosed. Furthermore, the *Handbook* requires that any report include elements important to the analysis and conclusions so that readers can evaluate the conclusions themselves.

4.6. Follow-Up

The process does not end with the report. If an equity investment is made or a credit rating is assigned, periodic review is required to determine if the original conclusions and recommendations are still valid. In the case of a rejected investment, follow-up may not be necessary but may be useful in determining whether the analysis process is adequate or should be refined (for example, if a rejected investment turns out to be successful in the market, perhaps the rejection was due to inadequate analysis). Follow-up may involve repeating all the previous steps in the process on a periodic basis.

5. SUMMARY

The information presented in financial and other reports, including the financial statements, notes, and management's commentary, help the financial analyst to assess a company's performance and financial position. An analyst may be called on to perform a financial analysis for

[10] Pinto, Henry, Robinson, and Stowe (2010).
[11] *Standards of Practice Handbook* (2010, p. 137).

a variety of reasons, including the valuation of equity securities, the assessment of credit risk, the performance of due diligence in an acquisition, and the evaluation of a subsidiary's performance relative to other business units. Major considerations in both equity analysis and credit analysis are evaluating a company's financial position, its ability to generate profits and cash flow, and its ability to generate future growth in profits and cash flow.

This chapter has presented an overview of financial statement analysis. Among the major points covered are the following:

- The primary purpose of financial reports is to provide information and data about a company's financial position and performance, including profitability and cash flows. The information presented in financial reports—including the financial statements and notes—and other reports—including management's commentary or management's discussion and analysis—allows the financial analyst to assess a company's financial position and performance and trends in that performance.
- The basic financial statements are the statement of financial position (i.e., the balance sheet), the statement of comprehensive income (i.e., a single statement of comprehensive income or two statements consisting of an income statement and a statement of comprehensive income), the statement of changes in equity, and the statement of cash flows.
- The balance sheet discloses what resources a company controls (assets) and what it owes (liabilities) at a specific point in time. Owners' equity represents the net assets of the company; it is the owners' residual interest in or residual claim on the company's assets after deducting its liabilities. The relationship among the three parts of the balance sheet (assets, liabilities, and owners' equity) may be shown in equation form as follows: Assets = Liabilities + Owners' equity.
- The income statement presents information on the financial results of a company's business activities over a period of time. The income statement communicates how much revenue and other income the company generated during a period and what expenses, including losses, it incurred in connection with generating that revenue and other income. The basic equation underlying the income statement is Revenue + Other income – Expenses = Net income.
- The statement of comprehensive income includes all items that change owners' equity except transactions with owners. Some of these items are included as part of net income, and some are reported as other comprehensive income (OCI).
- The statement of changes in equity provides information about increases or decreases in the various components of owners' equity.
- Although the income statement and balance sheet provide measures of a company's success, cash and cash flow are also vital to a company's long-term success. Disclosing the sources and uses of cash helps creditors, investors, and other statement users evaluate the company's liquidity, solvency, and financial flexibility.
- The notes (also referred to as footnotes) that accompany the financial statements are an integral part of those statements and provide information that is essential to understanding the statements. Analysts should evaluate note disclosures regarding the use of alternative accounting methods, estimates, and assumptions.
- In addition to the financial statements, a company provides other sources of information that are useful to the financial analyst. As part of his or her analysis, the financial analyst should read and assess this additional information, particularly that presented in the management commentary (also called management report[ing], operating and financial review, and management's discussion and analysis [MD&A]).
- A publicly traded company must have an independent audit performed on its annual financial statements. The auditor's report expresses an opinion on the financial statements and provides some assurance about whether the financial statements fairly present a company's

financial position, performance, and cash flows. In addition, for US publicly traded companies, auditors must also express an opinion on the company's internal control systems.
- Information on the economy, industry, and peer companies is useful in putting the company's financial performance and position in perspective and in assessing the company's future. In most cases, information from sources apart from the company are crucial to an analyst's effectiveness.
- The financial statement analysis framework provides steps that can be followed in any financial statement analysis project. These steps are:
  - articulate the purpose and context of the analysis;
  - collect input data;
  - process data;
  - analyze/interpret the processed data;
  - develop and communicate conclusions and recommendations; and
  - follow up.

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PROBLEMS

1. Providing information about the performance and financial position of companies so that users can make economic decisions *best* describes the role of:
   A. auditing.
   B. financial reporting.
   C. financial statement analysis.

2. A company's current financial position would *best* be evaluated using the:
   A. balance sheet.
   B. income statement.
   C. statement of cash flows.

3. A company's profitability for a period would *best* be evaluated using the:
   A. balance sheet.
   B. income statement.
   C. statement of cash flows.

4. Accounting policies, methods, and estimates used in preparing financial statements are *most likely* found in the:
   A. auditor's report.
   B. management commentary.
   C. notes to the financial statements.

5. Information about management and director compensation would *least likely* be found in the:
   A. auditor's report.
   B. proxy statement.
   C. notes to the financial statements.
6. Information about a company's objectives, strategies, and significant risks would *most likely* be found in the:
   A. auditor's report.
   B. management commentary.
   C. notes to the financial statements.
7. What type of audit opinion is preferred when analyzing financial statements?
   A. Qualified.
   B. Adverse.
   C. Unqualified.
8. Ratios are an input into which step in the financial statement analysis framework?
   A. Process data.
   B. Collect input data.
   C. Analyze/interpret the processed data.

CHAPTER 2

FINANCIAL REPORTING MECHANICS

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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- explain the relationship of financial statement elements and accounts, and classify accounts into the financial statement elements;
- explain the accounting equation in its basic and expanded forms;
- describe the process of recording business transactions using an accounting system based on the accounting equation;
- describe the need for accruals and other adjustments in preparing financial statements;
- describe the relationships among the income statement, balance sheet, statement of cash flows, and statement of owners' equity;
- describe the flow of information in an accounting system;
- describe the use of the results of the accounting process in security analysis.

1. INTRODUCTION

The financial statements of a company are end-products of a process for recording transactions of the company related to operations, financing, and investment. The structures of financial statements themselves reflect the system of recording and organizing transactions. To be an informed user of financial statements, the analyst must be knowledgeable about the principles

of this system. This chapter will supply that essential knowledge, taking the perspective of the user rather than the preparer. Learning the process from this perspective will enable an analyst to grasp the critical concepts without being overwhelmed by the detailed technical skills required by the accountants who prepare financial statements that are a major component of financial reports.

This chapter is organized as follows: Section 2 describes the three groups into which business activities are classified for financial reporting purposes. Any transaction affects one or more of these groups. Section 3 describes how the elements of financial statements relate to accounts, the basic content unit of classifying transactions. The section is also an introduction to the linkages among the financial statements. Section 4 provides a step-by-step illustration of the accounting process. Section 5 explains the consequences of timing differences between the elements of a transaction. Section 6 provides an overview of how information flows through a business's accounting system. Section 7 introduces the use of financial reporting in security analysis. A summary of the key points and practice problems in the CFA Institute multiple-choice format conclude the chapter.

2. THE CLASSIFICATION OF BUSINESS ACTIVITIES

Accountants give similar accounting treatment to similar types of business transactions. Therefore, a first step in understanding financial reporting mechanics is to understand how business activities are classified for financial reporting purposes.

Business activities may be classified into three groups for financial reporting purposes: operating, investing, and financing activities.

- **Operating activities** are those activities that are part of the day-to-day business functioning of an entity. Examples include the sale of meals by a restaurant, the sale of services by a consulting firm, the manufacture and sale of ovens by an oven-manufacturing company, and taking deposits and making loans by a bank.
- **Investing activities** are those activities associated with acquisition and disposal of long-term assets. Examples include the purchase of equipment or sale of surplus equipment (such as an oven) by a restaurant (contrast this to the sale of an oven by an oven manufacturer, which would be an operating activity), and the purchase or sale of an office building, a retail store, or a factory.
- **Financing activities** are those activities related to obtaining or repaying capital. The two primary sources for such funds are owners (shareholders) or creditors. Examples include issuing common shares, taking out a bank loan, and issuing bonds.

Understanding the nature of activities helps the analyst understand where the company is doing well and where it is not doing so well. Ideally, an analyst would prefer that most of a company's profits (and cash flow) come from its operating activities. Exhibit 1 provides examples of typical business activities and how these activities relate to the elements of financial statements described in the following section.

EXHIBIT 1 Typical Business Activities and Financial Statement Elements Affected

Operating activities	• Sales of goods and services to customers: (R) • Costs of providing the goods and services: (X) • Income tax expense: (X) • Holding short-term assets or incurring short-term liabilities directly related to operating activities: (A), (L)
Investing activities	• Purchase or sale of assets, such as property, plant, and equipment: (A) • Purchase or sale of other entities' equity and debt securities: (A)
Financing activities	• Issuance or repurchase of the company's own preferred or common stock: (E) • Issuance or repayment of debt: (L) • Payment of distributions (i.e., dividends to preferred or common stockholders): (E)

Accounting elements: Assets (A), Liabilities (L), Owners' Equity (E), Revenue (R), and Expenses (X).

Not all transactions fit neatly in this framework for purposes of financial statement presentation. For example, interest received by a bank on one of its loans would be considered part of operating activities because a bank is in the business of lending money. In contrast, interest received on a bond investment by a restaurant may be more appropriately classified as an investing activity because the restaurant is not in the business of lending money.

The next section discusses how transactions resulting from these business activities are reflected in a company's financial records.

3. ACCOUNTS AND FINANCIAL STATEMENTS

Business activities resulting in transactions are reflected in the broad groupings of financial statement elements: Assets, Liabilities, Owners' Equity, Revenue, and Expenses.[1] In general terms, these elements can be defined as follows: **assets** are the economic resources of a company; **liabilities** are the creditors' claims on the resources of a company; **owners' equity** is the residual claim on those resources; **revenues** are inflows of economic resources to the company; and **expenses** are outflows of economic resources or increases in liabilities.[2]

Accounts provide individual records of increases and decreases in a *specific* asset, liability, component of owners' equity, revenue, or expense. The financial statements are constructed using these elements.

[1] International Financial Reporting Standards use the term "income" to include revenue and gains. Gains are similar to revenue; however, they arise from secondary or peripheral activities rather than from a company's primary business activities. For example, for a restaurant, the sale of surplus restaurant equipment for more than its cost is referred to as a gain rather than revenue. Similarly, a loss is like an expense but arises from secondary activities. Gains and losses may be considered part of operations on the income statement (for example, a loss due to a decline in value of inventory) or may be part of nonoperating activities (for example, the sale of nontrading investments). Under US GAAP, financial statement elements are defined to include assets, liabilities, owners' equity, revenue, expenses, gains, and losses. To illustrate business transactions in this chapter, we will use the simple classification of revenues and expenses. All gains and revenue will be aggregated in revenue, and all losses and expenses will be aggregated in expenses.

[2] The authoritative accounting standards provide significantly more detailed definitions of the accounting elements. Also note that "owners' equity" is a generic term and more specific titles are often used such as "shareholders' equity," "stockholders' equity," or "partners' capital." The broader terms "equity" and "capital" are also used on occasion.

3.1. Financial Statement Elements and Accounts

Within the financial statement elements, accounts are subclassifications. **Accounts** are individual records of increases and decreases in a specific asset, liability, component of owners' equity, revenue, or expense. For financial statements, amounts recorded in every individual account are summarized and grouped appropriately within a financial statement element. Exhibit 2 provides a listing of common accounts. These accounts will be described throughout this chapter or in following chapters. Unlike the financial statement elements, there is no standard set of accounts applicable to all companies. Although almost every company has certain accounts, such as cash, each company specifies the accounts in its accounting system based on its particular needs and circumstances. For example, a company in the restaurant business may not be involved in trading securities and, therefore, may not need an account to record such an activity. Furthermore, each company names its accounts based on its business. A company in the restaurant business might have an asset account for each of its ovens, with the accounts named "Oven-1" and "Oven-2." In its financial statements, these accounts would likely be grouped within long-term assets as a single line item called "Property, plant, and equipment."

A company's challenge is to establish accounts and account groupings that provide meaningful summarization of voluminous data but retain enough detail to facilitate decision making and preparation of the financial statements. The actual accounts used in a company's accounting system will be set forth in a **chart of accounts**. Generally, the chart of accounts is far more detailed than the information presented in financial statements.

Certain accounts are used to offset other accounts. For example, a common asset account is accounts receivable, also known as "trade accounts receivable" or "trade receivables." A company uses this account to record the amounts it is owed by its customers. In other words, sales made on credit are reflected in accounts receivable. In connection with its receivables, a company often expects some amount of uncollectible accounts and, therefore, records an estimate of the amount that may not be collected. The estimated uncollectible amount is recorded in an account called **allowance for bad debts**. Because the effect of the allowance for bad debts account is to reduce the balance of the company's accounts receivable, it is known as a "contra asset account." Any account that is offset or deducted from another account is called a "**contra account**." Common contra accounts include allowance for bad debts (an offset to accounts receivable for the amount of accounts receivable that are estimated to be uncollectible), **accumulated depreciation** (an offset to property, plant, and equipment reflecting the amount of the cost of property, plant, and equipment that has been allocated to current and previous accounting periods), and **sales returns and allowances** (an offset to revenue reflecting any cash refunds, credits on account, and discounts from sales prices given to customers who purchased defective or unsatisfactory items).

EXHIBIT 2 Common Accounts

Assets	• Cash and cash equivalents • Accounts receivable, trade receivables • Prepaid expenses • Inventory • Property, plant, and equipment • Investment property • Intangible assets (patents, trademarks, licenses, copyright, goodwill) • Financial assets, trading securities, investment securities • Investments accounted for by the equity method • Current and deferred tax assets • [for banks, Loans (receivable)]

EXHIBIT 2 (Continued)

Liabilities	• Accounts payable, trade payables • Provisions or accrued liabilities • Financial liabilities • Current and deferred tax liabilities • Reserves • Minority interest • Unearned revenue • Debt payable • Bonds (payable) • [for banks, Deposits]
Owners' Equity	• Capital, such as common stock par value • Additional paid-in capital • Retained earnings • Other comprehensive income
Revenue	• Revenue, sales • Gains • Investment income (e.g., interest and dividends)
Expense	• Cost of goods sold • Selling, general, and administrative expenses "SG&A" (e.g., rent, utilities, salaries, advertising) • Depreciation and amortization • Interest expense • Tax expense • Losses

For presentation purposes, assets are sometimes categorized as "current" or "noncurrent." For example, Tesco (a large European retailer) presents the following major asset accounts in its 2006 financial reports:

Noncurrent assets:
- Intangible assets including goodwill;
- Property, plant, and equipment;
- Investment property;
- Investments in joint ventures and associates.

Current assets:
- Inventories;
- Trade and other receivables;
- Cash and cash equivalents.

Noncurrent assets are assets that are expected to benefit the company over an extended period of time (usually more than one year). For Tesco, these include the following: intangible assets, such as goodwill;[3] property, plant, and equipment used in operations (e.g., land and buildings); other property held for investment, and investments in the securities of other companies.

[3] **Goodwill** is an intangible asset that represents the excess of the purchase price of an acquired company over the value of the net assets acquired.

Current assets are those that are expected to be consumed or converted into cash in the near future, typically one year or less. **Inventory** is the unsold units of product on hand (sometimes referred to as inventory stock). **Trade receivables** (also referred to as **commercial receivables**, or simply **accounts receivable**) are amounts customers owe the company for products that have been sold as well as amounts that may be due from suppliers (such as for returns of merchandise). **Other receivables** represent amounts owed to the company from parties other than customers. **Cash** refers to cash on hand (e.g., petty cash and cash not yet deposited to the bank) and in the bank. **Cash equivalents** are very liquid short-term investments, usually maturing in 90 days or less. The presentation of assets as current or noncurrent will vary from industry to industry and from country to country. Some industries present current assets first, whereas others list noncurrent assets first. This is discussed further in later chapters.

3.2. Accounting Equations

The five financial statement elements noted previously serve as the inputs for equations that underlie the financial statements. This section describes the equations for three of the financial statements: balance sheet, income statement, and statement of retained earnings. A statement of retained earnings can be viewed as a component of the statement of stockholders' equity, which shows *all* changes to owners' equity, both changes resulting from retained earnings and changes resulting from share issuance or repurchase. The fourth basic financial statement, the statement of cash flows, will be discussed in a later section.

The **balance sheet** presents a company's financial position at a *particular point in time*. It provides a listing of a company's assets and the claims on those assets (liabilities and equity claims). The equation that underlies the balance sheet is also known as the "basic accounting equation." A company's financial position is reflected using the following equation:

$$\text{Assets} = \text{Liabilities} + \text{Owners' equity} \tag{1a}$$

Presented in this form, it is clear that claims on assets are from two sources: liabilities or owners' equity. Owners' equity is the **residual claim** of the owners (i.e., the owners' remaining claim on the company's assets after the liabilities are deducted). The concept of the owners' residual claim is well illustrated by the slightly rearranged balance sheet equation, roughly equivalent to the structure commonly seen in the balance sheets of UK companies:

$$\text{Assets} - \text{Liabilities} = \text{Owners' equity} \tag{1b}$$

Other terms are used to denote owners' equity, including shareholders' equity, stockholders' equity, net assets, equity, net worth, net book value, and partners' capital. The exact titles depend upon the type of entity, but the equation remains the same. Owners' equity at a given date can be further classified by its origin: capital contributed by owners, and earnings retained in the business up to that date:[4]

$$\text{Owners' equity} = \text{Contributed capital} + \text{Retained earnings} \tag{2}$$

[4]This formula reflects the fundamental origins of owners' equity and reflects the basic principles of accounting. The presentation is somewhat simplified. In practice, the owners' equity section of a company's balance sheet may include other items, such as treasury stock (which arises when a company repurchases and holds its own stock) or other comprehensive income. **Comprehensive income** includes all income of the company. Some items of comprehensive income are not reported on the income statement. These items as a group are called **other comprehensive income**; such items arise, for example, when there are changes in the value of assets or liabilities that are not reflected in the income statement.

The **income statement** presents the performance of a business for a *specific period of time*. The equation reflected in the income statement is the following:

$$\text{Revenue} - \text{Expenses} = \text{Net income (loss)} \quad (3)$$

Note that **net income** (loss) is the difference between two of the elements: revenue and expenses. When a company's revenue exceeds its expenses, it reports net income; when a company's revenues are less than its expenses, it reports a net loss. Other terms are used synonymously with revenue, including sales and turnover (in the United Kingdom). Other terms used synonymously with net income include net profit and net earnings.

Also, as noted earlier, revenue and expenses generally relate to providing goods or services in a company's primary business activities. In contrast, gains (losses) relate to increases (decreases) in resources that are not part of a company's primary business activities. Distinguishing a company's primary business activities from other business activities is important in financial analysis; however, for purposes of the accounting equation, gains are included in revenue and losses are included in expenses.

The balance sheet and income statement are two of the primary financial statements. Although these are the common terms for these statements, some variations in the names occur. A balance sheet can be referred to as a "statement of financial position" or some similar term that indicates it contains balances at a point in time. Income statements can be titled "statement of operations," "statement of income," "statement of profit and loss," or some other similar term showing that it reflects the company's operating activity for a period of time. A simplified balance sheet and income statement are shown in Exhibit 3.

EXHIBIT 3 Simplified Balance Sheet and Income Statement

ABC Company, Inc. Balance Sheet as of 31 December 20X1		ABC Company, Inc. Income Statement for the Year Ended 31 December 20X1	
Assets	2,000	Revenue	250
Liabilities	500	Expense	50
Owners' equity	1,500	Net income	200
	2,000		

The balance sheet represents a company's financial position at a point in time, and the income statement represents a company's activity over a period of time. The two statements are linked together through the retained earnings component of owners' equity. Beginning retained earnings is the balance in this account at the beginning of the accounting period, and ending retained earnings is the balance at the end of the period. A company's ending retained earnings is composed of the beginning balance (if any), plus net income, less any distributions to owners (dividends). Accordingly, the equation underlying retained earnings is:

$$\begin{aligned}\text{Ending retained earnings} = {} & \text{Beginning retained earnings} \\ & + \text{Net income} - \text{Dividends}\end{aligned} \quad (4a)$$

Or, substituting Equation 3 for Net income, equivalently:

$$\text{Ending retained earnings} = \text{Beginning retained earnings} + \text{Revenues} - \text{Expenses} - \text{Dividends} \tag{4b}$$

As its name suggests, retained earnings represent the earnings (i.e., net income) that are retained by the company—in other words, the amount not distributed as dividends to owners. Retained earnings is a component of owners' equity and links the "as of" balance sheet equation with the "activity" equation of the income statement. To provide a combined representation of the balance sheet and income statement, we can substitute Equation 2 into Equation 1a. This becomes the expanded accounting equation:

$$\text{Assets} = \text{Liabilities} + \text{Contributed capital} + \text{Ending retained earnings} \tag{5a}$$

Or equivalently, substituting Equation 4b into Equation 5a, we can write:

$$\text{Assets} = \text{Liabilities} + \text{Contributed capital} + \text{Beginning retained earnings} + \text{Revenue} - \text{Expenses} - \text{Dividends} \tag{5b}$$

The last five items, beginning with contributed capital, are components of owners' equity.

The **statement of retained earnings** shows the linkage between the balance sheet and income statement. Exhibit 4 shows a simplified example of financial statements for a company that began the year with retained earnings of $250 and recognized $200 of net income during the period. The example assumes the company paid no dividends and, therefore, had ending retained earnings of $450.

EXHIBIT 4 Simplified Balance Sheet, Income Statement, and Statement of Retained Earnings

Point in Time: Beginning of Period Balance Sheet		Change over Time: Income Statement *and* Changes in Retained Earnings		Point in Time: End of Period Balance Sheet	
ABC Company, Inc. (Beginning) Balance Sheet As of 31 December 20X0		**ABC Company, Inc. Income Statement Year Ended 31 December 20X1**		**ABC Company, Inc. (Ending) Balance Sheet As of 31 December 20X1**	
Assets	2,000	Revenue	250	Assets	2,200
		Expense	50		
Liabilities	500	Net income	200	Liabilities	500
Contributed equity	1,250			Combined equity	1,250
Retained earnings	**250**			**Retained earnings**	**450**
Owners' equity	1,500			Owners' equity	1,700
	2,000				2,200

EXHIBIT 4 (Continued)

Point in Time: Beginning of Period Balance Sheet	Change over Time: Income Statement *and* Changes in Retained Earnings	Point in Time: End of Period Balance Sheet

ABC Company, Inc.
Statement of Retained Earnings Year Ended 31 December 20X1

Beginning retained earnings	**250**
Plus net income	200
Minus dividends	0
Ending retained earnings	**450**

The basic accounting equation reflected in the balance sheet (Assets = Liabilities + Owners' equity) implies that every recorded transaction affects at least two accounts in order to keep the equation in balance, hence the term **double-entry accounting** that is sometimes used to describe the accounting process. For example, the use of cash to purchase equipment affects two accounts (both asset accounts): cash decreases and equipment increases. As another example, the use of cash to pay off a liability also affects two accounts (one asset account and one liability account): cash decreases and the liability decreases. With each transaction, the accounting equation remains in balance, which is a fundamental accounting concept. Example 1 presents a partial balance sheet for an actual company and an application of the accounting equation. Examples 2 and 3 provide further practice for applying the accounting equations.

EXAMPLE 1 Using Accounting Equations (1)

Canon is a manufacturer of copy machines and other electronic equipment. Abbreviated balance sheets as of 31 December 2004 and 2005 are presented below.

Canon and Subsidiaries Consolidated Balance Sheets (Millions of Yen)

	31 Dec 2005	31 Dec 2004
Assets		
Total assets	¥4,043,553	¥3,587,021
Liabilities and stockholders' equity		
Total liabilities	1,238,535	1,190,331
Total stockholders' equity	?	2,396,690
Total liabilities and stockholders' equity	¥4,043,553	¥3,587,021

Using Equation 1a, address the following:

1. Determine the amount of stockholders' equity as of 31 December 2005.
2. A. Calculate and contrast the absolute change in total assets in 2005 with the absolute change in total stockholders' equity in 2005.
   B. Based on your answer to 2A, state and justify the relative importance of growth in stockholders' equity and growth in liabilities in financing the growth of assets over the two years.

Solution to 1: Total stockholders' equity is equal to assets minus liabilities; in other words, it is the residual claim to the company's assets after deducting liabilities. For 2005, the amount of Canon's total stockholders' equity was thus ¥4,043,553 million – ¥1,238,535 million = ¥2,805,018 million in 2005.

Solutions to 2:

A. Total assets increased by ¥4,043,553 million – ¥3,587,021 million = ¥456,532 million. Total stockholders' equity increased by ¥2,805,018 million – ¥2,396,690 million = ¥408,328 million. Thus, in 2005, total assets grew by more than total stockholders' equity (¥456,532 million is larger than ¥408,328 million).

B. Using the relationship Assets = Liabilities + Owners' equity, the solution to 2A implies that total liabilities increased by the difference between the increase in total assets and the increase in total stockholders' equity, that is, by ¥456,532 million – ¥408,328 million = ¥48,204 million. (If liabilities had not increased by ¥48,204 million, the accounting equation would not be in balance.) Contrasting the growth in total stockholders' equity (¥408,328 million) with the growth in total liabilities (¥48,204 million), we see that the growth in stockholders' equity was relatively much more important than the growth in liabilities in financing total asset growth in 2005.

EXAMPLE 2 Using Accounting Equations (2)

An analyst has collected the following information regarding a company in advance of its year-end earnings announcement (amounts in millions):

Estimated net income	$ 150
Beginning retained earnings	$2,000
Estimated distributions to owners	$ 50

The analyst's estimate of ending retained earnings (in millions) should be closest to:

A. $2,000.

B. $2,100.

C. $2,150.

D. $2,200.

Solution: B is correct. Beginning retained earnings is increased by net income and reduced by distributions to owners: $2,000 + $150 – $50 = $2,100.

EXAMPLE 3 Using Accounting Equations (3)

An analyst has compiled the following information regarding RDZ, Inc.

Liabilities at year-end	€1,000
Contributed capital at year-end	€1,000
Beginning retained earnings	€ 500
Revenue during the year	€4,000
Expenses during the year	€3,800

There have been no distributions to owners. The analyst's estimate of total assets at year-end should be closest to:

A. €2,000.
B. €2,300.
C. €2,500.
D. €2,700.

Solution: D is correct. Ending retained earnings is first determined by adding revenue minus expenses to beginning retained earnings to obtain €700. Total assets would be equal to the sum of liabilities, contributed capital, and ending retained earnings: €1,000 + €1,000 + €700 = €2,700.

Having described the components and linkages of financial statements in abstract terms, we now examine more concretely how business activities are recorded. The next section illustrates the accounting process with a simple step-by-step example.

4. THE ACCOUNTING PROCESS

The accounting process involves recording business transactions such that periodic financial statements can be prepared. This section illustrates how business transactions are recorded in a simplified accounting system.

4.1. An Illustration

Key concepts of the accounting process can be more easily explained using a simple illustration. We look at an illustration in which three friends decide to start a business, Investment Advisers, Ltd. (IAL). They plan to issue a monthly newsletter of securities trading advice and to sell investment books. Although they do not plan to manage any clients' funds, they will manage a trading portfolio of the owners' funds to demonstrate the success of the recommended strategies from the newsletter. Because this illustration is meant to present accounting concepts, any regulatory implications will not be addressed. Additionally, for

this illustration, we will assume that the entity will not be subject to income taxes; any income or loss will be passed through to the owners and be subject to tax on their personal income tax returns.

As the business commences, various business activities occur. Exhibit 5 provides a listing of the business activities that have taken place in the early stages of operations. Note that these activities encompass the types of operating, investing, and financing business activities discussed above.

EXHIBIT 5 Business Activities for Investment Advisers, Ltd.

#	Date	Business Activity
1	31 December 2005	• File documents with regulatory authorities to establish a separate legal entity. Initially capitalize the company through deposit of $150,000 from the three owners.
2	2 January 2006	• Set up a $100,000 investment account and purchase a portfolio of equities and fixed-income securities.
3	2 January 2006	• Pay $3,000 to landlord for office/warehouse. $2,000 represents a refundable deposit, and $1,000 represents the first month's rent.
4	3 January 2006	• Purchase office equipment for $6,000. The equipment has an estimated life of two years with no salvage value.*
5	3 January 2006	• Receive $1,200 cash for a one-year subscription to the monthly newsletter.
6	10 January 2006	• Purchase and receive 500 books at a cost of $20 per book for a total of $10,000. Invoice terms are that payment from IAL is due in 30 days. No cash changes hands. These books are intended for resale.
7	10 January 2006	• Spend $600 on newspaper and trade magazine advertising for the month.
8	15 January 2006	• Borrow $12,000 from a bank for working capital. Interest is payable annually at 10 percent. The principal is due in two years.
9	15 January 2006	• Ship first order to a customer consisting of five books at $25 per book. Invoice terms are that payment is due in 30 days. No cash changes hands.
10	15 January 2006	• Sell for cash 10 books at $25 per book at an investment conference.
11	30 January 2006	• Hire a part-time clerk. The clerk is hired through an agency that also handles all payroll taxes. The company is to pay $15 per hour to the agency. The clerk works six hours prior to 31 January, but no cash will be paid until February.
12	31 January 2006	• Mail out the first month's newsletter to customer. This subscription had been sold on 3 January. See item 5.
13	31 January 2006	• Review of the investment portfolio shows that $100 of interest income was earned and the market value of the portfolio has increased by $2,000. The balance in the investment account is now $102,100. The securities are classified as "trading" securities.

*__Salvage value__ (residual value) is the amount the company estimates that it can sell the asset for at the end of its useful life.

4.2. The Accounting Records

If the owners want to evaluate the business at the end of January 2006, Exhibit 5 does not provide a sufficiently meaningful report of what transpired or where the company currently stands. It is clear that a system is needed to track this information and to address three objectives:

- Identify those activities requiring further action (e.g., collection of outstanding receivable balances).
- Assess the profitability of the operations over the month.
- Evaluate the current financial position of the company (such as cash on hand).

An accounting system will translate the company's business activities into usable financial records. The basic system for recording transactions in this illustration is a spreadsheet with each of the different types of accounts represented by a column. The accounting equation provides a basis for setting up this system. Recall the accounting Equation 5b:

Assets = Liabilities + Contributed capital + Beginning retained earnings
+ Revenue – Expenses – Dividends

The specific accounts to be used for IAL's system include the following:

- Asset Accounts:
  - Cash
  - Investments
  - Prepaid rent (cash paid for rent in advance of recognizing the expense)
  - Rent deposit (cash deposited with the landlord, but returnable to the company)
  - Office equipment
  - Inventory
  - Accounts receivable

- Liability Accounts:
  - Unearned fees (fees that have not been earned yet, even though cash has been received)
  - Accounts payable (amounts owed to suppliers)
  - Bank debt

- Equity Accounts:
  - Contributed capital
  - Retained earnings
    - Income
      - Revenue
      - Expenses
    - Dividends

Exhibit 6 presents the spreadsheet representing IAL's accounting system for the first 10 transactions. Each event is entered on a new row of the spreadsheet as it occurs. To record events in the spreadsheet, the financial impact of each needs to be assessed and the activity

expressed as an accounting transaction. In assessing the financial impact of each event and converting these events into accounting transactions, the following steps are taken:

1. Identify which accounts are affected, by what amount, and whether the accounts are increased or decreased.
2. Determine the element type for each account identified in Step 1 (e.g., cash is an asset) and where it fits in the basic accounting equation. Rely on the economic characteristics of the account and the basic definitions of the elements to make this determination.
3. Using the information from Steps 1 and 2, enter the amounts in the appropriate column of the spreadsheet.
4. Verify that the accounting equation is still in balance.

At any point in time, basic financial statements can be prepared based on the subtotals in each column.

The following discussion identifies the accounts affected and the related element (Steps 1 and 2) for the first 10 events listed in Exhibit 5. The accounting treatment shows the account affected in bold and the related element in brackets. The recording of these entries into a basic accounting system (Steps 3 and 4) is depicted on the spreadsheet in Exhibit 6.

Because this is a new business, the accounting equation begins at zero on both sides. There is a zero beginning balance in all accounts.

31 December 2005

#	Business Activity	Accounting Treatment
1	• File documents with regulatory authorities to establish a separate legal entity. Initially capitalize the company through deposit of $150,000 from the three owners.	• **Cash [A]** is increased by $150,000, and **contributed capital [E]*** is increased by $150,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).
*The account title will vary depending upon the type of entity (incorporated or not) and jurisdiction. Alternative account titles are "common shares," "common stock," "members' capital," "partners' capital," etc.

This transaction affects two elements: assets and equity. Exhibit 6 demonstrates this effect on the accounting equation. The company's balance sheet at this point in time would be presented by subtotaling the columns in Exhibit 6:

Investment Advisers, Ltd. Balance Sheet as of 31 December 2005	
Assets	
Cash	$150,000
Total assets	$150,000
Liabilities and owners' equity	
Contributed capital	$150,000
Total liabilities and owners' equity	$150,000

EXHIBIT 6 Accounting System for Investment Advisers, Ltd.

	Assets =			Liabilities		+		Owners' Equity		
#	Cash	Other Assets	Account	Amount	Account	Contributed Capital	Beginning Retained Earnings	Revenue	Expense	Dividends
Beg. Balance	0	0		0		0	0	0	0	0
1 Capitalize	150,000					150,000				
2 Investments	(100,000)	100,000	Investments							
3 Pay landlord	(3,000)	1,000	Prepaid rent							
		2,000	Rent deposit							
4 Buy equipment	(6,000)	6,000	Office equipment							
5 Sell subscription	1,200			1,200	Unearned fees					
6 Buy books		10,000	Inventory	10,000	Accounts payable					
7 Advertise	(600)								(600)	
8 Borrow	12,000			12,000	Bank debt					
9 Sell books on account		125	Accounts receivable					125	(100)	
		(100)	Inventory							
10 Cash sale	250	(200)	Inventory					250	(200)	
Subtotal	**53,850**	**118,825**		**23,200**			**150,000**	**375**	**(900)**	

The company has assets (resources) of $150,000, and the owners' claim on the resources equals $150,000 (their contributed capital) as there are no liabilities at this point.

For this illustration, we present an unclassified balance sheet. An **unclassified balance sheet** is one that does not show subtotals for current assets and current liabilities. Assets are simply listed in order of liquidity (how quickly they are expected to be converted into cash). Similarly, liabilities are listed in the order in which they are expected to be satisfied (or paid off).

2 January 2006

#	Business Activity	Accounting Treatment
2	• Set up a $100,000 investment account and purchase a portfolio of equities and fixed-income securities.	• **Investments** [A] were increased by $100,000, and **cash** [A] was decreased by $100,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

This transaction affects two accounts, but only one element (assets) and one side of the accounting equation, as depicted in Exhibit 6. Cash is reduced when the securities are purchased. Another type of asset, investments, increases. We examine the other transaction from 2 January before taking another look at the company's balance sheet.

2 January 2006

#	Business Activity	Accounting Treatment
3	• Pay $3,000 to landlord for office/warehouse. $2,000 represents a refundable deposit, and $1,000 represents the first month's rent.	• **Cash** [A] was decreased by $3,000, **deposits** [A] were increased by $2,000, and **prepaid rent** [A] was increased by $1,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

Once again, this transaction affects only asset accounts. Note that the first month's rent is initially recorded as an asset, prepaid rent. As time passes, the company will incur rent expense, so a portion of this prepaid asset will be transferred to expenses and thus will appear on the income statement as an expense.[5] This will require a later adjustment in our accounting system. Note that the transactions so far have had no impact on the income statement. At this point in time, the company's balance sheet would be:

Investment Advisers, Ltd. Balance Sheet as of 2 January 2006	
Assets	
Cash	$ 47,000
Investments	100,000

[5]An argument can be made for treating this $1,000 as an immediate expense. We adopt the approach of recording a prepaid asset in order to illustrate accrual accounting. A situation in which a company prepays rent (or insurance or any similar expense) for a time span covering multiple accounting periods more clearly requires the use of accrual accounting.

Investment Advisers, Ltd. Balance Sheet as of 2 January 2006	
Prepaid rent	1,000
Deposits	2,000
Total assets	$150,000
Liabilities and owners' equity	
Contributed capital	$150,000
Total liabilities and owners' equity	$150,000

Note that the items in the balance sheet have changed, but it remains in balance; the amount of total assets equals total liabilities plus owners' equity. The company still has $150,000 in resources, but the assets now comprise cash, investments, prepaid rent, and deposits. Each asset is listed separately because they are different in terms of their ability to be used by the company. Note also that the owners' equity claim on these assets remains $150,000 because the company still has no liabilities.

3 January 2006

#	Business Activity	Accounting Treatment
4	• Purchase office equipment for $6,000 in cash. The equipment has an estimated life of two years with no salvage value.	• **Cash [A]** was decreased by $6,000, and **office equipment [A]** was increased by $6,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

The company has once again exchanged one asset for another. Cash has decreased while office equipment has increased. Office equipment is a resource that will provide benefits over multiple future periods and, therefore, its cost must also be spread over multiple future periods. This will require adjustments to our accounting records as time passes. **Depreciation** is the term for the process of spreading this cost over multiple periods.

3 January 2006

#	Business Activity	Accounting Treatment
5	• Receive $1,200 cash for a one-year subscription to the monthly newsletter.	• **Cash [A]** was increased by $1,200, and **unearned fees [L]** was increased by $1,200.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

In this transaction, the company has received cash related to the sale of subscriptions. However, the company has not yet actually earned the subscription fees because it has an obligation to deliver newsletters in the future. So, this amount is recorded as a liability called **unearned fees** (or **unearned revenue**). In the future, as the company delivers the newsletters and thus fulfills its obligation, this amount will be transferred to revenue. If the company fails

to deliver the newsletters, the fees will need to be returned to the customer. As of 3 January 2006, the company's balance sheet would appear as

Investment Advisers, Ltd. Balance Sheet as of 3 January 2006	
Assets	
Cash	$ 42,200
Investments	100,000
Prepaid rent	1,000
Deposits	2,000
Office equipment	6,000
Total assets	$151,200
Liabilities and owners' equity	
Liabilities	
Unearned fees	$ 1,200
Equity	
Contributed capital	150,000
Total liabilities and owners' equity	$151,200

The company now has $151,200 of resources, against which there is a claim by the subscription customer of $1,200 and a residual claim by the owners of $150,000. Again, the balance sheet remains in balance, with total assets equal to total liabilities plus equity.

10 January 2006

#	Business Activity	Accounting Treatment
6	• Purchase and receive 500 books at a cost of $20 per book for a total of $10,000. Invoice terms are that payment from IAL is due in 30 days. No cash changes hands. These books are intended for resale.	• **Inventory [A]** is increased by $10,000, and **accounts payable [L]** is increased by $10,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

The company has obtained an asset, inventory, which can be sold to customers at a later date. Rather than paying cash to the supplier currently, the company has incurred an obligation to do so in 30 days. This represents a liability to the supplier that is termed accounts payable.

10 January 2006

#	Business Activity	Accounting Treatment
7	• Spend $600 on newspaper and trade magazine advertising for the month.	• **Cash [A]** was decreased by $600, and **advertising expense [X]** was increased by $600.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

Unlike the previous expenditures, advertising is an expense, not an asset. Its benefits relate to the current period. Expenditures such as advertising are recorded as an expense when they are incurred. Contrast this expenditure with that for equipment, which is expected to be useful over multiple periods and thus is initially recorded as an asset, and then reflected as an expense over time. Also, contrast this treatment with that for rent expense, which was paid in advance and can be clearly allocated over time, and thus is initially recorded as a prepaid asset and then reflected as an expense over time. The advertising expenditure in this example relates to the current period. If the company had paid in advance for several years worth of advertising, then a portion would be capitalized (i.e., recorded as an asset), similar to the treatment of equipment or prepaid rent and expensed in future periods. We can now prepare a partial income statement for the company reflecting this expense:

Investment Advisers, Ltd. Income Statement for the Period 1 January through 10 January 2006		
Total revenue		$ 0
Expenses		
Advertising	600	
Total expense		600
Net income (loss)		$(600)

Because the company has incurred a $600 expense but has not recorded any revenue (the subscription revenue has not been earned yet), an income statement for Transactions 1 through 7 would show net income of minus $600 (i.e., a net loss). To prepare a balance sheet for the company, we need to update the retained earnings account. Beginning retained earnings was $0 (zero). Adding the net loss of $600 (made up of $0 revenue minus $600 expense) and deducting any dividend ($0 in this illustration) gives ending retained earnings of minus $600. The ending retained earnings covering Transactions 1–7 is included in the interim balance sheet:

Investment Advisers, Ltd. Balance Sheet as of 10 January 2006	
Assets	
Cash	$ 41,600
Investments	100,000
Inventory	10,000
Prepaid rent	1,000
Deposits	2,000
Office equipment	6,000
Total assets	$160,600

(continued)

(Continued)

Investment Advisers, Ltd. Balance Sheet as of 10 January 2006	
Liabilities and owners' equity	
Liabilities	
Accounts payable	$ 10,000
Unearned fees	1,200
Total liabilities	11,200
Equity	
Contributed capital	150,000
Retained earnings	(600)
Total equity	149,400
Total liabilities and owners' equity	$160,600

As with all balance sheets, the amount of total assets equals total liabilities plus owners' equity—both are $160,600. The owners' claim on the business has been reduced to $149,400. This is due to the negative retained earnings (sometimes referred to as a retained "deficit"). As noted, the company has a net loss after the first seven transactions, a result of incurring $600 of advertising expenses but not yet producing any revenue.

15 January 2006

#	Business Activity	Accounting Treatment
8	• Borrow $12,000 from a bank for working capital. Interest is payable annually at 10 percent. The principal is due in two years.	• **Cash [A]** is increased by $12,000, and **bank debt [L]** is increased by $12,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

Cash is increased, and a corresponding liability is recorded to reflect the amount owed to the bank. Initially, no entry is made for interest that is expected to be paid on the loan. In the future, interest will be recorded as time passes and interest accrues (accumulates) on the loan.

15 January 2006

#	Business Activity	Accounting Treatment
9	• Ship first order to a customer consisting of five books at $25 per book. Invoice terms are that payment is due in 30 days. No cash changes hands.	• **Accounts receivable [A]** increased by $125, and **revenue [R]** increased by $125. Additionally, **inventory [A]** decreased by $100, and **cost of goods sold [X]** increased by $100.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

The company has now made a sale. Sale transaction records have two parts. One part represents the $125 revenue to be received from the customer, and the other part represents the $100 cost of the goods that have been sold. Although payment has not yet been received from the customer in payment for the goods, the company has delivered the goods (five books) and so revenue is recorded. A corresponding asset, accounts receivable, is recorded to reflect amounts due from the customer. Simultaneously, the company reduces its inventory balance by the cost of the five books sold and also records this amount as an expense termed **cost of goods sold**.

15 January 2006

#	Business Activity	Accounting Treatment
10	• Sell for cash 10 books at $25 per book at an investment conference.	• **Cash [A]** is increased by $250, and **revenue [R]** is increased by $250. Additionally, **inventory [A]** is decreased by $200, and **cost of goods sold [X]** is increased by $200.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

Similar to the previous sale transaction, both the $250 sales proceeds and the $200 cost of the goods sold must be recorded. In contrast with the previous sale, however, the sales proceeds are received in cash. Subtotals from Exhibit 6 can once again be used to prepare a preliminary income statement and balance sheet to evaluate the business to date:

Investment Advisers, Ltd. Income Statement for the Period 1 January through 15 January 2006		
Total revenue		$ 375
Expenses		
Cost of goods sold	300	
Advertising	600	
Total expenses		900
Net income (loss)		($525)

Investment Advisers, Ltd. Balance Sheet as of 15 January 2006	
Assets	
Cash	$ 53,850
Accounts receivable	125
Investments	100,000
Inventory	9,700

(continued)

(Continued)

Prepaid rent	1,000
Deposits	2,000
Office equipment	6,000
Total assets	$172,675
Liabilities and owners' equity	
Liabilities	
Accounts payable	$ 10,000
Unearned fees	1,200
Bank debt	12,000
Total liabilities	23,200
Equity	
Contributed capital	150,000
Retained earnings	(525)
Total equity	149,475
Total liabilities and owners' equity	$172,675

An income statement covering Transactions 1–10 would reflect revenue to date of $375 for the sale of books minus the $300 cost of those books and minus the $600 advertising expense. The net loss is $525, which is shown in the income statement as $(525) using the accounting convention that indicates a negative number using parentheses. This net loss is also reflected on the balance sheet in retained earnings. The amount in retained earnings at this point equals the net loss of $525 because retained earnings had $0 beginning balance and no dividends have been distributed. The balance sheet reflects total assets of $172,675 and claims on the assets of $23,200 in liabilities and $149,475 owners' equity. Within assets, the inventory balance represents the cost of the 485 remaining books (a total of 15 have been sold) at $20 each.

Transactions 1–10 occurred throughout the month and involved cash, accounts receivable, or accounts payable; accordingly, these transactions clearly required an entry into the accounting system. The other transactions, items 11–13, have also occurred and need to be reflected in the financial statements, but these transactions may not be so obvious. In order to prepare complete financial statements at the end of a reporting period, an entity needs to review its operations to determine whether any accruals or other adjustments are required. A more complete discussion of accruals and adjustments is set forth in the next section, but generally speaking, such entries serve to allocate revenue and expense items into the correct accounting period. In practice, companies may also make adjustments to correct erroneous entries or to update inventory balances to reflect a physical count.

In this illustration, adjustments are needed for a number of transactions in order to allocate amounts across accounting periods. The accounting treatment for these transactions is shown in Exhibit 7. Transactions are numbered sequentially, and an "a" is add-

ed to a transaction number to denote an adjustment relating to a previous transaction. Exhibit 8 presents the completed spreadsheet reflecting these additional entries in the accounting system.

EXHIBIT 7 Investment Advisers, Ltd. Accruals and Other Adjusting Entries on 31 January 2006

#	Business Activity	Accounting Treatment
11	• Hire a part-time clerk. The clerk is hired through an agency that also handles all payroll taxes. The company is to pay $15 per hour to the agency. The clerk works six hours prior to 31 January, but no cash will be paid until February.	• The company owes $90 for wages at month end. Under accrual accounting, expenses are recorded when incurred, not when paid. • **Accrued wages [L]** is increased by $90, and **payroll expense [X]** is increased by $90. The accrued wage liability will be eliminated when the wages are paid.
12	• Mail out the first month's newsletter to customer. This subscription had been sold on 3 January.	• One month (or 1/12) of the $1,200 subscription has been satisfied, so $100 can be recognized as revenue. • **Unearned fees [L]** is decreased by $100, and **fee revenue [R]** is increased by $100.
13	• Review of the investment portfolio shows that $100 of interest income was earned and the market value of the portfolio has increased by $2,000. The balance in the investment account is now $102,100. The securities are classified as "trading" securities.	• **Interest income [R]** is increased by $100, and the **investments** account **[A]** is increased by $100. • The $2,000 increase in the value of the portfolio represents unrealized gains that are part of income for traded securities. The **investments** account **[A]** is increased by $2,000, and **unrealized gains [R]** is increased by $2,000.
3a	• In item 3, $3,000 was paid to the landlord for office/warehouse, including a $2,000 refundable deposit and $1,000 for the first month's rent. • Now, the first month has ended, so this rent has become a cost of doing business.	• To reflect the full amount of the first month's rent as a cost of doing business, **prepaid rent [A]** is decreased by $1,000, and **rent expense [X]** is increased by $1,000.
4a	• In item 4, office equipment was purchased for $6,000 in cash. The equipment has an estimated life of two years with no salvage value. • Now, one month (or 1/24) of the useful life of the equipment has ended, so a portion of the equipment cost has become a cost of doing business.	• A portion (1/24) of the total $6,000 cost of the office equipment is allocated to the current period's cost of doing business. • **Depreciation expense [X]** is increased by $250, and **accumulated depreciation [A]** (a contra asset account) is increased by $250. • Accumulated depreciation is a contra asset account to office equipment.

(continued)

EXHIBIT 7 (Continued)

#	Business Activity	Accounting Treatment
8a	• The company borrowed $12,000 from a bank on 15 January, with interest payable annually at 10 percent and the principal due in two years. • Now, one-half of one month has passed since the borrowing.	• One-half of one month of interest expense has become a cost of doing business. $12,000 × 10% = $1,200 of annual interest, equivalent to $100 per month or $50 for one-half month. • **Interest expense [X]** is increased by $50, and **interest payable [L]** is increased by $50.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).
Notes: Items 11–13 are repeated from Exhibit 5. Items 3a, 4a, and 8a reflect adjustments relating to items 3, 4, and 8 from Exhibit 5.

A final income statement and balance sheet can now be prepared reflecting all transactions and adjustments.

Investment Advisers, Ltd. Income Statement for the Period 1 January through 31 January 2006	
Revenues	
Fee revenue	$ 100
Book sales	375
Investment income	2,100
Total revenues	$ 2,575
Expenses	
Cost of goods sold	$ 300
Advertising	600
Wage	90
Rent	1,000
Depreciation	250
Interest	50
Total expenses	2,290
Net income (loss)	$ 285

Investment Advisers, Ltd. Balance Sheet as of 31 January 2006	
Assets	
Cash	$ 53,850
Accounts receivable	125
Investments	102,100
Inventory	9,700

(continued)

EXHIBIT 8 Accounting System for Investment Advisers, Ltd.

	Assets =			Liabilities		+	Owners' Equity			
#	Cash	Other Assets	Account	Amount	Account	Contributed Capital	Beginning Retained Earnings	Revenue	Expense (Enter as Negative)	Dividends (Enter as Negative)
Beg. Balance	0	0		0		0	0	0	0	0
1 Capitalize	150,000					150,000				
2 Investments	(100,000)	100,000	Investments							
3 Pay landlord	(3,000)	1,000	Prepaid rent							
		2,000	Rent deposit							
4 Buy equipment	(6,000)	6,000	Office equipment							
5 Sell subscript.	1,200			1,200	Unearned fees					
6 Buy Books		10,000	Inventory	10,000	Accounts payable					
7 Advertise	(600)								(600)	
8 Borrow	12,000			12,000	Bank debt					
9 Sell books on account		(100)	Inventory					125	(100)	
		125	Accounts receivable							
10 Cash sale	250	(200)	Inventory					250	(200)	
11 Accrue wages				90	Accrued wages				(90)	
12 Earn subscription fees				(100)	Unearned fees			100		
13 Investment income		100	Investments					100		
		2,000	Investments					2,000		
3a Rent expense		(1,000)	Prepaid rent						(1,000)	
4a Depreciate equipment		(250)	Accumulated depreciation (equipment)						(250)	
8a Accrue interest				50	Interest payable				(50)	
Subtotal	**53,850**	**119,675**		**23,240**			**150,000**	**2,575**	**(2,290)**	

(Continued)

Investment Advisers, Ltd. Balance Sheet as of 31 January 2006	
Prepaid rent	0
Office equipment, net	5,750
Deposits	2,000
Total assets	$173,525
Liabilities and owners' equity	
Liabilities	
Accounts payable	$ 10,000
Accrued wages	90
Interest payable	50
Unearned fees	1,100
Bank debt	12,000
Total liabilities	23,240
Equity	
Contributed capital	150,000
Retained earnings	285
Total equity	150,285
Total liabilities and owners' equity	$173,525

From the income statement, we can determine that the business was profitable for the month. The business earned $285 after expenses. The balance sheet presents the financial position. The company has assets of $173,525, and claims against those assets included liabilities of $23,240 and an owners' claim of $150,285. The owners' claim reflects their initial investment plus reinvested earnings. These statements are explored further in the next section.

4.3. Financial Statements

The spreadsheet in Exhibit 8 is an organized presentation of the company's transactions and can help in preparing the income statement and balance sheet presented above. Exhibit 9 presents all financial statements and demonstrates their relationships. Note that the data for the income statement come from the revenue and expense columns of the spreadsheet (which include gains and losses). The net income of $285 (revenue of $2,575 minus expenses of $2,290) was retained in the business rather than distributed to the owners as dividends. The net income, therefore, becomes part of ending retained earnings on the balance sheet. The detail of retained earnings is shown in the statement of owners' equity.

The balance sheet presents the financial position of the company using the assets, liabilities, and equity accounts from the accounting system spreadsheet. The statement of cash flows summarizes the data from the cash column of the accounting system spreadsheet to enable the

owners and others to assess the sources and uses of cash. These sources and uses of cash are categorized according to group of business activity: operating, investing, or financing. The format of the statement of cash flows presented here is known as the **direct format**, which refers to the operating cash section appearing simply as operating cash receipts less operating cash disbursements. An alternative format for the operating cash section, which begins with net income and shows adjustments to derive operating cash flow, is known as the **indirect format**. The alternative formats and detailed rules are discussed in the chapter on understanding the statement of cash flows.

EXHIBIT 9 Investment Advisers, Ltd., Financial Statements

Investment Advisers, Ltd.
Balance Sheet
As of

	12/31/2005	1/31/2006
Assets		
Cash	150,000	53,850
Accounts receivable	0	125
Investments	0	102,100
Inventory		9,700
Office equipment, net		5,750
Deposits		2,000
Total assets	150,000	173,525
Liabilities		
Accounts payable	0	10,000
Accrued expenses		140
Unearned fees		1,100
Bank debt		12,000
Total liabilities		23,240
Owners' equity		
Contributed capital	150,000	150,000
Retained earnings	0	285
Total equity	150,000	150,285
Total liabilities and equity	150,000	173,525

Investment Advisers, Ltd.
Income Statement
For the Month Ended 1/31/2006

Fee revenue	100
Book sales revenue	375
Investment income	2,100
Total revenue	2,575
Cost of goods sold	300
Other expense	1,990
Total expense	2,290
Net income (loss)	285

Investment Advisers, Ltd.
Statement of Cash Flows
For the Month Ended 1/31/2006

Cash received from customers	1,450
Cash paid to landlord	(3,000)
Cash paid for advertising	(600)
Investments in trading securities	(100,000)
Operating cash flows	(102,150)
Capital expenditures	(6,000)
Investing cash flows	(6,000)
Borrowing	12,000
Financing cash flows	12,000
Net decrease in cash	(96,150)
Cash at 12/31/05	150,000
Cash at 1/31/06	53,850

Investment Advisers, Ltd.
Statement of Owners' Equity
31 January 2006

	Contributed Capital	Retained Earnings	Total
Balance at 12/31/05	150,000	0	150,000
Issuance of stock			
Net income (loss)		285	285
Distributions			
Balance at 1/31/06	150,000	285	150,285

Financial statements use the financial data reported in the accounting system and present this data in a more meaningful manner. Each statement reports on critical areas. Specifically, a review of the financial statements for the IAL illustration provides the following information:

- **Balance Sheet**. This statement provides information about a company's financial position at a point in time. It shows an entity's assets, liabilities, and owners' equity at a particular date. Two years are usually presented so that comparisons can be made. Less significant accounts can be grouped into a single line item. One observation from the IAL illustration is that although total assets have increased significantly (about 16 percent), equity has increased less than 0.2 percent—most of the increase in total assets is due to the increase in liabilities.
- **Income Statement**. This statement provides information about a company's profitability over a period of time. It shows the amount of revenue, expense, and resulting net income or loss for a company during a period of time. Again, less significant accounts can be grouped into a single line item—in this illustration, expenses other than cost of goods sold are grouped into a single line item. The statement shows that IAL has three sources of revenue and made a small profit in its first month of operations. Significantly, most of the revenue came from investments rather than subscriptions or book sales.
- **Statement of Cash Flows**. This statement provides information about a company's cash flows over a period of time. It shows a company's cash inflows (receipts) and outflows (payments) during the period. These flows are categorized according to the three groups of business activities: operating, financing, and investing. In the illustration, IAL reported a large negative cash flow from operations ($102,150), primarily because its trading activities involved the purchase of a portfolio of securities but no sales were made from the portfolio. (Note that the purchase of investments for IAL appears in its operating section because the company is in the business of trading securities. In contrast, for a nontrading company, investment activity would be shown as investing cash flows rather than operating cash flows.) IAL's negative operating and investing cash flows were funded by $12,000 bank borrowing and a $96,150 reduction in the cash balance.
- **Statement of Owners' Equity**. This statement provides information about the composition and changes in owners' equity during a period of time. In this illustration, the only change in equity resulted from the net income of $285. A **Statement of Retained Earnings** (not shown) would report the changes in a company's retained earnings during a period of time.

These statements again illustrate the interrelationships among financial statements. On the balance sheet, we see beginning and ending amounts for assets, liabilities, and owners' equity. Owners' equity increased from $150,000 to $150,285. The statement of owners' equity presents a breakdown of this $285 change. The arrow from the statement of owners' equity to the owners' equity section of the balance sheet explains that section of the balance sheet. In the IAL illustration, the entire $285 change resulted from an increase in retained earnings. In turn, the increase in retained earnings resulted from $285 net income. The income statement presents a breakdown of the revenues and expenses resulting in this $285. The arrow from the income statement to the net income figure in the owners' equity section explains how reported net income came about.

Also on the balance sheet, we see that cash decreased from $150,000 at the beginning of the month to $53,850 at the end of the month. The statement of cash flows provides information on the increases and decreases in cash by group of business activity. The arrow from the statement of cash flows to the ending cash figure shows that the statement of cash flows explains in detail the ending cash amount.

In summary, the balance sheet provides information at a point in time (financial position), whereas the other statements provide useful information regarding the activity during a period of time (profitability, cash flow, and changes in owners' equity).

5. ACCRUALS AND VALUATION ADJUSTMENTS

In a simple business model such as the investment company discussed in the illustration above, many transactions are handled in cash and settled in a relatively short time frame. Furthermore, assets and liabilities have a fixed and determinable value. Translating business transactions into the accounting system is fairly easy. Difficulty usually arises when a cash receipt or disbursement occurs in a different period than the related revenue or expense, or when the reportable values of assets vary. This section will address the accounting treatment for these situations—namely, accruals and valuation adjustments.

5.1. Accruals

Accrual accounting requires that revenue be recorded when earned and that expenses be recorded when incurred, irrespective of when the related cash movements occur. The purpose of accrual entries is to report revenue and expense in the proper accounting period. Because accrual entries occur due to timing differences between cash movements and accounting recognition of revenue or expense, it follows that there are only a few possibilities. First, cash movement and accounting recognition can occur at the same time, in which case there is no need for accruals. Second, cash movement may occur before or after accounting recognition, in which case accruals are required. The possible situations requiring accrual entries are summarized into four types of accrual entries shown in Exhibit 10 and discussed below. Each type of accrual involves an originating entry and at least one adjusting entry at a later date or dates.

EXHIBIT 10 Accruals

	Cash Movement prior to Accounting Recognition	Cash Movement in the Same Period as Accounting Recognition	Cash Movement after Accounting Recognition
Revenue	**UNEARNED (DEFERRED) REVENUE** • **Originating entry**–record cash receipt and establish a liability (such as unearned revenue) • **Adjusting entry**–reduce the liability while recording revenue	Settled transaction–no accrual entry needed	**UNBILLED (ACCRUED) REVENUE** • **Originating entry**–record revenue and establish an asset (such as unbilled revenue) • **Adjusting entry**–When billing occurs, reduce unbilled revenue and increase accounts receivable. When cash is collected, eliminate the receivable.
Expense	**PREPAID EXPENSE** • **Originating entry**–record cash payment and establish an asset (such as prepaid expense) • **Adjusting entry**–reduce the asset while recording expense		**ACCRUED EXPENSES** • **Originating entry**–establish a liability (such as accrued expenses) and record an expense • **Adjusting entry**–reduce the liability as cash is paid

Unearned revenue (or **deferred revenue**) arises when a company receives cash prior to earning the revenue. In the IAL illustration, in Transaction 5, the company received $1,200 for a 12-month subscription to a monthly newsletter. At the time the cash was received, the company had an obligation to deliver 12 newsletters and thus had not yet earned the revenue. Each month, as a newsletter is delivered, this obligation will decrease by 1/12th (i.e., $100). And at the same time, $100 of revenue will be earned. The accounting treatment involves an originating entry (the initial recording of the cash received and the corresponding liability to deliver newsletters) and, subsequently, 12 future adjusting entries, the first one of which was illustrated as Transaction 12. Each adjusting entry reduces the liability and records revenue.

In practice, a large amount of unearned revenue may cause some concern about a company's ability to deliver on this future commitment. Conversely, a positive aspect is that increases in unearned revenue are an indicator of future revenues. For example, a large liability on the balance sheet of an airline relates to cash received for future airline travel. Revenue will be recognized as the travel occurs, so an increase in this liability is an indicator of future increases in revenue.

Unbilled revenue (or **accrued revenue**) arises when a company earns revenue prior to receiving cash but has not yet recognized the revenue at the end of an accounting period. In such cases, the accounting treatment involves an originating entry to record the revenue earned through the end of the accounting period and a related receivable reflecting amounts due from customers. When the company receives payment (or if goods are returned), an adjusting entry eliminates the receivable.

Accrued revenue specifically relates to end-of-period accruals; however, the concept is similar to any sale involving deferred receipt of cash. In the IAL illustration, in Transaction 9, the company sold books on account, so the revenue was recognized prior to cash receipt. The accounting treatment involved an entry to record the revenue and the associated receivable. In the future, when the company receives payment, an adjusting entry (not shown) would eliminate the receivable. In practice, it is important to understand the quality of a company's receivables (i.e., the likelihood of collection).

Prepaid expense arises when a company makes a cash payment prior to recognizing an expense. In Exhibit 3, in Transaction 3, the company prepaid one month's rent. The accounting treatment involves an originating entry to record the payment of cash and the prepaid asset reflecting future benefits, and a subsequent adjusting entry to record the expense and eliminate the prepaid asset. (See the boxes showing the accounting treatment of Transaction 3, which refers to the originating entry, and Transaction 3a, which refers to the adjusting entry.) In other words, prepaid expenses are assets that will be subsequently expensed. In practice, particularly in a valuation, one consideration is that prepaid assets typically have future value only as future operations transpire, unless they are refundable.

Accrued expenses arise when a company incurs expenses that have not yet been paid as of the end of an accounting period. Accrued expenses result in liabilities that usually require future cash payments. In the IAL illustration, the company had incurred wage expenses at month end, but the payment would not be made until after the end of the month (Transaction 11). To reflect the company's position at the end of the month, the accounting treatment involved an originating entry to record wage expense and the corresponding liability for wages payable, and a future adjusting entry to eliminate the liability when cash is paid (not shown because wages will be paid only in February). Similarly, the IAL illustration included interest accrual on the company's bank borrowing. (See the boxes showing the accounting treatment of Transaction 8, where Transaction 8 refers to the originating entry, and Transaction 8a, which refers to the adjusting entry.)

As with accrued revenues, accrued expenses specifically relate to end-of-period accruals. Accounts payable are similar to accrued expenses in that they involve a transaction that occurs

now but the cash payment is made later. Accounts payable is also a liability but often relates to the receipt of inventory (or perhaps services) as opposed to recording an immediate expense. Accounts payable should be listed separately from other accrued expenses on the balance sheet because of their different nature.

Overall, in practice, complex businesses require additional accruals that are theoretically similar to the four categories of accruals discussed above but which require considerably more judgment. For example, there may be significant lags between a transaction and cash settlement. In such cases, accruals can span many accounting periods (even 10–20 years!), and it is not always clear when revenue has been earned or an expense has been incurred. Considerable judgment is required to determine how to allocate/distribute amounts across periods. An example of such a complex accrual would be the estimated annual revenue for a contractor on a long-term construction project, such as building a nuclear power plant. In general, however, accruals fall under the four general types and follow essentially the same pattern of originating and adjusting entries as the basic accruals described.

5.2. Valuation Adjustments

In contrast to accrual entries that allocate revenue and expenses into the appropriate accounting periods, valuation adjustments are made to a company's assets or liabilities—only where required by accounting standards—so that the accounting records reflect the current market value rather than the historical cost. In this discussion, we focus on valuation adjustments to assets. For example, in the IAL illustration, Transaction 13 adjusted the value of the company's investment portfolio to its current market value. The income statement reflects the $2,100 increase (including interest), and the ending balance sheets report the investment portfolio at its current market value of $102,100. In contrast, the equipment in the IAL illustration was not reported at its current market value and no valuation adjustment was required.

As this illustration demonstrates, accounting regulations do not require all types of assets to be reported at their current market value. Some assets (e.g., trading securities) are shown on the balance sheet at their current market value, and changes in that market value are reported in the income statement. Some assets are shown at their historical cost (e.g., specific classes of investment securities being held to maturity). Other assets (e.g., a particular class of investment securities) are shown on the balance sheet at their current market value, but changes in market value bypass the income statement and are recorded directly into shareholders' equity under a component referred to as "other comprehensive income." This topic will be discussed in more detail in later chapters.

In summary, where valuation adjustment entries are required for assets, the basic pattern is the following for increases in assets: An asset is increased with the other side of the equation being a gain on the income statement or an increase to other comprehensive income. Conversely for decreases: An asset is decreased with the other side of the equation being a loss on the income statement or a decrease to other comprehensive income.

6. ACCOUNTING SYSTEMS

The accounting system set forth for the IAL illustration involved a very simple business, a single month of activity, and a small number of transactions. In practice, most businesses are more complicated and have many more transactions. Accordingly, actual accounting systems, although using essentially the same logic as discussed in the illustration, are both more efficient than a spreadsheet and more complex.

6.1. Flow of Information in an Accounting System

Accounting texts typically discuss accounting systems in detail because accountants need to understand each step in the process. While analysts do not need to know the same details, they should be familiar with the flow of information through a financial reporting system. This flow and the key related documents are described in Exhibit 11.

EXHIBIT 11 Accounting System Flow and Related Documents

Journal entries and adjusting entries	A journal is a document or computer file in which business transactions are recorded in the order in which they occur (chronological order). The general journal is the collection of all business transactions in an accounting system sorted by date. All accounting systems have a general journal to record all transactions. Some accounting systems also include special journals. For example, there may be one journal for recording sales transactions and another for recording inventory purchases. Journal entries—recorded in journals—are dated, show the accounts affected, and the amounts. If necessary, the entry will include an explanation of the transaction and documented authorization to record the entry. As the initial step in converting business transactions into financial information, the journal entry is useful for obtaining detailed information regarding a particular transaction. Adjusting journal entries, a subset of journal entries, are typically made at the end of an accounting period to record items such as accruals that are not yet reflected in the accounting system.
	↓
General ledger and T- accounts	A ledger is a document or computer file that shows all business transactions by account. Note that the general ledger, the core of every accounting system, contains all of the same entries as that posted to the general journal—the only difference is that the data are sorted by date in a journal and by account in the ledger. The general ledger is useful for reviewing all of the activity related to a single account. T-accounts, explained in the Appendix, are representations of ledger accounts and are frequently used to describe or analyze accounting transactions.
	↓
Trial balance and adjusted trial balance	A trial balance is a document that lists account balances at a particular point in time. Trial balances are typically prepared at the end of an accounting period as a first step in producing financial statements. A key difference between a trial balance and a ledger is that the trial balance shows only total ending balances. An initial trial balance assists in the identification of any adjusting entries that may be required. Once these adjusting entries are made, an adjusted trial balance can be prepared.
	↓
Financial statements	The financial statements, a final product of the accounting system, are prepared based on the account totals from an adjusted trial balance.

6.2. Debits and Credits

Reviewing the example of IAL, it is clear that the accounting treatment of every transaction involved at least two accounts and the transaction either increased or decreased the value of any affected account. Traditionally, accounting systems have used the terms **debit** and **credit** to describe changes in an account resulting from the accounting processing of a transaction. The correct usage of "debit" and "credit" in an accounting context differs from how these terms are used in everyday language.[6] The accounting definitions of debit and credit ensure that, in processing a transaction, the sum of the debits equals the sum of the credits, which is consistent with the accounting equation always remaining in balance.

Although mastering the usage of the terms "debit" and "credit" is essential for an accountant, an analyst can still understand financial reporting mechanics without speaking in terms of debits and credits. In general, this text avoids the use of debit/credit presentation; however, for reference, Appendix 2 presents the IAL illustration in a debit and credit system.

The following section broadly describes some considerations for using financial statements in security analysis.

7. USING FINANCIAL STATEMENTS IN SECURITY ANALYSIS

Financial statements serve as a foundation for credit and equity analysis, including security valuation. Analysts may need to make adjustments to reflect items not reported in the statements (certain assets/liabilities and future earnings). Analysts may also need to assess the reasonableness of management judgment (e.g., in accruals and valuations). Because analysts typically will not have access to the accounting system or individual entries, they will need to infer what transactions were recorded by examining the financial statements.

7.1. The Use of Judgment in Accounts and Entries

Quite apart from deliberate misrepresentations, even efforts to faithfully represent the economic performance and position of a company require judgments and estimates. Financial reporting systems need to accommodate complex business models by recording accruals and changes in valuations of balance sheet accounts. Accruals and valuation entries require considerable judgment and thus create many of the limitations of the accounting model. Judgments could prove wrong or, worse, be used for deliberate earnings manipulation. An important first step in analyzing financial statements is identifying the types of accruals and valuation entries in an entity's financial statements. Most of these items will be noted in the critical accounting policies/estimates section of management's discussion and analysis (MD&A) and in the significant accounting policies footnote, both found in the annual report. Analysts should use this disclosure to identify the key accruals and valuations for a company. The analyst needs to be aware, as Example 4 shows, that the manipulation of earnings and assets can take place within the context of satisfying the mechanical rules governing the recording of transactions.

[6] In accounting, debits record increases of asset and expense accounts or decreases in liability and owners' equity accounts. Credits record increases in liability, owners' equity, and revenue accounts or decreases in asset accounts. Appendix 2 provides more details.

EXAMPLE 4 The Manipulation of Accounting Earnings

As discussed in this chapter, the accounting equation can be expressed as Assets = Liabilities + Contributed capital + Ending retained earnings (Equation 5a). Although the equation must remain in balance with each transaction, management can improperly record a transaction to achieve a desired result. For example, when a company spends cash and records an expense, assets are reduced on the left side of the equation and expenses are recorded, which lowers retained earnings on the right side. The balance is maintained. If, however, a company spent cash but did not want to record an expense in order to achieve higher net income, the company could manipulate the system by reducing cash and increasing another asset. The equation would remain in balance and the right-hand side of the equation would not be affected at all. This was one of the techniques used by managers at WorldCom to manipulate financial reports, as summarized in a US Securities and Exchange Commission complaint against the company (emphasis added):

> In general, WorldCom manipulated its financial results in two ways. First, WorldCom reduced its operating expenses by improperly releasing certain reserves held against operating expenses. Second, **WorldCom improperly reduced its operating expenses by recharacterizing certain expenses as capital assets**. Neither practice was in conformity with generally accepted accounting principles ("GAAP"). Neither practice was disclosed to WorldCom's investors, despite the fact that both practices constituted changes from WorldCom's previous accounting practices. Both practices falsely reduced WorldCom's expenses and, accordingly, had the effect of artificially inflating the income WorldCom reported to the public in its financial statements from 1999 through the first quarter of 2002.[7]

In 2005, the former CEO of WorldCom was sentenced to 25 years in prison for his role in the fraud.[8] The analyst should be aware of the possibility of manipulation of earnings and be on the lookout for large increases in existing assets, new unusual assets, and unexplained changes in financial ratios.

7.2. Misrepresentations

It is rare in this age of computers that the mechanics of an accounting system do not work. Most computer accounting systems will not allow a company to make one-sided entries. It is important to note, however, that just because the mechanics work does not necessarily mean that the judgments underlying the financial statements are correct. An unscrupulous accountant could structure entries to achieve a desired result. For example, if a manager wanted to record fictitious revenue, a fictitious asset (a receivable) could be created to keep the accounting

[7] SEC vs. WorldCom, 5 November 2002: www.sec.gov/litigation/complaints/comp17829.htm.

[8] "Ebbers Is Sentenced to 25 Years For $11 Billion WorldCom Fraud," *Wall Street Journal*, 14 July 2005, A1.

equation in balance. If the manager paid for something but did not want to record an expense, the transaction could be recorded in a prepaid asset account. If cash is received but the manager does not want to record revenue, a liability could be created. Understanding that there has to be another side to every entry is key in detecting inappropriate accounting because—usually in the course of "fixing" one account—there will be another account with a balance that does not make sense. In the case of recording fictitious revenue, there is likely to be a growing receivable whose collectibility is in doubt. Ratio analysis, which is discussed further in later chapters, can assist in detecting suspect amounts in these accounts. Furthermore, the accounting equation can be used to detect likely accounts where aggressive or even fraudulent accounting may have occurred.

8. SUMMARY

The accounting process is a key component of financial reporting. The mechanics of this process convert business transactions into records necessary to create periodic reports on a company. An understanding of these mechanics is useful in evaluating financial statements for credit and equity analysis purposes and in forecasting future financial statements. Key concepts are as follows:

- Business activities can be classified into three groups: operating activities, investing activities, and financing activities.
- Companies classify transactions into common accounts that are components of the five financial statement elements: assets, liabilities, equity, revenue, and expense.
- The core of the accounting process is the basic accounting equation: Assets = Liabilities + Owners' equity.
- The expanded accounting equation is Assets = Liabilities + Contributed capital + Beginning retained earnings + Revenue – Expenses – Dividends.
- Business transactions are recorded in an accounting system that is based on the basic and expanded accounting equations.
- The accounting system tracks and summarizes data used to create financial statements: the balance sheet, income statement, statement of cash flows, and statement of owners' equity. The statement of retained earnings is a component of the statement of owners' equity.
- Accruals are a necessary part of the accounting process and are designed to allocate activity to the proper period for financial reporting purposes.
- The results of the accounting process are financial reports that are used by managers, investors, creditors, analysts, and others in making business decisions.
- An analyst uses the financial statements to make judgments on the financial health of a company.
- Company management can manipulate financial statements, and a perceptive analyst can use his or her understanding of financial statements to detect misrepresentations.

APPENDIX: A DEBIT/CREDIT ACCOUNTING SYSTEM

The main section of this chapter presented a basic accounting system represented as a spreadsheet. An alternative system that underlies most manual and electronic accounting systems uses debits and credits. Both a spreadsheet and a debit/credit system are based on the basic accounting equation:

Assets = Liabilities + Owners' equity

Early generations of accountants desired a system for recording transactions that maintained the balance of the accounting equation and avoided the use of negative numbers (which could lead to errors in recording). The system can be illustrated with T-accounts for every account involved in recording transactions. The T-account is so named for its shape:

T-Account	
Debit	Credit

The left-hand side of the T-account is called a "debit," and the right-hand side is termed a "credit." The names should not be construed as denoting value. A debit is not better than a credit and vice versa. Debit simply means the left side of the T-account, and credit simply means the right side. Traditionally, debit is abbreviated as "DR," whereas credit is abbreviated "CR." The T-account is also related to the balance sheet and accounting equation as follows:

Balance Sheet	
Assets	Liabilities
	Owners' Equity

Assets are referred to as the left side of the balance sheet (and accounting equation) and hence are on the left side of the T-account. Assets are, therefore, recorded with a debit balance. In other words, to record an increase in an asset, an entry is made to the left-hand side of a T-account. A decrease to an asset is recorded on the right side of a T-account. Liabilities and owners' equity are referred to as the right side of the balance sheet (and accounting equation). Increases to liabilities and owners' equity are recorded on the right side of a T-account; decreases to liabilities and owners' equity are recorded on the left side.

At any point in time, the balance in an account is determined by summing all the amounts on the left side of the account, summing all the amounts on the right side of the account, and calculating the difference. If the sum of amounts on the left side of the account is greater than the sum of amounts on the right side of the account, the account has a debit balance equal to the difference. If the sum of amounts on the right side of the account is greater than the sum of amounts on the left side of the account, the account has a credit balance.

A T-account is created for each asset account, liability account, and owners' equity account. The collection of these T-accounts at the beginning of the year for a fictitious company, Investment Advisers, Ltd. (IAL), is presented in Exhibit 1. Each balance sheet T-account is termed a "permanent" or "real" account because the balance in the account carries over from year-to-year.

EXHIBIT 1 Balance Sheet T-Accounts for Investment Advisers, Ltd.

Cash		**Accounts Receivable**		**Inventory**	

Investments		**Office Equipment**		**Accumulated Depreciation**	

EXHIBIT 1 (Continued)

Deposits	Prepaid Rent	Accounts Payable
Accrued Wages	Unearned Fees	Bank Debt
Accrued Interest	Contributed Capital	Retained Earnings

T-accounts are also set up for each income statement account. These T-accounts are referred to as "temporary" or "nominal" accounts because they are transferred at the end of each fiscal year by transferring any net income or loss to the balance sheet account, Retained Earnings. Income statement T-accounts for IAL are presented in Exhibit 2.

EXHIBIT 2 Income Statement T-Accounts for Investment Advisers, Ltd.

Fee Revenue	Book Sales Revenue	Investment Income
Cost of Goods Sold	Advertising Expense	Rent Expense
Depreciation Expense	Wage Expense	Interest Expense

The collection of all business transactions sorted by account, real and temporary, for a company comprise the general ledger. The general ledger is the core of every accounting system, where all transactions are ultimately entered. To illustrate the use of T-accounts, we will use the transactions for IAL summarized in Exhibit 3. We will first enter each transaction into the general ledger T-accounts, then use the information to prepare financial statements.

EXHIBIT 3 Business Transactions for Investment Advisers, Ltd.

#	Date	Business Activity
1	31 December 2005	• File documents with regulatory authorities to establish a separate legal entity. Initially capitalize the company through deposit of $150,000 from the three owners.
2	2 January 2006	• Set up a $100,000 investment account and purchase a portfolio of equities and fixed-income securities.
3	2 January 2006	• Pay $3,000 to landlord for office/warehouse. $2,000 represents a refundable deposit, and $1,000 represents the first month's rent.
4	3 January 2006	• Purchase office equipment for $6,000. The equipment has an estimated life of two years with no salvage value.
5	3 January 2006	• Receive $1,200 cash for a one-year subscription to the monthly newsletter.
6	10 January 2006	• Purchase and receive 500 books at a cost of $20 per book for a total of $10,000. Invoice terms are that payment from IAL is due in 30 days. No cash changes hands. These books are intended for resale.
7	10 January 2006	• Spend $600 on newspaper and trade magazine advertising for the month.
8	15 January 2006	• Borrow $12,000 from a bank for working capital. Interest is payable annually at 10 percent. The principal is due in two years.
9	15 January 2006	• Ship first order to a customer consisting of five books at $25 per book. Invoice terms are that payment is due in 30 days. No cash changes hands.
10	15 January 2006	• Sell for cash 10 books at $25 per book at an investment conference.
11	30 January 2006	• Hire a part-time clerk. The clerk is hired through an agency that also handles all payroll taxes. The company is to pay $15 per hour to the agency. The clerk works six hours prior to 31 January, but no cash will be paid until February.
12	31 January 2006	• Mail out the first month's newsletter to customer. This subscription had been sold on 3 January. See item 5.
13	31 January 2006	• Review of the investment portfolio shows that $100 of interest income was earned and the market value of the portfolio has increased by $2,000. The balance in the investment account is now $102,100. Securities are classified as "trading" securities.

Because this is a new business, the company's general ledger T-accounts initially have a zero balance.

31 December 2005 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
1	• File documents with regulatory authorities to establish a separate legal entity. Initially capitalize the company through deposit of $150,000 from the three owners.	• **Cash** [A] is increased by $150,000, and **contributed capital** [E] is increased by $150,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

This transaction affects two accounts: cash and contributed capital. (Cash is an asset, and contributed capital is part of equity.) The transaction is entered into the T-accounts as shown below. The number in parenthesis references the transaction number.

Cash	
150,000 (1)	

Contributed Capital	
	150,000 (1)

Cash is an asset account, and assets are on the left-hand side of the balance sheet (and basic accounting equation); therefore, cash is increased by recording the $150,000 on the debit (left) side of the T-account. Contributed capital is an equity account, and equity accounts are on the right-hand side of the balance sheet; therefore, contributed capital is increased by recording $150,000 on the credit (right) side of the T-account. Note that the sum of the debits for this transaction equals the sum of the credits:

$$DR = \$150{,}000$$

$$CR = \$150{,}000$$

$$DR = CR$$

Each transaction must always maintain this equality. This ensures that the accounting system (and accounting equation) is kept in balance. At this point in time, the company has assets (resources) of $150,000, and the owners' claim on the resources equals $150,000 (their contributed capital) because there are no liabilities at this point.

Transactions are recorded in a journal, which is then "posted to" (recorded in) the general ledger. When a transaction is recorded in a journal, it takes the form:

Date	Account	DR	CR
13 Dec 2005	Cash	150,000	
	Contributed Capital		150,000

This kind of entry is referred to as a "journal entry," and it is a summary of the information that will be posted in the general ledger T-accounts.

2 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
2	• Set up a $100,000 investment account and purchase a portfolio of equities and fixed-income securities.	• **Investments [A]** were increased by $100,000, and **cash [A]** was decreased by $100,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

This transaction affects two accounts but only one side of the accounting equation. Cash is reduced when the investments are purchased. Another type of asset, investments, increases. The T-account entries are shown below:

Cash		Investment	
150,000 (1)	100,000 (2)	100,000 (2)	

The cash account started with a $150,000 debit balance from the previous transaction. Assets are reduced by credit entries, so the reduction in cash is recorded by entering the $100,000 on the credit (right) side of the cash T-account. The investment account is also an asset, and the increase in investments is recorded by entering $100,000 on the debit side of the investments T-account. Transaction 2 balances because Transaction 2 debits equal Transaction 2 credits.

Going forward, we will use the traditional accounting terms of debit (debiting, debited) to indicate the action of entering a number in the debit side of an account, and credit (crediting, credited) to indicate the action of entering an amount on the credit side of an account.

2 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
3	• Pay $3,000 to landlord for office/warehouse. $2,000 represents a refundable deposit, and $1,000 represents the first month's rent.	• **Cash [A]** was decreased by $3,000, **deposits [A]** were increased by $2,000, and **prepaid rent [A]** was increased by $1,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

Cash is reduced once again by crediting the account by $3,000. On the other side of the transaction, two asset accounts increase. Deposits are increased by debiting the account for $2,000, while prepaid rent is increased by debiting that account for $1,000:

Cash		Deposits		Prepaid Rent	
150,000 (1)	100,000 (2)	2,000 (3)		1,000 (3)	
	3,000 (3)				

The sum of the debits for Transaction 3 equals the sum of the credits (i.e., $3,000).

3 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
4	• Purchase office equipment for $6,000 in cash. The equipment has an estimated life of two years with no salvage value.	• **Cash [A]** was decreased by $6,000, and **office equipment [A]** was increased by $6,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

Cash is credited for $6,000, while office equipment is debited for $6,000. Both are asset accounts, so these entries reflect a reduction in cash and an increase in office equipment.

Cash		Office Equipment	
150,000 (1)	100,000 (2)	6,000 (4)	
	3,000 (3)		
	6,000 (4)		

3 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
5	• Receive $1,200 cash for a one-year subscription to the monthly newsletter.	• **Cash [A]** was increased by $1,200, and **unearned fees [L]** was increased by $1,200.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

In this transaction, the company has received cash related to the sale of subscriptions. However, the company has not yet actually earned the subscription fees because it has an obligation to deliver newsletters in the future. So, this amount is recorded as a liability called "unearned fees" (or "unearned revenue"). In the future, as the company delivers the newsletters and thus fulfills its obligation, this amount will be transferred to revenue. If they fail to deliver the newsletters, the fees will need to be returned to the customer. To record the transaction, cash is debited (increased), while a liability account, unearned fees, is credited. Liabilities are on the right-hand side of the balance sheet and are, therefore, increased by crediting the T-account.

Cash		Unearned Fees	
150,000 (1)	100,000 (2)		1,200 (5)
1,200 (5)	3,000 (3)		
	6,000 (4)		

The sum of Transaction 5 debits and credits each equal $1,200.

10 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
6	• Purchase and receive 500 books at a cost of $20 per book for a total of $10,000. Invoice terms are that payment from IAL is due in 30 days. No cash changes hands. These books are intended for resale.	• **Inventory [A]** is increased by $10,000, and **accounts payable [L]** is increased by $10,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

The company has obtained an asset, inventory, which can be sold to customers at a later date. Rather than paying cash to the supplier currently, the company has an obligation to do so in

30 days. This represents a liability ("accounts payable") to the supplier. Inventory is debited for $10,000, while the liability, accounts payable, is credited for $10,000. Note that there is no impact on the cash account.

Inventory	
10,000 (6)	

Accounts Payable	
	10,000 (6)

10 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
7	• Spend $600 on newspaper and trade magazine advertising for the month	• **Cash [A]** was decreased by $600, and **advertising expense [X]** was increased by $600.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

Unlike the previous expenditures, advertising is not an asset. Its future economic benefits are unclear, unlike equipment, which is expected to be useful over multiple periods. Expenditures such as advertising are recorded as an expense when they are incurred. To record the advertising expense, cash is credited for $600, and advertising expense is debited for $600. Expenses reduce net income, and thus reduce retained earnings. Decreases in retained earnings, as with any equity account, are recorded as debits. The entries with respect to retained earnings will be presented later in this section after the income statement.

Cash	
150,000 (1)	100,000 (2)
1,200 (5)	3,000 (3)
	6,000 (4)
	600 (7)

Advertising Expense	
600 (7)	

15 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
8	• Borrow $12,000 from a bank for working capital. Interest is payable annually at 10 percent. The principal is due in two years.	• **Cash [A]** is increased by $12,000, and **Bank debt [L]** is increased by $12,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

Cash is debited, and a corresponding liability is credited. Initially, no entry is made for interest that is expected to be paid on the loan. Interest will be recorded in the future as time passes and interest accrues (accumulates) on the loan.

Cash

Debit	Credit
150,000 (1)	100,000 (2)
1,200 (5)	3,000 (3)
12,000 (8)	6,000 (4)
	600 (7)

Bank Debt

Debit	Credit
	12,000 (8)

The debits and credits of Transaction 8 each total $12,000.

15 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
9	• Ship first order to a customer consisting of five books at $25 per book. Invoice terms are that payment is due in 30 days. No cash changes hands.	• **Accounts receivable [A]** increased by $125, and **book sales revenue [R]** increased by $125. Additionally, **inventory [A]** decreased by $100, and **cost of goods sold [X]** increased by $100.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

The company has now made a sale. Sale transaction records have two parts. One part records the $125 revenue to be received from the customer, and the other part records the $100 cost of the goods that have been sold. For the first part, accounts receivable is debited (increased) for $125, and a revenue account is credited for $125.

Accounts Receivable

Debit	Credit
125 (9)	

Book Sales Revenue

Debit	Credit
	125 (9)

For the second part, inventory is credited (reduced) for $100, and an expense, cost of goods sold, is debited (increased) to reflect the cost of inventory sold.

Inventory

Debit	Credit
10,000 (6)	100 (9)

Cost of Goods Sold

Debit	Credit
100 (9)	

Note that the sum of debits and the sum of credits for Transaction 9 both equal $225. The $225 is not meaningful by itself. What is important is that the debits and credits balance.

15 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
10	• Sell for cash 10 books at $25 per book at an investment conference.	• **Cash [A]** is increased by $250, and **book sales revenue [R]** is increased by $250. Additionally, **inventory [A]** is decreased by $200, and **cost of goods sold [X]** is increased by $200.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

Similar to the previous transaction, both the sales proceeds and cost of the goods sold must be recorded. In this case, however, the sales proceeds are received in cash. To record the sale proceeds, the entries include a debit to cash for $250 and a corresponding credit to book sales revenue for $250. To record cost of goods sold, the entries include a debit to cost of goods sold and a credit to inventory.

Cash

Debit	Credit
150,000 (1)	100,000 (2)
1,200 (5)	3,000 (3)
12,000 (8)	6,000 (4)
250 (10)	600 (7)

Book Sales Revenue

Debit	Credit
	125 (9)
	250 (10)

Inventory

Debit	Credit
10,000 (6)	100 (9)
	200 (10)

Cost of Goods Sold

Debit	Credit
100 (9)	
200 (10)	

Transaction 10's debits and credits are equal, maintaining the accounting system's balance.

30 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
11	• Hire a part-time clerk. The clerk is hired through an agency that also handles all payroll taxes. The company is to pay $15 per hour to the agency. The clerk works six hours prior to 31 January, but no cash will be paid until February.	• The company owes $90 for wages at month-end. Under accrual accounting, expenses are recorded when incurred, not when paid. • **Accrued wages [L]** is increased by $90, and **wage expense [X]** is increased by $90. The accrued wage liability will be eliminated when the wages are paid.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

Accrued wages is a liability that is increased by crediting that account, whereas payroll is an expense account that is increased with a debit.

Accrued Wages	
	90 (11)

Wage Expense	
90 (11)	

31 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
12	• Mail out the first month's newsletter to customer. This subscription had been sold on 3 January.	• One month (or 1/12) of the $1,200 subscription has been satisfied, and thus $100 can be recognized as revenue. • **Unearned fees [L]** is decreased by $100, and **fee revenue [R]** is increased by $100.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

To record the recognition of one month of the subscription fee, the account fee revenue is credited (increased) by $100, and the related liability is debited (decreased) by $100.

Fee Revenue	
	100 (12)

Unearned Fees	
100 (12)	1,200 (5)

31 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
13	• Review of the investment portfolio shows that $100 of interest income was earned and the market value of the portfolio has increased by $2,000. The balance in the investment account is now $102,100. The securities are classified as "trading" securities.	• **Investment income [R]** is increased by $100, and the **investments** account **[A]** is increased by $100. • The $2,000 increase in the value of the portfolio represents unrealized gains that are part of income for traded securities. The **investments** account **[A]** is increased by $2,000, and **investment income [R]** is increased by $2,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

The investments account is an asset account that is debited (increased) for $2,100, and investment income is a revenue account that is credited (increased) by $2,100.

Investments	
100,000 (2)	
2,100 (13)	

Investment Income	
	2,100 (13)

These entries complete the recording of the first 13 transactions. In this illustration, there are three adjustments. An adjustment must be made related to Transaction 3 to account for the fact that a month has passed and rent expense has been incurred. We refer to this as Transaction 3a. Adjustments must also be made for an estimate of the depreciation of the office equipment (Transaction 4a) and for interest that has accrued on the loan (Transaction 8a).

31 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
3a	• In item 3, $3,000 was paid to the landlord for office/warehouse, including a $2,000 refundable deposit and $1,000 for the first month's rent. • Now, the first month has ended, so this rent has become a cost of doing business.	• To reflect the full amount of the first month's rent as a cost of doing business, **prepaid rent [A]** is decreased by $1,000, and **rent expense [X]** is increased by $1,000.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

Prepaid rent (an asset) is credited for $1,000 to reduce the balance, and rent expense is debited for the same amount to record the fact that the expense has now been incurred. After this entry, the balance of the prepaid rent asset account is $0.

Prepaid Rent	
1,000 (3)	1,000 (3a)

Rent Expense	
1,000 (3a)	

31 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
4a	• In item 4, office equipment was purchased for $6,000 in cash. The equipment has an estimated life of two years with no salvage value. • Now, one month (or 1/24) of the useful life of the equipment has ended so a portion of the equipment cost has become a cost of doing business.	• A portion (1/24) of the total $6,000 cost of the office equipment is allocated to the current period's cost of doing business. • **Depreciation expense [X]** is increased by $250, and **accumulated depreciation** is increased by $250. • Accumulated depreciation is a contra asset account to office equipment

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

Because some time has passed, accounting principles require that the estimated depreciation of the equipment be recorded. In this case, one could directly credit office equipment for $250; however, a preferred method is to credit an account called "accumulated depreciation," which is associated with the office equipment account. This accumulated depreciation account "holds" the cumulative amount of the depreciation related to the office equipment. When financial reports are prepared, a user is able to see both the original cost of the equipment as well as the accumulated depreciation. The user, therefore, has insight into the age of the asset, and perhaps how much time remains before it is likely to be replaced. Accumulated depreciation is termed a "contra" asset account and is credited for $250, while depreciation expense is debited (increased) for $250.

Accumulated Depreciation	
	250 (4a)

Depreciation Expense	
250 (4a)	

31 January 2006 (excerpt from Exhibit 3)

#	Business Activity	Accounting Treatment
8a	• The company borrowed $12,000 from a bank on 15 January, with interest payable annually at 10 percent and the principal due in two years. • Now, one-half of one month has passed since the borrowing.	• One-half of one month of interest expense has become a cost of doing business. $12,000 times 10% equals $1,200 of annual interest, equivalent to $100 per month and $50 for one-half month. • **Interest expense [X]** is increased by $50, and **accrued interest [L]** is increased by $50.

Accounting elements: Assets (A), Liabilities (L), Equity (E), Revenue (R), and Expenses (X).

Accrued interest is a liability that is credited (increased) for $50, and interest expense is debited (increased) for $50. Accrued interest is also sometimes referred to as "interest payable."

Accrued Interest	
	50 (8a)

Interest Expense	
50 (8a)	

Exhibit 4 summarizes the general ledger T-accounts for IAL at this point in time. For accounts with multiple entries, a line is drawn and the debit and credit columns are summed and netted to determine the current balance in the account. The balance is entered below the line. These individual account totals are then summarized in a trial balance as depicted in Exhibit 5. A trial balance is a summary of the account balances at a point in time. An accountant can prepare a trial balance at any time to ensure that the system is in balance and to review current amounts in the accounts. Note that the debit and credit columns each total $176,065, confirming that the system is in balance. Any difference in the column totals would indicate an error had been made. The trial balance totals have no particular significance and are not used in preparing financial statements. These totals are simply the sum of debits and credits in the accounting system at that point in time.

EXHIBIT 4 General Ledger T-Accounts for Investment Advisors, Ltd.

Cash	
150,000 (1)	100,000 (2)
1,200 (5)	3,000 (3)
12,000 (8)	6,000 (4)
250 (10)	600 (7)
53,850	

Accounts Receivable	
125 (9)	

Inventory	
10,000 (6)	100 (9)
	200 (10)
9,700	

(continued)

EXHIBIT 4 (Continued)

Investments

100,000 (2)	
2,100 (13)	
102,100	

Office Equipment

6,000 (4)	

Accumulated Depreciation

	250 (4a)

Deposits

2,000 (3)	

Prepaid Rent

1,000 (3)	1,000 (3a)
0	

Accounts Payable

	10,000 (6)

Accrued Wages

	90 (11)

Unearned Fees

100 (12)	1,200 (5)
	1,100

Bank Debt

	12,000 (8)

Accrued Interest

	50 (8a)

Contributed Capital

	150,000 (1)

Retained Earnings

Fee Revenue

	100 (12)

Book Sales Revenue

	125 (9)
	250 (10)
	375

Investment Income

	2,100 (13)

Cost of Goods Sold

100 (9)	
200 (10)	
300	

Advertising Expense

600 (7)	

Rent Expense

1,000 (3a)	

Depreciation Expense

250 (4a)	

Wage Expense

90 (11)	

Interest Expense

50 (8a)	

EXHIBIT 5 Investment Advisers, Ltd., Trial Balance

	DR	CR
Cash	53,850	
Accounts receivable	125	
Inventory	9,700	
Investments	102,100	
Office equipment	6,000	
Accumulated depreciation		250
Deposits	2,000	
Prepaid rent	0	
Accounts payable		10,000
Accrued wages		90
Unearned fees		1,100
Bank debt		12,000
Accrued interest		50
Contributed capital		150,000
Retained earnings		
Fee revenue		100
Book sales revenue		375
Investment income		2,100
Cost of goods sold	300	
Advertising expense	600	
Rent expense	1,000	
Depreciation expense	250	
Wage expense	90	
Interest expense	50	
Total	**176,065**	**176,065**

After ensuring that the balances in the trial balance are correct (if there are errors, they are corrected and an adjusted trial balance is prepared), we prepare the financial statements. The trial balance provides the information necessary to prepare the balance sheet and the income statement. The detail in the general ledger must be reviewed to prepare the statement of cash flows and statement of owners' equity. After the income statement is prepared, the temporary accounts are closed out (i.e., taken to a zero balance) by transferring each of their balances to retained earnings. This typically occurs at year-end and is termed the "closing process." Exhibits 6 and 7 show the post-closing general ledger and trial balance, respectively.

EXHIBIT 6 Post-Closing General Ledger T-Accounts for Investment Advisors, Ltd.

Cash	
150,000 (1)	100,000 (2)
1,200 (5)	3,000 (3)
12,000 (8)	6,000 (4)
250 (10)	600 (7)
53,850	

Accounts Receivable	
125 (9)	

Inventory	
10,000 (6)	100 (9)
	200 (10)
9,700	

Investments	
100,000 (2)	
2,100 (13)	
102,100	

Office Equipment	
6,000 (4)	

Accumulated Depreciation	
	250 (4a)

Deposits	
2,000 (3)	

Prepaid Rent	
1,000 (3)	1,000 (3a)
0	

Accounts Payable	
	10,000 (6)

Accrued Wages	
	90 (11)

Unearned Fees	
100 (12)	1,200 (5)
	1,100

Bank Debt	
	12,000 (8)

Accrued Interest	
	50 (8a)

Contributed Capital	
	150,000 (1)

Retained Earnings	
	285

Fee Revenue	
	0

Book Sales Revenue	
	0

Investment Income	
	0

Cost of Goods Sold	
0	

Advertising Expense	
0	

Rent Expense	
0	

Depreciation Expense	
0	

Wage Expense	
0	

Interest Expense	
0	

EXHIBIT 7 Investment Advisers, Ltd., Post-Closing Trial Balance

	DR	CR
Cash	53,850	
Accounts receivable	125	
Inventory	9,700	
Investments	102,100	
Office equipment	6,000	
Accumulated depreciation		250
Deposits	2,000	
Prepaid rent	0	
Accounts payable		10,000
Accrued wages		90
Unearned fees		1,100
Bank debt		12,000
Accrued interest		50
Contributed capital		150,000
Retained earnings		285
Fee revenue		0
Book sales revenue		0
Investment income		0
Cost of goods sold	0	
Advertising expense	0	
Rent expense	0	
Depreciation expense	0	
Wage expense	0	
Interest expense	0	
Total	**173,775**	**173,775**

Financial statements are identical whether using a spreadsheet approach or a debit/credit approach. Accordingly, the financial statements for IAL that would be prepared using the trial balances are identical to those presented in the main body of the chapter as Exhibit 9.

PROBLEMS

1. Which of the following items would most likely be classified as an operating activity?
   A. Issuance of debt.
   B. Acquisition of a competitor.
   C. Sale of automobiles by an automobile dealer.

2. Which of the following items would most likely be classified as a financing activity?
   A. Issuance of debt.
   B. Payment of income taxes.
   C. Investments in the stock of a supplier.
3. Which of the following elements represents an economic resource?
   A. Asset.
   B. Liability.
   C. Owners' equity.
4. Which of the following elements represents a residual claim?
   A. Asset.
   B. Liability.
   C. Owners' equity.
5. An analyst has projected that a company will have assets of €2,000 at year-end and liabilities of €1,200. The analyst's projection of total owners' equity should be *closest* to:
   A. €800.
   B. €2,000.
   C. €3,200.
6. An analyst has collected the following information regarding a company in advance of its year-end earnings announcement (in millions):

Estimated net income	$	200
Beginning retained earnings	$	1,400
Estimated distributions to owners	$	100

   The analyst's estimate of ending retained earnings (in millions) should be *closest* to:
   A. $1,300.
   B. $1,500.
   C. $1,700.
7. An analyst has compiled the following information regarding Rubsam, Inc.

Liabilities at year-end	€	1,000
Contributed capital at year-end	€	500
Beginning retained earnings	€	600
Revenue during the year	€	5,000
Expenses during the year	€	4,300

   There have been no distributions to owners. The analyst's *most likely* estimate of total assets at year-end should be *closest* to:
   A. €2,100.
   B. €2,300.
   C. €2,800.

8. A group of individuals formed a new company with an investment of $500,000. The *most likely* effect of this transaction on the company's accounting equation at the time of the formation is an increase in cash and:
   A. an increase in revenue.
   B. an increase in liabilities.
   C. an increase in contributed capital.
9. HVG, LLC paid $12,000 of cash to a real estate company upon signing a lease on 31 December 2005. The payment represents a $4,000 security deposit and $4,000 of rent for each of January 2006 and February 2006. Assuming that the correct accounting is to reflect both January and February rent as prepaid, the *most likely* effect on HVG's accounting equation in December 2005 is:
   A. no net change in assets.
   B. a decrease in assets of $8,000.
   C. a decrease in assets of $12,000.
10. TRR Enterprises sold products to customers on 30 June 2006 for a total price of €10,000. The terms of the sale are that payment is due in 30 days. The cost of the products was €8,000. The *most likely* net change in TRR's total assets on 30 June 2006 related to this transaction is:
    A. €0.
    B. €2,000.
    C. €10,000.
11. On 30 April 2006, Pinto Products received a cash payment of $30,000 as a deposit on production of a custom machine to be delivered in August 2006. This transaction would *most likely* result in which of the following on 30 April 2006?
    A. No effect on liabilities.
    B. A decrease in assets of $30,000.
    C. An increase in liabilities of $30,000.
12. Squires & Johnson, Ltd., recorded €250,000 of depreciation expense in December 2005. The *most likely* effect on the company's accounting equation is:
    A. no effect on assets.
    B. a decrease in assets of €250,000.
    C. an increase in liabilities of €250,000.
13. An analyst who is interested in assessing a company's financial position is *most likely* to focus on which financial statement?
    A. Balance sheet.
    B. Income statement.
    C. Statement of cash flows.
14. The statement of cash flows presents the flows into which three groups of business activities?
    A. Operating, Nonoperating, and Financing.
    B. Operating, Investing, and Financing.
    C. Operating, Nonoperating, and Investing.

15. Which of the following statements about cash received prior to the recognition of revenue in the financial statements is *most* accurate? The cash is recorded as:
    A. deferred revenue, an asset.
    B. accrued revenue, a liability.
    C. deferred revenue, a liability.
16. When, at the end of an accounting period, a revenue has been recognized in the financial statements but no billing has occurred and no cash has been received, the accrual is to:
    A. unbilled (accrued) revenue, an asset.
    B. deferred revenue, an asset.
    C. unbilled (accrued) revenue, a liability.
17. When, at the end of an accounting period, cash has been paid with respect to an expense, the business should then record:
    A. an accrued expense, an asset.
    B. a prepaid expense, an asset.
    C. an accrued expense, a liability.
18. When, at the end of an accounting period, cash has not been paid with respect to an expense that has been incurred, the business should then record:
    A. an accrued expense, an asset.
    B. a prepaid expense, an asset.
    C. an accrued expense, a liability.
19. The collection of all business transactions sorted by account in an accounting system is referred to as:
    A. a trial balance.
    B. a general ledger.
    C. a general journal.
20. If a company reported fictitious revenue, it could try to cover up its fraud by:
    A. decreasing assets.
    B. increasing liabilities.
    C. creating a fictitious asset.

CHAPTER 3

FINANCIAL REPORTING STANDARDS

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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- describe the objective of financial statements and the importance of financial reporting standards in security analysis and valuation;
- describe roles and desirable attributes of financial reporting standard-setting bodies and regulatory authorities in establishing and enforcing reporting standards, and describe the role of the International Organization of Securities Commissions;
- describe the status of global convergence of accounting standards and ongoing barriers to developing one universally accepted set of financial reporting standards;
- describe the International Accounting Standards Board's conceptual framework, including the objective and qualitative characteristics of financial statements, required reporting elements, and constraints and assumptions in preparing financial statements;
- describe general requirements for financial statements under International Financial Reporting Standards (IFRS);
- compare key concepts of financial reporting standards under IFRS and US generally accepted accounting principles (US GAAP) reporting systems;
- identify characteristics of a coherent financial reporting framework and the barriers to creating such a framework;
- describe implications for financial analysis of differing financial reporting systems and the importance of monitoring developments in financial reporting standards;
- analyze company disclosures of significant accounting policies.

1. INTRODUCTION

Financial reporting standards provide principles for preparing financial reports and determine the types and amounts of information that must be provided to users of financial statements, including investors and creditors, so that they may make informed decisions. This chapter focuses on the framework within which these standards are created. An understanding of the underlying framework of financial reporting standards, which is broader than knowledge of specific accounting rules, will allow an analyst to assess the valuation implications of financial statement elements and transactions—including transactions, such as those that represent new developments, which are not specifically addressed by the standards.

Section 2 of this chapter discusses the objective of financial statements and the importance of financial reporting standards in security analysis and valuation. Section 3 describes the roles of financial reporting standard-setting bodies and regulatory authorities and several of the financial reporting standard-setting bodies and regulatory authorities. Section 4 describes the trend toward and barriers to convergence of global financial reporting standards. Section 5 describes the International Financial Reporting Standards (IFRS) framework[1] and general requirements for financial statements. Section 6 discusses the characteristics of an effective financial reporting framework along with some of the barriers to a single coherent framework. Section 7 illustrates some of the specific differences between IFRS and US generally accepted accounting practices (US GAAP), and Section 8 discusses the importance of monitoring developments in financial reporting standards. A summary of the key points and practice problems in the CFA Institute multiple choice format conclude the chapter.

2. THE OBJECTIVE OF FINANCIAL REPORTING

The financial reports of a company include financial statements and other supplemental disclosures necessary to assess a company's financial position and periodic financial performance. Financial reporting is based on a simple premise. The International Accounting Standards Board (IASB), which sets financial reporting standards that have been adopted in many countries, expressed it as follows in its *Conceptual Framework for Financial Reporting 2010* (*Conceptual Framework 2010*):[2]

[1] The body of standards issued by the International Accounting Standards Board (IASB) is referred to as International Financial Reporting Standards.

[2] In September 2010, the IASB adopted the *Conceptual Framework for Financial Reporting* in place of the *Framework for the Preparation and Presentation of Financial Statements* (*1989*). The *Conceptual Framework* represents the partial completion of a joint convergence project between the IASB and FASB on an updated framework. The *Conceptual Framework* (*2010*) contains two updated chapters: *The objective of financial reporting* and *Qualitative characteristics of useful financial information.* The remainder of the material in the *Conceptual Framework* is from the *Framework* (*1989*) and will be updated as the project is completed. Also in September 2010, the FASB issued Concepts Statement 8, *Conceptual Framework for Financial Reporting*, to replace Concepts Statements 1 and 2.

> The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity. Those decisions involve buying, selling, or holding equity and debt instruments, and providing or settling loans and other forms of credit.[3]

The objective in the *Conceptual Framework* (*2010*) differs from the objective of the *Framework for the Preparation and Presentation of Financial Statements* (*1989*)[4] in a number of key ways. The scope of the objective now extends to financial reporting, which is broader than the previously stated scope that covered financial statements only. Another difference is that the objective now specifies the primary users for whom the reports are intended (existing and potential investors, etc.) while the previously stated objective referred solely to a "wide range of users." Also, while the *Conceptual Framework* (*2010*) identifies information that should be reported—including that about financial position (economic resources and claims), changes in economic resources and claims, and financial performance reflected by accrual accounting and past cash flows—it does not list that information within the objective itself, unlike the previously stated objective.

Standards are developed in accordance with a framework so it is useful to have an agreed upon framework to guide the development of standards. The joint conceptual framework project of the IASB and the US Financial Accounting Standards Board (FASB) aims to develop a common foundation for standards. Standards based on this foundation should be principles-based, internally consistent, and converged. Until recently, financial reporting standards were primarily developed independently by each country's standard-setting body. This independent standard setting created a wide range of standards, some of which were quite comprehensive and complex (often considered to be rules-based standards), and others more general (often considered to be principles-based standards). Recent accounting scandals and the economic crisis of 2008–2009 increased awareness of the need for high quality, more uniform global financial reporting standards and provided the impetus for stronger coordination among the major standard-setting bodies. Such coordination is also a natural outgrowth of the increased globalization of capital markets.

Developing financial reporting standards is complicated because the underlying economic reality is complicated. The financial transactions and financial position that companies aim to represent in their financial reports are also complex. Furthermore, uncertainty about various aspects of transactions often results in the need for accruals and estimates, both of which necessitate judgment. Judgment varies from one preparer to the next. Accordingly, standards are needed to achieve some amount of consistency in these judgments. Even with such standards, there usually will be no single correct answer to the question of how to reflect economic reality in financial reports. Nevertheless, financial reporting standards try to limit the range of acceptable answers in order to increase consistency in financial reports.

[3] *Conceptual Framework (2010)* Chapter 1, OB2. Under US GAAP, the identical statement appears in Concept Statement 8, Chapter 1, OB2.

[4] The *Framework (1989)* stated that, "The objective of financial statements is to provide information about the financial position, performance, and changes in financial position of an entity; this information should be useful to a wide range of users for the purpose of making economic decisions."

EXAMPLE 1 Estimates in Financial Reporting

To facilitate comparisons across companies (cross sectional analysis) and over time for a single company (time series analysis), it is important that accounting methods are comparable and consistently applied. However, accounting standards must be flexible enough to recognize that differences exist in the underlying economics between businesses.

Suppose two companies buy the same model of machinery to be used in their respective businesses. The machine is expected to last for several years. Financial reporting standards typically require that both companies account for this equipment by initially recording the cost of the machinery as an asset. Without such a standard, the companies could report the purchase of the equipment differently. For example, one company might record the purchase as an asset and the other might record the purchase as an expense. An accounting standard ensures that both companies should record the transaction in a similar manner.

Accounting standards typically require the cost of the machine to be apportioned over the estimated useful life of an asset as an expense called depreciation. Because the two companies may be operating the machinery differently, financial reporting standards must retain some flexibility. One company might operate the machinery only a few days per week, whereas the other company operates the equipment continuously throughout the week. Given the difference in usage, it would not be appropriate to require the two companies to report an identical amount of depreciation expense each period. Financial reporting standards must allow for some discretion such that management can match their financial reporting choices to the underlying economics of their business while ensuring that similar transactions are recorded in a similar manner between companies.

Financial statements of two companies with identical transactions in the fiscal year, prepared in accordance with the same set of financial reporting standards, are *most likely* to be:

A. identical.
B. consistent.
C. comparable.

Solution: C is correct. The companies' financial statements should be comparable (possible to compare) because they should reflect the underlying economics of the transactions for each company. The underlying economics may vary between companies, so the financial statements are not likely to be identical. Choices made by each company with respect to accounting methods should be consistent but the choice across companies is not necessarily consistent. Information about accounting choices will enhance a user's ability to compare the companies' financial statements.

The IASB and the FASB have developed similar financial reporting frameworks which specify the overall objective and qualities of information to be provided. Financial reports are intended to provide information to many users, including investors, creditors, employees, customers, and others. As a result of this multipurpose nature, financial reports are *not* designed

solely with asset valuation in mind. However, financial reports provide important inputs into the process of valuing a company or the securities a company issues. Understanding the financial reporting framework—including how and when judgments and estimates can affect the numbers reported—enables an analyst to evaluate the information reported and to use the information appropriately when assessing a company's financial performance. Clearly, such an understanding is also important in assessing the financial impact of business decisions by, and in making comparisons across, entities.

3. STANDARD-SETTING BODIES AND REGULATORY AUTHORITIES

A distinction must be made between standard-setting bodies and regulatory authorities. Standard-setting bodies, such as the IASB and FASB, are typically private sector, self-regulated organizations with board members who are experienced accountants, auditors, users of financial statements, and academics. The requirement to prepare financial reports in accordance with specified accounting standards is the responsibility of regulatory authorities. Regulatory authorities, such as the Accounting and Corporate Regulatory Authority in Singapore, the Securities and Exchange Commission (SEC) in the United States, the Securities and Exchange Commission in Brazil, and the Financial Service Authority (FSA) in the United Kingdom (a new regulatory authority will succeed the FSA in the United Kingdom as of 2012), are governmental entities that have the legal authority to enforce financial reporting requirements and exert other controls over entities that participate in the capital markets within their jurisdiction.

In other words, *generally*, standard-setting bodies set the standards and regulatory authorities recognize and enforce the standards. Without the recognition of the standards by the regulatory authorities, the private sector standard-setting bodies would have no authority. Note, however, that regulators often retain the legal authority to establish financial reporting standards in their jurisdiction and can overrule the private sector standard-setting bodies.

EXAMPLE 2 Industry-Specific Regulation

In certain cases, multiple regulatory bodies affect a company's financial reporting requirements. For example, in almost all jurisdictions around the world, banking-specific regulatory bodies establish requirements related to risk-based capital measurement, minimum capital adequacy, provisions for doubtful loans, and minimum monetary reserves. An awareness of such regulations provides an analyst with the context to understand a bank's business, including the objectives and scope of allowed activities. Insurance is another industry where specific regulations typically are in place. An analyst should be aware of such regulations to understand constraints on an insurance company.

The following are examples of country-specific bank regulators. In Canada, the Office of the Superintendent of Financial Institutions regulates and supervises all banks in Canada as well as some other federally incorporated or registered financial institutions or intermediaries. In Germany, the German Federal Financial Supervisory Authority

exercises supervision over financial institutions in accordance with the Banking Act. In Japan, the Financial Services Agency has regulatory authority over financial institutions. In the United States, the Office of the Comptroller of the Currency charters and regulates all national banks. In some countries, a single entity serves both as the central bank and as the regulatory body for the country's financial institutions.

In addition, the Basel Accords establish and promote internationally consistent capital requirements and risk management practices for larger international banks. The Basel Committee on Banking Supervision, among other functions, has evolved into a standard setter for bank supervision. The various regulations that affect banks present a challenge for bank analysts.

Which of the following statements is *most* accurate?

A. As a general rule, it is sufficient for an analyst covering an industry to be familiar with financial reporting standards and regulations in his/her country of residence.
B. An analyst should familiarize him/herself with the regulations and reporting standards that affect the company and/or industry that he/she is analyzing.
C. An analyst should be aware that financial reporting standards vary among countries and may be industry specific, but standards are so similar that the analyst does not have to be concerned about it.

Solution: B is correct. An analyst should familiarize him/herself with the regulations and reporting standards that affect the company and/or industry being analyzed. This can be quite challenging but, given the potential effects, necessary.

This section provides a brief overview of the International Accounting Standards Board and the US Financial Accounting Standards Board. The overview is followed by descriptions of the International Organization of Securities Commissions, the US Securities and Exchange Commission, and capital markets regulation in the European Union. The topics covered in these overviews were chosen to serve as examples of standard-setting boards, securities commissions, and capital market regulation. After reading these descriptions, the reader should be able to describe the functioning and roles of standard-setting bodies and regulatory authorities in more detail than is given in the introduction to this section.

3.1. Accounting Standards Boards

Accounting standards boards exist in virtually every national market. These boards are typically independent, private, not-for-profit organizations. Most users of financial statements know of the International Accounting Standards Board that issues international financial reporting standards and the US Financial Accounting Standards Board that is the source of US generally accepted accounting principles. Most countries have an accounting standard-setting body. There are certain attributes that are typically common to these standard setters. After discussing the IASB and the FASB, some of the common and desirable attributes of accounting standards boards will be identified.

3.1.1. International Accounting Standards Board

The IASB is the independent standard-setting body of the IFRS Foundation,[5] an independent, not-for-profit private sector organization. The Trustees of the IFRS Foundation reflect a diversity of geographical and professional backgrounds. The Trustees appoint the members of the IASB and related entities, ensure the financing of the Foundation, establish the budget, and monitor the IASB's strategy and effectiveness. The Trustees of the Foundation are accountable to a monitoring board composed of public authorities that include representatives from the European Commission, IOSCO, the Japan Financial Services Agency, and the US SEC. The chairman of the Basel Committee on Banking Supervision serves as an observer on the Monitoring Board.

The Trustees of the IFRS Foundation make a commitment to act in the public interest. The principle objectives of the IFRS Foundation are to develop and promote the use and adoption of a single set of high quality financial standards; to ensure the standards result in transparent, comparable, and decision-useful information while taking into account the needs of a range of sizes and types of entities in diverse economic settings; and to promote the convergence of national accounting standards and IFRS. The Trustees are responsible for ensuring that the IASB is and is perceived as independent. Each member of the IASB is expected to exercise independence of judgment in setting standards.

The members of the IASB are appointed by the Trustees on the basis of professional competence and practical experience. As is true for the Trustees, the members reflect a diversity of geographical and professional backgrounds. The members deliberate, develop, and issue international financial reporting standards.[6] Two related entities, with members appointed by the Trustees, are the IFRS Interpretations Committee and the IFRS Advisory Council.[7] The Interpretations Committee's members are responsible for reviewing accounting issues that arise in the application of IFRS and are not specifically addressed by IFRS, and for issuing appropriate, authoritative, IASB-approved interpretations. Note that the authoritative interpretations must be approved by the IASB. The IFRS Advisory Council's members represent a wide range of organizations and individuals that are affected by and interested in international financial reporting. The Council provides advice to the IASB on, among other items, agenda decisions and priorities.

The IASB has a basic process that it goes through when deliberating, developing, and issuing international financial reporting standards. A simplified version of the typical process is as follows. An issue is identified as a priority for consideration and placed on the IASB's agenda in consultation with the Advisory Council. After considering an issue, which may include soliciting advice from others including national standard-setters, the IASB may publish an exposure draft for public comment. In addition to soliciting public comment, the IASB may hold public hearings to discuss proposed standards. After reviewing the input of others, the IASB may issue a new or revised financial reporting standard. These standards are authoritative to the extent that they are recognised and adopted by regulatory authorities.

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[5] The IFRS Foundation was previously named the International Accounting Standards Committee Foundation (IASC Foundation).

[6] Although the name of the IASB incorporates "Accounting Standards" and early standards were titled International Accounting Standards (IAS), the term "International Financial Reporting Standards" (IFRS) is being used for new standards. The use of the words "financial reporting" recognizes the importance of disclosures outside of the core financial statements, such as management discussion of the business, risks, and future plans.

[7] The IFRS Interpretations Committee and the IFRS Advisory Council were previously named the International Financial Reporting Interpretations Committee and the Standards Advisory Council.

3.1.2. Financial Accounting Standards Board

The FASB and its predecessor organizations have been issuing financial reporting standards in the United States since the 1930s. The FASB operates within a structure similar to that of the IASB. The Financial Accounting Foundation oversees, administers, and finances the organization. The Foundation ensures the independence of the standard-setting process and appoints members to the FASB and related entities including the Financial Accounting Standards Advisory Council.

The FASB issues new and revised standards to improve standards of financial reporting so that decision-useful information is provided to users of financial reports. This is done through a thorough and independent process that seeks input from stakeholders and is overseen by the Financial Accounting Foundation. The steps in the process are similar to those described for the IASB. The outputs of the standard-setting process are contained in the FASB *Accounting Standards Codification*™ (Codification).[8] Effective for periods ending after 15 September 2009, the Codification is the source of authoritative US generally accepted accounting principles to be applied to non-governmental entities. The Codification is organized by topic. Among the specific motivations for the Codification, the FASB mentions that it will facilitate researching accounting issues, improve the usability of the literature, provide accurate updated information on an ongoing basis, and help with convergence efforts.

US GAAP, as established by the FASB, is officially recognized as authoritative by the SEC (Financial Reporting Release No. 1, Section 101, and reaffirmed in the April 2003 Policy Statement). However, the SEC retains the authority to establish standards. Although it has rarely overruled the FASB, the SEC does issue authoritative financial reporting guidance including Staff Accounting Bulletins. These bulletins reflect the SEC's views regarding accounting-related disclosure practices and can be found on the SEC website. Certain portions—but not all portions—of the SEC regulations, releases, interpretations, and guidance are included for reference in the FASB Codification.

3.1.3. Desirable Attributes of Accounting Standards Boards

The responsibilities of all parties involved in the standards-setting process—including trustees of a foundation or others that oversee, administer, and finance the organization and members of the standard-setting board—should be clearly defined. All parties involved in the standards-setting process should observe high professional standards, including standards of ethics and confidentiality. The organization should have adequate authority, resources, and competencies to fulfill its responsibilities. The processes that guide the organization and the formation of standards should be clear and consistent. The accounting standards board should be guided by a well-articulated framework with a clearly stated objective. The accounting standards board should operate independently, seeking and considering input from stakeholders but making decisions that are consistent with the stated objective of the framework. The decision-setting process should not be compromised by pressure from external forces and should not be influenced by self- or special interests. The decisions and resulting standards should be in the public interest, and culminate in a set of high quality standards that will be recognised and adopted by regulatory authorities.

[8] The Codification combines literature issued by various standard setters, including the FASB, the Emerging Issues Task Force (EITF), the Derivative Implementation Group (DIG), and the American Institute of Certified Public Accountants (AICPA).

3.2. Regulatory Authorities

The requirement to prepare financial reports in accordance with specified accounting standards is the responsibility of regulatory authorities. Regulatory authorities are governmental entities that have the legal authority to enforce financial reporting requirements and exert other controls over entities that participate in the capital markets within their jurisdiction. Regulatory authorities may require that financial reports be prepared in accordance with one specific set of accounting standards or may specify acceptable accounting standards. For example in Switzerland, as of 2010, companies listed on the main board of the SIX Swiss Stock Exchange had to prepare their financial statements in accordance with either IFRS or US GAAP. Other registrants in Switzerland could use IFRS, US GAAP, or Swiss GAAP FER.

The International Organization of Securities Commissions (IOSCO) is not a regulatory authority but its members regulate a significant portion of the world's financial capital markets. This organization has established objectives and principles to guide securities and capital market regulation. The US SEC is discussed as an example of a regulatory authority. Aspects of capital market regulation in Europe are discussed to illustrate a cooperative approach to regulation.

3.2.1. International Organization of Securities Commissions

IOSCO was formed in 1983 as the successor organization to an inter-American regional association (created in 1974). As of 23 September 2010, IOSCO had 114 ordinary members, 11 associate members, and 74 affiliate members. Ordinary members are the securities commission or similar governmental regulatory authority with primary responsibility for securities regulation in the country.[9] The members regulate more than 90 percent of the world's financial capital markets.

The IOSCO's comprehensive set of *Objectives and Principles of Securities Regulation* is updated as required and is recognized as an international benchmark for all markets. The principles of securities regulation are based upon three core objectives:[10]

- protecting investors;
- ensuring that markets are fair, efficient, and transparent; and
- reducing systemic risk.

IOSCO's principles are grouped into nine categories, including principles for regulators, for enforcement, for auditing, and for issuers, among others. Within the category "Principles for Issuers," two principles relate directly to financial reporting:

- There should be full, accurate, and timely disclosure of financial results, risk, and other information which is material to investors' decisions.
- Accounting standards used by issuers to prepare financial statements should be of a high and internationally acceptable quality.

[9] The names of the primary securities regulator vary from country to country. For example: China Securities Regulatory Commission, Egyptian Financial Supervisory Authority, Securities and Exchange Board of India, Kingdom of Saudi Arabia Capital Market Authority, and Banco Central del Uruguay.

[10] *Objectives and Principles of Securities Regulation*, IOSCO, June 2010.

Historically, regulation and related financial reporting standards were developed within individual countries and were often based on the cultural, economic, and political norms of each country. As financial markets have become more global, it has become desirable to establish comparable financial reporting standards internationally. Ultimately, laws and regulations are established by individual jurisdictions, so this also requires cooperation among regulators. Another IOSCO principle deals with the use of self-regulatory organizations (accounting standards bodies are examples of self-regulating organizations in this context). Principle 9 states:

> Where the regulatory system makes use of Self-Regulatory Organizations (SROs) that exercise some direct oversight responsibility for their respective areas of competence, such SROs should be subject to the oversight of the Regulator and should observe standards of fairness and confidentiality when exercising powers and delegated responsibilities.[11]

To ensure consistent application of international financial standards (such as the Basel Committee on Banking Supervision's standards and IFRS), it is important to have uniform regulation and enforcement across national boundaries. IOSCO assists in attaining this goal of uniform regulation as well as cross-border co-operation in combating violations of securities and derivatives laws.

3.2.2. The Securities and Exchange Commission (US)

The US SEC has primary responsibility for securities and capital markets regulation in the United States and is an ordinary member of IOSCO. Any company issuing securities within the United States, or otherwise involved in US capital markets, is subject to the rules and regulations of the SEC. The SEC, one of the oldest and most developed regulatory authorities, originated as a result of reform efforts made after the great stock market crash of 1929, sometimes referred to as simply the "Great Crash."

A number of laws affect reporting companies, broker/dealers, and other market participants. From a financial reporting and analysis perspective, the most significant pieces of legislation are the Securities Acts of 1933 and 1934 and the Sarbanes–Oxley Act of 2002.

- **Securities Act of 1933** (The 1933 Act): This act specifies the financial and other significant information that investors must receive when securities are sold, prohibits misrepresentations, and requires initial registration of all public issuances of securities.
- **Securities Exchange Act of 1934** (The 1934 Act): This act created the SEC, gave the SEC authority over all aspects of the securities industry, and empowered the SEC to require periodic reporting by companies with publicly traded securities.
- **Sarbanes–Oxley Act of 2002**: The Sarbanes–Oxley Act of 2002 created the Public Company Accounting Oversight Board (PCAOB) to oversee auditors. The SEC is responsible for carrying out the requirements of the act and overseeing the PCAOB. The act addresses auditor independence; for example, it prohibits auditors from providing certain non-audit services to the companies they audit. The act strengthens corporate responsibility for financial reports; for example, it requires the chief executive officer and the chief financial officer to certify that the company's financial reports fairly present the company's condition.

[11] *Objectives and Principles of Securities Regulation*, IOSCO, June 2010.

Furthermore, Section 404 of the Sarbanes–Oxley Act requires management to report on the effectiveness of the company's internal control over financial reporting and to obtain a report from its external auditor attesting to management's assertion about the effectiveness of the company's internal control.

Companies comply with these acts principally through the completion and submission (i.e., filing) of standardized forms issued by the SEC. There are more than 50 different types of SEC forms that are used to satisfy reporting requirements; the discussion herein will be limited to those forms most relevant for financial analysts.

In 1993, the SEC began to mandate electronic filings of the required forms through its Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system. As of 2005, most SEC filings are required to be made electronically. EDGAR has made corporate and financial information more readily available to investors and the financial community. Most of the SEC filings that an analyst would be interested in can be retrieved from the internet from one of many websites, including the SEC's own website. Some filings are required on the initial offering of securities, whereas others are required on a periodic basis thereafter. The following are some of the more common information sources used by analysts.

- **Securities Offerings Registration Statement:** The 1933 Act requires companies offering securities to file a registration statement. New issuers as well as previously registered companies that are issuing new securities are required to file these statements. Required information and the precise form vary depending upon the size and nature of the offering. Typically, required information includes: 1) disclosures about the securities being offered for sale, 2) the relationship of these new securities to the issuer's other capital securities, 3) the information typically provided in the annual filings, 4) recent audited financial statements, and 5) risk factors involved in the business.
- **Forms 10-K, 20-F, and 40-F:** These are forms that companies are required to file *annually*. Form 10-K is for US registrants, Form 40-F is for certain Canadian registrants, and Form 20-F is for all other non-US registrants. These forms require a comprehensive overview, including information concerning a company's business, financial disclosures, legal proceedings, and information related to management. The financial disclosures include a historical summary of financial data (usually 10 years), management's discussion and analysis (MD&A) of the company's financial condition and results of operations, and audited financial statements.[12]
- **Annual Report:** In addition to the SEC's annual filings (e.g., Form 10-K), most companies prepare an annual report to shareholders. This is not a requirement of the SEC. The annual report is usually viewed as one of the most significant opportunities for a company to present itself to shareholders and other external parties; accordingly, it is often a highly polished marketing document with photographs, an opening letter from the chief executive officer, financial data, market segment information, research and development activities, and future corporate goals. In contrast, the Form 10-K is a more legal type of document with minimal marketing emphasis. Although the perspectives vary, there is considerable overlap between a company's annual report and its Form 10-K. Some companies elect to prepare just the Form 10-K or a document that integrates both the 10-K and annual report.

[12] Effective in 2008, the SEC permits foreign private issuers to file financial statements prepared in accordance with IFRS (as issued by the IASB) with no reconciliation to US GAAP. Foreign private issuers using accounting standards other than US GAAP or IFRS must still provide a reconciliation to US GAAP.

- **Proxy Statement/Form DEF-14A:** The SEC requires that shareholders of a company receive a proxy statement prior to a shareholder meeting. A proxy is an authorization from the shareholder giving another party the right to cast its vote. Shareholder meetings are held at least once a year, but any special meetings also require a proxy statement. Proxies, especially annual meeting proxies, contain information that is often useful to financial analysts. Such information typically includes proposals that require a shareholder vote, details of security ownership by management and principal owners, biographical information on directors, and disclosure of executive compensation. Proxy statement information is filed with the SEC as Form DEF-14A.
- **Forms 10-Q and 6-K:** These are forms that companies are required to submit for interim periods (quarterly for US companies on Form 10-Q, semiannually for many non-US companies on Form 6-K). The filing requires certain financial information, including unaudited financial statements and a MD&A for the interim period covered by the report. Additionally, if certain types of non-recurring events—such as the adoption of a significant accounting policy, commencement of significant litigation, or a material limitation on the rights of any holders of any class of registered securities—take place during the period covered by the report, these events must be included in the Form 10-Q report. Companies may provide the 10-Q report to shareholders or may prepare a separate, abbreviated, quarterly report to shareholders.

EXAMPLE 3 Initial Registration Statement

In 2004, Google filed a Form S-1 registration statement with the US SEC to register its initial public offering of securities (Class A Common Stock). In addition to a large amount of financial and business information, the registration statement provided a 20-page discussion of risks related to Google's business and industry. This type of qualitative information is helpful, if not essential, in making an assessment of a company's credit or investment risk.

Which of the following is *least likely* to have been included in Google's registration statement?

A. Audited financial statements.
B. Assessment of risk factors involved in the business.
C. Projected cash flows and earnings for the business.

Solution: C is correct. Companies provide information useful in developing these projections but do not typically include these in the registration statement. Information provided includes audited financial statements, an assessment of risk factors involved in the business, names of the underwriters, estimated proceeds from the offering, and use of proceeds.

A company or its officers make other SEC filings—either periodically, or, if significant events or transactions have occurred, in between the periodic reports noted above. By their nature, these forms sometimes contain the most interesting and timely information and may have significant valuation implications.

- **Form 8-K:** In addition to filing annual and interim reports, SEC registrants must report material corporate events on a more current basis. Form 8-K (6-K for non-US registrants) is the "current report" companies must file with the SEC to announce such major events as acquisitions or disposals of corporate assets, changes in securities and trading markets, matters related to accountants and financial statements, corporate governance and management changes, and Regulation FD disclosures.[13]
- **Form 144:** This form must be filed with the SEC as notice of the proposed sale of restricted securities or securities held by an affiliate of the issuer in reliance on Rule 144. Rule 144 permits limited sales of restricted securities without registration.
- **Forms 3, 4, and 5:** These forms are required to report beneficial ownership of securities. These filings are required for any director or officer of a registered company as well as beneficial owners of greater than 10 percent of a class of registered equity securities. Form 3 is the initial statement, Form 4 reports changes, and Form 5 is the annual report. These forms, along with Form 144, can be used to examine purchases and sales of securities by officers, directors, and other affiliates of the company.
- **Form 11-K:** This is the annual report of employee stock purchase, savings, and similar plans. It might be of interest to analysts for companies with significant employee benefit plans because it contains more information than that disclosed in the company's financial statements.

In jurisdictions other than the United States, similar legislation exists for the purpose of regulating securities and capital markets. Regulatory authorities are responsible for enforcing regulation, and securities regulation is intended to be consistent with the IOSCO objectives described in the previous section. Within each jurisdiction, regulators will either establish or, more typically, recognize and adopt a specified set or sets of accounting standards. The regulators will also establish reporting and filing requirements. IOSCO members have agreed to cooperate in the development, implementation, and enforcement of internationally recognised and consistent standards of regulation.

3.2.3. Capital Markets Regulation in Europe

Each individual member state of the European Union (EU) regulates capital markets in its jurisdiction. There are, however, certain regulations that have been adopted at the EU level. Importantly, in 2002 the EU agreed that from 1 January 2005, consolidated accounts of EU listed companies would use International Financial Reporting Standards. The endorsement process by which newly issued IFRS are adopted by the EU reflects the balance between the individual member state's autonomy and the need for cooperation and convergence. When the IASB issues a new standard, the European Financial Reporting Advisory Group advises the European Commission on the standard, and the Standards Advice Review Group provides the Commission an opinion about that advice. Based on the input from these two entities, the Commission prepares a draft endorsement regulation. The Accounting Regulatory Committee votes on the proposal; and if the vote is favorable, the proposal proceeds to the European Parliament and the Council of the European Union for approval.[14]

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[13] Regulation FD provides that when an issuer discloses material non-public information to certain individuals or entities—generally, securities market professionals such as stock analysts or holders of the issuer's securities who may trade on the basis of the information—the issuer must make public disclosure of that information. In this way, the rule aims to promote full and fair disclosure.

[14] Source: European Commission. http://ec.europa.eu/internal_market/accounting/legal_framework/ias_regulation_en.htm.

Two committees related to securities regulation, established in 2001 by the European Commission, are the European Securities Committee (ESC) and the Committee of European Securities Regulators (CESR). The ESC consists of high-level representatives of member states and advises the European Commission on securities policy issues. The CESR, an independent advisory body composed of representatives of regulatory authorities of the member states, assists the commission, particularly with technical issues. As noted earlier, regulation still rests with the individual member states and, therefore, requirements for registering shares and filing periodic financial reports vary from country to country.

On 1 January 2011, CESR was replaced by the European Securities and Market Authority (ESMA) as part of a reform of the EU financial supervisory framework. The EU Parliament created ESMA as an EU cross-border supervisor because the CESR's powers were deemed insufficient to coordinate supervision of the EU market. ESMA is one of three European supervisory authorities; the two others supervise the banking and insurance industries.

4. CONVERGENCE OF GLOBAL FINANCIAL REPORTING STANDARDS

Recent activities have moved the goal of one set of universally accepted financial reporting standards out of the theoretical sphere and closer to reality. IFRS have been or are in the process of being adopted in many countries. Other countries maintain their own set of standards but are working with the IASB to converge their standards and IFRS.

In some ways, the movement toward one global set of financial reporting standards has made the challenges related to full convergence or adoption of a single set of global standards more apparent. Standard-setting bodies and regulators can have differing views or use a different framework for developing standards. This can be the result of differences in institutional, regulatory, business, and cultural environments. In addition, there may be resistance to change or advocacy for change from certain constituents; accounting boards may be influenced by strong industry lobbying groups and others that will be subject to these reporting standards. For example, the FASB faced strong opposition when it first attempted to adopt standards requiring companies to expense employee stock compensation plans.[15] The IASB has experienced similar political pressures. The issue of political pressure is compounded when international standards are involved, simply because there are many more interested parties and many more divergent views and objectives. In the financial crisis of 2008 and 2009, both the FASB and the IASB faced political pressure to amend the standards related to financial instrument accounting. Political pressure and its influence create tension as the independence of accounting standards boards are questioned and jeopardized.

The integrity of the financial reporting framework depends on the standard setter's ability to invite and balance various points of view and yet to remain independent of external pressures. For analysts, it is important to be aware of the pace of change in accounting standards and factors potentially influencing those changes.

An additional issue related to convergence involves the application and enforcement of accounting standards. Unless the standards are applied consistently and enforcement is uniform, a single set of standards may only appear to exist but desirable attributes such as comparability may be lacking.

[15] The second attempt was successful and US GAAP requires the expensing of stock options. FASB ASC Topic 718 [Compensation–Stock Compensation].

In 2002, the IASB and FASB each acknowledged their commitment to the development of high quality, compatible accounting standards that could be used for both domestic and cross-border financial reporting (in an agreement referred to as "the Norwalk Agreement"). Both the IASB and FASB pledged to use their best efforts to 1) make their existing financial reporting standards fully compatible as soon as practicable, and 2) to coordinate their future work programs to ensure that, once achieved, compatibility is maintained. The Norwalk Agreement was certainly an important milestone, and both bodies began working toward convergence. In 2004, the IASB and FASB agreed that, in principle, any significant accounting standard would be developed cooperatively. In 2006, the IASB and the FASB issued another memorandum of understanding (titled "A Roadmap for Convergence between IFRSs and US GAAP") in which the two Boards identified major projects. They agreed to align their conceptual frameworks; in the short term, to remove selected differences; and in the medium term, to issue joint standards where significant improvements were identified as being required. The joint projects include (but are not limited to): the Conceptual Framework, Fair Value Measurement, Consolidations, Financial Instruments, Financial Statement Presentation, Insurance Contracts, Leases, Post Employment Benefits, and Revenue Recognition. In 2009, the IASB and FASB again reaffirmed their commitment to achieving convergence and affirmed June 2011 as the target completion date for the major projects that had been identified. In mid-2010, however, the Boards acknowledged that all the new standard-setting activity required to achieve that targeted completion would not give stakeholders enough time to provide high quality input in the process. Therefore, the Boards pushed back the target date for some projects to later in 2011.

Meanwhile, as convergence between IFRS and US GAAP continued, the SEC began certain steps regarding the possible adoption of IFRS in the United States. Effective in 2008, the SEC adopted rules to eliminate the reconciliation requirement for foreign private issuers' financial statements prepared in accordance with IFRS as issued by the IASB. Previously, any non-US issuer using accounting standards other than US GAAP was required to provide a reconciliation to US GAAP. In November 2008, the SEC issued a proposed rule concerning a "Roadmap" for the use of financial statements prepared in accordance with IFRS by US issuers; however the rule did not become final. In February 2010, the SEC issued a "Statement in Support of Convergence and Global Accounting Standards" in which it reiterated its commitment to global accounting standards and directed its staff to execute a work plan to enable the "Commission in 2011 to make a determination regarding incorporating IFRS into the financial reporting system for US issuers."[16]

Convergence between IFRS and other local GAAP also continues. For example, convergence between IFRS and Japanese GAAP is underway. In 2008, the IASB and the Accounting Standards Board of Japan published a memorandum of understanding (the "Tokyo Agreement") outlining work to achieve convergence by June 2011. In 2009, the Japanese Business Accounting Council, a key advisory body to the Commissioner of the Japanese Financial Services Agency, approved a roadmap for the adoption of IFRS in Japan.[17]

Exhibit 1 provides a summary of the adoption status of IFRS in selected worldwide locations. As can be seen, adoption ranges from total adoption of IFRS to requiring local GAAP. Between these two extremes, countries demonstrate different levels of commitment to IFRS including adoption of a local version of IFRS, requirement for certain entities to use IFRS, permission to use IFRS, and use of local GAAP that is converging with IFRS.

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[16] Source: www.sec.gov/rules/other/2010/33-9109.pdf.

[17] Source: www.iasb.org/Use+around+the+world/Global+convergence/IFRS+global+convergence.htm.

EXHIBIT 1 International Adoption Status of IFRS in Selected Locations as of June 2010

Region	Status
Europe	• The EU requires companies listed in EU countries to adopt IFRS beginning with their 2005 financial statements. • Switzerland requires that Swiss multinational companies listed on the main board of the Swiss Exchange must choose either US GAAP or IFRS. • Some countries (for example, Georgia, Macedonia, Moldova, Serbia) use IFRS as adopted locally. Georgia, for example, uses the IFRS 2007 edition. • Some countries (for example, Czech Republic, Finland, Germany, Ireland, Lithuania, Netherlands, Norway, Poland) permit some foreign companies listing on local exchanges to use other specified and/or well-recognised standards.
North America	• The US SEC accepts IFRS for non-US registrants and no longer requires a reconciliation to US GAAP for filers using IFRS. • The US FASB is engaged in numerous projects with the IASB to achieve convergence of US GAAP and IFRS. • The US SEC announced its intention to decide by 2011 whether to incorporate IFRS into financial reporting by US issuers. • In Canada, listed companies are required to use IFRS beginning 1 January 2011. The year ending 31 December 2010 is the last year of reporting under current Canadian GAAP. • In November 2008, Mexico announced plans to move to IFRS in 2012. • Most of the island nations off the southeast coast of North America require or permit the use of IFRS by listed companies.
Central and South America	• Central America, Costa Rica, Honduras, and Panama require the use of IFRS. El Salvador, Guatemala, and Nicaragua permit the use of IFRS. • Brazil requires that listed companies and financial institutions use IFRS, starting with periods ending in 2010. Brazilian GAAP continues to converge to IFRS. Ecuador requires listed companies, other than financial institutions, to use IFRS beginning in 2010. • Chile requires major listed companies to use IFRS for 2009 financial statements. Other companies are permitted to use IFRS. • Venezuela permits listed companies to use IFRS. The expectation is that listed companies will be required to use IFRS by 2011. • Peru and Uruguay require the use of IFRS as adopted locally. • In Argentina, convergence of ARG GAAP to IFRS is in progress. Listed foreign companies are permitted to use their primary GAAP, including IFRS, but should also include a reconciliation to ARG GAAP. • Bolivia is moving toward convergence with IFRS. • In Colombia and Paraguay, the adoption of IFRS is in early stages of consideration.
Asia and Middle East	• Listed companies in a number of countries—including India, Indonesia, and Thailand—report under local GAAP, and plans exist to either converge with or transition to IFRS. • Companies in China report under Chinese accounting standards (CAS). CAS are largely converged with IFRS and China's November 2009 proposed Roadmap targeted 2011 as the year for completion of convergence of IFRS and CAS. Financial institutions are required to prepare financial statements in accordance with IFRS in addition to their statements prepared using CAS. • In Japan, some companies that meet certain criteria may use IFRS, otherwise companies report using Japanese GAAP. Japan has launched a joint project with the IASB to reduce differences between Japanese GAAP and IFRS. • In Malaysia, domestic listed companies report using local GAAP and foreign companies listed on Malaysian exchanges are permitted to use IFRS. Malaysia plans to have full convergence with IFRS by January 2012.

EXHIBIT 1 (Continued)

	• Companies incorporated in Hong Kong normally report under Hong Kong FRS. These are largely converged with IFRS. • Korea requires the use of IFRS beginning 2011. Early adoption was permitted from 2009. • Listed companies are required to report under IFRS in a number of other countries, including Kyrgyz Republic, Lebanon, and Turkey. • A number of countries, including Pakistan, Philippines, and Singapore, require use of IFRS as adopted locally. In Singapore, IFRS is permitted for use by companies that list on other exchanges that require IFRS or if permission is given by the Accounting and Corporate Regulatory Authority. • In a number of countries, IFRS is required for some types of entities and permitted for others. For example, Armenia requires IFRS for financial organizations and permits its use for others, Azerbaijan requires IFRS for banks and state owned public interest entities, Israel requires IFRS for domestic listed companies except for banking institutions, Kazakhstan requires IFRS for domestic listed companies, large business entities and public interest entities, Saudi Arabia requires IFRS for all banks regulated by the Saudi Arabian Monetary Agency (central bank), and Uzbekistan requires IFRS for all commercial banks and permits IFRS for others. Vietnam requires IFRS for state owned banks and permits IFRS for commercial banks; all other listed companies report under Vietnamese accounting standards. Some countries, including Afghanistan and Qatar, permit the use of IFRS.
Oceana	• Australia requires Australian reporting entities to use IFRS as adopted locally. Foreign companies listing on local exchanges are permitted to use IFRS or their primary GAAP. The Australian regulator may require additional information. • New Zealand requires use of IFRS as adopted locally (NZ-IFRS).
Africa	• Many African countries, including Botswana, Ghana, Kenya, Malawi, Mauritius, Namibia, South Africa, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe, require IFRS for listed companies. • Morocco requires the use of IFRS for consolidated financial statements of bank and financial institutions and permits its use for others. • Mozambique requires the use of IFRS for financial and lending institutions and for certain large entities. Use of IFRS is permitted by other entities beginning in 2010. • Egypt requires the use of local GAAP which is partially converged with IFRS. • The Nigerian Federal Executive Council approved 1 January 2012 as the effective date for convergence of accounting standards in Nigeria with IFRS. • In some countries, financial statements are required to be prepared in accordance with the Organization for the Harmonization of Business Law in Africa accounting framework. These countries include Cameroon, Cote D'Ivoire, and Equatorial Guinea.

Sources: Based on data from www.iasb.org, www.sec.gov, www.iasplus.com, and www.pwc.com.

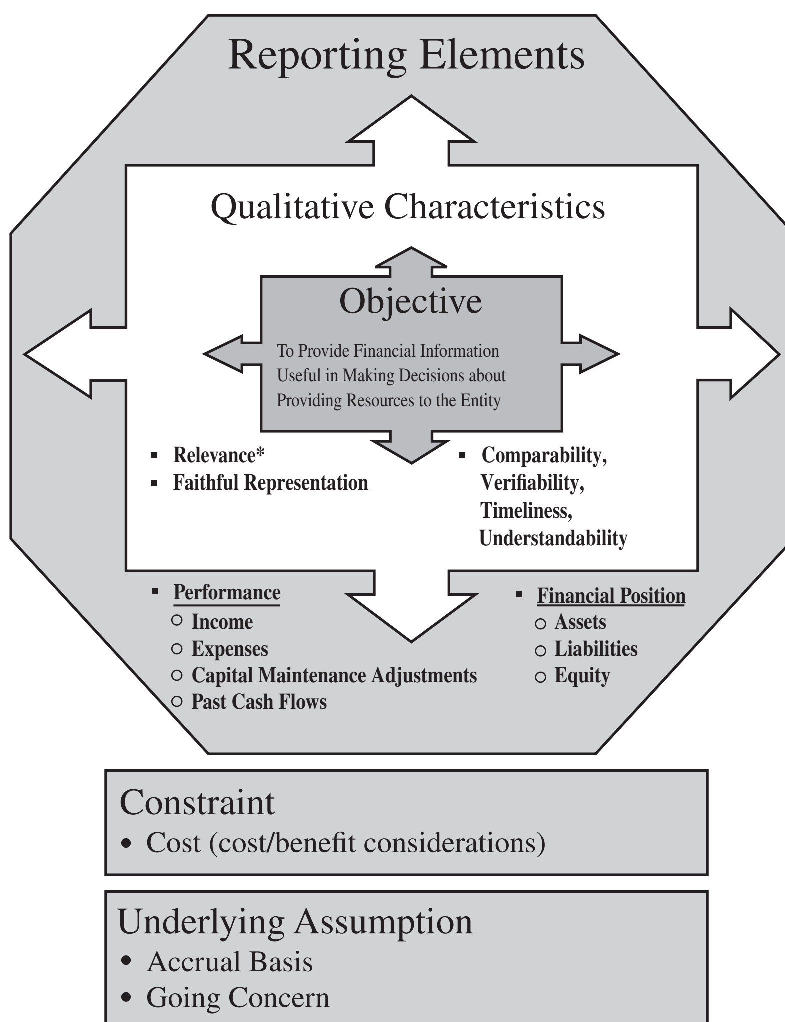
5. THE INTERNATIONAL FINANCIAL REPORTING STANDARDS FRAMEWORK

The *Conceptual Framework for Financial Reporting 2010* sets forth "the concepts that underlie the preparation and presentation of financial statements for external users." The *Conceptual Framework* (*2010*) is designed to assist standard setters in developing and reviewing standards, to assist preparers of financial statements in applying standards and in dealing with issues not specifically covered by standards, to assist auditors in forming an opinion on financial statements,

and to assist users in interpreting financial statement information. It is important to note that an understanding of the *Conceptual Framework* (*2010*) is expected to assist users of financial statements—including financial analysts—in interpreting the information contained therein.

The *Conceptual Framework* (*2010*) is diagrammed in Exhibit 2. The top part of the diagram shows the objective of general purpose financial reporting at the center, because other aspects of the framework are based upon this core. The qualitative characteristics of useful financial information surround the objective (fundamental characteristics are listed on the left and enhancing characteristics are listed on the right). The reporting elements are shown next with elements of financial statements shown at the bottom. Beneath the diagram of the framework are the basic constraint (cost) and assumption (going concern) that guide the development of standards and the preparation of financial reports.

EXHIBIT 2 IFRS Framework for the Preparation and Presentation of Financial Reports



*Material is an aspect of relevance.

In the following, we discuss the *Conceptual Framework* (*2010*) starting at the core: The objective of financial statements.

5.1. Objective of Financial Reports

At the core of the *Conceptual Framework* (*2010*) is the objective: The provision of financial information that is useful to current and potential providers of resources in making decisions. All other aspects of the framework flow from that central objective.

The providers of resources are considered to be the primary users of financial reports and include investors, lenders, and other creditors. The purpose of providing the financial information is to be useful in making decisions about providing resources. Other users may find the financial information useful for making economic decisions. The types of economic decisions differ by users, so the specific information needed differs as well. However, although these users may have unique information needs, some information needs are common across all users. Information is needed about the company's financial position: its resources and its financial obligations. Information is needed about a company's financial performance; this information explains how and why the company's financial position changed in the past and can be useful in evaluating potential changes in the future. The third common information need reflected in the *Conceptual Framework* (*2010*) diagram is the need for information about a company's cash. How did the company obtain cash (by selling its products and services, borrowing, other)? How did the company use cash (by paying expenses, investing in new equipment, paying dividends, other)?

The *Conceptual Framework* (*2010*) indicates that to make decisions about providing resources to the company, users need information that is helpful in assessing future net cash inflows to the entity. Such information includes information about the economic resources of (assets) and claims against (liabilities and equity) the entity, and about how well the management and governing board have utilized the resources of the entity. It is specifically noted in the *Conceptual Framework* (*2010*) that users need to consider information from other sources as well in making their decisions. Further, it is noted that the financial reports do not show the value of an entity but are useful in estimating the value of an entity.

5.2. Qualitative Characteristics of Financial Reports

Flowing from the central objective of providing information that is *useful* to providers of resources, the *Conceptual Framework* (*2010*) elaborates on what constitutes usefulness. It identifies two fundamental qualitative characteristics that make financial information useful: relevance and faithful representation.[18] The concept of materiality is discussed within the context of relevance.

1. *Relevance*: Information is relevant if it would potentially affect or make a difference in users' decisions. The information can have predictive value (useful in making forecasts), confirmatory value (useful to evaluate past decisions or forecasts), or both. In other words, relevant information helps users of financial information to evaluate past, present, and future events, or to confirm or correct their past evaluations in a decision-making context. *Materiality:* Information is considered to be material if omission or misstatement of the

[18] *Conceptual Framework for Financial Reporting (2010)*, paragraphs QC 5–18.

information could influence users' decisions. Materiality is a function of the nature and/or magnitude of the information.

2. *Faithful representation*: Information that faithfully represents an economic phenomenon that it purports to represent is ideally complete, neutral, and free from error. Complete means that all information necessary to understand the phenomenon is depicted. Neutral means that information is selected and presented without bias. In other words, the information is not presented in such a manner as to bias the users' decisions. Free from error means that there are no errors of commission or omission in the description of the economic phenomenon, and that an appropriate process to arrive at the reported information was selected and was adhered to without error. Faithful representation maximizes the qualities of complete, neutral, and free from error to the extent possible.

Relevance and faithful representation are the fundamental, most critical characteristics of useful financial information. In addition to these two fundamental characteristics, the *Conceptual Framework* (*2010*) identifies four characteristics that enhance the usefulness of relevant and faithfully represented financial information. These enhancing qualitative characteristics are comparability, verifiability, timeliness, and understandability.[19]

1. *Comparability*: Comparability allows users "to identify and understand similarities and differences of items." Information presented in a consistent manner over time and across entities enables users to make comparisons more easily than information with variations in how similar economic phenomena are represented.
2. *Verifiability*: Verifiability means that different knowledgeable and independent observers would agree that the information presented faithfully represents the economic phenomena it purports to represent.
3. *Timeliness*: Timely information is available to decision makers prior to their making a decision.
4. *Understandability*: Clear and concise presentation of information enhances understandability. The *Conceptual Framework* (*2010*) specifies that the information is prepared for and should be understandable by users who have a reasonable knowledge of business and economic activities, and who are willing to study the information with diligence. However, some complex economic phenomena cannot be presented in an easily understandable form. Information that is useful should not be excluded simply because it is difficult to understand. It may be necessary for users to seek assistance to understand information about complex economic phenomena.

Financial information exhibiting these qualitative characteristics—fundamental and enhancing—should be useful for making economic decisions.

5.3. Constraints on Financial Reports

Although it would be ideal for financial statements to exhibit all of these qualitative characteristics and thus achieve maximum usefulness, it may be necessary to make tradeoffs across the enhancing characteristics. The application of the enhancing characteristics follows no set order

[19] Ibid., paragraphs QC19–34.

of priority. Depending on the circumstances, each enhancing characteristic may take priority over the others.[20] The aim is an appropriate balance among the enhancing characteristics.

A pervasive constraint on useful financial reporting is the cost of providing and using this information.[21] Optimally, benefits derived from information should exceed the costs of providing and using it. Again, the aim is a balance between costs and benefits.

A limitation of financial reporting not specifically mentioned in the *Conceptual Framework* (*2010*) involves information not included. Financial statements, by necessity, omit information that is non-quantifiable. For example, the creativity, innovation, and competence of a company's work force are not directly captured in the financial statements. Similarly, customer loyalty, a positive corporate culture, environmental responsibility, and many other aspects about a company may not be directly reflected in the financial statements. Of course, to the extent that these items result in superior financial performance, a company's financial reports will reflect the results.

EXAMPLE 4 Balancing Qualitative Characteristics of Useful Information

A tradeoff between enhancing qualitative characteristics often occurs. For example, when a company records sales revenue, it is required to simultaneously estimate and record an expense for potential bad debts (uncollectible accounts). Including this estimated expense is considered to represent the economic event faithfully and to provide relevant information about the net profits for the accounting period. The information is timely and understandable; but because bad debts may not be known with certainty until a later period, inclusion of this estimated expense involves a sacrifice of verifiability. The bad debt expense is simply an estimate. It is apparent that it is not always possible to simultaneously fulfill all qualitative characteristics.

Companies are *most likely* to make tradeoffs between which of the following when preparing financial reports?

A. Relevance and materiality.
B. Timeliness and verifiability.
C. Relevance and faithful representation.

Solution: B is correct. Providing timely information implies a shorter time frame between the economic event and the information preparation; however, fully verifying information may require a longer time frame. Relevance and faithful representation are fundamental qualitative characteristics that make financial information useful. Both characteristics are required; there is no tradeoff between these. Materiality is an aspect of relevance.

[20] Ibid., paragraph QC34.
[21] Ibid., paragraphs QC35–39.

5.4. The Elements of Financial Statements

Financial statements portray the financial effects of transactions and other events by grouping them into broad classes (elements) according to their economic characteristics.[22] Three elements of financial statements are directly related to the measurement of financial position: assets, liabilities, and equity.[23]

- **Assets:** Resources controlled by the enterprise as a result of past events and from which future economic benefits are expected to flow to the enterprise. Assets are what a company owns (e.g., inventory and equipment).
- **Liabilities:** Present obligations of an enterprise arising from past events, the settlement of which is expected to result in an outflow of resources embodying economic benefits. Liabilities are what a company owes (e.g., bank borrowings).
- **Equity** (for public companies, also known as "shareholders' equity" or "stockholders' equity"): Assets less liabilities. Equity is the residual interest in the assets after subtracting the liabilities.

The elements of financial statements directly related to the measurement of performance (profit and related measures) are income and expenses.[24]

- **Income:** Increases in economic benefits in the form of inflows or enhancements of assets, or decreases of liabilities that result in an increase in equity (other than increases resulting from contributions by owners). Income includes both revenues and gains. Revenues represent income from the ordinary activities of the enterprise (e.g., the sale of products). Gains may result from ordinary activities or other activities (the sale of surplus equipment).
- **Expenses:** Decreases in economic benefits in the form of outflows or depletions of assets, or increases in liabilities that result in decreases in equity (other than decreases because of distributions to owners). Expenses include losses, as well as those items normally thought of as expenses, such as the cost of goods sold or wages.

5.4.1. Underlying Assumptions in Financial Statements

Two important assumptions underlie financial statements: accrual accounting and going concern. These assumptions determine how financial statement elements are recognized and measured.[25]

The use of "accrual accounting" assumes that financial statements should reflect transactions in the period when they actually occur, not necessarily when cash movements occur. For example, accrual accounting specifies that a company reports revenues *when they are earned (when the performance obligations have been satisfied)*, regardless of whether the company received cash before delivering the product, after delivering the product, or at the time of delivery.

"Going concern" refers to the assumption that the company will continue in business for the foreseeable future. To illustrate, consider the value of a company's inventory if it is assumed

[22] Chapter 4, the section of *The Conceptual Framework (2010)* which deals with the elements of the financial statements and their recognition and measurement, has not been amended from *The Framework (1989).* This chapter and the proposed Chapter 2, "The Reporting Entity," will be considered further sometime after 2010. The references given will be as they appear in *The Conceptual Framework (2010).*

[23] *Conceptual Framework for Financial Reporting (2010)*, paragraphs 4.4–4.23.

[24] Ibid., paragraphs 4.24–4.36.

[25] Ibid., paragraphs OB17 and 4.1.

that the inventory can be sold over a normal period of time versus the value of that same inventory if it is assumed that the inventory must all be sold in a day (or a week). Companies with the intent to liquidate or materially curtail operations would require different information for a fair presentation.

In reporting the financial position of a company that is assumed to be a going concern, it may be appropriate to list assets at some measure of a current value based upon normal market conditions. However, if a company is expected to cease operations and be liquidated, it may be more appropriate to list such assets at an appropriate liquidation value, namely, a value that would be obtained in a forced sale.

5.4.2. Recognition of Financial Statement Elements

Recognition means that an item is included in the balance sheet or income statement. Recognition occurs if the item meets the definition of an element and satisfies the criteria for recognition. A financial statement element (assets, liabilities, equity, income, and expenses) should be recognized in the financial statements if:[26]

- it is *probable* that any future economic benefit associated with the item will flow to or from the enterprise; and
- the item has a cost or value that can be *measured with reliability*.

5.4.3. Measurement of Financial Statement Elements

Measurement is the process of determining the monetary amounts at which the elements of the financial statements are to be recognized and carried in the balance sheet and income statement. The following alternative bases of measurement are used to different degrees and in varying combinations to measure assets and liabilities:[27]

- **Historical cost:** Historical cost is simply the amount of cash or cash equivalents paid to purchase an asset, including any costs of acquisition and/or preparation. If the asset was not bought for cash, historical cost is the fair value of whatever was given in order to buy the asset. When referring to liabilities, the historical cost basis of measurement means the amount of proceeds received in exchange for the obligation.
- **Amortised cost:** Historical cost adjusted for amortisation, depreciation, or depletion and/or impairment.
- **Current cost:** In reference to assets, current cost is the amount of cash or cash equivalents that would have to be paid to buy the same or an equivalent asset today. In reference to liabilities, the current cost basis of measurement means the undiscounted amount of cash or cash equivalents that would be required to settle the obligation today.
- **Realizable (settlement) value:** In reference to assets, realizable value is the amount of cash or cash equivalents that could currently be obtained by selling the asset in an orderly disposal. For liabilities, the equivalent to realizable value is called "settlement value"—that is, settlement value is the undiscounted amount of cash or cash equivalents expected to be paid to satisfy the liabilities in the normal course of business.
- **Present value (PV):** For assets, present value is the present discounted value of the future net cash inflows that the asset is expected to generate in the normal course of business. For

[26] Ibid., paragraphs 4.37–4.38.

[27] Ibid., paragraphs 4.54–4.55.

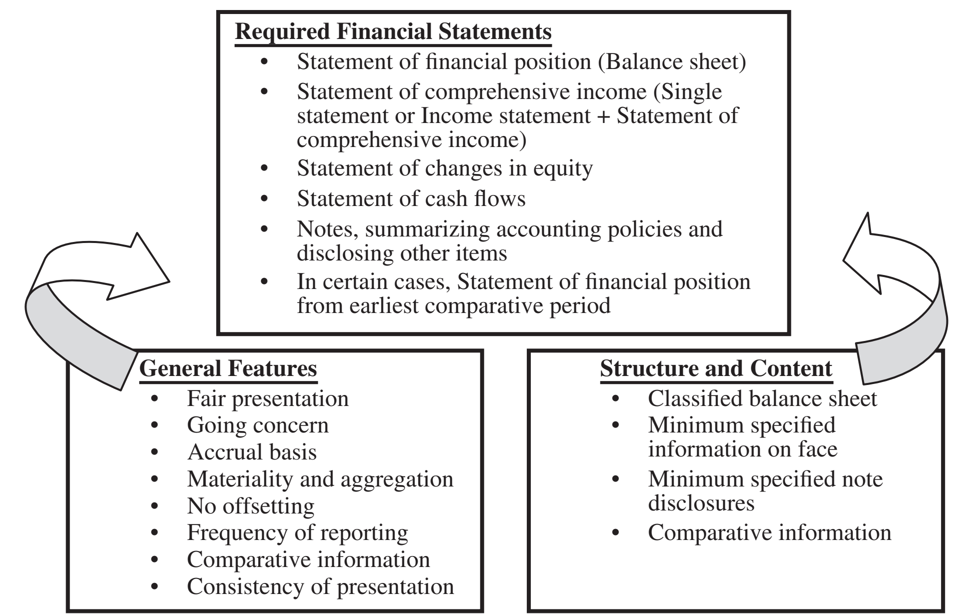
liabilities, present value is the present discounted value of the future net cash outflows that are expected to be required to settle the liabilities in the normal course of business.
- **Fair value:** is a measure of value mentioned but not specifically defined in the *Conceptual Framework* (*2010*). Fair value is the amount at which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction. This may involve either market measures or present value measures depending on the availability of information.[28]

5.5. General Requirements for Financial Statements

The *Conceptual Framework* (*2010*) provides a basis for establishing standards and the elements of financial statements, but it does not address the contents of the financial statements. Having discussed the *Conceptual Framework* (*2010*), we now address the general requirements for financial statements.

International Accounting Standard (IAS) No. 1, *Presentation of Financial Statements*, specifies the required financial statements, general features of financial statements, and structure and content of financial statements.[29] These general requirements are illustrated in Exhibit 3 and described in the subsections below.

EXHIBIT 3 IASB General Requirements for Financial Statements



[28] IFRS *Glossary of Terms*. Note that the joint IASB/FASB Fair Value project intends to redefine the term "fair value" as an exit price—the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. This is the definition in FASB ASC Topic 820 [Fair Value Measurements and Disclosures].

[29] For US GAAP, financial statement presentation is covered in Sections 205 through 280 of the Accounting Standards Codification.

In the following sections, we discuss the required financial statements, the general features underlying the preparation of financial statements, and the specified structure and content in greater detail.

5.5.1. Required Financial Statements

Under IAS No. 1, a complete set of financial statements includes:[30]

- a statement of financial position (balance sheet);
- a statement of comprehensive income (a single statement of comprehensive income or two statements, an income statement and a statement of comprehensive income that begins with profit or loss from the income statement);
- a statement of changes in equity, separately showing changes in equity resulting from profit or loss, each item of other comprehensive income, and transactions with owners in their capacity as owners;[31]
- a statement of cash flows; and
- notes comprising a summary of significant accounting policies and other explanatory notes that disclose information required by IFRS and not presented elsewhere and that provide information relevant to an understanding of the financial statements.

Entities are encouraged to furnish other related financial and non-financial information in addition to that required. Financial statements need to present fairly the financial position, financial performance, and cash flows of an entity.

5.5.2. General Features of Financial Statements

A company that applies IFRS is required to state explicitly in the notes to its financial statements that it is in compliance with the standards. Such a statement is only made when a company is in compliance with *all* requirements of IFRS. In extremely rare circumstances, a company may deviate from a requirement of IFRS if management concludes that complying with IFRS would result in misleading financial statements. In this case, management must disclose details of the departure from IFRS.

IAS No. 1 specifies a number of general features underlying the preparation of financial statements. These features clearly reflect the *Conceptual Framework* (*2010*).

- *Fair Presentation*: The application of IFRS is presumed to result in financial statements that achieve a fair presentation. The IAS describes fair presentation as follows:

  > Fair presentation requires the faithful representation of the effects of transactions, other events and conditions in accordance with the definitions and recognition criteria for assets, liabilities, income and expenses set out in the *Framework*.[32]

- *Going Concern*: Financial statements are prepared on a going concern basis unless management either intends to liquidate the entity or to cease trading, or has no realistic alternative but to do so. If not presented on a going concern basis, the fact and rationale should be disclosed.

[30] IAS No. 1, *Presentation of Financial Statements*, paragraph 10.

[31] Examples of transactions with owners acting in their capacity as owners include sale of equity securities to investors, distributions of earnings to investors, and repurchases of equity securities from investors.

[32] IAS No. 1, *Presentation of Financial Statements*, paragraph 15.

- *Accrual Basis*: Financial statements (except for cash flow information) are to be prepared using the accrual basis of accounting.
- *Materiality and Aggregation*: Omissions or misstatements of items are material if they could, individually or collectively, influence the economic decisions that users make on the basis of the financial statements. Each material class of similar items is presented separately. Dissimilar items are presented separately unless they are immaterial.
- *No Offsetting*: Assets and liabilities, and income and expenses, are not offset unless required or permitted by an IFRS.
- *Frequency of Reporting*: Financial statements must be prepared at least annually.
- *Comparative Information*: Financial statements must include comparative information from the previous period. The comparative information of prior periods is disclosed for all amounts reported in the financial statements, unless an IFRS requires or permits otherwise.
- *Consistency*: The presentation and classification of items in the financial statements are usually retained from one period to the next.

5.5.3. Structure and Content Requirements

IAS No. 1 also specifies structure and content of financial statements. These requirements include the following:

- *Classified Statement of Financial Position (Balance Sheet)*: IAS No. 1 requires the balance sheet to distinguish between current and non-current assets, and between current and non-current liabilities unless a presentation based on liquidity provides more relevant and reliable information (e.g., in the case of a bank or similar financial institution).
- *Minimum Information on the Face of the Financial Statements*: IAS No. 1 specifies the minimum line item disclosures on the face of, or in the notes to, the financial statements. For example, companies are specifically required to disclose the amount of their plant, property, and equipment as a line item on the face of the balance sheet. The specific requirements are listed in Exhibit 4.
- *Minimum Information in the Notes* (or on the face of financial statements): IAS No. 1 specifies disclosures about information to be presented in the financial statements. This information must be provided in a systematic manner and cross-referenced from the face of the financial statements to the notes. The required information is summarized in Exhibit 5.
- *Comparative Information*: For all amounts reported in a financial statement, comparative information should be provided for the previous period unless another standard requires or permits otherwise. Such comparative information allows users to better understand reported amounts.

EXHIBIT 4 IAS No. 1: Minimum Required Line Items in Financial Statements

On the face of the Statement of Financial Position	• Plant, property, and equipment • Investment property • Intangible assets • Financial assets (those not included in other specified line items) • Investments accounted for using the equity method • Biological assets • Inventories • Trade and other receivables • Cash and cash equivalents • Total assets in groups held for sale • Trade and other payables • Provisions

EXHIBIT 4 (Continued)

	• Financial liabilities (not listed in other line items) • Liabilities and assets for current tax • Deferred tax liabilities and deferred tax assets • Total liabilities in groups held for sale • Non-controlling interest (i.e., minority interest, presented within equity) • Issued capital and reserves attributable to owners of the parent
On the face of the Statement of Comprehensive Income, presented either in a single statement or in two statements (Income statement + Statement of comprehensive income)	• Revenue • Specified gains and losses for financial assets • Finance costs • Share of the profit or loss of associates and joint ventures accounted for using the equity method • Pretax gain or loss recognized on the disposal of assets or settlement of liabilities attributable to discontinued operations • Tax expense • Profit or loss • Each component of other comprehensive income • Amount of profit or loss and amount of comprehensive income attributable to non-controlling interest (minority interest) • Amount of profit or loss and amount of comprehensive income attributable to the parent
On the face of the Statement of Changes in Equity	• Total comprehensive income for the period, showing separately the total amounts attributable to owners of the parent and to non-controlling interest (minority interest) • For each component of equity, a reconciliation between beginning balances and ending balances, showing separately amounts arising from a) profit or loss, b) each item of other comprehensive income, and c) transactions with owners in their capacity as owners. • For each component of equity, the effects of changes in accounting policies and corrections of errors recognized in accordance with IAS No. 8

EXHIBIT 5 Summary of IFRS Required Disclosures in the Notes to the Financial Statements

Disclosure of Accounting Policies	• Measurement bases used in preparing financial statements • Significant accounting policies used • Judgments made in applying accounting policies that have the most significant effect on the amounts recognized in the financial statements
Sources of Estimation Uncertainty	• Key assumptions about the future and other key sources of estimation uncertainty that have a significant risk of causing material adjustment to the carrying amount of assets and liabilities within the next year
Other Disclosures	• Information about capital and about certain financial instruments classified as equity • Dividends not recognized as a distribution during the period, including dividends declared before the financial statements were issued and any cumulative preference dividends • Description of the entity, including its domicile, legal form, country of incorporation, and registered office or business address • Nature of operations and principal activities • Name of parent and ultimate parent

5.6. Convergence of Conceptual Framework

One of the joint IASB/FASB projects, begun in 2004, aims to develop an improved, common conceptual framework. The project will be conducted in phases. The Boards' initial, technical work plan included: Objective of and qualitative characteristics of financial reporting; Reporting entity; Elements; and Measurement and recognition of elements. As of the writing of this chapter, the objective and qualitative characteristics phase was complete and is incorporated in the chapter.

As more countries adopt IFRS, the need to consider other financial reporting systems will be reduced. Additionally, the IASB and FASB are considering frameworks from other jurisdictions in developing their joint framework. Nevertheless, analysts are likely to encounter financial statements that are prepared on a basis other than IFRS. Although the number and relevance of different local GAAP reporting systems are likely to decline, industry-specific financial reports—such as those required for banking or insurance companies—will continue to exist. Differences remain between IFRS and US GAAP that affect the framework and general financial reporting requirements. The chapters on individual financial statements and specific topics will review in more detail differences in IFRS and US GAAP as they apply to specific financial statements and topics.

As mentioned earlier, a joint IASB–FASB project was begun in October 2004 to develop a common conceptual framework. The initial focus was to achieve the convergence of the frameworks and improve particular aspects of the framework dealing with objectives, qualitative characteristics, elements and their recognition, and measurement. A December 2004 discussion paper presented the broad differences between the two frameworks. The differences between IFRS and US GAAP that affect the framework and general financial reporting requirements have been reduced by the agreement by the IASB and FASB on the purpose and scope of the *Conceptual Framework* (*2010*), the objective of general purpose financial reporting, and qualitative characteristics of useful financial information. Exhibit 6 summarizes the remaining differences as presented in the December 2004 discussion paper. Some of the differences identified in December 2004 may no longer apply. The chapters on individual financial statements and specific topics will discuss relevant and more current differences in greater detail.

EXHIBIT 6 Summary of Differences between IFRS and US GAAP Frameworks

	US GAAP (FASB) Framework
Financial Statement Elements (definition, recognition, and measurement)	• *Performance Elements*: The FASB framework includes three elements relating to financial performance in addition to revenue and expenses: gains, losses, and comprehensive income. Comprehensive income is a more encompassing concept than net income, as it includes all changes in equity during a period except those resulting from investments by and distributions to owners. • *Financial Position Elements*: The FASB framework defines an asset as "a future economic benefit" rather than the "resource" from which future economic benefits are expected to flow to the entity as in the IASB framework. It also includes the term "probable" to define the assets and liabilities elements. As discussed below, the term "probable" is part of the IASB framework recognition criteria. Additionally, the frameworks have different meanings of probable. • *Recognition of Elements*: The FASB framework does not discuss the term "probable" in its recognition criteria, whereas the IASB framework requires that it is probable that any future economic benefit flow to/from the entity. The FASB framework also has a separate recognition criterion of relevance.

EXHIBIT 6 (Continued)

	US GAAP (FASB) Framework
	• *Measurement of Elements*: Measurement attributes (historical cost, current cost, settlement value, current market value, and present value) are broadly consistent, and both frameworks lack fully developed measurement concepts. Furthermore, the FASB framework prohibits revaluations except for certain categories of financial instruments, which have to be carried at fair value.

For analysis of financial statements created under different frameworks, reconciliation schedules and disclosures regarding the significant differences between the reporting bases were formerly available to a greater extent. For example, the SEC used to require reconciliation for foreign private issuers that did not prepare financial statements in accordance with US GAAP. The SEC no longer requires reconciliation for foreign private issuers that prepare their financial reports in compliance with IFRS. Such reconciliations can reveal additional information related to the more judgmental components of the financial statements. In the absence of a reconciliation, users of financial statements must be prepared to consider how the use of different reporting standards potentially impact financial reports. This can have important implications for comparing the performance of companies and security valuation.

6. EFFECTIVE FINANCIAL REPORTING

A discussion of the characteristics of an effective framework and the barriers to the creation of such a framework offer additional perspective on financial reporting.

6.1. Characteristics of an Effective Financial Reporting Framework

Any effective financial reporting system needs to be a coherent one (i.e., a framework in which all the pieces fit together according to an underlying logic). Such frameworks have several characteristics:

- *Transparency*: A framework should enhance the transparency of a company's financial statements. Transparency means that users should be able to see the underlying economics of the business reflected clearly in the company's financial statements. Full disclosure and fair presentation create transparency.
- *Comprehensiveness*: To be comprehensive, a framework should encompass the full spectrum of transactions that have financial consequences. This spectrum includes not only transactions currently occurring, but also new types of transactions as they are developed. So an effective financial reporting framework is based on principles that are universal enough to provide guidance for recording both existing and newly developed transactions.
- *Consistency*: An effective framework should ensure reasonable consistency across companies and time periods. In other words, similar transactions should be measured and presented in a similar manner regardless of industry, company size, geography, or other characteristics. Balanced against this need for consistency, however, is the need for sufficient flexibility to allow companies sufficient discretion to report results in accordance with underlying economic activity.

6.2. Barriers to a Single Coherent Framework

Although effective frameworks all share the characteristics of transparency, comprehensiveness, and consistency, there are some conflicts that create inherent limitations in any financial reporting standards framework. Specifically, it is difficult to completely satisfy all these characteristics concurrently, so any framework represents an attempt to balance the relative importance of these characteristics. Three areas of conflict include valuation, standard-setting approach, and measurement.

- *Valuation*: As discussed, various bases for measuring the value of assets and liabilities exist, such as historical cost, current cost, fair value, realizable value, and present value. Historical cost valuation, under which an asset's value is its initial cost, requires minimal judgment. In contrast, other valuation approaches, such as fair value, require considerable judgment but can provide more relevant information.
- *Standard-Setting Approach*: Financial reporting standards can be established based on 1) principles, 2) rules, or 3) a combination of principles and rules (sometimes referred to as "objectives oriented"). A principles-based approach provides a broad financial reporting framework with little specific guidance on how to report a particular element or transaction. Such principles-based approaches require the preparers of financial reports and auditors to exercise considerable judgment in financial reporting. In contrast, a rules-based approach establishes specific rules for each element or transaction. Rules-based approaches are characterized by a list of yes-or-no rules, specific numerical tests for classifying certain transactions (known as "bright line tests"), exceptions, and alternative treatments. Some suggest that rules are created in response to preparers' needs for specific guidance in implementing principles, so even standards that begin purely as principles evolve into a combination of principles and rules. The third alternative, an objectives-oriented approach, combines the other two approaches by including both a framework of principles and appropriate levels of implementation guidance. The common conceptual framework is likely to be more objectives oriented.
- *Measurement*: The balance sheet presents elements at a point in time, whereas the income statement reflects changes during a period of time. Because these statements are related, standards regarding one of the statements have an effect on the other statement. Financial reporting standards can be established taking an "asset/liability" approach, which gives preference to proper valuation of the balance sheet, or a "revenue/expense" approach that focuses more on the income statement. This conflict can result in one statement being reported in a theoretically sound manner, but the other statement reflecting less relevant information. In recent years, standard setters have predominantly used an asset/liability approach.

EXAMPLE 5 Conflicts between Measurement Approaches

Prime Retailers (PR), a US-based distributor of men's shirts, has a policy of marking its merchandise up by $5 per unit. At the beginning of 2009, PR had 10,000 units of inventory on hand, which cost $15 per unit. During 2009, PR purchased 100,000 units of inventory at a cost of $22 per unit. Also during 2009, PR sold 100,000 units of inventory at $27 per unit. How shall PR reflect the cost of the inventory sold: $15 or $22 or some combination?

In order to match current costs with current revenues, PR (which does not operate in an IFRS jurisdiction; last-in, first-out is not allowed under IFRS) may decide that it is appropriate to use a method of inventory costing that assumes that the most recently purchased inventory is sold first. So, the assumption is that the 100,000 units of sales had a cost of $22. A partial income statement for PR would be:

Sales	$2,700,000
Cost of sales	$2,200,000
Gross profit	$500,000

The gross profit calculated in this manner reflects the current cost of goods matched with the current level of revenues.

But PR still has 10,000 units of inventory on hand. The assumption must be that the 10,000 remaining units had a cost of $15 per unit. Therefore, the value of the inventory reflected on the balance sheet would be $150,000.

Although the income statement reflects current costs, the remaining inventory on the balance sheet does not reflect current information. The inventory is reflected at the older cost of $15 per unit. An analyst would likely find this older cost less relevant than the current cost of that inventory.

7. COMPARISON OF IFRS WITH ALTERNATIVE REPORTING SYSTEMS

The recent adoption of IFRS as the required financial reporting standard by the EU and other countries has advanced the goal of global convergence. Nevertheless, there are still significant differences in financial reporting in the global capital markets. Arguably, the most critical are the differences that exist between IFRS and US GAAP. After the EU adoption of IFRS in 2005, a significant number of the world's listed companies use one of these two reporting standards.

For analyzing financial statements created under different standards, reconciliation schedules and disclosures regarding the significant differences between the reporting bases—historically available in some jurisdictions—were particularly helpful. For example, the SEC historically required reconciliation for foreign private issuers that did not prepare financial statements in accordance with US GAAP. In 2007, however, the SEC eliminated the reconciliation requirement for companies that prepared their financial statements according to IFRS.[33]

Although the disclosures related to any such differences were sometimes dauntingly long, the numerical reconciliations of net income and shareholders' equity appeared in charts that were relatively easy to use. As an example, consider the reconciliation disclosures made by Syngenta AG, a Swiss agribusiness company in 2006, the last year in which reconciliations were required. Syngenta's 2006 US SEC Form 20-F filing discussed these differences in Note

[33] The SEC issued Rule 33-8879 (available at www.sec.gov/rules/final/2007/33-8879.pdf) on 21 December 2007. The Rule eliminated the reconciliation requirement for companies reporting under IFRS as issued by the IASB and applied to financial years ending after 15 November 2007.

34, "Significant Differences between IFRS and United States Generally Accepted Accounting Principles." This note was roughly 20 pages long! The chart presenting the numerical reconciliation of net income (see Exhibit 7) was, however, relatively easy to use and could be reviewed to identify the significant items; large amounts could be examined in more detail. The Syngenta disclosure indicates that the company's 2006 net income based on US GAAP was $504 million, compared with the $634 million of net income reported under IFRS. The reconciliation indicates that most significant differences relate to accounting for acquisitions (purchase accounting adjustments include a $30 million increase and an $86 million decrease), accounting for pension provisions ($48 million), accounting for put options ($60 million) and accounting for various tax-related items. In some instances, further analysis would be undertaken to determine the implications of each significant difference based on additional disclosures in the notes.

EXHIBIT 7 Reconciliation of GAAP Income: Syngenta (US$ in Millions)

	2006	2005	2004
Net income/(loss) reported under IFRS attributable to Syngenta AG shareholders	634	622	460
US GAAP adjustments:			
Purchase accounting: Zeneca agrochemicals business	30	(7)	62
Purchase accounting: other acquisitions	(86)	(80)	(62)
Restructuring charges	(9)	(9)	47
Pension provisions (including post-retirement benefits)	(48)	15	43
Deferred taxes on share-based compensation	—	3	(3)
Deferred taxes on unrealized profit in inventory	26	(33)	(61)
Impairment losses	2	(7)	(1)
Inventory provisions	(13)	—	—
Revenue recognition	(1)	—	—
Environmental remediation costs	(27)	—	—
Other items	9	28	(17)
Grant of put option to Syngenta AG shareholders	(60)	—	—
Valuation allowance against deferred tax assets	—	26	(34)
Income tax on undistributed earnings of subsidiaries	1	1	(27)
Deferred tax effect of US GAAP adjustments	46	27	(55)
Net income/(loss) reported under US GAAP	504	556	352

Source: 2005 US SEC Form 20-F.

Now that reconciliation disclosures are no longer generally available, an analyst comparing two companies that use different reporting standards must be aware of areas where accounting standards have not converged. For example, data from 2006 SEC reconciliations (the last year available) indicated that pensions and goodwill were the dominant IFRS-to-US GAAP reconciliation items for European companies that listed their stock on an exchange

in the United States.[34] In most cases, a user of financial statements prepared under different accounting standards will no longer have enough information to make specific adjustments required to achieve comparability. Instead, an analyst must maintain general caution in interpreting comparative financial measures produced under different accounting standards and monitor significant developments in financial reporting standards.

8. MONITORING DEVELOPMENTS IN FINANCIAL REPORTING STANDARDS

In studying financial reporting and financial statement analysis in general, the analyst must be aware that reporting standards are evolving rapidly. Analysts need to monitor ongoing developments in financial reporting and assess their implications for security analysis and valuation. The need to monitor developments in financial reporting standards does not mean that analysts should be accountants. An accountant monitors these developments from a preparer's perspective; an analyst needs to monitor from a user's perspective. More specifically, analysts need to know how these developments will affect financial reports.

Analysts can remain aware of developments in financial reporting standards by monitoring three areas: new products or transactions, actions of standard setters and other groups representing users of financial statements (such as CFA Institute), and company disclosures regarding critical accounting policies and estimates.

8.1. New Products or Types of Transactions

New products and new types of transactions can have unusual or unique elements to them such that no explicit guidance in the financial reporting standards exists. New products or transactions typically arise from economic events, such as new businesses (e.g., the internet), or from a newly developed financial instrument or financial structure. Financial instruments, whether exchange traded or not, are typically designed to enhance a company's business or to mitigate inherent risks. However, at times, financial instruments or structured transactions have been developed primarily for purposes of financial report "window dressing."

Although companies might discuss new products and transactions in their financial reports, the analyst can also monitor business journals and the capital markets to identify such items. Additionally, when one company in an industry develops a new product or transaction, other companies in the industry often do the same. Once new products, financial instruments, or structured transactions are identified, it is helpful to gain an understanding of the business purpose. If necessary, an analyst can obtain further information from a company's management, which should be able to describe the economic purpose, the financial statement reporting, significant estimates, judgments applied in determining the reporting, and future cash flow implications for these items. The financial reporting framework described here is useful in evaluating the potential effect on financial statements even though a standard may not have been issued as to how to report a particular transaction.

[34] Henry, Lin, and Yang, "The European-US 'GAAP Gap': IFRS to US GAAP Form 20-F Reconciliations," *Accounting Horizons* 23, no. 2 (2009): 121–150.

8.2. Evolving Standards and the Role of CFA Institute

The actions of standard setters and regulators are unlikely to be helpful in identifying new products and transactions, given the lag between new product development and regulatory action. Monitoring the actions of these authorities is nonetheless important for another reason: Changes in regulations can affect companies' financial reports and, thus, valuations. This is particularly true if the financial reporting standards change to require more explicit identification of matters affecting asset/liability valuation or financial performance. For example, one relatively recent regulatory change requires companies to report the value of employee stock options as an expense in the income statement. Prior to the required expensing, an analyst could assess the impact of stock options on a company's performance and the dilutive effect to shareholders by reviewing information disclosed in the notes to the financial statements. As another example, the current standard-setting project on leases will likely result in explicitly recognizing on the balance sheet the assets and liabilities associated with certain types of leases; currently, that lease information is available only in the notes. To the extent that some market participants do not examine financial statement details and thus ignore some items when valuing a company's securities, more explicit identification could affect the value of the company's securities. Additionally, it is plausible to believe that management is more attentive to and rigorous in any calculations/estimates of items that appear in the financial statements, compared to items that are only disclosed in the notes.

The IASB and FASB have numerous major projects underway that will most likely result in new standards. It is important to keep up to date on these evolving standards. The IASB (www.iasb.org) and FASB (www.fasb.org) provide a great deal of information on their websites regarding new standards and proposals for future changes in standards. In addition, the IASB and FASB seek input from the financial analyst community—those who regularly use financial statements in making investment and credit decisions. When a new standard is proposed, an exposure draft is made available and users of financial statements can draft comment letters and position papers for submission to the IASB and FASB in order to evaluate the proposal.

CFA Institute is active in advocating improvements to financial reporting, through its Standards and Financial Market Integrity Division. Volunteer members of CFA Institute serve on several liaison committees that meet regularly to make recommendations to the IASB and FASB on proposed standards and to draft comment letters and position papers. The comment letters and position papers of these groups on financial reporting issues are available at www.cfainstitute.org/ethics/topics/pages/index.aspx.

CFA Institute issued a position paper titled *A Comprehensive Business Reporting Model: Financial Reporting for Investors*, which provides a suggested model for significantly improving financial reporting. The position paper, issued in 2007, states:

> Corporate financial statements and their related disclosures are fundamental to sound investment decision making. The well-being of the world's financial markets, and of the millions of investors who entrust their financial present and future to those markets, depends directly on the information financial statements and disclosures provide. Consequently, the quality of the information drives global financial markets. The quality, in turn, depends directly on the principles and standards managers apply when recognizing and measuring the economic activities and events affecting their companies' operations. . . .
>
> Investors require timeliness, transparency, comparability, and consistency in financial reporting. Investors have a preference for decision relevance over reliability. As

> CFA Institute stated in 1993 and as reiterated in this paper, "analysts need to know economic reality—what is really going on—to the greatest extent it can be depicted by accounting numbers." Corporate financial statements that fail to reflect this economic reality undermine the investment decision-making process.[35]

Among other principles, the proposed model stresses the importance of information regarding the current fair value of assets and liabilities, of neutrality in financial reporting, and of providing detailed information on cash flows to investors through the choice of the so-called direct format for the cash flow statement.[36]

In summary, analysts can improve their investment decision making by keeping current on financial reporting standards, and various web-based sources provide the means to do so. In addition, analysts can contribute to improving financial reporting by sharing their perspective as users with standard-setting bodies, which typically invite comments concerning proposed changes.

8.3. Company Disclosures

A good source for obtaining information regarding the effect of financial reporting standards on a company's financial statements is typically the company itself. This information is provided in the notes to the financial statements and accompanying discussion.

8.3.1. Disclosures Relating to Critical and Significant Accounting Policies

As noted earlier, financial reporting standards need to restrict alternatives but retain flexibility in allowing enterprises to match their accounting methods with underlying economics. As a result, companies choose among alternative accounting policies (e.g., depreciation methods) and use estimates (e.g., depreciable lives of assets). Under both IFRS and US GAAP, companies are required to disclose their accounting policies and estimates in the notes to the financial statements. Companies also discuss in the management commentary (or the management's discussion and analysis, MD&A) those policies that management deems most important. Although many of the policies are discussed in both the management commentary and the notes to the financial statement, there is typically a distinction between the two discussions. The management commentary generally relates to aspects of the accounting policies deemed important by management to understand the financial statements, particularly changes. The MD&A disclosure relates to those policies that require significant judgments and estimates, whereas the note discusses all accounting policies, irrespective of whether judgment was required. Each disclosure has value.

In analyzing financial reporting disclosures, the following questions should be addressed:

- What policies have been discussed?
- Do these policies appear to cover all of the significant balances on the financial statements?
- Which policies are identified as requiring significant estimates?
- Have there been any changes in these disclosures from one year to the next?

Exhibit 8 summarizes the accounting policies discussed in the management report section of Volkswagen's annual report.

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[35] *A Comprehensive Business Reporting Model: Financial Reporting for Investors*, CFA Institute Centre for Financial Market Integrity, July 2007, p. 1, 2.

[36] See the chapter on cash flow statements for further information on the direct format.

EXHIBIT 8 Accounting Policy Discussion in Volkswagen's Management Report

Volkswagen's management report includes the following discussion of accounting policies:

> The application of IFRS 8 led to a reclassification of the segments disclosed in the notes. The following segments are now reported: Passenger Cars and Light Commercial Vehicles, Scania, and Volkswagen Financial Services. The classification of the Group's activities into the Automotive and Financial Services divisions remains unchanged in the management report.
>
> In accordance with the amended IAS 7, as of fiscal year 2009 we are reporting liquidity movements resulting from changes in leasing and rental assets in cash flows from operating activities (previously reported in cash flows from investing activities). Accordingly, changes in financial services receivables are also allocated to cash flows from operating activities. The prior-year presentation has been adjusted accordingly.
>
> The adoption of new or amended accounting standards did not otherwise materially affect the 2009 consolidated financial statements.

Source: Volkswagen's 2009 Annual Report, page 144.

Exhibit 9 lists the items discussed in the note titled "Accounting Policies" in Volkswagen's notes to the financial statements. Note that far more items are described in the notes to the financial statements as compared to the management's commentary, illustrating the broader disclosure of the notes.

EXHIBIT 9 Accounting Policies Described in Volkswagen's Financial Statement Notes

- Intangible assets
- Property, plant, and equipment
- Leasing and rental assets
- Investment property
- Capitalization of borrowing costs
- Equity-accounted investments
- Financial instruments
- Loans and receivables and financial liabilities
- Available-for-sale financial assets
- Derivatives and hedge accounting
- Receivables from finance leases
- Other receivables and financial assets
- Impairment losses on financial instruments
- Deferred taxes
- Inventories
- Non-current assets held for sale and discontinued operations
- Pension provisions
- Provisions for taxes
- Other provisions
- Liabilities
- Revenue and expense recognition

8.3.2. Disclosures Regarding Changes in Accounting Policies

Companies must disclose information about changes in accounting policies. Such changes can occur as a result of initially applying a new accounting standard or as a result of the company voluntarily changing which policy it uses (among those allowable). In addition, IFRS require discussion about pending implementations of new standards and the known or estimable information relevant to assessing the impact of the new standards.[37] These disclosures can alert an analyst to significant changes in reported financial statement amounts that could affect security valuation. Although each discussion will be different, the conclusions that a company can reach about a new standard not yet implemented include:

1. the standard does not apply;
2. the standard will have no material impact;
3. management is still evaluating the impact; or
4. the impact of adoption is discussed.

Clearly, disclosures indicating the expected impact provide the most meaningful information. In addition, disclosures indicating that the standard does not apply or will not have a material effect are also helpful. However, disclosures indicating that management is still evaluating the impact of a new standard create some uncertainty about whether the change might materially affect the company.

In addition to the disclosures referred to in Exhibits 8 and 9, Volkswagen also provided extensive disclosures about recently issued accounting standards in its 2009 Annual Report. The company confirmed it had adopted all accounting pronouncements required to be applied starting in fiscal year 2009, stated the impact of four new or revised standards, and listed nine other standards that had no material effect on the company's financial reports. In addition, Volkswagen provided a table summarizing standards that had been adopted by the IASB but were not required to be applied for fiscal year 2009. The table listed 17 specific standards changes, of which the company expected 14 to have no impact and the other three to result in non-quantified changes in disclosures or presentations.

In some cases, companies are able to quantify the expected impact of accounting standards that have been changed but are not yet effective at the time of the company's report. As an example of quantified disclosures about accounting changes that would have a future effect on a company's financial statements, consider the disclosures in Exhibit 10.

EXHIBIT 10 Impact of New and Amended Accounting Standards: General Electric

In its 2009 annual report filed with the SEC in February 2010, General Electric (which reports under US GAAP) included disclosures in its MD&A about an accounting change that would require consolidation of certain entities that previously had not been consolidated. The acronym ASU stands for "Accounting Standards Update" and is the means by which the FASB communicates changes to US GAAP following the Financial Standards Codification in 2009.

(*continued*)

[37] IAS No. 8, Accounting Policies, *Changes in Accounting Estimates and Errors*.

EXHIBIT 10 (Continued)

The acronym ASC stands for "Accounting Standards Codification" and refers to a particular section of the Codification.

> In 2009, the FASB issued ASU 2009–16 and ASU 2009–17, which amended ASC 860, *Transfers and Servicing*, and ASC 810, *Consolidation*, respectively, and are effective for us on January 1, 2010. . .
>
> Upon adoption of the amendments on January 1, 2010, we will consolidate the assets and liabilities of these entities at the amount they would have been reported in our financial statements had we always consolidated them. We will also deconsolidate certain entities where we do not meet the definition of the primary beneficiary under the revised guidance, the effect of which will be insignificant. The incremental effect of consolidation on total assets and liabilities, net of our investment in these entities, will be an increase of approximately $32 billion and $34 billion, respectively. There also will be a net reduction of equity of approximately $2 billion, principally related to the reversal of previously recognized securitization gains as a cumulative effect adjustment to retained earnings, which will be earned back over the life of the assets.

Source: General Electric 2009 Annual Report.

An analyst could use these disclosures to adjust expectations about the company's assets, liabilities, and equity, and confirm the impact (which in this case appear to be minimal) on the company's leverage ratios. Importantly, because these disclosures relate to expected changes, the analyst could incorporate these disclosures into forecasts of financial statements.

9. SUMMARY

An awareness of the reporting framework underlying financial reports can assist in security valuation and other financial analysis. The framework describes the objectives of financial reporting, desirable characteristics for financial reports, the elements of financial reports, and the underlying assumptions and constraints of financial reporting. An understanding of the framework, which is broader than knowledge of a particular set of rules, offers an analyst a basis from which to infer the proper financial reporting, and thus security valuation implications, of *any* financial statement element or transaction. The chapter discusses the conceptual objectives of financial reporting standards, the parties involved in standard-setting processes, and how financial reporting standards are converging into one global set of standards.

Some key points of the chapter are summarized below:

- *The Objective of Financial Reporting*:
  - The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity. Those

decisions involve buying, selling, or holding equity and debt instruments, and providing or settling loans and other forms of credit.[38]
  - Financial reporting requires policy choices and estimates. These choices and estimates require judgment, which can vary from one preparer to the next. Accordingly, standards are needed to ensure increased consistency in these judgments.
- *Financial Reporting Standard-Setting Bodies and Regulatory Authorities*: Private sector standard-setting bodies and regulatory authorities play significant but different roles in the standard-setting process. In general, standard-setting bodies make the rules, and regulatory authorities enforce the rules. However, regulators typically retain legal authority to establish financial reporting standards in their jurisdiction.
- *Convergence of Global Financial Reporting Standards*: The IASB and FASB, along with other standard setters, are working to achieve convergence of financial reporting standards. Many countries have adopted or permit the use of IFRS, have indicated that they will adopt IFRS in the future, or have indicated that they are working on convergence with IFRS. Listed companies in many countries are adopting IFRS. Barriers and challenges to full convergence still exist.
- *The IFRS Framework*: The IFRS *Framework* sets forth the concepts that underlie the preparation and presentation of financial statements for external users, provides further guidance on the elements from which financial statements are constructed, and discusses concepts of capital and capital maintenance.
  - The objective of fair presentation of useful information is the center of the *Conceptual Framework* (*2010*). The qualitative characteristics of useful information include fundamental and enhancing characteristics. Information must exhibit the fundamental characteristics of relevance and faithful representation to be useful. The enhancing characteristics identified are comparability, verifiability, timeliness, and understandability.
  - The IFRS *Framework* identifies the following elements of financial statements: assets, liabilities, equity, income, expenses, and capital maintenance adjustments.
  - The *Conceptual Framework* (*2010*) is constructed based on the underlying assumptions of accrual basis and going concern and acknowledges the inherent constraint of benefit versus cost.
- *IFRS Financial Statements*: IAS No. 1 prescribes that a complete set of financial statements includes a statement of financial position (balance sheet), a statement of comprehensive income (either two statements—one for net income and one for comprehensive income—or a single statement combining both net income and comprehensive income), a statement of changes in equity, a cash flow statement, and notes. The notes include a summary of significant accounting policies and other explanatory information.
  - Financial statements need to reflect certain basic features: fair presentation, going concern, accrual basis, materiality and aggregation, no offsetting, and consistency.
  - Financial statements must be prepared at least annually and must include comparative information from the previous period.
  - Financial statements must follow certain presentation requirements including a classified balance sheet, minimum information on the face of the financial statements and in the notes.

[38] *Conceptual Framework for Financial Reporting (2010)*, International Accounting Standards Board, 2010, Chapter 1, OB2.

- *Characteristics of a Coherent Financial Reporting Framework*: Effective frameworks share three characteristics: transparency, comprehensiveness, and consistency. Effective standards can, however, differ on appropriate valuation bases, the basis for standard setting (principle or rules based), and resolution of conflicts between balance sheet and income statement focus.
- *Comparison of IFRS with Alternative Reporting Systems*: A significant number of the world's listed companies report under either IFRS or US GAAP.
  - Although these standards are moving toward convergence, there are still significant differences in the framework and individual standards.
  - In most cases, a user of financial statements will lack the information necessary to make specific adjustments required to achieve comparability between companies that use IFRS and companies that use US GAAP. Instead, an analyst must maintain general caution in interpreting comparative financial measures produced under different accounting standards and monitor significant developments in financial reporting standards.
- *Monitoring Developments*: Analysts can remain aware of ongoing developments in financial reporting by monitoring three areas: new products or types of transactions; actions of standard setters, regulators, and other groups; and company disclosures regarding critical accounting policies and estimates.

PROBLEMS

1. Which of the following is *most likely* not an objective of financial statements?
   A. To provide information about the performance of an entity.
   B. To provide information about the financial position of an entity.
   C. To provide information about the users of an entity's financial statements.
2. International financial reporting standards are currently developed by which entity?
   A. The IFRS Foundation.
   B. The International Accounting Standards Board.
   C. The International Organization of Securities Commissions.
3. US generally accepted accounting principles are currently developed by which entity?
   A. The Securities and Exchange Commission.
   B. The Financial Accounting Standards Board.
   C. The Public Company Accounting Oversight Board.
4. Which of the following statements about desirable attributes of accounting standards boards is *most* accurate? Accounting standards boards should:
   A. concede to political pressures.
   B. be guided by a well articulated framework.
   C. be adequately funded by companies to which the standards apply.
5. A core objective of the International Organization of Securities Commissions is to:
   A. eliminate systematic risk.
   B. protect users of financial statements.
   C. ensure that markets are fair, efficient, and transparent.

6. According to the *Conceptual Framework for Financial Reporting (2010)*, which of the following is *not* an enhancing qualitative characteristic of information in financial statements?
   A. Accuracy.
   B. Timeliness.
   C. Comparability.
7. Which of the following is *not* a constraint on the financial statements according to the *Conceptual Framework* (*2010*)?
   A. Understandability.
   B. Benefit versus cost.
   C. Balancing of qualitative characteristics.
8. The assumption that an entity will continue to operate for the foreseeable future is called:
   A. accrual basis.
   B. comparability.
   C. going concern.
9. The assumption that the effects of transactions and other events are recognized when they occur, not when the cash flows occur, is called:
   A. relevance.
   B. accrual basis.
   C. going concern.
10. Neutrality of information in the financial statements most closely contributes to which qualitative characteristic?
    A. Relevance.
    B. Understandability.
    C. Faithful representation.
11. Valuing assets at the amount of cash or equivalents paid or the fair value of the consideration given to acquire them at the time of acquisition most closely describes which measurement of financial statement elements?
    A. Current cost.
    B. Historical cost.
    C. Realizable value.
12. The valuation technique under which assets are recorded at the amount that would be received in an orderly disposal is:
    A. current cost.
    B. present value.
    C. realizable value.
13. Which of the following is *not* a required financial statement according to IAS No. 1?
    A. Statement of financial position.
    B. Statement of changes in income.
    C. Statement of comprehensive income.

14. Which of the following elements of financial statements is *most* closely related to measurement of performance?
    A. Assets.
    B. Expenses.
    C. Liabilities.
15. Which of the following elements of financial statements is *most* closely related to measurement of financial position?
    A. Equity.
    B. Income.
    C. Expenses.
16. Which of the following is *not* a characteristic of a coherent financial reporting framework?
    A. Timeliness.
    B. Consistency.
    C. Transparency.
17. Which of the following is *not* a recognized approach to standard-setting?
    A. A rules-based approach.
    B. An asset/liability approach.
    C. A principles-based approach.
18. Which of the following disclosures regarding new accounting standards provides the *most* meaningful information to an analyst?
    A. The impact of adoption is discussed.
    B. The standard will have no material impact.
    C. Management is still evaluating the impact.

CHAPTER 4

UNDERSTANDING INCOME STATEMENTS

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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- describe the components of the income statement and alternative presentation formats of that statement;
- describe general principles of revenue recognition and accrual accounting, specific revenue recognition applications (including accounting for long-term contracts, installment sales, barter transactions, gross and net reporting of revenue), and implications of revenue recognition principles for financial analysis;
- calculate revenue given information that might influence the choice of revenue recognition method;
- describe general principles of expense recognition, specific expense recognition applications, and implications of expense recognition choices for financial analysis;
- describe the financial reporting treatment and analysis of non-recurring items (including discontinued operations, extraordinary items, unusual or infrequent items) and changes in accounting standards;
- distinguish between the operating and non-operating components of the income statement;
- describe how earnings per share is calculated and calculate and interpret a company's earnings per share (both basic and diluted earnings per share) for both simple and complex capital structures;
- distinguish between dilutive and antidilutive securities, and describe the implications of each for the earnings per share calculation;
- convert income statements to common-size income statements;
- evaluate a company's financial performance using common-size income statements and financial ratios based on the income statement;
- describe, calculate, and interpret comprehensive income;
- describe other comprehensive income, and identify major types of items included in it.

1. INTRODUCTION

The income statement presents information on the financial results of a company's business activities over a period of time. The income statement communicates how much revenue the company generated during a period and what costs it incurred in connection with generating that revenue. The basic equation underlying the income statement, ignoring gains and losses, is Revenue minus Expenses equals Net income. The income statement is also sometimes referred to as the "statement of operations," "statement of earnings," or "profit and loss (P&L) statement." Under International Financial Reporting Standards (IFRS), the income statement may be presented as a separate statement followed by a statement of comprehensive income that begins with the profit or loss from the income statement or as a section of a single statement of comprehensive income.[1] Under US generally accepted accounting principles (US GAAP), the income statement may be presented as a separate statement or as a section of a single statement of income and comprehensive income.[2] This chapter focuses on the income statement, but also discusses comprehensive income (profit or loss from the income statement plus other comprehensive income).

Investment analysts intensely scrutinize companies' income statements.[3] Equity analysts are interested in them because equity markets often reward relatively high- or low-earnings growth companies with above-average or below-average valuations, respectively, and because inputs into valuation models often include estimates of earnings. Fixed-income analysts examine the components of income statements, past and projected, for information on companies' abilities to make promised payments on their debt over the course of the business cycle. Corporate financial announcements frequently emphasize information reported in income statements, particularly earnings, more than information reported in the other financial statements.

This chapter is organized as follows: Section 2 describes the components of the income statement and its format. Section 3 describes basic principles and selected applications related to the recognition of revenue, and Section 4 describes basic principles and selected applications related to the recognition of expenses. Section 5 covers non-recurring items and non-operating items. Section 6 explains the calculation of earnings per share. Section 7 introduces income statement analysis, and Section 8 explains comprehensive income and its reporting. A summary of the key points and practice problems in the CFA Institute multiple choice format complete the chapter.

[1] The International Accounting Standards Board (IASB) issues International Financial Reporting Standards (IFRS), which have been adopted as the accounting standards in many countries in the world. International Accounting Standard (IAS) 1, *Presentation of Financial Statements*, establishes the presentation and minimum content requirements of financial statements and guidelines for the structure of financial statements.

[2] The single authoritative source of US GAAP is the Financial Accounting Standards Board (FASB) Accounting Standards Codification™ (FASB ASC). FASB ASC Section 220-10-45 [Comprehensive Income–Overall–Other Presentation Matters] discusses acceptable formats in which to present income, other comprehensive income, and comprehensive income.

[3] In this chapter, the term *income statement* will be used to describe either the separate statement that reports profit or loss used for earnings per share calculations or that section of a statement of comprehensive income that reports the same profit or loss.

2. COMPONENTS AND FORMAT OF THE INCOME STATEMENT

On the top line of the income statement, companies typically report revenue. **Revenue** generally refers to amounts charged (and expected to be received) for the delivery of goods or services in the *ordinary activities* of a business. The term **net revenue** means that the revenue number is reported after adjustments (e.g., for cash or volume discounts, or for estimated returns). Revenue may be called sales or turnover.[4] Exhibits 1 and 2 show the income statements for Groupe Danone (Euronext Paris: BN), a French food manufacturer, and Kraft Foods (NYSE:KFT), a US food manufacturer.[5] For the year ended 31 December 2009, Danone reports €14.98 billion of net revenue, whereas Kraft reports $40.39 billion of net revenue.

EXHIBIT 1 Groupe Danone Consolidated Income Statement (in Millions of Euros)

	Year Ended 31 December	
	2008	2009
Net revenue	15,220	14,982
Cost of goods sold	(7,172)	(6,749)
Selling expenses	(4,197)	(4,212)
General and administrative expenses	(1,297)	(1,356)
Research and development expenses	(198)	(206)
Other revenue (expense)	(86)	(165)
Trading operating income	**2,270**	**2,294**
Other operating income (expense)	(83)	217
Operating income	**2,187**	**2,511**
Interest revenue	58	76
Interest expense	(497)	(340)
Cost of net debt	(439)	(264)
Other financial revenue (expense)	(145)	(225)
Income before tax	**1,603**	**2,022**
Income tax	(443)	(424)
Income from fully consolidated companies	**1,160**	**1,598**
Share of profits of associates	62	(77)
Net income from continuing operations	**1,222**	**1,521**
Net income from discontinued operations	269	—
NET INCOME	**1,491**	**1,521**
Attributable to the Group	1,313	1,361
Attributable to minority interests	178	160

[4] **Sales** is sometimes understood to refer to the sale of goods, whereas *revenue* can include the sale of goods or services; however, the terms are often used interchangeably. In some countries, such as South Africa, turnover may be used in place of revenue. For an example of this, the reader can look at the Sasol (JSE: SOL) Annual Financial Statements 2009.

[5] Following net income, the income statement will also present **earnings per share**, the amount of earnings per common share of the company. Earnings per share will be discussed in detail later in this chapter, and the per-share display has been omitted from these exhibits to focus on the core income statement.

EXHIBIT 2 Kraft Foods and Subsidiaries Consolidated Statements of Earnings (in Millions of Dollars, except Per-Share Data)

	Year Ended 31 December		
	2009	2008	2007
Net revenues	$40,386	$41,932	$35,858
Cost of sales	25,786	28,088	23,656
Gross profit	14,600	13,844	12,202
Marketing, administration, and research costs	9,108	8,862	7,587
Asset impairment and exit costs	(64)	1,024	440
(Gains)/Losses on divestitures, net	6	92	(14)
Amortisation of intangibles	26	23	13
Operating income	5,524	3,843	4,176
Interest and other expense, net	1,237	1,240	604
Earnings from continuing operations before income taxes	4,287	2,603	3,572
Provision for income taxes	1,259	755	1,080
Earnings from continuing operations	3,028	1,848	2,492
Earnings and gain from discontinued operations, net of income taxes (Note 2)	—	1,045	232
Net earnings	3,028	2,893	2,724
Non-controlling interest	7	9	3
Net earnings attributable to Kraft Foods	$ 3,021	$ 2,884	$ 2,721

Note that Danone lists the years in increasing order from left to right with the most recent year in the right-most column, whereas Kraft lists the years in decreasing order with the most recent year listed in the left-most column. Different orderings of chronological information are common. Differences in presentations of items, such as expenses, are also common. **Expenses** reflect outflows, depletions of assets, and incurrences of liabilities in the course of the activities of a business. Expenses may be grouped and reported in different formats, subject to some specific requirements. For example, Danone reports research and development expenses as a separate line item whereas Kraft combines research costs with marketing and administration costs and reports the total in a single line item.

Another difference is how the companies indicate that an amount on the income statement results in a reduction in net income. Danone shows expenses, such as cost of goods sold and selling expenses, in parentheses to explicitly indicate that these are subtracted from revenue and reduce net income. Kraft, on the other hand, does not place cost of sales in parentheses. Rather, Kraft assumes that the user implicitly understands that this is an expense and is subtracted in arriving at gross profit, subtotals such as operating earnings, and, ultimately, in net income. In general, companies may or may not enclose an amount in parentheses (or use a negative sign) to indicate that it is a reduction in net income. Furthermore, within a list of items that normally reduce net income, an item that increases net income may be shown as a negative. In this case, the item is actually added rather than subtracted in calculating net income. In summary, because there is flexibility in how companies may present the income statement, the analyst should always verify the order of years, how expenses are grouped and reported, and how to treat items presented as negatives.

At the bottom of the income statement, companies report net income (companies may use other terms such as "net earnings" or "profit or loss"). For 2009, Danone reports €1,521 million of net income and Kraft reports $3,028 million of net earnings. Net income is often referred to as the "bottom line." The basis for this expression is that net income is the final—or bottom—line item in an income statement. Because net income is often viewed as the single most relevant number to describe a company's performance over a period of time, the term "bottom line" sometimes is used in business to refer to any final or most relevant result.

Despite this customary terminology, note that the companies both present another item below net income: information about how much of that net income is attributable to the company itself and how much of that income is attributable to minority interests, or non-controlling interests. Danone and Kraft both consolidate subsidiaries over which they have control. Consolidation means that they include all of the revenues and expenses of the subsidiaries even if they own less than 100 percent. Minority interest represents the portion of income that "belongs" to minority shareholders of the consolidated subsidiaries, as opposed to the parent company itself. For Danone, €1,361 million of the net income amount is attributable to shareholders of Groupe Danone and €160 million is attributable to minority interests. For Kraft, $3,021 million of the net earnings amount is attributable to the shareholders of Kraft Foods and $7 million is attributable to the non-controlling interest.

Net income also includes **gains** and **losses,** which are increases and decreases in economic benefits, respectively, which may or may not arise in the ordinary activities of the business. For example, when a manufacturing company sells its products, these transactions are reported as revenue, and the costs incurred to generate these revenues are expenses and are presented separately. However, if a manufacturing company sells surplus land that is not needed, the transaction is reported as a gain or a loss. The amount of the gain or loss is the difference between the carrying value of the land and the price at which the land is sold. For example, in Exhibit 2, Kraft reports a loss (proceeds, net of carrying value) of $6 million on divestitures in fiscal 2009. Kraft discloses in the notes to consolidated financial statements that the assets sold included a nutritional energy bar operation in the United States, a juice operation in Brazil, and a plant in Spain.

The definition of income encompasses both revenue and gains and the definition of expenses encompasses both expenses that arise in the ordinary activities of the business and losses.[6] Thus, **net income** (profit or loss) can be defined as: a) income minus expenses, or equivalently b) revenue plus other income plus gains minus expenses, or equivalently c) revenue plus other income plus gains minus expenses in the ordinary activities of the business minus other expenses, and minus losses. The last definition can be rearranged as follows: net income equals (i) revenue minus expenses in the ordinary activities of the business, plus (ii) other income minus other expenses, plus (iii) gains minus losses.

In addition to presenting the net income, income statements also present items, including subtotals, which are significant to users of financial statements. Some of the items are specified by IFRS but other items are not specified.[7] Certain items, such as revenue, finance costs, and tax expense, are required to be presented separately on the face of the income statement. IFRS additionally require that line items, headings, and subtotals relevant to understanding the entity's financial performance should be presented even if not specified. Expenses may be grouped together either by their nature or function. Grouping together expenses such as depreciation

[6]IASB *Framework for the Preparation and Presentation of Financial Statements*, paragraphs 74 to 80.

[7]Requirements are presented in IAS 1, *Presentation of Financial Statements.*

on manufacturing equipment and depreciation on administrative facilities into a single line item called "depreciation" is an example of a **grouping by nature** of the expense. An example of **grouping by function** would be grouping together expenses into a category such as cost of goods sold, which may include labour and material costs, depreciation, some salaries (e.g., salespeople's), and other direct sales-related expenses.[8] Both Danone and Kraft present their expenses by function, which is sometimes referred to "cost of sales" method.

One subtotal often shown in an income statement is **gross profit** or **gross margin** (that is revenue less cost of sales). When an income statement shows a gross profit subtotal, it is said to use a **multi-step format** rather than a **single-step format**. The Kraft Foods income statement is an example of the multi-step format, whereas the Groupe Danone income statement is in a single-step format. For manufacturing and merchandising companies, gross profit is a relevant item and is calculated as revenue minus the cost of the goods that were sold. For service companies, gross profit is calculated as revenue minus the cost of services that were provided. In summary, gross profit is the amount of revenue available after subtracting the costs of delivering goods or services. Other expenses related to running the business are subtracted after gross profit.

Another important subtotal which may be shown on the income statement is **operating profit** (or, synonymously, operating income). Operating profit results from deducting operating expenses such as selling, general, administrative, and research and development expenses from gross profit. Operating profit reflects a company's profits on its usual business activities before deducting taxes, and for non-financial companies, before deducting interest expense. For financial companies, interest expense would be included in operating expenses and subtracted in arriving at operating profit because it relates to the operating activities for such companies. For some companies composed of a number of separate business segments, operating profit can be useful in evaluating the performance of the individual business segments, because interest and tax expenses may be more relevant at the level of the overall company rather than an individual segment level. The specific calculations of gross profit and operating profit may vary by company, and a reader of financial statements can consult the notes to the statements to identify significant variations across companies.

Operating profit is sometimes referred to as EBIT (earnings before interest and taxes). However, operating profit and EBIT are not necessarily the same. Note that in both Exhibits 1 and 2, interest and taxes do not represent the only differences between earnings (net income, net earnings) and operating income. For example, both companies separately report some income from discontinued operations.

Exhibit 3 shows an excerpt from the income statement of CRA International (NASDAQ GS: CRAI), a company providing management consulting services. Accordingly, CRA deducts cost of services (rather than cost of goods) from revenues to derive gross profit. CRA's fiscal year ends on the last Saturday in November, and periodically (for example in 2008) its fiscal year will contain 53 weeks rather than 52 weeks. Although the extra week is likely immaterial in computing year-to-year growth rates, it may have a material impact on a quarter containing the extra week. In general, an analyst should be alert to the effect of an extra week when making historical comparisons and forecasting future performance.

[8] Later chapters will provide additional information about alternative methods to calculate cost of goods sold.

EXHIBIT 3 CRA International Inc. Consolidated Statements of Income (Excerpt) (in Thousands of Dollars, except Per-Share Data)

	Year Ended		
	28 Nov 2009 (52 weeks)	29 Nov 2008 (53 weeks)	24 Nov 2007 (52 weeks)
Revenues	$301,639	$376,751	$394,645
Costs of services	199,861	251,263	248,514
Gross profit	101,778	125,488	146,131
Selling, general, and administrative expenses	76,124	92,797	90,079
Depreciation and amortisation	8,521	12,699	9,782
Income from operations	$ 17,133	$ 19,992	$ 46,270

Note: Remaining items omitted

Exhibits 1, 2, and 3 illustrate basic points about the income statement, including variations across the statements—some of which depend on the industry and/or country, and some of which reflect differences in accounting policies and practices of a particular company. In addition, some differences within an industry are primarily differences in terminology, whereas others are more fundamental accounting differences. Notes to the financial statements are helpful in identifying such differences.

Having introduced the components and format of an income statement, the next objective is to understand the actual reported numbers in it. To accurately interpret reported numbers, the analyst needs to be familiar with the principles of revenue and expense recognition—that is, how revenue and expenses are measured and attributed to a given accounting reporting period.

3. REVENUE RECOGNITION

Revenue is the top line in an income statement, so we begin the discussion of line items in the income statement with revenue recognition. A first task is to explain some relevant accounting terminology.

The terms revenue, sales, gains, losses, and net income (profit, net earnings) have been briefly defined. The IASB *Framework for the Preparation and Presentation of Financial Statements* (referred to hereafter as "the Framework") further defines and discusses these income statement items. The *Framework* explains that profit is a frequently used measure of performance and is composed of income and expenses.[9] It defines **income** as follows:

> Income is increases in economic benefits during the accounting period in the form of inflows or enhancements of assets or decreases of liabilities that result in increases in equity, other than those relating to contributions from equity participants.[10]

[9] IASB *Framework for the Preparation and Presentation of Financial Statements (1989)*, paragraph 69. The text on the elements of financial statements and their recognition and measurement is the same in the 1989 *Framework* and the IASB *Conceptual Framework for Financial Reporting (2010).*

[10] Ibid., paragraph 70.

In IFRS, the term "income" includes revenue and gains. Gains are similar to revenue, but they typically arise from secondary or peripheral activities rather than from a company's primary business activities. For example, for a restaurant, the sale of surplus restaurant equipment for more than its carrying value is referred to as a gain rather than as revenue. Similarly, a loss typically arises from secondary activities. Gains and losses may be considered part of operating activities (e.g., a loss due to a decline in the value of inventory) or may be considered part of non-operating activities (e.g., the sale of non-trading investments).

In the following simple hypothetical scenario, revenue recognition is straightforward: a company sells goods to a buyer for cash and does not allow returns, so the company recognizes revenue when the exchange of goods for cash takes place and measures revenue at the amount of cash received. In practice, however, determining when revenue should be recognized and at what amount is considerably more complex for reasons discussed in the following sections.

3.1. General Principles

An important aspect concerning revenue recognition is that it can occur independently of cash movements. For example, assume a company sells goods to a buyer on credit, so does not actually receive cash until some later time. A fundamental principle of accrual accounting is that revenue is recognized (reported on the income statement) when it is earned, so the company's financial records reflect revenue from the sale when the risk and reward of ownership is transferred; this is often when the company delivers the goods or services. If the delivery was on credit, a related asset, such as trade or accounts receivable, is created. Later, when cash changes hands, the company's financial records simply reflect that cash has been received to settle an account receivable. Similarly, there are situations when a company receives cash in advance and actually delivers the product or service later, perhaps over a period of time. In this case, the company would record a liability for **unearned revenue** when the cash is initially received, and revenue would be recognized as being earned over time as products and services are delivered. An example would be a subscription payment received for a publication that is to be delivered periodically over time.

When to recognize revenue (when to report revenue on the income statement) is a critical issue in accounting.[11] IFRS specify that revenue from the sale of goods is to be recognized (reported on the income statement) when the following conditions are satisfied:[12]

- the entity has transferred to the buyer the significant risks and rewards of ownership of the goods;
- the entity retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;
- the amount of revenue can be measured reliably;
- it is probable that the economic benefits associated with the transaction will flow to the entity; and
- the costs incurred or to be incurred in respect of the transaction can be measured reliably.

In simple words, this basically says revenue is recognized when the seller no longer bears risks with respect to the goods (for example, if the goods were destroyed by fire, it would be a

[11] In June 2010, IASB and FASB issued a joint proposal for a standard on revenue recognition. If adopted, there will be a single revenue recognition standard for IFRS and US GAAP. The standards in this chapter are those in effect 30 June 2010 and do not reflect the proposed standard.

[12] IAS No. 18, *Revenue*, paragraph 14.

loss to the purchaser), the seller cannot tell the purchaser what to do with the goods, the seller knows what it expects to collect and is reasonably certain of collection, and the seller knows how much the goods cost.

IFRS note that the transfer of the risks and rewards of ownership normally occurs when goods are delivered to the buyer or when legal title to goods transfers. However, as noted by the above remaining conditions, physical transfer of goods will not always result in the recognition of revenue. For example, if goods are delivered to a retail store to be sold on consignment and title is not transferred, the revenue would not yet be recognized.[13]

IFRS specify similar criteria for recognizing revenue for the rendering of services.[14] When the outcome of a transaction involving the rendering of services can be estimated reliably, revenue associated with the transaction shall be recognized by reference to the stage of completion of the transaction at the balance sheet date. The outcome of a transaction can be estimated reliably when all the following conditions are satisfied:

- the amount of revenue can be measured reliably;
- it is probable that the economic benefits associated with the transaction will flow to the entity;
- the stage of completion of the transaction at the balance sheet date can be measured reliably; and
- the costs incurred for the transaction and the costs to complete the transaction can be measured reliably.

IFRS criteria for recognizing interest, royalties, and dividends are that it is probable that the economic benefits associated with the transaction will flow to the entity and the amount of the revenue can be reliably measured.

US GAAP[15] specify that revenue should be recognized when it is "realized or realizable and earned." The US Securities and Exchange Commission (SEC),[16] motivated in part because of the frequency with which overstating revenue occurs in connection with fraud and/or misstatements, provides guidance on how to apply the accounting principles. This guidance lists four criteria to determine when revenue is realized or realizable and earned:

1. There is evidence of an arrangement between buyer and seller. For instance, this would disallow the practice of recognizing revenue in a period by delivering the product just before the end of an accounting period and then completing a sales contract *after* the period end.
2. The product has been delivered, or the service has been rendered. For instance, this would preclude revenue recognition when the product has been shipped but the *risks and rewards of ownership have not actually passed* to the buyer.
3. The price is determined, or determinable. For instance, this would preclude a company from recognizing revenue that is based on some *contingency*.
4. The seller is reasonably sure of collecting money. For instance, this would preclude a company from recognizing revenue when the customer is *unlikely to pay*.

[13] IAS 18 IE describes a "consignment sale" as one in which the recipient undertakes to sell the goods on behalf of the shipper (seller). Revenue is recognized by the shipper when the recipient sells the goods to a third party. IAS 18 IE, *Illustrative Examples*, paragraph 2.

[14] IAS No. 18, *Revenue*, paragraph 20.

[15] FASB ASC Section 605-10-25 [Revenue Recognition-Overall-Recognition].

[16] The content of SEC Staff Accounting Bulletin 101 is contained in FASB ASC Section 605-10-S99 [Revenue Recognition–Overall–SEC Materials].

Companies must disclose their revenue recognition policies in the notes to their financial statements (sometimes referred to as footnotes). Analysts should review these policies carefully to understand how and when a company recognizes revenue, which may differ depending on the types of product sold and services rendered. Exhibit 4 presents a portion of the summary of significant accounting policies note that discusses revenue recognition for DaimlerChrysler (DB-F: DAI) from its 2009 annual report, prepared under IFRS.

EXHIBIT 4 Excerpt from DaimlerChrysler Notes

> Revenue from sales of vehicles, service parts and other related products is recognized when the risks and rewards of ownership of the goods are transferred to the customer, the amount of revenue can be estimated reliably and collectability is reasonably assured. Revenue is recognized net of discounts, cash sales incentives, customer bonuses and rebates granted.
>
> Daimler uses price discounts in response to a number of market and product factors, including pricing actions and incentives offered by competitors, the amount of excess industry production capacity, the intensity of market competition and consumer demand for the product. The Group may offer a variety of sales incentive programs at any point in time, including cash offers to dealers and consumers, lease subsidies which reduce the consumers' monthly lease payment, or reduced financing rate programs offered to consumers.

An analyst comparing Daimler with another company would likely want to ensure that revenue recognition policies are similar. For example, Daimler notes that it recognizes its revenue net of certain items. Does the comparison company deduct the same items from revenue? Exhibit 5 presents excerpts from the 2009 annual report's notes to the financial statements of Ford Motor Company (NYSE:F) prepared under US GAAP. In Ford's Note 2, Summary of Accounting Policies, the section titled *revenue recognition* mentions the criteria and timing of revenue recognition, but not the recognition of revenue net of certain items. In a subsequent section of Note 2, Ford states that its marketing incentives are recognized as revenue reductions. A comparison of the disclosed revenue recognition policies suggests that the companies do have similar revenue recognition policies despite minor differences in presentation.

EXHIBIT 5 Excerpt from Ford Motor Company Notes

> **Revenue Recognition — Automotive Sector**
>
> Automotive sales consist primarily of revenue generated from the sale of vehicles. Sales are recorded when the risks and rewards of ownership are transferred to our customers (generally dealers and distributors). For the majority of our sales, this occurs when products are shipped from our manufacturing facilities or delivered to our customers. When vehicles are shipped to customers or vehicle modifiers on consignment, revenue is recognized when the vehicle is sold to the ultimate customer.
>
> [*portions omitted*]

EXHIBIT 5 (Continued)

Marketing Incentives and Interest Supplements

Marketing incentives generally are recognized by the Automotive sector as revenue reductions in Automotive sales. These include customer and dealer cash payments and costs for special financing and leasing programs paid to the Financial Services sector. The revenue reductions are accrued at the later of the date the related vehicle sales to the dealers are recorded or the date the incentive program is both approved and communicated. We generally estimate these accruals using marketing programs that are approved as of the balance sheet date and are expected to be effective at the beginning of the subsequent period. The Financial Services sector identifies payments for special financing and leasing programs as interest supplements or other support costs and recognizes them consistent with the earnings process of the underlying receivable or operating lease.

The topic of revenue recognition remains important and new challenges have evolved, particularly in areas of e-commerce and services such as software development. Standard setters continue to evaluate current revenue recognition standards and issue new guidance periodically to deal with new types of transactions.[17] Additionally, there are occasional special cases for revenue recognition, as discussed in the next section.

3.2. Revenue Recognition in Special Cases

The general principles discussed above are helpful for dealing with most revenue recognition issues. There are some instances where revenue recognition is more difficult to determine. For example, in limited circumstances, revenue may be recognized before or after goods are delivered or services are rendered, as summarized in Exhibit 6.

EXHIBIT 6 Revenue Recognition in Special Cases

Before Goods Are Fully Delivered or Services Completely Rendered	*At the Time* Goods Are Delivered or Services Rendered	*After* Goods Are Delivered or Services Rendered
For example, with long-term contracts where the outcome can be reliably measured, the percentage-of-completion method is used.	Recognize revenues using normal revenue recognition criteria.	For example, with real estate sales where there is doubt about the buyer's ability to complete payments, the installment method and cost recovery method are appropriate.

The following sections discuss revenue recognition in the case of long-term contracts, installment sales, and barter.

[17] In June 2010, IASB and FASB issued a joint proposal for a standard on revenue recognition. If adopted, there will be a single revenue recognition standard for IFRS and US GAAP. The standards in this chapter are those in effect 30 June 2010 and do not reflect the proposed standard.

3.2.1. Long-Term Contracts

A **long-term contract** is one that spans a number of accounting periods. Such contracts raise issues in determining when the earnings process has been completed and revenue recognition should occur. How should a company apportion the revenue earned under a long-term contract to each accounting period? If, for example, the contract is a service contract or a licensing arrangement, the company may recognize the revenue on a prorated basis over the period of time of the contract rather than at the end of the contract term. Under IFRS, this may be done using the percentage-of-completion method.[18] Under the percentage-of-completion method, revenue is recognized based on the stage of completion of a transaction or contract and is, thus, recognized when the services are rendered. Construction contracts are examples of contracts that may span a number of accounting periods and that may use the percentage-of-completion method.[19] IFRS provide that when the outcome of a construction contract can be measured reliably, revenue and expenses should be recognized in reference to the stage of completion. US GAAP have similar requirements for long-term contracts including construction contracts.

Under the **percentage-of-completion** method, in each accounting period, the company estimates what percentage of the contract is complete and then reports that percentage of the total contract revenue in its income statement. Contract costs for the period are expensed against the revenue. Therefore, net income or profit is reported each year as work is performed.

Under IFRS, if the outcome of the contract cannot be measured reliably, then revenue may be recognized to the extent of contract costs incurred (but only if it is probable the costs will be recovered). Costs are expensed in the period incurred. Under this method, no profit is recognized until all the costs had been recovered. Under US GAAP, but not under IFRS, a revenue recognition method used when the outcome cannot be measured reliably is the completed contract method. Under the **completed contract** method, the company does not report any income until the contract is substantially finished (the remaining costs and potential risks are insignificant in amount), although provision should be made for expected losses. Billings and costs are accumulated on the balance sheet rather than flowing through the income statement. Under US GAAP, the completed contract method is also acceptable when the entity has primarily short-term contracts. Note that if a contract is started and completed in the same period, there is no difference between the percentage-of-completion and completed contract methods.

Examples 1, 2, and 3 provide illustrations of these revenue recognition methods. As shown, the percentage-of-completion method results in revenue recognition sooner than the completed contract method and thus may be considered a less conservative approach. In addition, the percentage-of-completion method relies on management estimates and is thus not as objective as the completed contract method. However, an advantage of the percentage-of-completion method is that it results in better matching of revenue recognition with the accounting period in which it was earned. Because of better matching with the periods in which work is performed, the percentage-of-completion method is the preferred method of revenue recognition for long-term contracts and is required when the outcome can be measured reliably under both IFRS and US GAAP. Under both IFRS and US GAAP, if a loss is expected on the contract, the loss is reported immediately, not upon completion of the contract, regardless of the method used (e.g., percentage-of-completion or completed contract).

[18] IAS No. 18, *Revenue*, paragraph 21.

[19] IAS No. 11, *Construction Contracts*.

EXAMPLE 1 Revenue Recognition for Long-Term Contracts: Recognizing Revenue on a Prorated Basis

New Era Network Associates has a five-year license to provide networking support services to a customer. The total amount of the license fee to be received by New Era is $1 million. New Era recognizes license revenue on a prorated basis regardless of the time at which cash is received. How much revenue will New Era recognize for this license in each year?

Solution: For this license, New Era Network Associates will recognize $200,000 each year for five years (calculated as $1 million divided by 5).

EXAMPLE 2 Revenue Recognition for Long-Term Contracts: Percentage-of-Completion Method

Stelle Technology has a contract to build a network for a customer for a total sales price of €10 million. The network will take an estimated three years to build, and total building costs are estimated to be €6 million. Stelle recognizes long-term contract revenue using the percentage-of-completion method and estimates percentage complete based on expenditure incurred as a percentage of total estimated expenditures.

1. At the end of Year 1, the company had spent €3 million. Total costs to complete are estimated to be another €3 million. How much revenue will Stelle recognize in Year 1?
2. At the end of Year 2, the company had spent an additional €2.4 million for an accumulated total of €5.4 million. Total costs to complete are estimated to be another €0.6 million. How much revenue will Stelle recognize in Year 2?
3. At the end of Year 3, the contract is complete. The company spent an accumulated total of €6 million. How much revenue will Stelle recognize in Year 3?

Solution to 1: Stelle has spent 50 percent of the total project costs (€3 million divided by €6 million), so in Year 1, the company will recognize 50 percent of the total contract revenue (i.e., €5 million).

Solution to 2: Because Stelle has spent 90 percent of the total project costs (€5.4 million divided by €6 million), by the end of Year 2, it will need to have recognized 90 percent of the total contract revenue (i.e., €9 million). Stelle has already recognized €5 million of revenue in Year 1, so in Year 2, the company will recognize €4 million revenue (€9 million minus €5 million).

Solution to 3: Because Stelle has spent 100 percent of the total project costs, by the end of Year 3, it will need to have recognized 100 percent of the total contract revenue (i.e., €10 million). Stelle had already recognized €9 million of revenue by the end of Year 2, so in Year 3, the company will recognize €1 million revenue (€10 million minus €9 million).

	Year 1	Year 2	Year 3	Total
Revenue	€5 million	€4 million	€1 million	€10 million

EXAMPLE 3 Revenue Recognition for Long-Term Contracts: Outcome Cannot Be Reliably Measured

Kolenda Technology Group has a contract to build a network for a customer for a total sales price of $10 million. This network will take an estimated three years to build, but considerable uncertainty surrounds total building costs because new technologies are involved. In other words, the outcome cannot be reliably measured, but it is probable that the costs up to the agreed upon price will be recovered.

Assuming the following expenditures, how much revenue, expense (cost of construction), and income would the company recognize each year under IFRS and using the completed contract method under US GAAP? The amounts periodically billed to the customer and received from the customer are not necessarily equivalent to the amount of revenue being recognized in the period. For simplicity, assume Kolenda pays cash for all expenditures.

1. At the end of Year 1, Kolenda has spent $3 million.
2. At the end of Year 2, Kolenda has spent a total of $5.4 million.
3. At the end of Year 3, the contract is complete. Kolenda spent a total of $6 million.

Solution: Under IFRS, revenue may be recognized to the extent of contract costs incurred if the outcome of the contract cannot be measured reliably and it is probable that costs will be recovered. In this example, the outcome is uncertain but it is probable that Kolenda will recover the costs up to $10 million. Under US GAAP, the company would use the completed contract method. No revenue will be recognized until the contract is complete.

Year 1. Under IFRS, Kolenda would recognize $3 million cost of construction, $3 million revenue, and thus $0 income. Under US GAAP, Kolenda would recognize $0 cost of construction, $0 revenue, and thus $0 income. The $3 million expenditure would be reported as an increase in the inventory account "construction in progress" and a decrease in cash.

Year 2. Under IFRS, Kolenda would recognize $2.4 million cost of construction, $2.4 million revenue, and thus $0 income. Under US GAAP, Kolenda would recognize

$0 cost of construction, $0 revenue, and thus $0 income. The $2.4 million expenditures would be reported as an increase in the inventory account "construction in progress" and a decrease in cash.

Year 3. Under IFRS, Kolenda would recognize the $0.6 million cost of construction incurred in the period. Because the contract has been completed and the outcome is now measurable, the company would recognize the remaining $4.6 million revenue on the contract, and thus $4 million income. Under US GAAP, because the contract has been completed, Kolenda would recognize the total contract revenue (i.e., $10 million). Kolenda would recognize $6 million cost of construction and thus $4 million income. The inventory account "construction in progress" would be eliminated.

Summary

Revenue recognition to the extent of contract costs incurred: IFRS

	Year 1	Year 2	Year 3	Total
Revenue	$3 million	$2.4 million	$4.6 million	$10 million
Cost of construction	$3 million	$2.4 million	$0.6 million	$ 6 million
Profit	$0 million	$ 0 million	$ 4 million	$ 4 million

Completed Contract Method: US GAAP

	Year 1	Year 2	Year 3	Total
Revenue	$0 million	$0 million	$10 million	$10 million
Cost of construction	$0 million	$0 million	$ 6 million	$ 6 million
Profit	$0 million	$0 million	$ 4 million	$ 4 million

3.2.2. Installment Sales

As noted above, revenue is normally reported when goods are delivered or services are rendered, independent of the period in which cash payments for those goods or services are received. This principle applies even to **installment sales**—sales in which proceeds are to be paid in installments over an extended period. For installment sales, IFRS separate the installments into the sale price, which is the discounted present value of the installment payments, and an interest component. Revenue attributable to the sale price is recognized at the date of sale, and revenue attributable to the interest component is recognized over time.[20] International standards note, however, that the guidance for revenue recognition must be considered in light of local laws regarding the sale of goods in a particular country. Under limited circumstances, recognition of revenue or profit may be required to be deferred for some installment sales. An example of such deferral arises for certain sales of real estate on an installment basis. Revenue recognition for sales of real estate varies depending on specific aspects of the sale transaction.[21]

[20] IAS No. 18 IE, *Illustrative Examples*, paragraph 8.

[21] IFRIC Interpretation 15, *Agreements for the Construction of Real Estate*, distinguishes three types of agreements for real estate construction (construction contract, rendering services, sale of goods) to determine whether the revenue recognition methods described under long-term contracts apply.

Under US GAAP, when the seller has completed the significant activities in the earnings process and is either assured of collecting the selling price or able to estimate amounts that will not be collected, a sale of real estate is reported at the time of sale using the normal revenue recognition conditions.[22] When those two conditions are not fully met, under US GAAP some of the profit is deferred. Two of the methods may be appropriate in these limited circumstances and relate to the amount of profit to be recognized each year from the transaction: the **installment method** and the **cost recovery method**. Under the installment method, the portion of the total profit of the sale that is recognized in each period is determined by the percentage of the total sales price for which the seller has received cash. Under the cost recovery method, the seller does not report any profit until the cash amounts paid by the buyer—including principal and interest on any financing from the seller—are greater than all the seller's costs of the property. Note that the cost recovery method is similar to the revenue recognition method under international standards, described above, when the outcome of a contract cannot be measured reliably (although the term cost recovery method is not used in the international standard).

Example 4 illustrates the differences between the installment method and the cost recovery method. Installment sales and cost recovery treatment of revenue recognition are rare for financial reporting purposes, especially for assets other than real estate.

EXAMPLE 4 The Installment and Cost Recovery Methods of Revenue Recognition

Assume the total sales price and cost of a property are $2,000,000 and $1,100,000, respectively, so that the total profit to be recognized is $900,000. The amount of cash received by the seller as a down payment is $300,000, with the remainder of the sales price to be received over a 10-year period. It has been determined that there is significant doubt about the ability and commitment of the buyer to complete all payments. How much profit will be recognized attributable to the down payment if:

1. The installment method is used?
2. The cost recovery method is used?

Solution to 1: The installment method apportions the cash receipt between cost recovered and profit using the ratio of profit to sales value; here, this ratio equals $900,000/$2,000,000 = 0.45 or 45 percent. Therefore, the seller will recognize the following profit attributable to the down payment: 45 percent of $300,000 = $135,000.

Solution to 2: Under the cost recovery method of revenue recognition, the company would not recognize any profit attributable to the down payment because the cash amounts paid by the buyer still do not exceed the cost of $1,100,000.

[22] FASB ASC Section 360-20-55 [Property, Plant, and Equipment–Real Estate Sales–Implementation Guidance and Illustrations].

3.2.3. Barter

Revenue recognition issues related to barter transactions became particularly important as e-commerce developed. As an example, if Company A exchanges advertising space for computer equipment from Company B but no cash changes hands, can Company A and B both report revenue? Such an exchange is referred to as a "barter transaction."

An even more challenging revenue recognition issue evolved from a specific type of barter transaction, a round-trip transaction. As an example, if Company A sells advertising services (or energy contracts, or commodities) to Company B and almost simultaneously buys an almost identical product from Company B, can Company A report revenue at the fair value of the product sold? Because the company's revenue would be approximately equal to its expense, the net effect of the transaction would have no impact on net income or cash flow. However, the amount of revenue reported would be higher, and the amount of revenue can be important to a company's valuation. In the earlier stages of e-commerce, for example, some equity valuations were based on sales (because many early internet companies reported no net income).

Under IFRS, revenue from barter transactions must be measured based on the fair value of revenue from similar non-barter transactions with unrelated parties (parties other than the barter partner).[23] US GAAP state that revenue can be recognized at fair value only if a company has historically received cash payments for such services and can thus use this historical experience as a basis for determining fair value; otherwise, the revenue from the barter transaction is recorded at the carrying amount of the asset surrendered.[24]

3.2.4. Gross versus Net Reporting

Another revenue recognition issue that became particularly important with the emergence of e-commerce is the issue of gross versus net reporting. Merchandising companies typically sell products that they purchased from a supplier. In accounting for their sales, the company records the amount of the sale proceeds as sales revenue and their cost of the products as the cost of goods sold. As internet-based merchandising companies developed, many sold products that they had never held in inventory; they simply arranged for the supplier to ship the products directly to the end customer. In effect, many such companies were agents of the supplier company, and the net difference between their sales proceeds and their costs was equivalent to a sales commission. What amount should these companies record as their revenues—the gross amount of sales proceeds received from their customers, or the net difference between sales proceeds and their cost?

US GAAP indicate that the approach should be based on the specific situation and provides guidance for determining when revenue should be reported gross versus net.[25] To report gross revenues, the following criteria are relevant: the company is the primary obligor under the contract, bears inventory risk and credit risk, can choose its supplier, and has reasonable latitude to establish price. If these criteria are not met, the company should report revenues net. Example 5 provides an illustration.

[23] IASB, SIC Interpretation 31, *Revenue—Barter Transactions Involving Advertising Services*, paragraph 5.

[24] FASB ASC paragraph 605-20-25-14 [Revenue Recognition–Services–Recognition–Advertising Barter Services].

[25] FASB ASC Section 605-45-45 [Revenue Recognition–Principal Agent Considerations–Other Presentation Matters].

EXAMPLE 5 Gross versus Net Reporting of Revenues

Flyalot has agreements with several major airlines to obtain airline tickets at reduced rates. The company pays only for tickets it sells to customers. In the most recent period, Flyalot sold airline tickets to customers over the internet for a total of $1.1 million. The cost of these tickets to Flyalot was $1 million. The company's direct selling costs were $2,000. Once the customers receive their ticket, the airline is responsible for providing all services associated with the customers' flights.

1. Demonstrate the reporting of revenues under:
   A. gross reporting.
   B. net reporting.
2. Determine and justify the appropriate method for reporting revenues.

Solution to 1: The table below shows how reporting would appear on a gross and a net basis:

	A. Gross Reporting	B. Net Reporting
Revenues	$1,100,000	$100,000
Cost of sales	1,002,000	2,000
Gross margin	$ 98,000	$ 98,000

Solution to 2: Flyalot should report revenue on a net basis. Flyalot pays only for tickets it sells to customers and thus does not bear inventory risk. In addition, the airline—not Flyalot—is the primary obligor under the contract. Revenues should be reported as $100,000.

3.3. Implications for Financial Analysis

As we have seen, companies use a variety of revenue recognition methods. Furthermore, a single company may use different revenue recognition policies for different businesses. Companies disclose their revenue recognition policies in the notes to their financial statement, often in the first note.

The following aspects of a company's revenue recognition policy are particularly relevant to financial analysis: whether a policy results in recognition of revenue sooner rather than later (sooner is less conservative), and to what extent a policy requires the company to make estimates. In order to analyze a company's financial statements, and particularly to compare one company's financial statements with those of another company, it is helpful to understand any differences in their revenue recognition policies. Although it may not be possible to calculate the monetary effect of differences between particular companies' revenue recognition policies and estimates, it is generally possible to characterize the relative conservatism of a company's policies and to qualitatively assess how differences in policies might affect financial ratios.

EXAMPLE 6 Revenue Recognition Policy for Apple

As disclosed in the excerpt from notes to the consolidated financial statements shown below (emphasis added), Apple Inc. (NasdaqGS: AAPL) uses different revenue recognition policies depending on the type of revenue producing activity, including product sales, service and support contracts, and products obtained from other companies. Note that these are only the first three paragraphs of Apple's disclosure on revenue recognition; the entire revenue recognition portion has nine paragraphs.

> **Revenue Recognition**
> Net sales consist primarily of revenue from the sale of hardware, software, digital content and applications, peripherals, and service and support contracts. The Company recognizes revenue when persuasive evidence of an arrangement exists, delivery has occurred, the sales price is fixed or determinable, and collection is probable. Product is considered delivered to the customer once it has been shipped and title and risk of loss have been transferred. For most of the Company's ***product sales***, these criteria are met at the time the product is shipped. For online sales to individuals, for some sales to education customers in the United States, and for certain other sales, the Company defers revenue until the customer receives the product because the Company legally retains a portion of the risk of loss on these sales during transit *[portions omitted].*
>
> Revenue from ***service and support contracts*** is deferred and recognized ratably over the service coverage periods. These contracts typically include extended phone support, repair services, web-based support resources, diagnostic tools, and extend the service coverage offered under the Company's standard limited warranty.
>
> The Company sells software and peripheral ***products obtained from other companies***. The Company generally establishes its own pricing and retains related inventory risk, is the primary obligor in sales transactions with its customers, and assumes the credit risk for amounts billed to its customers. Accordingly, the Company generally recognizes revenue for the sale of products obtained from other companies based on the gross amount billed.
>
> *Source*: Apple Inc. 10-K/A for the year ended 26 September 2009, as filed with the SEC on 25 January 2010. Emphasis added.

1. What criteria does Apple apply to determine when to recognize revenue from product sales?
2. What principle underpins the company's deferral of revenue from service and support contracts?

Solution to 1: Apple recognizes revenue when persuasive evidence of an arrangement exists, delivery has occurred, the sales price is fixed or determinable, and collection is probable. Note that these are just the four US GAAP revenue recognition criteria described in Section 3.1. Note also that Apple recognizes revenue on some product sales at the time of shipment and others at the time of delivery, depending on when its risk of loss ends.

Solution to 2: The basic principle underpinning the company's deferral of revenue for service and sales contracts is that revenue should be recognized in the period it is earned. Because service under these contracts will be performed in future periods, the company defers the revenue and then recognizes it over the time it is earned.

With familiarity of the basic principles of revenue recognition in hand, the next section begins a discussion of expense recognition.

4. EXPENSE RECOGNITION

Expenses are deducted against revenue to arrive at a company's net profit or loss. Under the IASB *Framework*, **expenses** are "decreases in economic benefits during the accounting period in the form of outflows or depletions of assets or incurrences of liabilities that result in decreases in equity, other than those relating to distributions to equity participants."[26]

The IASB *Framework* also states:

> The definition of expenses encompasses losses as well as those expenses that arise in the course of the ordinary activities of the enterprise. Expenses that arise in the course of the ordinary activities of the enterprise include, for example, cost of sales, wages and depreciation. They usually take the form of an outflow or depletion of assets such as cash and cash equivalents, inventory, property, plant and equipment.
>
> Losses represent other items that meet the definition of expenses and may, or may not, arise in the course of the ordinary activities of the enterprise. Losses represent decreases in economic benefits and as such they are no different in nature from other expenses. Hence, they are not regarded as a separate element in this *Framework*.
>
> Losses include, for example, those resulting from disasters such as fire and flood, as well as those arising on the disposal of non-current assets.[27]

Similar to the issues with revenue recognition, in a simple hypothetical scenario, expense recognition would not be an issue. For instance, assume a company purchased inventory for cash and sold the entire inventory in the same period. When the company paid for the inventory, absent indications to the contrary, it is clear that the inventory cost has been incurred and when that inventory is sold, it should be recognized as an expense (cost of goods sold) in the financial records. Assume also that the company paid all operating and administrative expenses in cash within each accounting period. In such a simple hypothetical scenario, no issues of expense recognition would arise. In practice, however, as with revenue recognition, determining when expenses should be recognized can be somewhat more complex.

4.1. General Principles

In general, a company recognizes expenses in the period that it consumes (i.e., uses up) the economic benefits associated with the expenditure, or loses some previously recognized economic benefit.[28]

[26] IASB *Framework for the Preparation and Presentation of Financial Statements*, paragraph 70.

[27] Ibid., paragraphs 78–80.

[28] Ibid., paragraph 94.

A general principle of expense recognition is the **matching principle**. Strictly speaking, IFRS do not refer to a "matching principle" but rather to a "matching concept" or to a process resulting in "matching of costs with revenues."[29] The distinction is relevant in certain standard-setting deliberations. Under matching, a company recognizes some expenses (e.g., cost of goods sold) when associated revenues are recognized and thus, expenses and revenues are matched. Associated revenues and expenses are those that result directly and jointly from the same transactions or events. Unlike the simple scenario in which a company purchases inventory and sells all of the inventory within the same accounting period, in practice, it is more likely that some of the current period's sales are made from inventory purchased in a previous period or previous periods. It is also likely that some of the inventory purchased in the current period will remain unsold at the end of the current period and so will be sold in a following period. Matching requires that a company recognizes cost of goods sold in the same period as revenues from the sale of the goods.

Period costs, expenditures that less directly match revenues, are reflected in the period when a company makes the expenditure or incurs the liability to pay. Administrative expenses are an example of period costs. Other expenditures that also less directly match revenues relate more directly to future expected benefits; in this case, the expenditures are allocated systematically with the passage of time. An example is depreciation expense.

Examples 7 and 8 demonstrate matching applied to inventory and cost of goods sold.

EXAMPLE 7 The Matching of Inventory Costs with Revenues

Kahn Distribution Limited (KDL) purchases inventory items for resale. At the beginning of 2009, Kahn had no inventory on hand. During 2009, Kahn had the following transactions:

Inventory Purchases		
First quarter	2,000	units at $40 per unit
Second quarter	1,500	units at $41 per unit
Third quarter	2,200	units at $43 per unit
Fourth quarter	1,900	units at $45 per unit
Total	7,600	units at a total cost of $321,600

KDL sold 5,600 units of inventory during the year at $50 per unit, and received cash. KDL determines that there were 2,000 remaining units of inventory and specifically identifies that 1,900 were those purchased in the fourth quarter and 100 were purchased in the third quarter. What are the revenue and expense associated with these transactions during 2009 based on specific identification of inventory items as sold or remaining in inventory?

Solution: The revenue for 2009 would be $280,000 (5,600 units × $50 per unit). Initially, the total cost of the goods purchased would be recorded as inventory (an asset) in the amount of $321,600. During 2009, the cost of the 5,600 units sold would be

[29] Ibid., paragraph 95.

expensed (matched against the revenue) while the cost of the 2,000 remaining unsold units would remain in inventory as follows:

Cost of Goods Sold		
From the first quarter	2,000 units at $40 per unit =	$ 80,000
From the second quarter	1,500 units at $41 per unit =	$ 61,500
From the third quarter	2,100 units at $43 per unit =	$ 90,300
Total cost of goods sold		$231,800
Cost of Goods Remaining in Inventory		
From the third quarter	100 units at $43 per unit =	$ 4,300
From the fourth quarter	1,900 units at $45 per unit =	$ 85,500
Total remaining (or ending) inventory cost		$ 89,800

To confirm that total costs are accounted for: $231,800 + $89,800 = $321,600. The cost of the goods sold would be expensed against the revenue of $280,000 as follows:

Revenue	$280,000
Cost of goods sold	231,800
Gross profit	$ 48,200

An alternative way to think about this is that the company created an asset (inventory) of $321,600 as it made its purchases. At the end of the period, the value of the company's inventory on hand is $89,800. Therefore, the amount of the Cost of goods sold expense recognized for the period should be the difference: $231,800.

The remaining inventory amount of $89,800 will be matched against revenue in a future year when the inventory items are sold.

EXAMPLE 8 Alternative Inventory Costing Methods

In Example 7, KDL was able to specifically identify which inventory items were sold and which remained in inventory to be carried over to later periods. This is called the **specific identification method** and inventory and cost of goods sold are based on their physical flow. It is generally not feasible to specifically identify which items were sold and which remain on hand, so accounting standards permit the assignment of inventory costs to costs of goods sold and to ending inventory using cost formulas (IFRS terminology) or cost flow assumptions (US GAAP). The cost formula or cost flow assumption determines which goods are assumed to be sold and which goods are assumed to remain in inventory. Both IFRS and US GAAP permit the use of the first in, first out (FIFO) method, and the weighted average cost method to assign costs.

Under the **FIFO method**, the oldest goods purchased (or manufactured) are assumed to be sold first and the newest goods purchased (or manufactured) are assumed

to remain in inventory. Cost of goods in beginning inventory and costs of the first items purchased (or manufactured) flow into cost of goods sold first, as if the earliest items purchased sold first. Ending inventory would, therefore, include the most recent purchases. It turns out that those items specifically identified as sold in Example 7 were also the first items purchased, so in this example, under FIFO, the cost of goods sold would also be $231,800, calculated as above.

The **weighted average cost method** assigns the average cost of goods available for sale to the units sold and remaining in inventory. The assignment is based on the average cost per unit (total cost of goods available for sale/total units available for sale) and the number of units sold and the number remaining in inventory.

For KDL, the weighted average cost per unit would be

$321,600/7,600 units = $42.3158 per unit

Cost of goods sold using the weighted average cost method would be

5,600 units at $42.3158 = $236,968

Ending inventory using the weighted average cost method would be

2,000 units at $42.3158 = $84,632

Another method is permitted under US GAAP but is not permitted under IFRS. This is the last in, first out (LIFO) method. Under the **LIFO method**, the newest goods purchased (or manufactured) are assumed to be sold first and the oldest goods purchased (or manufactured) are assumed to remain in inventory. Costs of the latest items purchased flow into cost of goods sold first, as if the most recent items purchased were sold first. Although this may seem contrary to common sense, it is logical in certain circumstances. For example, lumber in a lumberyard may be stacked up with the oldest lumber on the bottom. As lumber is sold, it is sold from the top of the stack, so the last lumber purchased and put in inventory is the first lumber out. Theoretically, a company should choose a method linked to the physical inventory flows.[30] Under the LIFO method, in the KDL example, it would be assumed that the 2,000 units remaining in ending inventory would have come from the first quarter's purchases:[31]

Ending inventory 2,000 units at $40 per unit = $80,000

[30] Practically, the reason some companies choose to use LIFO in the United States is to reduce taxes. When prices and inventory quantities are rising, LIFO will normally result in higher cost of goods sold and lower income and hence lower taxes. US tax regulations require that if LIFO is used on a company's tax return, it must also be used on the company's GAAP financial statements.

[31] If data on the precise timing of quarterly sales were available, the answer would differ because the cost of goods sold would be determined during the quarter rather than at the end of the quarter.

The remaining costs would be allocated to cost of goods sold under LIFO:

Total costs of $321,600 less $80,000 remaining in ending inventory = $241,600

Alternatively, the cost of the last 5,600 units purchased is allocated to cost of goods sold under LIFO:

1,900 units at $45 per unit + 2,200 units at $43 per unit + 1,500 units at $41 per unit = $241,600

An alternative way to think about expense recognition is that the company created an asset (inventory) of $321,600 as it made its purchases. At the end of the period, the value of the company's inventory is $80,000. Therefore, the amount of the Cost of goods sold expense recognized for the period should be the difference: $241,600.

Exhibit 7 summarizes and compares inventory costing methods.

EXHIBIT 7 Summary Table on Inventory Costing Methods

Method	Description	Cost of Goods Sold When Prices Are Rising, Relative to Other Two Methods	Ending Inventory When Prices Are Rising, Relative to Other Two Methods
FIFO (first in, first out)	Costs of the earliest items purchased flow to cost of goods sold first	Lowest	Highest
LIFO (last in, first out)	Costs of the most recent items purchased flow to cost of goods sold first	Highest*	Lowest*
Weighted average cost	Averages total costs over total units available	Middle	Middle

*Assumes no LIFO layer liquidation. **LIFO layer liquidation** occurs when the volume of sales exceeds the volume of purchases in the period so that some sales are assumed to be made from existing, relatively low-priced inventory rather than from more recent purchases.

4.2. Issues in Expense Recognition

The following sections cover applications of the principles of expense recognition to certain common situations.

4.2.1. Doubtful Accounts

When a company sells its products or services on credit, it is likely that some customers will ultimately default on their obligations (i.e., fail to pay). At the time of the sale, it is not known which customer will default. (If it were known that a particular customer would ultimately default, presumably a company would not sell on credit to that customer.) One possible

approach to recognizing credit losses on customer receivables would be for the company to wait until such time as a customer defaulted and only then recognize the loss (**direct write-off method**). Such an approach would usually not be consistent with generally accepted accounting principles.

Under the matching principle, at the time revenue is recognized on a sale, a company is required to record an estimate of how much of the revenue will ultimately be uncollectible. Companies make such estimates based on previous experience with uncollectible accounts. Such estimates may be expressed as a proportion of the overall amount of sales, the overall amount of receivables, or the amount of receivables overdue by a specific amount of time. The company records its estimate of uncollectible amounts as an expense on the income statement, not as a direct reduction of revenues.

4.2.2. Warranties

At times, companies offer warranties on the products they sell. If the product proves deficient in some respect that is covered under the terms of the warranty, the company will incur an expense to repair or replace the product. At the time of sale, the company does not know the amount of future expenses it will incur in connection with its warranties. One possible approach would be for a company to wait until actual expenses are incurred under the warranty and to reflect the expense at that time. However, this would not result in a matching of the expense with the associated revenue.

Under the matching principle, a company is required to estimate the amount of future expenses resulting from its warranties, to recognize an estimated warranty expense in the period of the sale, and to update the expense as indicated by experience over the life of the warranty.

4.2.3. Depreciation and Amortisation

Companies commonly incur costs to obtain long-lived assets. **Long-lived assets** are assets expected to provide economic benefits over a future period of time greater than one year. Examples are land (property), plant, equipment, and **intangible assets** (assets lacking physical substance) such as trademarks. The costs of most long-lived assets are allocated over the period of time during which they provide economic benefits. The two main types of long-lived assets whose costs are *not* allocated over time are land and those intangible assets with indefinite useful lives.

Depreciation is the process of systematically allocating costs of long-lived assets over the period during which the assets are expected to provide economic benefits. "Depreciation" is the term commonly applied to this process for physical long-lived assets such as plant and equipment (land is not depreciated), and **amortisation** is the term commonly applied to this process for intangible long-lived assets with a finite useful life.[32] Examples of intangible long-lived assets with a finite useful life include an acquired mailing list, an acquired patent with a set expiration date, and an acquired copyright with a set legal life. The term "amortisation" is also commonly applied to the systematic allocation of a premium or discount relative to the face value of a fixed-income security over the life of the security.

[32] Intangible assets with indefinite life are not amortised. Instead, they are reviewed each period as to the reasonableness of continuing to assume an indefinite useful life and are tested at least annually for impairment (i.e., if the recoverable or fair value of an intangible asset is materially lower than its value in the company's books, the value of the asset is considered to be impaired and its value must be decreased). IAS 38, *Intangible Assets* and FASB ASC Topic 350 [Intangibles–Goodwill and Other].

IFRS allow two alternative models for valuing property, plant, and equipment: the cost model and the revaluation model.[33] Under the cost model, the depreciable amount of that asset (cost less residual value) is allocated on a systematic basis over the remaining useful life of the asset. Under the cost model, the asset is reported at its cost less any accumulated depreciation. Under the revaluation model, the asset is reported at its fair value. The revaluation model is not permitted under US GAAP. Here, we will focus only on the cost model. There are two other differences between IFRS and US GAAP to note: IFRS require each component of an asset to be depreciated separately and US GAAP do not require component depreciation; and IFRS require an annual review of residual value and useful life, and US GAAP do not explicitly require such a review.

The method used to compute depreciation should reflect the pattern over which the economic benefits of the asset are expected to be consumed. IFRS do not prescribe a particular method for computing depreciation but note that several methods are commonly used, such as the straight-line method, diminishing balance method (accelerated depreciation), and the units of production method (depreciation varies depending upon production or usage).

The **straight-line method** allocates evenly the cost of long-lived assets less estimated residual value over the estimated useful life of an asset. (The term "straight line" derives from the fact that the annual depreciation expense, if represented as a line graph over time, would be a straight line. In addition, a plot of the cost of the asset minus the cumulative amount of annual depreciation expense, if represented as a line graph over time, would be a straight line with a negative downward slope.) Calculating depreciation and amortisation requires two significant estimates: the estimated useful life of an asset and the estimated residual value (also known as "salvage value") of an asset. Under IFRS, the residual value is the amount that the company expects to receive upon sale of the asset at the end of its useful life. Example 9 assumes that an item of equipment is depreciated using the straight-line method and illustrates how the annual depreciation expense varies under different estimates of the useful life and estimated residual value of an asset. As shown, annual depreciation expense is sensitive to both the estimated useful life and to the estimated residual value.

EXAMPLE 9 Sensitivity of Annual Depreciation Expense to Varying Estimates of Useful Life and Residual Value

Using the straight-line method of depreciation, annual depreciation expense is calculated as:

$$\frac{\text{Cost} - \text{Residual value}}{\text{Estimated useful life}}$$

Assume the cost of an asset is \$10,000. If, for example, the residual value of the asset is estimated to be \$0 and its useful life is estimated to be 5 years, the annual depreciation expense under the straight-line method would be (\$10,000 – \$0)/5 years = \$2,000. In contrast, holding the estimated useful life of the asset constant at 5 years but

[33] IAS No. 16, *Property, Plant, and Equipment.*

increasing the estimated residual value of the asset to $4,000 would result in annual depreciation expense of only $1,200 [calculated as ($10,000 – $4,000)/5 years]. Alternatively, holding the estimated residual value at $0 but increasing the estimated useful life of the asset to 10 years would result in annual depreciation expense of only $1,000 [calculated as ($10,000 – $0)/10 years]. Exhibit 8 shows annual depreciation expense for various combinations of estimated useful life and residual value.

EXHIBIT 8 Annual Depreciation Expense (in Dollars)

Estimated Useful Life (Years)	Estimated Residual Value					
	0	1,000	2,000	3,000	4,000	5,000
2	5,000	4,500	4,000	3,500	3,000	2,500
4	2,500	2,250	2,000	1,750	1,500	1,250
5	2,000	1,800	1,600	1,400	1,200	1,000
8	1,250	1,125	1,000	875	750	625
10	1,000	900	800	700	600	500

Generally, alternatives to the straight-line method of depreciation are called **accelerated methods** of depreciation because they accelerate (i.e., speed up) the timing of depreciation. Accelerated depreciation methods allocate a greater proportion of the cost to the early years of an asset's useful life. These methods are appropriate if the plant or equipment is expected to be used up faster in the early years (e.g., an automobile). A commonly used accelerated method is the **diminishing balance method** (also known as the declining balance method). The diminishing balance method is demonstrated in Example 10.

EXAMPLE 10 An Illustration of Diminishing Balance Depreciation

Assume the cost of computer equipment was $11,000, the estimated residual value is $1,000, and the estimated useful life is five years. Under the diminishing or declining balance method, the first step is to determine the straight-line rate, the rate at which the asset would be depreciated under the straight-line method. This rate is measured as 100 percent divided by the useful life or 20 percent for a five-year useful life. Under the straight-line method, 1/5 or 20 percent of the depreciable cost of the asset (here, $11,000 – $1,000 = $10,000) would be expensed each year for five years: The depreciation expense would be $2,000 per year.

The next step is to determine an acceleration factor that approximates the pattern of the asset's wear. Common acceleration factors are 150 percent and 200 percent. The latter is known as **double declining balance depreciation** because it depreciates the asset at double the straight-line rate. Using the 200 percent acceleration factor, the

diminishing balance rate would be 40 percent (20 percent × 2.0). This rate is then applied to the remaining undepreciated balance of the asset each period (known as the **net book value**).

At the beginning of the first year, the net book value is $11,000. Depreciation expense for the first full year of use of the asset would be 40 percent of $11,000, or $4,400. Under this method, the residual value, if any, is generally not used in the computation of the depreciation each period (the 40 percent is applied to $11,000 rather than to $11,000 minus residual value). However, the company will stop taking depreciation when the salvage value is reached.

At the beginning of Year 2, the net book value is measured as

Asset cost	$11,000
Less: Accumulated depreciation	(4,400)
Net book value	$ 6,600

For the second full year, depreciation expense would be $6,600 × 40 percent, or $2,640. At the end of the second year (i.e., beginning of the third year), a total of $7,040 ($4,400 + $2,640) of depreciation would have been recorded. So, the remaining net book value at the beginning of the third year would be

Asset cost	$11,000
Less: Accumulated depreciation	(7,040)
Net book value	$ 3,960

For the third full year, depreciation would be $3,960 × 40 percent, or $1,584. At the end of the third year, a total of $8,624 ($4,400 + $2,640 + $1,584) of depreciation would have been recorded. So, the remaining net book value at the beginning of the fourth year would be

Asset cost	$11,000
Less: Accumulated depreciation	(8,624)
Net book value	$ 2,376

For the fourth full year, depreciation would be $2,376 × 40 percent, or $950. At the end of the fourth year, a total of $9,574 ($4,400 + $2,640 + $1,584 + $950) of depreciation would have been recorded. So, the remaining net book value at the beginning of the fifth year would be

Asset cost	$11,000
Less: Accumulated depreciation	(9,574)
Net book value	$ 1,426

For the fifth year, if deprecation were determined as in previous years, it would amount to $570 ($1,426 × 40 percent). However, this would result in a remaining net book value of the asset below its estimated residual value of $1,000. So, instead, only $426 would be depreciated, leaving a $1,000 net book value at the end of the fifth year.

Asset cost	$11,000
Less: Accumulated depreciation	(10,000)
Net book value	$ 1,000

Companies often use a zero or small residual value, which creates problems for diminishing balance depreciation because the asset never fully depreciates. In order to fully depreciate the asset over the initially estimated useful life when a zero or small residual value is assumed, companies often adopt a depreciation policy that combines the diminishing balance and straight-line methods. An example would be a deprecation policy of using double declining balance depreciation and switching to the straight-line method halfway through the useful life.

Under accelerated depreciation methods, there is a higher depreciation expense in early years relative to the straight-line method. This results in higher expenses and lower net income in the early depreciation years. In later years, there is a reversal with accelerated depreciation expense lower than straight-line depreciation. Accelerated depreciation is sometimes referred to as a conservative accounting choice because it results in lower net income in the early years of asset use.

For those intangible assets that must be amortised (those with an identifiable useful life), the process is the same as for depreciation; only the name of the expense is different. IFRS state that if a pattern cannot be determined over the useful life, then the straight-line method should be used.[34] In most cases under IFRS and US GAAP, amortisable intangible assets are amortised using the straight-line method with no residual value. **Goodwill**[35] and intangible assets with indefinite life are not amortised. Instead, they are tested at least annually for impairment (i.e., if the current value of an intangible asset or goodwill is materially lower than its value in the company's books, the value of the asset is considered to be impaired and its value in the company's books must be decreased).

In summary, to calculate depreciation and amortisation, a company must choose a method, estimate the asset's useful life, and estimate residual value. Clearly, different choices have a differing effect on depreciation or amortisation expense and, therefore, on reported net income.

4.3. Implications for Financial Analysis

A company's estimates for doubtful accounts and/or for warranty expenses can affect its reported net income. Similarly, a company's choice of depreciation or amortisation method, estimates of assets' useful lives, and estimates of assets' residual values can affect reported net income. These are only a few of the choices and estimates that affect a company's reported net income.

[34] IAS 38, *Intangible Assets.*

[35] Goodwill is recorded in acquisitions and is the amount by which the price to purchase an entity exceeds the amount of net identifiable assets acquired (the total amount of identifiable assets acquired less liabilities assumed).

As with revenue recognition policies, a company's choice of expense recognition can be characterized by its relative conservatism. A policy that results in recognition of expenses later rather than sooner is considered less conservative. In addition, many items of expense require the company to make estimates that can significantly affect net income. Analysis of a company's financial statements, and particularly comparison of one company's financial statements with those of another, requires an understanding of differences in these estimates and their potential impact.

If, for example, a company shows a significant year-to-year change in its estimates of uncollectible accounts as a percentage of sales, warranty expenses as a percentage of sales, or estimated useful lives of assets, the analyst should seek to understand the underlying reasons. Do the changes reflect a change in business operations (e.g., lower estimated warranty expenses reflecting recent experience of fewer warranty claims because of improved product quality)? Or are the changes seemingly unrelated to changes in business operations and thus possibly a signal that a company is manipulating estimates in order to achieve a particular effect on its reported net income?

As another example, if two companies in the same industry have dramatically different estimates for uncollectible accounts as a percentage of their sales, warranty expenses as a percentage of sales, or estimated useful lives as a percentage of assets, it is important to understand the underlying reasons. Are the differences consistent with differences in the two companies' business operations (e.g., lower uncollectible accounts for one company reflecting a different, more creditworthy customer base or possibly stricter credit policies)? Another difference consistent with differences in business operations would be a difference in estimated useful lives of assets if one of the companies employs newer equipment. Or, alternatively, are the differences seemingly inconsistent with differences in the two companies' business operations, possibly signaling that a company is manipulating estimates?

Information about a company's accounting policies and significant estimates are described in the notes to the financial statements and in the management discussion and analysis section of a company's annual report.

When possible, the monetary effect of differences in expense recognition policies and estimates can facilitate more meaningful comparisons with a single company's historical performance or across a number of companies. An analyst can use the monetary effect to adjust the reported expenses so that they are on a comparable basis.

Even when the monetary effects of differences in policies and estimates cannot be calculated, it is generally possible to characterize the relative conservatism of the policies and estimates and, therefore, to qualitatively assess how such differences might affect reported expenses and thus financial ratios.

5. NON-RECURRING ITEMS AND NON-OPERATING ITEMS

From a company's income statements, we can see its earnings from last year and in the previous year. Looking forward, the question is: What will the company earn next year and in the years after?

To assess a company's future earnings, it is helpful to separate those prior years' items of income and expense that are likely to continue in the future from those items that are less likely to continue.[36] Some items from prior years are clearly not expected to continue in the

[36] In business writing, items expected to continue in the future are often described as "persistent" or "permanent," whereas those not expected to continue are described as "transitory."

future periods and are separately disclosed on a company's income statement. This is consistent with "An entity shall present additional line items, headings, and subtotals . . . when such presentation is relevant to an understanding of the entity's financial performance."[37] IFRS describe considerations that enter into the decision to present information other than that explicitly specified by a standard. US GAAP specify some of the items that should be reported separately. Two such items are 1) discontinued operations, and 2) extraordinary items (the latter category is not permitted under IFRS). These two items, if applicable, must be reported separately from continuing operations under US GAAP.[38] For other items on a company's income statement, such as unusual items, accounting changes, and non-operating income, the likelihood of their continuing in the future is somewhat less clear and requires the analyst to make some judgments.

5.1. Discontinued Operations

When a company disposes of or establishes a plan to dispose of one of its component operations and will have no further involvement in the operation, the income statement reports separately the effect of this disposal as a "discontinued" operation under both IFRS and US GAAP. Financial standards provide various criteria for reporting the effect separately, which are generally that the discontinued component must be separable both physically and operationally.[39]

Because the discontinued operation will no longer provide earnings (or cash flow) to the company, an analyst can eliminate discontinued operations in formulating expectations about a company's future financial performance.

In Exhibit 2, Kraft reported earnings and gains from discontinued operations of $1,045 million in 2008 and $232 million in 2007. In Note 2 of its financial statements, Kraft explains that it split off its Post Cereals business. The earnings and gains from discontinued operations of $1,045 million in 2008 and $232 million in 2007 refer to the amount of earnings of the cereal business in each of those years, up to the date it was split off.

5.2. Extraordinary Items

IFRS prohibit classification of any income or expense items as being "extraordinary."[40] Under US GAAP, an extraordinary item is one that is both unusual in nature and infrequent in occurrence. Extraordinary items are presented separately on the income statement and allow a reader of the statements to see that these items are not part of a company's operating activities and are not expected to occur on an ongoing basis. Extraordinary items are shown net of tax and appear on the income statement below discontinued operations. An example of an extraordinary item is provided in Exhibit 9.

[37] IAS No. 1, *Presentation of Financial Statements*, paragraph 85.
[38] These requirements apply to material amounts.
[39] IFRS No. 5, *Non-Current Assets Held for Sale and Discontinued Operations*, paragraphs 31–33.
[40] IAS No. 1, *Presentation of Financial Statements*, paragraph 87.

EXHIBIT 9 Extraordinary Gain on Debt Forgiveness

In its annual report, ForgeHouse, Inc. (OTCBB: FOHE) made the following disclosure describing an extraordinary gain on debt forgiveness:

> On September 30, 2009, the Company entered into a Debt Forgiveness Agreement with Insurance Medical Group Limited (f/k/a After All Limited), Bryan Irving, and Ian Morl, pursuant to which $785,000 (plus accrued and unpaid interest and any penalties of $80,141) of the Company's outstanding obligations in favor of Arngrove Group Holdings were forgiven and all $200,000 (plus accrued and unpaid interest and any penalties of $23,418) of the Company's outstanding obligations in favor of After All Group, Limited, was forgiven. Gain on these two debt restructurings was a gross of $1,088,559 for the year ended December 31, 2009.
>
> In December 2009, the Company entered into agreements with two of its vendors to reduce the amounts owed to the vendors in exchange for upfront payments. Gain on the restructure of amounts owed to the two vendors was $244,041.
>
> These amounts are presented in the statement of operations net of income taxes of $453,084 for a net extraordinary gain on debt restructuring of $879,516.

Source: ForgeHouse, Inc. 10-K for fiscal year ended 31 December 2009, filed 14 May 2010: Note 6.

Companies apply judgment to determine whether an item is extraordinary based on guidance from accounting standards.[41] Judgment on whether an item is unusual in nature requires consideration of the company's environment, including its industry and geography. Determining whether an item is infrequent in occurrence is based on expectations of whether it will occur again in the near future. Standard setters offer specific guidance in some cases. For example, following Hurricanes Katrina and Rita in 2005, the American Institute of Certified Public Accountants issued Technical Practice Aid 5400.05, which states (the material in square brackets has been added): "A natural disaster [such as a hurricane, tornado, fire, or earthquake] of a type that is reasonably expected to reoccur would not meet both conditions [for classification as an extraordinary item]."

Given the requirements for classification of an item as extraordinary—unusual and infrequent—an analyst can generally eliminate extraordinary items from expectations about a company's future financial performance unless there is some indication that such an extraordinary item may reoccur.

5.3. Unusual or Infrequent Items

IFRS require that items of income or expense that are material and/or relevant to the understanding of the entity's financial performance should be disclosed separately. Unusual or infrequent items are likely to meet these criteria. Under US GAAP, which allow items to be shown as extraordinary, items that are unusual or infrequent—but not both—cannot be shown as extraordinary. Items that are unusual or infrequent are shown as part of a company's continuing operations. For example, restructuring charges, such as costs to close plants and employee

[41] FASB ASC Section 225–20–45 [Income Statement-Extraordinary and Unusual Items–Other Presentation Matters].

termination costs, are considered part of a company's ordinary activities. As another example, gains and losses arising when a company sells an asset or part of a business, for more or less than its carrying value, are also disclosed separately on the income statement. These are not considered extraordinary under US GAAP because such sales are considered ordinary business activities.

Highlighting the unusual or infrequent nature of these items assists an analyst in judging the likelihood that such items will reoccur. This meets the IFRS criteria of disclosing items that are relevant to the understanding of an entity's financial performance. Exhibit 10 shows such disclosure.

EXHIBIT 10 Highlighting Infrequent Nature of Items
Excerpt from Roche Group Consolidated Income Statement (in millions of CHF, Year ended 31 December 2009)

[portions omitted]	
Operating profit before exceptional items	15,012
Major legal cases	(320)
Changes in Group organization	(2,415)
Operating profit	12,277
[portions omitted]	

In Exhibit 10, Roche Group (SWX: ROG), a Swiss healthcare company, shows operating profit before and after exceptional items. The exceptional items relate to major legal cases and changes in the organization. The company's notes explain both items further. The costs for changes in the organization relate to Roche's acquisition of Genentech and major changes to certain manufacturing and commercial centers. Generally, in forecasting future operations, an analyst would assess whether the items reported are likely to reoccur and also possible implications for future earnings. It is generally not advisable simply to ignore all unusual items.

5.4. Changes in Accounting Policies

At times, standard setters issue new standards that require companies to change accounting policies. Companies may be permitted to adopt the standards prospectively (in the future) or retrospectively (restate financial statements as though the standard existed in the past). In other cases, changes in accounting policies (e.g., from one acceptable inventory costing method to another) are made for other reasons, such as providing a better reflection of the company's performance. Changes in accounting policies are reported through retrospective application[42] unless it is impractical to do so.

Retrospective application means that the financial statements for all fiscal years shown in a company's financial report are presented as if the newly adopted accounting principle had been used throughout the entire period. Notes to the financial statements describe the change and explain the justification for the change. Because changes in accounting principles are retrospectively applied, the financial statements that appear within a financial report are comparable.

[42] IAS No. 8, *Accounting Policies, Changes in Accounting Estimates and Errors,* and FASB ASC Topic 250 [Accounting Changes and Error Corrections].

So, if a company's annual report for 2009 includes its financial statements for fiscal years 2007, 2008, and 2009, all of these statements will be comparable.

Example 11 presents an excerpt from the 25 January 2010 10-K/A of Apple Inc. (NasdaqGS: AAPL). Apple amended its previously filed 10-K to reflect the company's retrospective adoption of a new FASB accounting standard related to revenue recognition for multi-deliverables. An example of a multi-deliverable is the sale of an iPhone with the right to receive future upgrades. The change described in Example 11 brings US GAAP closer to IFRS although differences remain. For example, IFRS do not provide detailed guidance and instead require that revenue should be allocated to separately identifiable components if doing so reflects the substance of the transaction. In contrast, US GAAP provide details about how the separation of revenue should be done and how the revenue should be allocated to each component.

EXAMPLE 11 Revenue Recognition: A Change in Accounting Principle

Apple's amended 10-K for the year ended 26 September 2009 explains how a change in accounting standards (the company refers to these as accounting principles) affects its financial statements. The following excerpt (emphasis added) is from the explanatory note included in the amendment.

> Under the historical accounting principles, the Company was required to account for sales of both iPhone and Apple TV using subscription accounting because the Company indicated it might from time-to-time provide future unspecified software upgrades and features for those products free of charge. Under **subscription accounting**, revenue and associated product cost of sales for iPhone and Apple TV were deferred at the time of sale and recognized on a straight-line basis over each product's estimated economic life. This resulted in the deferral of significant amounts of revenue and cost of sales related to iPhone and Apple TV. Costs incurred by the Company for engineering, sales, marketing and warranty were expensed as incurred. As of September 26, 2009, based on the historical accounting principles, total accumulated deferred revenue and deferred costs associated with past iPhone and Apple TV sales were $12.1 billion and $5.2 billion, respectively.
>
> The **new accounting principles generally require the Company to account for the sale of both iPhone and Apple TV as two deliverables**. The first deliverable is the hardware and software delivered at the time of sale, and the second deliverable is the right included with the purchase of iPhone and Apple TV to receive on a when-and-if-available basis future unspecified software upgrades and features relating to the product's software. **The new accounting principles result in the recognition of substantially all of the revenue and product costs from sales of iPhone and Apple TV at the time of sale**. Additionally, the Company is required to estimate a standalone selling price for the unspecified software upgrade right included with the sale of iPhone and Apple TV and recognizes that amount ratably over the 24-month estimated life of the related hardware device. For all periods presented, the

Company's estimated selling price for the software upgrade right included with each iPhone and Apple TV sold is $25 and $10, respectively. The adoption of the new accounting principles increased the Company's net sales by $6.4 billion, $5.0 billion, and $572 million for 2009, 2008, and 2007, respectively. As of September 26, 2009, the revised total accumulated deferred revenue associated with iPhone and Apple TV sales to date was $483 million; revised accumulated deferred costs for such sales were zero.

Source: Apple Inc. 10-K/A for the year ended 26 September 2009, as filed with the SEC on 25 January 2010. Emphasis added.

1. Under the historical accounting principle, how would the revenue from a sale of an iPhone be reflected in Apple's financial statements?
2. How and why did adoption of the new accounting principles affect Apple's revenues in 2009?

Solution to 1: Under the historical accounting principle (standard), a sale of an iPhone was treated as a subscription sale and revenue was not recognized at the time of sale. Rather, the sale would result in a liability entitled "deferred revenue." In subsequent periods, the company would recognize as revenue a portion of the revenue from that sale and reduce the amount of deferred revenue by the same amount. Disclosures about deferred revenue can be helpful to an analyst in developing expectations about future revenues.

Solution to 2: Adoption of the new accounting principles (standards) increased the company's 2009 net sales (revenue) by $6.4 billion. The reason for the increase is that the new standard allowed the company to separate the revenue from the iPhone into two separate components and to report revenue from them separately.

In years prior to 2005, under both IFRS and US GAAP, the cumulative effect of changes in accounting policies was typically shown at the bottom of the income statement in the year of change instead of using retrospective application. It is possible that future accounting standards may occasionally require a company to report the change differently than retrospective application. Note disclosures are required to explain how the transition from the old standard to the new one is handled. During the period when companies make the transition from the old standard to the new, an analyst can examine disclosures to ensure comparability across companies.

In contrast to changes in accounting policies (such as whether to expense the cost of employee stock options), companies sometimes make *changes in accounting estimates* (such as the useful life of a depreciable asset). Changes in accounting estimates are handled prospectively, with the change affecting the financial statements for the period of change and future periods. No adjustments are made to prior statements, and the adjustment is not shown on the face of the income statement. Significant changes should be disclosed in the notes.

Another possible adjustment is a *correction of an error for a prior period* (e.g., in financial statements issued for an earlier year). This cannot be handled by simply adjusting the current period income statement. Correction of an error for a prior period is handled by restating

the financial statements (including the balance sheet, statement of owners' equity, and cash flow statement) for the prior periods presented in the current financial statements.[43] Note disclosures are required regarding the error. These disclosures should be examined carefully because they may reveal weaknesses in the company's accounting systems and financial controls.

5.5. Non-Operating Items

Non-operating items are typically reported separately from operating income because they are material and/or relevant to the understanding of the entity's financial performance. Under IFRS, there is no definition of operating activities, and companies that choose to report operating income or the results of operating activities should ensure that these represent activities that are normally regarded as operating. Under US GAAP, operating activities generally involve producing and delivering goods and providing services and include all transactions and other events that are not defined as investing or financing activities.[44] For example, if a non-financial service company invests in equity or debt securities issued by another company, any interest, dividends, or profits from sales of these securities will be shown as non-operating income. In general, for non-financial services companies,[45] non-operating income that is disclosed separately on the income statement (or in the notes) includes amounts earned through investing activities.

Among non-operating items on the income statement (or accompanying notes), non-financial service companies also disclose the interest expense on their debt securities, including amortisation of any discount or premium. The amount of interest expense is related to the amount of a company's borrowings and is generally described in the notes to the financial statements. For financial service companies, interest income and expense are likely components of operating activities. (Note that the characterization of interest and dividends as non-operating items on the income statement is not necessarily consistent with the classification on the statement of cash flows. Specifically, under IFRS, interest and dividends received can be shown either as operating or as investing on the statement of cash flows, while under US GAAP interest and dividends received are shown as operating cash flows. Under IFRS, interest and dividends paid can be shown either as operating or as financing on the statement of cash flows, while under US GAAP, interest paid is shown as operating and dividends paid are shown as financing.)

In practice, investing and financing activities may be disclosed on a net basis, with the components disclosed separately in the notes. In its income statement for 2009 (Exhibit 1), Groupe Danone, for example, disclosed net interest expense (cost of net debt) of €264 million. The net amount is the €340 million of interest expense minus €76 million interest revenue. The financial statement notes (not shown) provide further disclosure about the expense.

For purposes of assessing a company's future performance, the amount of financing expense will depend on the company's financing policy (target capital structure) and borrowing costs. The amount of investing income will depend on the purpose and success of investing activities. For a non-financial company, a significant amount of financial income would typically warrant further exploration. What are the reasons underlying the company's investments in the securities of other companies? Is the company simply investing excess cash in short-term securities to generate income higher than cash deposits, or is the company purchasing

[43] Ibid.

[44] FASB ASC *Master Glossary.*

[45] Examples of financial services companies are insurance companies, banks, brokers, dealers, and investment companies.

securities issued by other companies for strategic reasons, such as access to raw material supply or research?

6. EARNINGS PER SHARE

One metric of particular importance to an equity investor is earnings per share (EPS). EPS is an input into ratios such as the price/earnings ratio. Additionally, each shareholder in a company owns a different number of shares. IFRS require the presentation of EPS on the face of the income statement for net profit or loss (net income) and profit or loss (income) from continuing operations.[46] Similar presentation is required under US GAAP.[47] This section outlines the calculations for EPS and explains how the calculation differs for a simple versus complex capital structure.

6.1. Simple versus Complex Capital Structure

A company's capital is composed of its equity and debt. Some types of equity have preference over others, and some debt (and other instruments) may be converted into equity. Under IFRS, the type of equity for which EPS is presented is referred to as ordinary. **Ordinary shares** are those equity shares that are subordinate to all other types of equity. The ordinary shareholders are basically the owners of the company—the equity holders who are paid last in a liquidation of the company and who benefit the most when the company does well. Under US GAAP, this ordinary equity is referred to as **common stock** or **common shares**, reflecting US language usage. The terms "ordinary shares," "common stock," and "common shares" are used interchangeably in the following discussion.

When a company has issued any financial instruments that are potentially convertible into common stock, it is said to have a complex capital structure. Examples of financial instruments that are potentially convertible into common stock include convertible bonds, convertible preferred stock, employee stock options, and warrants.[48] If a company's capital structure does not include such potentially convertible financial instruments, it is said to have a simple capital structure.

The distinction between simple versus complex capital structure is relevant to the calculation of EPS because financial instruments that are potentially convertible into common stock could, as a result of conversion or exercise, potentially dilute (i.e., decrease) EPS. Information about such a potential dilution is valuable to a company's current and potential shareholders; therefore, accounting standards require companies to disclose what their EPS would be if all dilutive financial instruments were converted into common stock. The EPS that would result if all dilutive financial instruments were converted is called **diluted EPS**. In contrast, **basic EPS** is calculated using the reported earnings available to common shareholders of the parent company and the weighted average number of shares outstanding.

[46] IAS No. 33, *Earnings Per Share.*

[47] FASB ASC Topic 260 [Earnings Per Share].

[48] A warrant is a call option typically attached to securities issued by a company, such as bonds. A warrant gives the holder the right to acquire the company's stock from the company at a specified price within a specified time period. IFRS and US GAAP standards regarding earnings per share apply equally to call options, warrants, and equivalent instruments.

Companies are required to report both basic and diluted EPS. For example, Danone reported basic EPS ("before dilution") and diluted EPS ("after dilution") of €2.57 for 2009, somewhat lower than 2008. Kraft reported basic EPS of $2.04 and diluted EPS of $2.03 for 2009, much higher than basic and diluted EPS (from continuing operations) of $1.22 and $1.21 for 2008. (The EPS information appears at the bottom of Danone's and Kraft's income statements.) An analyst would try to determine the causes underlying the changes in EPS, a topic we will address following an explanation of the calculations of both basic and diluted EPS.

6.2. Basic EPS

Basic EPS is the amount of income available to common shareholders divided by the weighted average number of common shares outstanding over a period. The amount of income available to common shareholders is the amount of net income remaining after preferred dividends (if any) have been paid. Thus, the formula to calculate basic EPS is:

$$\text{Basic EPS} = \frac{\text{Net income} - \text{Preferred dividends}}{\text{Weighted average number of shares outstanding}} \tag{1}$$

The weighted average number of shares outstanding is a time weighting of common shares outstanding. For example, assume a company began the year with 2,000,000 common shares outstanding and repurchased 100,000 common shares on 1 July. The weighted average number of common shares outstanding would be the sum of 2,000,000 shares × 1/2 year + 1,900,000 shares × 1/2 year, or 1,950,000 shares. So the company would use 1,950,000 shares as the weighted average number of shares in calculating its basic EPS.

If the number of shares of common stock increases as a result of a stock dividend or a stock split, the EPS calculation reflects the change retroactively to the beginning of the period.

Examples 12, 13, and 14 illustrate the computation of basic EPS.

EXAMPLE 12 A Basic EPS Calculation (1)

For the year ended 31 December 2009, Shopalot Company had net income of $1,950,000. The company had 1,500,000 shares of common stock outstanding, no preferred stock, and no convertible financial instruments. What is Shopalot's basic EPS?

Solution: Shopalot's basic EPS is $1.30 ($1,950,000 divided by 1,500,000 shares).

EXAMPLE 13 A Basic EPS Calculation (2)

For the year ended 31 December 2009, Angler Products had net income of $2,500,000. The company declared and paid $200,000 of dividends on preferred stock. The company also had the following common stock share information:

Shares outstanding on 1 January 2009	1,000,000
Shares issued on 1 April 2009	200,000
Shares repurchased (treasury shares) on 1 October 2009	(100,000)
Shares outstanding on 31 December 2009	1,100,000

1. What is the company's weighted average number of shares outstanding?
2. What is the company's basic EPS?

Solution to 1: The weighted average number of shares outstanding is determined by the length of time each quantity of shares was outstanding:

1,000,000 × (3 months/12 months) =	250,000
1,200,000 × (6 months/12 months) =	600,000
1,100,000 × (3 months/12 months) =	275,000
Weighted average number of shares outstanding	1,125,000

Solution to 2: Basic EPS = (Net income – Preferred dividends)/Weighted average number of shares = ($2,500,000 – $200,000)/1,125,000 = $2.04

EXAMPLE 14 A Basic EPS Calculation (3)

Assume the same facts as in Example 13 except that on 1 December 2009, a previously declared 2 for 1 stock split took effect. Each shareholder of record receives two shares in exchange for each current share that he or she owns. What is the company's basic EPS?

Solution: For EPS calculation purposes, a stock split is treated as if it occurred at the beginning of the period. The weighted average number of shares would, therefore, be 2,250,000, and the basic EPS would be $1.02 [= ($2,500,000 – $200,000)/2,250,000].

6.3. Diluted EPS

If a company has a simple capital structure (in other words, one that includes no potentially dilutive financial instruments), then its basic EPS is equal to its diluted EPS. However, if a company has potentially dilutive financial instruments, its diluted EPS may differ from its basic EPS. Diluted EPS, by definition, is always equal to or less than basic EPS. The sections below describe the effects of three types of potentially dilutive financial instruments on diluted EPS: convertible preferred, convertible debt, and employee stock options. The final section explains why not all potentially dilutive financial instruments actually result in a difference between basic and diluted EPS.

6.3.1. Diluted EPS When a Company Has Convertible Preferred Stock Outstanding

When a company has convertible preferred stock outstanding, diluted EPS is calculated using the **if-converted method**. The if-converted method is based on what EPS would have been if the convertible preferred securities had been converted at the beginning of the period. In other words, the method calculates what the effect would have been if the convertible preferred shares converted at the beginning of the period. If the convertible shares had been converted, there would be two effects. First, the convertible preferred securities would no longer be outstanding; instead, additional common stock would be outstanding. Thus, under the if-converted method, the weighted average number of shares outstanding would be higher than in the basic EPS calculation. Second, if such a conversion had taken place, the company would not have paid preferred dividends. Thus, under the if-converted method, the net income available to common shareholders would be higher than in the basic EPS calculation.

Diluted EPS using the if-converted method for convertible preferred stock is equal to net income divided by the weighted average number of shares outstanding from the basic EPS calculation plus the additional shares of common stock that would be issued upon conversion of the preferred. Thus, the formula to calculate diluted EPS using the if-converted method for preferred stock is:

$$\text{Diluted EPS} = \frac{(\text{Net income})}{\begin{array}{l}(\text{Weighted average number of shares} \\ \text{outstanding} + \text{New common shares that} \\ \text{would have been issued at conversion})\end{array}} \quad (2)$$

A diluted EPS calculation using the if-converted method for preferred stock is provided in Example 15.

EXAMPLE 15 A Diluted EPS Calculation Using the If-Converted Method for Preferred Stock

For the year ended 31 December 2009, Bright-Warm Utility Company had net income of \$1,750,000. The company had an average of 500,000 shares of common stock outstanding, 20,000 shares of convertible preferred, and no other potentially dilutive securities. Each share of preferred pays a dividend of \$10 per share, and each is convertible into five shares of the company's common stock. Calculate the company's basic and diluted EPS.

Solution: If the 20,000 shares of convertible preferred had each converted into 5 shares of the company's common stock, the company would have had an additional 100,000 shares of common stock (5 shares of common for each of the 20,000 shares of preferred). If the conversion had taken place, the company would not have paid preferred dividends of \$200,000 (\$10 per share for each of the 20,000 shares of preferred). As shown in Exhibit 11, the company's basic EPS was \$3.10 and its diluted EPS was \$2.92.

EXHIBIT 11 Calculation of Diluted EPS for Bright-Warm Utility Company Using the If-Converted Method: Case of Preferred Stock

	Basic EPS	Diluted EPS Using If-Converted Method
Net income	$1,750,000	$1,750,000
Preferred dividend	–200,000	0
Numerator	$1,550,000	$1,750,000
Weighted average number of shares outstanding	500,000	500,000
Additional shares issued if preferred converted	0	100,000
Denominator	500,000	600,000
EPS	**$ 3.10**	**$ 2.92**

6.3.2. Diluted EPS When a Company Has Convertible Debt Outstanding

When a company has convertible debt outstanding, the diluted EPS calculation also uses the if-converted method. Diluted EPS is calculated as if the convertible debt had been converted at the beginning of the period. If the convertible debt had been converted, the debt securities would no longer be outstanding; instead, additional shares of common stock would be outstanding. Also, if such a conversion had taken place, the company would not have paid interest on the convertible debt, so the net income available to common shareholders would increase by the after-tax amount of interest expense on the debt converted.

Thus, the formula to calculate diluted EPS using the if-converted method for convertible debt is:

$$\text{Diluted EPS} = \frac{(\text{Net income} + \text{After-tax interest on convertible debt} - \text{Preferred dividends})}{(\text{Weighted average number of shares outstanding} + \text{Additional common shares that would have been issued at conversion})} \quad (3)$$

A diluted EPS calculation using the if-converted method for convertible debt is provided in Example 16.

EXAMPLE 16 A Diluted EPS Calculation Using the If-Converted Method for Convertible Debt

Oppnox Company reported net income of $750,000 for the year ended 31 December 2009. The company had a weighted average of 690,000 shares of common stock

outstanding. In addition, the company has only one potentially dilutive security: \$50,000 of 6 percent convertible bonds, convertible into a total of 10,000 shares. Assuming a tax rate of 30 percent, calculate Oppnox's basic and diluted EPS.

Solution: If the debt securities had been converted, the debt securities would no longer be outstanding and instead, an additional 10,000 shares of common stock would be outstanding. Also, if the debt securities had been converted, the company would not have paid interest of \$3,000 on the convertible debt, so net income available to common shareholders would have increased by \$2,100 [= \$3,000(1 – 0.30)] on an after-tax basis. Exhibit 12 illustrates the calculation of diluted EPS using the if-converted method for convertible debt.

EXHIBIT 12 Calculation of Diluted EPS for Oppnox Company Using the If-Converted Method: Case of a Convertible Bond

	Basic EPS	Diluted EPS Using If-Converted Method
Net income	\$750,000	\$750,000
After-tax cost of interest		2,100
Numerator	\$750,000	\$752,100
Weighted average number of shares outstanding	690,000	690,000
If converted	0	10,000
Denominator	690,000	700,000
EPS	**\$1.09**	**\$1.07**

6.3.3. Diluted EPS When a Company Has Stock Options, Warrants, or Their Equivalents Outstanding

When a company has stock options, warrants, or their equivalents[49] outstanding, diluted EPS is calculated as if the financial instruments had been exercised and the company had used the proceeds from exercise to repurchase as many shares of common stock as possible at the average market price of common stock during the period. The weighted average number of shares outstanding for diluted EPS is thus increased by the number of shares that would be issued upon exercise minus the number of shares that would have been purchased with the proceeds. This method is called the **treasury stock method** under US GAAP because companies typically hold repurchased shares as treasury stock. The same method is used under IFRS but is not named.

[49] Hereafter, options, warrants, and their equivalents will be referred to simply as "options" because the accounting treatment for EPS calculations is interchangeable for these instruments under IFRS and US GAAP.

For the calculation of diluted EPS using this method, the assumed exercise of these financial instruments would have the following effects:

- The company is assumed to receive cash upon exercise and, in exchange, to issue shares.
- The company is assumed to use the cash proceeds to repurchase shares at the weighted average market price during the period.

As a result of these two effects, the number of shares outstanding would increase by the incremental number of shares issued (the difference between the number of shares issued to the holders and the number of shares assumed to be repurchased by the company). For calculating diluted EPS, the incremental number of shares is weighted based upon the length of time the financial instrument was outstanding in the year. If the financial instrument was issued prior to the beginning of the year, the weighted average number of shares outstanding increases by the incremental number of shares. If the financial instruments were issued during the year, then the incremental shares are weighted by the amount of time the financial instruments were outstanding during the year.

The assumed exercise of these financial instruments would not affect net income. For calculating EPS, therefore, no change is made to the numerator. The formula to calculate diluted EPS using the treasury stock method (same method as used under IFRS but not named) for options is:

$$\text{Diluted EPS} = \frac{(\text{Net income} - \text{Preferred dividends})}{\begin{array}{l}[\text{Weighted average number of shares}\\ \text{outstanding} + (\text{New shares that would}\\ \text{have been issued at option exercise} -\\ \text{Shares that could have been purchased}\\ \text{with cash received upon exercise}) \times\\ (\text{Proportion of year during which the}\\ \text{financial instruments were outstanding})]\end{array}} \tag{4}$$

A diluted EPS calculation using the treasury stock method for options is provided in Example 17.

EXAMPLE 17 A Diluted EPS Calculation Using the Treasury Stock Method for Options

Hihotech Company reported net income of $2.3 million for the year ended 30 June 2009 and had a weighted average of 800,000 common shares outstanding. At the beginning of the fiscal year, the company has outstanding 30,000 options with an exercise price of $35. No other potentially dilutive financial instruments are outstanding. Over the fiscal year, the company's market price has averaged $55 per share. Calculate the company's basic and diluted EPS.

Solution: Using the treasury stock method, we first calculate that the company would have received \$1,050,000 (\$35 for each of the 30,000 options exercised) if all the options had been exercised. The options would no longer be outstanding; instead, 30,000 shares of common stock would be outstanding. Under the treasury stock method, we assume that shares would be repurchased with the cash received upon exercise of the options. At an average market price of \$55 per share, the \$1,050,000 proceeds from option exercise, the company could have repurchased 19,091 shares. Therefore, the incremental number of shares issued is 10,909 (calculated as 30,000 minus 19,091). For the diluted EPS calculation, no change is made to the numerator. As shown in Exhibit 13, the company's basic EPS was \$2.88 and the diluted EPS was \$2.84.

EXHIBIT 13 Calculation of Diluted EPS for Hihotech Company Using the Treasury Stock Method: Case of Stock Options

	Basic EPS	Diluted EPS Using Treasury Stock Method
Net income	\$2,300,000	\$2,300,000
Numerator	\$2,300,000	\$2,300,000
Weighted average number of shares outstanding	800,000	800,000
If converted	0	10,909
Denominator	800,000	810,909
EPS	**\$2.88**	**\$2.84**

As noted, IFRS requires a similar computation but does not refer to it as the "treasury stock method." The company is required to consider that any assumed proceeds are received from the issuance of new shares at the average market price for the period. These new "inferred" shares would be disregarded in the computation of diluted EPS, but the excess of the new shares that would be issued under options contracts minus the new inferred shares would be added to the weighted average number of shares outstanding. The results are the same as the treasury stock method, as shown in Example 18.

EXAMPLE 18 Diluted EPS for Options under IFRS

Assuming the same facts as in Example 17, calculate the weighted average number of shares outstanding for diluted EPS under IFRS.

Solution: If the options had been exercised, the company would have received \$1,050,000. If this amount had been received from the issuance of new shares at the average market price of \$55 per share, the company would have issued 19,091 shares.

IFRS refer to the 19,091 shares the company would have issued at market prices as the inferred shares. The number of shares issued under options (30,000) minus the number of inferred shares (19,091) equals 10,909. This amount is added to the weighted average number of shares outstanding of 800,000 to get diluted shares of 810,909. Note that this is the same result as that obtained under US GAAP; it is just derived in a different manner.

6.3.4. Other Issues with Diluted EPS

It is possible that some potentially convertible securities could be **antidilutive** (i.e., their inclusion in the computation would result in an EPS higher than the company's basic EPS). Under IFRS and US GAAP, antidilutive securities are not included in the calculation of diluted EPS. Diluted EPS should reflect the maximum potential dilution from conversion or exercise of potentially dilutive financial instruments. Diluted EPS will always be less than or equal to basic EPS. Example 19 provides an illustration of an antidilutive security.

EXAMPLE 19

An Antidilutive Security

For the year ended 31 December 2009, Dim-Cool Utility Company had net income of $1,750,000. The company had an average of 500,000 shares of common stock outstanding, 20,000 shares of convertible preferred, and no other potentially dilutive securities. Each share of preferred pays a dividend of $10 per share, and each is convertible into three shares of the company's common stock. What was the company's basic and diluted EPS?

Solution: If the 20,000 shares of convertible preferred had each converted into 3 shares of the company's common stock, the company would have had an additional 60,000 shares of common stock (3 shares of common for each of the 20,000 shares of preferred). If the conversion had taken place, the company would not have paid preferred dividends of $200,000 ($10 per share for each of the 20,000 shares of preferred). The effect of using the if-converted method would be EPS of $3.13, as shown in Exhibit 14. Because this is greater than the company's basic EPS of $3.10, the securities are said to be antidilutive and the effect of their conversion would not be included in diluted EPS. Diluted EPS would be the same as basic EPS (i.e., $3.10).

EXHIBIT 14 Calculation for an Antidilutive Security

	Basic EPS	Diluted EPS Using If-Converted Method	
Net income	$1,750,000	$1,750,000	
Preferred dividend	–200,000	0	
Numerator	$1,550,000	$1,750,000	
Weighted average number of shares outstanding	500,000	500,000	
If converted	0	60,000	
Denominator	500,000	560,000	
EPS	**$3.10**	$3.13	←Exceeds basic EPS; security is antidilutive and, therefore, **not** included. **Reported diluted EPS= $3.10**.

6.4. Changes in EPS

Having explained the calculations of both basic and diluted EPS, we return to an examination of changes in EPS. As noted above, Kraft's fully diluted EPS from continuing operations increased from $1.21 in 2008 to $2.03 in 2009. One cause of the increase in EPS is found in the notes to the financial statements (not shown). The note describing the calculation of EPS indicates that the number of weighted-average shares decreased, and another note indicates that one reason for the decrease was the company's repurchase of some of its own shares during the year. A more important cause of the increase in EPS—shown on the income statement itself—was the significant increase in earnings from continuing operations, from $1,848 million to $3,028 million. Changes in the numerator and denominator explain the changes in EPS arithmetically. To understand the business drivers of those changes requires further research. The next section presents analytical tools that an analyst can use to highlight areas for further examination.

7. ANALYSIS OF THE INCOME STATEMENT

In this section, we apply two analytical tools to analyze the income statement: common-size analysis and income statement ratios. The objective of this analysis is to assess a company's performance over a period of time—compared with its own past performance or the performance of another company.

7.1. Common-Size Analysis of the Income Statement

Common-size analysis of the income statement can be performed by stating each line item on the income statement as a percentage of revenue.[50] Common-size statements facilitate

[50] This format can be distinguished as "vertical common-size analysis." As the chapter on financial statement analysis discusses, there is another type of common-size analysis, known as "horizontal common-size analysis," that states items in relation to a selected base year value. Unless otherwise indicated, text references to "common-size analysis" refer to vertical analysis.

comparison across time periods (time series analysis) and across companies (cross-sectional analysis) because the standardization of each line item removes the effect of size.

To illustrate, Panel A of Exhibit 15 presents an income statement for three hypothetical companies in the same industry. Company A and Company B, each with $10 million in sales, are larger (as measured by sales) than Company C, which has only $2 million in sales. In addition, Companies A and B both have higher operating profit: $2 million and $1.5 million, respectively, compared with Company C's operating profit of only $400,000.

How can an analyst meaningfully compare the performance of these companies? By preparing a common-size income statement, as illustrated in Panel B, an analyst can readily see that the percentages of Company C's expenses and profit relative to its sales are exactly the same as for Company A. Furthermore, although Company C's operating profit is lower than Company B's in absolute dollars, it is higher in percentage terms (20 percent for Company C compared with only 15 percent for Company B). For each $100 of sales, Company C generates $5 more operating profit than Company B. In other words, Company C is relatively more profitable than Company B based on this measure.

The common-size income statement also highlights differences in companies' strategies. Comparing the two larger companies, Company A reports significantly higher gross profit as a percentage of sales than does Company B (70 percent compared with 25 percent). Given that both companies operate in the same industry, why can Company A generate so much higher gross profit? One possible explanation is found by comparing the operating expenses of the two companies. Company A spends significantly more on research and development and on advertising than Company B. Expenditures on research and development likely result in products with superior technology. Expenditures on advertising likely result in greater brand awareness. So, based on these differences, it is likely that Company A is selling technologically superior products with a better brand image. Company B may be selling its products more cheaply (with a lower gross profit as a percentage of sales) but saving money by not investing in research and development or advertising. In practice, differences across companies are more subtle, but the concept is similar. An analyst, noting significant differences, would do more research and seek to understand the underlying reasons for the differences and their implications for the future performance of the companies.

EXHIBIT 15

Panel A: Income Statements for Companies A, B, and C ($)			
	A	B	C
Sales	$10,000,000	$10,000,000	$2,000,000
Cost of sales	3,000,000	7,500,000	600,000
Gross profit	7,000,000	2,500,000	1,400,000
Selling, general, and administrative expenses	1,000,000	1,000,000	200,000
Research and development	2,000,000	–	400,000
Advertising	2,000,000	–	400,000
Operating profit	2,000,000	1,500,000	400,000

(*continued*)

EXHIBIT 15 (Continued)

Panel B: Common-Size Income Statements for Companies A, B, and C (%)			
	A	B	C
Sales	100%	100%	100%
Cost of sales	30	75	30
Gross profit	70	25	70
Selling, general, and administrative expenses	10	10	10
Research and development	20	0	20
Advertising	20	0	20
Operating profit	20	15	20

Note: Each line item is expressed as a percentage of the company's sales.

For most expenses, comparison to the amount of sales is appropriate. However, in the case of taxes, it is more meaningful to compare the amount of taxes with the amount of pretax income. Using note disclosure, an analyst can then examine the causes for differences in effective tax rates. To project the companies' future net income, an analyst would project the companies' pretax income and apply an estimated effective tax rate determined in part by the historical tax rates.

Vertical common-size analysis of the income statement is particularly useful in cross-sectional analysis—comparing companies with each other for a particular time period or comparing a company with industry or sector data. The analyst could select individual peer companies for comparison, use industry data from published sources, or compile data from databases based on a selection of peer companies or broader industry data. For example, Exhibit 16 presents median common-size income statement data compiled for the components of the S&P 500 classified into the 10 S&P/MSCI Global Industrial Classification System (GICS) sectors using 2008 data. Note that when compiling aggregate data such as this, some level of aggregation is necessary and less detail may be available than from peer company financial statements. The performance of an individual company can be compared with industry or peer company data to evaluate its relative performance.

EXHIBIT 16 Median Common-Size Income Statement Statistics for the S&P 500 Classified by S&P/MSCI GICS Sector Data for 2008

	Energy	Materials	Industrials	Consumer Discretionary	Consumer Staples
No. observations	40	29	59	86	40
Operating margin	20.81	10.59	12.47	8.65	13.19
Pretax margin	17.73	7.11	10.92	5.37	9.49
Profit margin	10.76	5.01	7.22	3.35	6.03
Cost of goods sold/sales	63.03	73.93	69.56	62.82	59.18
Selling, general, and administrative expenses/sales	5.21	8.91	14.70	23.78	21.79
Taxes/Pretax income	33.30	30.72	32.30	32.56	33.51

EXHIBIT 16 (Continued)

	Health Care	Financials	Information Technology	Telecom. Services	Utilities
No. observations	55	87	77	9	33
Operating margin	19.77	16.69	16.91	27.76	17.22
Pretax margin	14.13	4.43	13.19	16.35	12.80
Profit margin	9.42	4.62	9.63	10.37	8.09
Cost of goods sold/sales	40.19	71.53	42.74	36.71	72.72
Selling, general, and administrative expenses/sales	33.13	26.36	35.76	24.04	4.42
Taxes/Pretax income	24.27	25.63	25.81	36.43	32.71

Source: Based on data from Compustat.

7.2. Income Statement Ratios

One aspect of financial performance is profitability. One indicator of profitability is **net profit margin**, also known as **profit margin** and **return on sales**, which is calculated as net income divided by revenue (or sales).[51]

$$\text{Net profit margin} = \frac{\text{Net income}}{\text{Revenue}}$$

Net profit margin measures the amount of income that a company was able to generate for each dollar of revenue. A higher level of net profit margin indicates higher profitability and is thus more desirable. Net profit margin can also be found directly on the common-size income statements.

For Kraft Foods, net profit margin for 2009 was 7.5 percent (calculated as earnings from continuing operations, net of non-controlling interests, of $3,021 million, divided by net revenues of $40,386 million). To judge this ratio, some comparison is needed. Kraft's profitability can be compared with that of another company or with its own previous performance. Compared with previous years, Kraft's profitability is higher than in 2008 and roughly equivalent to 2007. In 2008, net profit margin was 6.9 percent, and in 2007, it was 7.6 percent.

Another measure of profitability is the gross profit margin. Gross profit (gross margin) is calculated as revenue minus cost of goods sold, and the **gross profit margin** is calculated as the gross profit divided by revenue.

$$\text{Gross profit margin} = \frac{\text{Gross profit}}{\text{Revenue}}$$

The gross profit margin measures the amount of gross profit that a company generated for each dollar of revenue. A higher level of gross profit margin indicates higher profitability

[51] In the definition of margin ratios of this type, "sales" is often used interchangeably with "revenue." "Return on sales" has also been used to refer to a class of profitability ratios having revenue in the denominator.

and thus is generally more desirable, although differences in gross profit margins across companies reflect differences in companies' strategies. For example, consider a company pursuing a strategy of selling a differentiated product (e.g., a product differentiated based on brand name, quality, superior technology, or patent protection). The company would likely be able to sell the differentiated product at a higher price than a similar, but undifferentiated, product and, therefore, would likely show a higher gross profit margin than a company selling an undifferentiated product. Although a company selling a differentiated product would likely show a higher gross profit margin, this may take time. In the initial stage of the strategy, the company would likely incur costs to create a differentiated product, such as advertising or research and development, which would not be reflected in the gross margin calculation.

Kraft's gross profit (shown in Exhibit 2) was $14,600 million in 2009, $13,844 million in 2008, and $12,202 million in 2007. Expressing gross profit as a percentage of net revenues, we see that the gross profit margin was 36.2 percent in 2009, 33.0 percent in 2008, and 34.0 percent in 2007. In absolute terms, Kraft's gross profit was higher in 2008 than in 2007. However Kraft's gross profit *margin* was lower in 2008.

Exhibit 17 presents a common-size income statement for Kraft, and highlights certain profitability ratios. The net profit margin and gross profit margin described above are just two of the many subtotals that can be generated from common-size income statements. Other "margins" used by analysts include the **operating profit margin** (operating income divided by revenue) and the **pretax margin** (earnings before taxes divided by revenue).

EXHIBIT 17 Kraft's Margins Abbreviated Common-Size Income Statement

	Year Ended 31 December					
	2009		2008		2007	
	$ millions	Percent	$ millions	Percent	$ millions	Percent
Net revenues	40,386	100.0	41,932	100.0	35,858	100.0
Cost of sales	25,786	63.8	28,088	67.0	23,656	66.0
Gross profit	14,600	**36.2**[a]	13,844	**33.0**[a]	12,202	**34.0**[a]
Marketing, administration, and research costs	9,108	22.6	8,862	21.1	7,587	21.2
Asset impairment and exit costs	–64	–0.2	1,024	2.4	440	1.2
(Gains)/losses on divestitures, net	6	0.0	92	0.2	–14	0.0
Amortisation of intangibles	26	0.1	23	0.1	13	0.0
Operating income	5,524	**13.7**[b]	3,843	**9.2**[b]	4,176	**11.6**[b]
Interest and other expense, net	1,237	3.1	1,240	3.0	604	1.7
Earnings from continuing operations before income taxes	4,287	**10.6**[c]	2,603	**6.2**[c]	3,572	**10.0**[c]
[Portions omitted]						
Net earnings attributable to Kraft Foods	3,021	**7.5**[d]	2,884	**6.9**[d]	2,721	**7.6**[d]

Notes:
[a] Gross profit margin
[b] Operating profit margin
[c] Pretax margin
[d] Net profit margin

The profitability ratios and the common-size income statement yield quick insights about changes in a company's performance. For example, Kraft's increase in profitability in 2009 was not driven by an increase in revenues. (In fact, net revenues were lower than in 2008.) Instead the company's improved profitability in 2009 was driven primarily by its higher gross profit margins. Given the economic climate in 2008, the company likely had to lower prices and/or incur higher promotional costs in order to stimulate demand for its products (downward pressure on net revenues). Another driver of the company's improved profitability in 2009 was a lower amount of asset impairment and exit costs. The profitability ratios and the common-size income statement thus serve to highlight areas about which an analyst might wish to gain further understanding.

8. COMPREHENSIVE INCOME

The general expression for net income is revenue minus expenses. There are, however, certain items of revenue and expense that, by accounting convention, are excluded from the net income calculation. To understand how reported shareholders' equity of one period links with reported shareholders' equity of the next period, we must understand these excluded items, known as **other comprehensive income**.

Under IFRS, **total comprehensive income** is "the change in equity during a period resulting from transaction and other events, other than those changes resulting from transactions with owners in their capacity as owners."[52] Under US GAAP, **comprehensive income** is defined as "the change in equity [net assets] of a business enterprise during a period from transactions and other events and circumstances from non-owner sources. It includes all changes in equity during a period except those resulting from investments by owners and distributions to owners."[53] While the wording differs, comprehensive income includes the same items under IFRS and US GAAP. So, comprehensive income includes *both* net income and other revenue and expense items that are excluded from the net income calculation (other comprehensive income). Assume, for example, a company's beginning shareholders' equity is €110 million, its net income for the year is €10 million, its cash dividends for the year are €2 million, and there was no issuance or repurchase of common stock. If the company's actual ending shareholders' equity is €123 million, then €5 million [€123 – (€110 + €10 – €2)] has bypassed the net income calculation by being classified as other comprehensive income. If the company had no other comprehensive income, its ending shareholders' equity would have been €118 million [€110 + €10 – €2].

Four types of items are treated as other comprehensive income under both IFRS and US GAAP.[54] (The specific treatment of some of these items differs between the two sets of standards, but these types of items are common to both.)

- Foreign currency translation adjustments. In consolidating the financial statements of foreign subsidiaries, the effects of translating the subsidiaries' balance sheet assets and liabilities at current exchange rates are included as other comprehensive income.

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[52] IAS 1, *Presentation of Financial Statements,* paragraph 7.

[53] FASB ASC Section 220-10-05 [Comprehensive Income–Overall–Overview and Background].

[54] IAS 1, *Presentation of Financial Statements,* paragraph 7, and FASB ASC Section 220-10-55-02 [Comprehensive Income–Overall–Implementation Guidance and Illustrations].

- Unrealized gains or losses on derivatives contracts accounted for as hedges. Changes in the fair value of derivatives are recorded each period, but these changes in value for certain derivatives (those considered hedges) are treated as other comprehensive income and thus bypass the income statement.
- Unrealized holding gains and losses on a certain category of investment securities, namely, available-for-sale securities.
- Certain costs of a company's defined benefit post-retirement plans that are not recognized in the current period.

In addition, under IFRS, other comprehensive income includes certain changes in the value of long-lived assets that are measured using the revaluation model rather than the cost model.

The third type of item is perhaps the simplest to illustrate. Holding gains on securities arise when a company owns securities over an accounting period, during which time the securities' value increases. Similarly, holding losses on securities arise when a company owns securities over a period during which time the securities' value decreases. If the company has not sold the securities (i.e., realized the gain or loss), its holding gain or loss is said to be unrealized. The question is: Should the company reflect these unrealized holding gains and losses in its income statement?

According to accounting standards, the answer depends on how the company has categorized the securities. Categorization depends on what the company intends to do with the securities. If the company intends to actively trade the securities, the answer is yes; the company should categorize the securities as **trading securities** and reflect unrealized holding gains and losses in its income statement. However, if the company does not intend to actively trade the securities, the securities may be categorized as **available-for-sale** securities. For available-for-sale securities, the company does not reflect unrealized holding gains and losses in its income statement. Instead, unrealized holding gains and losses on available-for-sale securities bypass the income statement and go directly to shareholders' equity.

Even though unrealized holding gains and losses on available-for-sale securities are excluded from a company's net income, they are *included* in a company's comprehensive income.

EXAMPLE 20 Other Comprehensive Income

Assume a company's beginning shareholders' equity is €200 million, its net income for the year is €20 million, its cash dividends for the year are €3 million, and there was no issuance or repurchase of common stock. The company's actual ending shareholders' equity is €227 million.

1. What amount has bypassed the net income calculation by being classified as other comprehensive income?
   A. €0.
   B. €7 million.
   C. €10 million.
2. Which of the following statements *best* describes other comprehensive income?
   A. Income earned from diverse geographic and segment activities.
   B. Income that increases stockholders' equity but is not reflected as part of net income.

C. Income earned from activities that are not part of the company's ordinary business activities.

Solution to 1: C is correct. If the company's actual ending shareholders' equity is €227 million, then €10 million [€227– (€200 + €20 – €3)] has bypassed the net income calculation by being classified as other comprehensive income.

Solution to 2: B is correct. Answers A and C are not correct because they do not specify whether such income is reported as part of net income and shown in the income statement.

EXAMPLE 21 Other Comprehensive Income in Analysis

An analyst is looking at two comparable companies. Company A has a lower price/earnings (P/E) ratio than Company B, and the conclusion that has been suggested is that Company A is undervalued. As part of examining this conclusion, the analyst decides to explore the question: What would the company's P/E look like if total comprehensive income per share—rather than net income per share—were used as the relevant metric?

	Company A	**Company B**
Price	$35	$30
EPS	$1.60	$0.90
P/E ratio	21.9×	33.3×
Other comprehensive income (loss) $ million	($16.272)	$(1.757)
Shares (millions)	22.6	25.1

Solution: As shown in the following table, part of the explanation for Company A's lower P/E ratio may be that its significant losses—accounted for as other comprehensive income (OCI)—are not included in the P/E ratio.

	Company A	**Company B**
Price	$35	$30
EPS	$1.60	$0.90
OCI (loss) $ million	($16.272)	$(1.757)
Shares (millions)	22.6	25.1
OCI (loss) per share	$(0.72)	$(0.07)
Comprehensive EPS = EPS + OCI per share	$0.88	$0.83
Price/Comprehensive EPS ratio	39.8×	36.1×

Both IFRS and US GAAP currently provide companies with some flexibility in reporting comprehensive income. IFRS currently allow companies two alternative presentations: either two statements—a separate income statement and a second statement additionally including other comprehensive income—or a single statement of other comprehensive income.[55] US GAAP give companies both of those alternatives plus another. Under US GAAP, a company can report comprehensive income at the bottom of the income statement, on a separate statement of comprehensive income, or as a column in the statement of shareholders' equity.[56] Particularly in comparing financial statements of two companies, it is relevant to examine significant differences in comprehensive income.

9. SUMMARY

This chapter has presented the elements of income statement analysis. The income statement presents information on the financial results of a company's business activities over a period of time; it communicates how much revenue the company generated during a period and what costs it incurred in connection with generating that revenue. A company's net income and its components (e.g., gross margin, operating earnings, and pretax earnings) are critical inputs into both the equity and credit analysis processes. Equity analysts are interested in earnings because equity markets often reward relatively high- or low-earnings growth companies with above-average or below-average valuations, respectively. Fixed-income analysts examine the components of income statements, past and projected, for information on companies' abilities to make promised payments on their debt over the course of the business cycle. Corporate financial announcements frequently emphasize income statements more than the other financial statements.

Key points to this chapter include the following:

- The income statement presents revenue, expenses, and net income.
- The components of the income statement include: revenue; cost of sales; sales, general, and administrative expenses; other operating expenses; non-operating income and expenses; gains and losses; non-recurring items; net income; and EPS.
- An income statement that presents a subtotal for gross profit (revenue minus cost of goods sold) is said to be presented in a multi-step format. One that does not present this subtotal is said to be presented in a single-step format.
- Revenue is recognized in the period it is earned, which may or may not be in the same period as the related cash collection. Recognition of revenue when earned is a fundamental principal of accrual accounting.
- In limited circumstances, specific revenue recognition methods may be applicable, including percentage of completion, completed contract, installment sales, and cost recovery.
- An analyst should identify differences in companies' revenue recognition methods and adjust reported revenue where possible to facilitate comparability. Where the available information does not permit adjustment, an analyst can characterize the revenue recognition as

[55] IAS 1, *Presentation of Financial Statements*, paragraph 81.

[56] FASB ASC 220-10-45 [Comprehensive Income–Overall–Other Presentation Matters] and FASB ASC 220-10-55 [Comprehensive Income–Overall–Implementation Guidance and Illustrations].

more or less conservative and thus qualitatively assess how differences in policies might affect financial ratios and judgments about profitability.

- The general principles of expense recognition include a process to match expenses either to revenue (such as, cost of goods sold) or to the time period in which the expenditure occurs (period costs such as, administrative salaries) or to the time period of expected benefits of the expenditures (such as, depreciation).
- In expense recognition, choice of method (i.e., depreciation method and inventory cost method), as well as estimates (i.e., uncollectible accounts, warranty expenses, assets' useful life, and salvage value) affect a company's reported income. An analyst should identify differences in companies' expense recognition methods and adjust reported financial statements where possible to facilitate comparability. Where the available information does not permit adjustment, an analyst can characterize the policies and estimates as more or less conservative and thus qualitatively assess how differences in policies might affect financial ratios and judgments about companies' performance.
- To assess a company's future earnings, it is helpful to separate those prior years' items of income and expense that are likely to continue in the future from those items that are less likely to continue.
- Under IFRS, a company should present additional line items, headings, and subtotals beyond those specified when such presentation is relevant to an understanding of the entity's financial performance. Some items from prior years clearly are not expected to continue in future periods and are separately disclosed on a company's income statement. Under US GAAP, two such items are specified 1) discontinued operations and 2) extraordinary items (IFRS prohibit reporting any item of income or expense as extraordinary). Both of these items are required to be reported separately from continuing operations, under US GAAP.
- For other items on a company's income statement, such as unusual items and accounting changes, the likelihood of their continuing in the future is somewhat less clear and requires the analyst to make some judgments.
- Non-operating items are reported separately from operating items on the income statement.
- Basic EPS is the amount of income available to common shareholders divided by the weighted average number of common shares outstanding over a period. The amount of income available to common shareholders is the amount of net income remaining after preferred dividends (if any) have been paid.
- If a company has a simple capital structure (i.e., one with no potentially dilutive securities), then its basic EPS is equal to its diluted EPS. If, however, a company has dilutive securities, its diluted EPS is lower than its basic EPS.
- Diluted EPS is calculated using the if-converted method for convertible securities and the treasury stock method for options.
- Common-size analysis of the income statement involves stating each line item on the income statement as a percentage of sales. Common-size statements facilitate comparison across time periods and across companies of different sizes.
- Two income-statement-based indicators of profitability are net profit margin and gross profit margin.
- Comprehensive income includes *both* net income and other revenue and expense items that are excluded from the net income calculation.

PROBLEMS

1. Expenses on the income statement may be grouped by:
   A. nature, but not by function.
   B. function, but not by nature.
   C. either function or nature.
2. An example of an expense classification by function is:
   A. tax expense.
   B. interest expense.
   C. cost of goods sold.
3. Denali Limited, a manufacturing company, had the following income statement information:

Revenue	$4,000,000
Cost of goods sold	$3,000,000
Other operating expenses	$ 500,000
Interest expense	$ 100,000
Tax expense	$ 120,000

   Denali's gross profit is equal to
   A. $280,000.
   B. $500,000.
   C. $1,000,000.
4. Under IFRS, income includes increases in economic benefits from:
   A. increases in liabilities not related to owners' contributions.
   B. enhancements of assets not related to owners' contributions.
   C. increases in owners' equity related to owners' contributions.
5. Fairplay had the following information related to the sale of its products during 2009, which was its first year of business:

Revenue	$1,000,000
Returns of goods sold	$ 100,000
Cash collected	$ 800,000
Cost of goods sold	$ 700,000

   Under the accrual basis of accounting, how much net revenue would be reported on Fairplay's 2009 income statement?
   A. $200,000.
   B. $900,000.
   C. $1,000,000.
6. If the outcome of a long-term contract can be measured reliably, the preferred accounting method under both IFRS and US GAAP is:
   A. the cost recovery method.
   B. the completed contract method.
   C. the percentage-of-completion method.

7. At the beginning of 2009, Florida Road Construction entered into a contract to build a road for the government. Construction will take four years. The following information as of 31 December 2009 is available for the contract:

Total revenue according to contract	$10,000,000
Total expected cost	$ 8,000,000
Cost incurred during 2009	$ 1,200,000

   Assume that the company estimates percentage complete based on costs incurred as a percentage of total estimated costs. Under the completed contract method, how much revenue will be reported in 2009?
   A. None.
   B. $300,000.
   C. $1,500,000.

8. During 2009, Argo Company sold 10 acres of prime commercial zoned land to a builder for $5,000,000. The builder gave Argo a $1,000,000 down payment and will pay the remaining balance of $4,000,000 to Argo in 2010. Argo purchased the land in 2002 for $2,000,000. Using the installment method, how much profit will Argo report for 2009?
   A. $600,000.
   B. $1,000,000.
   C. $3,000,000.

9. Using the same information as in Question 8, how much profit will Argo report for 2009 using the cost recovery method?
   A. None.
   B. $600,000.
   C. $1,000,000.

10. Under IFRS, revenue from barter transactions should be measured based on the fair value of revenue from:
    A. similar barter transactions with unrelated parties.
    B. similar non-barter transactions with related parties.
    C. similar non-barter transactions with unrelated parties.

11. Apex Consignment sells items over the internet for individuals on a consignment basis. Apex receives the items from the owner, lists them for sale on the internet, and receives a 25 percent commission for any items sold. Apex collects the full amount from the buyer and pays the net amount after commission to the owner. Unsold items are returned to the owner after 90 days. During 2009, Apex had the following information:
    - Total sales price of items sold during 2009 on consignment was €2,000,000.
    - Total commissions retained by Apex during 2009 for these items was €500,000.

    How much revenue should Apex report on its 2009 income statement?
    A. €500,000.
    B. €2,000,000.
    C. €1,500,000.

12. During 2009, Accent Toys Plc., which began business in October of that year, purchased 10,000 units of a toy at a cost of ₤10 per unit in October. The toy sold well in October. In anticipation of heavy December sales, Accent purchased 5,000 additional units in November at a cost of ₤11 per unit. During 2009, Accent sold 12,000 units at a price of ₤15 per unit. Under the first in, first out (FIFO) method, what is Accent's cost of goods sold for 2009?
    A. ₤120,000.
    B. ₤122,000.
    C. ₤124,000.

13. Using the same information as in Question 12, what would Accent's cost of goods sold be under the weighted average cost method?
    A. ₤120,000.
    B. ₤122,000.
    C. ₤124,000.

14. Which inventory method is least likely to be used under IFRS?
    A. First in, first out (FIFO).
    B. Last in, first out (LIFO).
    C. Weighted average.

15. At the beginning of 2009, Glass Manufacturing purchased a new machine for its assembly line at a cost of $600,000. The machine has an estimated useful life of 10 years and estimated residual value of $50,000. Under the straight-line method, how much depreciation would Glass take in 2010 for financial reporting purposes?
    A. $55,000.
    B. $60,000.
    C. $65,000.

16. Using the same information as in Question 15, how much depreciation would Glass take in 2009 for financial reporting purposes under the double-declining balance method?
    A. $60,000.
    B. $110,000.
    C. $120,000.

17. Which combination of depreciation methods and useful lives is most conservative in the year a depreciable asset is acquired?
    A. Straight-line depreciation with a short useful life.
    B. Declining balance depreciation with a long useful life.
    C. Declining balance depreciation with a short useful life.

18. Under IFRS, a loss from the destruction of property in a fire would most likely be classified as:
    A. an extraordinary item.
    B. continuing operations.
    C. discontinued operations.

19. For 2009, Flamingo Products had net income of $1,000,000. At 1 January 2009, there were 1,000,000 shares outstanding. On 1 July 2009, the company issued 100,000 new shares for $20 per share. The company paid $200,000 in dividends to common shareholders. What is Flamingo's basic earnings per share for 2009?
    A. $0.80.
    B. $0.91.
    C. $0.95.

20. Cell Services Inc. (CSI) had 1,000,000 average shares outstanding during all of 2009. During 2009, CSI also had 10,000 options outstanding with exercise prices of $10 each. The average stock price of CSI during 2009 was $15. For purposes of computing diluted earnings per share, how many shares would be used in the denominator?
    A. 1,003,333.
    B. 1,006,667.
    C. 1,010,000.

CHAPTER 5

UNDERSTANDING BALANCE SHEETS

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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- describe the elements of the balance sheet: assets, liabilities, and equity;
- describe uses and limitations of the balance sheet in financial analysis;
- describe alternative formats of balance sheet presentation;
- distinguish between current and non-current assets, and current and non-current liabilities;
- describe different types of assets and liabilities and the measurement bases of each;
- describe the components of shareholders' equity;
- convert balance sheets to common-size balance sheets and interpret common-size balance sheets;
- calculate and interpret liquidity and solvency ratios.

1. INTRODUCTION

The balance sheet provides information on a company's resources (assets) and its sources of capital (equity and liabilities/debt). This information helps an analyst assess a company's ability to pay for its near-term operating needs, meet future debt obligations, and make distributions to owners. The basic equation underlying the balance sheet is Assets = Liabilities + Equity.

Analysts should be aware that different items of assets and liabilities may be measured differently. For example, some items are measured at historical cost or a variation thereof

and others at fair value.[1] An understanding of the measurement issues will facilitate analysis. The balance sheet measurement issues are, of course, closely linked to the revenue and expense recognition issues affecting the income statement. Throughout this chapter, we describe and illustrate some of the linkages between the measurement issues affecting the balance sheet and the revenue and expense recognition issues affecting the income statement.

This chapter is organized as follows: In Section 2, we describe and give examples of the elements and formats of balance sheets. Section 3 discusses current assets and current liabilities. Section 4 focuses on assets, and Section 5 focuses on liabilities. Section 6 describes the components of equity and illustrates the statement of changes in shareholders' equity. Section 7 introduces balance sheet analysis. A summary of the key points and practice problems in the CFA Institute multiple-choice format conclude the chapter.

2. COMPONENTS AND FORMAT OF THE BALANCE SHEET

The **balance sheet** (also called the **statement of financial position** or **statement of financial condition**) discloses what an entity owns (or controls), what it owes, and what the owners' claims are at a specific point in time.[2]

The financial position of a company is described in terms of its basic elements (assets, liabilities, and equity):

- **Assets** (A) are what the company owns (or controls). More formally, assets are resources controlled by the company as a result of past events and from which future economic benefits are expected to flow *to* the entity.
- **Liabilities** (L) are what the company owes. More formally, liabilities represent obligations of a company arising from past events, the settlement of which is expected to result in an outflow of economic benefits *from* the entity.
- **Equity** (E) represents the owners' residual interest in the company's assets after deducting its liabilities. Commonly known as **shareholders' equity** or **owners' equity**, equity is determined by subtracting the liabilities from the assets of a company, giving rise to the accounting equation: **A – L = E** or **A = L + E**.

The equation A = L + E is sometimes summarized as follows: The left side of the equation reflects the resources controlled by the company and the right side reflects how those resources were financed. For all financial statement items, an item should only be recognized in the financial statements if it is probable that any future economic benefit associated with

[1] IFRS defines the term "fair value" as the amount for which an asset could be exchanged or a liability settled between knowledgeable, willing parties in an arm's length transaction (IAS 39, *Financial Instruments: Recognition and Measurement*, paragraph 9). US GAAP defines "fair value" as an exit price, i.e., the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (FASB ASC Glossary).

[2] IFRS uses the term "statement of financial position" (IAS 1 *Presentation of Financial Statements*), although US GAAP uses the two terms interchangeably (ASC 210-10-05 [Balance Sheet–Overall–Overview and Background).

the item will flow to or from the entity and if the item has a cost or value that can be measured with reliability.[3]

The balance sheet provides important information about a company's financial condition, but the balance sheet amounts of equity (assets, net of liabilities) should not be viewed as a measure of either the market or intrinsic value of a company's equity for several reasons. First, the balance sheet under current accounting standards is a mixed model with respect to measurement. Some assets and liabilities are measured based on historical cost, sometimes with adjustments, whereas other assets and liabilities are measured based on a current value. The measurement bases may have a significant effect on the amount reported. Second, even the items measured at current value reflect the value that was current at the end of the reporting period. The values of those items obviously can change after the balance sheet is prepared. Third, the value of a company is a function of many factors, including future cash flows expected to be generated by the company and current market conditions. Important aspects of a company's ability to generate future cash flows—for example, its reputation and management skills—are not included in its balance sheet.

2.1. Balance Sheet Components

To illustrate the components and formats of balance sheets, we show the major subtotals from two companies' balance sheets. Exhibit 1 and Exhibit 2 are based on the balance sheets of SAP Group (Frankfurt: SAP) and Apple Inc. (Nasdaq: AAPL). SAP Group is a leading business software company based in Germany and prepares its financial statements in accordance with IFRS. Apple is a technology manufacturer based in the United States and prepares its financial statements in accordance with US GAAP. For purposes of discussion, Exhibits 1 and 2 show only the main subtotals and totals of these companies' balance sheets. Additional exhibits throughout this chapter will expand on these subtotals.

EXHIBIT 1 SAP Group Consolidated Statements of Financial Position (Excerpt) (in millions of €)

	31 December	
Assets	2009	2008
Total current assets	5,255	5,571
Total non-current assets	8,119	8,329
Total assets	13,374	13,900
Equity and liabilities		
Total current liabilities	3,416	5,824
Total non-current liabilities	1,467	905
Total liabilities	4,883	6,729
Total equity	8,491	7,171
Equity and liabilities	13,374	13,900

Source: SAP Group 2009 annual report.

[3] *Framework for the Preparation and Presentation of Financial Statements*, International Accounting Standards Committee, 1989, adopted by IASB 2001, paragraph 83.

EXHIBIT 2 Apple Inc. Consolidated Balance Sheet (Excerpt)* (in millions of $)

Assets	26 September 2009	27 September 2008
Total current assets	31,555	30,006
[*All other assets*]	15,946	6,165
Total assets	47,501	36,171
Liabilities and shareholders' equity		
Total current liabilities	11,506	11,361
[*Total non-current liabilities*]	4,355	2,513
Total liabilities	15,861	13,874
Total shareholders' equity	31,640	22,297
Total liabilities and shareholders' equity	47,501	36,171

**Note:* The italicized subtotals presented in this excerpt are not explicitly shown on the face of the financial statement as prepared by the company.
Source: Apple Inc. 2009 annual report (Form 10K/A).

SAP Group uses the title Statement of Financial Position, consistent with IFRS, and Apple uses the title Balance Sheet. Despite their different titles, both statements report the three basic elements: assets, liabilities, and equity. Both companies are reporting on a consolidated basis, i.e., including all their controlled subsidiaries. The numbers in SAP Group's balance sheet are in millions of euro, and the numbers in Apple's balance sheet are in millions of dollars.

Balance sheet information is as of a specific point in time. These exhibits are from the companies' annual financial statements, so the balance sheet information is as of the last day of their respective fiscal years. SAP Group's fiscal year is the same as the calendar year and the balance sheet information is as of 31 December. Apple's fiscal year ends on the last Saturday of September so the actual date changes from year to year. About every six years, Apple's fiscal year will include 53 weeks rather than 52 weeks. This feature of Apple's fiscal year should be noted, but in general, the extra week is more relevant to evaluating statements spanning a period of time (the income and cash flow statements) rather than the balance sheet which captures information as of a specific point in time.

A company's ability to pay for its short-term operating needs relates to the concept of **liquidity**. With respect to a company overall, liquidity refers to the availability of cash to meet those short-term needs. With respect to a particular asset or liability, liquidity refers to its "nearness to cash." A liquid asset is one that can be easily converted into cash in a short period of time at a price close to fair market value. For example, a small holding of an actively traded stock is much more liquid than an asset such as a commercial real estate property in a weak property market.

The separate presentation of current and non-current assets and liabilities enables an analyst to examine a company's liquidity position (at least as of the end of the fiscal period). Both IFRS and US GAAP require that the balance sheet distinguish between current and non-current assets and between current and non-current liabilities and present these as separate classifications. An exception to this requirement, under IFRS, is that the current and non-current classifications are not required if a liquidity-based presentation provides reliable and more relevant information. Presentations distinguishing between current and non-current elements are shown in Exhibits 1 and 2. Exhibit 3 in Section 2.3 shows a liquidity-based presentation.

2.2. Current and Non-Current Classification

Assets held primarily for the purpose of trading or expected to be sold, used up, or otherwise realized in cash within one year or one operating cycle of the business, whichever is greater, after the reporting period are classified as **current assets**. A company's operating cycle is the average amount of time that elapses between acquiring inventory and collecting the cash from sales to customers. For a manufacturer, this is the average amount of time between acquiring raw materials and converting these into cash from a sale. Examples of companies that might be expected to have operating cycles longer than one year include those operating in the tobacco, distillery, and lumber industries. Even though these types of companies often hold inventories longer than one year, the inventory is classified as a current asset because it is expected to be sold within an operating cycle. Assets not expected to be sold or used up within one year or one operating cycle of the business, whichever is greater, are classified as **non-current assets** (long-term, long-lived assets).

Current assets are generally maintained for operating purposes, and these assets include—in addition to cash—items expected to be converted into cash (e.g., trade receivables), used up (e.g., office supplies, prepaid expenses), or sold (e.g., inventories) in the current period. Current assets provide information about the operating activities and the operating capability of the entity. For example, the item "trade receivables" or "accounts receivable" would indicate that a company provides credit to its customers. Non-current assets represent the infrastructure from which the entity operates and are not consumed or sold in the current period. Investments in such assets are made from a strategic and longer-term perspective.

Similarly, liabilities expected to be settled within one year or within one operating cycle of the business, whichever is greater, after the reporting period are classified as **current liabilities**. The specific criteria for classification of a liability as current include the following:

- It is expected to be settled in the entity's normal operating cycle;
- It is held primarily for the purpose of being traded;[4]
- It is due to be settled within one year after the balance sheet date; or
- The entity does not have an unconditional right to defer settlement of the liability for at least one year after the balance sheet date.[5]

IFRS specify that some current liabilities, such as trade payables and some accruals for employee and other operating costs, are part of the working capital used in the entity's normal operating cycle. Such operating items are classified as current liabilities even if they will be settled more than one year after the balance sheet date. When the entity's normal operating cycle is not clearly identifiable, its duration is assumed to be one year. All other liabilities are classified as **non-current liabilities**. Non-current liabilities include financial liabilities that provide financing on a long-term basis.

The excess of current assets over current liabilities is called **working capital**. The level of working capital tells analysts something about the ability of an entity to meet liabilities as they fall due. Although adequate working capital is essential, working capital should not be too large because funds may be tied up that could be used more productively elsewhere.

A balance sheet with separately classified current and non-current assets and liabilities is referred to as a **classified balance sheet**. Classification also refers generally to the grouping of

[4]Examples of these are financial liabilities classified as held for trading in accordance with IAS 39.

[5]IAS 1, *Presentation of Financial Statements*, paragraph 69.

accounts into subcategories. Both companies' balance sheets that are summarized in Exhibits 1 and 2 are classified balance sheets. Although both companies' balance sheets present current assets before non-current assets and current liabilities before non-current liabilities, this is not required. IFRS does not specify the order or format in which a company presents items on a current/non-current classified balance sheet.

2.3. Liquidity-Based Presentation

A liquidity-based presentation, rather than a current/non-current presentation, is used when such a presentation provides information that is reliable and more relevant. With a liquidity-based presentation, all assets and liabilities are presented broadly in order of liquidity.

Entities such as banks are candidates to use a liquidity-based presentation. Exhibit 3 presents the assets portion of the balance sheet of China Construction Bank, a commercial bank based in Beijing that reports using IFRS. [The Bank's H-shares are listed on the Hong Kong Stock Exchange (Stock Code: 939), and the Bank's A-shares are listed on the Shanghai Stock Exchange (Stock Code: 601939).] Its balance sheet is ordered using a liquidity-based presentation. As shown, the asset section begins with Cash and deposits with central banks. Less liquid items such as fixed assets and land use rights appear near the bottom of the asset listing.

EXHIBIT 3 China Construction Bank Corporation Consolidated Statement of Financial Position (Excerpt: Assets Only) as of 31 December (in millions of RMB)

Assets	2009	2008
Cash and deposits with central banks	1,458,648	1,247,450
Deposits with banks and non-bank financial institutions	101,163	33,096
Precious metals	9,229	5,160
Placements with banks and non-bank financial institutions	22,217	16,836
Financial assets at fair value through profit or loss	18,871	50,309
Positive fair value of derivatives	9,456	21,299
Financial assets held under resale agreements	589,606	208,548
Interest receivable	40,345	38,317
Loans and advances to customers	4,692,947	3,683,575
Available-for-sale financial assets	651,480	550,838
Held-to-maturity investments	1,408,873	1,041,783
Debt securities classified as receivables	499,575	551,818
Interests in associates and jointly controlled entities	1,791	1,728
Fixed assets	74,693	63,957
Land use rights	17,122	17,295
Intangible assets	1,270	1,253
Goodwill	1,590	1,527
Deferred tax assets	10,790	7,855
Other assets	13,689	12,808
Total assets	9,623,355	7,555,452

Source: China Construction Bank 2009 Annual Report.

3. CURRENT ASSETS AND CURRENT LIABILITIES

This section examines current assets and current liabilities in greater detail.

3.1. Current Assets

Accounting standards require that certain specific line items, if they are material, must be shown on a balance sheet. Among the current assets' required line items are cash and cash equivalents, trade and other receivables, inventories, and financial assets (with short maturities). Companies present other line items as needed, consistent with the requirements to separately present each material class of similar items. As examples, Exhibit 4 and Exhibit 5 present balance sheet excerpts for SAP Group and Apple Inc. showing the line items for the companies' current assets.

EXHIBIT 4 SAP Group Consolidated Statements of Financial Position (Excerpt: Current Assets Detail) (in millions of €)

	as of 31 December	
Assets	2009	2008
Cash and cash equivalents	1,884	1,280
Other financial assets	486	588
Trade and other receivables	2,546	3,178
Other non-financial assets	147	126
Tax assets	192	399
Total current assets	5,255	5,571
Total non-current assets	8,119	8,329
Total assets	13,374	13,900
Equity and liabilities		
Total current liabilities	3,416	5,824
Total non-current liabilities	1,467	905
Total liabilities	4,883	6,729
Total equity	8,491	7,171
Equity and liabilities	13,374	13,900

Source: SAP Group 2009 annual report.

EXHIBIT 5 Apple Inc. Consolidated Balance Sheet (Excerpt: Current Assets Detail)* (in millions of $)

Assets	26 September 2009	27 September 2008
Cash and cash equivalents	5,263	11,875
Short-term marketable securities	18,201	10,236
Accounts receivable, less allowances of $52 and $47, respectively	3,361	2,422

(*continued*)

EXHIBIT 5 (Continued)

Assets	26 September 2009	27 September 2008
Inventories	455	509
Deferred tax assets	1,135	1,044
Other current assets	3,140	3,920
Total current assets	31,555	30,006
[All other assets]	15,946	6,165
Total assets	47,501	36,171
Liabilities and shareholders' equity		
Total current liabilities	11,506	11,361
[*Total non-current liabilities*]	4,355	2,513
Total liabilities	15,861	13,874
Total shareholders' equity	31,640	22,297
Total liabilities and shareholders' equity	47,501	36,171

**Note:* The italicized subtotals presented in this excerpt are not explicitly shown on the face of the financial statement as prepared by the company.
Source: Apple Inc. 2009 annual report (Form 10K/A).

3.1.1. Cash and Cash Equivalents

Cash equivalents are highly liquid, short-term investments that are so close to maturity,[6] the risk is minimal that their value will change significantly with changes in interest rates. Cash and cash equivalents are financial assets. Financial assets, in general, are measured and reported at either **amortised cost** or **fair value**. Amortised cost is the historical cost (initially recognized cost) of the asset adjusted for amortisation and impairment. Under IFRS, fair value is the amount at which an asset could be exchanged or a liability settled in an arm's length transaction between knowledgeable and willing parties. Under US GAAP, the definition is similar but it is based on an exit price, the price received to sell an asset or paid to transfer a liability, rather than an entry price.[7]

For cash and cash equivalents, amortised cost and fair value are likely to be immaterially different. Examples of cash equivalents are demand deposits with banks and highly liquid investments (such as US Treasury bills, commercial paper, and money market funds) with original maturities of three months or less. Cash and cash equivalents excludes amounts that are restricted in use for at least 12 months. For all companies, the Statement of Cash Flows presents information about the changes in cash over a period. For the fiscal year 2009, SAP Group's cash and cash equivalents increased from €1,280 million to €1,844 million, and Apple's cash and cash equivalents decreased from $11,875 million to $5,263 million.

[6]Generally, three months or less.

[7]The joint IASB/FASB Fair Value project has expressed the intent to adopt an exit price definition of fair value.

3.1.2. Marketable Securities

Marketable securities are also financial assets and include investments in debt or equity securities that are traded in a public market, and whose value can be determined from price information in a public market. Examples of marketable securities include treasury bills, notes, bonds, and equity securities, such as common stocks and mutual fund shares. Companies disclose further detail in the notes to their financial statements about their holdings. For example, SAP Group discloses that its other financial assets consist mainly of time deposits, investment in insurance policies, and loans to employees. Apple's short-term marketable securities, totaling $18.2 billion and $10.2 billion at the end of fiscal 2009 and 2008, respectively, consist of fixed-income securities with a maturity of less than one year. Financial assets such as investments in debt and equity securities involve a variety of measurement issues and will be addressed in Section 4.5.

3.1.3. Trade Receivables

Trade receivables, also referred to as accounts receivable, are another type of financial asset. These are amounts owed to a company by its customers for products and services already delivered. They are typically reported at net realizable value, an approximation of fair value, based on estimates of collectability. Several aspects of accounts receivable are usually relevant to an analyst. First, the overall level of accounts receivable relative to sales (a topic to be addressed further in ratio analysis) is important because a significant increase in accounts receivable relative to sales could signal that the company is having problems collecting cash from its customers.

A second relevant aspect of accounts receivable is the allowance for doubtful accounts. The allowance for doubtful accounts reflects the company's estimate of amounts that will ultimately be uncollectible. Additions to the allowance in a particular period are reflected as bad debt expenses, and the balance of the allowance for doubtful accounts reduces the gross receivables amount to a net amount that is an estimate of fair value. When specific receivables are deemed to be uncollectible, they are written off by reducing accounts receivable and the allowance for doubtful accounts. The allowance for doubtful accounts is called a **contra account** because it is netted against (i.e., reduces) the balance of accounts receivable, which is an asset account. SAP Group's balance sheet, for example, reports current net trade and other receivables of €2,546 million as of 31 December 2009. The amount of the allowance for doubtful accounts (€48 million) is disclosed in the notes to the financial statements. Apple discloses the allowance for doubtful accounts on the balance sheet; as of 26 September 2009, the allowance was $52 million. The $3,361 million of accounts receivable on that date is net of the allowance. Apple's disclosures state that the allowance is based on "historical experience, the age of the accounts receivable balances, credit quality of the Company's customers, current economic conditions, and other factors that may affect customers' ability to pay." The age of an accounts receivable balance refers to the length of time the receivable has been outstanding, including how many days past the due date.

Another relevant aspect of accounts receivable is the concentration of credit risk. For example, SAP Group's note on trade and other receivables discloses that concentration of credit risk is limited because they have a large customer base diversified across various industries and countries, and because no single customer accounted for 10 percent or more of either revenue or receivables.

EXAMPLE 1 Analysis of Accounts Receivable

1. Based on the balance sheet excerpt for Apple Inc. in Exhibit 5, what percentage of its total accounts receivable in 2009 and 2008 does Apple estimate will be uncollectible?
2. In general, how does the amount of allowance for doubtful accounts relate to bad debt expense?
3. In general, what are some factors that could cause a company's allowance for doubtful accounts to decrease?

Solution to 1: ($ millions) The percentage of 2009 accounts receivable estimated to be uncollectible is 1.5 percent, calculated as $52/($3,361 + $52). Note that the $3,361 is net of the $52 allowance, so the gross amount of accounts receivable is determined by adding the allowance to the net amount. The percentage of 2008 accounts receivable estimated to be uncollectible is 1.9 percent [$47/($2,422 + $47)].

Solution to 2: Bad debt expense is an expense of the period, based on a company's estimate of the percentage of credit sales in the period, for which cash will ultimately not be collected. The allowance for bad debts is a contra asset account, which is netted against the asset accounts receivable.

To record the estimated bad debts, a company recognizes a bad debt expense (which affects net income) and increases the balance in the allowance for doubtful accounts by the same amount. To record the write-off of a particular account receivable, a company reduces the balance in the allowance for doubtful accounts and reduces the balance in accounts receivable by the same amount.

Solution to 3: In general, a decrease in a company's allowance for doubtful accounts in absolute terms could be caused by a decrease in the amount of credit sales.

Some factors that could cause a company's allowance for doubtful accounts to decrease as a percentage of accounts receivable include the following:

- Improvements in the credit quality of the company's existing customers (whether driven by a customer-specific improvement or by an improvement in the overall economy);
- Stricter credit policies (for example, refusing to allow less creditworthy customers to make credit purchases and instead requiring them to pay cash, to provide collateral, or to provide some additional form of financial backing); and/or
- Stricter risk management policies (for example, buying more insurance against potential defaults).

In addition to the business factors noted above, because the allowance is based on management's estimates of collectability, management can potentially bias these estimates to manipulate reported earnings. For example, a management team aiming to increase reported income could intentionally over-estimate collectability and under-estimate the bad debt expense for a period. Conversely, in a period of good earnings, management could under-estimate collectability and over-estimate the bad debt expense with the intent of reversing the bias in a period of poorer earnings.

3.1.4. Inventories

Inventories are physical products that will eventually be sold to the company's customers, either in their current form (finished goods) or as inputs into a process to manufacture a final product (raw materials and work-in-process). Like any manufacturer, Apple holds inventories. The 2009 balance sheet of Apple Inc. shows $455 million of inventories. SAP Group's balance sheet does not include a line item for inventory, but its note disclosures indicate that inventory is included as a part of other non-financial assets on its balance sheet. SAP Group is primarily a software and services provider and the amount of its inventory is not material enough to require disclosure as a separate line item on the balance sheet.

Inventories are measured at the lower of cost and net realisable value under IFRS, and the lower of cost or market under US GAAP. The cost of inventories comprises all costs of purchase, costs of conversion, and other costs incurred in bringing the inventories to their present location and condition. The following amounts are excluded from the determination of inventory costs:

- abnormal amounts of wasted materials, labor, and overheads;
- storage costs, unless they are necessary prior to a further production process;
- administrative overheads; and
- selling costs.

The following techniques can be used to measure the cost of inventories if the resulting valuation amount approximates cost:

- **Standard cost**, which should take into account the normal levels of materials, labor, and actual capacity. The standard cost should be reviewed regularly to ensure that it approximates actual costs.
- The **retail method** in which the sales value is reduced by the gross margin to calculate cost. An average gross margin percentage should be used for each homogeneous group of items. In addition, the impact of marked-down prices should be taken into consideration.

Net realisable value (NRV), the measure used by IFRS, is the estimated selling price less the estimated costs of completion and costs necessary to make the sale. Under US GAAP, market value is current replacement cost but with upper and lower limits: It cannot exceed NRV and cannot be lower than NRV less a normal profit margin.

If the net realisable value (under IFRS) or market value (under US GAAP) of a company's inventory falls below its carrying amount, the company must write down the value of the inventory. The loss in value is reflected in the income statement. For example, within its Management's Discussion and Analysis and notes, Apple indicates that the company reviews its inventory each quarter and records write-downs of inventory that has become obsolete, exceeds anticipated demand, or is carried at a value higher than its market value. Under IFRS, if inventory that was written down in a previous period subsequently increases in value, the amount of the original write-down is reversed. Subsequent reversal of an inventory write-down is not permitted under US GAAP.

When inventory is sold, the cost of that inventory is reported as an expense, "cost of goods sold." Accounting standards allow different valuation methods for determining the amounts that are included in cost of goods sold on the income statement and thus the amounts that are reported in inventory on the balance sheet. (Inventory valuation methods are referred to as cost formulas and cost flow assumptions under IFRS and US GAAP, respectively.) IFRS allows only

the first-in, first-out (FIFO), weighted average cost, and specific identification methods. Some accounting standards (such as US GAAP) also allow last-in, first-out (LIFO) as an additional inventory valuation method. The LIFO method is not allowed under IFRS.

EXAMPLE 2 Analysis of Inventory

Cisco Systems is a global provider of networking equipment. In its third quarter 2001 Form 10-Q filed with the US Securities and Exchange Commission (US SEC) on 1 June 2001, the company made the following disclosure:

> We recorded a provision for inventory, including purchase commitments, totaling $2.36 billion in the third quarter of fiscal 2001, of which $2.25 billion related to an additional excess inventory charge. Inventory purchases and commitments are based upon future sales forecasts. To mitigate the component supply constraints that have existed in the past, we built inventory levels for certain components with long lead times and entered into certain longer-term commitments for certain components. Due to the sudden and significant decrease in demand for our products, inventory levels exceeded our requirements based on current 12-month sales forecasts. This additional excess inventory charge was calculated based on the inventory levels in excess of 12-month demand for each specific product. We do not currently anticipate that the excess inventory subject to this provision will be used at a later date based on our current 12-month demand forecast.

After the inventory charge, Cisco reported approximately $2 billion of inventory on the balance sheet, suggesting that the write-off amounted to approximately half of its inventory. In addition to the obvious concerns raised as to management's poor performance in anticipating how much inventory was required, many analysts were concerned about how the write-off would affect Cisco's future reported earnings. If this inventory is sold in a future period, a "gain" could be reported based on a lower cost basis for the inventory. In this case, management indicated that the intent was to scrap the inventory. When the company subsequently released its annual earnings, the press release stated:[8]

> Net sales for fiscal 2001 were $22.29 billion, compared with $18.93 billion for fiscal 2000, an increase of 18%. Pro forma net income, which excludes the effects of acquisition charges, payroll tax on stock option exercises, restructuring costs and other special charges, excess inventory charge (benefit), and net gains realized on minority investments, was $3.09 billion or $0.41 per share for fiscal 2001, compared with pro forma net income of $3.91 billion or $0.53 per share for fiscal 2000, decreases of 21% and 23%, respectively.
>
> Actual net loss for fiscal 2001 was $1.01 billion or $0.14 per share, compared with actual net income of $2.67 billion or $0.36 per share for fiscal 2000.

1. What concerns would an analyst likely have about the company's $2.3 billion write-off of inventory? What is the significance of the company indicating its intent to scrap the written off inventory?

[8] Cisco press release dated 7 August 2001 from www.cisco.com.

2. What concerns might an analyst have about the company's earnings press release when the company subsequently released its annual earnings?

Solution to 1: First, an analyst would likely have concerns about management's abilities to anticipate how much and what type of inventory was required. While errors in forecasting demand are understandable, the amount of inventory written off represented about half of the company's inventory. A second concern would relate to how the write-off would affect the company's future reported earnings. If the inventory that had been written off were sold in a future period, a "gain" could be reported based on a lower cost basis for the inventory. The company's intent to scrap the written off inventory would alleviate but not eliminate concerns about distortions to future reported earnings.

Solution to 2: An analyst might be concerned that the company's press release focused mainly on "pro forma earnings," which excluded the impact of many items, including the inventory write-off. The company only gave a brief mention of actual (US GAAP) results.

Note: A 2003 SEC regulation now requires companies to give at least equal emphasis to GAAP measures (for example, reported net income) when using a non-GAAP measure (for example, pro forma net income) and to provide a reconciliation of the two measures.[9]

3.1.5. Other Current Assets

The amounts shown in "other current assets" reflect items that are individually not material enough to require a separate line item on the balance sheet and so are aggregated into a single amount. Companies usually disclose the components in a note to the financial statements. A typical item included in other current assets is prepaid expenses. **Prepaid expenses** are normal operating expenses that have been paid in advance. Because expenses are recognized in the period in which they are incurred—and not necessarily the period in which the payment is made—the advance payment of a future expense creates an asset. The asset (prepaid expenses) will be recognized as an expense in future periods as it is used up. For example, consider prepaid insurance. Assume a company pays its insurance premium for coverage over the next calendar year on 31 December of the current year. At the time of the payment, the company recognizes an asset (prepaid insurance expense). The expense is not incurred at that date; the expense is incurred as time passes (in this example, one-twelfth, 1/12, in each following month). Therefore, the expense is recognized and the value of the asset is reduced in the financial statements over the course of the year.

Portions of the amounts shown as tax assets on SAP's balance sheet and **deferred tax assets** on Apple's balance sheet represent income taxes incurred prior to the time that the income tax expense will be recognized on the income statement. Deferred tax assets may result when the actual **income tax payable** based on income for tax purposes in a period exceeds the amount of income tax expense based on the reported financial statement income due to temporary timing differences. For example, a company may be required to report certain income for tax purposes in the current period but to defer recognition of that income for financial statement purposes to subsequent periods. In this case, the company will pay income tax as

[9] US Securities and Exchange Commission. (January 2003). *Final rule: Conditions for use of non-GAAP financial measures* (Releases 33-8176 and 34-47226, File S7-43-02).

required by tax laws, and the difference between the taxes payable and the tax expense related to the income for which recognition was deferred on the financial statements will be reported as a deferred tax asset. When the income is subsequently recognized on the income statement, the related tax expense is also recognised which will reduce the deferred tax asset.

Also, a company may claim certain expenses for financial statement purposes that it is only allowed to claim in subsequent periods for tax purposes. In this case, as in the previous example, the financial statement income before taxes is less than taxable income. Thus, income taxes payable based on taxable income exceeds income tax expense based on accounting net income before taxes. The difference is expected to reverse in the future when the income reported on the financial statements exceeds the taxable income as a deduction for the expense becomes allowed for tax purposes. Deferred tax assets may also result from carrying forward unused tax losses and credits (these are not temporary timing differences). Deferred tax assets are only to be recognised if there is an expectation that there will be taxable income in the future, against which the temporary difference or carried forward tax losses or credits can be applied to reduce taxes payable.

3.2. Current Liabilities

Current liabilities are those liabilities that are expected to be settled in the entity's normal operating cycle, held primarily for trading, or due to be settled within 12 months after the balance sheet date. Exhibit 6 and Exhibit 7 present balance sheet excerpts for SAP Group and Apple Inc. showing the line items for the companies' current liabilities. Some of the common types of current liabilities, including trade payables, financial liabilities, accrued expenses, and deferred income, are discussed below.

EXHIBIT 6 SAP Group Consolidated Statements of Financial Position (Excerpt: Current Liabilities Detail) (in millions of €)

	as of 31 December	
Assets	2009	2008
Total current assets	5,255	5,571
Total non-current assets	8,119	8,329
Total assets	13,374	13,900
Equity and liabilities		
Trade and other payables	638	599
Tax liabilities	125	363
Bank loans and other financial liabilities	146	2,563
Other non-financial liabilities	1,577	1,428
Provisions	332	248
Deferred income	598	623
Total current liabilities	3,416	5,824
Total non-current liabilities	1,467	905
Total liabilities	4,883	6,729
Total equity	8,491	7,171
Equity and liabilities	13,374	13,900

Source: SAP Group 2009 annual report.

EXHIBIT 7 Apple Inc. Consolidated Balance Sheet (Excerpt: Current Liabilities Detail)*
(in millions of $)

Assets	26 September 2009	27 September 2008
Total current assets	31,555	30,006
[All other assets]	15,946	6,165
Total assets	47,501	36,171
Liabilities and shareholders' equity		
Accounts payable	5,601	5,520
Accrued expenses	3,852	4,224
Deferred revenue	2,053	1,617
Total current liabilities	11,506	11,361
[Total non-current liabilities]	4,355	2,513
Total liabilities	15,861	13,874
Total shareholders' equity	31,640	22,297
Total liabilities and shareholders' equity	47,501	36,171

**Note:* The italicized subtotals presented in this excerpt are not explicitly shown on the face of the financial statement as prepared by the company.
Source: Apple Inc. 2009 annual report (Form 10K/A).

Trade payables, also called **accounts payable**, are amounts that a company owes its vendors for purchases of goods and services. In other words, these represent the unpaid amount as of the balance sheet date of the company's purchases on credit. An issue relevant to analysts is the trend in overall levels of trade payables relative to purchases (a topic to be addressed further in ratio analysis). Significant changes in accounts payable relative to purchases could signal potential changes in the company's credit relationships with its suppliers. The general term "trade credit" refers to credit provided to a company by its vendors. Trade credit is a source of financing that allows the company to make purchases and then pay for those purchases at a later date.

Notes payable are financial liabilities owed by a company to creditors, including trade creditors and banks, through a formal loan agreement. Any notes payable, loans payable, or other financial liabilities that are due within one year (or the operating cycle, whichever is longer) appear in the current liability section of the balance sheet. In addition, any portions of long-term liabilities that are due within one year (i.e., the current portion of long-term liabilities) are also shown in the current liability section of the balance sheet. On SAP Group's balance sheet, current liabilities include bank loans and other financial liabilities. Apple Inc. does not have any current notes payable or loans payable.

Income taxes payable reflect taxes, based on taxable income, that have not yet been paid. SAP Group's balance sheet shows €125 million of tax liabilities in its current liabilities. Apple Inc.'s balance sheet does not show a separate line item for current taxes payable; instead a note discloses that income taxes payable of $430 million are included within the $3,852 million of "Accrued expenses." **Accrued expenses** (also called accrued expenses payable, accrued liabilities, and other non-financial liabilities) are expenses that have been recognized on a company's income statement but which have not yet been paid as of the balance sheet date. In addition to income taxes payable, other common examples of accrued expenses are accrued interest

payable, accrued warranty costs, and accrued employee compensation (i.e., wages payable). SAP Group's notes disclose that the €1,577 million line item of other non-financial liabilities, for example, includes €1,343 million of employee-related liabilities.

Deferred income (also called **deferred revenue** and **unearned revenue**) arises when a company receives payment in advance of delivery of the goods and services associated with the payment. The company has an obligation either to provide the goods or services or to return the cash received. Examples include lease payments received at the beginning of a lease, fees for servicing office equipment received at the beginning of the service period, and payments for magazine subscriptions received at the beginning of the subscription period. SAP Group's balance sheet shows deferred income of €598 million at the end of 2009, down slightly from €623 million at the end of 2008. Apple Inc.'s balance sheet shows deferred revenue of $2,053 million at the end of fiscal 2009, up 27 percent from $1,617 million at the end of fiscal 2008. Example 3 presents each company's disclosures about deferred revenue and discusses some of the implications.

EXAMPLE 3 Analysis of Deferred Revenue

In the notes to its 2009 financial statements, SAP Group describes its deferred income as follows:

> Deferred income consists mainly of prepayments made by our customers for support services and professional services, fees for multiple element arrangements allocated to undelivered elements, and amounts . . . for obligations to perform under acquired support contracts in connection with acquisitions.

Apple's deferred revenue arises from sales involving components, some delivered at the time of sale and others to be delivered in the future. In its 2009 financial statements, Apple Inc. explains that accounting for sale of some of its products is treated as two deliverables:

> . . . The first deliverable is the hardware and software delivered at the time of sale, and the second deliverable is the right included with the purchase of iPhone and Apple TV to receive on a when-and-if-available basis future unspecified software upgrades and features relating to the product's software . . . the Company is required to estimate a stand-alone selling price for the unspecified software upgrade right included with the sale of iPhone and Apple TV and recognizes that amount ratably over the 24-month estimated life of the related hardware device . . .

1. In general, in the period a transaction occurs, how would a company's balance sheet reflect $100 of deferred revenue resulting from a sale? (Assume, for simplicity, that the company receives cash for all sales, the company's income tax payable is 30 percent based on cash receipts, and the company pays cash for all relevant income tax obligations as they arise. Ignore any associated deferred costs.)
2. In general, how does deferred revenue impact a company's financial statements in the periods following its initial recognition?

3. Interpret the amounts shown by SAP Group as deferred income and by Apple Inc. as deferred revenue.
4. Both accounts payable and deferred revenue are classified as current liabilities. Discuss the following statements:
   A. When assessing a company's liquidity, the implication of amounts in accounts payable differs from the implication of amounts in deferred revenue.
   B. Some investors monitor amounts in deferred revenue as an indicator of future revenue growth.

Solution to 1: In the period that deferred revenue arises, the company would record a \$100 increase in the asset Cash and a \$100 increase in the liability Deferred Revenues. In addition, because the company's income tax payable is based on cash receipts and is paid in the current period, the company would record a \$30 decrease in the asset Cash and a \$30 increase in the asset Deferred Tax Assets. Deferred tax assets increase because the company has paid taxes on revenue it has not yet recognised for accounting purposes. In effect, the company has prepaid taxes from an accounting perspective.

Solution to 2: In subsequent periods, the company will recognize the deferred revenue as it is earned. When the revenue is recognized, the liability Deferred Revenue will decrease. In addition, the tax expense is recognized on the income statement as the revenue is recognised and thus the associated amounts of Deferred Tax Assets will decrease.

Solution to 3: The deferred income on SAP Group's balance sheet and deferred revenue on Apple Inc.'s balance sheet at the end of their respective 2009 fiscal years will be recognized as revenue, sales, or a similar item in income statements subsequent to the 2009 fiscal year, as the goods or services are provided or the obligation is reduced. The costs of delivering the goods or services will also be recognised.

Solution to 4A: The amount of accounts payable represents a future obligation to pay cash to suppliers. In contrast, the amount of deferred revenue represents payments that the company has already received from its customers, and the future obligation is to deliver the related services. With respect to liquidity, settling accounts payable will require cash outflows whereas settling deferred revenue obligations will not.

Solution to 4B: Some investors monitor amounts in deferred revenue as an indicator of future growth because the amounts in deferred revenue will be recognized as revenue in the future. Thus, growth in the amount of deferred revenue implies future growth of that component of a company's revenue.

4. NON-CURRENT ASSETS

This section provides an overview of assets other than current assets, sometimes collectively referred to as non-current, long-term, or long-lived assets. The categories discussed are property, plant, and equipment; investment property; intangible assets; goodwill; and financial assets. Exhibit 8 and Exhibit 9 present balance sheet excerpts for SAP Group and Apple Inc. showing the line items for the companies' non-current assets.

EXHIBIT 8 SAP Group Consolidated Statements of Financial Position (Excerpt: Non-Current Assets Detail) (in millions of €)

	as of 31 December	
Assets	2009	2008
Total current assets	5,255	5,571
Goodwill	4,994	4,975
Intangible assets	894	1,140
Property, plant, and equipment	1,371	1,405
Other financial assets	284	262
Trade and other receivables	52	41
Other non-financial assets	35	32
Tax assets	91	33
Deferred tax assets	398	441
Total non-current assets	8,119	8,329
Total assets	13,374	13,900
Equity and liabilities		
Total current liabilities	3,416	5,824
Total non-current liabilities	1,467	905
Total liabilities	4,883	6,729
Total equity	8,491	7,171
Equity and liabilities	13,374	13,900

Source: SAP Group 2009 annual report.

EXHIBIT 9 Apple Inc. Consolidated Balance Sheet (Excerpt: Non-Current Assets Detail)* (in millions of $)

Assets	26 September 2009	27 September 2008
Total current assets	31,555	30,006
Long-term marketable securities	10,528	2,379
Property, plant and equipment, net	2,954	2,455
Goodwill	206	207
Acquired intangible assets, net	247	285
Other assets	2,011	839
Total assets	47,501	36,171
Liabilities and shareholders' equity		
Total current liabilities	11,506	11,361
[*Total non-current liabilities*]	4,355	2,513
Total liabilities	15,861	13,874
Total shareholders' equity	31,640	22,297
Total liabilities and shareholders' equity	47,501	36,171

**Note:* The italicized subtotals presented in this excerpt are not explicitly shown on the face of the financial statement as prepared by the company.
Source: Apple Inc. 2009 annual report (Form 10K/A).

4.1. Property, Plant, and Equipment

Property, plant, and equipment (PPE) are tangible assets that are used in company operations and expected to be used (provide economic benefits) over more than one fiscal period. Examples of tangible assets treated as property, plant, and equipment include land, buildings, equipment, machinery, furniture, and natural resources such as mineral and petroleum resources. IFRS permits companies to report PPE using either a cost model or a revaluation model.[10] While IFRS permits companies to use the cost model for some classes of assets and the revaluation model for others, the company must apply the same model to all assets within a particular class of assets. US GAAP permits only the cost model for reporting PPE.

Under the cost model, PPE is carried at amortised cost (historical cost less any accumulated depreciation or accumulated depletion, and less any impairment losses). Historical cost generally consists of an asset's purchase price, its delivery cost, and any other additional costs incurred to make the asset operable (such as costs to install a machine). Depreciation and depletion is the process of allocating (recognizing as an expense) the cost of a long-lived asset over its useful life. Land is not depreciated. Because PPE is presented on the balance sheet net of depreciation and depreciation expense is recognised in the income statement, the choice of depreciation method and the related estimates of useful life and salvage value impact both a company's balance sheet and income statement.

Whereas depreciation is the systematic allocation of cost over an asset's useful life, impairment losses reflect an unanticipated decline in value. Impairment occurs when the asset's recoverable amount is less than its carrying amount, with terms defined as follows under IFRS:[11]

- Recoverable amount: The higher of an asset's fair value less cost to sell, and its value in use.
- Fair value less cost to sell: The amount obtainable in a sale of the asset in an arm's length transaction between knowledgeable willing parties, less the costs of the sale.
- Value in use: The present value of the future cash flows expected to be derived from the asset.

When an asset is considered impaired, the company recognizes the impairment loss in the income statement. Reversals of impairment losses are permitted under IFRS but not under US GAAP.

Under the revaluation model, the reported and carrying value for PPE is the fair value at the date of revaluation less any subsequent accumulated depreciation. Changes in the value of PPE under the revaluation model affect equity directly or profit and loss depending upon the circumstances.

In Exhibits 8 and 9, SAP Group reports €1,371 million of PPE and Apple Inc. reports $2,954 million of PPE at the end of fiscal year 2009. For SAP Group, PPE represents approximately 10 percent of total assets and for Apple, PPE represents approximately 6 percent of total assets. SAP Group discloses in its notes that land is not depreciated, that they use a cost model for PPE, and that PPE are generally depreciated over their expected useful lives using the straight-line method. Apple Inc. discloses similar policies but does not specifically disclose that land is not depreciated.

[10] IAS 16, *Property, Plant and Equipment*, paragraphs 29–31.

[11] IAS 36, *Impairment of Assets*, paragraph 6. US GAAP uses a different approach to impairment.

4.2. Investment Property

Some property is not used in the production of goods or services or for administrative purposes. Instead, it is used to earn rental income or capital appreciation (or both). Under IFRS, such property is considered to be **investment property**.[12] US GAAP does not include a specific definition for investment property. IFRS provides companies with the choice to report investment property using either a cost model or a fair value model. In general, a company must apply its chosen model (cost or fair value) to all of its investment property. The cost model for investment property is identical to the cost model for PPE: In other words, investment property is carried at cost less any accumulated depreciation and any accumulated impairment losses. Under the fair value model, investment property is carried at its fair value. When a company uses the fair value model to measure the value of its investment property, any gain or loss arising from a change in the fair value of the investment property is recognized in profit and loss, i.e., on the income statement, in the period in which it arises.[13]

Neither SAP Group nor Apple disclose ownership of investment property. The types of companies that typically hold investment property are real estate investment companies or property management companies. Entities such as life insurance companies and endowment funds may also hold investment properties as part of their investment portfolio.

4.3. Intangible Assets

Intangible assets are identifiable non-monetary assets without physical substance.[14] An identifiable asset can be acquired singly (can be separated from the entity) or is the result of specific contractual or legal rights or privileges. Examples include patents, licenses, and trademarks. The most common asset that is not a separately identifiable asset is accounting goodwill, which arises in business combinations and is discussed further in Section 4.4.

IFRS allows companies to report intangible assets using either a cost model or a revaluation model. The revaluation model can only be selected when there is an active market for an intangible asset. These measurement models are essentially the same as described for PPE. US GAAP permits only the cost model.

For each intangible asset, a company assesses whether the useful life of the asset is finite or indefinite. Amortisation and impairment principles apply as follows:

- An intangible asset with a finite useful life is amortised on a systematic basis over the best estimate of its useful life, with the amortisation method and useful life estimate reviewed at least annually.
- Impairment principles for an intangible asset with a finite useful life are the same as for PPE.
- An intangible asset with an indefinite useful life is not amortised. Instead, at least annually, the reasonableness of assuming an indefinite useful life for the asset is reviewed and the asset is tested for impairment.

Financial analysts have traditionally viewed the values assigned to intangible assets, particularly goodwill, with caution. Consequently, in assessing financial statements, analysts often exclude the book value assigned to intangibles, reducing net equity by an equal amount and increasing pretax income by any amortisation expense or impairment associated with the

[12] IAS 40, *Investment Property*.
[13] IAS 40, *Investment Property*, paragraph 35.
[14] IAS 38, *Intangible Assets*, paragraph 8.

intangibles. An arbitrary assignment of zero value to intangibles is not advisable; instead, an analyst should examine each listed intangible and assess whether an adjustment should be made. Note disclosures about intangible assets may provide useful information to the analyst. These disclosures include information about useful lives, amortisation rates and methods, and impairment losses recognised or reversed.

Further, a company may have developed intangible assets internally that can only be recognised in certain circumstances. Companies may also have assets that are never recorded on a balance sheet because they have no physical substance and are non-identifiable. These assets might include management skill, name recognition, a good reputation, and so forth. Such assets are valuable and are, in theory, reflected in the price at which the company's equity securities trade in the market (and the price at which the entirety of the company's equity would be sold in an acquisition transaction). Such assets may be recognised as goodwill if a company is acquired, but are not recognised until an acquisition occurs.

4.3.1. Identifiable Intangibles

Under IFRS, identifiable intangible assets are recognised on the balance sheet if it is probable that future economic benefits will flow to the company and the cost of the asset can be measured reliably. Examples of identifiable intangible assets include patents, trademarks, copyrights, franchises, licenses, and other rights. Identifiable intangible assets may have been created internally or purchased by a company. Determining the cost of internally created intangible assets can be difficult and subjective. For these reasons, under IFRS and US GAAP, the general requirement is that internally created identifiable intangibles are expensed rather than reported on the balance sheet.

IFRS provides that for internally created intangible assets, the company must separately identify the research phase and the development phase.[15] The research phase includes activities that seek new knowledge or products. The development phase occurs after the research phase and includes design or testing of prototypes and models. IFRS require that costs to internally generate intangible assets during the research phase must be expensed on the income statement. Costs incurred in the development stage can be capitalized as intangible assets if certain criteria are met, including technological feasibility, the ability to use or sell the resulting asset, and the ability to complete the project.

US GAAP prohibits the capitalization as an asset of most costs of internally developed intangibles and research and development. All such costs usually must be expensed. Costs related to the following categories are typically expensed under IFRS and US GAAP. They include:

- internally generated brands, mastheads, publishing titles, customer lists, etc.;
- start-up costs;
- training costs;
- administrative and other general overhead costs;
- advertising and promotion;
- relocation and reorganization expenses; and
- redundancy and other termination costs.

Generally, acquired intangible assets are reported as separately identifiable intangibles (as opposed to goodwill) if they arise from contractual rights (such as a licensing agreement), other legal rights (such as patents), or have the ability to be separated and sold (such as a customer list).

[15] IAS 38, *Intangible Assets*, paragraphs 51–67.

EXAMPLE 4 Measuring Intangible Assets

Alpha Inc., a motor vehicle manufacturer, has a research division that worked on the following projects during the year:

Project 1 Research aimed at finding a steering mechanism that does not operate like a conventional steering wheel but reacts to the impulses from a driver's fingers.

Project 2 The design of a prototype welding apparatus that is controlled electronically rather than mechanically. The apparatus has been determined to be technologically feasible, salable, and feasible to produce.

The following is a summary of the expenses of the research division (in thousands of €):

	General	Project 1	Project 2
Material and services	128	935	620
Labor			
• Direct labor	—	630	320
• Administrative personnel	720	—	—
Overhead			
• Direct	—	340	410
• Indirect	270	110	60

Five percent of administrative personnel costs can be attributed to each of Projects 1 and 2. Explain the accounting treatment of Alpha's costs for Projects 1 and 2 under IFRS and US GAAP.

Solution: Under IFRS, the capitalization of development costs for Projects 1 and 2 would be as follows:

		Amount Capitalized as an Asset (€'000)
Project 1:	Classified as in the research stage, so all costs are recognized as expenses	NIL
Project 2:	Classified as in the development stage, so costs may be capitalized. Note that administrative costs are not capitalized.	(620 + 320 + 410 + 60) = 1,410

Under US GAAP, the costs of Projects 1 and 2 are expensed.

As presented in Exhibits 8 and 9, SAP Group's 2009 balance sheet shows €894 million of intangible assets, and Apple's 2009 balance sheet shows acquired intangible assets, net of $247 million.

4.4. Goodwill

When one company acquires another, the purchase price is allocated to all the identifiable assets (tangible and intangible) and liabilities acquired, based on fair value. If the purchase price is greater than the acquirer's interest in the fair value of the identifiable assets and liabilities acquired, the excess is described as **goodwill** and is recognized as an asset. To understand why an acquirer would pay more to purchase a company than the fair value of the target company's identifiable assets and liabilities, consider the following three observations. First, as noted, certain items not recognized in a company's own financial statements (e.g., its reputation, established distribution system, trained employees) have value. Second, a target company's expenditures in research and development may not have resulted in a separately identifiable asset that meets the criteria for recognition but nonetheless may have created some value. Third, part of the value of an acquisition may arise from strategic positioning versus a competitor or from perceived synergies. The purchase price might not pertain solely to the separately identifiable assets and liabilities acquired and thus may exceed the value of those net assets due to the acquisition's role in protecting the value of all of the acquirer's existing assets or to cost savings and benefits from combining the companies.

The subject of recognizing goodwill in financial statements has found both proponents and opponents among professionals. The proponents of goodwill recognition assert that goodwill is the present value of excess returns that a company is able to earn. This group claims that determining the present value of these excess returns is analogous to determining the present value of future cash flows associated with other assets and projects. Opponents of goodwill recognition claim that the prices paid for acquisitions often turn out to be based on unrealistic expectations, thereby leading to future write-offs of goodwill.

Analysts should distinguish between accounting goodwill and economic goodwill. Economic goodwill is based on the economic performance of the entity, whereas accounting goodwill is based on accounting standards and is reported only in the case of acquisitions. Economic goodwill is important to analysts and investors, and it is not necessarily reflected on the balance sheet. Instead, economic goodwill is reflected in the stock price (at least in theory). Some financial statement users believe that goodwill should not be listed on the balance sheet, because it cannot be sold separately from the entity. These financial statement users believe that only assets that can be separately identified and sold should be reflected on the balance sheet. Other financial statement users analyze goodwill and any subsequent impairment charges to assess management's performance on prior acquisitions.

Under both IFRS and US GAAP, accounting goodwill arising from acquisitions is capitalized. Goodwill is not amortised but is tested for impairment annually. If goodwill is deemed to be impaired, an impairment loss is charged against income in the current period. An impairment loss reduces current earnings. An impairment loss also reduces total assets, so some performance measures, such as return on assets (net income divided by average total assets), may actually increase in future periods. An impairment loss is a non-cash item.

Accounting standards' requirements for recognizing goodwill can be summarized by the following steps:

A. The total cost to purchase the target company (the acquiree) is determined.
B. The acquiree's identifiable assets are measured at fair value. The acquiree's liabilities and contingent liabilities are measured at fair value. The difference between the fair value of identifiable assets and the fair value of the liabilities and contingent liabilities equals the net identifiable assets acquired.

C. Goodwill arising from the purchase is the excess of a) the cost to purchase the target company and b) the net identifiable assets acquired. Occasionally, a transaction will involve the purchase of net identifiable assets with a value greater than the cost to purchase. Such a transaction is called a "bargain purchase." Any gain from a bargain purchase is recognized in profit and loss in the period in which it arises.[16]

Companies are also required to disclose information that enables users to evaluate the nature and financial effect of business combinations. The required disclosures include, for example, the acquisition date fair value of the total cost to purchase the target company, the acquisition date amount recognized for each major class of assets and liabilities, and a qualitative description of the factors that make up the goodwill recognized.

Despite the guidance incorporated in accounting standards, analysts should be aware that the estimations of fair value involve considerable management judgment. Values for intangible assets, such as computer software, might not be easily validated when analyzing acquisitions. Management judgment about valuation in turn impacts current and future financial statements because identifiable intangible assets with definite lives are amortised over time. In contrast, neither goodwill nor identifiable intangible assets with indefinite lives are amortised; instead both are tested annually for impairment.

The recognition and impairment of goodwill can significantly affect the comparability of financial statements between companies. Therefore, analysts often adjust the companies' financial statements by removing the impact of goodwill. Such adjustments include:

- excluding goodwill from balance sheet data used to compute financial ratios, and
- excluding goodwill impairment losses from income data used to examine operating trends.

In addition, analysts can develop expectations about a company's performance following an acquisition by taking into account the purchase price paid relative to the net assets and earnings prospects of the acquired company.

EXAMPLE 5 Goodwill Impairment

Safeway, Inc. (NYSE:SWY), is a North American food and drug retailer. On 25 February 2010, Safeway issued a press release that included the following information:

> Safeway Inc. today reported a net loss of $1,609.1 million ($4.06 per diluted share) for the 16-week fourth quarter of 2009. Excluding a non-cash goodwill impairment charge of $1,818.2 million, net of tax ($4.59 per diluted share), net income would have been $209.1 million ($0.53 per diluted share). Net income was $338.0 million ($0.79 per diluted share) for the 17-week fourth quarter of 2008.
>
> In the fourth quarter of 2009, Safeway recorded a non-cash goodwill impairment charge of $1,974.2 million ($1,818.2 million, net of tax). The impairment was due primarily to Safeway's reduced market capitalization and a weak economy. . . . The goodwill originated from previous acquisitions.

[16] IFRS 3 *Business Combinations* and FASB ASC 805 [Business Combinations].

Safeway's balance sheet as of 2 January 2010 showed goodwill of $426.6 million and total assets of $14,963.6 million. The company's balance sheet as of 3 January 2009 showed goodwill of $2,390.2 million and total assets of $17,484.7 million.

1. How significant is this goodwill impairment charge?
2. With reference to acquisition prices, what might this goodwill impairment indicate?

Solution to 1: The goodwill impairment was more than 80 percent of the total value of goodwill and 11 percent of total assets, so it was clearly significant. (The charge of $1,974.2 million equals 82.6 percent of the $2,390.2 million of goodwill at the beginning of the year and 11.3 percent of the $17,484.7 million total assets at the beginning of the year.)

Solution to 2: The goodwill had originated from previous acquisitions. The impairment charge implies that the acquired operations are now worth less than the price that was paid for their acquisition.

As presented in Exhibits 8 and 9, SAP Group's 2009 balance sheet shows €4,994 million of goodwill, and Apple's 2009 balance sheet shows goodwill of $206 million. Goodwill represents 37.3 percent of SAP Group's total assets and only 0.4 percent of Apple's total assets. An analyst may be concerned that goodwill represents such a high proportion of SAP Group's total assets.

4.5. Financial Assets

IFRS define a financial instrument as a contract that gives rise to a financial asset of one entity, and a financial liability or equity instrument of another entity.[17] This section will focus on financial assets such as a company's investments in stocks issued by another company or its investments in the notes, bonds, or other fixed-income instruments issued by another company (or issued by a governmental entity). Financial liabilities such as notes payable and bonds payable issued by the company itself will be discussed in the liability portion of this chapter. Some financial instruments may be classified as either an asset or a liability depending on the contractual terms and current market conditions. One example of such a financial instrument is a derivative. **Derivatives** are financial instruments for which the value is derived based on some underlying factor (interest rate, exchange rate, commodity price, security price, or credit rating) and for which little or no initial investment is required.

All financial instruments are recognized when the entity becomes a party to the contractual provisions of the instrument. In general, there are two basic alternative ways that financial instruments are measured: fair value or amortised cost.[18] Recall that fair value is the arm's

[17] IAS 32, *Financial Instruments: Presentation*, paragraph 11.

[18] Both IFRS and US GAAP are working on projects related to financial instruments; this chapter is current as of June 2010.

length transaction price at which an asset could be exchanged or a liability settled between knowledgeable and willing parties under IFRS, and the price that would be received to sell an asset or paid to transfer a liability under US GAAP. The amortised cost of a financial asset (or liability) is the amount at which it was initially recognized, minus any principal repayments, plus or minus any amortisation of discount or premium, and minus any reduction for impairment.

Financial assets are measured at amortised cost if the asset's cash flows occur on specified dates and consist solely of principal and interest, and if the business model is to hold the asset to maturity. This category of asset is referred to as **held-to-maturity**. An example is an investment in a long-term bond issued by another company; the value of the bond will fluctuate, for example with interest rate movements, but if the bond is classified as held-to-maturity, it will be measured at amortised cost. Other types of financial assets measured at historical cost are loans (to other companies).

Financial assets not measured at amortised cost are measured at fair value. For financial instruments measured at fair value, there are two basic alternatives in how net changes in fair value are recognized: as profit or loss on the income statement, or as other comprehensive income (loss) which bypasses the income statement. Note that these alternatives refer to unrealized changes in fair value, i.e., changes in the value of a financial asset that has not been sold and is still owned at the end of the period. Unrealized gains and losses are also referred to as holding period gains and losses. If a financial asset is sold within the period, a gain is realized if the selling price is greater than the carrying value and a loss is realized if the selling price is less than the carrying value. When a financial asset is sold, any realized gain or loss is reported on the income statement. The category **held for trading** (or "trading securities" under US GAAP) refers to a category of financial assets that is acquired primarily for the purpose of selling in the near term. These assets are likely to be held only for a short period of time. These trading assets are measured at fair value, and any unrealized holding gains or losses are recognized as profit or loss on the income statement. **Mark to market** refers to the process whereby the value of a financial instrument is adjusted to reflect current fair value based on market prices.

Some financial assets are not classified as held for trading, even though they are available to be sold. Such **available-for-sale** assets are measured at fair value, with any unrealized holding gains or losses recognized in other comprehensive income. The "available-for-sale" classification no longer appears in IFRS as of 2010, although the relevant standard (IFRS 9 *Financial Instruments)* is not effective until 2013. However, although the available-for-sale category will not exist, IFRS still permit certain equity investments to be measured at fair value with any unrealized holding gains or losses recognized in other comprehensive income. Specifically, at the time a company buys an equity investment that is not held for trading, the company is permitted to make an irrevocable election to measure the asset in this manner. These assets are referred to as "financial assets measured at fair value through other comprehensive income."[19]

Exhibit 10 summarizes how various financial assets are classified and measured.

[19] IFRS 7 *Financial Instruments: Disclosures*, paragraph 8(h).

EXHIBIT 10 Measurement of Financial Assets

Measured at Fair Value	Measured at Cost or Amortised Cost
• Financial assets held for trading (e.g., stocks and bonds issued by another company) • Available-for-sale financial assets (e.g., stocks and bonds issued by another company)* • Derivatives whether stand-alone or embedded in non-derivative instruments • Non-derivative instruments (including financial assets) with fair value exposures hedged by derivatives	• Unquoted equity instruments (in limited circumstances where the fair value is not reliably measurable, cost may serve as a proxy (estimate) for fair value) • Held-to-maturity investments (investments in bonds issued by another company, intended to be held to maturity) • Loans to and receivables from another company

*As described above, the available-for-sale category will no longer be a choice under IFRS when IFRS 9 becomes effective in 2013.

To illustrate the different accounting treatments of the gains and losses on financial assets, consider an entity that invests €100,000,000 on 1 January 200X in a fixed-income security investment, with a 5 percent coupon paid semi-annually. After six months, the company receives the first coupon payment of €2,500,000. Additionally, market interest rates have declined such that the value of the fixed-income investment has increased by €2,000,000 as of 30 June 200X. Exhibit 11 illustrates how this situation will be portrayed in the balance sheet assets and equity, as well as the income statement (ignoring taxes) of the entity concerned, under each of the following three accounting policies for financial assets: assets held for trading purposes, assets available for sale, and held-to-maturity assets.

EXHIBIT 11 Accounting for Gains and Losses on Marketable Securities

Balance Sheet As of 30 June 200X	Trading Portfolio	Available-for-Sale Portfolio	Held to Maturity
Assets			
Cash and cash equivalents	2,500,000	2,500,000	2,500,000
Cost of securities	100,000,000	100,000,000	100,000,000
Unrealized gains on securities	2,000,000	2,000,000	—
	104,500,000	104,500,000	102,500,000
Liabilities			
Equity			
Paid-in capital	100,000,000	100,000,000	100,000,000
Retained earnings	4,500,000	2,500,000	2,500,000
Accumulated other comprehensive income	—	2,000,000	—
	104,500,000	104,500,000	102,500,000

Income Statement for Period 1 January–30 June 200X			
Interest income	2,500,000	2,500,000	2,500,000
Unrealized gains	2,000,000	—	—
Impact on profit and loss	4,500,000	2,500,000	2,500,000

In the case of marketable securities classified as either trading or available-for-sale, the investments are listed under assets and measured at fair market value. To highlight the impact of the change in value, Exhibit 11 shows the unrealized gain on a separate line. Practically, the investments would be listed at their fair value of €102,000,000 on one line within assets. In the case of trading securities, the unrealized gain is included on the income statement and thus reflected in retained earnings within owners' equity. In the case of available-for-sale securities, the unrealized gain is not included on the income statement as profit and loss; rather, it is treated as part of other comprehensive income and thus reflected in accumulated other comprehensive income within owners' equity. Other comprehensive income includes gains and losses that have not been reported on the income statement due to particular accounting standards. In the case of held-to-maturity securities, the securities are measured at cost rather than fair value; therefore, no unrealized gain is reflected on either the balance sheet or income statement or through comprehensive income.

In Exhibits 4 and 8, SAP Group's 2009 balance sheet shows other financial assets of €486 million (current) and €284 million (non-current). The company's notes disclose that most of these financial assets are loans and receivables, €422 million (current) and €168 million (non-current). Also, €87 million of the non-current other financial assets are classified as available-for-sale equity investments, of which €62 million are venture capital investments without quoted market prices. The notes disclose that fair values could not be estimated by reference to quoted market prices or by discounting estimated future cash flows and that "such investments are accounted for at cost approximating fair value with impairment being assessed . . ."

In Exhibits 5 and 9, Apple's 2009 balance sheet shows $18,201 million of short-term marketable securities and $10,528 million of long-term marketable securities. In total, marketable securities represent around 60 percent of Apple's $47.5 billion in total assets. Marketable securities plus cash and cash equivalents represent around 72 percent of the company's total assets. Apple's notes disclose that most of the company's marketable securities are fixed-income securities issued by the US government ($3,327 million) or its agencies ($10,835 million), and by other companies including commercial paper ($12,602 million). In accordance with its investment policy, Apple invests in highly rated securities (which the company defines as investment grade, primarily rated single A or better). The company classifies its marketable securities as available for sale and reports them on the balance sheet at fair value. Unrealized gains and losses are reported in other comprehensive income.

5. NON-CURRENT LIABILITIES

All liabilities that are not classified as current are considered to be non-current or long-term. Exhibits 12 and 13 present balance sheet excerpts for SAP Group and Apple Inc. showing the line items for the companies' non-current liabilities.

Both companies' balance sheets show non-current unearned revenue (deferred income for SAP Group and deferred revenue for Apple). These amounts represent the amounts of unearned revenue relating to goods and services expected to be delivered in periods beyond twelve months following the reporting period. The sections that follow focus on two common types of non-current (long-term) liabilities: long-term financial liabilities and deferred tax liabilities.

EXHIBIT 12 SAP Group Consolidated Statements of Financial Position (Excerpt: Non-Current Liabilities Detail) (in millions of €)

	as of 31 December	
Assets	2009	2008
Total current assets	5,255	5,571
Total non-current assets	8,119	8,329
Total assets	13,374	13,900
Equity and liabilities		
Total current liabilities	3,416	5,824
Trade and other payables	35	42
Tax liabilities	239	278
Bank loans	699	2
Other financial liabilities	30	38
Financial liabilities	729	40
Other non-financial liabilities	12	13
Provisions	198	232
Deferred tax liabilities	190	239
Deferred income	64	61
Total non-current liabilities	1,467	905
Total liabilities	4,883	6,729
Total equity	8,491	7,171
Equity and liabilities	13,374	13,900

Source: SAP Group 2009 annual report.

EXHIBIT 13 Apple Inc. Consolidated Balance Sheet (Excerpt: Non-Current Liabilities Detail)* (in millions of $)

Assets	26 September 2009	27 September 2008
Total current assets	31,555	30,006
[*All other assets*]	15,946	6,165
Total assets	47,501	36,171
Liabilities and shareholders' equity		
Total current liabilities	11,506	11,361
Deferred revenue non-current	853	768
Other non-current liabilities	3,502	1,745
Total liabilities	15,861	13,874
Total shareholders' equity	31,640	22,297
Total liabilities and shareholders' equity	47,501	36,171

**Note:* The italicized subtotals presented in this excerpt are not explicitly shown on the face of the financial statement as prepared by the company.
Source: Apple Inc. 2009 annual report (Form 10K/A).

5.1. Long-term Financial Liabilities

Typical long-term financial liabilities include loans (i.e., borrowings from banks) and notes or bonds payable (i.e., fixed-income securities issued to investors). Liabilities such as loans payable and bonds payable are usually reported at amortised cost on the balance sheet. At maturity, the amortised cost of the bond (carrying amount) will be equal to the face value of the bond. For example, if a company issues $10,000,000 of bonds at par, the bonds are reported as a long-term liability of $10 million. The carrying amount (amortised cost) from issue to maturity remains at $10 million. As another example, if a company issues $10,000,000 of bonds at a price of 97.50 (a discount to par), the bonds are reported as a liability of $9,750,000. Over the bond's life, the discount of $250,000 is amortised so that the bond will be listed as a liability of $10,000,000 at maturity. Similarly, any bond premium would be amortised for bonds issued at a price in excess of face or par value.

In certain cases, liabilities such as bonds issued by a company are reported at fair value. Those cases include financial liabilities held for trading, derivatives that are a liability to the company, and some non-derivative instruments such as those which are hedged by derivatives.

SAP Group's balance sheet in Exhibit 12 shows €699 million of bank loans and €30 million of other financial liabilities. Apple's balance sheet does not show any non-current financial liabilities.

5.2. Deferred Tax Liabilities

Deferred tax liabilities result from temporary timing differences between a company's income as reported for tax purposes (taxable income) and income as reported for financial statement purposes (reported income). Deferred tax liabilities result when taxable income and the actual income tax payable in a period based on it is less than the reported financial statement income before taxes and the income tax expense based on it. Deferred tax liabilities are defined as the amounts of income taxes payable in future periods in respect of taxable temporary differences.[20] In the previous discussion of unearned revenue, inclusion of revenue in taxable income in an earlier period created a deferred tax asset (essentially prepaid tax).

Deferred tax liabilities typically arise when items of expense are included in taxable income in earlier periods than for financial statement net income. This results in taxable income being less than income before taxes in the earlier periods. As a result, taxes payable based on taxable income are less than income tax expense based on accounting income before taxes. The difference between taxes payable and income tax expense results in a deferred tax liability—for example, when companies use accelerated depreciation methods for tax purposes and straight-line depreciation methods for financial statement purposes. Deferred tax liabilities also arise when items of income are included in taxable income in later periods—for example, when a company's subsidiary has profits that have not yet been distributed and thus have not yet been taxed.

SAP Group's balance sheet in Exhibit 12 shows €190 million of deferred tax liabilities. Apple's balance sheet in Exhibit 13 does not show a separate line item for deferred tax liabilities, however, note disclosures indicate that the $3,502 million of non-current liabilities reported on Apple's balance sheet includes deferred tax liabilities of $2,216 million.

[20] IAS 12, *Income Taxes*, paragraph 5.

6. EQUITY

Equity is the owners' residual claim on a company's assets after subtracting its liabilities.[21] It represents the claim of the owner against the company. Equity includes funds directly invested in the company by the owners, as well as earnings that have been reinvested over time. Equity can also include items of gain or loss that are not yet recognized on the company's income statement.

6.1. Components of Equity

Six potential components comprise total owners' equity. The first five components listed below comprise equity attributable to owners of parent. The sixth component is the equity attributable to non-controlling interests.

1. *Capital contributed by owners* (or common stock, or issued capital). The amount contributed to the company by owners. Ownership of a corporation is evidenced through the issuance of common shares. Common shares may have a par value (or stated value) or may be issued as no par shares (depending on regulations governing the incorporation). Where par or stated value requirements exist, it must be disclosed in the equity section of the balance sheet. In addition, the number of shares authorized, issued, and outstanding must be disclosed for each class of share issued by the company. The number of authorized shares is the number of shares that may be sold by the company under its articles of incorporation. The number of issued shares refers to those shares that have been sold to investors. The number of outstanding shares consists of the issued shares less treasury shares.
2. *Preferred shares*. Classified as equity or financial liabilities based upon their characteristics rather than legal form. For example, perpetual, non-redeemable preferred shares are classified as equity. In contrast, preferred shares with mandatory redemption at a fixed amount at a future date are classified as financial liabilities. Preferred shares have rights that take precedence over the rights of common shareholders—rights that generally pertain to receipt of dividends and receipt of assets if the company is liquidated.
3. *Treasury shares* (or treasury stock or own shares repurchased). Shares in the company that have been repurchased by the company and are held as treasury shares, rather than being cancelled. The company is able to sell (reissue) these shares. A company may repurchase its shares when management considers the shares undervalued, needs shares to fulfill employees' stock options, or wants to limit the effects of dilution from various employee stock compensation plans. A purchase of treasury shares reduces shareholders' equity by the amount of the acquisition cost and reduces the number of total shares outstanding. If treasury shares are subsequently reissued, a company does not recognize any gain or loss from the reissuance on the income statement. Treasury shares are non-voting and do not receive any dividends declared by the company.
4. *Retained earnings.* The cumulative amount of earnings recognized in the company's income statements which have not been paid to the owners of the company as dividends.

[21] IAS *Framework*, paragraph 49 (c) and FASB ASC 505-10-05-3 [Equity–Overview and Background].

5. *Accumulated other comprehensive income* (or other reserves). The cumulative amount of *other* comprehensive income or loss. Comprehensive income includes both a) net income, which is recognized on the income statement and is reflected in retained earnings, and b) other comprehensive income which is not recognized as part of net income and is reflected in accumulated other comprehensive income.[22]
6. *Non-controlling interest* (or minority interest). The equity interests of minority shareholders in the subsidiary companies that have been consolidated by the parent (controlling) company but that are not wholly owned by the parent company.

Exhibits 14 and 15 present excerpts of the balance sheets of SAP Group and Apple Inc., respectively, with detailed line items for each company's equity section. SAP's balance sheet indicates that the company has 1,226 million shares of no-par common stock outstanding with a corresponding amount shown in issued capital of €1,226 million. Presentation of the amount of treasury shares, –€1,320 million, is explained in the company's notes:

> Treasury shares are recorded at acquisition cost and are presented as a deduction from total equity. Gains and losses on the subsequent reissuance of treasury shares are credited or charged to share premium on an after-tax basis.
>
> *Source:* SAP Group 2009 annual report

Thus, the line item share premium of €317 million includes amounts from treasury share transactions (and certain other transactions). The amount of retained earnings, €8,571 million, represents the cumulative amount of earnings that the company has recognized in its income statements, net of dividends. SAP Group's –€317 million of "Other components of equity" includes the company's accumulated other comprehensive income. The consolidated statement of changes in equity shows that this is composed of €319 million of losses on exchange differences in translation, €13 million gains on remeasuring available-for-sale financial assets, and €11 million losses on cash flow hedges. The balance sheet presents a subtotal for the amount of equity attributable to the parent company €8,477 million followed by the amount of equity attributable to non-controlling interests. Total equity includes both equity attributable to the parent company and equity attributable to non-controlling interests.

The equity section of Apple's balance sheet consists of only three line items: common stock, retained earnings, and accumulated other comprehensive income/(loss). The company holds no treasury stock and has no minority interests.

[22] Comprehensive income is defined as "the change in equity [net assets] of a business enterprise during a period from transactions and other events and circumstances from non-owner sources. It includes all changes in equity during a period except those resulting from investments by owners and distributions to owners." FASB ASC Section 220-10-05 [Comprehensive Income–Overall–Overview and Background]. There is no explicit definition of comprehensive income in IFRS; the implicit definition is similar to that above. IFRS defines income in the glossary as "increases in economic benefits during the accounting period in the form of inflows or enhancements of assets or decreases of liabilities that result in increases in equity, other than those relating to contributions from equity participants."

EXHIBIT 14 SAP Group Consolidated Statements of Financial Position (Excerpt: Equity Detail) (in millions of €)

	as of 31 December	
Assets	2009	2008
Total assets	13,374	13,900
Equity and liabilities		
Total liabilities	4,883	6,729
Issued capital[1)]	1,226	1,226
Treasury shares	–1,320	–1,362
Share premium	317	320
Retained earnings	8,571	7,422
Other components of equity	–317	–437
Equity attributable to owners of parent	8,477	7,169
Non-controlling interests	14	2
Total equity	8,491	7,171
Equity and liabilities	13,374	13,900

[1)]Authorized–not issued or outstanding: 480 million no-par shares at 31 December 2009 and 2008. Authorized–issued and outstanding: 1,226 million no-par shares at 31 December 2009 and 2008.
Source: SAP Group 2009 annual report.

EXHIBIT 15 Apple Inc. Consolidated Balance Sheet (Excerpt: Equity Detail) (in millions of $)

Assets	26 September 2009	27 September 2008
Total assets	47,501	36,171
Liabilities and shareholders' equity		
Total liabilities	15,861	13,874
Common stock, no par value; 1,800,000,000 shares authorized; 899,805,500 and 888,325,973 shares issued and outstanding, respectively	8,210	7,177
Retained earnings	23,353	15,129
Accumulated other comprehensive income/(loss)	77	(9)
Total shareholders' equity	31,640	22,297
Total liabilities and shareholders' equity	47,501	36,171

Source: Apple Inc. 2009 annual report (10K/A).

6.2. Statement of Changes in Equity

The **statement of changes in equity** (or statement of shareholders' equity) presents information about the increases or decreases in a company's equity over a period. IFRS requires the following information in the statement of changes in equity:

- total comprehensive income for the period;
- the effects of any accounting changes that have been retrospectively applied to previous periods;

- capital transactions with owners and distributions to owners; and
- reconciliation of the carrying amounts of each component of equity at the beginning and end of the year.[23]

Under US GAAP, the requirement as specified by the SEC is for companies to provide an analysis of changes in each component of stockholders' equity that is shown in the balance sheet.[24]

Exhibit 16 presents an excerpt from Apple's Consolidated Statements of Changes in Shareholders' Equity. The excerpt shows only one of the years presented on the actual statement. It begins with the balance as of 27 September 2008 (i.e., the beginning of fiscal 2009) and presents the analysis of changes to 26 September 2009 in each component of equity that is shown on Apple's balance sheet. As shown, the company issued 11.48 million new shares in connection with its employee stock plans, increasing the number of shares outstanding from 888.326 million to 899.806 million. The dollar balance in common stock also increased in connection with stock-based compensation. Retained earnings increased by $8,235 million net income, net of an $11 million adjustment in connection with stock plans. For companies that pay dividends, the amount of dividends are shown separately as a deduction from retained earnings. Apple did not pay dividends. The statement also provides details on the $86 million change in Apple's Accumulated other comprehensive income. Note that the statement provides a subtotal for total comprehensive income that includes net income and each of the components of other comprehensive income.

EXHIBIT 16 Excerpt from Apple Inc.'s Consolidated Statements of Changes in Shareholders' Equity (in millions, except share amounts which are reflected in thousands)

	Common Stock		Retained Earnings	Accumulated Other Comprehensive Income	Total Shareholders' Equity
	Shares	Amount			
Balances as of 27 September 2008	**888,326**	**$ 7,177**	**$ 15,129**	**$ (9)**	**$ 22,297**
Components of comprehensive income:					
Net income	—	—	8,235	—	8,235
Change in foreign currency translation	—	—	—	(14)	(14)
Change in unrealized loss on available-for-sale securities, net of tax	—	—	—	118	118
Change in unrealized gain on derivative instruments, net of tax	—	—	—	(18)	(18)

[23] IAS 1, *Presentation of Financial Statements*, paragraph 106.

[24] FASB ASC 505-10-S99 [Equity–Overall–SEC materials] indicates that a company can present the analysis of changes in stockholders' equity either in the notes or in a separate statement.

EXHIBIT 16 (Continued)

	Common Stock		Retained Earnings	Accumulated Other Comprehensive Income	Total Shareholders' Equity
	Shares	Amount			
Total comprehensive income					8,321
Stock-based compensation	—	707	—	—	707
Common stock issued under stock plans, net of shares withheld for employee taxes	11,480	404	(11)	—	393
Tax benefit from employee stock plan awards, including transfer pricing adjustments	—	(78)	—	—	(78)
Balances as of 26 September 2009	**899,806**	**$ 8,210**	**$ 23,353**	**$ 77**	**$ 31,640**

7. ANALYSIS OF THE BALANCE SHEET

This section describes two tools for analyzing the balance sheet: common-size analysis and balance sheet ratios. Analysis of a company's balance sheet can provide insight into the company's liquidity and solvency—as of the balance sheet date—as well as the economic resources the company controls. **Liquidity** refers to a company's ability to meet its short-term financial commitments. Assessments of liquidity focus a company's ability to convert assets to cash and to pay for operating needs. **Solvency** refers to a company's ability to meet its financial obligations over the longer term. Assessments of solvency focus on the company's financial structure and its ability to pay long-term financing obligations.

7.1. Common-Size Analysis of the Balance Sheet

The first technique, vertical common-size analysis, involves stating each balance sheet item as a percentage of total assets.[25] Common-size statements are useful in comparing a company's balance sheet composition over time (time-series analysis) and across companies in the same industry. To illustrate, Panel A of Exhibit 17 presents a balance sheet for three hypothetical companies. Company C, with assets of $9.75 million is much larger than Company A and Company B, each with only $3.25 million in assets. The common-size balance sheet presented in Panel B facilitates a comparison of these different sized companies.

[25] As discussed in the curriculum chapter on financial statement analysis, another type of common-size analysis, known as "horizontal common-size analysis," states quantities in terms of a selected base-year value. Unless otherwise indicated, text references to "common-size analysis" refer to vertical analysis.

EXHIBIT 17

Panel A: Balance Sheets for Companies A, B, and C

($ Thousands)	A	B	C
ASSETS			
Current assets			
Cash and cash equivalents	1,000	200	3,000
Short-term marketable securities	900	—	300
Accounts receivable	500	1,050	1,500
Inventory	100	950	300
Total current assets	2,500	2,200	5,100
Property, plant, and equipment, net	750	750	4,650
Intangible assets	—	200	—
Goodwill	—	100	—
Total assets	3,250	3,250	9,750
LIABILITIES AND SHAREHOLDERS' EQUITY			
Current liabilities			
Accounts payable	—	2,500	600
Total current liabilities	—	2,500	600
Long-term bonds payable	10	10	9,000
Total liabilities	10	2,510	9,600
Total shareholders' equity	3,240	740	150
Total liabilities and shareholders' equity	3,250	3,250	9,750

Panel B: Common-Size Balance Sheets for Companies A, B, and C

(Percent)	A	B	C
ASSETS			
Current assets			
Cash and cash equivalents	30.8	6.2	30.8
Short-term marketable securities	27.7	0.0	3.1
Accounts receivable	15.4	32.3	15.4
Inventory	3.1	29.2	3.1
Total current assets	76.9	67.7	52.3
Property, plant, and equipment, net	23.1	23.1	47.7
Intangible assets	0.0	6.2	0.0
Goodwill	0.0	3.1	0.0
Total assets	100.0	100.0	100.0

EXHIBIT 17 (Continued)

Panel B: Common-Size Balance Sheets for Companies A, B, and C			
(Percent)	A	B	C
LIABILITIES AND SHAREHOLDERS' EQUITY			
Current liabilities			
Accounts payable	0.0	76.9	6.2
Total current liabilities	0.0	76.9	6.2
Long-term bonds payable	0.3	0.3	92.3
Total liabilities	0.3	77.2	98.5
Total shareholders' equity	99.7	22.8	1.5
Total liabilities and shareholders' equity	100.0	100.0	100.0

Most of the assets of Company A and B are current assets; however, Company A has nearly 60 percent of its total assets in cash and short-term marketable securities while Company B has only 6 percent of its assets in cash. Company A is more liquid than Company B. Company A shows no current liabilities (its current liabilities round to less than $10 thousand), and it has cash on hand of $1.0 million to meet any near-term financial obligations it might have. In contrast, Company B has $2.5 million of current liabilities which exceed its available cash of only $200 thousand. To pay those near-term obligations, Company B will need to collect some of its accounts receivables, sell more inventory, borrow from a bank, and/or raise more long-term capital (e.g., by issuing more bonds or more equity). Company C also appears more liquid than Company B. It holds over 30 percent of its total assets in cash and short-term marketable securities, and its current liabilities are only 6.2 percent of the amount of total assets.

Company C's $3.3 million in cash and short-term marketable securities is substantially more than its current liabilities of $600 thousand. Turning to the question of solvency, however, note that 98.5 percent of Company C's assets are financed with liabilities. If Company C experiences significant fluctuations in cash flows, it may be unable to pay the interest and principal on its long-term bonds. Company A is far more solvent than Company C, with less than one percent of its assets financed with liabilities.

Note that these examples are hypothetical only. Other than general comparisons, little more can be said without further detail. In practice, a wide range of factors affect a company's liquidity management and capital structure. The study of optimal **capital structure** is a fundamental issue addressed in corporate finance. Capital refers to a company's long-term debt and equity financing; capital structure refers to the proportion of debt versus equity financing.

Common-size balance sheets can also highlight differences in companies' strategies. Comparing the asset composition of the companies, Company C has made a greater proportional investment in property, plant, and equipment—possibly because it manufactures more of its products in-house. The presence of goodwill on Company B's balance sheet signifies that it has made one or more acquisitions in the past. In contrast, the lack of goodwill on the balance sheets of Company A and Company C suggests that these two companies may have pursued a strategy of internal growth rather than growth by acquisition. Company A may be in either a start-up or liquidation stage of operations as evidenced by the composition of its balance sheet. It has relatively little inventory and no accounts payable. It either has not yet established trade credit or it is in the process of paying off its obligations in the process of liquidating.

EXAMPLE 6 Common-Size Analysis

Applying common-size analysis to the excerpts of SAP Group's balance sheets presented in Exhibits 4, 6, 8, and 12, answer the following: In 2009 relative to 2008, which two of the following line items increased as a percentage of assets?

A. Cash and cash equivalents.
B. Other financial assets.
C. Trade and other receivables.
D. Tax assets.
E. Bank loans classified as current (i.e., due within one year).
F. Bank loans classified as non-current (i.e., due after one year).

Solution: (€ amounts shown are in millions.) A and F are correct. Both cash and longer-term bank loans increased as a percentage of total assets. Cash and cash equivalents increased from 9.2 percent of total assets in 2008 (€1,280 ÷ €13,900) to 14.1 percent in 2009 (€1,884 ÷ €13,374). Bank loans due after one year increased from 0.01 percent in 2008 (€2 ÷ €13,900) to 5.2 percent in 2009 (€699 ÷ €13,374). The company may have borrowed funds for a strategic purpose that it has not yet acted upon.

The other items (other financial assets, trade and other receivables, tax assets, and bank loans classified as current) all decreased both in absolute euro amounts and as a percentage of total assets when compared with the previous year. Note that some amounts of the company's other financial assets, trade and other receivables, and tax assets are classified as current assets (shown in Exhibit 4) and some amounts are classified as non-current assets (shown in Exhibit 8). The total amounts—current and non-current—of other financial assets, trade and other receivables, and tax assets, therefore, are obtained by summing the amounts in Exhibits 4 and 8.

Overall, the company strengthened its liquidity position in 2009. Total current assets were approximately the same percentage of total assets, whereas cash was a much higher percentage of total assets; total current liabilities were a much smaller percentage of the amount of total assets.

Common-size analysis of the balance sheet is particularly useful in cross-sectional analysis—comparing companies to each other for a particular time period or comparing a company with industry or sector data. The analyst could select individual peer companies for comparison, use industry data from published sources, or compile data from databases. When analyzing a company, many analysts prefer to select the peer companies for comparison or to compile their own industry statistics.

Exhibit 18 presents common-size balance sheet data compiled for the 10 sectors of the S&P 500 using 2008 data. The sector classification follows the S&P/MSCI Global Industrial Classification System (GICS). The exhibit presents mean and median common-size balance sheet data for those companies in the S&P 500 for which 2008 data was available in the Compustat database.[26]

[26] An entry of zero for an item (e.g., current assets) was excluded from the data, except in the case of preferred stock. Note that most financial institutions did not provide current asset or current liability data, so these are reported as not available in the database.

EXHIBIT 18 Common-Size Balance Sheet Statistics for the S&P 500 Grouped by S&P/MSCI GICS Sector (in percent except No. of Observations; data for 2008)

Panel A. Median Data

	10	15	20	25	30	35	40	45	50	55
	Energy	Materials	Industrials	Consumer Discretionary	Consumer Staples	Health Care	Financials	Information Technology	Telecommunication Services	Utilities
Number of observations	40	29	59	86	40	55	87	77	9	33
Cash	4.31	4.50	5.90	5.92	4.09	11.62	7.36	26.12	2.85	1.66
Receivables	8.34	12.22	16.41	9.43	8.82	11.45	18.25	9.44	5.77	5.29
Inventories	3.33	12.06	8.71	15.20	12.81	6.07	0.00	3.17	0.32	2.27
Other current	2.59	2.29	2.79	3.78	2.70	4.30	0.00	4.88	1.26	3.10
Total current assets	19.88	35.07	35.65	41.24	30.05	39.43	31.07	49.53	8.85	13.77
PPE	69.25	32.46	15.85	21.84	22.69	11.04	1.09	9.79	42.77	61.67
Intangibles	3.39	13.53	27.99	18.45	30.58	33.22	2.34	18.46	40.43	3.95
Accounts payable	6.05	6.28	6.43	7.84	7.88	3.61	9.37	3.17	2.06	3.46
Current liabilities	15.81	17.63	24.55	26.38	26.27	17.94	24.00	22.59	10.70	13.52
LT debt	17.86	22.94	19.15	22.50	26.75	18.66	11.86	9.64	52.75	30.86
Total liabilities	50.74	66.89	63.44	64.08	68.46	53.34	88.16	49.00	66.34	74.53
Preferred stock	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
Common equity	47.68	30.88	36.55	35.56	31.48	46.43	9.45	49.88	20.61	25.43
Total equity	47.68	31.03	36.55	35.56	31.48	46.43	11.81	49.88	20.61	25.47
Number of observations	40	29	59	86	40	55	87	77	9	33
Cash	5.66	6.72	7.82	10.06	6.81	15.00	10.18	27.63	3.08	2.43
Receivables	9.43	11.80	18.76	11.40	9.62	13.24	29.68	12.16	4.63	5.92
Inventories	5.98	13.64	10.49	17.93	13.44	8.04	2.39	4.70	0.43	2.82

(continued)

EXHIBIT 18 (Continued)

Panel B. Median Data										
	10	15	20	25	30	35	40	45	50	55
	Energy	Materials	Industrials	Consumer Discretionary	Consumer Staples	Health Care	Financials	Information Technology	Telecommunication Services	Utilities
Other current	3.17	2.87	3.44	4.09	3.62	4.75	3.18	7.56	1.77	4.64
Total current assets	23.94	34.98	38.35	39.88	33.31	41.07	34.25	51.97	9.91	15.73
PPE	62.93	37.88	24.15	26.83	27.09	13.52	2.75	13.41	48.81	61.62
Intangibles	7.43	16.52	28.04	21.40	32.75	33.80	9.30	23.08	35.95	5.16
Accounts payable	7.02	6.64	7.69	10.51	8.65	8.50	26.87	5.03	2.46	3.90
Current liabilities	16.33	20.33	25.82	27.48	27.65	22.73	32.76	25.89	10.27	16.02
LT debt	20.08	22.83	20.48	24.94	28.01	19.76	21.04	14.84	49.17	30.99
Total liabilities	52.29	64.02	64.23	66.31	69.32	53.36	79.79	51.21	80.00	73.73
Preferred stock	0.12	0.58	0.00	0.15	0.00	0.16	1.47	0.00	0.00	0.44
Common equity	46.77	35.55	35.41	33.00	30.04	46.08	18.02	48.69	17.95	25.44
Total equity	46.89	36.14	35.41	33.15	30.04	46.25	19.49	48.69	17.95	25.88

PPE = Property, plant, and equipment, LT = Long term.
Source: Based on data from Compustat.

Some interesting general observations can be made from these data:

- Energy and utility companies have the largest amounts of property, plant, and equipment (PPE). Telecommunication services, followed by utilities, have the highest level of long-term debt. Utilities also use some preferred stock.
- Financial companies have the greatest percentage of total liabilities. Financial companies typically have relatively high financial leverage.
- Telecommunications services and utility companies have the lowest level of receivables.
- Inventory levels are highest for consumer discretionary. Materials and consumer staples have the next highest inventories.
- Information technology companies use the least amount of leverage as evidenced by the lowest percentages for long-term debt and total liabilities and highest percentages for common and total equity.

Example 7 discusses an analyst using cross-sectional common-size balance sheet data.

EXAMPLE 7 Cross-Sectional Common-Size Analysis

Jason Lu is examining three companies in the computer industry to evaluate their relative financial position as reflected on their balance sheets. He has compiled the following vertical common-size data for Apple, Dell, and Hewlett-Packard.

Cross-Sectional Analysis Consolidated Balance Sheets (in Percent of Total Assets)

	AAPL 30 Sept 2009	DELL 29 Jan 2010	HPQ 31 Oct 2009
ASSETS			
Current assets:			
Cash and cash equivalents	11.1	31.6	11.6
Short-term marketable securities	38.3	1.1	0.0
Accounts receivable and financing receivables	7.1	25.4	16.7
Inventories	1.0	3.1	5.3
Deferred tax assets	2.4	0.0	0.0
Other current assets	6.6	10.8	12.1
Total current assets	66.4	72.0	45.8
Long-term marketable securities	22.2	2.3	0.0
Long-term financing receivables	0.0	0.0	9.8
Property, plant, and equipment, net	6.2	6.5	9.8
Goodwill	0.4	12.1	28.8
Acquired intangible assets, net	0.5	5.0	5.7
Other assets	4.2	2.0	0.0
Total assets	100.0	100.0	100.0

Cross-Sectional Analysis Consolidated Balance Sheets (in Percent of Total Assets)			
	AAPL 30 Sept 2009	DELL 29 Jan 2010	HPQ 31 Oct 2009
LIABILITIES AND SHAREHOLDERS' EQUITY			
Current liabilities:			
Accounts payable	11.8	33.8	12.9
Short-term debt	0.0	2.0	1.6
Accrued expenses	8.1	11.5	17.6
Deferred revenue	4.3	9.0	5.4
Total current liabilities	24.2	56.3	37.5
Long-term debt	0.0	10.2	12.2
Deferred revenue non-current	1.8	9.0	0.0
Other non-current liabilities	7.4	7.7	15.1
Total liabilities	33.4	83.2	64.7
Commitments and contingencies			
Total shareholders' equity	66.6	16.8	35.3
Total liabilities and shareholders' equity	100.0	100.0	100.0

AAPL = Apple Inc.; DELL = Dell Inc.; HPQ = Hewlett-Packard Co.
Source: Based on data from companies' annual reports.

From this data, Lu learns the following:

- Apple and Dell have a high level of cash and short-term marketable securities, consistent with the information technology sector as reported in Exhibit 18. Hewlett-Packard's percentage of cash and marketable securities is lower, perhaps reflecting its broader range of information technology products and services. Apple has a higher balance in cash and investments combined than Dell, Hewlett-Packard, or the industry sector as reported in Exhibit 18. This may reflect the success of the company's business model, which has generated large operating cash flows in recent years.
- Apple has the lowest level of accounts receivable. Further research is necessary to learn the extent to which this is related to Apple's cash sales through its own retail stores. An alternative explanation would be that the company has been selling/factoring receivables to a greater degree than the other companies; however, that explanation is unlikely given Apple's cash position.
- Apple and Dell both have low levels of inventory compared to the industry sector as reported in Exhibit 18. Both utilize a just-in-time inventory system and rely on suppliers to hold inventory until needed. Additional scrutiny of the notes accompanying their annual reports reveals Apple regularly makes purchase commitments that are not currently recorded as inventory and uses contract manufacturers to assemble and test some finished products. All of the companies have some purchase commitments

and make some use of contract manufacturers, which implies that inventory may be "understated."

- Apple and Dell have a level of property, plant, and equipment below that of the sector, whereas Hewlett-Packard is very close to the sector median as reported in Exhibit 18.
- Hewlett-Packard has a large amount of goodwill from its steady stream of acquisitions over the last decade.
- Dell has a large amount of accounts payable. Because of Dell's high level of cash and investments, this is likely not a problem for Dell.
- Consistent with the industry, Dell and Hewlett-Packard have very low levels of long-term debt. Apple has no long-term debt.

7.2. Balance Sheet Ratios

Ratios facilitate time-series and cross-sectional analysis of a company's financial position. **Balance sheet ratios** are those involving balance sheet items only. Each of the line items on a vertical common-size balance sheet is a ratio in that it expresses a balance sheet amount in relation to total assets. Other balance sheet ratios compare one balance sheet item to another. For example, the current ratio expresses current assets in relation to current liabilities as an indicator of a company's liquidity. Balance sheet ratios include **liquidity ratios** (measuring the company's ability to meet its short-term obligations) and **solvency ratios** (measuring the company's ability to meet long-term and other obligations). These ratios and others are discussed in a later chapter. Exhibit 19 summarizes the calculation and interpretation of selected balance sheet ratios.

EXHIBIT 19 Balance Sheet Ratios

Liquidity Ratios	Calculation	Indicates
Current	Current assets ÷ Current liabilities	Ability to meet current liabilities
Quick (acid test)	(Cash + Marketable securities + Receivables) ÷ Current liabilities	Ability to meet current liabilities
Cash	(Cash + Marketable securities) ÷ Current liabilities	Ability to meet current liabilities
Solvency Ratios		
Long-term debt-to-equity	Total long-term debt ÷ Total equity	Financial risk and financial leverage
Debt-to-equity	Total debt ÷ Total equity	Financial risk and financial leverage
Total debt	Total debt ÷ Total assets	Financial risk and financial leverage
Financial leverage	Total assets ÷ Total equity	Financial risk and financial leverage

EXAMPLE 8 Ratio Analysis

For the following ratio questions, refer to the balance sheet information for the SAP Group presented in Exhibits 1, 4, 6, 8, and 12.

1. The current ratio for SAP Group at 31 December 2009 is *closest* to
   A. 1.54.
   B. 1.86.
   C. 2.33.
2. Which two of the following ratios decreased in 2009 relative to 2008?
   A. Cash.
   B. Quick.
   C. Current.
   D. Debt-to-equity.
   E. Financial leverage.
   F. Long-term debt-to-equity.
3. For the ratios listed in Question 2, how are the changes interpreted?

Solution to 1: A is correct. SAP Group's current ratio (Current assets ÷ Current liabilities) at 31 December 2009 is 1.54 (€5,255 million ÷ €3,416 million).

Solution to 2: D and E are correct. The ratios are shown in the table below. The debt-to-equity and financial leverage ratios are lower in 2009 than in 2008. Bank loans (short-term debt) were reduced and equity increased. All other ratios are higher.

Liquidity Ratios	Calculation	2009 € in millions	2008 € in millions
Current	Current assets ÷ Current liabilities	€5,255 ÷ €3,416 = **1.54**	€5,571 ÷ €5,824 = **0.96**
Quick (acid test)	(Cash + Marketable securities + Receivables) ÷ Current liabilities	(€1,884 + €486 + €2,546) ÷ €3,416 = **1.44**	(€1,280 + €588 + €3,178) ÷ €5,824 = **0.87**
Cash	(Cash + Marketable securities) ÷ Current liabilities	(€1,884 + €486) ÷ €3,416 = **0.69**	(€1,280 + €588) ÷ €5,824 = **0.32**
Solvency Ratios			
Long-term debt-to-equity	Total long-term debt ÷ Total equity	€729 ÷ €8,491 = **8.6%**	€40 ÷ €7,171 = **0.6%**
Debt-to-equity	Total debt ÷ Total equity	(€146 + €729) ÷ €8,491 = **10.3%**	(€ 2,563 + €40) ÷ €7,171 = **36.3%**
Financial Leverage	Total assets ÷ Total equity	€13,374 ÷ €8,491 = **1.58**	€13,900 ÷ €7,171 = **1.94**

Solution to 3: The increase in each of the liquidity ratios (current, quick, and cash) in 2009 indicates that the company's liquidity position strengthened. Compared with the end of 2008, the company reported a greater amount of current assets relative to current liabilities.

- The long-term debt-to-equity ratio indicates the amount of long-term debt capital relative to the amount of equity capital. In general, an increase in the long-term debt-to-equity ratio implies that a company's solvency has weakened. In this case, however, several points should be noted. First, despite the increase, this company's ratio remains very low, indicating its solvency position is strong. Second, securing long-term financing in 2009—when credit market disruptions had caused difficulty for some companies seeking to borrow—could be considered a very prudent action. Third, the company's overall financial leverage decreased, i.e., improved.
- The debt-to-equity ratio indicates the amount of total debt capital relative to the amount of equity capital. Financial leverage indicates the amount of total asset relative to equity. A decrease in the debt-to-equity and financial leverage ratios implies that a company's total leverage decreased and thus its solvency has improved. In this case, the company's total leverage decreased largely because the company repaid most of its short-term bank loans and increased its equity in 2009.

Cross-sectional financial ratio analysis can be limited by differences in accounting methods. In addition, lack of homogeneity of a company's operating activities can limit comparability. For diversified companies operating in different industries, using industry-specific ratios for different lines of business can provide better comparisons. Companies disclose information on operating segments. The financial position and performance of the operating segments can be compared to the relevant industry.

Ratio analysis requires a significant amount of judgment. One key area requiring judgment is understanding the limitations of any ratio. The current ratio, for example, is only a rough measure of liquidity at a specific point in time. The ratio captures only the amount of current assets, but the components of current assets differ significantly in their nearness to cash (e.g., marketable securities versus inventory). Another limitation of the current ratio is its sensitivity to end-of-period financing and operating decisions that can potentially impact current asset and current liability amounts. Another overall area requiring judgment is determining whether a ratio for a company is within a reasonable range for an industry. Yet another area requiring judgment is evaluating whether a ratio signifies a persistent condition or reflects only a temporary condition. Overall, evaluating specific ratios requires an examination of the entire operations of a company, its competitors, and the external economic and industry setting in which it is operating.

8. SUMMARY

The balance sheet (also referred to as the statement of financial position) discloses what an entity owns (assets) and what it owes (liabilities) at a specific point in time. Equity is the owners' residual interest in the assets of a company, net of its liabilities. The amount of equity is increased by income earned during the year, or by the issuance of new equity. The amount of equity is decreased by losses, by dividend payments, or by share repurchases.

An understanding of the balance sheet enables an analyst to evaluate the liquidity, solvency, and overall financial position of a company.

- The balance sheet distinguishes between current and non-current assets and between current and non-current liabilities unless a presentation based on liquidity provides more relevant and reliable information.
- The concept of liquidity relates to a company's ability to pay for its near-term operating needs. With respect to a company overall, liquidity refers to the availability of cash to pay those near-term needs. With respect to a particular asset or liability, liquidity refers to its "nearness to cash."
- Some assets and liabilities are measured on the basis of fair value and some are measured at historical cost. Notes to financial statements provide information that is helpful in assessing the comparability of measurement bases across companies.
- Assets expected to be liquidated or used up within one year or one operating cycle of the business, whichever is greater, are classified as current assets. Assets not expected to be liquidated or used up within one year or one operating cycle of the business, whichever is greater, are classified as non-current assets.
- Liabilities expected to be settled or paid within one year or one operating cycle of the business, whichever is greater, are classified as current liabilities. Liabilities not expected to be settled or paid within one year or one operating cycle of the business, whichever is greater, are classified as non-current liabilities.
- Trade receivables, also referred to as accounts receivable, are amounts owed to a company by its customers for products and services already delivered. Receivables are reported net of the allowance for doubtful accounts.
- Inventories are physical products that will eventually be sold to the company's customers, either in their current form (finished goods) or as inputs into a process to manufacture a final product (raw materials and work-in-process). Inventories are reported at the lower of cost or net realizable value. If the net realizable value of a company's inventory falls below its carrying amount, the company must write down the value of the inventory and record an expense.
- Inventory cost is based on specific identification or estimated using the first-in, first-out or weighted average cost methods. Some accounting standards (including US GAAP but not IFRS) also allow last-in, first-out as an additional inventory valuation method.
- Accounts payable, also called trade payables, are amounts that a business owes its vendors for purchases of goods and services.
- Deferred revenue (also known as unearned revenue) arises when a company receives payment in advance of delivery of the goods and services associated with the payment received.
- Property, plant, and equipment (PPE) are tangible assets that are used in company operations and expected to be used over more than one fiscal period. Examples of tangible assets include land, buildings, equipment, machinery, furniture, and natural resources such as mineral and petroleum resources.
- IFRS provide companies with the choice to report PPE using either a historical cost model or a revaluation model. US GAAP permit only the historical cost model for reporting PPE.
- Depreciation is the process of recognizing the cost of a long-lived asset over its useful life. (Land is not depreciated.)
- Under IFRS, property used to earn rental income or capital appreciation is considered to be investment property. IFRS provide companies with the choice to report investment property using either a historical cost model or a fair value model.

- Intangible assets refer to identifiable non-monetary assets without physical substance. Examples include patents, licenses, and trademarks. For each intangible asset, a company assesses whether the useful life is finite or indefinite.
- An intangible asset with a finite useful life is amortised on a systematic basis over the best estimate of its useful life, with the amortisation method and useful-life estimate reviewed at least annually. Impairment principles for an intangible asset with a finite useful life are the same as for PPE.
- An intangible asset with an indefinite useful life is not amortised. Instead, it is tested for impairment at least annually.
- For internally generated intangible assets, IFRS require that costs incurred during the research phase must be expensed. Costs incurred in the development stage can be capitalized as intangible assets if certain criteria are met, including technological feasibility, the ability to use or sell the resulting asset, and the ability to complete the project.
- The most common asset that is not a separately identifiable asset is goodwill, which arises in business combinations. Goodwill is not amortised; instead it is tested for impairment at least annually.
- Financial instruments are contracts that give rise to both a financial asset of one entity and a financial liability or equity instrument of another entity. In general, there are two basic alternative ways that financial instruments are measured: fair value or amortised cost. For financial instruments measured at fair value, there are two basic alternatives in how net changes in fair value are recognized: as profit or loss on the income statement, or as other comprehensive income (loss) which bypasses the income statement.
- Typical long-term financial liabilities include loans (i.e., borrowings from banks) and notes or bonds payable (i.e., fixed-income securities issued to investors). Liabilities such as bonds issued by a company are usually reported at amortised cost on the balance sheet.
- Deferred tax liabilities arise from temporary timing differences between a company's income as reported for tax purposes and income as reported for financial statement purposes.
- Six potential components that comprise the owners' equity section of the balance sheet include: contributed capital, preferred shares, treasury shares, retained earnings, accumulated other comprehensive income, and non-controlling interest.
- The statement of changes in equity reflects information about the increases or decreases in each component of a company's equity over a period.
- Vertical common-size analysis of the balance sheet involves stating each balance sheet item as a percentage of total assets.
- Balance sheet ratios include liquidity ratios (measuring the company's ability to meet its short-term obligations) and solvency ratios (measuring the company's ability to meet long-term and other obligations).

PROBLEMS

1. Resources controlled by a company as a result of past events are:
   A. equity.
   B. assets.
   C. liabilities.

2. Equity equals:
   A. Assets – Liabilities.
   B. Liabilities – Assets.
   C. Assets + Liabilities.
3. Distinguishing between current and non-current items on the balance sheet and presenting a subtotal for current assets and liabilities is referred to as:
   A. a classified balance sheet.
   B. an unclassified balance sheet.
   C. a liquidity-based balance sheet.
4. All of the following are current assets *except*:
   A. cash.
   B. goodwill.
   C. inventories.
5. Debt due within one year is considered:
   A. current.
   B. preferred.
   C. convertible.
6. Money received from customers for products to be delivered in the future is recorded as:
   A. revenue and an asset.
   B. an asset and a liability.
   C. revenue and a liability.
7. The carrying value of inventories reflects:
   A. their historical cost.
   B. their current value.
   C. the lower of historical cost or net realizable value.
8. When a company pays its rent in advance, its balance sheet will reflect a reduction in:
   A. assets and liabilities.
   B. assets and shareholders' equity.
   C. one category of assets and an increase in another.
9. Accrued expenses (accrued liabilities) are:
   A. expenses that have been paid.
   B. created when another liability is reduced.
   C. expenses that have been reported on the income statement but not yet paid.
10. The initial measurement of goodwill is *most likely* affected by:
    A. an acquisition's purchase price.
    B. the acquired company's book value.
    C. the fair value of the acquirer's assets and liabilities.
11. Defining total asset turnover as revenue divided by average total assets, all else equal, impairment write-downs of long-lived assets owned by a company will *most likely* result in an increase for that company in:
    A. the debt-to-equity ratio but not the total asset turnover.
    B. the total asset turnover but not the debt-to-equity ratio.
    C. both the debt-to-equity ratio and the total asset turnover.

12. For financial assets classified as trading securities, how are unrealized gains and losses reflected in shareholders' equity?
    A. They are not recognized.
    B. They flow through income into retained earnings.
    C. They are a component of accumulated other comprehensive income.
13. For financial assets classified as available for sale, how are unrealized gains and losses reflected in shareholders' equity?
    A. They are not recognized.
    B. They flow through retained earnings.
    C. They are a component of accumulated other comprehensive income.
14. For financial assets classified as held to maturity, how are unrealized gains and losses reflected in shareholders' equity?
    A. They are not recognized.
    B. They flow through retained earnings.
    C. They are a component of accumulated other comprehensive income.
15. The non-controlling (minority) interest in consolidated subsidiaries is presented on the balance sheet:
    A. as a long-term liability.
    B. separately, but as a part of shareholders' equity.
    C. as a mezzanine item between liabilities and shareholders' equity.
16. The item "retained earnings" is a component of:
    A. assets.
    B. liabilities.
    C. shareholders' equity.
17. When a company buys shares of its own stock to be held in treasury, it records a reduction in:
    A. both assets and liabilities.
    B. both assets and shareholders' equity.
    C. assets and an increase in shareholders' equity.
18. Which of the following would an analyst *most likely* be able to determine from a common-size analysis of a company's balance sheet over several periods?
    A. An increase or decrease in sales.
    B. An increase or decrease in financial leverage.
    C. A more efficient or less efficient use of assets.
19. An investor concerned whether a company can meet its near-term obligations is *most likely* to calculate the:
    A. current ratio.
    B. return on total capital.
    C. financial leverage ratio.
20. The most stringent test of a company's liquidity is its:
    A. cash ratio.
    B. quick ratio.
    C. current ratio.

21. An investor worried about a company's long-term solvency would *most likely* examine its:
    A. current ratio.
    B. return on equity.
    C. debt-to-equity ratio.
22. Using the information presented in Exhibit 4, the quick ratio for SAP Group at 31 December 2009 is *closest* to:
    A. 1.01.
    B. 1.44.
    C. 1.54.
23. Using the information presented in Exhibit 12, the financial leverage ratio for SAP Group at 31 December 2009 is *closest* to:
    A. 0.08.
    B. 0.58.
    C. 1.58.

CHAPTER 6

UNDERSTANDING CASH FLOW STATEMENTS

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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- compare cash flows from operating, investing, and financing activities and classify cash flow items as relating to one of those three categories given a description of the items;
- describe how non-cash investing and financing activities are reported;
- contrast cash flow statements prepared under International Financial Reporting Standards (IFRS) and US generally accepted accounting principles (US GAAP);
- distinguish between the direct and indirect methods of presenting cash from operating activities and describe arguments in favor of each method;
- describe how the cash flow statement is linked to the income statement and the balance sheet;
- describe the steps in the preparation of direct and indirect cash flow statements, including how cash flows can be computed using income statement and balance sheet data;
- convert cash flows from the indirect to direct method;
- analyze and interpret both reported and common-size cash flow statements;
- calculate and interpret free cash flow to the firm, free cash flow to equity, and performance and coverage cash flow ratios.

1. INTRODUCTION

The cash flow statement provides information about a company's *cash receipts* and *cash payments* during an accounting period. The cash-based information provided by the cash flow statement contrasts with the accrual-based information from the income statement. For example, the income statement reflects revenues when earned rather than when cash is collected; in contrast,

the cash flow statement reflects cash receipts when collected as opposed to when the revenue was earned. A reconciliation between reported income and cash flows from operating activities provides useful information about when, whether, and how a company is able to generate cash from its operating activities. Although income is an important measure of the results of a company's activities, cash flow is also essential. As an extreme illustration, a hypothetical company that makes all sales on account, without regard to whether it will ever collect its accounts receivable, would report healthy sales on its income statement and might well report significant income; however, with zero cash inflow, the company would not survive. The cash flow statement also provides a reconciliation of the beginning and ending cash on the balance sheet.

In addition to information about cash generated (or, alternatively, cash used) in operating activities, the cash flow statement provides information about cash provided (or used) in a company's investing and financing activities. This information allows the analyst to answer such questions as:

- Does the company generate enough cash from its operations to pay for its new investments, or is the company relying on new debt issuance to finance them?
- Does the company pay its dividends to common stockholders using cash generated from operations, from selling assets, or from issuing debt?

Answers to these questions are important because, in theory, generating cash from operations can continue indefinitely, but generating cash from selling assets, for example, is possible only as long as there are assets to sell. Similarly, generating cash from debt financing is possible only as long as lenders are willing to lend, and the lending decision depends on expectations that the company will ultimately have adequate cash to repay its obligations. In summary, information about the sources and uses of cash helps creditors, investors, and other statement users evaluate the company's liquidity, solvency, and financial flexibility.

This chapter explains how cash flow activities are reflected in a company's cash flow statement. The chapter is organized as follows. Section 2 describes the components and format of the cash flow statement, including the classification of cash flows under International Financial Reporting Standards (IFRS) and US generally accepted accounting principles (GAAP) and the direct and indirect formats for presenting the cash flow statement. Section 3 discusses the linkages of the cash flow statement with the income statement and balance sheet and the steps in the preparation of the cash flow statement. Section 4 demonstrates the analysis of cash flow statements, including the conversion of an indirect cash flow statement to the direct method and how to use common-size cash flow analysis, free cash flow measures, and cash flow ratios used in security analysis. A summary of the key points and practice problems in the CFA Institute multiple-choice format conclude the chapter.

2. COMPONENTS AND FORMAT OF THE CASH FLOW STATEMENT

The analyst needs to be able to extract and interpret information on cash flows from financial statements. The basic components and allowable formats of the cash flow statement are well established.

- The cash flow statement has subsections relating specific items to the operating, investing, and financing activities of the company.
- Two presentation formats for the operating section are allowable: direct and indirect.

The following discussion presents these topics in greater detail.

2.1. Classification of Cash Flows and Non-Cash Activities

All companies engage in operating, investing, and financing activities. These activities are the classifications used in the cash flow statement under both IFRS and US GAAP and are described as follows:[1]

- **Operating activities** include the company's day-to-day activities that create revenues, such as selling inventory and providing services, and other activities not classified as investing or financing. Cash inflows result from cash sales and from collection of accounts receivable. Examples include cash receipts from the provision of services and royalties, commissions, and other revenue. To generate revenue, companies undertake such activities as manufacturing inventory, purchasing inventory from suppliers, and paying employees. Cash outflows result from cash payments for inventory, salaries, taxes, and other operating-related expenses and from paying accounts payable. Additionally, operating activities include cash receipts and payments related to **dealing securities** or **trading securities** (as opposed to buying or selling securities as investments, as discussed below).
- **Investing activities** include purchasing and selling long-term assets and other investments. These long-term assets and other investments include property, plant, and equipment; intangible assets; other long-term assets; and both long-term and short-term investments in the equity and debt (bonds and loans) issued by other companies. For this purpose, investments in equity and debt securities exclude a) any securities considered cash equivalents (very short-term, highly liquid securities) and b) securities held for dealing or trading purposes, the purchase and sale of which are considered operating activities even for companies where this is not a primary business activity. Cash inflows in the investing category include cash receipts from the sale of non-trading securities; property, plant, and equipment; intangibles; and other long-term assets. Cash outflows include cash payments for the purchase of these assets.
- **Financing activities** include obtaining or repaying capital, such as equity and long-term debt. The two primary sources of capital are shareholders and creditors. Cash inflows in this category include cash receipts from issuing stock (common or preferred) or bonds and cash receipts from borrowing. Cash outflows include cash payments to repurchase stock (e.g., treasury stock) and to repay bonds and other borrowings. Note that indirect borrowing using accounts payable is not considered a financing activity—such borrowing is classified as an operating activity.

EXAMPLE 1 Net Cash Flow from Investing Activities

A company recorded the following in Year 1:

Proceeds from issuance of long-term debt	€300,000
Purchase of equipment	€200,000
Loss on sale of equipment	€ 70,000
Proceeds from sale of equipment	€120,000
Equity in earnings of affiliate	€ 10,000

[1] IAS 7 *Statement of Cash Flows*.

On the Year 1 statement of cash flows, the company would report net cash flow from investing activities *closest* to:

A. (€150,000).
B. (€80,000).
C. €200,000.

Solution: B is correct. The only two items that would affect the investing section are the purchase of equipment and the proceeds from sale of equipment: (€200,000) + €120,000 = (€80,000). The loss on sale of equipment and the equity in earnings of affiliate affect net income but are not cash flows. The issuance of debt is a financing cash flow.

IFRS provide companies with choices in reporting some items of cash flow, particularly interest and dividends. IFRS explain that although for a financial institution interest paid and received would normally be classified as operating activities, for other entities, alternative classifications may be appropriate. For this reason, under IFRS, interest received may be classified either as an operating activity or as an investing activity. Under IFRS, interest paid may be classified as either an operating activity or a financing activity. Furthermore, under IFRS, dividends received may be classified as either an operating activity or an investing activity and dividends paid may be classified as either an operating activity or a financing activity. Companies must use a consistent classification from year to year and disclose separately the amounts of interest and dividends received and paid and where the amounts are reported.

Under US GAAP, discretion is not permitted in classifying interest and dividends. Interest received and interest paid are reported as operating activities for all companies.[2] Under US GAAP, dividends received are always reported as operating activities and dividends paid are always reported as financing activities.

EXAMPLE 2 Operating versus Financing Cash Flows

On 31 December 2009, a company issued a £30,000 180-day note at 8 percent, using the cash received to pay for inventory, and issued £110,000 long-term debt at 11 percent annually, using the cash received to pay for new equipment. Which of the following *most* accurately reflects the combined effect of both transactions on the company's cash flows for the year ended 31 December 2009 under IFRS? Cash flows from:

A. operations are unchanged.
B. financing increase £110,000.
C. operations decrease £30,000.

[2] FASB ASC Topic 230 [Statement of Cash Flows].

Solution: C is correct. The payment for inventory would decrease cash flows from operations. The issuance of debt (both short-term and long-term debt) is part of financing activities and would increase cash flows from financing activities by £140,000. The purchase of equipment is an investing activity. Note that the treatment under US GAAP would be the same for these transactions.

Companies may also engage in non-cash investing and financing transactions. A non-cash transaction is any transaction that does not involve an inflow or outflow of cash. For example, if a company exchanges one non-monetary asset for another non-monetary asset, no cash is involved. Similarly, no cash is involved when a company issues common stock either for dividends or in connection with conversion of a convertible bond or convertible preferred stock. Because no cash is involved in non-cash transactions (by definition), these transactions are not incorporated in the cash flow statement. However, because such transactions may affect a company's capital or asset structures, any significant non-cash transaction is required to be disclosed, either in a separate note or a supplementary schedule to the cash flow statement.

2.2. A Summary of Differences between IFRS and US GAAP

As highlighted in the previous section, there are some differences in cash flow statements prepared under IFRS and US GAAP that the analyst should be aware of when comparing the cash flow statements of companies prepared in accordance with different sets of standards. The key differences are summarized in Exhibit 1. Most significantly, IFRS allow more flexibility in the reporting of such items as interest paid or received and dividends paid or received and in how income tax expense is classified.

US GAAP classify interest and dividends received from investments as operating activities, whereas IFRS allow companies to classify those items as either operating or investing cash flows. Likewise, US GAAP classify interest expense as an operating activity, even though the principal amount of the debt issued is classified as a financing activity. IFRS allow companies to classify interest expense as either an operating activity or a financing activity. US GAAP classify dividends paid to stockholders as a financing activity, whereas IFRS allow companies to classify dividends paid as either an operating activity or a financing activity.

US GAAP classify all income tax expenses as an operating activity. IFRS also classify income tax expense as an operating activity, unless the tax expense can be specifically identified with an investing or financing activity (e.g., the tax effect of the sale of a discontinued operation could be classified under investing activities).

EXHIBIT 1 Cash Flow Statements: Differences between IFRS and US GAAP

Topic	IFRS	US GAAP
Classification of cash flows:		
• Interest received	Operating or investing	Operating
• Interest paid	Operating or financing	Operating
• Dividends received	Operating or investing	Operating
• Dividends paid	Operating or financing	Financing

(continued)

EXHIBIT 1 (Continued)

Topic	IFRS	US GAAP
• Bank overdrafts	Considered part of cash equivalents	Not considered part of cash and cash equivalents and classified as financing
• Taxes paid	Generally operating, but a portion can be allocated to investing or financing if it can be specifically identified with these categories	Operating
Format of statement	Direct or indirect; direct is encouraged	Direct or indirect; direct is encouraged. A reconciliation of net income to cash flow from operating activities must be provided regardless of method used

Sources: IAS 7; FASB ASC Topic 230; and "IFRS and US GAAP: Similarities and Differences," PricewaterhouseCoopers (September 2009), available at www.pwc.com.

Under either set of standards, companies currently have a choice of formats for presenting cash flow statements, as discussed in the next section.

2.3. Direct and Indirect Methods for Reporting Cash Flow from Operating Activities

There are two acceptable formats for reporting **cash flow from operating activities** (also known as **cash flow from operations** or **operating cash flow**), defined as the net amount of cash provided from operating activities: the direct and the indirect methods. The *amount* of operating cash flow is identical under both methods; only the *presentation format* of the operating cash flow section differs. The presentation format of the cash flows from investing and financing is exactly the same, regardless of which method is used to present operating cash flows.

The **direct method** shows the specific cash inflows and outflows that result in reported cash flow from operating activities. It shows each cash inflow and outflow related to a company's cash receipts and disbursements. In other words, the direct method eliminates any impact of accruals and shows only cash receipts and cash payments. The primary argument in favor of the direct method is that it provides information on the specific sources of operating cash receipts and payments. This is in contrast to the indirect method, which shows only the net result of these receipts and payments. Just as information on the specific sources of revenues and expenses is more useful than knowing only the net result—net income—the analyst gets additional information from a direct-format cash flow statement. The additional information is useful in understanding historical performance and in predicting future operating cash flows.

The **indirect method** shows how cash flow from operations can be obtained from reported net income as the result of a series of adjustments. The **indirect format** begins with net income. To reconcile net income with operating cash flow, adjustments are made for non-cash items, for non-operating items, and for the net changes in operating accruals. The main argument for the indirect approach is that it shows the reasons for differences between net income and operating cash flows. (However, the differences between net income and operating cash flows are equally visible on an indirect-format cash flow statement and in the supplementary reconciliation required under US GAAP if the company uses the direct method.) Another

argument for the indirect method is that it mirrors a forecasting approach that begins by forecasting future income and then derives cash flows by adjusting for changes in balance sheet accounts that occur because of the timing differences between accrual and cash accounting.

IFRS and US GAAP both encourage the use of the direct method but permit either method. US GAAP encourage the use of the direct method but also require companies to present a reconciliation between net income and cash flow (which is equivalent to the indirect method).[3] If the indirect method is chosen, no direct-format disclosures are required. The majority of companies, reporting under IFRS or US GAAP, present using the indirect method for operating cash flows.

Many users of financial statements prefer the **direct format**, particularly analysts and commercial lenders, because of the importance of information about operating receipts and payments in assessing a company's financing needs and capacity to repay existing obligations. Preparers argue that adjusting net income to operating cash flow, as in the indirect format, is easier and less costly than reporting gross operating cash receipts and payments, as in the direct format. With advances in accounting systems and technology, it is not clear that gathering the information required to use the direct method is difficult or costly. CFA Institute has advocated that standard setters require the use of the direct format for the main presentation of the cash flow statement, with indirect cash flows as supplementary disclosure.[4]

2.3.1. An Indirect-Format Cash Flow Statement Prepared under IFRS

Exhibit 2 presents the consolidated cash flow statement prepared under IFRS from Unilever Group's 2009 annual report.[5] The statement, covering the fiscal years ended 31 December 2009, 2008, and 2007, shows the use of the indirect method. Unilever is an Anglo-Dutch consumer products company with headquarters in the United Kingdom and the Netherlands.[6]

EXHIBIT 2 Unilever Group Consolidated Cash Flow Statement (€ millions)

	For the Year Ended 31 December		
	2009	2008	2007
Cash flow from operating activities			
Net profit	3,659	5,285	4,136
Taxation	1,257	1,844	1,137
Share of net profit of joint ventures/associates and other income from non-current investments	(489)	(219)	(191)
Net finance costs:	593	257	252
Finance income	(75)	(106)	(147)

(continued)

[3] FASB ASC Section 230-10-45 [Statement of Cash Flows–Overall–Other Presentation Matters].

[4] *A Comprehensive Business Reporting Model: Financial Reporting for Investors*, CFA Institute Centre for Financial Market Integrity (July 2007), p. 13.

[5] The cash flow statement presented here includes a reconciliation of net income to cash generated from operations, which Unilever Group reports in Note 28 to the financial statement rather than on the statement itself.

[6] Unilever NV (Amsterdam: UNA; NYSE: UN) and Unilever PLC (London: ULVR; NYSE: UL) have independent legal structures, but a series of agreements enable the companies to operate as a single economic entity.

EXHIBIT 2 (Continued)

	For the Year Ended 31 December		
	2009	2008	2007
Finance cost	504	506	550
Preference shares provision	—	—	7
Pensions and similar obligations	164	(143)	(158)
Operating profit (continuing and discontinued operations)	5,020	7,167	5,334
Depreciation, amortization and impairment	1,032	1,003	943
Changes in working capital:	1,701	(161)	27
Inventories	473	(345)	(333)
Trade and other current receivables	640	(248)	(43)
Trade payables and other current liabilities	588	432	403
Pensions and similar provisions less payments	(1,028)	(502)	(910)
Provisions less payments	(258)	(62)	145
Elimination of (profits)/losses on disposals	13	(2,259)	(459)
Non-cash charge for share-based compensation	195	125	118
Other adjustments	58	15	(10)
Cash flow from operating activities	**6,733**	**5,326**	**5,188**
Income tax paid	(959)	(1,455)	(1,312)
Net cash flow from operating activities	**5,774**	**3,871**	**3,876**
Interest received	73	105	146
Purchase of intangible assets	(121)	(147)	(136)
Purchase of property, plant and equipment	(1,248)	(1,142)	(1,046)
Disposal of property, plant and equipment	111	190	163
Sale and leaseback transactions resulting in operating leases	—	—	36
Acquisition of group companies, joint ventures and associates	(409)	(211)	(214)
Disposal of group companies, joint ventures and associates	270	2,476	164
Acquisition of other non-current investments	(95)	(126)	(50)
Disposal of other non-current investments	224	47	33
Dividends from joint ventures, associates and other non-current investments	201	132	188
(Purchase)/sale of financial assets	(269)	91	93
Net cash flow (used in)/from investing activities	**(1,263)**	**1,415**	**(623)**
Dividends paid on ordinary share capital	(2,106)	(2,086)	(2,182)
Interest and preference dividends paid	(517)	(487)	(552)
Additional financial liabilities	2,913	4,544	4,283
Repayment of financial liabilities	(4,456)	(3,427)	(2,896)
Sale and leaseback transactions resulting in finance leases	—	(1)	25
Capital element of finance lease rental payments	(24)	(66)	(74)
Share buy-back programme	—	(1,503)	(1,500)

EXHIBIT 2 (Continued)

	For the Year Ended 31 December		
	2009	2008	2007
Other movements on treasury stock	103	103	442
Other financing activities	(214)	(207)	(555)
Net cash flow (used in)/from financing activities	**(4,301)**	**(3,130)**	**(3,009)**
Net increase/(decrease) in cash and cash equivalents	**210**	**2,156**	**244**
Cash and cash equivalents at the beginning of the year	**2,360**	**901**	**710**
Effect of foreign exchange rate changes	(173)	(697)	(53)
Cash and cash equivalents at the end of the year	**2,397**	**2,360**	**901**

Beginning first at the bottom of the statement, we note that cash increased from €710 million at the beginning of 2007 to €2,397 million at the end of 2009, with the largest increase occurring in 2008. To understand the changes, we next examine the sections of the statement. In each year, the primary cash inflow derived from operating activities, as would be expected for a mature company in a relatively stable industry. In each year, the operating cash flow was more than the reported net profit, again, as would be expected from a mature company, with the largest differences primarily arising from the add-back of depreciation. Also, in each year, the operating cash flow was more than enough to cover the company's capital expenditures. For example, in 2009, the company generated €5,774 million in net cash from operating activities and—as shown in the investing section—spent €1,137 million on property, plant, and equipment (€1,248 million, net of €111 million proceeds from disposals). Also, as shown in the investing section, the main reason for the large increase in cash in 2008 was the €2,476 million inflow from the disposal of group companies, joint ventures, and associates.

The financing section of the statement shows that each year the company returned about €2.1 billion to its common shareholders and around €500 million to its debt holders and preferred shareholders via interest and dividends. The company also repurchased about €1.5 billion in common stock in both 2007 and 2008. In 2009, the company repaid debt (repayments of €4,456 million exceeded additional financing liabilities of €2,913 million).

Having examined each section of the statement, we return to the operating activities section of Unilever's cash flow statement, which presents a reconciliation of net profit to net cash flow from operating activities (i.e., uses the indirect method). The following discussion of certain adjustments to reconcile net profit to operating cash flows explains some of the main reconciliation adjustments and refers to the amounts in 2009. The first adjustment adds back the €1,257 million income tax expense (labeled "Taxation") that had been recognized as an expense in the computation of net profit. A €959 million deduction for the (cash) income taxes paid is then shown separately, as the last item in the operating activities section, consistent with the IFRS requirement that cash flows arising from income taxes be separately disclosed. The classification of taxes on income paid should be indicated. The classification is in operating activities unless the taxes can be specifically identified with financing or investing activities.

The next adjustment "removes" from the operating cash flow section the €489 million representing Unilever's share of joint ventures income that had been included in the computation of net profit. A €201 million inflow of (cash) dividends received from those joint ventures is then shown in the investing activities section. Similarly, a €593 million adjustment removes the net finance costs from the operating activities section. Unilever then reports its €73 million

(cash) interest received in the investing activities section and its €517 million (cash) interest paid (and preference dividends paid) in the financing activities section. The next adjustment in the operating section of this indirect-method statement adds back €1,032 million depreciation, amortization, and impairment, all of which are expenses that had been deducted in the computation of net income but which did not involve any outflow of cash in the period. The €1,701 million adjustment for changes in working capital is necessary because these changes result from applying accrual accounting and thus do not necessarily correspond to the actual cash movement. These adjustments are described in greater detail in a later section.

In summary, some observations from an analysis of Unilever's cash flow statement include:

- Total cash increased from €710 million at the beginning of 2007 to €2,397 million at the end of 2009, with the largest increase occurring in 2008.
- In each year, the operating cash flow was more than the reported net profit, as would generally be expected from a mature company.
- In each year, the operating cash flow was more than enough to cover the company's capital expenditures.
- The company returned cash to its equity investors through dividends in each year and through share buybacks in 2007 and 2008.

2.3.2. A Direct-Format Cash Flow Statement Prepared under IFRS

In the direct format of the cash flow statement, the cash received from customers, as well as other operating items, is clearly shown.

Exhibit 3 presents a direct-method format cash flow statement prepared under IFRS for Telefónica Group (SM: TEF), a diversified telecommunications company based in Madrid.[7]

EXHIBIT 3 Telefónica Group Consolidated Statement of Cash Flows (€ millions)

For the years ended 31 December	2009	2008	2007
Cash flows from operating activities			
Cash received from customers	67,358	69,060	67,129
Cash paid to suppliers and employees	(46,198)	(48,500)	(47,024)
Dividends received	100	113	124
Net interest and other financial expenses paid	(2,170)	(2,894)	(3,221)
Taxes paid	(2,942)	(1,413)	(1,457)
Net cash from operating activities	**16,148**	**16,366**	**15,551**
Cash flows from investing activities			
Proceeds on disposals of property, plant and equipment and intangible assets	242	276	198
Payments on investments in property, plant and equipment and intangible assets	(7,593)	(7,889)	(7,274)
Proceeds on disposals of companies, net of cash and cash equivalents disposed	34	686	5,346

[7] This statement excludes the supplemental cash flow reconciliation provided at the bottom of the original cash flow statement by the company.

EXHIBIT 3 (Continued)

For the years ended 31 December	2009	2008	2007
Payments on investments in companies, net of cash and cash equivalents acquired	(48)	(2,178)	(2,798)
Proceeds on financial investments not included under cash equivalents	6	31	14
Payments made on financial investments not included under cash equivalents	(1,411)	(114)	(179)
Interest (paid) received on cash surpluses not included under cash equivalents	(548)	76	74
Government grants received	18	11	27
Net cash used in investing activities	**(9,300)**	**(9,101)**	**(4,592)**
Cash flows from financing activities			
Dividends paid	(4,838)	(4,440)	(3,345)
Transactions with equity holders	(947)	(2,241)	(2,152)
Proceeds on issue of debentures and bonds	8,617	1,317	4,209
Proceeds on loans, borrowings and promissory notes	2,330	3,693	6,658
Cancellation of debentures and bonds	(1,949)	(1,167)	(1,756)
Repayments of loans, borrowings and promissory notes	(5,494)	(4,927)	(13,039)
Net cash flow used in financing activities	**(2,281)**	**(7,765)**	**(9,425)**
Effect of foreign exchange rate changes on collections and payments	269	(302)	(261)
Effect of changes in consolidation methods and other non-monetary effects	—	14	—
Net increase (decrease) in cash and cash equivalents during the period	**4,836**	**(788)**	**1,273**
Cash and cash equivalents at 1 January	4,277	5,065	3,792
Cash and cash equivalents at 31 December	9,113	4,277	5,065

As shown at the bottom of the statement, cash and cash equivalents increased from €3,792 million at the beginning of 2007 to €9,113 million at the end of 2009. The largest increase in cash occurred in 2009, with 2008 showing a decrease. Cash from operations was the primary source of cash, consistent with the profile of a mature company in a relatively stable industry. Each year, the company generated significantly more cash from operations than it required for its capital expenditures. For example, in 2009, the company generated €16.1 billion cash from operations and spent—as shown in the investing section—only €7.4 billion on property, plant, and equipment (€7,593 million, net of €242 million from disposals). Another notable item from the investing section is the company's limited acquisition activity in 2009 compared with 2008 and 2007. In both 2007 and 2008, the company made over €2 billion of acquisitions, and in 2007, the company also received €5.5 billion from disposals. Instead of using cash for acquisition activity in 2009 when net acquisitions used only €14 million (€48 million acquisitions, net of €34 million from disposals), the company invested €1,411 million in financial investments excluded from cash and cash equivalents (i.e., long-term financial investments).

As shown in the financing section, in 2009, the net cash inflow from debt issuance was €3,504 million (€8,617 million proceeds from debentures and bonds plus €2,330 million proceeds from loans, borrowings, and promissory notes, net of repayments and cancellations totaling €7,443 million).

In summary, some observations from an analysis of Telefónica's cash flow statement include

- Total cash and cash equivalents increased over the three-year period, with 2009 showing the biggest increase.
- Cash from operating activities was large enough in each year to cover the company's capital expenditures.
- The amount paid for property, plant, and equipment and intangible assets was the largest investing expenditure each year and did not significantly vary from year to year.
- The company had a significant amount of acquisition and divestiture activity in 2007 and 2008 but not in 2009.
- The company paid an increasing amount of dividends over the three-year period.

An analyst can also make some comparisons between the income statement (not shown here) and the statement of cash flows. For example, contrast the change in revenues from the income statement to the change in cash received from customers. An increase in revenues coupled with a decrease in cash received from customers, for example, could signal collection problems. As shown in Exhibit 3, cash received from customers in 2009 decreased 2.46 percent compared with 2008, from €69,060 million to €67,358 million. The company reported revenues on the income statement of €56,731 million and €57,946 million for 2009 and 2008, respectively. Thus, the decrease in cash received from customers was slightly greater than the 2.10 percent decrease in total revenue and would not in itself indicate any collection issue.

2.3.3. Illustrations of Cash Flow Statements Prepared under US GAAP

Previously, we presented cash flow statements prepared under IFRS. In this section, we illustrate cash flow statements prepared under US GAAP. This section presents the cash flow statements of two companies, Tech Data Corporation (NASDAQ: TECD) and Walmart (NYSE: WMT). Tech Data reports its operating activities using the direct method, whereas Walmart reports its operating activities using the more common indirect method.

Tech Data Corporation is a leading distributor of information technology products. Exhibit 4 presents comparative cash flow statements from the company's annual report for the fiscal years ended 31 January 2008 through 2010.

EXHIBIT 4 Tech Data Corporation and Subsidiaries Consolidated Cash Flow Statements (in Thousands)

Years Ended 31 January	2010	2009	2008
Cash flows from operating activities:			
Cash received from customers	$21,927,372	$23,989,567	$23,473,295
Cash paid to vendors and employees	(21,320,637)	(23,636,388)	(23,053,048)
Interest paid, net	(14,015)	(20,382)	(14,273)
Income taxes paid	(48,790)	(52,987)	(48,552)
Net cash provided by operating activities	**543,930**	**279,810**	**357,422**

EXHIBIT 4 (Continued)

Years Ended 31 January	2010	2009	2008
Cash flows from investing activities:			
Acquisition of business, net of cash acquired	(8,153)	(78,266)	(21,503)
Proceeds from sale of business	0	0	7,161
Proceeds from sale of property and equipment	5,491	0	0
Expenditures for property and equipment	(14,486)	(17,272)	(21,474)
Software and software development costs	(14,379)	(15,275)	(16,885)
Net cash used in investing activities	**(31,527)**	**(110,813)**	**(52,701)**
Cash flows from financing activities:			
Proceeds from the issuance of common stock and reissuance of treasury stock	37,959	1,530	12,542
Cash paid for purchase of treasury stock	0	(100,000)	(100,019)
Capital contributions and net borrowings from joint venture partner	23,208	10,810	9,000
Net (repayments) borrowings on revolving credit loans	(19,116)	42,834	(56,297)
Principal payments on long-term debt	(5,654)	(1,786)	(2,371)
Excess tax benefit from stock-based compensation	963	0	212
Net cash provided by (used in) financing activities	**37,360**	**(46,612)**	**(136,933)**
Effect of exchange rate changes on cash and cash equivalents	38,793	(41,702)	14,546
Net increase in cash and cash equivalents	588,556	80,683	182,334
Cash and cash equivalents at beginning of year	528,023	447,340	265,006
Cash and cash equivalents at end of year	$1,116,579	$528,023	$447,340
Reconciliation of net income to net cash provided by operating activities:			
Net income attributable to shareholders of Tech Data Corporation	$180,155	$117,278	$102,129
Net income (loss) attributable to non-controlling interest	1,045	(1,822)	(3,559)
Consolidated net income	**181,200**	**115,456**	**98,570**
Adjustments to reconcile net income to net cash provided by (used in) operating activities:			
Loss on disposal of subsidiaries	0	0	14,471
Depreciation and amortization	45,954	51,234	53,881
Provision for losses on accounts receivable	10,953	15,000	11,200
Stock-based compensation expense	11,225	11,990	10,287
Accretion of debt discount on convertible senior debentures	10,278	10,278	10,278
Deferred income taxes	(2,541)	18,221	2,629
Excess tax benefit from stock-based compensation	(963)	0	(212)

(continued)

EXHIBIT 4 (Continued)

Years Ended 31 January	2010	2009	2008
Changes in operating assets and liabilities:			
Accounts receivable	(168,152)	(86,423)	57,419
Inventories	116,543	(261,974)	57,904
Prepaid expenses and other assets	21,290	(18,761)	(40,951)
Accounts payable	336,587	374,696	83,845
Accrued expenses and other liabilities	(18,444)	50,093	(1,899)
Total adjustments	362,730	164,354	258,852
Net cash provided by operating activities	$543,930	$279,810	$357,422

Tech Data Corporation prepares its cash flow statements under the direct method. The company's cash increased from $265 million at the beginning of 2008 to $1.1 billion at the end of January 2010, with the biggest increase occurring in the most recent year. The 2010 increase was driven by changes across all three sections of the statement. In the cash flows from operating activities section of Tech Data's cash flow statements, the company identifies the amount of cash it received from customers, $21.9 billion for 2010, and the amount of cash that it paid to suppliers and employees, $21.3 billion for 2010. Cash receipts decreased from $24.0 billion in the prior year, but cash paid decreased by even more such that cash provided by operating activities increased in 2010 compared with 2009. Net cash provided by operating activities of $543.9 million was adequate to cover the company's investing activities, primarily purchases of property and equipment ($14.5 million) and software development ($14.4 million). Overall, investing activities in 2010 used far less cash than in 2009, primarily because of reduced amounts of cash used for acquisition of businesses. In 2010, the company issued $38 million of common stock and received $23.2 million in contributions and borrowings from its joint venture partner, providing net cash from financing activities of $37.4 million after its debt repayments.

Whenever the direct method is used, US GAAP require a disclosure note and a schedule that reconciles net income with the net cash flow from operating activities. Tech Data shows this reconciliation at the bottom of its consolidated statements of cash flows. The disclosure note and reconciliation schedule are exactly the information that would have been presented in the body of the cash flow statement if the company had elected to use the indirect method rather than the direct method. For 2009, the reconciliation highlights an increase in the company's accounts receivable, a decrease in inventory, and a significant increase in payables.

In summary, some observations from an analysis of Tech Data's cash flow statement include:

- The company's cash increased by $852 (= 1,117 – 265 or = 589 + 81 + 182) million over the three years ending in January 2010, with the biggest increase occurring in the most recent year.
- The company's operating cash was adequate to cover the company's investments in all three years.
- In 2009, the company issued stock and received financing from its joint venture partner, which provided the company with a stronger cash cushion.

Walmart is a global retailer that conducts business under the names of Walmart and Sam's Club. Exhibit 5 presents the comparative cash flow statements from the company's annual report for the fiscal years ended 31 January 2010, 2009, and 2008.

EXHIBIT 5 Walmart Cash Flow Statements Fiscal Years Ended 31 January ($ millions)

Fiscal Year Ended 31 January	2010	2009	2008
Cash flows from operating activities:			
Consolidated net income	14,848	13,899	13,137
Loss (income) from discontinued operations, net of tax	79	(146)	132
Income from continuing operations	14,927	13,753	13,269
Adjustments to reconcile income from continuing operations to net cash provided by operating activities:			
Depreciation and amortization	7,157	6,739	6,317
Deferred income taxes	(504)	581	(8)
Other operating activities	301	769	504
Changes in certain assets and liabilities, net of effects of acquisitions:			
Increase in accounts receivable	(297)	(101)	(564)
Decrease (increase) in inventories	2,265	(220)	(775)
Increase (decrease) in accounts payable	1,052	(410)	865
Increase in accrued liabilities	1,348	2,036	1,034
Net cash provided by operating activities	26,249	23,147	20,642
Cash flows from investing activities:			
Payments for property and equipment	(12,184)	(11,499)	(14,937)
Proceeds from disposal of property and equipment	1,002	714	957
Proceeds from (payments for) disposal of certain international operations, net	—	838	(257)
Investment in international operations, net of cash acquired	—	(1,576)	(1,338)
Other investing activities	(438)	781	(95)
Net cash used in investing activities	(11,620)	(10,742)	(15,670)
Cash flows from financing activities:			
Increase (decrease) in short-term borrowings, net	(1,033)	(3,745)	2,376
Proceeds from issuance of long-term debt	5,546	6,566	11,167
Payment of long-term debt	(6,033)	(5,387)	(8,723)
Dividends paid	(4,217)	(3,746)	(3,586)
Purchase of Company stock	(7,276)	(3,521)	(7,691)
Purchase of redeemable non-controlling interest	(436)	—	—
Payment of capital lease obligations	(346)	(352)	(343)
Other financing activities	(396)	267	(622)
Net cash used in financing activities	(14,191)	(9,918)	(7,422)
Effect of exchange rates on cash and cash equivalents	194	(781)	252
Net increase (decrease) in cash and cash equivalents	632	1,706	(2,198)
Cash and cash equivalents at beginning of year[1]	7,275	5,569	7,767
Cash and cash equivalents at end of year[2]	**7,907**	**7,275**	**5,569**

(*continued*)

EXHIBIT 5 (Continued)

Fiscal Year Ended 31 January	2010	2009	2008
Supplemental disclosure of cash flow information			
Income tax paid	7,389	6,596	6,299
Interest paid	2,141	1,787	1,622
Capital lease obligations incurred	61	284	447

[1] Includes cash and cash equivalents of discontinued operations of $51 million at 1 February 2007.
[2] Includes cash and cash equivalents of discontinued operations of $77 million at 31 January 2008.

Walmart's cash flow statement indicates the following:

- Cash and cash equivalents changed only slightly over the three years, from $7.8 billion at the beginning of fiscal 2008 to $7.9 billion at the end of fiscal 2010, but year-to-year cash flows varied significantly.
- Operating cash flow increased steadily from $20.6 billion in fiscal 2008 to $26.2 billion in 2010 and was significantly greater than the company's expenditures on property and equipment in every year.
- In 2009 and 2010, the company used cash to repay borrowing, to pay dividends, and to repurchase its common stock.

Walmart prepares its cash flow statements under the indirect method. In the cash flows from operating activities section of Walmart's cash flow statement, the company reconciles its net income of $14.8 billion to net cash provided by operating activities of $26.2 billion. Whenever the indirect method is used, US GAAP mandate disclosure of how much cash was paid for interest and income taxes. Note that these are line items in cash flow statements using the direct method, so disclosure does not have to be mandated. Walmart discloses the amount of cash paid for income tax ($7.4 billion), interest ($2.1 billion), and capital lease obligations ($61 million) at the bottom of its cash flow statements.

3. THE CASH FLOW STATEMENT: LINKAGES AND PREPARATION

The indirect format of the cash flow statement demonstrates that changes in balance sheet accounts are an important factor in determining cash flows. The next section addresses the linkages between the cash flow statement and other financial statements.

3.1. Linkages of the Cash Flow Statement with the Income Statement and Balance Sheet

Recall the accounting equation that summarizes the balance sheet:

$$\text{Assets} = \text{Liabilities} + \text{Equity}$$

Cash is an asset. The statement of cash flows ultimately shows the change in cash during an accounting period. The beginning and ending balances of cash are shown on the company's

balance sheets for the previous and current years, and the bottom of the cash flow statement reconciles beginning cash with ending cash. The relationship, stated in general terms, is as shown below.

Beginning Balance Sheet at 31 December 20X8	Statement of Cash Flows for Year Ended 31 December 20X9		Ending Balance Sheet at 31 December 20X9
Beginning cash	Plus: Cash receipts (from operating, investing, and financing activities)	Less: Cash payments (for operating, investing, and financing activities)	Ending cash

In the case of cash held in foreign currencies, there would also be an impact from changes in exchange rates. For example, Walmart's cash flow statement for 2010, presented in Exhibit 5, shows cash flows from operating, investing, and financing activities that total $438 million during the year ($26,249 – $11,620 – $14,191). Combined with the $194 million net effect of exchange rates on cash and cash equivalents, the net increase in cash and cash equivalents was $632 million, the amount by which end-of-year cash and cash equivalents ($7,907) exceeds beginning-of-year cash and cash equivalents ($7,275).

The body of Walmart's cash flow statement shows why the change in cash occurred; in other words, it shows the company's operating, investing, and financing activities (as well as the impact of foreign currency translation). The beginning and ending balance sheet values of cash and cash equivalents are linked through the cash flow statement.

The current assets and current liabilities sections of the balance sheet typically reflect a company's operating decisions and activities. Because a company's operating activities are reported on an accrual basis in the income statement, any differences between the accrual basis and the cash basis of accounting for an operating transaction result in an increase or decrease in some (usually) short-term asset or liability on the balance sheet. For example, if revenue reported using accrual accounting is higher than the cash actually collected, the result will typically be an increase in accounts receivable. If expenses reported using accrual accounting are lower than cash actually paid, the result will typically be a decrease in accounts payable or another accrued liability account.[8] As an example of how items on the balance sheet are related to the income statement and/or cash flow statement through the change in the beginning and ending balances, consider accounts receivable:

Beginning Balance Sheet at 31 December 20X8	Income Statement for Year Ended 31 December 20X9	Statement of Cash Flows for Year Ended 31 December 20X9	Ending Balance Sheet at 31 December 20X9
Beginning accounts receivable	Plus: Revenues	Minus: Cash collected from customers	Equals: Ending accounts receivable

[8]There are other less typical explanations of the differences. For example, if revenue reported using accrual accounting is higher than the cash actually collected, it is possible that it is the result of a decrease in an unearned revenue liability account. If expenses reported using accrual accounting are lower than cash actually paid, it is possible that it is the result of an increase in prepaid expenses, inventory, or another asset account.

Knowing any three of these four items makes it easy to compute the fourth. For example, if you know beginning accounts receivable, revenues, and cash collected from customers, you can easily compute ending accounts receivable. Understanding the interrelationships between the balance sheet, income statement, and cash flow statement is useful in not only understanding the company's financial health but also in detecting accounting irregularities. Recall the extreme illustration of a hypothetical company that makes sales on account without regard to future collections and thus reports healthy sales and significant income on its income statement yet lacks cash inflow. Such a pattern would occur if a company improperly recognized revenue.

A company's investing activities typically relate to the long-term asset section of the balance sheet, and its financing activities typically relate to the equity and long-term debt sections of the balance sheet. The next section demonstrates the preparation of cash flow information based on income statement and balance sheet information.

3.2. Steps in Preparing the Cash Flow Statement

The preparation of the cash flow statement uses data from both the income statement and the comparative balance sheets.

As noted earlier, companies often only disclose indirect operating cash flow information, whereas analysts prefer direct-format information. Understanding how cash flow information is put together will enable you to take an indirect statement apart and reconfigure it in a more useful manner. The result is an approximation of a direct cash flow statement, which—while not perfectly accurate—can be helpful to an analyst. The following demonstration of how an approximation of a direct cash flow statement is prepared uses the income statement and the comparative balance sheets for Acme Corporation (a fictitious retail company) shown in Exhibits 6 and 7.

EXHIBIT 6 Acme Corporation Income Statement Year Ended 31 December 2009

Revenue		$23,598
Cost of goods sold		11,456
Gross profit		12,142
Salary and wage expense	$4,123	
Depreciation expense	1,052	
Other operating expenses	3,577	
Total operating expenses		8,752
Operating profit		3,390
Other revenues (expenses):		
Gain on sale of equipment	205	
Interest expense	(246)	(41)
Income before tax		3,349
Income tax expense		1,139
Net income		$2,210

EXHIBIT 7 Acme Corporation Comparative Balance Sheets 31 December 2009 and 2008

	2009	2008	Net Change
Cash	$1,011	$ 1,163	$(152)
Accounts receivable	1,012	957	55
Inventory	3,984	3,277	707
Prepaid expenses	155	178	(23)
Total current assets	6,162	5,575	587
Land	510	510	—
Buildings	3,680	3,680	—
Equipment*	8,798	8,555	243
Less: accumulated depreciation	(3,443)	(2,891)	(552)
Total long-term assets	9,545	9,854	(309)
Total assets	$15,707	$15,429	$278
Accounts payable	$3,588	$3,325	$ 263
Salary and wage payable	85	75	10
Interest payable	62	74	(12)
Income tax payable	55	50	5
Other accrued liabilities	1,126	1,104	22
Total current liabilities	4,916	4,628	288
Long-term debt	3,075	3,575	(500)
Common stock	3,750	4,350	(600)
Retained earnings	3,966	2,876	1,090
Total liabilities and equity	$15,707	$15,429	$278

*During 2009, Acme purchased new equipment for a total cost of $1,300. No items impacted retained earnings other than net income and dividends.

The first step in preparing the cash flow statement is to determine the total cash flows from operating activities. The direct method of presenting cash from operating activities is illustrated in sections 3.2.1 through 3.2.4. Section 3.2.5 illustrates the indirect method of presenting cash flows from operating activities. Cash flows from investing activities and from financing activities are identical under either method.

3.2.1. Operating Activities: Direct Method

We first determine how much cash Acme received from its customers, followed by how much cash was paid to suppliers and to employees as well as how much cash was paid for other operating expenses, interest, and income taxes.

3.2.1.1. Cash Received from Customers The income statement for Acme reported revenue of $23,598 for the year ended 31 December 2009. To determine the approximate cash receipts from its customers, it is necessary to adjust this revenue amount by the net change in accounts receivable for the year. If accounts receivable increase during the year, revenue

on an accrual basis is higher than cash receipts from customers, and vice versa. For Acme Corporation, accounts receivable increased by $55, so cash received from customers was $23,543, as follows:

Revenue	$23,598
Less: Increase in accounts receivable	(55)
Cash received from customers	**$23,543**

Cash received from customers affects the accounts receivable account as follows:

Beginning accounts receivable	$ 957
Plus revenue	23,598
Minus cash collected from customers	(**23,543**)
Ending accounts receivable	$1,012

The accounts receivable account information can also be presented as follows:

Beginning accounts receivable	$ 957
Plus revenue	23,598
Minus ending accounts receivable	(1,012)
Cash collected from customers	**$23,543**

EXAMPLE 3 Computing Cash Received from Customers

Blue Bayou, a fictitious advertising company, reported revenues of $50 million, total expenses of $35 million, and net income of $15 million in the most recent year. If accounts receivable decreased by $12 million, how much cash did the company receive from customers?

A. $38 million.

B. $50 million.

C. $62 million.

Solution: C is correct. Revenues of $50 million plus the decrease in accounts receivable of $12 million equals $62 million cash received from customers. The decrease in accounts receivable means that the company received more in cash than the amount of revenue it reported.

"Cash received from customers" is sometimes referred to as "cash collections from customers" or "cash collections."

3.2.1.2. Cash Paid to Suppliers For Acme, the cash paid to suppliers was $11,900, determined as follows:

Cost of goods sold	$11,456
Plus: Increase in inventory	707
Equals purchases from suppliers	$12,163
Less: Increase in accounts payable	(263)
Cash paid to suppliers	**$11,900**

There are two pieces to this calculation: the amount of inventory purchased and the amount paid for it. To determine purchases from suppliers, cost of goods sold is adjusted for the change in inventory. If inventory increased during the year, then purchases during the year exceeded cost of goods sold, and vice versa. Acme reported cost of goods sold of $11,456 for the year ended 31 December 2009. For Acme Corporation, inventory increased by $707, so purchases from suppliers was $12,163. Purchases from suppliers affect the inventory account, as shown below:

Beginning inventory	$ 3,277
Plus purchases	12,163
Minus cost of goods sold	(11,456)
Ending inventory	$3,984

Acme purchased $12,163 of inventory from suppliers in 2009, but is this the amount of cash that Acme paid to its suppliers during the year? Not necessarily. Acme may not have yet paid for all of these purchases and may yet owe for some of the purchases made this year. In other words, Acme may have paid less cash to its suppliers than the amount of this year's purchases, in which case Acme's liability (accounts payable) will have increased by the difference. Alternatively, Acme may have paid even more to its suppliers than the amount of this year's purchases, in which case Acme's accounts payable will have decreased.

Therefore, once purchases have been determined, cash paid to suppliers can be calculated by adjusting purchases for the change in accounts payable. If the company made all purchases with cash, then accounts payable would not change and cash outflows would equal purchases. If accounts payable increased during the year, then purchases on an accrual basis would be higher than they would be on a cash basis, and vice versa. In this example, Acme made more purchases than it paid in cash, so the balance in accounts payable increased. For Acme, the cash paid to suppliers was $11,900, determined as follows:

Purchases from suppliers	$12,163
Less: Increase in accounts payable	(263)
Cash paid to suppliers	**$11,900**

The amount of cash paid to suppliers is reflected in the accounts payable account, as shown below:

Beginning accounts payable	$3,325
Plus purchases	12,163
Minus cash paid to suppliers	**(11,900)**
Ending accounts payable	$3,588

EXAMPLE 4 Computing Cash Paid to Suppliers

Orange Beverages Plc., a fictitious manufacturer of tropical drinks, reported cost of goods sold for the year of $100 million. Total assets increased by $55 million, but inventory declined by $6 million. Total liabilities increased by $45 million, but accounts payable decreased by $2 million. How much cash did the company pay to its suppliers during the year?

A. $96 million.

B. $104 million.

C. $108 million.

Solution: A is correct. Cost of goods sold of $100 million less the decrease in inventory of $6 million equals purchases from suppliers of $94 million. The decrease in accounts payable of $2 million means that the company paid $96 million in cash ($94 million plus $2 million).

3.2.1.3. Cash Paid to Employees To determine the cash paid to employees, it is necessary to adjust salary and wages expense by the net change in salary and wages payable for the year. If salary and wages payable increased during the year, then salary and wages expense on an accrual basis would be higher than the amount of cash paid for this expense, and vice versa. For Acme, salary and wages payable increased by $10, so cash paid for salary and wages was $4,113, as follows:

Salary and wages expense	$4,123
Less: Increase in salary and wages payable	(10)
Cash paid to employees	**$4,113**

The amount of cash paid to employees is reflected in the salary and wages payable account, as shown below:

Beginning salary and wages payable	$ 75
Plus salary and wages expense	4,123
Minus cash paid to employees	**(4,113)**
Ending salary and wages payable	$ 85

3.2.1.4. Cash Paid for Other Operating Expenses To determine the cash paid for other operating expenses, it is necessary to adjust the other operating expenses amount on the income statement by the net changes in prepaid expenses and accrued expense liabilities for the year. If prepaid expenses increased during the year, other operating expenses on a cash basis would be higher than on an accrual basis, and vice versa. Likewise, if accrued expense liabilities increased during the year, other operating expenses on a cash basis would be lower than on an accrual basis, and vice versa. For Acme Corporation, the amount of cash paid for operating expenses in 2009 was $3,532, as follows:

Other operating expenses	$3,577
Less: Decrease in prepaid expenses	(23)
Less: Increase in other accrued liabilities	(22)
Cash paid for other operating expenses	**$3,532**

EXAMPLE 5 Computing Cash Paid for Other Operating Expenses

Black Ice, a fictitious sportswear manufacturer, reported other operating expenses of $30 million. Prepaid insurance expense increased by $4 million, and accrued utilities payable decreased by $7 million. Insurance and utilities are the only two components of other operating expenses. How much cash did the company pay in other operating expenses?

A. $19 million.

B. $33 million.

C. $41 million.

Solution: C is correct. Other operating expenses of $30 million plus the increase in prepaid insurance expense of $4 million plus the decrease in accrued utilities payable of $7 million equals $41 million.

3.2.1.5. Cash Paid for Interest The cash paid for interest is included in operating cash flows under US GAAP and may be included in operating or financing cash flows under IFRS. To determine the cash paid for interest, it is necessary to adjust interest expense by the net change in interest payable for the year. If interest payable increases during the year, then interest expense on an accrual basis will be higher than the amount of cash paid for interest, and vice versa. For Acme Corporation, interest payable decreased by $12, and cash paid for interest was $258, as follows:

Interest expense	$246
Plus: Decrease in interest payable	12
Cash paid for interest	**$258**

Alternatively, cash paid for interest may also be determined by an analysis of the interest payable account, as shown below:

Beginning interest payable	$74
Plus interest expense	246
Minus cash paid for interest	**(258)**
Ending interest payable	$62

3.2.1.6. Cash Paid for Income Taxes To determine the cash paid for income taxes, it is necessary to adjust the income tax expense amount on the income statement by the net changes in taxes receivable, taxes payable, and deferred income taxes for the year. If taxes receivable or deferred tax assets increase during the year, income taxes on a cash basis will be higher than on an accrual basis, and vice versa. Likewise, if taxes payable or deferred tax liabilities increase during the year, income tax expense on a cash basis will be lower than on an accrual basis, and vice versa. For Acme Corporation, the amount of cash paid for income taxes in 2009 was $1,134, as follows:

Income tax expense	$1,139
Less: Increase in income tax payable	(5)
Cash paid for income taxes	**$1,134**

3.2.2. Investing Activities

The second and third steps in preparing the cash flow statement are to determine the total cash flows from investing activities and from financing activities. The presentation of this information is identical, regardless of whether the direct or indirect method is used for operating cash flows.

Purchases and sales of equipment were the only investing activities undertaken by Acme in 2009, as evidenced by the fact that the amounts reported for land and buildings were unchanged during the year. An informational note in Exhibit 7 tells us that Acme *purchased* new equipment in 2009 for a total cost of $1,300. However, the amount of equipment shown on Acme's balance sheet increased by only $243 (ending balance of $8,798 minus beginning balance of $8,555); therefore, Acme must have also *sold or otherwise disposed of* some equipment during the year. To determine the cash inflow from the sale of equipment, we analyze the equipment and accumulated depreciation accounts as well as the gain on the sale of equipment from Exhibits 6 and 7. Assuming that the entire accumulated depreciation is related to equipment, the cash received from sale of equipment is determined as follows.

The historical cost of the equipment sold was $1,057. This amount is determined as follows:

Beginning balance equipment (from balance sheet)	$8,555
Plus equipment purchased (from informational note)	1,300
Minus ending balance equipment (from balance sheet)	(8,798)
Equals historical cost of equipment sold	$1,057

The accumulated depreciation on the equipment sold was $500, determined as follows:

Beginning balance accumulated depreciation (from balance sheet)	$2,891
Plus depreciation expense (from income statement)	1,052
Minus ending balance accumulated depreciation (from balance sheet)	(3,443)
Equals accumulated depreciation on equipment sold	$ 500

The historical cost information, accumulated depreciation information, and information from the income statement about the gain on the sale of equipment can be used to determine the cash received from the sale.

Historical cost of equipment sold (calculated above)	$1,057
Less accumulated depreciation on equipment sold (calculated above)	(500)
Equals book value of equipment sold	$ 557
Plus gain on sale of equipment (from the income statement)	205
Equals cash received from sale of equipment	**$ 762**

EXAMPLE 6 Computing Cash Received from the Sale of Equipment

Copper, Inc., a fictitious brewery and restaurant chain, reported a gain on the sale of equipment of $12 million. In addition, the company's income statement shows depreciation expense of $8 million and the cash flow statement shows capital expenditure of $15 million, all of which was for the purchase of new equipment.

Balance sheet item	12/31/2009	12/31/2010	Change
Equipment	$100 million	$109 million	$9 million
Accumulated depreciation—equipment	$30 million	$36 million	$6 million

Using the above information from the comparative balance sheets, how much cash did the company receive from the equipment sale?

A. $12 million.
B. $16 million.
C. $18 million.

Solution: B is correct. Selling price (cash inflow) minus book value equals gain or loss on sale; therefore, gain or loss on sale plus book value equals selling price (cash inflow). The amount of gain is given, $12 million. To calculate the book value of the equipment

sold, find the historical cost of the equipment and the accumulated depreciation on the equipment.

- Beginning balance of equipment of $100 million plus equipment purchased of $15 million minus ending balance of equipment of $109 million equals historical cost of equipment sold, or $6 million.
- Beginning accumulated depreciation on equipment of $30 million plus depreciation expense for the year of $8 million minus ending balance of accumulated depreciation of $36 million equals accumulated depreciation on the equipment sold, or $2 million.
- Therefore, the book value of the equipment sold was $6 million minus $2 million, or $4 million.
- Because the gain on the sale of equipment was $12 million, the amount of cash received must have been $16 million.

3.2.3. Financing Activities

As with investing activities, the presentation of financing activities is identical, regardless of whether the direct or indirect method is used for operating cash flows.

3.2.3.1. Long-Term Debt and Common Stock The change in long-term debt, based on the beginning 2009 (ending 2008) and ending 2009 balances in Exhibit 7, was a decrease of $500. Absent other information, this indicates that Acme retired $500 of long-term debt. Retiring long-term debt is a cash outflow relating to financing activities.

Similarly, the change in common stock during 2009 was a decrease of $600. Absent other information, this indicates that Acme repurchased $600 of its common stock. Repurchase of common stock is also a cash outflow related to financing activity.

3.2.3.2. Dividends Recall the following relationship:

Beginning retained earnings + Net income – Dividends = Ending retained earnings

Based on this relationship, the amount of cash dividends paid in 2009 can be determined from an analysis of retained earnings, as follows:

Beginning balance of retained earnings (from the balance sheet)	$2,876
Plus net income (from the income statement)	2,210
Minus ending balance of retained earnings (from the balance sheet)	(3,966)
Equals dividends paid	**$1,120**

Note that dividends paid are presented in the statement of changes in equity.

3.2.4. Overall Statement of Cash Flows: Direct Method

Exhibit 8 summarizes the information about Acme's operating, investing, and financing cash flows in the statement of cash flows. At the bottom of the statement, the total net change in cash is shown to be a decrease of $152 (from $1,163 to $1,011). This decrease can also be seen

on the comparative balance sheet in Exhibit 7. The cash provided by operating activities of $2,606 was adequate to cover the net cash used in investing activities of $538; however, the company's debt repayments, cash payments for dividends, and repurchase of common stock (i.e., its financing activities) of $2,220 resulted in an overall decrease in cash of $152.

EXHIBIT 8 Acme Corporation Cash Flow Statement (Direct Method) for Year Ended 31 December 2009

Cash flow from operating activities:	
Cash received from customers	$23,543
Cash paid to suppliers	(11,900)
Cash paid to employees	(4,113)
Cash paid for other operating expenses	(3,532)
Cash paid for interest	(258)
Cash paid for income tax	(1,134)
Net cash provided by operating activities	2,606
Cash flow from investing activities:	
Cash received from sale of equipment	762
Cash paid for purchase of equipment	(1,300)
Net cash used for investing activities	(538)
Cash flow from financing activities:	
Cash paid to retire long-term debt	(500)
Cash paid to retire common stock	(600)
Cash paid for dividends	(1,120)
Net cash used for financing activities	(2,220)
Net increase (decrease) in cash	(152)
Cash balance, 31 December 2008	1,163
Cash balance, 31 December 2009	$1,011

3.2.5. Overall Statement of Cash Flows: Indirect Method

Using the alternative approach to reporting cash from operating activities, the indirect method, we will present the same amount of cash provided by operating activities. Under this approach, we reconcile Acme's net income of $2,210 to its operating cash flow of $2,606.

To perform this reconciliation, net income is adjusted for the following: a) any non-operating activities, b) any non-cash expenses, and c) changes in operating working capital items.

The only non-operating activity in Acme's income statement, the sale of equipment, resulted in a gain of $205. This amount is removed from the operating cash flow section; the cash effects of the sale are shown in the investing section.

Acme's only non-cash expense was depreciation expense of $1,052. Under the indirect method, depreciation expense must be added back to net income because it was a non-cash deduction in the calculation of net income.

Changes in working capital accounts include increases and decreases in the current operating asset and liability accounts. The changes in these accounts arise from applying accrual accounting; that is, recognizing revenues when they are earned and expenses when they are incurred instead of when the cash is received or paid. To make the working capital adjustments under the indirect method, any increase in a current operating asset account is subtracted from net income and a net decrease is added to net income. As described above, the increase in accounts receivable, for example, resulted from Acme recording income statement revenue higher than the amount of cash received from customers; therefore, to reconcile back to operating cash flow, that increase in accounts receivable must be deducted from net income. For current operating liabilities, a net increase is added to net income and a net decrease is subtracted from net income. As described above, the increase in wages payable, for example, resulted from Acme recording income statement expenses higher than the amount of cash paid to employees.

Exhibit 9 presents a tabulation of the most common types of adjustments that are made to net income when using the indirect method to determine net cash flow from operating activities.

EXHIBIT 9 Adjustments to Net Income Using the Indirect Method

Additions	• Non-cash items ▪ Depreciation expense of tangible assets ▪ Amortization expense of intangible assets ▪ Depletion expense of natural resources ▪ Amortization of bond discount • Non-operating losses ▪ Loss on sale or write-down of assets ▪ Loss on retirement of debt ▪ Loss on investments accounted for under the equity method • Increase in deferred income tax liability • Changes in working capital resulting from accruing higher amounts for expenses than the amounts of cash payments or lower amounts for revenues than the amounts of cash receipts ▪ Decrease in current operating assets (e.g., accounts receivable, inventory, and prepaid expenses) ▪ Increase in current operating liabilities (e.g., accounts payable and accrued expense liabilities)
Subtractions	• Non-cash items (e.g., amortization of bond premium) • Non-operating items ▪ Gain on sale of assets ▪ Gain on retirement of debt ▪ Income on investments accounted for under the equity method • Decrease in deferred income tax liability • Changes in working capital resulting from accruing lower amounts for expenses than for cash payments or higher amounts for revenues than for cash receipts ▪ Increase in current operating assets (e.g., accounts receivable, inventory, and prepaid expenses) ▪ Decrease in current operating liabilities (e.g., accounts payable and accrued expense liabilities)

Accordingly, for Acme Corporation, the $55 increase in accounts receivable and the $707 increase in inventory are subtracted from net income and the $23 decrease in prepaid expenses is added to net income. For Acme's current liabilities, the increases in accounts payable, salary and wage payable, income tax payable, and other accrued liabilities ($263, $10, $5, and $22, respectively) are added to net income and the $12 decrease in interest payable is subtracted from net income. Exhibit 10 presents the cash flow statement for Acme Corporation under the indirect method by using the information that we have determined from our analysis of the income statement and the comparative balance sheets. Note that the investing and financing sections are identical to the statement of cash flows prepared using the direct method.

EXHIBIT 10 Acme Corporation Cash Flow Statement (Indirect Method) Year Ended 31 December 2009

Cash flow from operating activities:	
Net income	$2,210
Depreciation expense	1,052
Gain on sale of equipment	(205)
Increase in accounts receivable	(55)
Increase in inventory	(707)
Decrease in prepaid expenses	23
Increase in accounts payable	263
Increase in salary and wage payable	10
Decrease in interest payable	(12)
Increase in income tax payable	5
Increase in other accrued liabilities	22
Net cash provided by operating activities	2,606
Cash flow from investing activities:	
Cash received from sale of equipment	762
Cash paid for purchase of equipment	(1,300)
Net cash used for investing activities	(538)
Cash flow from financing activities:	
Cash paid to retire long-term debt	(500)
Cash paid to retire common stock	(600)
Cash paid for dividends	(1,120)
Net cash used for financing activities	(2,220)
Net decrease in cash	(152)
Cash balance, 31 December 2008	1,163
Cash balance, 31 December 2009	$1,011

EXAMPLE 7 Adjusting Net Income to Compute Operating Cash Flow

Based on the following information for Pinkerly Inc., a fictitious company, what are the total adjustments that the company would make to net income in order to derive operating cash flow?

	Year Ended		
Income statement item		12/31/2009	
Net income		$30 million	
Depreciation		$7 million	
Balance sheet item	12/31/2008	12/31/2009	Change
Accounts receivable	$15 million	$30 million	$15 million
Inventory	$16 million	$13 million	($3 million)
Accounts payable	$10 million	$20 million	$10 million

A. Add $5 million.
B. Add $21 million.
C. Subtract $9 million.

Solution: A is correct. To derive operating cash flow, the company would make the following adjustments to net income: add depreciation (a non-cash expense) of $7 million; add the decrease in inventory of $3 million; add the increase in accounts payable of $10 million; and subtract the increase in accounts receivable of $15 million. Total additions of $20 million and total subtractions of $15 million result in net total additions of $5 million.

3.3. Conversion of Cash Flows from the Indirect to the Direct Method

An analyst may desire to review direct-format operating cash flow to review trends in cash receipts and payments (such as cash received from customers or cash paid to suppliers). If a direct-format statement is not available, cash flows from operating activities reported under the indirect method can be converted to the direct method. Accuracy of conversion depends on adjustments using data available in published financial reports. The method described here is sufficiently accurate for most analytical purposes.

The three-step conversion process is demonstrated for Acme Corporation in Exhibit 11. Referring again to Exhibits 6 and 7 for Acme Corporation's income statement and balance sheet information, begin by disaggregating net income of $2,210 into total revenues and total expenses (Step 1). Next, remove any non-operating and non-cash items (Step 2). For Acme, we therefore remove the non-operating gain on the sale of equipment of $205 and the non-cash depreciation expense of $1,052. Then, convert accrual amounts of revenues and expenses to cash flow amounts of receipts and payments by adjusting for changes in working capital accounts (Step 3). The results of these adjustments are the items of information for the direct format of operating cash flows. These line items are shown as the results of Step 3.

EXHIBIT 11 Conversion from the Indirect to the Direct Method

Step 1	Total revenues	$23,803
Aggregate all revenue and all expenses	Total expenses	21,593
	Net income	$2,210
Step 2	Total revenue less non-cash item revenues:	
Remove all non-cash items from aggregated revenues and expenses and break out remaining items into relevant cash flow items	($23,803 – $205) =	$23,598
	Revenue	$23,598
	Total expenses less non-cash item expenses:	
	($21,593 – $1,052) =	$20,541
	Cost of goods sold	$11,456
	Salary and wage expenses	4,123
	Other operating expenses	3,577
	Interest expense	246
	Income tax expense	1,139
	Total	$20,541
Step 3	Cash received from customers[a]	$23,543
Convert accrual amounts to cash flow amounts by adjusting for working capital changes	Cash paid to suppliers[b]	(11,900)
	Cash paid to employees[c]	(4,113)
	Cash paid for other operating expenses[d]	(3,532)
	Cash paid for interest[e]	(258)
	Cash paid for income tax[f]	(1,134)
	Net cash provided by operating activities	$2,606

Calculations for Step 3:
[a]Revenue of $23,598 less increase in accounts receivable of $55.
[b]Cost of goods sold of $11,456 plus increase in inventory of $707 less increase in accounts payable of $263.
[c]Salary and wage expense of $4,123 less increase in salary and wage payable of $10.
[d]Other operating expenses of $3,577 less decrease in prepaid expenses of $23 less increase in other accrued liabilities of $22.
[e]Interest expense of $246 plus decrease in interest payable of $12.
[f]Income tax expense of $1,139 less increase in income tax payable of $5.

4. CASH FLOW STATEMENT ANALYSIS

The analysis of a company's cash flows can provide useful information for understanding a company's business and earnings and for predicting its future cash flows. This section describes tools and techniques for analyzing the statement of cash flows, including the analysis of sources and uses of cash and cash flow, common-size analysis, and calculation of free cash flow measures and cash flow ratios.

4.1. Evaluation of the Sources and Uses of Cash

Evaluation of the cash flow statement should involve an overall assessment of the sources and uses of cash between the three main categories as well as an assessment of the main drivers of cash flow within each category, as follows:

1. Evaluate where the major sources and uses of cash flow are between operating, investing, and financing activities.
2. Evaluate the primary determinants of operating cash flow.
3. Evaluate the primary determinants of investing cash flow.
4. Evaluate the primary determinants of financing cash flow.

Step 1 The major sources of cash for a company can vary with its stage of growth. For a mature company, it is expected and desirable that operating activities are the primary source of cash flows. Over the long term, a company must generate cash from its operating activities. If operating cash flow were consistently negative, a company would need to borrow money or issue stock (financing activities) to fund the shortfall. Eventually, these providers of capital need to be repaid from operations or they will no longer be willing to provide capital. Cash generated from operating activities can be used in either investing or financing activities. If the company has good opportunities to grow the business or other investment opportunities, it is desirable to use the cash in investing activities. If the company does not have profitable investment opportunities, the cash should be returned to capital providers, a financing activity. For a new or growth stage company, operating cash flow may be negative for some period of time as it invests in such assets as inventory and receivables (extending credit to new customers) in order to grow the business. This situation is not sustainable over the long term, so eventually the cash must start to come primarily from operating activities so that capital can be returned to the providers of capital. Lastly, it is desirable that operating cash flows are sufficient to cover capital expenditures (in other words, the company has free cash flow as discussed further in Section 4.3). In summary, major points to consider at this step are:

- What are the major sources and uses of cash flow?
- Is operating cash flow positive and sufficient to cover capital expenditures?

Step 2 Turning to the operating section, the analysts should examine the most significant determinants of operating cash flow. Companies need cash for use in operations (for example, to hold receivables and inventory and to pay employees and suppliers) and receive cash from operating activities (for example, payments from customers). Under the indirect method, the increases and decreases in receivables, inventory, payables, and so on can be examined to determine whether the company is using or generating cash in operations and why. It is also useful to compare operating cash flow with net income. For a mature company, because net income includes non-cash expenses (depreciation and amortization), it is expected and desirable that operating cash flow exceeds net income. The relationship between net income and operating cash flow is also an indicator of earnings quality. If a company has large net income but poor operating cash flow, it may be a sign of poor earnings quality. The company may be making aggressive accounting choices to increase net income but not be generating cash for its business. You should also examine the variability of both earnings and cash flow and consider the impact of this variability on the company's risk as well as the ability to forecast future cash flows for valuation purposes. In summary:

- What are the major determinants of operating cash flow?
- Is operating cash flow higher or lower than net income? Why?
- How consistent are operating cash flows?

Step 3 Within the investing section, you should evaluate each line item. Each line item represents either a source or use of cash. This enables you to understand where the cash is being spent (or received). This section will tell you how much cash is being invested for the future in property, plant, and equipment; how much is used to acquire entire companies; and how much is put aside in liquid investments, such as stocks and bonds. It will also tell you how much cash is being raised by selling these types of assets. If the company is making major capital investments, you should consider where the cash is coming from to cover these investments (e.g., is the cash coming from excess operating cash flow or from the financing activities described in Step 4). If assets are being sold, it is important to determine why and to assess the effects on the company.

Step 4 Within the financing section, you should examine each line item to understand whether the company is raising capital or repaying capital and what the nature of its capital sources are. If the company is borrowing each year, you should consider when repayment may be required. This section will also present dividend payments and repurchases of stock that are alternative means of returning capital to owners. It is important to assess why capital is being raised or repaid.

We now provide an example of a cash flow statement evaluation.

EXAMPLE 8 Analysis of the Cash Flow Statement

Derek Yee, CFA, is preparing to forecast cash flow for Groupe Danone (FP: BN) as an input into his valuation model. He has asked you to evaluate the historical cash flow statement of Groupe Danone, which is presented in Exhibit 12. Groupe Danone prepares its financial statements in conformity with IFRS. Note that Groupe Danone presents the most recent period on the right.

EXHIBIT 12 Groupe Danone Consolidated Financial Statements Consolidated Statements of Cash Flows (in € Millions)

Years Ended 31 December	2008	2009
Net income attributable to the Group	1,313	1,361
Net income attributable to minority interests	178	160
Net income from discontinued operations	(269)	—
Share of profits of associates	(62)	77
Depreciation and amortization	525	549
Dividends received from associates	29	174
Other flows with impact on cash	(113)	(157)
Other flows with no impact on cash	93	(93)
Cash flows provided by operating activities, excluding changes in net working capital	**1,699**	**2,092**
(Increase) decrease in inventories	3	37
(Increase) decrease in trade accounts receivable	(74)	(112)

(continued)

EXHIBIT 12 (Continued)

Years Ended 31 December	2008	2009
Increase (decrease) in trade accounts payable	36	(127)
Changes in other accounts receivable and payable	90	110
Change in other working capital requirements	55	(92)
Cash flows provided by (used in) operating activities	**1,754**	**2,000**
Capital expenditure	(706)	(699)
Purchase of businesses and other investments, net of cash and cash equivalents acquired	(259)	(147)
Proceeds from the sale of businesses and other investments, including indebtedness of companies sold	329	1,024
(Increase) decrease in long-term loans and other long-term assets	67	36
Cash flows provided by (used in) investing activities	**(569)**	**214**
Increase in capital and additional paid-in capital	48	2,977
Purchases of treasury stock (net of disposals)	46	100
Dividends paid to Danone shareholders and to minority interests	(705)	(451)
Settlement of debt hedge financial instruments (mainly equalization payments)		(154)
Increase (decrease) in non-current financial liabilities	1,338	(4,154)
Increase (decrease) in current financial liabilities	(1,901)	(427)
Increase (decrease) in marketable securities	63	(60)
Cash flows provided by (used in) financing activities	**(1,111)**	**(2,169)**
Effect of exchange rate changes	(31)	8
Increase (decrease) in cash and cash equivalents	**43**	**53**
Cash and cash equivalents at beginning of period	548	591
Cash and cash equivalents at end of period	591	644
Supplemental disclosures		
Payments during the year of:		
• net interest	433	272
• income tax	430	413

Yee would like answers to the following questions:

- What are the major sources of cash for Groupe Danone?
- What are the major uses of cash for Groupe Danone?
- What is the relationship between net income and cash flow from operating activities?
- Is cash flow from operating activities sufficient to cover capital expenditures?
- Other than capital expenditures, is cash being used or generated in investing activities?
- What types of financing cash flows does Groupe Danone have?

Solution: The major categories of cash flows can be summarized as follows (in € millions):

	2008	2009
Cash flows provided by operating activities	1,754	2,000
Cash flows provided by (used in) investing activities	(569)	214
Cash flows provided by (used in) financing activities	(1,111)	(2,169)
Exchange rate effects on cash	(31)	8
Increase in cash	43	53

The primary source of cash for Groupe Danone is operating activities. In 2009, investing activities provided cash as the result of the sale of businesses and other investments. Cash flow is being used in financing activities, primarily to repay financial liabilities and to pay dividends. The fact that the primary source of cash is from operations is positive and desirable for a mature company. Additionally, the fact that operating cash flow exceeds net income in both years is a positive sign. Finally, operating cash flows exceed capital expenditures, indicating that the company can fund capital expenditures from operations.

4.2. Common-Size Analysis of the Statement of Cash Flows

In common-size analysis of a company's income statement, each income and expense line item is expressed as a percentage of net revenues (net sales). For the common-size balance sheet, each asset, liability, and equity line item is expressed as a percentage of total assets. For the common-size cash flow statement, there are two alternative approaches. The first approach is to express each line item of cash inflow (outflow) as a percentage of total inflows (outflows) of cash, and the second approach is to express each line item as a percentage of net revenue.

Exhibit 13 demonstrates the total cash inflows/total cash outflows method for Acme Corporation. Under this approach, each of the cash inflows is expressed as a percentage of the total cash inflows, whereas each of the cash outflows is expressed as a percentage of the total cash outflows. In Panel A, Acme's common-size statement is based on a cash flow statement using the direct method of presenting operating cash flows. Operating cash inflows and outflows are separately presented on the cash flow statement, and therefore, the common-size cash flow statement shows each of these operating inflows (outflows) as a percentage of total inflows (outflows). In Panel B, Acme's common-size statement is based on a cash flow statement using the indirect method of presenting operating cash flows. When a cash flow statement has been presented using the indirect method, operating cash inflows and outflows are not separately presented; therefore, the common-size cash flow statement shows only the net operating cash flow (net cash provided by or used in operating activities) as a percentage of total inflows or outflows, depending on whether the net amount was a cash inflow or outflow. Because Acme's net operating cash flow is positive, it is shown as a percentage of total inflows.

EXHIBIT 13 Acme Corporation Common-Size Cash Flow Statement Year Ended 31 December 2009

Panel A. Direct Format for Cash Flow

Inflows		Percentage of Total Inflows
Receipts from customers	$23,543	96.86%
Sale of equipment	762	3.14
Total	$24,305	100.00%

Outflows		Percentage of Total Outflows
Payments to suppliers	$11,900	48.66%
Payments to employees	4,113	16.82
Payments for other operating expenses	3,532	14.44
Payments for interest	258	1.05
Payments for income tax	1,134	4.64
Purchase of equipment	1,300	5.32
Retirement of long-term debt	500	2.04
Retirement of common stock	600	2.45
Dividend payments	1,120	4.58
Total	$24,457	100.00%
Net increase (decrease) in cash	($152)	

Panel B. Indirect Format for Cash Flow

Inflows		Percentage of Total Inflows
Net cash provided by operating activities	$2,606	77.38%
Sale of equipment	762	22.62
Total	$3,368	100.00%

Outflows		Percentage of Total Outflows
Purchase of equipment	$1,300	36.93%
Retirement of long-term debt	500	14.20
Retirement of common stock	600	17.05
Dividend payments	1,120	31.82
Total	$3,520	100.00%
Net increase (decrease) in cash	($152)	

Exhibit 14 demonstrates the net revenue common-size cash flow statement for Acme Corporation. Under the net revenue approach, each line item in the cash flow statement is shown as a percentage of net revenue. The common-size statement in this exhibit has been developed based on Acme's cash flow statement using the indirect method for operating cash flows and using net revenue of $23,598 as shown in Exhibit 6. Each line item of the reconciliation between net income and net operating cash flows is expressed as a percentage of net revenue. The common-size format makes it easier to see trends in cash flow rather than just looking at the total amount. This method is also useful to the analyst in forecasting future cash flows because individual items in the common-size statement (e.g., depreciation, fixed capital expenditures, debt borrowing, and repayment) are expressed as a percentage of net revenue. Thus, once the analyst has forecast revenue, the common-size statement provides a basis for forecasting cash flows for those items with an expected relation to net revenue.

EXHIBIT 14 Acme Corporation Common-Size Cash Flow Statement: Indirect Format Year Ended 31 December 2009

		Percentage of Net Revenue
Cash flow from operating activities:		
Net income	$2,210	9.37%
Depreciation expense	1,052	4.46
Gain on sale of equipment	(205)	(0.87)
Increase in accounts receivable	(55)	(0.23)
Increase in inventory	(707)	(3.00)
Decrease in prepaid expenses	23	0.10
Increase in accounts payable	263	1.11
Increase in salary and wage payable	10	0.04
Decrease in interest payable	(12)	(0.05)
Increase in income tax payable	5	0.02
Increase in other accrued liabilities	22	0.09
Net cash provided by operating activities	$2,606	11.04%
Cash flow from investing activities:		
Cash received from sale of equipment	$ 762	3.23%
Cash paid for purchase of equipment	(1,300)	(5.51)
Net cash used for investing activities	$(538)	(2.28)%
Cash flow from financing activities:		
Cash paid to retire long-term debt	$(500)	(2.12)%
Cash paid to retire common stock	(600)	(2.54)
Cash paid for dividends	(1,120)	(4.75)
Net cash used for financing activities	$(2,220)	(9.41)%
Net decrease in cash	$(152)	(0.64)%

EXAMPLE 9 Analysis of a Common-Size Cash Flow Statement

Andrew Potter is examining an abbreviated common-size cash flow statement for Dell Inc. (NASDAQ: DELL), a provider of technological products and services. The common-size cash flow statement was prepared by dividing each line item by total net revenue for the same year. The terminology is that used by Dell. "Change in cash from" is used instead of "cash provided by (used in)."

	29 Jan 10	30 Jan 09	1 Feb 08
Cash flows from operating activities:			
Net income	**2.71%**	**4.06%**	**4.82%**
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	1.61	1.26	0.99
Stock-based compensation	0.59	0.68	0.54
In-process research and development charges	0.00	0.00	0.14
Effects of exchange rate changes on monetary assets and liabilities denominated in foreign currencies	0.11	(0.19)	0.05
Deferred income taxes	(0.10)	0.14	(0.50)
Provision for doubtful accounts—including financing receivables	0.81	0.51	0.31
Other	0.19	0.05	0.05
Changes in operating assets and liabilities, net of effects from acquisitions:			
Accounts receivable	(1.25)	0.79	(1.78)
Financing receivables	(2.05)	(0.49)	(0.64)
Inventories	(0.35)	0.51	(0.81)
Other assets	(0.43)	(0.17)	(0.20)
Accounts payable	5.36	(5.10)	1.37
Deferred services revenue	0.26	1.09	1.69
Accrued and other liabilities	(0.08)	(0.02)	0.45
Change in cash from operating activities	**7.38**	**3.10**	**6.46**
Cash flows from investing activities:			
Investments: Purchases	(2.61)	(2.59)	(3.92)
Investments: Maturities and sales	2.91	3.82	6.02
Capital expenditures	(0.69)	(0.72)	(1.36)
Proceeds from sale of facility and land	0.03	0.07	0.00
Acquisition of business, net of cash received	(6.83)	(0.29)	(3.63)
Change in cash from investing activities	**(7.20)**	**0.29**	**(2.88)**

	29 Jan 10	30 Jan 09	1 Feb 08
Cash flows from financing activities:			
Repurchase of common stock	0.00	(4.69)	(6.55)
Issuance of common stock under employee plans	0.00	0.13	0.22
Issuance of commercial paper (maturity 90 days or less), net	0.14	0.16	(0.16)
Proceeds from debt	3.89	2.49	0.11
Repayments of debt	(0.23)	(0.39)	(0.27)
Other	0.00	0.00	(0.09)
Change in cash from financing activities	**3.80**	**(2.30)**	**(6.74)**
Effect of exchange rate changes on cash and cash equivalents	0.33	–0.13	0.25
Change in cash and cash equivalents	**4.32%**	**0.96%**	**–2.91%**

Based on the information in the above exhibit:

1. Discuss the significance of
   A. depreciation and amortization.
   B. capital expenditures.
2. Compare Dell's operating cash flow as a percentage of revenue with Dell's net profit margin.
3. Discuss Dell's use of its positive operating cash flow.

Solution to 1:

A. Dell's depreciation and amortization expense is less than 2 percent of total net revenue in the year ended 29 January 2010. However, as a percentage of total revenue, it has been increasing each year. In the year ended 29 January 2010, adding this expense back to determine operating cash flow has a significant impact on cash flow from operations as a percentage of total revenue because its size was approximately 60 percent of net profit margin (net income/total net revenue).

B. Dell's level of capital expenditures is relatively small, less than 1 percent of revenues in the most recent years. Cash flow from operations as a percentage of total revenue indicates that operating cash flows are more than sufficient to cover these expenditures.

Solution to 2: Dell's operating cash flow as a percentage of revenue is usually much higher than net profit margin, with the exception of the year ended 30 January 2009. In that year, the net profit margin was 4.06 percent and operating cash flow as a percentage of total revenue was 3.10 percent. The primary difference between that year and the other years appears to have been a significant reduction in accounts payable; in each of the other years, accounts payable increased. For the year ended 29 January 2010, operating cash flow as a percentage of total revenue was 7.38 percent and net profit margin was 2.71 percent.

Solution to 3: In the year ended 29 January 2010, the largest cash outflow was for an acquisition of business (investing activities). In prior years, much of Dell's operating cash flow was used to repurchase its own stock (financing activities). In each of the three years, Dell's purchases of investments (investing activities) were less than the amounts of maturities and sales; thus, on a net basis, investments provided a net source of cash.

4.3. Free Cash Flow to the Firm and Free Cash Flow to Equity

It was mentioned earlier that it is desirable that operating cash flows are sufficient to cover capital expenditures. The excess of operating cash flow over capital expenditures is known generically as **free cash flow**. For purposes of valuing a company or its equity securities, an analyst may want to determine and use other cash flow measures, such as free cash flow to the firm (FCFF) or free cash flow to equity (FCFE).

FCFF is the cash flow available to the company's suppliers of debt and equity capital after all operating expenses (including income taxes) have been paid and necessary investments in working capital and fixed capital have been made. FCFF can be computed starting with net income as[9]

$$\text{FCFF} = \text{NI} + \text{NCC} + \text{Int}(1 - \text{Tax rate}) - \text{FCInv} - \text{WCInv}$$

where

NI = Net income
NCC = Non-cash charges (such as depreciation and amortization)
Int = Interest expense
FCInv = Capital expenditures (fixed capital, such as equipment)
WCInv = Working capital expenditures

The reason for adding back interest is that FCFF is the cash flow available to the suppliers of debt capital as well as equity capital. Conveniently, FCFF can also be computed from cash flow from operating activities as

$$\text{FCFF} = \text{CFO} + \text{Int}(1 - \text{Tax rate}) - \text{FCInv}$$

CFO represents cash flow from operating activities under US GAAP or under IFRS where the company has included interest paid in operating activities. If interest paid was included in financing activities, then CFO does not have to be adjusted for Int(1 – Tax rate). Under IFRS, if the company has placed interest and dividends received in investing activities, these should be added back to CFO to determine FCFF. Additionally, if dividends paid were subtracted in the operating section, these should be added back in to compute FCFF.

The computation of FCFF for Acme Corporation (based on the data from Exhibits 6, 7, and 8) is as follows:

CFO	\$2,606
Plus: Interest paid times (1 – income tax rate)	
{\$258 [1 – 0.34[a]]}	170
Less: Net investments in fixed capital	
(\$1,300 – \$762)	(538)
FCFF	\$2,238

[a] Income tax rate of 0.34 = (Tax expense ÷ Pretax income) = (\$1,139 ÷ \$3,349).

[9] See Pinto et al., *Equity Asset Valuation* (2010) for a detailed discussion of free cash flow computations.

FCFE is the cash flow available to the company's common stockholders after all operating expenses and borrowing costs (principal and interest) have been paid and necessary investments in working capital and fixed capital have been made. FCFE can be computed as

$$\text{FCFE} = \text{CFO} - \text{FCInv} + \text{Net borrowing}$$

When net borrowing is negative, debt repayments exceed receipts of borrowed funds. In this case, FCFE can be expressed as

$$\text{FCFE} = \text{CFO} - \text{FCInv} - \text{Net debt repayment}$$

The computation of FCFE for Acme Corporation (based on the data from Exhibits 6, 7, and 8) is as follows:

CFO	$2,606
Less: Net investments in fixed capital ($1,300 – $762)	(538)
Less: Debt repayment	(500)
FCFE	$1,568

Positive FCFE means that the company has an excess of operating cash flow over amounts needed for capital expenditures and repayment of debt. This cash would be available for distribution to owners.

4.4. Cash Flow Ratios

The statement of cash flows provides information that can be analyzed over time to obtain a better understanding of the past performance of a company and its future prospects. This information can also be effectively used to compare the performance and prospects of different companies in an industry and of different industries. There are several ratios based on cash flow from operating activities that are useful in this analysis. These ratios generally fall into cash flow performance (profitability) ratios and cash flow coverage (solvency) ratios. Exhibit 15 summarizes the calculation and interpretation of some of these ratios.

EXHIBIT 15 Cash Flow Ratios

Performance Ratios	Calculation	What It Measures
Cash flow to revenue	CFO ÷ Net revenue	Operating cash generated per dollar of revenue
Cash return on assets	CFO ÷ Average total assets	Operating cash generated per dollar of asset investment
Cash return on equity	CFO ÷ Average shareholders' equity	Operating cash generated per dollar of owner investment
Cash to income	CFO ÷ Operating income	Cash generating ability of operations
Cash flow per share[a]	(CFO – Preferred dividends) ÷ Number of common shares outstanding	Operating cash flow on a per-share basis

(continued)

EXHIBIT 15 (Continued)

Coverage Ratios	Calculation	What It Measures
Debt coverage	CFO ÷ Total debt	Financial risk and financial leverage
Interest coverage[b]	(CFO + Interest paid + Taxes paid) ÷ Interest paid	Ability to meet interest obligations
Reinvestment	CFO ÷ Cash paid for long-term assets	Ability to acquire assets with operating cash flows
Debt payment	CFO ÷ Cash paid for long-term debt repayment	Ability to pay debts with operating cash flows
Dividend payment	CFO ÷ Dividends paid	Ability to pay dividends with operating cash flows
Investing and financing	CFO ÷ Cash outflows for investing and financing activities	Ability to acquire assets, pay debts, and make distributions to owners

Notes:

[a] If the company reports under IFRS and includes total dividends paid as a use of cash in the operating section, total dividends should be added back to CFO as reported and then preferred dividends should be subtracted. Recall that CFO reported under US GAAP and IFRS may differ depending on the treatment of interest and dividends, received and paid.

[b] If the company reports under IFRS and included interest paid as a use of cash in the financing section, then interest paid should not be added back to the numerator.

EXAMPLE 10 A Cash Flow Analysis of Comparables

Andrew Potter is comparing the cash-flow-generating ability of Dell Inc. with that of other computer manufacturers: Hewlett Packard (NYSE: HPQ) and Apple Inc. (NASDAQ: AAPL). He collects information from the companies' annual reports and prepares the following table.

Cash Flow from Operating Activities as a Percentage of Total Net Revenue

	2009 (%)	2008 (%)	2007 (%)
DELL	7.38	3.10	6.46
HPQ	11.68	12.33	9.22
AAPL	23.68	29.55	22.79

As a Percentage of Ending Total Assets

	2009 (%)	2008 (%)	2007 (%)
DELL	11.61	7.15	14.33
HPQ	11.65	12.87	10.84
AAPL	21.39	24.25	21.58

AAPL = Apple; HPQ = Hewlett Packard.

What is Potter likely to conclude about the relative cash-flow-generating ability of these companies?

Solution: On both measures—operating cash flow divided by revenue and operating cash flow divided by assets—Apple's performance was much stronger than the two comparable companies. Dell's operating cash flow divided by revenue is lower than HP's for all three years. Dell's operating cash flow relative to assets is similar to HP's in 2009, lower than HP's in 2008, and higher than HP's in 2007. Apple's measures are significantly higher than the others, indicating that it has the best cash generating ability. Note that Apple's cash generating ability presumably reflects the company's successful introduction and sales of new products (including the iPhone), tightly managed inventory, and ability to generate revenues (and operating cash flow) from businesses not requiring significant investment in such assets as service contracts and sales of third-party compatible products. Overall, Potter should undertake additional research to understand the underlying business reasons for the differences in the companies' cash flow profiles.

5. SUMMARY

The cash flow statement provides important information about a company's cash receipts and cash payments during an accounting period as well as information about a company's operating, investing, and financing activities. Although the income statement provides a measure of a company's success, cash and cash flow are also vital to a company's long-term success. Information on the sources and uses of cash helps creditors, investors, and other statement users evaluate the company's liquidity, solvency, and financial flexibility. Key concepts are as follows:

- Cash flow activities are classified into three categories: operating activities, investing activities, and financing activities. Significant non-cash transaction activities (if present) are reported by using a supplemental disclosure note to the cash flow statement.
- Cash flow statements under IFRS and US GAAP are similar; however, IFRS provide companies with more choices in classifying some cash flow items as operating, investing, or financing activities.
- Companies can use either the direct or the indirect method for reporting their operating cash flow:
  - The direct method discloses operating cash inflows by source (e.g., cash received from customers, cash received from investment income) and operating cash outflows by use (e.g., cash paid to suppliers, cash paid for interest) in the operating activities section of the cash flow statement.
  - The indirect method reconciles net income to operating cash flow by adjusting net income for all non-cash items and the net changes in the operating working capital accounts.
- The cash flow statement is linked to a company's income statement and comparative balance sheets and to data on those statements.
- Although the indirect method is most commonly used by companies, an analyst can generally convert it to an approximation of the direct format by following a simple three-step process.
- An evaluation of a cash flow statement should involve an assessment of the sources and uses of cash and the main drivers of cash flow within each category of activities.

- The analyst can use common-size statement analysis for the cash flow statement. Two approaches to developing the common-size statements are the total cash inflows/total cash outflows method and the percentage of net revenues method.
- The cash flow statement can be used to determine free cash flow to the firm (FCFF) and free cash flow to equity (FCFE).
- The cash flow statement may also be used in financial ratios that measure a company's profitability, performance, and financial strength.

REFERENCE

Pinto, Jerald E., Elaine Henry, Thomas R. Robinson, and John D. Stowe. 2010. *Equity Asset Valuation*, 2nd edition. Hoboken, NJ: John Wiley & Sons.

PROBLEMS

1. The three major classifications of activities in a cash flow statement are:
   A. inflows, outflows, and net flows.
   B. operating, investing, and financing.
   C. revenues, expenses, and net income.
2. The sale of a building for cash would be classified as what type of activity on the cash flow statement?
   A. Operating.
   B. Investing.
   C. Financing.
3. Which of the following is an example of a financing activity on the cash flow statement under US GAAP?
   A. Payment of interest.
   B. Receipt of dividends.
   C. Payment of dividends.
4. A conversion of a face value $1 million convertible bond for $1 million of common stock would most likely be:
   A. reported as a $1 million investing cash inflow and outflow.
   B. reported as a $1 million financing cash outflow and inflow.
   C. reported as supplementary information to the cash flow statement.
5. Interest paid is classified as an operating cash flow under:
   A. US GAAP but may be classified as either operating or investing cash flows under IFRS.
   B. IFRS but may be classified as either operating or investing cash flows under US GAAP.
   C. US GAAP but may be classified as either operating or financing cash flows under IFRS.
6. Cash flows from taxes on income must be separately disclosed under:
   A. IFRS only.
   B. US GAAP only.
   C. both IFRS and US GAAP.

7. Which of the following components of the cash flow statement may be prepared under the indirect method under both IFRS and US GAAP?
   A. Operating.
   B. Investing.
   C. Financing.
8. Which of the following is *most likely* to appear in the operating section of a cash flow statement under the indirect method?
   A. Net income.
   B. Cash paid to suppliers.
   C. Cash received from customers.
9. Red Road Company, a consulting company, reported total revenues of $100 million, total expenses of $80 million, and net income of $20 million in the most recent year. If accounts receivable increased by $10 million, how much cash did the company receive from customers?
   A. $90 million.
   B. $100 million.
   C. $110 million.
10. Green Glory Corp., a garden supply wholesaler, reported cost of goods sold for the year of $80 million. Total assets increased by $55 million, including an increase of $5 million in inventory. Total liabilities increased by $45 million, including an increase of $2 million in accounts payable. The cash paid by the company to its suppliers is most likely *closest* to:
    A. $73 million.
    B. $77 million.
    C. $83 million.
11. Purple Fleur S.A., a retailer of floral products, reported cost of goods sold for the year of $75 million. Total assets increased by $55 million, but inventory declined by $6 million. Total liabilities increased by $45 million, and accounts payable increased by $2 million. The cash paid by the company to its suppliers is most likely *closest* to:
    A. $67 million.
    B. $79 million.
    C. $83 million.
12. White Flag, a women's clothing manufacturer, reported salaries expense of $20 million. The beginning balance of salaries payable was $3 million, and the ending balance of salaries payable was $1 million. How much cash did the company pay in salaries?
    A. $18 million.
    B. $21 million.
    C. $22 million.
13. An analyst gathered the following information from a company's 2010 financial statements (in $ millions):

Year ended 31 December	2009	2010
Net sales	245.8	254.6
Cost of goods sold	168.3	175.9
Accounts receivable	73.2	68.3
Inventory	39.0	47.8
Accounts payable	20.3	22.9

Based only on the information above, the company's 2010 statement of cash flows in the direct format would include amounts (in $ millions) for cash received from customers and cash paid to suppliers, respectively, that are *closest* to:

	Cash Received from Customers	Cash Paid to Suppliers
A.	249.7	169.7
B.	259.5	174.5
C.	259.5	182.1

14. Golden Cumulus Corp., a commodities trading company, reported interest expense of $19 million and taxes of $6 million. Interest payable increased by $3 million, and taxes payable decreased by $4 million over the period. How much cash did the company pay for interest and taxes?
    A. $22 million for interest and $10 million for taxes.
    B. $16 million for interest and $2 million for taxes.
    C. $16 million for interest and $10 million for taxes.

15. An analyst gathered the following information from a company's 2010 financial statements (in $ millions):

Balances as of Year Ended 31 December	2009	2010
Retained earnings	120	145
Accounts receivable	38	43
Inventory	45	48
Accounts payable	36	29

In 2010, the company declared and paid cash dividends of $10 million and recorded depreciation expense in the amount of $25 million. The company considers dividends paid a financing activity. The company's 2010 cash flow from operations (in $ millions) was *closest* to
    A. 25.
    B. 45.
    C. 75.

16. Silverago Incorporated, an international metals company, reported a loss on the sale of equipment of $2 million in 2010. In addition, the company's income statement shows depreciation expense of $8 million and the cash flow statement shows capital expenditure of $10 million, all of which was for the purchase of new equipment. Using the following information from the comparative balance sheets, how much cash did the company receive from the equipment sale?

Balance Sheet Item	12/31/2009	12/31/2010	Change
Equipment	$100 million	$105 million	$5 million
Accumulated depreciation—equipment	$40 million	$46 million	$6 million

    A. $1 million.
    B. $2 million.
    C. $3 million.

17. Jaderong Plinkett Stores reported net income of $25 million. The company has no outstanding debt. Using the following information from the comparative balance sheets (in millions), what should the company report in the financing section of the statement of cash flows in 2010?

Balance Sheet Item	12/31/2009	12/31/2010	Change
Common stock	$100	$102	$ 2
Additional paid-in capital common stock	$100	$140	$40
Retained earnings	$100	$115	$15
Total stockholders' equity	$300	$357	$57

A. Issuance of common stock of $42 million; dividends paid of $10 million.
B. Issuance of common stock of $38 million; dividends paid of $10 million.
C. Issuance of common stock of $42 million; dividends paid of $40 million.

18. Based on the following information for Star Inc., what are the total net adjustments that the company would make to net income in order to derive operating cash flow?

	Year Ended
Income Statement Item	12/31/2010
Net income	$20 million
Depreciation	$ 2 million

Balance Sheet Item	12/31/2009	12/31/2010	Change
Accounts receivable	$25 million	$22 million	($3 million)
Inventory	$10 million	$14 million	$4 million
Accounts payable	$ 8 million	$13 million	$5 million

A. Add $2 million.
B. Add $6 million.
C. Subtract $6 million.

19. The first step in cash flow statement analysis should be to:
A. evaluate consistency of cash flows.
B. determine operating cash flow drivers.
C. identify the major sources and uses of cash.

20. Which of the following would be valid conclusions from an analysis of the cash flow statement for Telefónica Group presented in Exhibit 3?
A. The primary use of cash is financing activities.
B. The primary source of cash is operating activities.
C. Telefónica classifies interest received as an operating activity.

21. Which is an appropriate method of preparing a common-size cash flow statement?
A. Show each item of revenue and expense as a percentage of net revenue.
B. Show each line item on the cash flow statement as a percentage of net revenue.
C. Show each line item on the cash flow statement as a percentage of total cash outflows.

22. Which of the following is an appropriate method of computing free cash flow to the firm?
    A. Add operating cash flows to capital expenditures and deduct after-tax interest payments.
    B. Add operating cash flows to after-tax interest payments and deduct capital expenditures.
    C. Deduct both after-tax interest payments and capital expenditures from operating cash flows.

23. An analyst has calculated a ratio using as the numerator the sum of operating cash flow, interest, and taxes and as the denominator the amount of interest. What is this ratio, what does it measure, and what does it indicate?
    A. This ratio is an interest coverage ratio, measuring a company's ability to meet its interest obligations and indicating a company's solvency.
    B. This ratio is an effective tax ratio, measuring the amount of a company's operating cash flow used for taxes and indicating a company's efficiency in tax management.
    C. This ratio is an operating profitability ratio, measuring the operating cash flow generated accounting for taxes and interest and indicating a company's liquidity.

CHAPTER 7

FINANCIAL ANALYSIS TECHNIQUES

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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- describe tools and techniques used in financial analysis, including their uses and limitations;
- classify, calculate, and interpret activity, liquidity, solvency, profitability, and valuation ratios;
- describe relationships among ratios and evaluate a company using ratio analysis;
- demonstrate the application of DuPont analysis of return on equity, and calculate and interpret effects of changes in its components;
- calculate and interpret ratios used in equity analysis and credit analysis;
- explain the requirements for segment reporting, and calculate and interpret segment ratios;
- describe how ratio analysis and other techniques can be used to model and forecast earnings.

1. INTRODUCTION

Financial analysis tools can be useful in assessing a company's performance and trends in that performance. In essence, an analyst converts data into financial metrics that assist in decision making. Analysts seek to answer such questions as: How successfully has the company performed, relative to its own past performance and relative to its competitors? How is the company likely to perform in the future? Based on expectations about future performance, what is the value of this company or the securities it issues?

A primary source of data is a company's annual report, including the financial statements and notes, and management commentary (operating and financial review or management's

discussion and analysis). This chapter focuses on data presented in financial reports prepared under International Financial Reporting Standards (IFRS) and United States generally accepted accounting principles (US GAAP). However, financial reports do not contain all the information needed to perform effective financial analysis. Although financial statements do contain data about the *past* performance of a company (its income and cash flows) as well as its *current* financial condition (assets, liabilities, and owners' equity), such statements do not necessarily provide all the information useful for analysis nor do they forecast *future* results. The financial analyst must be capable of using financial statements in conjunction with other information to make projections and reach valid conclusions. Accordingly, an analyst typically needs to supplement the information found in a company's financial reports with other information, including information on the economy, industry, comparable companies, and the company itself.

This chapter describes various techniques used to analyze a company's financial statements. Financial analysis of a company may be performed for a variety of reasons, such as valuing equity securities, assessing credit risk, conducting due diligence related to an acquisition, or assessing a subsidiary's performance. This chapter will describe techniques common to any financial analysis and then discuss more specific aspects for the two most common categories: equity analysis and credit analysis.

Equity analysis incorporates an owner's perspective, either for valuation or performance evaluation. Credit analysis incorporates a creditor's (such as a banker or bondholder) perspective. In either case, there is a need to gather and analyze information to make a decision (ownership or credit); the focus of analysis varies because of the differing interest of owners and creditors. Both equity and credit analyses assess the entity's ability to generate and grow earnings and cash flow, as well as any associated risks. Equity analysis usually places a greater emphasis on growth, whereas credit analysis usually places a greater emphasis on risks. The difference in emphasis reflects the different fundamentals of these types of investments: The value of a company's equity generally increases as the company's earnings and cash flow increase, whereas the value of a company's debt has an upper limit.[1]

The balance of this chapter is organized as follows: Section 2 recaps the framework for financial statements and the place for financial analysis techniques within the framework. Section 3 provides a description of analytical tools and techniques. Section 4 explains how to compute, analyze, and interpret common financial ratios. Sections 5 through 8 explain the use of ratios and other analytical data in equity analysis, credit analysis, segment analysis, and forecasting, respectively. A summary of the key points and practice problems in the CFA Institute multiple-choice format conclude the chapter.

2. THE FINANCIAL ANALYSIS PROCESS

In financial analysis, it is essential to clearly identify and understand the final objective and the steps required to reach that objective. In addition, the analyst needs to know where to find relevant data, how to process and analyze the data (in other words, know the typical questions to address when interpreting data), and how to communicate the analysis and conclusions.

[1] The upper limit is equal to the undiscounted sum of the principal and remaining interest payments (i.e., the present value of these contractual payments at a zero percent discount rate).

2.1. The Objectives of the Financial Analysis Process

Because of the variety of reasons for performing financial analysis, the numerous available techniques, and the often substantial amount of data, it is important that the analytical approach be tailored to the specific situation. Prior to beginning any financial analysis, the analyst should clarify the purpose and context, and clearly understand the following:

- What is the purpose of the analysis? What questions will this analysis answer?
- What level of detail will be needed to accomplish this purpose?
- What data are available for the analysis?
- What are the factors or relationships that will influence the analysis?
- What are the analytical limitations, and will these limitations potentially impair the analysis?

Having clarified the purpose and context of the analysis, the analyst can select the set of techniques (e.g., ratios) that will best assist in making a decision. Although there is no single approach to structuring the analysis process, a general framework is set forth in Exhibit 1.[2] The steps in this process were discussed in more detail in an earlier chapter; the primary focus of this chapter is on Phases 3 and 4, processing and analyzing data.

EXHIBIT 1 A Financial Statement Analysis Framework

Phase	Sources of Information	Output
1. Articulate the purpose and context of the analysis.	• The nature of the analyst's function, such as evaluating an equity or debt investment or issuing a credit rating. • Communication with client or supervisor on needs and concerns. • Institutional guidelines related to developing specific work product.	• Statement of the purpose or objective of analysis. • A list (written or unwritten) of specific questions to be answered by the analysis. • Nature and content of report to be provided. • Timetable and budgeted resources for completion.
2. Collect input data.	• Financial statements, other financial data, questionnaires, and industry/economic data. • Discussions with management, suppliers, customers, and competitors. • Company site visits (e.g., to production facilities or retail stores).	• Organized financial statements. • Financial data tables. • Completed questionnaires, if applicable.
3. Process data.	• Data from the previous phase.	• Adjusted financial statements. • Common-size statements. • Ratios and graphs. • Forecasts.
4. Analyze/interpret the processed data.	• Input data as well as processed data.	• Analytical results.

(*continued*)

[2]Components of this framework have been adapted from van Greuning and Bratanovic (2003, p. 300) and Benninga and Sarig (1997, pp. 134–156).

EXHIBIT 1 (Continued)

Phase	Sources of Information	Output
5. Develop and communicate conclusions and recommendations (e.g., with an analysis report).	• Analytical results and previous reports. • Institutional guidelines for published reports.	• Analytical report answering questions posed in Phase 1. • Recommendation regarding the purpose of the analysis, such as whether to make an investment or grant credit.
6. Follow-up.	• Information gathered by periodically repeating above steps as necessary to determine whether changes to holdings or recommendations are necessary.	• Updated reports and recommendations.

2.2. Distinguishing between Computations and Analysis

An effective analysis encompasses both computations and interpretations. A well-reasoned analysis differs from a mere compilation of various pieces of information, computations, tables, and graphs by integrating the data collected into a cohesive whole. Analysis of past performance, for example, should address not only what happened but also why it happened and whether it advanced the company's strategy. Some of the key questions to address include:

- What aspects of performance are critical for this company to successfully compete in this industry?
- How well did the company's performance meet these critical aspects? (Established through computation and comparison with appropriate benchmarks, such as the company's own historical performance or competitors' performance.)
- What were the key causes of this performance, and how does this performance reflect the company's strategy? (Established through analysis.)

If the analysis is forward looking, additional questions include:

- What is the likely impact of an event or trend? (Established through interpretation of analysis.)
- What is the likely response of management to this trend? (Established through evaluation of quality of management and corporate governance.)
- What is the likely impact of trends in the company, industry, and economy on future cash flows? (Established through assessment of corporate strategy and through forecasts.)
- What are the recommendations of the analyst? (Established through interpretation and forecasting of results of analysis.)
- What risks should be highlighted? (Established by an evaluation of major uncertainties in the forecast and in the environment within which the company operates.)

Example 1 demonstrates how a company's financial data can be analyzed in the context of its business strategy and changes in that strategy. An analyst must be able to understand the "why" behind the numbers and ratios, not just what the numbers and ratios are.

EXAMPLE 1 Strategy Reflected in Financial Performance

Apple Inc. (NasdaqGS: AAPL) and Dell Inc. (NasdaqGS: DELL) engage in the design, manufacture, and sale of computer hardware and related products and services. Selected financial data for 2007 through 2009 for these two competitors are given below. Apple's fiscal year (FY) ends on the final Saturday in September (for example, FY2009 ended on 26 September 2009). Dell's fiscal year ends on the Friday nearest 31 January (for example, FY2009 ended on 29 January 2010 and FY2007 ended on 1 February 2008).

Selected Financial Data for Apple (Dollars in Millions)

Fiscal year	2009	2008	2007
Net sales	42,905	37,491	24,578
Gross margin	17,222	13,197	8,152
Operating income	11,740	8,327	4,407

Selected Financial Data for Dell (Dollars in Millions)

Fiscal year	2009	2008	2007
Net sales	52,902	61,101	61,133
Gross margin	9,261	10,957	11,671
Operating income	2,172	3,190	3,440

Source: Apple's Forms 10-K and 10-K/A and Dell's Form 10-K.

Apple reported a 53 percent increase in net sales from FY2007 to FY2008 and a further increase in FY2009 of approximately 14 percent. Gross margin increased 62 percent from FY2007 to FY2008 and increased 30 percent from FY2008 to FY2009. From FY2007 to FY2009, the gross margin more than doubled. Also, the company's operating income almost tripled over the three year period. From FY2007 to 2009, Dell reported a decrease in sales, gross margin, and operating income

What caused Apple's dramatic growth in sales and operating income and Dell's comparatively sluggish performance? One of the most important factors was the introduction of innovative and stylish products, the linkages with iTunes, and expansion of the distinctive Apple stores. Among the company's most important and most successful new products was the iPhone. Apple's 2009 10-K indicates that iPhone unit sales grew 78 percent from 11.6 million units in 2008 to 20.7 million units in 2009. By 2009, the company's revenues from iPhones and related services had grown to $13.0 billion and were nearly as large as the company's $13.8 billion revenues from sales of Mac computers. The new products and linkages among the products not only increased demand but also increased the potential for higher pricing. As a result, gross profit margins and operating profit margins increased over the period because costs did not increase at the same pace as sales. Moreover, the company's products revolutionized the delivery

channel for music and video. The financial results reflect a successful execution of the company's strategy to deliver integrated, innovative products by controlling the design and development of both hardware and software.

Dell continued to concentrate on the personal computer market, which arguably is in the market maturity stage of the product life cycle. Dell's results are consistent with a market maturity stage where industry sales level off and competition increases so that industry profits decline. With increased competition, some companies cannot compete and drop out of the market.

Analysts often need to communicate the findings of their analysis in a written report. Their reports should communicate how conclusions were reached and why recommendations were made. For example, a report might present the following:[3]

- the purpose of the report, unless it is readily apparent;
- relevant aspects of the business context:
  - economic environment (country, macro economy, sector);
  - financial and other infrastructure (accounting, auditing, rating agencies);
  - legal and regulatory environment (and any other material limitations on the company being analyzed);
- evaluation of corporate governance and assessment of management strategy, including the company's competitive advantage(s);
- assessment of financial and operational data, including key assumptions in the analysis; and
- conclusions and recommendations, including limitations of the analysis and risks.

An effective narrative and well supported conclusions and recommendations are normally enhanced by using 3–10 years of data, as well as analytic techniques appropriate to the purpose of the report.

3. ANALYTICAL TOOLS AND TECHNIQUES

The tools and techniques presented in this section facilitate evaluations of company data. Evaluations require comparisons. It is difficult to say that a company's financial performance was "good" without clarifying the basis for comparison. In assessing a company's ability to generate and grow earnings and cash flow, and the risks related to those earnings and cash flows, the analyst draws comparisons to other companies (cross-sectional analysis) and over time (trend or time-series analysis).

For example, an analyst may wish to compare the profitability of companies competing in a global industry. If the companies differ significantly in size and/or report their financial data in different currencies, comparing net income as reported is not useful. Ratios (which express one number in relation to another) and common-size financial statements can remove size as a factor and enable a more relevant comparison. To achieve comparability across companies

[3]The nature and content of reports will vary depending on the purpose of the analysis and the ultimate recipient of the report. For an example of the contents of an equity research report, see Pinto et al. (2010).

reporting in different currencies, one approach is to translate all reported numbers into a common currency using exchange rates at the end of a period. Others may prefer to translate reported numbers using the average exchange rates during the period. Alternatively, if the focus is primarily on ratios, comparability can be achieved without translating the currencies.

The analyst may also want to examine comparable performance over time. Again, the nominal currency amounts of sales or net income may not highlight significant changes. However, using ratios (see Example 2), horizontal financial statements where quantities are stated in terms of a selected base year value, and graphs can make such changes more apparent. Another obstacle to comparison is differences in fiscal year end. To achieve comparability, one approach is to develop trailing twelve months data, which will be described in a section below. Finally, it should be noted that differences in accounting standards can limit comparability.

EXAMPLE 2 Ratio Analysis

An analyst is examining the profitability of three Asian companies with large shares of the global personal computer market: Acer Inc. (Taiwan SE: ACER), Lenovo Group Limited (HKSE: 0992), and Toshiba Corporation (Tokyo SE: 6502). Taiwan-based Acer has pursued a strategy of selling its products at affordable prices. In contrast, China-based Lenovo aims to achieve higher selling prices by stressing the high engineering quality of its personal computers for business use. Japan-based Toshiba is a conglomerate with varied product lines in addition to computers. For its personal computer business, one aspect of Toshiba's strategy has been to focus on laptops only, in contrast with other manufacturers that also make desktops. Acer reports in New Taiwan dollars (TW$), Lenovo reports in US dollars (US$), and Toshiba reports in Japanese yen (JP¥). For Acer, fiscal year end is 31 December. For both Lenovo and Toshiba, fiscal year end is 31 March; thus, for these companies, FY2009 ended 31 March 2010.

The analyst collects the data shown in Exhibit 2 below. Use this information to answer the following questions:

1. Which of the three companies is largest based on the amount of revenue, in US$, reported in fiscal year 2009? For FY2009, assume the relevant, average exchange rates were 32.2 TW$/US$ and 92.5 JP¥/US$.
2. Which company had the highest revenue growth from FY2005 to FY2009?
3. How do the companies compare, based on profitability?

EXHIBIT 2

ACER

TW$ Millions	**FY2005**	**FY2006**	**FY2007**	**FY2008**	**FY2009**
Revenue	318,088	350,816	462,066	546,274	573,983
Gross profit	34,121	38,171	47,418	57,286	58,328
Net income	8,478	10,218	12,959	11,742	11,353

(*continued*)

EXHIBIT 2 (Continued)

LENOVO					
US$ Millions	**FY2005**	**FY2006**	**FY2007**	**FY2008**	**FY2009**
Revenue	13,276	14,590	16,352	14,901	16,605
Gross profit	1,858	2,037	2,450	1,834	1,790
Net income (Loss)	22	161	484	(226)	129

TOSHIBA					
JP¥ Millions	**FY2005**	**FY2006**	**FY2007**	**FY2008**	**FY2009**
Revenue	6,343,506	7,116,350	7,665,332	6,654,518	6,381,599
Gross profit	1,683,711	1,804,171	1,908,729	1,288,431	1,459,362
Net income (Loss)	78,186	137,429	127,413	(343,559)	(19,743)

Solution to 1: Toshiba is far larger than the other two companies based on FY2009 revenues in US$. Toshiba's FY2009 revenues of US$69.0 billion are far higher than either Acer's US$17.8 billion or Lenovo's US$16.6 billion.
Acer: At the assumed average exchange rate of 32.2 TW$/US$, Acer's FY2009 revenues are equivalent to US$17.8 billion (= TW$573.983 billion ÷ 32.2 TW$/US$).
Lenovo: Lenovo's FY2009 revenues totaled US$16.6 billion.
Toshiba: At the assumed average exchange rate of 92.5 JP¥/US$, Toshiba's revenues for FY2009 are equivalent to US$69.0 billion (= JP¥ 6,381.599 billion ÷ 92.5 JP¥/US$).

Note: Comparing the size of companies reporting in different currencies requires translating reported numbers into a common currency using exchange rates at some point in time. This solution converts the revenues of Acer and Toshiba to billions of US dollars using the average exchange rate of the fiscal period. It would be equally informative (and would yield the same conclusion) to convert the revenues of Acer and Lenovo to Japanese yen, or to convert the revenues of Toshiba and Lenovo to New Taiwan dollars.

Solution to 2: The growth in Acer's revenue was much higher than either of the other two companies.

	Change in Revenue FY2009 versus FY2005 (%)	Compound Annual Growth Rate from FY2005 to FY2009 (%)
Acer	80.4	15.9
Lenovo	25.1	5.8
Toshiba	0.6	0.1

The table shows two growth metrics. Calculations are illustrated using the revenue data for Acer:

The change in Acer's revenue for FY2009 versus FY2005 is 80.4 percent calculated as (573,983 – 318,088) ÷ 318,088 or equivalently (573,983 ÷ 318,088) – 1.

The compound annual growth rate in Acer's revenue from FY2005 to FY2009 is 15.9 percent, calculated using a financial calculator with the following inputs: Present value = – 318,088; Future value = 573,983; N = 4; Payment = 0; and then Interest = ? to solve for growth.

Calculation of the compound annual growth rate can also be expressed as follows: $[(\text{Ending value} \div \text{Beginning value})^{(1/\text{number of periods})}] - 1 = [(573{,}983 \div 318{,}088)^{(1/4)} - 1 = 0.159$ or 15.9 percent.

Solution to 3: Profitability can be assessed by comparing the amount of gross profit to revenue and the amount of net income to revenue. The following table presents these two profitability ratios—**gross profit margin** (gross profit divided by revenue) and **net profit margin** (net income divided by revenue)—for each year.

ACER	FY2005 (%)	FY2006 (%)	FY2007 (%)	FY2008 (%)	FY2009 (%)
Gross profit margin	10.7	10.9	10.3	10.5	10.2
Net profit margin	2.7	2.9	2.8	2.1	2.0

LENOVO	FY2005 (%)	FY2006 (%)	FY2007 (%)	FY2008 (%)	FY2009 (%)
Gross profit margin	14.0	14.0	15.0	12.3	10.8
Net profit margin	0.2	1.1	3.0	–1.5	0.8

TOSHIBA	FY2005 (%)	FY2006 (%)	FY2007 (%)	FY2008 (%)	FY2009 (%)
Gross profit margin	26.5	25.4	24.9	19.4	22.9
Net profit margin	1.2	1.9	1.7	–5.2	–0.3

The net profit margins indicate that Acer has been the most profitable of the three companies. The company's net profit margin was somewhat lower in the most recent two years (only 2.1 percent and 2.0 percent in FY2008 and FY2009, respectively, compared to 2.7 percent, 2.9 percent, and 2.8 percent in FYs 2005, 2006, and 2007, respectively), but has nonetheless remained positive and has remained higher than the competing companies.

Acer's gross profit margin has remained consistently above 10 percent in all 5 fiscal years. In contrast, Lenovo's gross profit margin has declined markedly over the 5-year period, but remains higher than Acer's, which is consistent with the company's strategic objective to achieve higher selling prices by stressing the high engineering quality of its personal computers. However, Lenovo's net profit margin has typically been lower than Acer's. Further analysis is needed to determine the cause of Lenovo's gross profitability decline over the period FY2005 to 2009 (lower selling prices and/or higher costs), to assess whether this decline is likely to persist in future years, and to determine the reason Lenovo's net profit margins are generally lower than Acer's despite Lenovo's higher gross profit margins.

Because Toshiba is a conglomerate, profit ratios based on data for the entire company give limited information about the company's personal computer business. Ratios based on segment data would likely be more useful than profit ratios for the entire company. Based on the aggregate information, Toshiba's gross profit margins are higher than either Acer's or Lenovo's gross profit margins, whereas Toshiba's net profit margins are generally lower than the net profit margins of either of the other two companies.

Section 3.1 describes the tools and techniques of ratio analysis in more detail. Sections 3.2 to 3.4 describe other tools and techniques.

3.1. Ratios

There are many relationships between financial accounts and between expected relationships from one point in time to another. Ratios are a useful way of expressing these relationships. Ratios express one quantity in relation to another (usually as a quotient).

Extensive academic research has examined the importance of ratios in predicting stock returns (Ou and Penman, 1989; Abarbanell and Bushee, 1998) or credit failure (Altman, 1968; Ohlson, 1980; Hopwood et al., 1994). This research has found that financial statement ratios are effective in selecting investments and in predicting financial distress. Practitioners routinely use ratios to derive and communicate the value of companies and securities.

Several aspects of ratio analysis are important to understand. First, the computed ratio is not "the answer." The ratio is an *indicator* of some aspect of a company's performance, telling what happened but not why it happened. For example, an analyst might want to answer the question: Which of two companies was more profitable? As demonstrated in the previous example, the net profit margin, which expresses profit relative to revenue, can provide insight into this question. Net profit margin is calculated by dividing net income by revenue:[4]

$$\frac{\text{Net income}}{\text{Revenue}}$$

Assume Company A has €100,000 of net income and Company B has €200,000 of net income. Company B generated twice as much income as Company A, but was it more profitable? Assume further that Company A has €2,000,000 of revenue, and thus a net profit margin of 5 percent, and Company B has €6,000,000 of revenue, and thus a net profit margin of 3.33 percent. Expressing net income as a percentage of revenue clarifies the relationship: For each €100 of revenue, Company A earns €5 in net income, whereas Company B earns only €3.33 for each €100 of revenue. So, we can now answer the question of which company was more profitable in percentage terms: Company A was more profitable, as indicated by its higher net profit margin of 5 percent. Note that Company A was more *profitable* despite the fact that Company B reported higher absolute amounts of net income and revenue. However, this ratio by itself does not tell us *why* Company A has a higher profit margin. Further analysis is required to determine the reason (perhaps higher relative sales prices or better cost control or lower effective tax rates).

Company size sometimes confers economies of scale, so the absolute amounts of net income and revenue are useful in financial analysis. However, ratios reduce the effect of size, which enhances comparisons between companies and over time.

A second important aspect of ratio analysis is that differences in accounting policies (across companies and across time) can distort ratios, and a meaningful comparison may, therefore, involve adjustments to the financial data. Third, not all ratios are necessarily relevant to a particular analysis. The ability to select the relevant ratio or ratios to answer the research question

[4] The term "sales" is often used interchangeably with the term "revenues." Other times it is used to refer to revenues derived from sales of products versus services. The income statement usually reflects "revenues" or "sales" after returns and allowances (e.g., returns of products or discounts offered after a sale to induce the customer to not return a product). Additionally, in some countries, including the United Kingdom and South Africa, the term "turnover" is used in the sense of "revenue."

is an analytical skill. Finally, as with financial analysis in general, ratio analysis does not stop with computation; interpretation of the result is essential. In practice, differences in ratios across time and across companies can be subtle, and interpretation is situation specific.

3.1.1. The Universe of Ratios

There are no authoritative bodies specifying exact formulas for computing ratios or providing a standard, comprehensive list of ratios. Formulas and even names of ratios often differ from analyst to analyst or from database to database. The number of different ratios that can be created is practically limitless. There are, however, widely accepted ratios that have been found to be useful. Section 4 of this chapter will focus primarily on these broad classes and commonly accepted definitions of key ratios. However, the analyst should be aware that different ratios may be used in practice and that certain industries have unique ratios tailored to the characteristics of that industry. When faced with an unfamiliar ratio, the analyst can examine the underlying formula to gain insight into what the ratio is measuring. For example, consider the following ratio formula:

$$\frac{\text{Operating income}}{\text{Average total assets}}$$

Never having seen this ratio, an analyst might question whether a result of 12 percent is better than 8 percent. The answer can be found in the ratio itself. The numerator is operating income and the denominator is average total assets, so the ratio can be interpreted as the amount of operating income generated per unit of assets. For every €100 of average total assets, generating €12 of operating income is better than generating €8 of operating income. Furthermore, it is apparent that this particular ratio is an indicator of profitability (and, to a lesser extent, efficiency in use of assets in generating operating profits). When facing a ratio for the first time, the analyst should evaluate the numerator and denominator to assess what the ratio is attempting to measure and how it should be interpreted. This is demonstrated in Example 3.

EXAMPLE 3 Interpreting a Financial Ratio

A US insurance company reports that its "combined ratio" is determined by dividing losses and expenses incurred by net premiums earned. It reports the following combined ratios:

Fiscal Year	5	4	3	2	1
Combined ratio	90.1%	104.0%	98.5%	104.1%	101.1%

Explain what this ratio is measuring and compare the results reported for each of the years shown in the chart. What other information might an analyst want to review before making any conclusions on this information?

Solution: The combined ratio is a profitability measure. The ratio is explaining how much costs (losses and expenses) were incurred for every dollar of revenue (net premiums

earned). The underlying formula indicates that a lower ratio is better. The Year 5 ratio of 90.1 percent means that for every dollar of net premiums earned, the costs were \$0.901, yielding a gross profit of \$0.099. Ratios greater than 100 percent indicate an overall loss. A review of the data indicates that there does not seem to be a consistent trend in this ratio. Profits were achieved in Years 5 and 3. The results for Years 4 and 2 show the most significant costs at approximately 104 percent.

The analyst would want to discuss this data further with management and understand the characteristics of the underlying business. He or she would want to understand why the results are so volatile. The analyst would also want to determine what should be used as a benchmark for this ratio.

The Operating income/Average total assets ratio shown above is one of many versions of the **return on assets (ROA)** ratio. Note that there are other ways of specifying this formula based on how assets are defined. Some financial ratio databases compute ROA using the ending value of assets rather than average assets. In limited cases, one may also see beginning assets in the denominator. Which one is right? It depends on what you are trying to measure and the underlying company trends. If the company has a stable level of assets, the answer will not differ greatly under the three measures of assets (beginning, average, and ending). However, if the assets are growing (or shrinking), the results will differ among the three measures. When assets are growing, operating income divided by ending assets may not make sense because some of the income would have been generated before some assets were purchased, and this would understate the company's performance. Similarly, if beginning assets are used, some of the operating income later in the year may have been generated only because of the addition of assets; therefore, the ratio would overstate the company's performance. Because operating income occurs throughout the period, it generally makes sense to use some average measure of assets. A good general rule is that when an income statement or cash flow statement number is in the numerator of a ratio and a balance sheet number is in the denominator, then an average should be used for the denominator. It is generally not necessary to use averages when only balance sheet numbers are used in both the numerator and denominator because both are determined as of the same date. However, in some instances, even ratios that only use balance sheet data may use averages. For example, **return on equity (ROE)**, which is defined as net income divided by average shareholders' equity, can be decomposed into other ratios, some of which only use balance sheet data. In decomposing ROE into component ratios, if an average is used in one of the component ratios then it should be used in the other component ratios. The decomposition of ROE is discussed further in Section 4.6.2.

If an average is used, judgment is also required about what average should be used. For simplicity, most ratio databases use a simple average of the beginning and end-of-year balance sheet amounts. If the company's business is seasonal so that levels of assets vary by interim period (semiannual or quarterly), then it may be beneficial to take an average over all interim periods, if available. (If the analyst is working within a company and has access to monthly data, this can also be used.)

3.1.2. Value, Purposes, and Limitations of Ratio Analysis

The value of ratio analysis is that it enables a financial analyst to evaluate past performance, assess the current financial position of the company, and gain insights useful for projecting

future results. As noted previously, the ratio itself is not "the answer" but is an indicator of some aspect of a company's performance. Financial ratios provide insights into:

- microeconomic relationships within a company that help analysts project earnings and free cash flow;
- a company's financial flexibility, or ability to obtain the cash required to grow and meet its obligations, even if unexpected circumstances develop;
- management's ability;
- changes in the company and/or industry over time; and
- comparability with peer companies or the relevant industry(ies).

There are also limitations to ratio analysis. Factors to consider include:

- *The heterogeneity or homogeneity of a company's operating activities.* Companies may have divisions operating in many different industries. This can make it difficult to find comparable industry ratios to use for comparison purposes.
- *The need to determine whether the results of the ratio analysis are consistent.* One set of ratios may indicate a problem, whereas another set may indicate that the potential problem is only short term in nature.
- *The need to use judgment.* A key issue is whether a ratio for a company is within a reasonable range. Although financial ratios are used to help assess the growth potential and risk of a company, they cannot be used alone to directly value a company or its securities, or to determine its creditworthiness. The entire operation of the company must be examined, and the external economic and industry setting in which it is operating must be considered when interpreting financial ratios.
- *The use of alternative accounting methods.* Companies frequently have latitude when choosing certain accounting methods. Ratios taken from financial statements that employ different accounting choices may not be comparable unless adjustments are made. Some important accounting considerations include the following:
  - FIFO (first in, first out), LIFO (last in, first out), or average cost inventory valuation methods (IFRS does not allow LIFO);
  - Cost or equity methods of accounting for unconsolidated affiliates;
  - Straight-line or accelerated methods of depreciation; and
  - Capital or operating lease treatment.

The expanding use of IFRS and the ongoing convergence between IFRS and US GAAP seeks to make the financial statements of different companies comparable and may overcome some of these difficulties. Nonetheless, there will remain accounting choices that the analyst must consider.

3.1.3. Sources of Ratios

Ratios may be computed using data obtained directly from companies' financial statements or from a database such as Bloomberg, Compustat, FactSet, or Thomson Reuters. The information provided by the database may include information as reported in companies' financial statements and ratios calculated based on the information. These databases are popular because they provide easy access to many years of historical data so that trends over time can be examined. They also allow for ratio calculations based on periods other than the company's fiscal year, such as for the trailing 12 months (TTM) or most recent quarter (MRQ).

EXAMPLE 4 Trailing Twelve Months

On 15 July, an analyst is examining a company with a fiscal year ending on 31 December. Use the following data to calculate the company's trailing 12 month earnings (for the period ended 30 June 2010):

- Earnings for the year ended 31 December, 2009: $1,200;
- Earnings for the six months ended 30 June 2009: $550; and
- Earnings for the six months ended 30 June 2010: $750.

Solution: The company's trailing 12 months earnings is $1,400, calculated as $1,200 – $550 + $750.

Analysts should be aware that the underlying formulas for ratios may differ by vendor. The formula used should be obtained from the vendor, and the analyst should determine whether any adjustments are necessary. Furthermore, database providers often exercise judgment when classifying items. For example, operating income may not appear directly on a company's income statement, and the vendor may use judgment to classify income statement items as "operating" or "non-operating." Variation in such judgments would affect any computation involving operating income. It is therefore a good practice to use the same source for data when comparing different companies or when evaluating the historical record of a single company. Analysts should verify the consistency of formulas and data classifications by the data source. Analysts should also be mindful of the judgments made by a vendor in data classifications and refer back to the source financial statements until they are comfortable that the classifications are appropriate.

Systems are under development that collect financial data from regulatory filings and can automatically compute ratios. The eXtensible Business Reporting Language (XBRL) is a mechanism that attaches "smart tags" to financial information (e.g., total assets), so that software can automatically collect the data and perform desired computations. The organization developing XBRL (www.xbrl.org) is an international nonprofit consortium of over 600 members from companies, associations, and agencies, including the International Accounting Standards Board. Many stock exchanges and regulatory agencies around the world now use XBRL for receiving and distributing public financial reports from listed companies.

Analysts can compare a subject company to similar (peer) companies in these databases or use aggregate industry data. For non-public companies, aggregate industry data can be obtained from such sources as Annual Statement Studies by the Risk Management Association or Dun & Bradstreet. These publications typically provide industry data with companies sorted into quartiles. By definition, twenty-five percent of companies' ratios fall within the lowest quartile, 25 percent have ratios between the lower quartile and median value, and so on. Analysts can then determine a company's relative standing in the industry.

3.2. Common-Size Analysis

Common-size analysis involves expressing financial data, including entire financial statements, in relation to a single financial statement item, or base. Items used most frequently as

the bases are total assets or revenue. In essence, common-size analysis creates a ratio between every financial statement item and the base item.

Common-size analysis was demonstrated in chapters for the income statement, balance sheet, and cash flow statement. In this section, we present common-size analysis of financial statements in greater detail and include further discussion of their interpretation.

3.2.1. Common-Size Analysis of the Balance Sheet

A vertical[5] common-size balance sheet, prepared by dividing each item on the balance sheet by the same period's total assets and expressing the results as percentages, highlights the composition of the balance sheet. What is the mix of assets being used? How is the company financing itself? How does one company's balance sheet composition compare with that of peer companies, and what are the reasons for any differences?

A horizontal common-size balance sheet, prepared by computing the increase or decrease in percentage terms of each balance sheet item from the prior year or prepared by dividing the quantity of each item by a base year quantity of the item, highlights changes in items. These changes can be compared to expectations. The section on trend analysis below will illustrate a horizontal common-size balance sheet.

Exhibit 3 presents a vertical common-size (partial) balance sheet for a hypothetical company in two time periods. In this example, receivables have increased from 35 percent to 57 percent of total assets and the ratio has increased by 63 percent from Period 1 to Period 2. What are possible reasons for such an increase? The increase might indicate that the company is making more of its sales on a credit basis rather than a cash basis, perhaps in response to some action taken by a competitor. Alternatively, the increase in receivables as a percentage of assets may have occurred because of a change in another current asset category, for example, a decrease in the level of inventory; the analyst would then need to investigate why that asset category has changed. Another possible reason for the increase in receivables as a percentage of assets is that the company has lowered its credit standards, relaxed its collection procedures, or adopted more aggressive revenue recognition policies. The analyst can turn to other comparisons and ratios (e.g., comparing the rate of growth in accounts receivable with the rate of growth in sales) to help determine which explanation is most likely.

EXHIBIT 3 Vertical Common-Size (Partial) Balance Sheet for a Hypothetical Company

	Period 1 Percent of Total Assets	Period 2 Percent of Total Assets
Cash	25	15
Receivables	35	57
Inventory	35	20
Fixed assets, net of depreciation	5	8
Total assets	100	100

[5]The term **vertical analysis** is used to denote a common-size analysis using only one reporting period or one base financial statement, whereas **horizontal analysis** refers to an analysis comparing a specific financial statement with prior or future time periods or to a cross-sectional analysis of one company with another.

3.2.2. Common-Size Analysis of the Income Statement

A vertical common-size income statement divides each income statement item by revenue, or sometimes by total assets (especially in the case of financial institutions). If there are multiple revenue sources, a decomposition of revenue in percentage terms is useful. Exhibit 4 presents a hypothetical company's vertical common-size income statement in two time periods. Revenue is separated into the company's four services, each shown as a percentage of total revenue.

In this example, revenues from Service A have become a far greater percentage of the company's total revenue (30 percent in Period 1 and 45 percent in Period 2). What are possible reasons for and implications of this change in business mix? Did the company make a strategic decision to sell more of Service A, perhaps because it is more profitable? Apparently not, because the company's earnings before interest, taxes, depreciation, and amortisation (EBITDA) declined from 53 percent of sales to 45 percent, so other possible explanations should be examined. In addition, we note from the composition of operating expenses that the main reason for this decline in profitability is that salaries and employee benefits have increased from 15 percent to 25 percent of total revenue. Are more highly compensated employees required for Service A? Were higher training costs incurred in order to increase revenues from Service A? If the analyst wants to predict future performance, the causes of these changes must be understood.

In addition, Exhibit 4 shows that the company's income tax as a percentage of sales has declined dramatically (from 15 percent to 8 percent). Furthermore, taxes as a percentage of earnings before tax (EBT) (the effective tax rate, which is usually the more relevant comparison), have decreased from 36 percent (= 15/42) to 24 percent (= 8/34). Is Service A, which in Period 2 is a greater percentage of total revenue, provided in a jurisdiction with lower tax rates? If not, what is the explanation for the change in effective tax rate?

The observations based on Exhibit 4 summarize the issues that can be raised through analysis of the vertical common-size income statement.

EXHIBIT 4 Vertical Common-Size Income Statement for Hypothetical Company

	Period 1 Percent of Total Revenue	Period 2 Percent of Total Revenue
Revenue source: Service A	30	45
Revenue source: Service B	23	20
Revenue source: Service C	30	30
Revenue source: Service D	17	5
Total revenue	**100**	**100**
Operating expenses (excluding depreciation)		
Salaries and employee benefits	15	25
Administrative expenses	22	20
Rent expense	10	10
EBITDA	**53**	**45**
Depreciation and amortisation	4	4

EXHIBIT 4 (Continued)

	Period 1 Percent of Total Revenue	Period 2 Percent of Total Revenue
EBIT	**49**	**41**
Interest paid	7	7
EBT	**42**	**34**
Income tax provision	15	8
Net income	**27**	**26**

EBIT = earnings before interest and tax.

3.2.3. Cross-Sectional Analysis

As noted previously, ratios and common-size statements derive part of their meaning through comparison to some benchmark. **Cross-sectional analysis** (sometimes called "relative analysis") compares a specific metric for one company with the same metric for another company or group of companies, allowing comparisons even though the companies might be of significantly different sizes and/or operate in different currencies. This is illustrated in Exhibit 5.

EXHIBIT 5 Vertical Common-Size (Partial) Balance Sheet for Two Hypothetical Companies

Assets	Company 1 Percent of Total Assets	Company 2 Percent of Total Assets
Cash	38	12
Receivables	33	55
Inventory	27	24
Fixed assets net of depreciation	1	2
Investments	1	7
Total Assets	**100**	**100**

Exhibit 5 presents a vertical common-size (partial) balance sheet for two hypothetical companies at the same point in time. Company 1 is clearly more liquid (liquidity is a function of how quickly assets can be converted into cash) than Company 2, which has only 12 percent of assets available as cash, compared with the highly liquid Company 1, which has 38 percent of assets available as cash. Given that cash is generally a relatively low-yielding asset and thus not a particularly efficient use of excess funds, why does Company 1 hold such a large percentage of total assets in cash? Perhaps the company is preparing for an acquisition, or maintains a large cash position as insulation from a particularly volatile operating environment. Another issue highlighted by the comparison in this example is the relatively high percentage of receivables in Company 2's assets, which may indicate a greater proportion of credit sales, overall changes in asset composition, lower credit or collection standards, or aggressive accounting policies.

3.2.4. Trend Analysis[6]

When looking at financial statements and ratios, trends in the data, whether they are improving or deteriorating, are as important as the current absolute or relative levels. Trend analysis provides important information regarding historical performance and growth and, given a sufficiently long history of accurate seasonal information, can be of great assistance as a planning and forecasting tool for management and analysts.

Exhibit 6A presents a partial balance sheet for a hypothetical company over five periods. The last two columns of the table show the changes for Period 5 compared with Period 4, expressed both in absolute currency (in this case, dollars) and in percentages. A small percentage change could hide a significant currency change and vice versa, prompting the analyst to investigate the reasons despite one of the changes being relatively small. In this example, the largest percentage change was in investments, which decreased by 33.3 percent.[7] However, an examination of the absolute currency amount of changes shows that investments changed by only \$2 million, and the more significant change was the \$12 million increase in receivables.

Another way to present data covering a period of time is to show each item in relation to the same item in a base year (i.e., a horizontal common-size balance sheet). Exhibits 6B and 6C illustrate alternative presentations of horizontal common-size balance sheets. Exhibit 6B presents the information from the same partial balance sheet as in Exhibit 6A, but indexes each item relative to the same item in Period 1. For example, in Period 2, the company had \$29 million cash, which is 74 percent or 0.74 of the amount of cash it had in Period 1. Expressed as an index relative to Period 1, where each item in Period 1 is given a value of 1.00, the value in Period 2 would be 0.74 (\$29/\$39 = 0.74). In Period 3, the company had \$27 million cash, which is 69 percent of the amount of cash it had in Period 1 (\$27/\$39 = 0.69).

Exhibit 6C presents the percentage change in each item, relative to the previous year. For example, the change in cash from Period 1 to Period 2 was –25.6 percent (\$29/\$39 – 1 = –0.256), and the change in cash from Period 2 to Period 3 was –6.9 percent (\$27/\$29 – 1 = –0.069). An analyst will select the horizontal common-size balance that addresses the particular period of interest. Exhibit 6B clearly highlights that in Period 5 compared to Period 1, the company has less than half the amount of cash, four times the amount of investments, and eight times the amount of property, plant, and equipment. Exhibit 6C highlights year-to-year changes: For example, cash has declined in each period. Presenting data this way highlights significant changes. Again, note that a mathematically big change is not necessarily an important change. For example, fixed assets increased 100 percent, i.e., doubled between Period 1 and 2; however, as a proportion of total assets, fixed assets increased from 1 percent of total assets to 2 percent of total assets. The company's working capital assets (receivables and inventory) are a far higher proportion of total assets and would likely warrant more attention from an analyst.

An analysis of horizontal common-size balance sheets highlights structural changes that have occurred in a business. Past trends are obviously not necessarily an accurate predictor of the future, especially when the economic or competitive environment changes. An examination

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[6] In financial statement analysis, the term "trend analysis" usually refers to comparisons across time periods of 3–10 years not involving statistical tools. This differs from the use of the term in the quantitative methods portion of the CFA curriculum, where "trend analysis" refers to statistical methods of measuring patterns in time-series data.

[7] Percentage change is calculated as (Ending value – Beginning value)/Beginning value, or equivalently, (Ending value/Beginning value) – 1.

of past trends is more valuable when the macroeconomic and competitive environments are relatively stable and when the analyst is reviewing a stable or mature business. However, even in less stable contexts, historical analysis can serve as a basis for developing expectations. Understanding of past trends is helpful in assessing whether these trends are likely to continue or if the trend is likely to change direction.

EXHIBIT 6A Partial Balance Sheet for a Hypothetical Company over Five Periods

	Period					Change 4 to 5	Change 4 to 5
Assets ($ Millions)	1	2	3	4	5	($ Million)	(Percent)
Cash	39	29	27	19	16	–3	–15.8
Investments	1	7	7	6	4	–2	–33.3
Receivables	44	41	37	67	79	12	17.9
Inventory	15	25	36	25	27	2	8.0
Fixed assets net of depreciation	1	2	6	9	8	–1	–11.1
Total assets	100	104	113	126	134	8	6.3

EXHIBIT 6B Horizontal Common-Size (Partial) Balance Sheet for a Hypothetical Company over Five Periods, with Each Item Expressed Relative to the Same Item in Period One

	Period				
Assets	1	2	3	4	5
Cash	1.00	0.74	0.69	0.49	0.41
Investments	1.00	7.00	7.00	6.00	4.00
Receivables	1.00	0.93	0.84	1.52	1.80
Inventory	1.00	1.67	2.40	1.67	1.80
Fixed assets net of depreciation	1.00	2.00	6.00	9.00	8.00
Total assets	1.00	1.04	1.13	1.26	1.34

EXHIBIT 6C Horizontal Common-Size (Partial) Balance Sheet for a Hypothetical Company over Five Periods, with Percent Change in Each Item Relative to the Prior Period

	Period			
Assets	2 (%)	3 (%)	4 (%)	5 (%)
Cash	–25.6	–6.9	–29.6	–15.8
Investments	600.0	0.0	–14.3	–33.3
Receivables	–6.8	–9.8	81.1	17.9
Inventory	66.7	44.0	–30.6	8.0
Fixed assets net of depreciation	100.0	200.0	50.0	–11.1
Total assets	4.0	8.7	11.5	6.3

One measure of success is for a company to grow at a rate greater than the rate of the overall market in which it operates. Companies that grow slowly may find themselves unable to attract equity capital. Conversely, companies that grow too quickly may find that their administrative and management information systems cannot keep up with the rate of expansion.

3.2.5. Relationships among Financial Statements

Trend data generated by a horizontal common-size analysis can be compared across financial statements. For example, the growth rate of assets for the hypothetical company in Exhibit 6 can be compared with the company's growth in revenue over the same period of time. If revenue is growing more quickly than assets, the company may be increasing its efficiency (i.e., generating more revenue for every dollar invested in assets).

As another example, consider the following year-over-year percentage changes for a hypothetical company:

Revenue	+20%
Net income	+25%
Operating cash flow	–10%
Total assets	+30%

Net income is growing faster than revenue, which indicates increasing profitability. However, the analyst would need to determine whether the faster growth in net income resulted from continuing operations or from non-operating, non-recurring items. In addition, the 10 percent decline in operating cash flow despite increasing revenue and net income clearly warrants further investigation because it could indicate a problem with earnings quality (perhaps aggressive reporting of revenue). Lastly, the fact that assets have grown faster than revenue indicates the company's efficiency may be declining. The analyst should examine the composition of the increase in assets and the reasons for the changes. Example 5 illustrates a company where comparisons of trend data from different financial statements were actually indicative of aggressive accounting policies.

EXAMPLE 5 Use of Comparative Growth Information[8]

In July 1996, Sunbeam, a US company, brought in new management to turn the company around. In the following year, 1997, using 1996 as the base, the following was observed based on reported numbers:

Revenue	+19%
Inventory	+58%
Receivables	+38%

It is generally more desirable to observe inventory and receivables growing at a slower (or similar) rate compared to revenue growth. Receivables growing faster than revenue

[8]Adapted from Robinson and Munter (2004, pp. 2–15).

can indicate operational issues, such as lower credit standards or aggressive accounting policies for revenue recognition. Similarly, inventory growing faster than revenue can indicate an operational problem with obsolescence or aggressive accounting policies, such as an improper overstatement of inventory to increase profits.

In this case, the explanation lay in aggressive accounting policies. Sunbeam was later charged by the US Securities and Exchange Commission with improperly accelerating the recognition of revenue and engaging in other practices, such as billing customers for inventory prior to shipment.

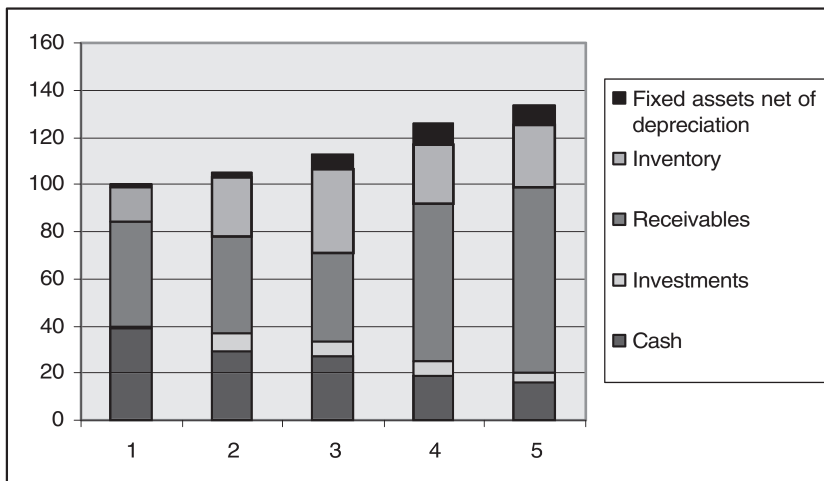
3.3. The Use of Graphs as an Analytical Tool

Graphs facilitate comparison of performance and financial structure over time, highlighting changes in significant aspects of business operations. In addition, graphs provide the analyst (and management) with a visual overview of risk trends in a business. Graphs may also be used effectively to communicate the analyst's conclusions regarding financial condition and risk management aspects.

Exhibit 7 presents the information from Exhibit 6A in a stacked column format. The graph makes the significant decline in cash and growth in receivables (both in absolute terms and as a percentage of assets) readily apparent. In Exhibit 7, the vertical axis shows US$ millions and the horizontal axis denotes the period.

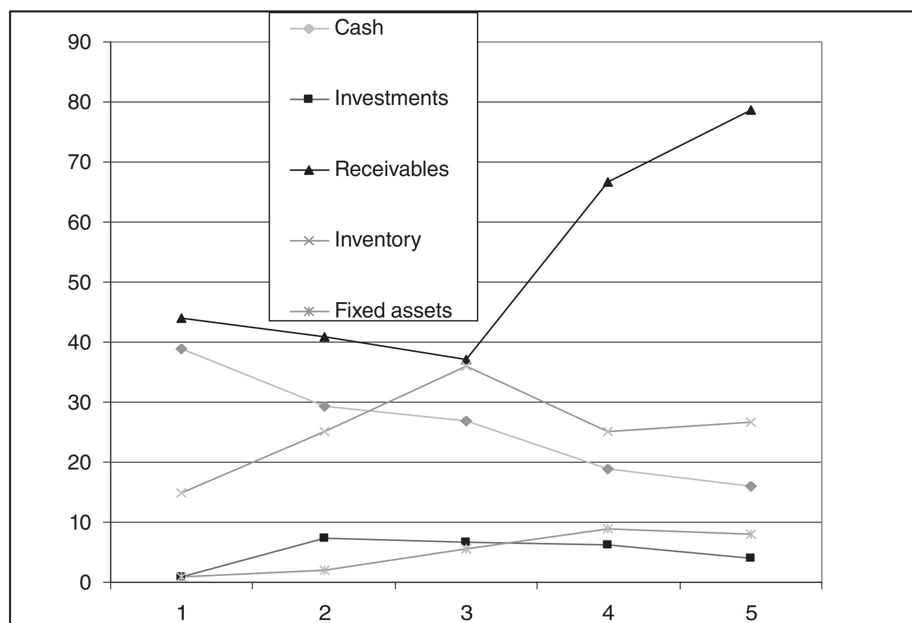
Choosing the appropriate graph to communicate the most significant conclusions of a financial analysis is a skill. In general, pie graphs are most useful to communicate the composition of a total value (e.g., assets over a limited amount of time, say one or two periods). Line graphs are useful when the focus is on the change in amount for a limited number of items over a relatively longer time period. When the composition and amounts, as well as their change over time, are all important, a stacked column graph can be useful.

EXHIBIT 7 Stacked Column Graph of Asset Composition of Hypothetical Company over Five Periods



When comparing Period 5 with Period 4, the growth in receivables appears to be within normal bounds; but when comparing Period 5 with earlier periods, the dramatic growth becomes apparent. In the same manner, a simple line graph will also illustrate the growth trends in key financial variables. Exhibit 8 presents the information from Exhibit 6A as a line graph, illustrating the growth of assets of a hypothetical company over five periods. The steady decline in cash, volatile movements of inventory, and dramatic growth of receivables is clearly illustrated. Again, the vertical axis is shown in US$ millions and the horizontal axis denotes periods.

EXHIBIT 8 Line Graph of Growth of Assets of Hypothetical Company over Five Periods



3.4. Regression Analysis

When analyzing the trend in a specific line item or ratio, frequently it is possible simply to visually evaluate the changes. For more complex situations, regression analysis can help identify relationships (or correlation) between variables. For example, a regression analysis could relate a company's sales to GDP over time, providing insight into whether the company is cyclical. In addition, the statistical relationship between sales and GDP could be used as a basis for forecasting sales.

Other examples include the relationship between a company's sales and inventory over time, or the relationship between hotel occupancy and a company's hotel revenues. In addition to providing a basis for forecasting, regression analysis facilitates identification of items or ratios that are not behaving as expected, given historical statistical relationships.

4. COMMON RATIOS USED IN FINANCIAL ANALYSIS

In the previous section, we focused on ratios resulting from common-size analysis. In this section, we expand the discussion to include other commonly used financial ratios and the broad classes into which they are categorized. There is some overlap with common-size financial statement ratios. For example, a common indicator of profitability is the net profit margin, which is calculated as net income divided by sales. This ratio appears on a vertical common-size income statement. Other ratios involve information from multiple financial statements or even data from outside the financial statements.

Because of the large number of ratios, it is helpful to think about ratios in terms of broad categories based on what aspects of performance a ratio is intended to detect. Financial analysts and data vendors use a variety of categories to classify ratios. The category names and the ratios included in each category can differ. Common ratio categories include activity, liquidity, solvency, profitability, and valuation. These categories are summarized in Exhibit 9. Each category measures a different aspect of the company's business, but all are useful in evaluating a company's overall ability to generate cash flows from operating its business and the associated risks.

EXHIBIT 9 Categories of Financial Ratios

Category	Description
Activity	**Activity ratios** measure how efficiently a company performs day-to-day tasks, such as the collection of receivables and management of inventory.
Liquidity	**Liquidity ratios** measure the company's ability to meet its short-term obligations.
Solvency	**Solvency ratios** measure a company's ability to meet long-term obligations. Subsets of these ratios are also known as "leverage" and "long-term debt" ratios.
Profitability	**Profitability ratios** measure the company's ability to generate profits from its resources (assets).
Valuation	**Valuation ratios** measure the quantity of an asset or flow (e.g., earnings) associated with ownership of a specified claim (e.g., a share or ownership of the enterprise).

These categories are not mutually exclusive; some ratios are useful in measuring multiple aspects of the business. For example, an activity ratio measuring how quickly a company collects accounts receivable is also useful in assessing the company's liquidity because collection of revenues increases cash. Some profitability ratios also reflect the operating efficiency of the business. In summary, analysts appropriately use certain ratios to evaluate multiple aspects of the business. Analysts also need to be aware of variations in industry practice in the calculation of financial ratios. In the text that follows, alternative views on ratio calculations are often provided.

4.1. Interpretation and Context

Financial ratios can only be interpreted in the context of other information, including benchmarks. In general, the financial ratios of a company are compared with those of its major competitors (cross-sectional and trend analysis) and to the company's prior periods (trend analysis). The goal is to understand the underlying causes of divergence between a company's

ratios and those of the industry. Even ratios that remain consistent require understanding because consistency can sometimes indicate accounting policies selected to smooth earnings. An analyst should evaluate financial ratios based on the following:

1. *Company goals and strategy*. Actual ratios can be compared with company objectives to determine whether objectives are being attained and whether the results are consistent with the company's strategy.
2. *Industry norms* (*cross-sectional analysis*). A company can be compared with others in its industry by relating its financial ratios to industry norms or to a subset of the companies in an industry. When industry norms are used to make judgments, care must be taken because:
   - Many ratios are industry specific, and not all ratios are important to all industries.
   - Companies may have several different lines of business. This will cause aggregate financial ratios to be distorted. It is better to examine industry-specific ratios by lines of business.
   - Differences in accounting methods used by companies can distort financial ratios.
   - Differences in corporate strategies can affect certain financial ratios.
3. *Economic conditions*. For cyclical companies, financial ratios tend to improve when the economy is strong and weaken during recessions. Therefore, financial ratios should be examined in light of the current phase of the business cycle.

The following sections discuss activity, liquidity, solvency, and profitability ratios in turn. Selected valuation ratios are presented later in the section on equity analysis.

4.2. Activity Ratios

Activity ratios are also known as **asset utilization ratios** or **operating efficiency ratios**. This category is intended to measure how well a company manages various activities, particularly how efficiently it manages its various assets. Activity ratios are analyzed as indicators of ongoing operational performance—how effectively assets are used by a company. These ratios reflect the efficient management of both working capital and longer term assets. As noted, efficiency has a direct impact on liquidity (the ability of a company to meet its short-term obligations), so some activity ratios are also useful in assessing liquidity.

4.2.1. Calculation of Activity Ratios

Exhibit 10 presents the most commonly used activity ratios. The exhibit shows the numerator and denominator of each ratio.

EXHIBIT 10 Definitions of Commonly Used Activity Ratios

Activity Ratios	Numerator	Denominator
Inventory turnover	Cost of sales or cost of goods sold	Average inventory
Days of inventory on hand (DOH)	Number of days in period	Inventory turnover
Receivables turnover	Revenue	Average receivables
Days of sales outstanding (DSO)	Number of days in period	Receivables turnover
Payables turnover	Purchases	Average trade payables
Number of days of payables	Number of days in period	Payables turnover

EXHIBIT 10 (Continued)

Activity Ratios	Numerator	Denominator
Working capital turnover	Revenue	Average working capital
Fixed asset turnover	Revenue	Average net fixed assets
Total asset turnover	Revenue	Average total assets

Activity ratios measure how efficiently the company utilizes assets. They generally combine information from the income statement in the numerator with balance sheet items in the denominator. Because the income statement measures what happened *during* a period whereas the balance sheet shows the condition only at the end of the period, average balance sheet data are normally used for consistency. For example, to measure inventory management efficiency, cost of sales or cost of goods sold (from the income statement) is divided by average inventory (from the balance sheet). Most databases, such as Bloomberg and Baseline, use this averaging convention when income statement and balance sheet data are combined. These databases typically average only two points: the beginning of the year and the end of the year. The examples that follow based on annual financial statements illustrate that practice. However, some analysts prefer to average more observations if they are available, especially if the business is seasonal. If a semiannual report is prepared, an average can be taken over three data points (beginning, middle, and end of year). If quarterly data are available, a five-point average can be computed (beginning of year and end of each quarterly period) or a four-point average using the end of each quarterly period. Note that if the company's year ends at a low or high point for inventory for the year, there can still be bias in using three or five data points, because the beginning and end of year occur at the same time of the year and are effectively double counted.

Because cost of goods sold measures the cost of inventory that has been sold, this ratio measures how many times per year the entire inventory was theoretically turned over, or sold. (We say that the entire inventory was "theoretically" sold because in practice companies do not generally sell out their entire inventory.) If, for example, a company's cost of goods sold for a recent year was €120,000 and its average inventory was €10,000, the inventory turnover ratio would be 12. The company theoretically turns over (i.e., sells) its entire inventory 12 times per year (i.e., once a month). (Again, we say "theoretically" because in practice the company likely carries some inventory from one month into another.) Turnover can then be converted to days of inventory on hand (DOH) by dividing inventory turnover into the number of days in the accounting period. In this example, the result is a DOH of 30.42 (365/12), meaning that, on average, the company's inventory was on hand for about 30 days, or, equivalently, the company kept on hand about 30 days' worth of inventory, on average, during the period.

Activity ratios can be computed for any annual or interim period, but care must be taken in the interpretation and comparison across periods. For example, if the same company had cost of goods sold for the first quarter (90 days) of the following year of €35,000 and average inventory of €11,000, the inventory turnover would be 3.18 times. However, this turnover rate is 3.18 times per quarter, which is not directly comparable to the 12 times per year in the preceding year. In this case, we can annualize the quarterly inventory turnover rate by multiplying the quarterly turnover by 4 (12 months/3 months; or by 4.06, using 365 days/90 days) for comparison to the annual turnover rate. So, the quarterly inventory turnover is equivalent to a 12.72 annual inventory turnover (or 12.91 if we annualize the ratio using a 90-day quarter and a 365-day year). To compute the DOH using quarterly data, we can use the quarterly turnover rate and the number of days in the quarter for the numerator—or, we can use the

annualized turnover rate and 365 days; either results in DOH of around 28.3, with slight differences due to rounding (90/3.18 = 28.30 and 365/12.91 = 28.27). Another time-related computational detail is that for companies using a 52/53-week annual period and for leap years, the actual days in the year should be used rather than 365.

In some cases, an analyst may want to know how many days of inventory are on hand at the end of the year rather than the average for the year. In this case, it would be appropriate to use the year-end inventory balance in the computation rather than the average. If the company is growing rapidly or if costs are increasing rapidly, analysts should consider using cost of goods sold just for the fourth quarter in this computation because the cost of goods sold of earlier quarters may not be relevant. Example 6 further demonstrates computation of activity ratios using Hong Kong Exchange–listed Lenovo Group Limited.

EXAMPLE 6 Computation of Activity Ratios

An analyst would like to evaluate Lenovo Group's efficiency in collecting its trade accounts receivable during the fiscal year ended 31 March 2010 (FY2009). The analyst gathers the following information from Lenovo's annual and interim reports:

	US$ in Thousands
Trade receivables as of 31 March 2009	482,086
Trade receivables as of 31 March 2010	1,021,062
Revenue for year ended 31 March 2010	16,604,815

Calculate Lenovo's receivables turnover and number of days of sales outstanding (DSO) for the fiscal year ended 31 March 2010.

Solution:

Receivables turnover	=	Revenue/Average receivables
	=	16,604,815/ [(1,021,062 + 482,086)/2]
	=	16,604,815/751,574
	=	22.0934 times, or 22.1 rounded
DSO	=	Number of days in period/Receivables turnover
	=	365/22.1
	=	16.5 days

On average, it took Lenovo 16.5 days to collect receivables during the fiscal year ended 31 March 2010.

4.2.2. Interpretation of Activity Ratios

In the following section, we further discuss the activity ratios that were defined in Exhibit 10.

Inventory Turnover and DOH Inventory turnover lies at the heart of operations for many entities. It indicates the resources tied up in inventory (i.e., the carrying costs) and can, therefore, be used to indicate inventory management effectiveness. A higher inventory turnover ratio implies a shorter period that inventory is held, and thus a lower DOH. In general, inventory turnover and DOH should be benchmarked against industry norms.

A high inventory turnover ratio relative to industry norms might indicate highly effective inventory management. Alternatively, a high inventory turnover ratio (and commensurately low DOH) could possibly indicate the company does not carry adequate inventory, so shortages could potentially hurt revenue. To assess which explanation is more likely, the analyst can compare the company's revenue growth with that of the industry. Slower growth combined with higher inventory turnover could indicate inadequate inventory levels. Revenue growth at or above the industry's growth supports the interpretation that the higher turnover reflects greater inventory management efficiency.

A low inventory turnover ratio (and commensurately high DOH) relative to the rest of the industry could be an indicator of slow-moving inventory, perhaps due to technological obsolescence or a change in fashion. Again, comparing the company's sales growth with the industry can offer insight.

Receivables Turnover and DSO. The number of DSO represents the elapsed time between a sale and cash collection, reflecting how fast the company collects cash from customers to whom it offers credit. Although limiting the numerator to sales made on credit in the receivables turnover would be more appropriate, credit sales information is not always available to analysts; therefore, revenue as reported in the income statement is generally used as an approximation.

A relatively high receivables turnover ratio (and commensurately low DSO) might indicate highly efficient credit and collection. Alternatively, a high receivables turnover ratio could indicate that the company's credit or collection policies are too stringent, suggesting the possibility of sales being lost to competitors offering more lenient terms. A relatively low receivables turnover ratio would typically raise questions about the efficiency of the company's credit and collections procedures. As with inventory management, comparison of the company's sales growth relative to the industry can help the analyst assess whether sales are being lost due to stringent credit policies. In addition, comparing the company's estimates of uncollectible accounts receivable and actual credit losses with past experience and with peer companies can help assess whether low turnover reflects credit management issues. Companies often provide details of receivables aging (how much receivables have been outstanding by age). This can be used along with DSO to understand trends in collection, as demonstrated in Example 7.

EXAMPLE 7 Evaluation of an Activity Ratio

An analyst has computed the average DSO for Lenovo for fiscal years ended 31 March 2010 and 2009:

	2010	2009
Days of sales outstanding	16.5	15.2

Revenue increased from US$14.901 billion for fiscal year ended 31 March 2009 (FY2008) to US$16.605 billion for fiscal year ended 31 March 2010 (FY2009). The analyst would like to better understand the change in the company's DSO from FY2008 to FY2009 and whether the increase is indicative of any issues with the customers' credit quality. The analyst collects accounts receivable aging information from Lenovo's annual reports and computes the percentage of accounts receivable by days outstanding. This information is presented in Exhibit 11:

EXHIBIT 11

	FY2009		FY2008		FY2007	
	US$000	Percent	US$000	Percent	US$000	Percent
Accounts receivable						
0–30 days	907,412	87.39	391,098	76.41	691,428	89.32
31–60 days	65,335	6.29	9,014	1.76	0	0.00
61–90 days	32,730	3.15	21,515	4.20	32,528	4.20
Over 90 days	32,904	3.17	90,214	17.63	50,168	6.48
Total	1,038,381	100.00	511,841	100.00	774,124	100.00
Less: Provision for impairment	–17,319	–1.67	–29,755	–5.81	–13,885	–1.79
Trade receivables, net	1,021,062	98.33	482,086	94.19	760,239	98.21
Total sales	*16,604,815*		*14,900,931*		*16,351,503*	

Note: Lenovo's footnotes disclose that general trade customers are provided with 30-day credit terms.

These data indicate that total accounts receivable more than doubled in FY2009 versus FY2008, while total sales increased by only 11.4 percent. This suggests that, overall, the company has been increasing customer financing to drive its sales growth. The significant increase in accounts receivable in total was the primary reason for the increase in DSO. The percentage of receivables older than 61 days has declined significantly, which is generally positive. However, the large increase in 0–30 day receivables may be indicative of aggressive accounting policies or sales practices. Perhaps Lenovo offered incentives to generate a large amount of year-end sales. While the data may suggest that the quality of receivables improved in FY2009 versus FY2008, with a much lower percentage of receivables (and a much lower absolute amount) that are more than 90 days outstanding and, similarly, a lower percentage of estimated uncollectible receivables, this should be investigated further by the analyst.

Payables Turnover and the Number of Days of Payables The number of days of payables reflects the average number of days the company takes to pay its suppliers, and the payables turnover ratio measures how many times per year the company theoretically pays off all its creditors. For purposes of calculating these ratios, an implicit assumption is that the company makes all its

purchases using credit. If the amount of purchases is not directly available, it can be computed as cost of goods sold plus ending inventory less beginning inventory. Alternatively, cost of goods sold is sometimes used as an approximation of purchases.

A payables turnover ratio that is high (low days payable) relative to the industry could indicate that the company is not making full use of available credit facilities; alternatively, it could result from a company taking advantage of early payment discounts. An excessively low turnover ratio (high days payable) could indicate trouble making payments on time, or alternatively, exploitation of lenient supplier terms. This is another example where it is useful to look simultaneously at other ratios. If liquidity ratios indicate that the company has sufficient cash and other short-term assets to pay obligations and yet the days payable ratio is relatively high, the analyst would favor the lenient supplier credit and collection policies as an explanation.

Working Capital Turnover **Working capital** is defined as current assets minus current liabilities. Working capital turnover indicates how efficiently the company generates revenue with its working capital. For example, a working capital turnover ratio of 4.0 indicates that the company generates €4 of revenue for every €1 of working capital. A high working capital turnover ratio indicates greater efficiency (i.e., the company is generating a high level of revenues relative to working capital). For some companies, working capital can be near zero or negative, rendering this ratio incapable of being interpreted. The following two ratios are more useful in those circumstances.

Fixed Asset Turnover This ratio measures how efficiently the company generates revenues from its investments in fixed assets. Generally, a higher fixed asset turnover ratio indicates more efficient use of fixed assets in generating revenue. A low ratio can indicate inefficiency, a capital-intensive business environment, or a new business not yet operating at full capacity—in which case the analyst will not be able to link the ratio directly to efficiency. In addition, asset turnover can be affected by factors other than a company's efficiency. The fixed asset turnover ratio would be lower for a company whose assets are newer (and, therefore, less depreciated and so reflected in the financial statements at a higher carrying value) than the ratio for a company with older assets (that are thus more depreciated and so reflected at a lower carrying value). The fixed asset ratio can be erratic because, although revenue may have a steady growth rate, increases in fixed assets may not follow a smooth pattern; so, every year-to-year change in the ratio does not necessarily indicate important changes in the company's efficiency.

Total Asset Turnover The total asset turnover ratio measures the company's overall ability to generate revenues with a given level of assets. A ratio of 1.20 would indicate that the company is generating €1.20 of revenues for every €1 of average assets. A higher ratio indicates greater efficiency. Because this ratio includes both fixed and current assets, inefficient working capital management can distort overall interpretations. It is therefore helpful to analyze working capital and fixed asset turnover ratios separately.

A low asset turnover ratio can be an indicator of inefficiency or of relative capital intensity of the business. The ratio also reflects strategic decisions by management—for example, the decision whether to use a more labor-intensive (and less capital-intensive) approach to its business or a more capital-intensive (and less labor-intensive) approach.

When interpreting activity ratios, the analysts should examine not only the individual ratios but also the collection of relevant ratios to determine the overall efficiency of a company. Example 8 demonstrates the evaluation of activity ratios, both narrow (e.g., days of inventory on hand) and broad (e.g., total asset turnover) for a hypothetical manufacturer.

EXAMPLE 8 Evaluation of Activity Ratios

ZZZ Company is a hypothetical manufacturing company. As part of an analysis of management's operating efficiency, an analyst collects the following activity ratios from a data provider:

Ratio	2009	2008	2007	2006
DOH	35.68	40.70	40.47	48.51
DSO	45.07	58.28	51.27	76.98
Total asset turnover	0.36	0.28	0.23	0.22

These ratios indicate that the company has improved on all three measures of activity over the four-year period. The company appears to be managing its inventory more efficiently, is collecting receivables faster, and is generating a higher level of revenues relative to total assets. The overall trend appears good, but thus far, the analyst has only determined *what* happened. A more important question is *why* the ratios improved, because understanding good changes as well as bad ones facilitates judgments about the company's future performance. To answer this question, the analyst examines company financial reports as well as external information about the industry and economy. In examining the annual report, the analyst notes that in the fourth quarter of 2009, the company experienced an "inventory correction" and that the company recorded an allowance for the decline in market value and obsolescence of inventory of about 15 percent of year-end inventory value (compared with about a 6 percent allowance in the prior year). This reduction in the value of inventory accounts for a large portion of the decline in DOH from 40.70 in 2008 to 35.68 in 2009. Management claims that this inventory obsolescence is a short-term issue; analysts can watch DOH in future interim periods to confirm this assertion. In any event, all else being equal, the analyst would likely expect DOH to return to a level closer to 40 days going forward.

More positive interpretations can be drawn from the total asset turnover. The analyst finds that the company's revenues increased more than 35 percent while total assets only increased by about 6 percent. Based on external information about the industry and economy, the analyst attributes the increased revenues both to overall growth in the industry and to the company's increased market share. Management was able to achieve growth in revenues with a comparatively modest increase in assets, leading to an improvement in total asset turnover. Note further that part of the reason for the increase in asset turnover is lower DOH and DSO.

4.3. Liquidity Ratios

Liquidity analysis, which focuses on cash flows, measures a company's ability to meet its short-term obligations. Liquidity measures how quickly assets are converted into cash. Liquidity ratios also measure the ability to pay off short-term obligations. In day-to-day operations, liquidity management is typically achieved through efficient use of assets. In the medium term, liquidity in the non-financial sector is also addressed by managing the structure of liabilities. (See the discussion on financial sector below.)

The level of liquidity needed differs from one industry to another. A particular company's liquidity position may vary according to the anticipated need for funds at any given time. Judging whether a company has adequate liquidity requires analysis of its historical funding requirements, current liquidity position, anticipated future funding needs, and options for reducing funding needs or attracting additional funds (including actual and potential sources of such funding).

Larger companies are usually better able to control the level and composition of their liabilities than smaller companies. Therefore, they may have more potential funding sources, including public capital and money markets. Greater discretionary access to capital markets also reduces the size of the liquidity buffer needed relative to companies without such access.

Contingent liabilities, such as letters of credit or financial guarantees, can also be relevant when assessing liquidity. The importance of contingent liabilities varies for the non-banking and banking sector. In the non-banking sector, contingent liabilities (usually disclosed in the footnotes to the company's financial statements) represent potential cash outflows, and when appropriate, should be included in an assessment of a company's liquidity. In the banking sector, contingent liabilities represent potentially significant cash outflows that are not dependent on the bank's financial condition. Although outflows in normal market circumstances typically may be low, a general macroeconomic or market crisis can trigger a substantial increase in cash outflows related to contingent liabilities because of the increase in defaults and business bankruptcies that often accompany such events. In addition, such crises are usually characterized by diminished levels of overall liquidity, which can further exacerbate funding shortfalls. Therefore, for the banking sector, the effect of contingent liabilities on liquidity warrants particular attention.

4.3.1. Calculation of Liquidity Ratios

Common liquidity ratios are presented in Exhibit 12. These liquidity ratios reflect a company's position at a point in time and, therefore, typically use data from the ending balance sheet rather than averages. The current, quick, and cash ratios reflect three measures of a company's ability to pay current liabilities. Each uses a progressively stricter definition of liquid assets.

The **defensive interval ratio** measures how long a company can pay its daily cash expenditures using only its existing liquid assets, without additional cash flow coming in. This ratio is similar to the "burn rate" often computed for start-up Internet companies in the late 1990s or for biotechnology companies. The numerator of this ratio includes the same liquid assets used in the quick ratio, and the denominator is an estimate of daily cash expenditures. To obtain daily cash expenditures, the total of cash expenditures for the period is divided by the number of days in the period. Total cash expenditures for a period can be approximated by summing all expenses on the income statement—such as cost of goods sold; selling, general, and administrative expenses; and research and development expenses—and then subtracting any non-cash expenses, such as depreciation and amortisation. (Typically, taxes are not included.)

The **cash conversion cycle**, a financial metric not in ratio form, measures the length of time required for a company to go from cash paid (used in its operations) to cash received (as a result of its operations). The cash conversion cycle is sometimes expressed as the length of time funds are tied up in working capital. During this period of time, the company needs to finance its investment in operations through other sources (i.e., through debt or equity).

EXHIBIT 12 Definitions of Commonly Used Liquidity Ratios

Liquidity Ratios	Numerator	Denominator
Current ratio	Current assets	Current liabilities
Quick ratio	Cash + Short-term marketable investments + Receivables	Current liabilities
Cash ratio	Cash + Short-term marketable investments	Current liabilities
Defensive interval ratio	Cash + Short-term marketable investments + Receivables	Daily cash expenditures
Additional Liquidity Measure		
Cash conversion cycle (net operating cycle)	DOH + DSO − Number of days of payables	

4.3.2. Interpretation of Liquidity Ratios

In the following, we discuss the interpretation of the five basic liquidity measures presented in Exhibit 12.

Current Ratio This ratio expresses current assets in relation to current liabilities. A higher ratio indicates a higher level of liquidity (i.e., a greater ability to meet short-term obligations). A current ratio of 1.0 would indicate that the book value of its current assets exactly equals the book value of its current liabilities.

A lower ratio indicates less liquidity, implying a greater reliance on operating cash flow and outside financing to meet short-term obligations. Liquidity affects the company's capacity to take on debt. The current ratio implicitly assumes that inventories and accounts receivable are indeed liquid (which is presumably not the case when related turnover ratios are low).

Quick Ratio The quick ratio is more conservative than the current ratio because it includes only the more liquid current assets (sometimes referred to as "quick assets") in relation to current liabilities. Like the current ratio, a higher quick ratio indicates greater liquidity.

The quick ratio reflects the fact that certain current assets—such as prepaid expenses, some taxes, and employee-related prepayments—represent costs of the current period that have been paid in advance and cannot usually be converted back into cash. This ratio also reflects the fact that inventory might not be easily and quickly converted into cash, and furthermore, that a company would probably not be able to sell all of its inventory for an amount equal to its carrying value, especially if it were required to sell the inventory quickly. In situations where inventories are illiquid (as indicated, for example, by low inventory turnover ratios), the quick ratio may be a better indicator of liquidity than is the current ratio.

Cash Ratio The cash ratio normally represents a reliable measure of an entity's liquidity in a crisis situation. Only highly marketable short-term investments and cash are included. In a general market crisis, the fair value of marketable securities could decrease significantly as a result of market factors, in which case even this ratio might not provide reliable information.

Defensive Interval Ratio This ratio measures how long the company can continue to pay its expenses from its existing liquid assets without receiving any additional cash inflow. A defensive interval ratio of 50 would indicate that the company can continue to pay its operating

expenses for 50 days before running out of quick assets, assuming no additional cash inflows. A higher defensive interval ratio indicates greater liquidity. If a company's defensive interval ratio is very low relative to peer companies or to the company's own history, the analyst would want to ascertain whether there is sufficient cash inflow expected to mitigate the low defensive interval ratio.

Cash Conversion Cycle (Net Operating Cycle) This metric indicates the amount of time that elapses from the point when a company invests in working capital until the point at which the company collects cash. In the typical course of events, a merchandising company acquires inventory on credit, incurring accounts payable. The company then sells that inventory on credit, increasing accounts receivable. Afterwards, it pays out cash to settle its accounts payable, and it collects cash in settlement of its accounts receivable. The time between the outlay of cash and the collection of cash is called the "cash conversion cycle." A shorter cash conversion cycle indicates greater liquidity. A short cash conversion cycle implies that the company only needs to finance its inventory and accounts receivable for a short period of time. A longer cash conversion cycle indicates lower liquidity; it implies that the company must finance its inventory and accounts receivable for a longer period of time, possibly indicating a need for a higher level of capital to fund current assets. Example 9 demonstrates the advantages of a short cash conversion cycle as well as how a company's business strategies are reflected in financial ratios.

EXAMPLE 9 Evaluation of Liquidity Measures

An analyst is evaluating the liquidity of Dell and finds that Dell's 10-K provides a computation of the number of days of receivables, inventory, and accounts payable, as well as the overall cash conversion cycle, as follows:

Fiscal Year Ended	29 Jan 2010	30 Jan 2009	1 Feb 2008
DSO	38	35	36
DOH	8	7	8
Less: Number of days of payables	82	67	80
Equals: Cash conversion cycle	(36)	(25)	(36)

The minimal DOH indicates that Dell maintains lean inventories, which is attributable to key aspects of the company's business model. The company does not build a computer until it is ordered and maintains a just-in-time approach to inventory management. In isolation, the increase in number of days payable (from 67 days in 2009 to 82 days in 2010) might suggest an inability to pay suppliers; however, in Dell's case, the balance sheet indicates that the company has more than $10 billion of cash and short-term investments, which would be more than enough to pay suppliers sooner if Dell chose to do so. Instead, Dell takes advantage of the favorable credit terms granted by its suppliers. The overall effect is a negative cash cycle, a somewhat unusual result. Instead of requiring additional capital to fund working capital as is the case for most companies, Dell has excess cash to invest for about 37 days (reflected on the balance sheet as short-term investments) on which it is earning, rather than paying, interest.

For comparison, the analyst finds the cash conversion cycle reported in the annual reports of two of Dell's competitors, Lenovo and Hewlett-Packard (NYSE: HPQ):

Fiscal Year	2009	2008	2007
Lenovo	(30)	(23)	(28)
Hewlett-Packard	14	20	24

The analyst notes that of the three, only Hewlett-Packard has to raise capital for working capital purposes. While both Dell and Lenovo have consistently negative cash conversion cycles, Lenovo has been slightly less liquid than Dell, evidenced by its slightly less negative cash conversion cycle.

EXAMPLE 10 Bounds and Context of Financial Measures

The previous example focused on the cash conversion cycle, which many companies identify as a key performance metric. The less positive the number of days in the cash conversion cycle, typically, the better it is considered to be. However, is this always true?

This example considers the following question: If a larger negative number of days in a cash conversion cycle is considered to be a desirable performance metric, does identifying a company with a large negative cash conversion cycle necessarily imply good performance?

Using the Compustat database, the company identified as the US computer technology company with the most negative number of days in its cash conversion cycle during the 2005 to 2009 period is National Datacomputer Inc. (OTC: NDCP), which had a negative cash conversion cycle of 275.5 days in 2008.

EXHIBIT 13 National Datacomputer Inc. ($ millions)

Fiscal year	2004	2005	2006	2007	2008	2009
Sales	3.248	2.672	2.045	1.761	1.820	1.723
Cost of goods sold	1.919	1.491	0.898	1.201	1.316	1.228
Receivables, Total	0.281	0.139	0.099	0.076	0.115	0.045
Inventories, Total	0.194	0.176	0.010	0.002	0.000	0.000
Accounts payable	0.223	0.317	0.366	1.423	0.704	0.674
DSO		28.69	21.24	18.14	19.15	16.95
DOH		45.29	37.80	1.82	0.28	0.00
*Less: Number of days of payables**		66.10	138.81	271.85	294.97	204.79
Equals: Cash conversion cycle		7.88	–79.77	–251.89	–275.54	–187.84

**Notes:* Calculated using Cost of goods sold as an approximation of purchases. Ending inventories 2008 and 2009 are reported as $0 million; therefore, inventory turnover for 2009 cannot be measured. However, given inventory and average sales per day, DOH in 2009 is 0.00.

Source: Raw data from Compustat. Ratios calculated.

The reason for the negative cash conversion cycle is that the company's accounts payable increased substantially over the period. An increase from approximately 66 days in 2005 to 295 days in 2008 to pay trade creditors is clearly a negative signal. In addition, the company's inventories disappeared, most likely because the company did not have enough cash to purchase new inventory and was unable to get additional credit from its suppliers.

Of course, an analyst would have immediately noted the negative trends in these data, as well as additional data throughout the company's financial statements. In its MD&A, the company clearly reports the risks as follows:

> Because we have historically had losses and only a limited amount of cash has been generated from operations, we have funded our operating activities to date primarily from the sale of securities and from the sale of a product line in 2009. In order to continue to fund our operations, we may need to raise additional capital, through the sale of securities. We cannot be certain that any such financing will be available on acceptable terms, or at all. Moreover, additional equity financing, if available, would likely be dilutive to the holders of our common stock, and debt financing, if available, would likely involve restrictive covenants and a security interest in all or substantially all of our assets. If we fail to obtain acceptable financing when needed, we may not have sufficient resources to fund our normal operations which would have a material adverse effect on our business.
>
> IF WE ARE UNABLE TO GENERATE ADEQUATE WORKING CAPITAL FROM OPERATIONS OR RAISE ADDITIONAL CAPITAL THERE IS SUBSTANTIAL DOUBT ABOUT THE COMPANY'S ABILITY TO CONTINUE AS A GOING CONCERN. (emphasis added by company)
>
> *Source:* National Datacomputer Inc., 2009 Form 10-K, page 7.

In summary, it is always necessary to consider ratios within bounds of reasonability and to understand the reasons underlying changes in ratios. Ratios must not only be calculated but must also be interpreted by an analyst.

4.4. Solvency Ratios

Solvency refers to a company's ability to fulfill its long-term debt obligations. Assessment of a company's ability to pay its long-term obligations (i.e., to make interest and principal payments) generally includes an in-depth analysis of the components of its financial structure. Solvency ratios provide information regarding the relative amount of debt in the company's capital structure and the adequacy of earnings and cash flow to cover interest expenses and other fixed charges (such as lease or rental payments) as they come due.

Analysts seek to understand a company's use of debt for several main reasons. One reason is that the amount of debt in a company's capital structure is important for assessing the company's risk and return characteristics, specifically its financial leverage. Leverage is a magnifying effect that results from the use of **fixed costs**—costs that stay the same within some range of activity—and can take two forms: operating leverage and financial leverage.

Operating leverage results from the use of fixed costs in conducting the company's business. Operating leverage magnifies the effect of changes in sales on operating income. Profitable companies may use operating leverage because when revenues increase, with operating leverage, their operating income increases at a faster rate. The explanation is that, although **variable costs** will rise proportionally with revenue, fixed costs will not.

When financing a company (i.e., raising capital for it), the use of debt constitutes **financial leverage** because interest payments are essentially fixed financing costs. As a result of interest payments, a given percent change in EBIT results in a larger percent change in earnings before taxes (EBT). Thus, financial leverage tends to magnify the effect of changes in EBIT on returns flowing to equity holders. Assuming that a company can earn more on funds than it pays in interest, the inclusion of some level of debt in a company's capital structure may lower a company's overall cost of capital and increase returns to equity holders. However, a higher level of debt in a company's capital structure increases the risk of default and results in higher borrowing costs for the company to compensate lenders for assuming greater credit risk. Starting with Modigliani and Miller (1958, 1963), a substantial amount of research has focused on determining a company's optimal capital structure and the subject remains an important one in corporate finance.

In analyzing financial statements, an analyst aims to understand levels and trends in a company's use of financial leverage in relation to past practices and the practices of peer companies. Analysts also need to be aware of the relationship between operating leverage (results from the use of non-current assets with fixed costs) and financial leverage (results from the use of long-term debt with fixed costs). The greater a company's operating leverage, the greater the risk of the operating income stream available to cover debt payments; operating leverage can thus limit a company's capacity to use financial leverage.

A company's relative solvency is fundamental to valuation of its debt securities and its creditworthiness. Finally, understanding a company's use of debt can provide analysts with insight into the company's future business prospects because management's decisions about financing may signal their beliefs about a company's future. For example, the issuance of long-term debt to repurchase common shares may indicate that management believes the market is underestimating the company's prospects and that the shares are undervalued.

4.4.1. Calculation of Solvency Ratios

Solvency ratios are primarily of two types. Debt ratios, the first type, focus on the balance sheet and measure the amount of debt capital relative to equity capital. Coverage ratios, the second type, focus on the income statement and measure the ability of a company to cover its debt payments. These ratios are useful in assessing a company's solvency and, therefore, in evaluating the quality of a company's bonds and other debt obligations.

Exhibit 14 describes commonly used solvency ratios. The first three of the debt ratios presented use total debt in the numerator. The definition of total debt used in these ratios varies among informed analysts and financial data vendors, with some using the total of interest-bearing short-term and long-term debt, excluding liabilities such as accrued expenses and accounts payable. (For calculations in this chapter, we use this definition.) Other analysts use definitions that are more inclusive (e.g., all liabilities) or restrictive (e.g., long-term debt only, in which case the ratio is sometimes qualified as "long-term," as in "long-term debt-to-equity ratio"). If using different definitions of total debt materially changes conclusions about a company's solvency, the reasons for the discrepancies warrant further investigation.

EXHIBIT 14 Definitions of Commonly Used Solvency Ratios

Solvency Ratios	Numerator	Denominator
Debt Ratios		
Debt-to-assets ratio[a]	Total debt[b]	Total assets
Debt-to-capital ratio	Total debt[b]	Total debt[b] + Total shareholders' equity
Debt-to-equity ratio	Total debt[b]	Total shareholders' equity
Financial leverage ratio	Average total assets	Average total equity
Coverage Ratios		
Interest coverage	EBIT	Interest payments
Fixed charge coverage	EBIT + Lease payments	Interest payments + Lease payments

[a]"Total debt ratio" is another name sometimes used for this ratio.
[b]In this chapter, we take total debt in this context to be the sum of interest-bearing short-term and long-term debt.

4.4.2. Interpretation of Solvency Ratios

In the following, we discuss the interpretation of the basic solvency ratios presented in Exhibit 14.

Debt-to-Assets Ratio This ratio measures the percentage of total assets financed with debt. For example, a **debt-to-assets ratio** of 0.40 or 40 percent indicates that 40 percent of the company's assets are financed with debt. Generally, higher debt means higher financial risk and thus weaker solvency.

Debt-to-Capital Ratio The **debt-to-capital ratio** measures the percentage of a company's capital (debt plus equity) represented by debt. As with the previous ratio, a higher ratio generally means higher financial risk and thus indicates weaker solvency.

Debt-to-Equity Ratio The **debt-to-equity ratio** measures the amount of debt capital relative to equity capital. Interpretation is similar to the preceding two ratios (i.e., a higher ratio indicates weaker solvency). A ratio of 1.0 would indicate equal amounts of debt and equity, which is equivalent to a debt-to-capital ratio of 50 percent. Alternative definitions of this ratio use the market value of stockholders' equity rather than its book value (or use the market values of both stockholders' equity and debt).

Financial Leverage Ratio This ratio (often called simply the "leverage ratio") measures the amount of total assets supported for each one money unit of equity. For example, a value of 3 for this ratio means that each €1 of equity supports €3 of total assets. The higher the **financial leverage ratio**, the more leveraged the company is in the sense of using debt and other liabilities to finance assets. This ratio is often defined in terms of average total assets and average total equity and plays an important role in the DuPont decomposition of return on equity that will be presented in Section 4.6.2.

Interest Coverage This ratio measures the number of times a company's EBIT could cover its interest payments. Thus, it is sometimes referred to as "times interest earned." A higher **interest coverage** ratio indicates stronger solvency, offering greater assurance that the company can service its debt (i.e., bank debt, bonds, notes) from operating earnings.

Fixed Charge Coverage This ratio relates fixed charges, or obligations, to the cash flow generated by the company. It measures the number of times a company's earnings (before interest, taxes, and lease payments) can cover the company's interest and lease payments.[9] Similar to the interest coverage ratio, a higher **fixed charge coverage** ratio implies stronger solvency, offering greater assurance that the company can service its debt (i.e., bank debt, bonds, notes, and leases) from normal earnings. The ratio is sometimes used as an indication of the quality of the preferred dividend, with a higher ratio indicating a more secure preferred dividend.

Example 11 demonstrates the use of solvency ratios in evaluating the creditworthiness of a company.

EXAMPLE 11 Evaluation of Solvency Ratios

A credit analyst is evaluating the solvency of Alcatel-Lucent (Euronext Paris: ALU) as of the beginning of 2010. The following data are gathered from the company's 2009 annual report (in € millions):

	2009	2008
Total equity	4,309	5,224
Accrued pension	5,043	4,807
Long-term debt	4,179	3,998
Other long term liabilities*	1,267	1,595
Current liabilities*	9,050	11,687
Total equity + Liabilities (equals Total assets)	23,848	27,311

*For purposes of this example, assume that these items are non-interest bearing, and that long-term debt equals total debt. In practice, an analyst could refer to Alcatel's footnotes to confirm details, rather than making an assumption.

1. A. Calculate the company's financial leverage ratio for 2009.
   B. Interpret the financial leverage ratio calculated in Part A.
2. A. What are the company's debt-to-assets, debt-to-capital, and debt-to-equity ratios for the two years?
   B. Is there any discernable trend over the two years?

Solutions to 1: (Amounts are millions of euro.)

A. Average total assets was (27,311 + 23,848)/2 = 25,580 and average total equity was (5,224 + 4,309)/2 = 4,767. Thus, financial leverage was 25,580/4,767 = 5.37.

B. For 2009, every €1 in total equity supported €5.37 in total assets, on average.

[9] For computing this ratio, an assumption sometimes made is that one-third of the lease payment amount represents interest on the lease obligation and that the rest is a repayment of principal on the obligation. For this variant of the fixed charge coverage ratio, the numerator is EBIT plus one-third of lease payments and the denominator is interest payments plus one-third of lease payments.

Solutions to 2: (Amounts are millions of euro.)

A. Debt-to-assets for 2008 = 3,998/27,311 = 14.64%
   Debt-to-assets for 2009 = 4,179/23,848 = 17.52%
   Debt-to-capital for 2008 = 3,998/(3,998 + 5,224) = 43.35%
   Debt-to-capital for 2009 = 4,179/(4,179 + 4,309) = 49.23%
   Debt-to-equity for 2008 = 3,998/5,224 = 0.77
   Debt-to-equity for 2009 = 4,179/4,309 = 0.97

B. On all three metrics, the company's leverage has increased. The increase in debt as part of the company's capital structure indicates that the company's solvency has weakened. From a creditor's perspective, lower solvency (higher debt) indicates higher risk of default on obligations.

As with all ratio analysis, it is important to consider leverage ratios in a broader context. In general, companies with lower business risk and operations that generate steady cash flows are better positioned to take on more leverage without a commensurate increase in the risk of insolvency. In other words, a higher proportion of debt financing poses less risk of nonpayment of interest and debt principal to a company with steady cash flows than to a company with volatile cash flows.

4.5. Profitability Ratios

The ability to generate profit on capital invested is a key determinant of a company's overall value and the value of the securities it issues. Consequently, many equity analysts would consider profitability to be a key focus of their analytical efforts.

Profitability reflects a company's competitive position in the market, and by extension, the quality of its management. The income statement reveals the sources of earnings and the components of revenue and expenses. Earnings can be distributed to shareholders or reinvested in the company. Reinvested earnings enhance solvency and provide a cushion against short-term problems.

4.5.1. Calculation of Profitability Ratios

Profitability ratios measure the return earned by the company during a period. Exhibit 15 provides the definitions of a selection of commonly used profitability ratios. Return-on-sales profitability ratios express various subtotals on the income statement (e.g., gross profit, operating profit, net profit) as a percentage of revenue. Essentially, these ratios constitute part of a common-size income statement discussed earlier. Return on investment profitability ratios measure income relative to assets, equity, or total capital employed by the company. For operating ROA, returns are measured as operating income, i.e., prior to deducting interest on debt capital. For ROA and ROE, returns are measured as net income, i.e., after deducting interest paid on debt capital. For return on common equity, returns are measured as net income minus preferred dividends (because preferred dividends are a return to preferred equity).

EXHIBIT 15 Definitions of Commonly Used Profitability Ratios

Profitability Ratios	Numerator	Denominator
Return on Sales[a]		
Gross profit margin	Gross profit	Revenue
Operating profit margin	Operating income[b]	Revenue

(*continued*)

EXHIBIT 15 (Continued)

Profitability Ratios	Numerator	Denominator
Pretax margin	EBT (earnings before tax but after interest)	Revenue
Net profit margin	Net income	Revenue

Return on Investment		
Operating ROA	Operating income	Average total assets
ROA	Net income	Average total assets
Return on total capital	EBIT	Short- and long-term debt and equity
ROE	Net income	Average total equity
Return on common equity	Net income – Preferred dividends	Average common equity

[a] "Sales" is being used as a synonym for "revenue."
[b] Some analysts use EBIT as a shortcut representation of operating income. Note that EBIT, strictly speaking, includes non-operating items such as dividends received and gains and losses on investment securities. Of utmost importance is that the analyst compute ratios consistently whether comparing different companies or analyzing one company over time.

4.5.2. Interpretation of Profitability Ratios

In the following, we discuss the interpretation of the profitability ratios presented in Exhibit 15. For each of the profitability ratios, a higher ratio indicates greater profitability.

Gross Profit Margin **Gross profit margin** indicates the percentage of revenue available to cover operating and other expenses and to generate profit. Higher gross profit margin indicates some combination of higher product pricing and lower product costs. The ability to charge a higher price is constrained by competition, so gross profits are affected by (and usually inversely related to) competition. If a product has a competitive advantage (e.g., superior branding, better quality, or exclusive technology), the company is better able to charge more for it. On the cost side, higher gross profit margin can also indicate that a company has a competitive advantage in product costs.

Operating Profit Margin Operating profit is calculated as gross profit minus operating costs. So, an **operating profit margin** increasing faster than the gross profit margin can indicate improvements in controlling operating costs, such as administrative overheads. In contrast, a declining operating profit margin could be an indicator of deteriorating control over operating costs.

Pretax Margin Pretax income (also called "earnings before tax" or "EBT") is calculated as operating profit minus interest, and the **pretax margin** is the ratio of pretax income to revenue. The pretax margin reflects the effects on profitability of leverage and other (non-operating) income and expenses. If a company's pretax margin is increasing primarily as a result of increasing amounts of non-operating income, the analyst should evaluate whether this increase

reflects a deliberate change in a company's business focus and, therefore, the likelihood that the increase will continue.

Net Profit Margin Net profit, or net income, is calculated as revenue minus all expenses. Net income includes both recurring and non-recurring components. Generally, the net income used in calculating the net profit margin is adjusted for non-recurring items to offer a better view of a company's potential future profitability.

ROA ROA measures the return earned by a company on its assets. The higher the ratio, the more income is generated by a given level of assets. Most databases compute this ratio as:

$$\frac{\text{Net income}}{\text{Average total assets}}$$

An issue with this computation is that net income is the return to equity holders, whereas assets are financed by both equity holders and creditors. Interest expense (the return to creditors) has already been subtracted in the numerator. Some analysts, therefore, prefer to add back interest expense in the numerator. In such cases, interest must be adjusted for income taxes because net income is determined after taxes. With this adjustment, the ratio would be computed as:

$$\frac{\text{Net income} + \text{Interest expense}(1 - \text{Tax rate})}{\text{Average total assets}}$$

Alternatively, some analysts elect to compute ROA on a pre-interest and pretax basis (operating ROA in Exhibit 15) as:

$$\frac{\text{Operating income or EBIT}}{\text{Average total assets}}$$

In this ROA calculation, returns are measured prior to deducting interest on debt capital (i.e., as operating income or EBIT). This measure reflects the return on all assets invested in the company, whether financed with liabilities, debt, or equity. Whichever form of ROA is chosen, the analyst must use it consistently in comparisons to other companies or time periods.

Return on Total Capital **Return on total capital** measures the profits a company earns on all of the capital that it employs (short-term debt, long-term debt, and equity). As with operating ROA, returns are measured prior to deducting interest on debt capital (i.e., as operating income or EBIT).

ROE ROE measures the return earned by a company on its equity capital, including minority equity, preferred equity, and common equity. As noted, return is measured as net income (i.e., interest on debt capital is not included in the return on equity capital). A variation of ROE is return on common equity, which measures the return earned by a company only on its common equity.

Both ROA and ROE are important measures of profitability and will be explored in more detail in section 4.6.2. As with other ratios, profitability ratios should be evaluated individually and as a group to gain an understanding of what is driving profitability (operating versus non-operating activities). Example 12 demonstrates the evaluation of profitability ratios and

the use of the management report (sometimes called management's discussion and analysis or management commentary) that accompanies financial statements to explain the trend in ratios.

EXAMPLE 12 Evaluation of Profitability Ratios

An analyst is evaluating the profitability of Daimler AG (Xetra: DAI) over a recent five-year period. He gathers the following revenue data and calculates the following profitability ratios from information in Daimler's annual reports:

	2009	2008	2007	2006	2005
Revenues (€ millions)	78,924	98,469	101,569	99,222	95,209
Gross profit margin	16.92%	21.89%	23.62%	20.60%	19.48%
Operating profit (EBIT) margin[a]	–1.92%	2.77%	8.58%	5.03%	3.02%
Pretax margin	–2.91%	2.84%	9.04%	4.94%	2.55%
Net profit margin	–3.35%	1.73%	4.78%	3.19%	2.37%

[a] EBIT (Earnings before interest and taxes) is the operating profit metric used by Daimler.

Daimler's revenue declined from 2007 to 2008 and from 2008 to 2009. Further, Daimler's 2009 revenues were the lowest of the five years. Management's discussion of the decline in revenue and EBIT in the 2009 Annual Report notes the following:

> The main reason for the decline [in EBIT] was a significant drop in revenue due to markedly lower unit sales in all vehicle segments as a result of the global economic downturn. Cost savings achieved through permanent and temporary cost reductions and efficiency improvements realized through ongoing optimization programs could only partially compensate for the drop in revenue.

1. Compare gross profit margins and operating profit margins over the 2005 to 2009 period.
2. Explain the decline in operating profit margin in 2009.
3. Explain why the pretax margin might have decreased to a greater extent than the operating profit margin in 2009.
4. Compare net profit margins and pretax margins over 2007 to 2009

Solution to 1: Gross profit margin improved from 2005 to 2007 as a result of some combination of price increases and/or cost control. However, gross profit margin declined from 2007 to 2009. Operating profit margin showed a similar trend. In 2009, the operating profit margin was negative.

Solution to 2: The decline in operating profit from 2.77 percent in 2008 to –1.92 percent in 2009 appears to be the result of Daimler's operating leverage. Management indicated that revenue declined in 2009 and reductions in expenses were not enough to offset the revenue decline. Management tried to increase efficiency and reduce costs,

including personnel expenses, but this did not sufficiently counteract the decrease in revenues. Expenses thus increased as a proportion of revenue, lowering the gross and operating profit margins. This is an example of the effects of operating leverage (fixed costs that could not be reduced) on profitability. In general, as revenue increases, to the extent that costs remain fixed, operating profit margins should increase. As revenue declines, the opposite occurs.

Solution to 3: Pretax margin was down substantially in 2009, indicating that the company may have had some non-operating losses or high interest expense in that year. A review of the company's annual report confirms that the cause was higher net interest expense. Specifically, the company increased financing liabilities, faced higher financing costs because of higher risk premiums on borrowing, and had lower interest income on investments. This is an example of the effects of financial leverage on profitability.

Solution to 4: Net profit margin followed the same pattern as pretax margin, increasing from 2005 to 2007 and then decreasing from 2007 to 2009. In the absence of major variation in the applicable tax rates, this would be expected as net profit margin is based on net income while pretax margin is based on EBT, and net income is EBT(1 – Tax rate).

4.6. Integrated Financial Ratio Analysis

In prior sections, the text presented separately activity, liquidity, solvency, and profitability ratios. Prior to discussing valuation ratios, the following sections demonstrate the importance of examining a variety of financial ratios—not a single ratio or category of ratios in isolation—to ascertain the overall position and performance of a company. Experience shows that the information from one ratio category can be helpful in answering questions raised by another category and that the most accurate overall picture comes from integrating information from all sources. Section 4.6.1 provides some introductory examples of such analysis and Section 4.6.2 shows how return on equity can be analyzed into components related to profit margin, asset utilization (activity), and financial leverage.

4.6.1. The Overall Ratio Picture: Examples

This section presents two simple illustrations to introduce the use of a variety of ratios to address an analytical task. Example 13 shows how the analysis of a pair of activity ratios resolves an issue concerning a company's liquidity. Example 14 shows that examining the overall ratios of multiple companies can assist an analyst in drawing conclusions about their relative performances.

EXAMPLE 13 A Variety of Ratios

An analyst is evaluating the liquidity of a Canadian manufacturing company and obtains the following liquidity ratios:

Fiscal Year	10	9	8
Current ratio	2.1	1.9	1.6
Quick ratio	0.8	0.9	1.0

The ratios present a contradictory picture of the company's liquidity. Based on the increase in its current ratio from 1.6 to 2.1, the company appears to have strong and improving liquidity; however, based on the decline of the quick ratio from 1.0 to 0.8, its liquidity appears to be deteriorating. Because both ratios have exactly the same denominator, current liabilities, the difference must be the result of changes in some asset that is included in the current ratio but not in the quick ratio (e.g., inventories). The analyst collects the following activity ratios:

Fiscal Year	10	9	8
DOH	55	45	30
DSO	24	28	30

The company's DOH has deteriorated from 30 days to 55 days, meaning that the company is holding increasingly larger amounts of inventory relative to sales. The decrease in DSO implies that the company is collecting receivables faster. If the proceeds from these collections were held as cash, there would be no effect on either the current ratio or the quick ratio. However, if the proceeds from the collections were used to purchase inventory, there would be no effect on the current ratio and a decline in the quick ratio (i.e., the pattern shown in this example). Collectively, the ratios suggest that liquidity is declining and that the company may have an inventory problem that needs to be addressed.

EXAMPLE 14 A Comparison of Two Companies (1)

An analyst collects the information[10] shown in Exhibit 16 for two companies:

EXHIBIT 16

Anson Industries	Fiscal Year	5	4	3	2
Inventory turnover		76.69	89.09	147.82	187.64
DOH		4.76	4.10	2.47	1.95
Receivables turnover		10.75	9.33	11.14	7.56
DSO		33.95	39.13	32.77	48.29
Accounts payable turnover		4.62	4.36	4.84	4.22
Days payable		78.97	83.77	75.49	86.56
Cash from operations/Total liabilities		31.41%	11.15%	4.04%	8.81%
ROE		5.92%	1.66%	1.62%	–0.62%
ROA		3.70%	1.05%	1.05%	–0.39%
Net profit margin (Net income/Revenue)		3.33%	1.11%	1.13%	–0.47%
Total asset turnover (Revenue/Average assets)		1.11	0.95	0.93	0.84
Leverage (Average assets/Average equity)		1.60	1.58	1.54	1.60

[10] Note that ratios are expressed in terms of two decimal places and are rounded. Therefore, expected relationships may not hold perfectly.

Clarence Corporation	Fiscal Year	5	4	3	2
Inventory turnover		9.19	9.08	7.52	14.84
DOH		39.73	40.20	48.51	24.59
Receivables turnover		8.35	7.01	6.09	5.16
DSO		43.73	52.03	59.92	70.79
Accounts payable turnover		6.47	6.61	7.66	6.52
Days payable		56.44	55.22	47.64	56.00
Cash from operations/Total liabilities		13.19%	16.39%	15.80%	11.79%
ROE		9.28%	6.82%	–3.63%	–6.75%
ROA		4.64%	3.48%	–1.76%	–3.23%
Net profit margin (Net income/Revenue)		4.38%	3.48%	–1.60%	–2.34%
Total asset turnover (Revenue/Average assets)		1.06	1.00	1.10	1.38
Leverage (Average assets/Average equity)		2.00	1.96	2.06	2.09

Which of the following choices best describes reasonable conclusions an analyst might make about the companies' efficiency?

A. Over the past four years, Anson has shown greater improvement in efficiency than Clarence, as indicated by its total asset turnover ratio increasing from 0.84 to 1.11.
B. In FY5, Anson's DOH of only 4.76 indicated that it was less efficient at inventory management than Clarence, which had DOH of 39.73.
C. In FY5, Clarence's receivables turnover of 8.35 times indicated that it was more efficient at receivables management than Anson, which had receivables turnover of 10.75.

Solution: A is correct. Over the past four years, Anson has shown greater improvement in efficiency than Clarence, as indicated by its total asset turnover ratio increasing from 0.84 to 1.11. Over the same period of time, Clarence's total asset turnover ratio has declined from 1.38 to 1.06. Choices B and C are incorrect because DOH and receivables turnover are misinterpreted.

4.6.2. DuPont Analysis: The Decomposition of ROE

As noted earlier, ROE measures the return a company generates on its equity capital. To understand what drives a company's ROE, a useful technique is to decompose ROE into its component parts. (Decomposition of ROE is sometimes referred to as **DuPont analysis** because it was developed originally at that company.) Decomposing ROE involves expressing the basic ratio (i.e., net income divided by average shareholders' equity) as the product of component ratios. Because each of these component ratios is an indicator of a distinct aspect of a company's performance that affects ROE, the decomposition allows us to evaluate how these different aspects of performance affected the company's profitability as measured by ROE.[11]

[11] For purposes of analyzing ROE, this method usually uses average balance sheet factors; however, the math will work out if beginning or ending balances are used throughout. For certain purposes, these alternative methods may be appropriate. See Stowe et al. (2002, pp. 85–88).

Decomposing ROE is useful in determining the reasons for changes in ROE over time for a given company and for differences in ROE for different companies in a given time period. The information gained can also be used by management to determine which areas they should focus on to improve ROE. This decomposition will also show why a company's overall profitability, measured by ROE, is a function of its efficiency, operating profitability, taxes, and use of financial leverage. DuPont analysis shows the relationship between the various categories of ratios discussed in this chapter and how they all influence the return to the investment of the owners.

Analysts have developed several different methods of decomposing ROE. The decomposition presented here is one of the most commonly used and the one found in popular research databases, such as Bloomberg. Return on equity is calculated as:

$$\text{ROE} = \text{Net income/Average shareholders' equity}$$

The decomposition of ROE makes use of simple algebra and illustrates the relationship between ROE and ROA. Expressing ROE as a product of only two of its components, we can write:

$$\begin{aligned} \text{ROE} &= \frac{\text{Net income}}{\text{Average shareholders' equity}} \\ &= \frac{\text{Net income}}{\text{Average total assets}} \times \frac{\text{Average total assets}}{\text{Average shareholders' equity}} \end{aligned} \tag{1a}$$

which can be interpreted as:

$$\text{ROE} = \text{ROA} \times \text{Leverage}$$

In other words, ROE is a function of a company's ROA and its use of financial leverage ("leverage" for short, in this discussion). A company can improve its ROE by improving ROA or making more effective use of leverage. Consistent with the definition given earlier, leverage is measured as average total assets divided by average shareholders' equity. If a company had no leverage (no liabilities), its leverage ratio would equal 1.0 and ROE would exactly equal ROA. As a company takes on liabilities, its leverage increases. As long as a company is able to borrow at a rate lower than the marginal rate it can earn investing the borrowed money in its business, the company is making an effective use of leverage and ROE would increase as leverage increases. If a company's borrowing cost exceeds the marginal rate it can earn on investing in the business, ROE would decline as leverage increased because the effect of borrowing would be to depress ROA.

Using the data from Example 14 for Anson Industries, an analyst can examine the trend in ROE and determine whether the increase from an ROE of –0.625 percent in FY2 to 5.925 percent in FY5 is a function of ROA or the use of leverage:

	ROE	=	ROA	×	Leverage
FY5	5.92%		3.70%		1.60
FY4	1.66%		1.05%		1.58
FY3	1.62%		1.05%		1.54
FY2	–0.62%		–0.39%		1.60

Over the four-year period, the company's leverage factor was relatively stable. The primary reason for the increase in ROE is the increase in profitability measured by ROA.

Just as ROE can be decomposed, the individual components such as ROA can be decomposed. Further decomposing ROA, we can express ROE as a product of three component ratios:

$$\frac{\text{Net income}}{\text{Average shareholders' equity}} = \frac{\text{Net income}}{\text{Revenue}} \times \frac{\text{Revenue}}{\text{Average total assets}} \times \frac{\text{Average total assets}}{\text{Average shareholders' equity}} \qquad (1b)$$

which can be interpreted as:

$$\text{ROE} = \text{Net profit margin} \times \text{Total asset turnover} \times \text{Leverage}$$

The first term on the right-hand side of this equation is the net profit margin, an indicator of profitability: how much income a company derives per one monetary unit (e.g., euro or dollar) of sales. The second term on the right is the asset turnover ratio, an indicator of efficiency: how much revenue a company generates per one money unit of assets. Note that ROA is decomposed into these two components: net profit margin and total asset turnover. A company's ROA is a function of profitability (net profit margin) and efficiency (total asset turnover). The third term on the right-hand side of Equation 1b is a measure of financial leverage, an indicator of solvency: the total amount of a company's assets relative to its equity capital. This decomposition illustrates that a company's ROE is a function of its net profit margin, its efficiency, and its leverage. Again, using the data from Example 14 for Anson Industries, the analyst can evaluate in more detail the reasons behind the trend in ROE:[12]

	ROE	=	Net profit margin	×	Total asset turnover	×	Leverage
FY5	5.92%		3.33%		1.11		1.60
FY4	1.66%		1.11%		0.95		1.58
FY3	1.62%		1.13%		0.93		1.54
FY2	–0.62%		–0.47%		0.84		1.60

This further decomposition confirms that increases in profitability (measured here as net profit margin) are indeed an important contributor to the increase in ROE over the four-year period. However, Anson's asset turnover has also increased steadily. The increase in ROE is, therefore, a function of improving profitability and improving efficiency. As noted above, ROE decomposition can also be used to compare the ROEs of peer companies, as demonstrated in Example 15.

[12] Ratios are expressed in terms of two decimal places and are rounded. Therefore, ROE may not be the exact product of the three ratios.

EXAMPLE 15 A Comparison of Two Companies (2)

Referring to the data for Anson Industries and Clarence Corporation in Example 14, which of the following choices best describes reasonable conclusions an analyst might make about the companies' ROE?

A. Anson's inventory turnover of 76.69 indicates it is more profitable than Clarence.
B. The main driver of Clarence's superior ROE in FY5 is its more efficient use of assets.
C. The main drivers of Clarence's superior ROE in FY5 are its greater use of debt financing and higher net profit margin.

Solution: C is correct. The main driver of Clarence's superior ROE (9.28 percent compared with only 5.92 percent for Anson) in FY5 is its greater use of debt financing (leverage of 2.00 compared with Anson's leverage of 1.60) and higher net profit margin (4.38 percent compared with only 3.33 percent for Anson). A is incorrect because inventory turnover is not a direct indicator of profitability. An increase in inventory turnover may indicate more efficient use of inventory which in turn could affect profitability; however, an increase in inventory turnover would also be observed if a company was selling more goods even if it was not selling those goods at a profit. B is incorrect because Clarence has less efficient use of assets than Anson, indicated by turnover of 1.06 for Clarence compared with Anson's turnover of 1.11.

To separate the effects of taxes and interest, we can further decompose the net profit margin and write:

$$\frac{\text{Net income}}{\text{Average shareholders' equity}} = \frac{\text{Net income}}{\text{EBT}} \times \frac{\text{EBT}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Revenue}} \times \frac{\text{Revenue}}{\text{Average total assets}} \times \frac{\text{Average total assets}}{\text{Average shareholders' equity}} \tag{1c}$$

which can be interpreted as:

$$\text{ROE} = \text{Tax burden} \times \text{Interest burden} \times \text{EBIT margin} \times \text{Total asset turnover} \times \text{Leverage}$$

This five-way decomposition is the one found in financial databases such as Bloomberg. The first term on the right-hand side of this equation measures the effect of taxes on ROE. Essentially, it reflects one minus the average tax rate, or how much of a company's pretax profits it gets to keep. This can be expressed in decimal or percentage form. So, a 30 percent tax rate would yield a factor of 0.70 or 70 percent. A higher value for the tax burden implies that the company can keep a higher percentage of its pretax profits, indicating a lower tax rate. A decrease in the tax burden ratio implies the opposite (i.e., a higher tax rate leaving the company with less of its pretax profits).

The second term on the right-hand side captures the effect of interest on ROE. Higher borrowing costs reduce ROE. Some analysts prefer to use operating income instead of EBIT

for this term and the following term. Either operating income or EBIT is acceptable as long as it is applied consistently. In such a case, the second term would measure both the effect of interest expense and non-operating income on ROE.

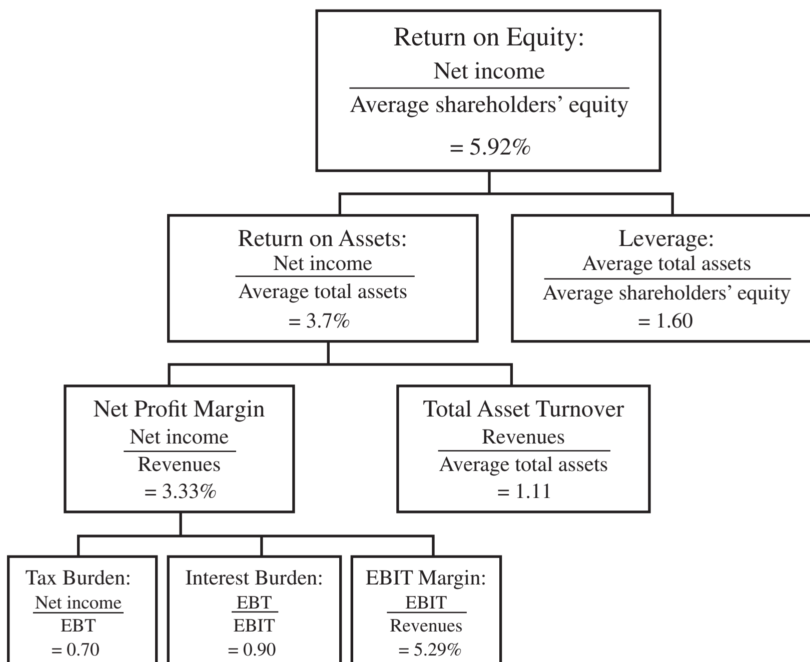
The third term on the right-hand side captures the effect of operating margin (if operating income is used in the numerator) or EBIT margin (if EBIT is used) on ROE. In either case, this term primarily measures the effect of operating profitability on ROE.

The fourth term on the right-hand side is again the total asset turnover ratio, an indicator of the overall efficiency of the company (i.e., how much revenue it generates per unit of total assets). The fifth term on the right-hand side is the financial leverage ratio described above—the total amount of a company's assets relative to its equity capital.

This decomposition expresses a company's ROE as a function of its tax rate, interest burden, operating profitability, efficiency, and leverage. An analyst can use this framework to determine what factors are driving a company's ROE. The decomposition of ROE can also be useful in forecasting ROE based upon expected efficiency, profitability, financing activities, and tax rates. The relationship of the individual factors, such as ROA to the overall ROE, can also be expressed in the form of an ROE tree to study the contribution of each of the five factors, as shown in Exhibit 17 for Anson Industries.[13]

Exhibit 17 shows that Anson's ROE of 5.92 percent in FY5 can be decomposed into ROA of 3.70 percent and leverage of 1.60. ROA can further be decomposed into a net profit margin of 3.33 percent and total asset turnover of 1.11. Net profit margin can be decomposed into a tax burden of 0.70 (an average tax rate of 30 percent), an interest burden of 0.90, and an EBIT margin of 5.29 percent. Overall ROE is decomposed into five components.

EXHIBIT 17 DuPont Analysis of Anson Industries' ROE: Fiscal Year 5



[13] Note that a breakdown of net profit margin was not provided in Example 14, but is added here.

Example 16 demonstrates how the five-component decomposition can be used to determine reasons behind the trend in a company's ROE.

EXAMPLE 16 Five-Way Decomposition of ROE

An analyst examining Royal Dutch Shell PLC (Amsterdam and London SEs: RDSA) wishes to understand the factors driving the trend in ROE over a recent four-year period. The analyst obtains and calculates the following data from Shell's annual reports:

	2009	2008	2007	2006
ROE	9.53%	20.78%	26.50%	24.72%
Tax burden	60.50%	52.10%	63.12%	58.96%
Interest burden	97.49%	97.73%	97.86%	97.49%
EBIT margin[a]	7.56%	11.04%	13.98%	13.98%
Asset turnover	0.99	1.71	1.47	1.44
Leverage	2.15	2.17	2.10	2.14

[a]Shell's income statement does not present a separate subtotal for operating income. EBIT was calculated as Earnings before taxes plus interest.

What might the analyst conclude?

Solution: The tax burden measure has varied, with no obvious trend. In the most recent year, 2009, taxes declined as a percentage of pretax profit. (Because the tax burden reflects the relation of after-tax profits to pretax profits, the increase from 52.10 percent in 2008 to 60.50 percent in 2009 indicates that taxes declined as a percentage of pretax profits.) This decline in average tax rates could be a result of lower tax rates from new legislation or revenue in a lower tax jurisdiction. The interest burden has remained fairly constant over the four-year period indicating that the company maintains a fairly constant capital structure. Operating margin (EBIT margin) declined over the period, indicating the company's operations were less profitable. This decline is generally consistent with declines in oil prices in 2009 and declines in refining industry gross margins in 2008 and 2009. The company's efficiency (asset turnover) decreased in 2009. The company's leverage remained constant, consistent with the constant interest burden. Overall, the trend in ROE (declining substantially over the recent years) resulted from decreases in operating profits and a lower asset turnover. Additional research on the causes of these changes is required in order to develop expectations about the company's future performance.

The most detailed decomposition of ROE that we have presented is a five-way decomposition. Nevertheless, an analyst could further decompose individual components of a five-way analysis. For example, EBIT margin (EBIT/Revenue) could be further decomposed into a non-operating component (EBIT/Operating income) and an operating component (Operating

income/Revenue). The analyst can also examine which other factors contributed to these five components. For example, an improvement in efficiency (total asset turnover) may have resulted from better management of inventory (DOH) or better collection of receivables (DSO).

5. EQUITY ANALYSIS

One application of financial analysis is to select securities as part of the equity portfolio management process. Analysts are interested in valuing a security to assess its merits for inclusion or retention in a portfolio. The valuation process has several steps, including:[14]

1. understanding the business and the existing financial profile
2. forecasting company performance
3. selecting the appropriate valuation model
4. converting forecasts to a valuation
5. making the investment decision

Financial analysis assists in providing the core information to complete the first two steps of this valuation process: understanding the business and forecasting performance.

Fundamental equity analysis involves evaluating a company's performance and valuing its equity in order to assess its relative attractiveness as an investment. Analysts use a variety of methods to value a company's equity, including valuation ratios (e.g., the price-to-earnings or P/E ratio), discounted cash flow approaches, and residual income approaches (ROE compared with the cost of capital), among others. The following section addresses the first of these approaches—the use of valuation ratios.

5.1. Valuation Ratios

Valuation ratios have long been used in investment decision making. A well known example is the **price to earnings ratio** (P/E ratio)—probably the most widely cited indicator in discussing the value of equity securities—which relates share price to the earnings per share (EPS). Additionally, some analysts use other market multiples, such as price to book value (P/B) and price to cash flow (P/CF). The following sections explore valuation ratios and other quantities related to valuing equities.

5.1.1. Calculation of Valuation Ratios and Related Quantities

Exhibit 18 describes the calculation of some common valuation ratios and related quantities.

EXHIBIT 18 Definitions of Selected Valuation Ratios and Related Quantities

	Numerator	Denominator
Valuation Ratios		
P/E	Price per share	Earnings per share
P/CF	Price per share	Cash flow per share

(*continued*)

[14] Stowe et al. (2002, p. 6).

EXHIBIT 18 (Continued)

	Numerator	Denominator
P/S	Price per share	Sales per share
P/BV	Price per share	Book value per share

Per-Share Quantities		
Basic EPS	Net income minus preferred dividends	Weighted average number of ordinary shares outstanding
Diluted EPS	Adjusted income available for ordinary shares, reflecting conversion of dilutive securities	Weighted average number of ordinary and potential ordinary shares outstanding
Cash flow per share	Cash flow from operations	Weighted average number of shares outstanding
EBITDA per share	EBITDA	Weighted average number of shares outstanding
Dividends per share	Common dividends declared	Weighted average number of ordinary shares outstanding

Dividend-Related Quantities		
Dividend payout ratio	Common share dividends	Net income attributable to common shares
Retention rate (b)	Net income attributable to common shares – Common share dividends	Net income attributable to common shares
Sustainable growth rate	$b \times$ ROE	

The P/E ratio expresses the relationship between the price per share and the amount of earnings attributable to a single share. In other words, the P/E ratio tells us how much an investor in common stock pays per dollar of earnings.

Because P/E ratios are calculated using net income, the ratios can be sensitive to non-recurring earnings or one-time earnings events. In addition, because net income is generally considered to be more susceptible to manipulation than are cash flows, analysts may use **price to cash flow** as an alternative measure—particularly in situations where earnings quality may be an issue. EBITDA per share, because it is calculated using income before interest, taxes, and depreciation, can be used to eliminate the effect of different levels of fixed asset investment across companies. It facilitates comparison between companies in the same sector but at different stages of infrastructure maturity. **Price to sales** is calculated in a similar manner and is sometimes used as a comparative price metric when a company does not have positive net income.

Another price-based ratio that facilitates useful comparisons of companies' stock prices is **price to book value**, or P/B, which is the ratio of price to book value per share. This ratio is often interpreted as an indicator of market judgment about the relationship between a company's required rate of return and its actual rate of return. Assuming that book values reflect the fair values of the assets, a price to book ratio of one can be interpreted as an indicator that the company's future returns are expected to be exactly equal to the returns required by the

market. A ratio greater than one would indicate that the future profitability of the company is expected to exceed the required rate of return, and values of this ratio less than one indicate that the company is not expected to earn excess returns.[15]

5.1.2. Interpretation of Earnings per Share

Exhibit 18 presented a number of per-share quantities that can be used in valuation ratios. In this section, we discuss the interpretation of one such critical quantity, earnings per share or EPS.[16]

EPS is simply the amount of earnings attributable to each share of common stock. In isolation, EPS does not provide adequate information for comparison of one company with another. For example, assume that two companies have only common stock outstanding and no dilutive securities outstanding. In addition, assume the two companies have identical net income of $10 million, identical book equity of $100 million and, therefore, identical profitability (10 percent, using ending equity in this case for simplicity). Furthermore, assume that Company A has 100 million weighted average common shares outstanding, whereas Company B has 10 million weighted average common shares outstanding. So, Company A will report EPS of $0.10 per share, and Company B will report EPS of $1 per share. The difference in EPS does not reflect a difference in profitability—the companies have identical profits and profitability. The difference reflects only a different number of common shares outstanding. Analysts should understand in detail the types of EPS information that companies report:

Basic EPS provides information regarding the earnings attributable to each share of common stock.[17] To calculate basic EPS, the weighted average number of shares outstanding during the period is first calculated. The weighted average number of shares consists of the number of ordinary shares outstanding at the beginning of the period, adjusted by those bought back or issued during the period, multiplied by a time-weighting factor.

Accounting standards generally require the disclosure of basic as well as **diluted EPS** (diluted EPS includes the effect of all the company's securities whose conversion or exercise would result in a reduction of basic EPS; dilutive securities include convertible debt, convertible preferred, warrants, and options). Basic EPS and diluted EPS must be shown with equal prominence on the face of the income statement for each class of ordinary share. Disclosure includes the amounts used as the numerators in calculating basic and diluted EPS, and a reconciliation of those amounts to the company's profit or loss for the period. Because both basic and diluted EPS are presented in a company's financial statements, an analyst does not need to calculate these measures for reported financial statements. Understanding the calculations is, however, helpful for situations requiring an analyst to calculate expected future EPS.

To calculate diluted EPS, earnings are adjusted for the after-tax effects assuming conversion, and the following adjustments are made to the weighted number of shares:

- The weighted average number of shares for basic EPS, *plus* those that would be issued on conversion of all dilutive potential ordinary shares. Potential ordinary shares are treated as

[15] For more detail on valuation ratios as used in equity analysis, see the curriculum chapter "Equity Valuation: Concepts and Basic Tools."
[16] For more detail on EPS calculation, see the chapter "Understanding Income Statements."
[17] IAS 33, *Earnings per Share* and FASB ASC Topic 260 [Earnings per Share].

dilutive when their conversion would decrease net profit per share from continuing ordinary operations.

- These shares are deemed to have been converted into ordinary shares at the beginning of the period or, if later, at the date of the issue of the shares.
- Options, warrants (and their equivalents), convertible instruments, contingently issuable shares, contracts that can be settled in ordinary shares or cash, purchased options, and written put options should be considered.

5.1.3. Dividend-Related Quantities

In this section, we discuss the interpretation of the dividend-related quantities presented in Exhibit 18. These quantities play a role in some present value models for valuing equities.

Dividend Payout Ratio The **dividend payout ratio** measures the percentage of earnings that the company pays out as dividends to shareholders. The amount of dividends per share tends to be relatively fixed because any reduction in dividends has been shown to result in a disproportionately large reduction in share price. Because dividend amounts are relatively fixed, the dividend payout ratio tends to fluctuate with earnings. Therefore, conclusions about a company's dividend payout policies should be based on examination of payout over a number of periods. Optimal dividend policy, similar to optimal capital structure, has been examined in academic research and continues to be a topic of significant interest in corporate finance.

Retention Rate The retention rate, or earnings retention rate, is the complement of the payout ratio or dividend payout ratio (i.e., 1 – payout ratio). Whereas the payout ratio measures the percentage of earnings that a company pays out as dividends, the retention rate is the percentage of earnings that a company retains. (Note that both the payout ratio and retention rate are both percentages of earnings. The difference in terminology—"ratio" versus "rate" versus "percentage"—reflects common usage rather than any substantive differences.)

Sustainable Growth Rate A company's **sustainable growth rate** is viewed as a function of its profitability (measured as ROE) and its ability to finance itself from internally generated funds (measured as the retention rate). The sustainable growth rate is ROE times the retention rate. A higher ROE and a higher retention rate result in a higher sustainable growth rate. This calculation can be used to estimate a company's growth rate, a factor commonly used in equity valuation.

5.2. Industry-Specific Ratios

As stated earlier in this chapter, a universally accepted definition and classification of ratios does not exist. The purpose of ratios is to serve as indicators of important aspects of a company's performance and value. Aspects of performance that are considered important in one industry may be irrelevant in another, and industry-specific ratios reflect these differences. For example, companies in the retail industry may report same-store sales changes because, in the retail industry, it is important to distinguish between growth that results from opening new stores and growth that results from generating more sales at existing stores. Industry-specific metrics can be especially important to the value of equity in early stage industries, where companies are not yet profitable.

In addition, regulated industries—especially in the financial sector—often are required to comply with specific regulatory ratios. For example, the banking sector's liquidity and cash reserve ratios provide an indication of banking liquidity and reflect monetary and regulatory requirements. Banking capital adequacy requirements attempt to relate banks' solvency requirements directly to their specific levels of risk exposure.

Exhibit 19 presents, for illustrative purposes only, some industry-specific and task-specific ratios.[18]

EXHIBIT 19 Definitions of Some Common Industry- and Task-Specific Ratios

Ratio	Numerator	Denominator
Business Risk		
Coefficient of variation of operating income	Standard deviation of operating income	Average operating income
Coefficient of variation of net income	Standard deviation of net income	Average net income
Coefficient of variation of revenues	Standard deviation of revenue	Average revenue
Financial Sector Ratios		
Capital adequacy—banks	Various components of capital	Various measures such as risk-weighted assets, market risk exposure, or level of operational risk assumed
Monetary reserve requirement (Cash reserve ratio)	Reserves held at central bank	Specified deposit liabilities
Liquid asset requirement	Approved "readily marketable" securities	Specified deposit liabilities
Net interest margin	Net interest income	Total interest-earning assets
Retail Ratios		
Same (or comparable) store sales	Average revenue growth year over year for stores open in both periods	Not applicable
Sales per square meter (or square foot)	Revenue	Total retail space in square meters (or square feet)
Service Companies		
Revenue per employee	Revenue	Total number of employees
Net income per employee	Net income	Total number of employees

(*continued*)

[18] There are many other industry- and task-specific ratios that are outside the scope of this chapter. Resources such as Standard and Poor's Industry Surveys present useful ratios for each industry. Industry organizations may present useful ratios for the industry or a task specific to the industry.

EXHIBIT 19 (Continued)

Ratio	Numerator	Denominator
Hotel		
Average daily rate	Room revenue	Number of rooms sold
Occupancy rate	Number of rooms sold	Number of rooms available

5.3. Research on Ratios in Equity Analysis

Some ratios may be particularly useful in equity analysis. The end product of equity analysis is often a valuation and investment recommendation. Theoretical valuation models are useful in selecting ratios that would be useful in this process. For example, a company's P/B is theoretically linked to ROE, growth, and the required return. ROE is also a primary determinant of residual income in a residual income valuation model. In both cases, higher ROE relative to the required return denotes a higher valuation. Similarly, profit margin is related to justified price-to-sales (P/S) ratios. Another common valuation method involves forecasts of future cash flows that are discounted back to the present. Trends in ratios can be useful in forecasting future earnings and cash flows (e.g., trends in operating profit margin and collection of customer receivables). Future growth expectations are a key component of all of these valuation models. Trends may be useful in assessing growth prospects (when used in conjunction with overall economic and industry trends). The variability in ratios and common-size data can be useful in assessing risk, an important component of the required rate of return in valuation models. A great deal of academic research has focused on the use of these fundamental ratios in evaluating equity investments.

A classic study, Ou and Penman (1989a and 1989b), found that ratios and common-size metrics generated from accounting data were useful in forecasting earnings and stock returns. Ou and Penman examined 68 such metrics and found that these could be reduced to a more parsimonious list of relevant variables, including percentage changes in a variety of measures such as current ratio, inventory, and sales; gross and pretax margins; and returns on assets and equity. These variables were found to be useful in forecasting earnings and stock returns.

Subsequent studies have also demonstrated the usefulness of ratios in evaluation of equity investments and valuation. Lev and Thiagarajan (1993) examined fundamental financial variables used by analysts to assess whether they are useful in security valuation. They found that fundamental variables add about 70 percent to the explanatory power of earnings alone in predicting excess returns (stock returns in excess of those expected). The fundamental variables they found useful included percentage changes in inventory and receivables relative to sales, gross margin, sales per employee, and the change in bad debts relative to the change in accounts receivable, among others. Abarbanell and Bushee (1997) found some of the same variables useful in predicting future accounting earnings. Abarbanell and Bushee (1998) devised an investment strategy using these same variables and found that they can generate excess returns under this strategy.

Piotroski (2000) used financial ratios to supplement a value investing strategy and found that he can generate significant excess returns. Variables used by Piotroski include ROA, cash flow ROA, change in ROA, change in leverage, change in liquidity, change in gross margin, and change in inventory turnover.

This research shows that in addition to being useful in evaluating the past performance of a company, ratios can be useful in predicting future earnings and equity returns.

6. CREDIT ANALYSIS

Credit risk is the risk of loss caused by a counterparty's or debtor's failure to make a promised payment. For example, credit risk with respect to a bond is the risk that the obligor (the issuer of the bond) is not able to pay interest and principal according to the terms of the bond indenture (contract). **Credit analysis** is the evaluation of credit risk.

Approaches to credit analysis vary and, as with all financial analysis, depend on the purpose of the analysis and the context in which it is done. Credit analysis for specific types of debt (e.g., acquisition financing and other highly leveraged financing) often involves projections of period-by-period cash flows similar to projections made by equity analysts. Whereas the equity analyst may discount projected cash flows to determine the value of the company's equity, a credit analyst would use the projected cash flows to assess the likelihood of a company complying with its financial covenants in each period and paying interest and principal as due.[19]

The analysis would also include expectations about asset sales and refinancing options open to the company.

Credit analysis may relate to the borrower's credit risk in a particular transaction or to its overall creditworthiness. In assessing overall creditworthiness, one general approach is credit scoring, a statistical analysis of the determinants of credit default.

Another general approach to credit analysis is the credit rating process that is used, for example, by credit rating agencies to assess and communicate the probability of default by an issuer on its debt obligations (e.g., commercial paper, notes, and bonds). A credit rating can be either long term or short term and is an indication of the rating agency's opinion of the creditworthiness of a debt issuer with respect to a specific debt security or other obligation. Where a company has no debt outstanding, a rating agency can also provide an issuer credit rating that expresses an opinion of the issuer's overall capacity and willingness to meet its financial obligations. The following sections review research on the use of ratios in credit analysis and the ratios commonly used in credit analysis.

6.1. The Credit Rating Process

The rating process involves both the analysis of a company's financial reports as well as a broad assessment of a company's operations. The credit evaluation process by any analyst includes many of the following procedures performed by analysts at credit rating agencies:[20]

- Meeting with management, typically including the chief financial officer, to discuss, for example, industry outlook, overview of major business segments, financial policies and goals, distinctive accounting practices, capital spending plans, and financial contingency plans.
- Tours of major facilities, time permitting.
- Meeting of a ratings committee where the analyst's recommendations are voted on, after considering factors that include:
  - Business risk, including the evaluation of:
    - operating environment;
    - industry characteristics (e.g., cyclicality and capital intensity);

[19] Financial covenants are clauses in bond indentures relating to the financial condition of the bond issuer.
[20] Based on Standard & Poor's *Corporate Ratings Criteria* (2008).

    - success factors and areas of vulnerability; and
    - company's competitive position, including size and diversification.
  - Financial risk, including:
    - the evaluation of capital structure, interest coverage, and profitability using ratio analysis, and
    - the examination of debt covenants.
  - Evaluation of management.
- Monitoring of publicly distributed ratings—including reconsideration of ratings due to changing conditions.

In assigning credit ratings, rating agencies emphasize the importance of the relationship between a company's business risk profile and its financial risk. "The company's business risk profile determines the level of financial risk appropriate for any rating category."[21]

When analyzing financial ratios, rating agencies normally investigate deviations of ratios from the median ratios of the universe of companies for which such ratios have been calculated and also use the median ratings as an indicator for the ratings grade given to a specific debt issuer. This so-called universe of rated companies changes constantly, and any calculations are obviously affected by economic factors as well as by mergers and acquisitions. International ratings include the influence of country and economic risk factors. Exhibit 20 presents key financial ratios used by Standard & Poor's in evaluating industrial companies. Note that before calculating ratios, rating agencies make certain adjustments to reported financials such as adjusting debt to include off-balance sheet debt in a company's total debt.

EXHIBIT 20 Selected Credit Ratios Used by Standard & Poor's

Credit Ratio	Numerator[b]	Denominator[c]
EBIT interest coverage	EBIT	Gross interest (prior to deductions for capitalized interest or interest income)
EBITDA interest coverage	EBITDA	Gross interest (prior to deductions for capitalized interest or interest income)
FFO[a] (Funds from operations) interest coverage	FFO plus interest paid, minus operating lease adjustments	Gross interest (prior to deductions for capitalized interest or interest income)
Return on capital	EBIT	Average capital, where capital = equity, plus non-current deferred taxes, plus debt
FFO (Funds from operations) to debt	FFO	Total debt
Free operating cash flow to debt	CFO (adjusted) minus capital expenditures	Total debt
Discretionary cash flow to debt	CFO minus capital expenditures minus dividends paid	Total debt
Net cash flow to capital expenditures	FFO minus dividends	Capital expenditures

[21] Standard & Poor's *Corporate Ratings Criteria* (2008), p. 23.

EXHIBIT 20 (Continued)

Credit Ratio	Numerator[b]	Denominator[c]
Debt to EBITDA	Total debt	EBITDA
Total debt to total debt plus equity	Total debt	Total debt plus equity

[a] FFO = funds from operations, defined as net income adjusted for non-cash items; CFO = cash flow from operations.
[b] Emphasis is on earnings from *continuing* operations.
[c] Note that both the numerator and denominator definitions are adjusted from ratio to ratio and may not correspond to the definitions used elsewhere in this chapter.
Source: Based on data from *Standard & Poor's Corporate Ratings Criteria* (2008), p. 52.

6.2. Research on Ratios in Credit Analysis

A great deal of academic and practitioner research has focused on determining which ratios are useful in assessing the credit risk of a company, including the risk of bankruptcy.

One of the earliest studies examined individual ratios to assess their ability to predict failure of a company up to five years in advance. Beaver (1967) found that six ratios could correctly predict company failure one year in advance 90 percent of the time and five years in advance at least 65 percent of the time. The ratios found effective by Beaver were cash flow to total debt, ROA, total debt to total assets, working capital to total assets, the current ratio, and the no-credit interval ratio (the length of time a company could go without borrowing). Altman (1968) and Altman, Haldeman, and Narayanan (1977) found that financial ratios could be combined in an effective model for predicting bankruptcy. Altman's initial work involved creation of a Z-score that was able to correctly predict financial distress. The Z-score was computed as

$$\begin{aligned} Z = {} & 1.2 \times (\text{Current assets} - \text{Current liabilities})/\text{Total assets} \\ & + 1.4 \times (\text{Retained earnings}/\text{Total assets}) \\ & + 3.3 \times (\text{EBIT}/\text{Total assets}) \\ & + 0.6 \times (\text{Market value of stock}/\text{Book value of liabilities}) \\ & + 1.0 \times (\text{Sales}/\text{Total assets}) \end{aligned}$$

In his initial study, a Z-score of lower than 1.81 predicted failure and the model was able to accurately classify 95 percent of companies studied into a failure group and a non-failure group. The original model was designed for manufacturing companies. Subsequent refinements to the models allow for other company types and time periods. Generally, the variables found to be useful in prediction include profitability ratios, coverage ratios, liquidity ratios, capitalization ratios, and earnings variability (Altman 2000).

Similar research has been performed on the ability of ratios to predict bond ratings and bond yields. For example, Ederington, Yawtiz, and Roberts (1987) found that a small number of variables (total assets, interest coverage, leverage, variability of coverage, and subordination status) were effective in explaining bond yields. Similarly, Ederington (1986) found that nine variables in combination could correctly classify more than 70 percent of bond ratings. These variables included ROA, long-term debt to assets, interest coverage, cash flow to debt, variability of coverage and cash flow, total assets, and subordination status. These studies have shown that ratios are effective in evaluating credit risk, bond yields, and bond ratings.

7. BUSINESS AND GEOGRAPHIC SEGMENTS

Analysts often need to evaluate the performance underlying business segments (subsidiary companies, operating units, or simply operations in different geographic areas) to understand in detail the company as a whole. Although companies are not required to provide full financial statements for segments, they are required to provide segment information under both IFRS and US GAAP.[22]

7.1. Segment Reporting Requirements

An operating segment is defined as a component of a company: a) that engages in activities that may generate revenue and create expenses, including a start-up segment that has yet to earn revenues, b) whose results are regularly reviewed by the company's senior management, and c) for which discrete financial information is available.[23] A company must disclose separate information about any operating segment which meets certain quantitative criteria—namely, the segment constitutes 10 percent or more of the combined operating segments' revenue, assets, or profit. (For purposes of determining whether a segment constitutes 10 percent or more of combined profits or losses, the criterion is expressed in terms of the absolute value of the segment's profit or loss as a percentage of the greater of (i) the combined profits of all profitable segments and (ii) the absolute amount of the combined losses of all loss-making segments.) If, after applying these quantitative criteria, the combined revenue from external customers for all reportable segments combined is less than 75 percent of the total company revenue, the company must identify additional reportable segments until the 75 percent level is reached. Small segments might be combined as one if they share a substantial number of factors that define a business or geographical segment, or they might be combined with a similar significant reportable segment. Information about operating segments and businesses that are not reportable is combined in an "all other segments" category.

Companies may internally report business results in a variety of ways (e.g., product segments and geographical segments). Companies identify the segments for external reporting purposes considering the definition of an operating segment and using factors such as what information is reported to the board of directors and whether a manager is responsible for each segment. Companies must disclose the factors used to identify reportable segments and the types and products and services sold by each reportable segment.

For each reportable segment, the following should also be disclosed:

- a measure of profit or loss;
- a measure of total assets and liabilities[24] (if these amounts are regularly reviewed by the company's chief decision-making officer);
- segment revenue, distinguishing between revenue to external customers and revenue from other segments;
- interest revenue and interest expense;

[22] IFRS 8, *Operating Segments* and FASB ASC Topic 280 [Segment Reporting].
[23] IFRS 8, *Operating Segments,* paragraph 5.
[24] IFRS 8 and FASB ASC Topic 280 are largely converged. One notable difference is that US GAAP does not require disclosure of segment liabilities, while IFRS requires disclosure of segment liabilities if that information is regularly provided to the company's "chief operating decision maker."

- cost of property, plant, and equipment, and intangible assets acquired;
- depreciation and amortisation expense;
- other non-cash expenses;
- income tax expense or income; and
- share of the net profit or loss of an investment accounted for under the equity method.

Companies also must provide a reconciliation between the information of reportable segments and the consolidated financial statements in terms of segment revenue, profit or loss, assets, and liabilities.

Another disclosure required is the company's reliance on any single customer. If any single customer represents 10 percent or more of the company's total revenues, the company must disclose that fact. From an analysts' perspective, information about a concentrated customer base can be useful in assessing the risks faced by the company.

7.2. Segment Ratios

Based on the segment information that companies are required to present, a variety of useful ratios can be computed, as shown in Exhibit 21.

EXHIBIT 21 Definitions of Segment Ratios

Segment Ratios	Numerator	Denominator
Segment margin	Segment profit (loss)	Segment revenue
Segment turnover	Segment revenue	Segment assets
Segment ROA	Segment profit (loss)	Segment assets
Segment debt ratio	Segment liabilities	Segment assets

The segment margin measures the operating profitability of the segment relative to revenues, whereas the segment ROA measures the operating profitability relative to assets. Segment turnover measures the overall efficiency of the segment: how much revenue is generated per unit of assets. The segment debt ratio examines the level of liabilities (hence solvency) of the segment. Example 17 demonstrates the evaluation of segment ratios.

EXAMPLE 17 The Evaluation of Segment Ratios

The information contained in Exhibit 22 relates to the business segments of Groupe Danone (EuronextParis: BN) for 2008 and 2009 in millions of euro. According to the company's 2009 annual report:

> Over the course of the past 10 years, the Group has refocused its activities on the health food industry. On October 31, 2007, the acquisition of Royal Numico N.V. and its subsidiaries ("Numico"), a group specialized in baby nutrition and medical nutrition, marked a new phase in the Group's development by adding these lines of business to Danone's portfolio. The Group has since operated in four markets corresponding to its four business lines: (i) Fresh Dairy Products, (ii) Waters, (iii) Baby Nutrition, and (iv) Medical Nutrition.

Evaluate the performance of the segments using the segment margin, segment ROA, and segment turnover.

EXHIBIT 22

	2009			2008		
(In € millions)	Revenue (3rd party)	Operating Income	Assets	Revenue (3rd party)	Operating Income	Assets
Fresh Dairy Products	8,555	1,240	7,843	8,697	1,187	7,145
Waters	2,578	646	2,773	2,874	323	3,426
Baby Nutrition	2,924	547	10,203	2,795	462	9,999
Medical Nutrition	925	190	4,781	854	217	4,450
Business Line Total	14,982	2,623	25,600	15,220	2,189	25,020

Segment Ratios

	2009				2008			
	Segment Revenue as Percent of Total	Segment Margin	Segment ROA[a]	Segment Turnover	Segment Revenue as Percent of Total	Segment Margin	Segment ROA[a]	Segment Turnover
Fresh Dairy Products	57.1%	14.5%	15.8%	1.1	57.1%	13.6%	16.6%	1.2
Waters	17.2%	25.1%	23.3%	0.9	18.9%	11.2%	9.4%	0.8
Baby Nutrition	19.5%	18.7%	5.4%	0.3	18.4%	16.5%	4.6%	0.3
Medical Nutrition	6.2%	20.5%	4.0%	0.2	5.6%	25.4%	4.9%	0.2

[a] As used in this table, ROA refers to operating income divided by ending assets.

Solution: The waters segment (Evian and Volvic) was the most profitable in 2009 as measured by margin and ROA; however, in 2009 the segment did not grow as fast as the company's other segments. In 2008, the segment represented 18.9 percent of total segment revenues, but in 2009 the percentage was only 17.2 percent.

The company's largest segment by revenue, fresh dairy products, had the lowest margin in 2009 but a much higher segment ROA than the baby and medical nutrition segments. Medical nutrition is the second highest segment in terms of segment margin but lowest in turnover (an indicator of efficiency, i.e., the ability to generate revenue from assets). As a result, medical nutrition had the lowest segment ROA (Segment ROA = Segment operating income/Segment assets = (Segment operating income/Segment revenue) × (Segment revenue × Segment Assets) = Segment margin × Segment turnover. Reported percentages may differ due to rounding). Part of the explanation for segment differences in ROA may be that the medical and baby nutrition businesses were acquired in 2007. In an acquisition, the acquiring company reports the acquired assets at fair value at the time of the acquisition. Most of a company's other assets are reported at

historical costs, and over time, most long-term assets are depreciated. Thus, compared to assets in other segments, it is likely that the assets of the nutrition segments are reported at amounts more reflective of current prices.

8. MODEL BUILDING AND FORECASTING

Analysts often need to forecast future financial performance. For example, EPS forecasts of analysts are widely followed by Wall Street. Analysts use data about the economy, industry, and company in arriving at a company's forecast. The results of an analyst's financial analysis, including common-size and ratio analyses, are integral to this process, along with the judgment of the analysts.

Based on forecasts of growth and expected relationships among the financial statement data, the analyst can build a model (sometimes referred to as an "earnings model") to forecast future performance. In addition to budgets, pro forma financial statements are widely used in financial forecasting within companies, especially for use by senior executives and boards of directors. Last but not least, these budgets and forecasts are also used in presentations to credit analysts and others in obtaining external financing.

For example, based on a revenue forecast, an analyst may budget expenses based on expected common-size data. Forecasts of balance sheet and cash flow statements can be derived from expected ratio data, such as DSO. Forecasts are not limited to a single point estimate but should involve a range of possibilities. This can involve several techniques:

- **Sensitivity analysis**: Also known as "what if" analysis, sensitivity analysis shows the range of possible outcomes as specific assumptions are changed; this could, in turn, influence financing needs or investment in fixed assets.
- **Scenario analysis**: This type of analysis shows the changes in key financial quantities that result from given (economic) events, such as the loss of customers, the loss of a supply source, or a catastrophic event. If the list of events is mutually exclusive and exhaustive and the events can be assigned probabilities, the analyst can evaluate not only the range of outcomes but also standard statistical measures such as the mean and median value for various quantities of interest.
- **Simulation**: This is computer-generated sensitivity or scenario analysis based on probability models for the factors that drive outcomes. Each event or possible outcome is assigned a probability. Multiple scenarios are then run using the probability factors assigned to the possible values of a variable.

9. SUMMARY

Financial analysis techniques, including common-size and ratio analysis, are useful in summarizing financial reporting data and evaluating the performance and financial position of a company. The results of financial analysis techniques provide important inputs into security valuation. Key facets of financial analysis include the following:

- Common-size financial statements and financial ratios remove the effect of size, allowing comparisons of a company with peer companies (cross-sectional analysis) and comparison of a company's results over time (trend or time-series analysis).
- Activity ratios measure the efficiency of a company's operations, such as collection of receivables or management of inventory. Major activity ratios include inventory turnover, days of inventory on hand, receivables turnover, days of sales outstanding, payables turnover, number of days of payables, working capital turnover, fixed asset turnover, and total asset turnover.
- Liquidity ratios measure the ability of a company to meet short-term obligations. Major liquidity ratios include the current ratio, quick ratio, cash ratio, and defensive interval ratio.
- Solvency ratios measure the ability of a company to meet long-term obligations. Major solvency ratios include debt ratios (including the debt-to-assets ratio, debt-to-capital ratio, debt-to-equity ratio, and financial leverage ratio) and coverage ratios (including interest coverage and fixed charge coverage).
- Profitability ratios measure the ability of a company to generate profits from revenue and assets. Major profitability ratios include return on sales ratios (including gross profit margin, operating profit margin, pretax margin, and net profit margin) and return on investment ratios (including operating ROA, ROA, return on total capital, ROE, and return on common equity).
- Ratios can also be combined and evaluated as a group to better understand how they fit together and how efficiency and leverage are tied to profitability.
- ROE can be analyzed as the product of the net profit margin, asset turnover, and financial leverage. This decomposition is sometimes referred to as DuPont analysis.
- Valuation ratios express the relation between the market value of a company or its equity (for example, price per share) and some fundamental financial metric (for example, earnings per share).
- Ratio analysis is useful in the selection and valuation of debt and equity securities and is a part of the credit rating process.
- Ratios can also be computed for business segments to evaluate how units within a business are performing.
- The results of financial analysis provide valuable inputs into forecasts of future earnings and cash flow.

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PROBLEMS

1. Comparison of a company's financial results to other peer companies for the same time period is called:
   A. technical analysis.
   B. time-series analysis.
   C. cross-sectional analysis.

2. In order to assess a company's ability to fulfill its long-term obligations, an analyst would *most likely* examine:
   A. activity ratios.
   B. liquidity ratios.
   C. solvency ratios.

3. Which ratio would a company *most likely* use to measure its ability to meet short-term obligations?
   A. Current ratio.
   B. Payables turnover.
   C. Gross profit margin.

4. Which of the following ratios would be *most* useful in determining a company's ability to cover its lease and interest payments?
   A. ROA.
   B. Total asset turnover.
   C. Fixed charge coverage.

5. An analyst is interested in assessing both the efficiency and liquidity of Spherion PLC. The analyst has collected the following data for Spherion:

	FY3	FY2	FY1
Days of inventory on hand	32	34	40
Days sales outstanding	28	25	23
Number of days of payables	40	35	35

   Based on this data, what is the analyst *least likely* to conclude?
   A. Inventory management has contributed to improved liquidity.
   B. Management of payables has contributed to improved liquidity.
   C. Management of receivables has contributed to improved liquidity.

6. An analyst is evaluating the solvency and liquidity of Apex Manufacturing and has collected the following data (in millions of euro):

	FY5 (€)	FY4 (€)	FY3 (€)
Total debt	2,000	1,900	1,750
Total equity	4,000	4,500	5,000

   Which of the following would be the analyst's *most likely* conclusion?
   A. The company is becoming increasingly less solvent, as evidenced by the increase in its debt-to-equity ratio from 0.35 to 0.50 from FY3 to FY5.
   B. The company is becoming less liquid, as evidenced by the increase in its debt-to-equity ratio from 0.35 to 0.50 from FY3 to FY5.
   C. The company is becoming increasingly more liquid, as evidenced by the increase in its debt-to-equity ratio from 0.35 to 0.50 from FY3 to FY5.

7. With regard to the data in Problem 6, what would be the *most* reasonable explanation of the financial data?
   A. The decline in the company's equity results from a decline in the market value of this company's common shares.
   B. The €250 increase in the company's debt from FY3 to FY5 indicates that lenders are viewing the company as increasingly creditworthy.
   C. The decline in the company's equity indicates that the company may be incurring losses, paying dividends greater than income, and/or repurchasing shares.

8. An analyst observes a decrease in a company's inventory turnover. Which of the following would *most likely* explain this trend?
   A. The company installed a new inventory management system, allowing more efficient inventory management.
   B. Due to problems with obsolescent inventory last year, the company wrote off a large amount of its inventory at the beginning of the period.

   C. The company installed a new inventory management system but experienced some operational difficulties resulting in duplicate orders being placed with suppliers.

9. Which of the following would *best* explain an increase in receivables turnover?
   A. The company adopted new credit policies last year and began offering credit to customers with weak credit histories.
   B. Due to problems with an error in its old credit scoring system, the company had accumulated a substantial amount of uncollectible accounts and wrote off a large amount of its receivables.
   C. To match the terms offered by its closest competitor, the company adopted new payment terms now requiring net payment within 30 days rather than 15 days, which had been its previous requirement.

10. Brown Corporation had average days of sales outstanding of 19 days in the most recent fiscal year. Brown wants to improve its credit policies and collection practices and decrease its collection period in the next fiscal year to match the industry average of 15 days. Credit sales in the most recent fiscal year were $300 million, and Brown expects credit sales to increase to $390 million in the next fiscal year. To achieve Brown's goal of decreasing the collection period, the change in the average accounts receivable balance that must occur is *closest* to:
    A. +$0.41 million.
    B. –$0.41 million.
    C. –$1.22 million.

11. An analyst observes the following data for two companies:

	Company A ($)	Company B ($)
Revenue	4,500	6,000
Net income	50	1,000
Current assets	40,000	60,000
Total assets	100,000	700,000
Current liabilities	10,000	50,000
Total debt	60,000	150,000
Shareholders' equity	30,000	500,000

    Which of the following choices *best* describes reasonable conclusions that the analyst might make about the two companies' abilities to pay their current and long-term obligations?
    A. Company A's current ratio of 4.0 indicates it is more liquid than Company B, whose current ratio is only 1.2, but Company B is more solvent, as indicated by its lower debt-to-equity ratio.
    B. Company A's current ratio of 0.25 indicates it is less liquid than Company B, whose current ratio is 0.83, and Company A is also less solvent, as indicated by a debt-to-equity ratio of 200 percent compared with Company B's debt-to-equity ratio of only 30 percent.
    C. Company A's current ratio of 4.0 indicates it is more liquid than Company B, whose current ratio is only 1.2, and Company A is also more solvent, as indicated by a debt-to-equity ratio of 200 percent compared with Company B's debt-to-equity ratio of only 30 percent.

The following information relates to Questions 12–15

The data in Exhibit 1 appear in the five-year summary of a major international company. A business combination with another major manufacturer took place in FY13.

EXHIBIT 1

	FY10	FY11	FY12	FY13	FY14
Financial statements	GBP m	GBP m	GBP m	GBP m	GBP m
Income statements					
Revenue	4,390	3,624	3,717	8,167	11,366
Profit before interest and taxation (EBIT)	844	700	704	933	1,579
Net interest payable	–80	–54	–98	–163	–188
Taxation	–186	–195	–208	–349	–579
Minorities	–94	–99	–105	–125	–167
Profit for the year	484	352	293	296	645
Balance sheets					
Fixed assets	3,510	3,667	4,758	10,431	11,483
Current asset investments, cash at bank and in hand	316	218	290	561	682
Other current assets	558	514	643	1,258	1,634
Total assets	4,384	4,399	5,691	12,250	13,799
Interest bearing debt (long term)	–602	–1,053	–1,535	–3,523	–3,707
Other creditors and provisions (current)	–1,223	–1,054	–1,102	–2,377	–3,108
Total liabilities	–1,825	–2,107	–2,637	–5,900	–6,815
Net assets	2,559	2,292	3,054	6,350	6,984
Shareholders' funds	2,161	2,006	2,309	5,572	6,165
Equity minority interests	398	286	745	778	819
Capital employed	2,559	2,292	3,054	6,350	6,984
Cash flow					
Working capital movements	–53	5	71	85	107
Net cash inflow from operating activities	864	859	975	1,568	2,292

12. The company's total assets at year-end FY9 were GBP 3,500 million. Which of the following choices *best* describes reasonable conclusions an analyst might make about the company's efficiency?
    A. Comparing FY14 with FY10, the company's efficiency improved, as indicated by a total asset turnover ratio of 0.86 compared with 0.64.
    B. Comparing FY14 with FY10, the company's efficiency deteriorated, as indicated by its current ratio.

C. Comparing FY14 with FY10, the company's efficiency deteriorated due to asset growth faster than turnover revenue growth.

13. Which of the following choices *best* describes reasonable conclusions an analyst might make about the company's solvency?
   A. Comparing FY14 with FY10, the company's solvency improved, as indicated by an increase in its debt-to-assets ratio from 0.14 to 0.27.
   B. Comparing FY14 with FY10, the company's solvency deteriorated, as indicated by a decrease in interest coverage from 10.6 to 8.4.
   C. Comparing FY14 with FY10, the company's solvency improved, as indicated by the growth in its profits to GBP 645 million.

14. Which of the following choices *best* describes reasonable conclusions an analyst might make about the company's liquidity?
   A. Comparing FY14 with FY10, the company's liquidity improved, as indicated by an increase in its debt-to-assets ratio from 0.14 to 0.27.
   B. Comparing FY14 with FY10, the company's liquidity deteriorated, as indicated by a decrease in interest coverage from 10.6 to 8.4.
   C. Comparing FY14 with FY10, the company's liquidity improved, as indicated by an increase in its current ratio from 0.71 to 0.75.

15. Which of the following choices *best* describes reasonable conclusions an analyst might make about the company's profitability?
   A. Comparing FY14 with FY10, the company's profitability improved, as indicated by an increase in its debt-to-assets ratio from 0.14 to 0.27.
   B. Comparing FY14 with FY10, the company's profitability deteriorated, as indicated by a decrease in its net profit margin from 11.0 percent to 5.7 percent.
   C. Comparing FY14 with FY10, the company's profitability improved, as indicated by the growth in its shareholders' equity to GBP 6,165 million.

16. Assuming no changes in other variables, which of the following would decrease ROA?
   A. A decrease in the effective tax rate.
   B. A decrease in interest expense.
   C. An increase in average assets.

17. An analyst compiles the following data for a company:

	FY13	FY14	FY15
ROE	19.8%	20.0%	22.0%
Return on total assets	8.1%	8.0%	7.9%
Total asset turnover	2.0	2.0	2.1

Based only on the information above, the *most* appropriate conclusion is that, over the period FY13 to FY15, the company's:
   A. net profit margin and financial leverage have decreased.
   B. net profit margin and financial leverage have increased.
   C. net profit margin has decreased but its financial leverage has increased.

18. A decomposition of ROE for Integra SA is as follows:

	FY12	FY11
ROE	18.90%	18.90%
Tax burden	0.70	0.75
Interest burden	0.90	0.90
EBIT margin	10.00%	10.00%
Asset turnover	1.50	1.40
Leverage	2.00	2.00

Which of the following choices *best* describes reasonable conclusions an analyst might make based on this ROE decomposition?

A. Profitability and the liquidity position both improved in FY12.
B. The higher average tax rate in FY12 offset the improvement in profitability, leaving ROE unchanged.
C. The higher average tax rate in FY12 offset the improvement in efficiency, leaving ROE unchanged.

19. A decomposition of ROE for Company A and Company B is as follows:

	Company A		Company B	
	FY15	FY14	FY15	FY14
ROE	26.46%	18.90%	26.33%	18.90%
Tax burden	0.7	0.75	0.75	0.75
Interest burden	0.9	0.9	0.9	0.9
EBIT margin	7.00%	10.00%	13.00%	10.00%
Asset turnover	1.5	1.4	1.5	1.4
Leverage	4	2	2	2

An analyst is *most likely* to conclude that:

A. Company A's ROE is higher than Company B's in FY15, and one explanation consistent with the data is that Company A may have purchased new, more efficient equipment.
B. Company A's ROE is higher than Company B's in FY15, and one explanation consistent with the data is that Company A has made a strategic shift to a product mix with higher profit margins.
C. The difference between the two companies' ROE in FY15 is very small and Company A's ROE remains similar to Company B's ROE mainly due to Company A increasing its financial leverage.

20. What does the P/E ratio measure?

A. The "multiple" that the stock market places on a company's EPS.
B. The relationship between dividends and market prices.
C. The earnings for one common share of stock.

21. A creditor *most likely* would consider a decrease in which of the following ratios to be positive news?
    A. Interest coverage (times interest earned).
    B. Debt-to-total assets.
    C. Return on assets.

22. When developing forecasts, analysts should *most likely*:
    A. develop possibilities relying exclusively on the results of financial analysis.
    B. use the results of financial analysis, analysis of other information, and judgment.
    C. aim to develop extremely precise forecasts using the results of financial analysis.

CHAPTER 8

INVENTORIES

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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- Distinguish between costs included in inventories and costs recognized as expenses in the period in which they are incurred.
- Describe different inventory valuation methods (cost formulas).
- Calculate and compare cost of sales, gross profit, and ending inventory using different inventory valuation methods and using periodic and perpetual inventory systems.
- Calculate and explain effects of inflation and deflation of inventory costs on the financial statements and ratios of companies that use different inventory valuation methods (cost formulas or cost flow assumptions).
- Explain LIFO reserve and LIFO liquidation and their effects on financial statements and ratios.
- Convert a company's reported financial statements from LIFO to FIFO for purposes of comparison.
- Describe implications of valuing inventory at net realizable value for financial statements and ratios.
- Describe the financial statement presentation of and disclosures relating to inventories.
- Explain issues that analysts should consider when examining a company's inventory disclosures and other sources of information.
- Analyze and compare the financial statements and ratios of companies, including those that use different inventory valuation methods.

1. INTRODUCTION

Merchandising and manufacturing companies generate revenues and profits through the sale of inventory. Further, inventory may represent a significant asset on these companies' balance sheets. Merchandisers (wholesalers and retailers) purchase inventory, ready for sale, from manufacturers and thus account for only one type of inventory—finished goods inventory. Manufacturers, however, purchase raw materials from suppliers and then add value by

transforming the raw materials into finished goods. They typically classify inventory into three different categories:[1] raw materials, work in progress,[2] and finished goods. Work-in-progress inventories have started the conversion process from raw materials but are not yet finished goods ready for sale. Manufacturers may report either the separate carrying amounts of their raw materials, work-in-progress, and finished goods inventories on the balance sheet or simply the total inventory amount. If the latter approach is used, the company must then disclose the carrying amounts of its raw materials, work-in-progress, and finished goods inventories in a footnote to the financial statements.

Inventories and cost of sales (cost of goods sold)[3] are significant items in the financial statements of many companies. Comparing the performance of these companies is challenging because of the allowable choices for valuing inventories: Differences in the choice of inventory valuation method can result in significantly different amounts being assigned to inventory and cost of sales. Financial statement analysis would be much easier if all companies used the same inventory valuation method or if inventory price levels remained constant over time. If there was no inflation or deflation with respect to inventory costs and thus unit costs were unchanged, the choice of inventory valuation method would be irrelevant. However, inventory price levels typically do change over time.

International Financial Reporting Standards (IFRS) permit the assignment of inventory costs (costs of goods available for sale) to inventories and cost of sales by three cost formulas: specific identification; first-in, first-out (FIFO); and weighted average cost.[4] U.S. generally accepted accounting principles (U.S. GAAP) allow the same three inventory valuation methods, referred to as cost flow assumptions in U.S. GAAP, but also include a fourth method called last-in, first-out (LIFO).[5] The choice of inventory valuation method affects the allocation of the cost of goods available for sale to ending inventory and cost of sales. Analysts must understand the various inventory valuation methods and the related impact on financial statements and financial ratios in order to evaluate a company's performance over time and relative to industry peers. The company's financial statements and related notes provide important information that the analyst can use in assessing the impact of the choice of inventory valuation method on financial statements and financial ratios.

This chapter is organized as follows: Section 2 discusses the costs that are included in inventory and the costs that are recognized as expenses in the period in which they are incurred. Section 3 describes inventory valuation methods and compares the measurement of ending inventory, cost of sales and gross profit under each method, and when using periodic versus perpetual inventory systems. Section 4 describes the LIFO method, LIFO reserve, and effects of LIFO liquidations, and demonstrates the adjustments required to compare a company that uses LIFO with one that uses FIFO. Section 5 describes the financial statement effects of a change in inventory valuation method. Section 6 discusses the measurement and reporting of inventory when its value changes. Section 7 describes the presentation of inventories on the financial statements and related disclosures, discusses inventory ratios and their interpretation, and shows examples of financial analysis with respect to inventories. A summary and practice problems conclude the chapter.

[1] Other classifications are possible. Inventory classifications should be appropriate to the entity.

[2] This category is commonly referred to as *work in process* under U.S. GAAP.

[3] Typically, *cost of sales* is IFRS terminology and *cost of goods sold* is U.S. GAAP terminology.

[4] International Accounting Standard (IAS) 2 [Inventories].

[5] Financial Accounting Standards Board *Accounting Standards Codification* (FASB ASC) Topic 330 [Inventory].

2. COST OF INVENTORIES

Under IFRS, the costs to include in inventories are "all costs of purchase, costs of conversion, and other costs incurred in bringing the inventories to their present location and condition."[6]

The costs of purchase include the purchase price, import and tax-related duties, transport, insurance during transport, handling, and other costs directly attributable to the acquisition of finished goods, materials, and services. Trade discounts, rebates, and similar items reduce the price paid and the costs of purchase. The costs of conversion include costs directly related to the units produced, such as direct labor and fixed and variable overhead costs.[7] Including these product-related costs in inventory (i.e., as an asset) means that they will not be recognized as an expense (i.e., as cost of sales) on the income statement until the inventory is sold. U.S. GAAP provide a similar description of the costs to be included in inventory.[8]

Both IFRS and U.S. GAAP exclude the following costs from inventory: abnormal costs incurred as a result of waste of materials, labor or other production conversion inputs, any storage costs (unless required as part of the production process), and all administrative overhead and selling costs. These excluded costs are treated as expenses and recognized on the income statement in the period in which they are incurred. Including costs in inventory defers their recognition as an expense on the income statement until the inventory is sold. Therefore, including costs in inventory that should be expensed will overstate profitability on the income statement (because of the inappropriate deferral of cost recognition) and create an overstated inventory value on the balance sheet.

EXAMPLE 1 Treatment of Inventory-Related Costs

Acme Enterprises, a hypothetical company that prepares its financial statements in accordance with IFRS, manufactures tables. In 2009, the factory produced 900,000 finished tables and scrapped 1,000 tables. For the finished tables, raw material costs were €9 million, direct labor conversion costs were €18 million, and production overhead costs were €1.8 million. The 1,000 scrapped tables (attributable to abnormal waste) had a total production cost of €30,000 (€10,000 raw material costs and €20,000 conversion costs; these costs are not included in the €9 million raw material and €19.8 million total conversion costs of the finished tables). During the year, Acme spent €1 million for freight delivery charges on raw materials and €500,000 for storing finished goods inventory. Acme does not have any work-in-progress inventory at the end of the year.

[6] International Accounting Standard (IAS) 2 [Inventories].

[7] Fixed production overhead costs (depreciation, factory maintenance, and factory management and administration) represent indirect costs of production that remain relatively constant regardless of the volume of production. Variable production overhead costs are indirect production costs (indirect labor and materials) that vary with the volume of production.

[8] FASB Accounting Standards Codification™ (ASC) Topic 330 [Inventory].

1. What costs should be included in inventory in 2009?
2. What costs should be expensed in 2009?

Solution to 1: Total inventory costs for 2009 are as follows:

Raw materials	€9,000,000
Direct labor	18,000,000
Production overhead	1,800,000
Transportation for raw materials	1,000,000
Total inventory costs	€29,800,000

Solution to 2: Total costs that should be expensed (not included in inventory) are as follows:

Abnormal waste	€30,000
Storage of finished goods inventory	500,000
Total	€530,000

3. INVENTORY VALUATION METHODS

Generally, inventory purchase costs and manufacturing conversion costs change over time. As a result, the allocation of total inventory costs (i.e., cost of goods available for sale) between cost of sales on the income statement and inventory on the balance sheet will vary depending on the inventory valuation method used by the company. As mentioned in the introduction, inventory valuation methods are referred to as cost formulas and cost flow assumptions under IFRS and U.S. GAAP, respectively. If the choice of method results in more cost being allocated to cost of sales and less cost being allocated to inventory than would be the case with other methods, the chosen method will cause, in the current year, reported gross profit, net income, and inventory carrying amount to be lower than if alternative methods had been used. Accounting for inventory, and consequently the allocation of costs, thus has a direct impact on financial statements and their comparability.

Both IFRS and U.S. GAAP allow companies to use the following inventory valuation methods: specific identification; first-in, first-out (FIFO); and weighted average cost. U.S. GAAP allow companies to use an additional method: last-in, first-out (LIFO). A company must use the same inventory valuation method for all items that have a similar nature and use. For items with a different nature or use, a different inventory valuation method can be used.[9] When items are sold, the carrying amount of the inventory is recognized as an expense (cost of sales) according to the cost formula (cost flow assumption) in use.

Specific identification is used for inventory items that are not ordinarily interchangeable, whereas FIFO, weighted average cost, and LIFO are typically used when there are large

[9] For example, if a clothing manufacturer produces both a retail line and one-of-a-kind designer garments, the retail line might be valued using FIFO and the designer garments using specific identification.

numbers of interchangeable items in inventory. Specific identification matches the actual historical costs of the specific inventory items to their physical flow; the costs remain in inventory until the actual identifiable inventory is sold. FIFO, weighted average cost, and LIFO are based on cost flow assumptions. Under these methods, companies must make certain assumptions about which goods are sold and which goods remain in ending inventory. As a result, the allocation of costs to the units sold and to the units in ending inventory can be different from the physical movement of the items.

The choice of inventory valuation method would be largely irrelevant if inventory costs remained constant or relatively constant over time. Given relatively constant prices, the allocation of costs between cost of goods sold and ending inventory would be very similar under each of the four methods. Given changing price levels, however, the choice of inventory valuation method can have a significant impact on the amount of reported cost of sales and inventory. And the reported cost of sales and inventory balances affect other items, such as gross profit, net income, current assets, and total assets.

3.1. Specific Identification

The specific identification method is used for inventory items that are not ordinarily interchangeable and for goods that have been produced and segregated for specific projects. This method is also commonly used for expensive goods that are uniquely identifiable, such as precious gemstones. Under this method, the cost of sales and the cost of ending inventory reflect the actual costs incurred to purchase (or manufacture) the items specifically identified as sold and the items specifically identified as remaining in inventory. Therefore, this method matches the physical flow of the specific items sold and remaining in inventory to their actual cost.

3.2. First-In, First-Out (FIFO)

FIFO assumes that the oldest goods purchased (or manufactured) are sold first and the newest goods purchased (or manufactured) remain in ending inventory. In other words, the first units included in inventory are assumed to be the first units sold from inventory. Therefore, cost of sales reflects the cost of goods in beginning inventory plus the cost of items purchased (or manufactured) earliest in the accounting period, and the value of ending inventory reflects the costs of goods purchased (or manufactured) more recently. In periods of rising prices, the costs assigned to the units in ending inventory are higher than the costs assigned to the units sold. Conversely, in periods of declining prices, the costs assigned to the units in ending inventory are lower than the costs assigned to the units sold.

3.3. Weighted Average Cost

Weighted average cost assigns the average cost of the goods available for sale (beginning inventory plus purchase, conversion, and other costs) during the accounting period to the units that are sold as well as to the units in ending inventory. In an accounting period, the weighted average cost per unit is calculated as the total cost of the units available for sale divided by the total number of units available for sale in the period (Total cost of goods available for sale/Total units available for sale).

3.4. Last-In, First-Out (LIFO)

LIFO is permitted only under U.S. GAAP. This method assumes that the newest goods purchased (or manufactured) are sold first and the oldest goods purchased (or manufactured), including beginning inventory, remain in ending inventory. In other words, the last units included in inventory are assumed to be the first units sold from inventory. Therefore, cost of sales reflects the cost of goods purchased (or manufactured) more recently, and the value of ending inventory reflects the cost of older goods. In periods of rising prices, the costs assigned to the units in ending inventory are lower than the costs assigned to the units sold. Conversely, in periods of declining prices, the costs assigned to the units in ending inventory are higher than the costs assigned to the units sold.

3.5. Calculation of Cost of Sales, Gross Profit, and Ending Inventory

In periods of changing prices, the allocation of total inventory costs (i.e., cost of goods available for sale) between cost of sales on the income statement and inventory on the balance sheet will vary depending on the inventory valuation method used by the company. The following example illustrates how cost of sales, gross profit, and ending inventory differ based on the choice of inventory valuation method.

EXAMPLE 2 Inventory Cost Flow Illustration for the Specific Identification, Weighted Average Cost, FIFO, and LIFO Methods

Global Sales, Inc. (GSI) is a hypothetical distributor of consumer products, including bars of violet essence soap. The soap is sold by the kilogram. GSI began operations in 2009, during which it purchased and received initially 100,000 kg of soap at 110 yuan/kg, then 200,000 kg of soap at 100 yuan/kg, and finally 300,000 kg of soap at 90 yuan/kg. GSI sold 520,000 kg of soap at 240 yuan/kg. GSI stores its soap in its warehouse so that soap from each shipment received is readily identifiable. During 2009, the entire 100,000 kg from the first shipment received, 180,000 kg of the second shipment received, and 240,000 kg of the final shipment received was sent to customers. Answers to the following questions should be rounded to the nearest 1,000 yuan.

1. What are the reported cost of sales, gross profit, and ending inventory balances for 2009 under the specific identification method?
2. What are the reported cost of sales, gross profit, and ending inventory balances for 2009 under the weighted average cost method?
3. What are the reported cost of sales, gross profit, and ending inventory balances for 2009 under the FIFO method?
4. What are the reported cost of sales, gross profit, and ending inventory balances for 2009 under the LIFO method?

Solution to 1: Under the specific identification method, the physical flow of the specific inventory items sold is matched to their actual cost.

Sales = 520,000 × 240 = 124,800,000 yuan
Cost of sales = (100,000 × 110) + (180,000 × 100) + (240,000 × 90) = 50,600,000 yuan
Gross profit = 124,800,000 − 50,600,000 = 74,200,000 yuan
Ending inventory = (20,000 × 100) + (60,000 × 90) = 7,400,000 yuan

Note that in spite of the segregation of inventory within the warehouse, it would be inappropriate to use specific identification for this inventory of interchangeable items. The use of specific identification could potentially result in earnings manipulation through the shipment decision.

Solution to 2: Under the weighted average cost method, costs are allocated to cost of sales and ending inventory by using a weighted average mix of the actual costs incurred for all inventory items. The weighted average cost per unit is determined by dividing the total cost of goods available for sale by the number of units available for sale.

Weighted average cost = [(100,000 × 110) + (200,000 × 100) + (300,000 × 90)]/
600,000 = 96.667 yuan/kg
Sales = 520,000 × 240 = 124,800,000 yuan
Cost of sales = 520,000 × 96.667 = 50,267,000 yuan
Gross profit = 124,800,000 − 50,267,000 = 74,533,000 yuan
Ending inventory = 80,000 × 96.667 = 7,733,000 yuan

Solution to 3: Under the FIFO method, the oldest inventory units acquired are assumed to be the first units sold. Ending inventory, therefore, is assumed to consist of those inventory units most recently acquired.

Sales = 520,000 × 240 = 124,800,000 yuan
Cost of sales = (100,000 × 110) + (200,000 × 100) + (220,000 × 90) = 50,800,000 yuan
Gross profit = 124,800,000 − 50,800,000 = 74,000,000 yuan
Ending inventory = 80,000 × 90 = 7,200,000 yuan

Solution to 4: Under the LIFO method, the newest inventory units acquired are assumed to be the first units sold. Ending inventory, therefore, is assumed to consist of the oldest inventory units.

Sales = 520,000 × 240 = 124,800,000 yuan
Cost of sales = (20,000 × 110) + (200,000 × 100) + (300,000 × 90) = 49,200,000 yuan
Gross profit = 124,800,000 − 49,200,000 = 75,600,000 yuan
Ending inventory = 80,000 × 110 = 8,800,000 yuan

The following table (in thousands of yuan) summarizes the cost of sales, the ending inventory, and the cost of goods available for sale that were calculated for each of the four inventory valuation methods. Note that in the first year of operation, the total cost of goods available for sale is the same under all four methods. Subsequently, the cost of goods available for sale will typically differ because beginning inventories will differ. Also

shown is the gross profit figure for each of the four methods. Because the cost of a kg of soap declined over the period, LIFO had the highest ending inventory amount, the lowest cost of sales, and the highest gross profit. FIFO had the lowest ending inventory amount, the highest cost of sales, and the lowest gross profit.

Inventory Valuation Method	Specific ID	Weighted Average Cost	FIFO	LIFO
Cost of sales	50,600	50,267	50,800	49,200
Ending inventory	7,400	7,733	7,200	8,800
Total cost of goods available for sale	58,000	58,000	58,000	58,000
Gross profit	74,200	74,533	74,000	75,600

3.6. Periodic versus Perpetual Inventory Systems

Companies typically record changes to inventory using either a periodic inventory system or a perpetual inventory system. Under a periodic inventory system, inventory values and costs of sales are determined at the end of an accounting period. Purchases are recorded in a purchases account. The total of purchases and beginning inventory is the amount of goods available for sale during the period. The ending inventory amount is subtracted from the goods available for sale to arrive at the cost of sales. The quantity of goods in ending inventory is usually obtained or verified through a physical count of the units in inventory. Under a perpetual inventory system, inventory values and cost of sales are continuously updated to reflect purchases and sales.

Under either system, the allocation of goods available for sale to cost of sales and ending inventory is the same if the inventory valuation method used is either specific identification or FIFO. This is not generally true for the weighted average cost method. Under a periodic inventory system, the amount of cost of goods available for sale allocated to cost of sales and ending inventory may be quite different using the FIFO method compared to the weighted average cost method. Under a perpetual inventory system, inventory values and cost of sales are continuously updated to reflect purchases and sales. As a result, the amount of cost of goods available for sale allocated to cost of sales and ending inventory is similar under the FIFO and weighted average cost methods. Because of lack of disclosure and the dominance of perpetual inventory systems, analysts typically do not make adjustments when comparing a company using the weighted average cost method with a company using the FIFO method.

Using the LIFO method, the periodic and perpetual inventory systems will generally result in different allocations to cost of sales and ending inventory. Under either a perpetual or periodic inventory system, the use of the LIFO method will generally result in significantly different allocations to cost of sales and ending inventory compared to other inventory valuation methods. When inventory costs are increasing and inventory unit levels are stable or increasing, using the LIFO method will result in higher cost of sales and lower inventory carrying amounts than using the FIFO method. The higher cost of sales under LIFO will result in lower gross profit, operating income, income before taxes, and net income. Income tax expense

will be lower under LIFO, causing the company's net operating cash flow to be higher. On the balance sheet, the lower inventory carrying amount will result in lower reported current assets, working capital, and total assets. Analysts must carefully assess the financial statement implications of the choice of inventory valuation method when comparing companies that use the LIFO method with companies that use the FIFO method.

Example 3 illustrates the impact of the choice of system under LIFO.

EXAMPLE 3 Perpetual versus Periodic Inventory Systems

If GSI (the company in Example 2) had used a perpetual inventory system, the timing of purchases and sales would affect the amounts of cost of sales and inventory. Following is a record of the purchases, sales, and quantity of inventory on hand after the transaction in 2009.

Date	Purchased	Sold	Inventory on Hand
5 January	100,000 kg at 110 yuan/kg		100,000 kg
1 February		80,000 kg at 240 yuan/kg	20,000 kg
8 March	200,000 kg at 100 yuan/kg		220,000 kg
6 April		100,000 kg at 240 yuan/kg	120,000 kg
23 May		60,000 kg at 240 yuan/kg	60,000 kg
7 July		40,000 kg at 240 yuan/kg	20,000 kg
2 August	300,000 kg at 90 yuan/kg		320,000 kg
5 September		70,000 kg at 240 yuan/kg	250,000 kg
17 November		90,000 kg at 240 yuan/kg	160,000 kg
8 December		80,000 kg at 240 yuan/kg	80,000 kg
	Total goods available for sale = 58,000,000 yuan	Total sales = 124,800,000 yuan	

The amounts for total goods available for sale and sales are the same under either the perpetual or periodic system in this first year of operation. The carrying amount of the ending inventory, however, may differ because the perpetual system will apply LIFO continuously throughout the year. Under the periodic system, it was assumed that the ending inventory was composed of 80,000 units of the oldest inventory, which cost 110 yuan/kg.

What are the ending inventory, cost of sales, and gross profit amounts using the perpetual system and the LIFO method? How do these compare with the amounts using the periodic system and the LIFO method, as in Example 2?

Solution: The carrying amounts of the inventory at the different time points using the perpetual inventory system are as follows:

Date	Quantity on Hand	Quantities and Cost	Carrying Amount
5 January	100,000 kg	100,000 kg at 110 yuan/kg	11,000,000 yuan
1 February	20,000 kg	20,000 kg at 110 yuan/kg	2,200,000 yuan
8 March	220,000 kg	20,000 kg at 110 yuan/kg + 200,000 kg at 100 yuan/kg	22,200,000 yuan
6 April	120,000 kg	20,000 kg at 110 yuan/kg + 100,000 kg at 100 yuan/kg	12,200,000 yuan
23 May	60,000 kg	20,000 kg at 110 yuan/kg + 40,000 kg at 100 yuan/kg	6,200,000 yuan
7 July	20,000 kg	20,000 kg at 110 yuan/kg	2,200,000 yuan
2 August	320,000 kg	20,000 kg at 110 yuan/kg + 300,000 kg at 90 yuan/kg	29,200,000 yuan
5 September	250,000 kg	20,000 kg at 110 yuan/kg + 230,000 kg at 90 yuan/kg	22,900,000 yuan
17 November	160,000 kg	20,000 kg at 110 yuan/kg + 140,000 kg at 90 yuan/kg	14,800,000 yuan
8 December	80,000 kg	20,000 kg at 110 yuan/kg + 60,000 kg at 90 yuan/kg	7,600,000 yuan

Perpetual system

Sales = 520,000 × 240 = 124,800,000 yuan
Cost of sales = 58,000,000 – 7,600,000 = 50,400,000 yuan
Gross profit = 124,800,000 – 50,400,000 = 74,400,000 yuan
Ending inventory = 7,600,000 yuan

Periodic system from Example 2

Sales = 520,000 × 240 = 124,800,000 yuan
Cost of sales = (20,000 × 110) + (200,000 × 100) + (300,000 × 90) = 49,200,000 yuan
Gross profit = 124,800,000 – 49,200,000 = 75,600,000 yuan
Ending inventory = 80,000 × 110 = 8,800,000 yuan

In this example, the ending inventory amount is lower under the perpetual system because only 20,000 kg of the oldest inventory with the highest cost is assumed to remain in inventory. The cost of sales is higher and the gross profit is lower under the perpetual system compared to the periodic system.

3.7. Comparison of Inventory Valuation Methods

As shown in Example 2, the allocation of the total cost of goods available for sale to cost of sales on the income statement and to ending inventory on the balance sheet varies under the different inventory valuation methods. In an environment of declining inventory unit costs and constant or increasing inventory quantities, FIFO (in comparison with weighted average cost or LIFO) will allocate a higher amount of the total cost of goods available for sale to cost of sales on the income statement and a lower amount to ending inventory on the balance sheet. Accordingly, because cost of sales will be higher under FIFO, a company's gross profit, operating profit, and income before taxes will be lower.

Conversely, in an environment of rising inventory unit costs and constant or increasing inventory quantities, FIFO (in comparison with weighted average cost or LIFO) will allocate a lower amount of the total cost of goods available for sale to cost of sales on the income statement and a higher amount to ending inventory on the balance sheet. Accordingly, because cost of sales will be lower under FIFO, a company's gross profit, operating profit, and income before taxes will be higher.

The carrying amount of inventories under FIFO will more closely reflect current replacement values because inventories are assumed to consist of the most recently purchased items. The cost of sales under LIFO will more closely reflect current replacement value. LIFO ending inventory amounts are typically not reflective of current replacement value because the ending inventory is assumed to be the oldest inventory and costs are allocated accordingly. Example 4 illustrates the different results obtained by using either the FIFO or LIFO methods to account for inventory.

EXAMPLE 4 Impact of Inflation Using LIFO Compared to FIFO

Company L and Company F are identical in all respects except that Company L uses the LIFO method and Company F uses the FIFO method. Each company has been in business for five years and maintains a base inventory of 2,000 units each year. Each year, except the first year, the number of units purchased equaled the number of units sold. Over the five year period, unit sales increased 10 percent each year and the unit purchase and selling prices increased at the beginning of each year to reflect inflation of 4 percent per year. In the first year, 20,000 units were sold at a price of $15.00 per unit and the unit purchase price was $8.00.

1. What was the end of year inventory, sales, cost of sales, and gross profit for each company for each of the five years?
2. Compare the inventory turnover ratios (based on ending inventory carrying amounts) and gross profit margins over the five year period and between companies.

Note that if the company sold more units than it purchased in a year, inventory would decrease. This is referred to as LIFO liquidation. The cost of sales of the units sold in excess of those purchased would reflect the inventory carrying amount. In this example, each unit sold in excess of those purchased would have a cost of sales of $8 and a higher gross profit.

Solution to 1:

Company L Using LIFO	Year 1	Year 2	Year 3	Year 4	Year 5
Ending inventory[a]	$ 16,000	$ 16,000	$ 16,000	$ 16,000	$ 16,000
Sales[b]	$300,000	$343,200	$392,621	$449,158	$513,837
Cost of sales[c]	160,000	183,040	209,398	239,551	274,046
Gross profit	$140,000	$160,160	$183,223	$209,607	$239,791

[a] Inventory is unchanged at $16,000 each year (2,000 units × $8). 2,000 of the units acquired in the first year are assumed to remain in inventory.
[b] Sales Year X = $(20,000 \times \$15)(1.10)^{X-1}(1.04)^{X-1}$. The quantity sold increases by 10 percent each year and the selling price increases by 4 percent each year.
[c] Cost of sales Year X = $(20,000 \times \$8)(1.10)^{X-1}(1.04)^{X-1}$. In Year 1, 20,000 units are sold with a cost of $8. In subsequent years, the number of units purchased equals the number of units sold and the units sold are assumed to be those purchased in the year. The quantity purchased increases by 10 percent each year and the purchase price increases by 4 percent each year.

Company F Using FIFO	Year 1	Year 2	Year 3	Year 4	Year 5
Ending inventory[a]	$ 16,000	$ 16,640	$ 17,306	$ 17,998	$ 18,718
Sales[b]	$300,000	$343,200	$392,621	$449,158	$513,837
Cost of sales[c]	160,000	182,400	208,732	238,859	273,326
Gross profit	$140,000	$160,800	$183,889	$210,299	$240,511

[a] Ending Inventory Year X = 2,000 units × Cost in Year X = 2,000 units $[\$8 \times (1.04)^{X-1}]$. 2,000 units of the units acquired in Year X are assumed to remain in inventory.
[b] Sales Year X = $(20,000 \times \$15)(1.10)^{X-1}(1.04)^{X-1}$
[c] Cost of sales Year 1 = $160,000 (= 20,000 units × $8). There was no beginning inventory.
Cost of sales Year X (where X ≠ 1) = Beginning inventory plus purchases less ending inventory = (Inventory at Year X–1) + $[(20,000 \times \$8)(1.10)^{X-1}(1.04)^{X-1}]$ – (Inventory at Year X) = 2,000 $(\$8)(1.04)^{X-2} + [(20,000 \times \$8)(1.10)^{X-1}(1.04)^{X-1}] - [2,000(\$8)(1.04)^{X-1}]$
For example, cost of sales Year 2 = 2,000($8) + [(20,000 × $8)(1.10)(1.04)] – [2,000 ($8)(1.04)] = $16,000 + 183,040 – 16,640 = $182,400

Solution to 2:

	Company L					Company F				
Year	1	2	3	4	5	1	2	3	4	5
Inventory turnover	10.0	11.4	13.1	15.0	17.1	10.0	11.0	12.1	13.3	14.6
Gross profit margin (%)	46.7	46.7	46.7	46.7	46.7	46.7	46.9	46.8	46.8	46.8

Inventory turnover ratio = Cost of sales ÷ Ending inventory. The inventory turnover ratio increased each year for both companies because the units sold increased, whereas the units in ending inventory remained unchanged. The increase in the inventory turnover ratio is higher for Company L because Company L's cost of sales is increasing for inflation but the inventory carrying amount is unaffected by inflation. It might appear

that a company using the LIFO method manages its inventory more effectively, but this is deceptive. Both companies have identical quantities and prices of purchases and sales and only differ in the inventory valuation method used.

Gross profit margin = Gross profit ÷ Sales. The gross profit margin is stable under LIFO because both sales and cost of sales increase at the same rate of inflation. The gross profit margin is slightly higher under the FIFO method after the first year because a proportion of the cost of sales reflects an older purchase price.

4. THE LIFO METHOD

In the United States, the LIFO method is widely used (approximately 36 percent of U.S. companies use the LIFO method). The potential income tax savings are a benefit of using the LIFO method when inventory costs are increasing. The higher cash flows due to lower income taxes may make the company more valuable because the value of a company is based on the present value of its future cash flows. Under the "LIFO conformity rule," the U.S. tax code requires that companies using the LIFO method for tax purposes must also use the LIFO method for financial reporting. Under the LIFO method, ending inventory is assumed to consist of those units that have been held the longest. This generally results in ending inventories with carrying amounts lower than current replacement costs because inventory costs typically increase over time. Cost of sales will more closely reflect current replacement costs.

If the purchase prices (purchase costs) or production costs of inventory are increasing, the income statement consequences of using the LIFO method compared to other methods will include higher cost of sales, and lower gross profit, operating profit, income tax expense, and net income. The balance sheet consequences include lower ending inventory, working capital, total assets, retained earnings, and shareholders' equity. The lower income tax paid will result in higher net cash flow from operating activities. Some of the financial ratio effects are a lower current ratio, higher debt-to-equity ratios, and lower profitability ratios.

If the purchase prices or production costs of inventory are decreasing, it is unlikely that a company will use the LIFO method for tax purposes (and therefore for financial reporting purposes due to the LIFO conformity rule) because this will result in lower cost of sales, and higher taxable income and income taxes. However, if the company had elected to use the LIFO method and cannot justify changing the inventory valuation method for tax and financial reporting purposes when inventory costs begin to decrease, the income statement, balance sheet, and ratio effects will be opposite to the effects during a period of increasing costs.

The U.S. Securities Exchange Commission (SEC) has proposed the full adoption of IFRS by all U.S. reporting companies beginning in 2014. An important consequence of this proposal would be the complete elimination of the LIFO inventory method for financial reporting and, due to the LIFO conformity rule, tax reporting by U.S. companies. As a consequence of the restatement of financial statements to the FIFO or weighted average cost method, significant immediate income tax liabilities may arise in the year of transition from the LIFO method to either the FIFO or weighted average cost method.

4.1. LIFO Reserve

For companies using the LIFO method, U.S. GAAP requires disclosure, in the notes to the financial statements or on the balance sheet, of the amount of the LIFO reserve. The **LIFO**

reserve is the difference between the reported LIFO inventory carrying amount and the inventory amount that would have been reported if the FIFO method had been used (in other words, the FIFO inventory value less the LIFO inventory value). The disclosure provides the information that analysts need to adjust a company's cost of sales (cost of goods sold) and ending inventory balance based on the LIFO method, to the FIFO method.

To compare companies using LIFO with companies not using LIFO, inventory is adjusted by adding the disclosed LIFO reserve to the inventory balance that is reported on the balance sheet. The reported inventory balance, using LIFO plus the LIFO reserve, equals the inventory that would have been reported under FIFO. Cost of sales is adjusted by subtracting the increase in the LIFO reserve during the period from the cost of sales amount that is reported on the income statement. If the LIFO reserve has declined during the period,[10] the decrease in the reserve is added to the cost of sales amount that is reported on the income statement. The LIFO reserve disclosure can be used to adjust the financial statements of a U.S. company using the LIFO method to make them comparable with a similar company using the FIFO method.

EXAMPLE 5 Inventory Conversion from LIFO to FIFO

Caterpillar Inc. (NYSE: CAT), based in Peoria, Illinois, USA, is the largest maker of construction and mining equipment, diesel and natural gas engines, and industrial gas turbines in the world. Excerpts from CAT's consolidated financial statements are shown in Exhibits 1 and 2; notes pertaining to CAT's inventories are presented in Exhibit 3. Assume tax rates of 20 percent for 2008 and 30 percent for earlier years. The assumed tax rates are based on the provision for taxes as a percentage of consolidated profits before taxes rather than the U.S. corporate statutory tax rate of 35 percent.

1. What inventory values would CAT report for 2008, 2007, and 2006 if it had used the FIFO method instead of the LIFO method?
2. What amount would CAT's cost of goods sold for 2008 and 2007 be if it had used the FIFO method instead of the LIFO method?
3. What net income (profit) would CAT report for 2008 and 2007 if it had used the FIFO method instead of the LIFO method?
4. By what amount would CAT's 2008 and 2007 net cash flow from operating activities decline if CAT used the FIFO method instead of the LIFO method?
5. What is the cumulative amount of income tax savings that CAT has generated through 2008 by using the LIFO method instead of the FIFO method?
6. What amount would be added to CAT's retained earnings (profit employed in the business) at 31 December 2008 if CAT had used the FIFO method instead of the LIFO method?
7. What would be the change in Cat's cash balance if CAT had used the FIFO method instead of the LIFO method?
8. Calculate and compare the following for 2008 under the LIFO method and the FIFO method: inventory turnover ratio, days of inventory on hand, gross profit margin, net profit margin, return on assets, current ratio, and total liabilities-to-equity ratio.

[10] This typically results from a reduction in inventory units and is referred to as LIFO liquidation. LIFO liquidation is discussed in Section 4.2.

EXHIBIT 1 Caterpillar Inc. Consolidated Results of Operation (US$ millions)

For the Years Ended 31 December	2008	2007	2006
Sales and revenues:			
Sales of Machinery and Engines	48,044	41,962	38,869
Revenue of Financial Products	3,280	2,996	2,648
Total sales and revenues	51,324	44,958	41,517
Operating costs:			
Cost of goods sold	38,415	32,626	29,549
⋮	⋮	⋮	⋮
Interest expense of Financial Products	1,153	1,132	1,023
⋮	⋮	⋮	⋮
Total operating costs	46,876	40,037	36,596
Operating profit	4,448	4,921	4,921
Interest expense excluding Financial Products	274	288	274
Other income (expense)	299	320	214
Consolidated profit before taxes	4,473	4,953	4,861
Provision for income taxes	953	1,485	1,405
Profit of consolidated companies	3,520	3,468	3,456
Equity in profit of unconsolidated affiliated companies	37	73	81
Profit	3,557	3,541	3,537

EXHIBIT 2 Caterpillar Inc. Consolidated Financial Position (US$ millions)

Year Ended 31 December	2008	2007	2006
Assets			
Current assets:			
Cash and short-term investments	2,736	1,122	530
⋮	⋮	⋮	⋮
Inventories	8,781	7,204	6,351
Total current assets	31,633	25,477	23,663
⋮	⋮	⋮	⋮
Total assets	67,782	56,132	51,449

(*continued*)

EXHIBIT 2 (Continued)

Liabilities			
Total current liabilities	26,069	22,245	19,822
⋮	⋮	⋮	⋮
Total liabilities	61,171	47,249	44,590
Redeemable non controlling interest (Note 25)	524		
Stockholders' equity			
Common stock of $1.00 par value:			
Authorized shares: 900,000,000			
Issued shares (2008, 2007 and 2006 – 814,894,624) at paid-in amount	3,057	2,744	2,465
Treasury stock (2008 – 213,367,983 shares; 2007 – 190,908,490 shares and 2006 – 169,086,448 shares) at cost	(11,217)	(9,451)	(7,352)
Profit employed in the business	19,826	17,398	14,593
Accumulated other comprehensive income	(5,579)	(1,808)	(2,847)
Total stockholders' equity	6,087	8,883	6,859
Total liabilities and stockholders' equity	67,782	56,132	51,449

EXHIBIT 3 Caterpillar Inc. Selected Notes to Consolidated Financial Statements

Note 1. Operations and Summary of Significant Accounting Policies
D. Inventories
Inventories are stated at the lower of cost or market. Cost is principally determined using the last-in, first-out (LIFO) method. The value of inventories on the LIFO basis represented about 70% of total inventories at December 31, 2008 and about 75% of total inventories at December 31, 2007 and 2006.

If the FIFO (first-in, first-out) method had been in use, inventories would have been $3,183 million, $2,617 million, and $2,403 million higher than reported at December 31, 2008, 2007, and 2006, respectively.

Note 9. Inventories

Year Ended 31 December (millions of dollars)	2008	2007	2006
Raw Materials	3,356	2,990	2,698
Work-in-process	1,107	863	591
Finished goods	4,022	3,066	2,785
Supplies	296	285	277
Total inventories	8,781	7,204	6,351

We had long-term material purchase obligations of approximately $363 million at December 31, 2008.

Solution to 1:

31 December (millions of dollars)	2008	2007	2006
Total inventories (LIFO method)	8,781	7,204	6,351
From Note 1. D (LIFO reserve)	3,183	2,617	2,403
Total inventories (FIFO method)	11,964	9,821	8,754

Solution to 2:

31 December (millions of dollars)	2008	2007
Cost of goods sold (LIFO method)	38,415	32,626
Less: Increase in LIFO reserve*	−566	−214
Cost of goods sold (FIFO method)	37,849	32,412

*From Note 1.D, the increase in LIFO reserve for 2008 is 566 (3,183 − 2,617) and for 2007 is 214 (2,617 − 2,403).

Solution to 3:

31 December (millions of dollars)	2008	2007
Net income (LIFO method)	3,557	3,541
Reduction in cost of goods sold (increase in operating profit)	566	214
Taxes on increased operating profit*	−113	−64
Net income (FIFO method)	4,010	3,691

*The taxes on the increased operating profit are assumed to be 113 (566 × 20%) for 2008 and 64 (214 × 30%) for 2007.

Solution to 4: The effect on a company's net cash flow from operating activities is limited to the impact of the change on income taxes paid; changes in allocating inventory costs to ending inventory and cost of goods sold does not change any cash flows except income taxes. Consequently, the effect of using FIFO on CAT's net operating cash flow from operating activities would be a decline of $113 million in 2008 and a decline of $64 million in 2007. These are the approximate incremental increases in income taxes that CAT would have incurred if the FIFO method were used instead of the LIFO method (see earlier solution to 3).

Solution to 5: Assuming tax rates of 20 percent for 2008 and 30 percent for earlier years, the cumulative amount of income tax savings that CAT has generated by using the LIFO method instead of FIFO is approximately $898 million (566 × 20% + 2,617 × 30%). Note 1.D indicates a LIFO reserve of $2,617 million at the end of 2007 and

an increase in the LIFO reserve of $566 million in 2008. Therefore, under the FIFO method, cumulative gross profits would have been $2,617 million higher as of the end of 2007 and an additional $566 million higher as of the end of 2008. The estimated tax savings would be higher (lower) if income tax rates were assumed to be higher (lower).

Solution to 6: The amount that would be added to CAT's retained earnings is $2,285 million (3,183 − 898) or (566 × 80% + 2,617 × 70%). This represents the cumulative increase in operating profit due to the decrease in cost of goods sold (LIFO reserve of $3,183 million) less the assumed taxes on that profit ($898 million, see solution to 5). Some analysts advocate ignoring the tax consequences and suggest simply adjusting inventory and equity by the same amount. They argue that the reported equity of the firm is understated by the difference between the current value of its inventory (approximated by the value under FIFO) and its carrying value (value under LIFO).

Solution to 7: Under the FIFO method, an additional $898 million is assumed to have been incurred for tax expenses. If CAT switched to FIFO, it would have an additional tax liability of $898 million as a consequence of the restatement of financial statements to the FIFO method. This illustrates the significant immediate income tax liabilities that may arise in the year of transition from the LIFO method to the FIFO method. If CAT switched to FIFO for tax purposes, there would be a cash outflow for the additional taxes. However, because the company is not actually converting at this point for either tax or reporting purposes, it is appropriate to reflect a deferred tax liability rather than a reduction in cash. In this case for analysis purposes, under FIFO, inventory would increase by $3,153 million, equity by $2,285 million, and noncurrent liabilities by $898 million.

Solution to 8: CAT's ratios for 2008 under the LIFO and FIFO methods are as follows:

	LIFO	FIFO
Inventory turnover	4.81	3.47
Days of inventory on hand	76.1 days	105.5 days
Gross profit margin	20.04%	21.22%
Net profit margin	6.93%	7.81%
Return on assets	5.74%	6.18%
Current ratio	1.21	1.34
Total liabilities-to-equity ratio	10.05	7.41

Inventory turnover ratio = Cost of goods sold ÷ Average inventory
LIFO = 4.81 = 38,415 ÷ [(8,781 + 7,204) ÷ 2]
FIFO = 3.47 = 37,849 ÷ [(11,964 + 9,821) ÷ 2]

The ratio is higher under LIFO because, given rising inventory costs, cost of goods sold will be higher and inventory carrying amounts will be lower under LIFO. If an analyst made no adjustment for the difference in inventory methods, it might appear that a company using the LIFO method manages its inventory more effectively.

Days of inventory on hand = Number of days in period ÷ Inventory turnover ratio
LIFO = 76.1 days = (366 days* ÷ 4.81)
FIFO = 105.5 days = (366 days ÷ 3.47)

*2008 was a leap year.

Without adjustment, a company using the LIFO method might appear to manage its inventory more effectively. This is primarily the result of the lower inventory carrying amounts under LIFO.

Gross profit margin = Gross profit ÷ Total revenue
LIFO = 20.04 percent = [(48,044 − 38,415) ÷ 48,044]
FIFO = 21.22 percent = [(48,044 − 37,849) ÷ 48,044]

Revenue of financial products is excluded from the calculation of gross profit. Gross profit is sales of machinery and engines less cost of goods sold. The gross profit margin is lower under LIFO because the cost of goods sold is higher given rising inventory costs.

Net profit margin = Net income ÷ Total revenue
LIFO = 6.93 percent = (3,557 ÷ 51,324)
FIFO = 7.81 percent = (4,010 ÷ 51,324)

The net profit margin is lower under LIFO because the cost of goods sold is higher. The absolute percentage difference is less than that of the gross profit margin because of income taxes on the increased income reported under FIFO and because net income is divided by total revenue including sales of machinery and engines and revenue of financial products. The company appears to be less profitable under LIFO.

Return on assets = Net income ÷ Average total assets
LIFO = 5.74 percent = 3,557 ÷ [(67,782 + 56,132) ÷ 2]
FIFO = 6.18 percent = 4,010 ÷ [(67,782 + 3,183) + (56,132 + 2,617) ÷ 2]

The total assets under FIFO are the LIFO total assets increased by the LIFO reserve. The return on assets is lower under LIFO because the lower net income due to the higher cost of goods sold has a greater impact on the ratio than the lower total assets, which are the result of lower inventory carrying amounts. The company appears to be less profitable under LIFO.

Current ratio = Current assets ÷ Current liabilities
LIFO = 1.21 = (31,633 ÷ 26,069)
FIFO = 1.34 = [(31,633 + 3,183) ÷ 26,069]

The current ratio is lower under LIFO primarily because of lower inventory carrying amount. The company appears to be less liquid under LIFO.

Total liabilities-to-equity ratio = Total liabilities ÷ Total shareholders' equity
LIFO = 10.05 = (61,171 ÷ 6,087)
FIFO = 7.41 = [(61,171 +898) ÷ (6,087 + 2,285)]

The ratio is higher under LIFO because the addition to retained earnings under FIFO reduces the ratio. The company appears to be more highly leveraged under LIFO.

In summary, the company appears to be less profitable, less liquid, and more highly leveraged under LIFO. Yet, because a company's value is based on the present value of future cash flows, LIFO will increase the company's value because the cash flows are higher in earlier years due to lower taxes. LIFO is primarily used for the tax benefits it provides.

4.2. LIFO Liquidations

In periods of rising inventory unit costs, the carrying amount of inventory under FIFO will always exceed the carrying amount of inventory under LIFO. The LIFO reserve may increase over time as the result of the increasing difference between the older costs used to value inventory under LIFO and the more recent costs used to value inventory under FIFO. Also, when the number of inventory units manufactured or purchased exceeds the number of units sold, the LIFO reserve may increase as the result of the addition of new LIFO layers (the quantity of inventory units is increasing and each increase in quantity creates a new LIFO layer).

When the number of units sold exceeds the number of units purchased or manufactured, the number of units in ending inventory is lower than the number of units in beginning inventory and a company using LIFO will experience a LIFO liquidation (some of the older units held in inventory are assumed to have been sold). If inventory unit costs have been rising from period to period and LIFO liquidation occurs, this will produce an inventory-related increase in gross profits. The increase in gross profits occurs because of the lower inventory carrying amounts of the liquidated units. The lower inventory carrying amounts are used for cost of sales and the sales are at the current prices. The gross profit on these units is higher than the gross profit that would be recognized using more current costs. These inventory profits caused by a LIFO liquidation, however, are one-time events and are not sustainable.

LIFO liquidations can occur for a variety of reasons. The reduction in inventory levels may be outside of management's control; for example, labor strikes at a supplier may force a company to reduce inventory levels to meet customer demands. In periods of economic recession or when customer demand is declining, a company may choose to reduce existing inventory levels rather than invest in new inventory. Analysts should be aware that management can potentially manipulate and inflate their company's reported gross profits and net income at critical times by intentionally reducing inventory quantities and liquidating older layers of LIFO inventory (selling some units of beginning inventory). During economic downturns, LIFO liquidation may result in higher gross profit than would otherwise be realized. If LIFO layers of inventory are temporarily depleted and not replaced by fiscal year-end, LIFO liquidation will occur, resulting in unsustainable higher gross profits. Therefore, it is imperative to review the LIFO reserve footnote disclosures to determine if LIFO liquidation has occurred. A decline in the LIFO reserve from the prior period may be indicative of LIFO liquidation.

EXAMPLE 6 LIFO Liquidation: Financial Statement Impact and Disclosure

The following excerpts are from the 2007 10-K of Sturm Ruger & Co., Inc. (NYSE: RGR):

> Item 7—Management's Discussion and Analysis of Financial Condition and Results of Operations
>
> "Reduction in inventory generated positive cash flow for the Company, partially offset by the tax impact of the consequent LIFO liquidation, which generated negative cash flow as it created taxable income, resulting in higher tax payments."

Balance Sheets

Year Ended December 31 (In thousands, except per share data)	2007	2006
Assets		
Current Assets		
⋮	⋮	⋮
Gross inventories:	64,330	87,477
Less LIFO reserve	(46,890)	(57,555)
Less excess and obsolescence reserve	(4,143)	(5,516)
Net inventories	13,297	24,406
⋮	⋮	⋮
Total Current Assets	73,512	81,785
⋮	⋮	⋮
Total Assets	$101,882	$117,066

Statements of Income

Year Ended December 31 (In thousands, except per share data)	2007	2006
⋮	⋮	⋮
Total net sales	156,485	167,620
Cost of products sold	117,186	139,610
Gross profit	39,299	28,010
Expenses:		
⋮	⋮	⋮
Total expenses	30,184	27,088

Operating income	9,115	922
⋮	⋮	⋮
Total other income, net	7,544	921
Income before income taxes	16,659	1,843
Income taxes	6,330	739
Net income	$10,329	$1,104
Basic and Diluted Earnings Per Share	$0.46	$0.04
Cash Dividends Per Share	$0.00	$0.00

Notes to Financial Statements
1. Significant Accounting Policies
⋮
Inventories
Inventories are stated at the lower of cost, principally determined by the last-in, first-out (LIFO) method, or market. If inventories had been valued using the first-in, first-out method, inventory values would have been higher by approximately $46.9 million and $57.6 million at December 31, 2007 and 2006, respectively. During 2007 and 2006, inventory quantities were reduced. This reduction resulted in a liquidation of LIFO inventory quantities carried at lower costs prevailing in prior years as compared with the current cost of purchases, the effect of which decreased costs of products sold by approximately $12.1 million and $7.1 million in 2007 and 2006, respectively. There was no LIFO liquidation in 2005.

1. What is the decrease in the LIFO reserve on the balance sheet? How much less was the cost of products sold in 2007, because of LIFO liquidation, according to the note disclosure?
2. How did the decreased cost of products sold compare to operating income in 2007?
3. How did the LIFO liquidation affect cash flows?

Solution to 1: The LIFO reserve decreased by $10,665 thousands (57,555 – 46,890) in 2007. The LIFO liquidation decreased costs of products sold by approximately $12.1 million in 2007. The decrease in the LIFO reserve is indicative of a LIFO liquidation but is not sufficient to determine the exact amount of the LIFO liquidation.

Solution to 2: The decreased cost of products sold of approximately $12.1 million exceeds the operating income of approximately $9 million.

Solution to 3: The LIFO liquidation (reduction in inventory) generated positive cash flow. The positive cash flow effect of the LIFO liquidation was reduced by its tax impact. The LIFO liquidation resulted in higher taxable income and higher tax payments.

EXAMPLE 7 LIFO Liquidation Illustration

Reliable Fans, Inc. (RF), a hypothetical company, sells high quality fans and has been in business since 2006. Exhibit 4 provides relevant data and financial statement information about RF's inventory purchases and sales of fan inventory for the years 2006 through 2009. RF uses the LIFO method and a periodic inventory system. What amount of RF's 2009 gross profit is due to LIFO liquidation?

EXHIBIT 4 RF Financial Statement Information under LIFO

	2006	2007	2008	2009
Fans units purchased	12,000	12,000	12,000	12,000
Purchase cost per fan	$100	$105	$110	$115
Fans units sold	10,000	12,000	12,000	13,000
Sales price per fan	$200	$205	$210	$215
LIFO Method				
Beginning inventory	$0	$200,000	$200,000	$200,000
Purchases	1,200,000	1,260,000	1,320,000	1,380,000
Goods available for sale	1,200,000	1,460,000	1,520,000	1,580,000
Ending inventory*	(200,000)	(200,000)	(200,000)	(100,000)
Cost of goods sold	$1,000,000	1,260,000	$1,320,000	$1,480,000
Income Statement				
Sales	$2,000,000	$2,460,000	$2,520,000	$2,795,000
Cost of goods sold	1,000,000	1,260,000	1,320,000	1,480,000
Gross profit	$1,000,0	$1,200,000	$1,200,000	$1,315,000
Balance Sheet				
Inventory	$200,000	$200,000	$200,000	$100,000

*Ending inventory 2006, 2007, and 2008 = (2,000 × $100)
Ending inventory 2009 = (1,000 × $100)

Solution: RF's reported gross profit for 2009 is $1,315,000. RF's 2009 gross profit due to LIFO liquidation is $15,000. If RF had purchased 13,000 fans in 2009 rather than 12,000 fans, the cost of goods sold under the LIFO method would have been $1,495,000 (13,000 fans sold at $115.00 purchase cost per fan), and the reported gross profit would have been $1,300,000 ($2,795,000 less $1,495,000). The gross profit due to LIFO liquidation is $15,000 ($1,315,000 reported gross profit less the $1,300,000 gross profit that would have been reported without the LIFO liquidation). The gross profit due to LIFO liquidation may also be determined by multiplying the number of units liquidated times the difference between the replacement cost of the units liquidated and their historical purchase cost. For RF, 1,000 units times $15 ($115 replacement cost per fan less the $100 historical cost per fan) equals the $15,000 gross profit due to LIFO liquidation.

5. INVENTORY METHOD CHANGES

Companies on rare occasion change inventory valuation methods. Under IFRS, a change in method is acceptable only if the change "results in the financial statements providing reliable and more relevant information about the effects of transactions, other events, or conditions on the business entity's financial position, financial performance, or cash flows."[11] If the change is justifiable, then it is applied retrospectively.

This means that the change is applied to comparative information for prior periods as far back as is practicable. The cumulative amount of the adjustments relating to periods prior to those presented in the current financial statements is made to the opening balance of each affected component of equity (i.e., retained earnings or comprehensive income) of the earliest period presented. For example, if a company changes its inventory method in 2009 and it presents three years of comparative financial statements (2007, 2008, and 2009) in its annual report, it would retrospectively reflect this change as far back as possible. The change would be reflected in the three years of financial statements presented; the financial statements for 2007 and 2008 would be restated as if the new method had been used in these periods, and the cumulative effect of the change on periods prior to 2007 would be reflected in the 2007 opening balance of each affected component of equity. An exemption to the restatement applies when it is impracticable to determine either the period-specific effects or the cumulative effect of the change.

Under U.S. GAAP, the conditions to make a change in accounting policy and the accounting for a change in inventory policy are similar to IFRS.[12] U.S. GAAP, however, requires companies to thoroughly explain why the newly adopted inventory accounting method is superior and preferable to the old method. If a company decides to change from LIFO to another inventory method, U.S. GAAP requires a retrospective restatement as described earlier. However, if a company decides to change to the LIFO method, it must do so on a prospective basis and retrospective adjustments are not made to the financial statements. The carrying amount of inventory under the old method becomes the initial LIFO layer in the year of LIFO adoption.

Analysts should carefully evaluate changes in inventory valuation methods. Although the stated reason for the inventory change may be to better match inventory costs with sales revenue (or some other plausible business explanation), the real underlying (and unstated) purpose may be to reduce income tax expense (if changing to LIFO from FIFO or average cost), or to increase reported profits (if changing from LIFO to FIFO or average cost). As always, the choice of inventory valuation method can have a significant impact on financial statements and the financial ratios that are derived from them. As a consequence, analysts must carefully consider the impact of the change in inventory valuation methods and the differences in inventory valuation methods when comparing a company's performance with that of its industry or its competitors.

6. INVENTORY ADJUSTMENTS

Significant financial risk can result from the holding of inventory. The cost of inventory may not be recoverable due to spoilage, obsolescence, or declines in selling prices. IFRS state that

[11] IAS 8 [Accounting Policies, Changes in Accounting Estimates and Errors].
[12] FASB ASC Topic 250 [Accounting Changes and Error Corrections].

inventories shall be measured (and carried on the balance sheet) at the lower of cost and net realizable value.[13] **Net realizable value** is the estimated selling price in the ordinary course of business less the estimated costs necessary to make the sale and estimated costs to get the inventory in condition for sale. The assessment of net realizable value is typically done item by item or by groups of similar or related items. In the event that the value of inventory declines below the carrying amount on the balance sheet, the inventory carrying amount must be written down to its net realizable value[14] and the loss (reduction in value) recognized as an expense on the income statement. This expense may be included as part of cost of sales or reported separately.

In each subsequent period, a new assessment of net realizable value is made. Reversal (limited to the amount of the original write-down) is required for a subsequent increase in value of inventory previously written down. The reversal of any write-down of inventories is recognized as a reduction in cost of sales (reduction in the amount of inventories recognized as an expense).

U.S. GAAP specify the lower of cost or market to value inventories.[15] This is broadly consistent with IFRS with one major difference: U.S. GAAP prohibit the reversal of write-downs. Market value is defined as current replacement cost subject to upper and lower limits. Market value cannot exceed net realizable value (selling price less reasonably estimated costs of completion and disposal). The lower limit of market value is net realizable value less a normal profit margin. Any write-down reduces the value of the inventory, and the loss in value (expense) is generally reflected in the income statement in cost of goods sold.

An inventory write-down reduces both profit and the carrying amount of inventory on the balance sheet and thus has a negative effect on profitability, liquidity, and solvency ratios. However, activity ratios (for example, inventory turnover and total asset turnover) will be positively affected by a write-down because the asset base (denominator) is reduced. The negative impact on some key ratios, due to the decrease in profit, may result in the reluctance by some companies to record inventory write-downs unless there is strong evidence that the decline in the value of inventory is permanent. This is especially true under U.S. GAAP where reversal of a write-down is prohibited.

IAS 2 [Inventories] does not apply to the inventories of producers of agricultural and forest products and minerals and mineral products, nor to commodity broker–traders. These inventories may be measured at net realizable value (fair value less costs to sell and complete) according to well-established industry practices. If an active market exists for these products, the quoted market price in that market is the appropriate basis for determining the fair value of that asset. If an active market does not exist, a company may use market determined prices or values (such as the most recent market transaction price) when available for determining fair value. Changes in the value of inventory (increase or decrease) are recognized in profit or loss in the period of the change. U.S. GAAP is similar to IFRS in its treatment of inventories of agricultural and forest products and mineral ores. Mark-to-market inventory accounting is allowed for bullion.

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[13] IAS 2 paragraphs 28–33 [Inventories – Net realizable value].

[14] Frequently, rather than writing inventory down directly, an inventory valuation allowance account is used. The allowance account is netted with the inventory accounts to arrive at the carrying amount that appears on the balance sheet.

[15] FASB ASC Section 330-10-35 [Inventory – Overall – Subsequent Measurement].

EXAMPLE 8 Accounting for Declines and Recoveries of Inventory Value

Acme Enterprises, a hypothetical company, manufactures computers and prepares its financial statements in accordance with IFRS. In 2008, the cost of ending inventory was €5.2 million but its net realizable value was €4.9 million. The current replacement cost of the inventory is €4.7 million. This figure exceeds the net realizable value less a normal profit margin. In 2009, the net realizable value of Acme's inventory was €0.5 million greater than the carrying amount.

1. What was the effect of the write-down on Acme's 2008 financial statements? What was the effect of the recovery on Acme's 2009 financial statements?
2. Under U.S. GAAP, what would be the effects of the write-down on Acme's 2008 financial statements and of the recovery on Acme's 2009 financial statements?
3. What would be the effect of the recovery on Acme's 2009 financial statements if Acme's inventory were agricultural products instead of computers?

Solution to 1: For 2008, Acme would write its inventory down to €4.9 million and record the change in value of €0.3 million as an expense on the income statement. For 2009, Acme would increase the carrying amount of its inventory and reduce the cost of sales by €0.3 million (the recovery is limited to the amount of the original write-down).

Solution to 2: Under U.S. GAAP, for 2008, Acme would write its inventory down to €4.7 million and typically include the change in value of €0.5 million in cost of goods sold on the income statement. For 2009, Acme would not reverse the write-down.

Solution to 3: If Acme's inventory were agricultural products instead of computers, inventory would be measured at net realizable value and Acme would, therefore, increase inventory by and record a gain of €0.5 million for 2009.

Analysts should consider the possibility of an inventory write-down because the impact on a company's financial ratios may be substantial. The potential for inventory write-downs can be high for companies in industries where technological obsolescence of inventories is a significant risk. Analysts should carefully evaluate prospective inventory impairments (as well as other potential asset impairments) and their potential effects on the financial ratios when debt covenants include financial ratio requirements. The breaching of debt covenants can have a significant impact on a company.

Companies that use specific identification, weighted average cost, or FIFO methods are more likely to incur inventory write-downs than companies that use the LIFO method. Under the LIFO method, the *oldest* costs are reflected in the inventory carrying amount on the balance sheet. Given increasing inventory costs, the inventory carrying amounts under the LIFO method are already conservatively presented at the oldest and lowest costs. Thus, it is far less likely that inventory write-downs will occur under LIFO—and if a write-down does occur, it is likely to be of a lesser magnitude.

EXAMPLE 9 Effect of Inventory Write-Downs on Financial Ratios

The Volvo Group (OMX Nordic Exchange: VOLV B), based in Göteborg, Sweden, is a leading supplier of commercial transport products such as construction equipment, trucks, buses, and drive systems for marine and industrial applications as well as aircraft engine components.[16] Excerpts from Volvo's consolidated financial statements are shown in Exhibits 5 and 6. Notes pertaining to Volvo's inventories are presented in Exhibit 7.

1. What inventory values would Volvo have reported for 2008, 2007, and 2006 if it had no allowance for inventory obsolescence?
2. Assuming that any changes to the allowance for inventory obsolescence are reflected in the cost of sales, what amount would Volvo's cost of sales be for 2008 and 2007 if it had not recorded inventory write-downs in 2008 and 2007?
3. What amount would Volvo's profit (net income) be for 2008 and 2007 if it had not recorded inventory write-downs in 2008 and 2007? Assume tax rates of 28.5 percent for 2008 and 30 percent for 2007.
4. What would Volvo's 2008 profit (net income) have been if it had reversed all past inventory write-downs in 2008? This question is independent of 1, 2, and 3. Assume a tax rate of 28.5 percent for 2008.
5. Compare the following for 2008 based on the numbers as reported and those assuming no allowance for inventory obsolescence as in questions 1, 2, and 3: inventory turnover ratio, days of inventory on hand, gross profit margin, and net profit margin.
6. CAT (Example 5) has no disclosures indicative of either inventory write-downs or a cumulative allowance for inventory obsolescence in its 2008 financial statements. Provide a conceptual explanation as to why Volvo incurred inventory write-downs for 2008 but CAT did not.

EXHIBIT 5 Volvo Group Consolidated Income Statements (Swedish krona in millions, except per share data)

For the Years Ended 31 December	2008	2007	2006
Net sales	303,667	285,405	258,835
Cost of sales	(237,578)	(219,600)	(199,054)
Gross income	66,089	65,805	59,781
⋮	⋮	⋮	⋮
Operating income	15,851	22,231	20,399
Interest income and similar credits	1,171	952	666
Income expenses and similar charges	(1,935)	(1,122)	(585)

(*continued*)

[16]As of this writing, the Volvo line of automobiles is not under the control and management of the Volvo Group.

EXHIBIT 5 (Continued)

Other financial income and expenses	(1,077)	(504)	(181)
Income after financial items	14,010	21,557	20,299
Income taxes	(3,994)	(6,529)	(3,981)
Income for the period	10,016	15,028	16,318
Attributable to:			
Equity holders of the parent company	9,942	14,932	16,268
Minority interests	74	96	50
Profit	10,016	15,028	16,318

EXHIBIT 6 Volvo Group Consolidated Balance Sheets (Swedish krona in millions)

Year Ended 31 December	2008	2007	2006
Assets			
Total noncurrent assets	196,381	162,487	124,039
Current assets:			
Inventories	55,045	43,645	34,211
⋮	⋮	⋮	⋮
Cash and cash equivalents	17,712	14,544	10,757
Total current assets	176,038	159,160	134,388
Total assets	372,419	321,647	258,427
Shareholders' equity and liabilities			
Shareholders' equity:			
Share capital	2,554	2,554	2,554
Reserves	5,078	2,146	1,664
Retained earnings	66,436	62,570	66,418
Income for the period	9,942	14,932	16,268
Equity attributable to equity holders of the parent company	84,010	82,202	86,904
Minority interests	630	579	284
Total shareholders' equity	84,640	82,781	87,188
Total noncurrent provisions	29,031	26,202	19,864
Total noncurrent liabilities	92,608	71,729	45,457
Total current provisions	11,750	10,656	9,799
Total current liabilities	154,390	130,279	96,119
Total shareholders' equity and liabilities	372,419	321,647	258,427

EXHIBIT 7 Volvo Group Selected Notes to Consolidated Financial Statements

NOTE 1. ACCOUNTING PRINCIPLES
Inventories
Inventories are reported at the lower of cost, in accordance with the first-in, first-out method (FIFO), or net realizable value. The acquisition value is based on the standard cost method, including costs for all direct manufacturing expenses and the apportionable share of the capacity and other related manufacturing costs. The standard costs are tested regularly and adjustments are made based on current conditions. Costs for research and development, selling, administration, and financial expenses are not included. Net realizable value is calculated as the selling price less costs attributable to the sale.

NOTE 2. KEY SOURCES OF ESTIMATION UNCERTAINTY
Inventory obsolescence
Inventories are reported at the lower of cost, in accordance with the first-in, first-out method (FIFO), or net realizable value. The estimated net realizable value includes management consideration of outdated articles, overstocking, physical damages, inventory-lead-time, handling, and other selling costs. If the estimated net realizable value is lower than cost, a valuation allowance is established for inventory obsolescence. The total inventory value, net of inventory obsolescence allowance, is per 31 December 2008, SEK (in millions) 55,045.

NOTE 18. INVENTORIES

Year Ended 31 December (millions of krona)	2008	2007	2006
Finished products	39,137	28,077	20,396
Production materials, etc.	15,908	15,568	13,815
Total	**55,045**	**43,645**	**34,211**

Increase (decrease) in allowance for inventory obsolescence

Year Ended 31 December (millions of krona)	2008	2007	2006
Balance sheet, 31 December, preceding year	2,837	2,015	2,401
Increase in allowance for inventory obsolescence charged to income	1,229	757	186
Scrapping	(325)	(239)	(169)
Translation differences	305	2	(130)
Reclassifications, etc.	(524)	302	(273)
Balance sheet, 31 December	3,522	2,837	2,015

Solution to 1:

Year Ended 31 December (Swedish krona in millions)	2008	2007	2006
Total inventories, net	55,045	43,645	34,211
From Note 18 (allowance for obsolescence)	3,522	2,837	2,015
Total inventories (without allowance)	58,567	46,482	36,226

Solution to 2:

Year Ended 31 December (Swedish krona in millions)	2008	2007
Cost of sales	237,578	219,600
Less: Increase in allowance for obsolescence*	−685	−822
Cost of sales (without allowance)	236,893	218,778

*From Note 18, the increase in allowance for obsolescence for 2008 is 685 (3,522 – 2,837) and for 2007 is 822 (2,837 – 2,015).

Solution to 3:

Year Ended 31 December (Swedish krona in millions)	2008	2007
Profit (net income)	10,016	15,028
Reduction in cost of sales (increase in operating profit)	685	822
Taxes on increased operating profit*	−195	−247
Profit (without allowance)	10,506	15,603

*Taxes on the increased operating profit are assumed to be 195 (685 × 28.5%) for 2008 and 247 (822 × 30%) for 2007.

Solution to 4:

Year Ended 31 December (Swedish krona in millions)	2008
Profit (net income)	10,016
Reduction in cost of sales (increase in operating profit)	3,522
Taxes on increased operating profit*	−1,004
Profit (after recovery of previous write-downs)	12,534

*Taxes on the increased operating profit are assumed to be 1,004 (3,522 × 28.5%) for 2008.

Solution to 5: The Volvo Group's financial ratios for 2008 with the allowance for inventory obsolescence and without the allowance for inventory obsolescence are as follows:

	With Allowance (as Reported)	Without Allowance (Adjusted)
Inventory turnover ratio	4.81	4.51
Days of inventory on hand	76.1	81.2
Gross profit margin	21.76%	21.99%
Net profit margin	3.30%	3.46%

Inventory turnover ratio = Cost of sales ÷ Average inventory
With allowance (as reported) = 4.81 = 237,578 ÷ [(55,045 + 43,645) ÷ 2]
Without allowance (adjusted) = 4.51 = 236,893 ÷ [(58,567 + 46,482) ÷ 2]

Inventory turnover is higher based on the numbers as reported because cost of sales will be higher (assuming inventory write-downs are reported as part of cost of sales) and inventory carrying amounts will be lower with an allowance for inventory obsolescence. The company appears to manage its inventory more efficiently when it has inventory write-downs.

Days of inventory on hand = Number of days in period ÷ Inventory turnover ratio
With allowance (as reported) = 76.1 days = (366 days* ÷ 4.81)
Without allowance (adjusted) = 81.2 days = (366 days ÷ 4.51)

*2008 was a leap year.

Days of inventory on hand are lower based on the numbers as reported because the inventory turnover is higher. A company with inventory write-downs might appear to manage its inventory more effectively. This is primarily the result of the lower inventory carrying amounts.

Gross profit margin = Gross income ÷ Net sales
With allowance (as reported) = 21.76 percent = (66,089 ÷ 303,667)
Without allowance (adjusted) = 21.99 percent = [(66,089 + 685) ÷ 303,667]

The gross profit margin is lower with inventory write-downs because the cost of sales is higher. This assumes that inventory write-downs are reported as part of cost of sales.

Net profit margin = Profit ÷ Net sales
With allowance (as reported) = 3.30 percent = (10,016 ÷ 303,667)
Without allowance (adjusted) = 3.46 percent = (10,506 ÷ 303,667)

The net profit margin is lower with inventory write-downs because the cost of sales is higher (assuming the inventory write-downs are reported as part of cost of sales). The absolute percentage difference is less than that of the gross profit margin because of income taxes on the increased income without write-downs.

The profitability ratios (gross profit margin and net profit margin) for Volvo Group would have been slightly better (higher) for 2008 if the company had not recorded inventory write-downs. The activity ratio (inventory turnover ratio) would appear less attractive without the write-downs. The inventory turnover ratio is slightly better (higher) with inventory write-downs because inventory write-downs increase cost of sales (numerator) and decrease the average inventory (denominator), making inventory management appear more efficient with write-downs.

Solution to 6: CAT uses the LIFO method whereas Volvo uses the FIFO method. Given increasing inventory costs, companies that use the FIFO inventory method are far more likely to incur inventory write-downs than those companies that use the LIFO method. This is because under the LIFO method, the inventory carrying amounts reflect the *oldest* costs and therefore the *lowest* costs given increasing inventory costs. Because inventory carrying amounts under the LIFO method are already conservatively presented, it is less likely that inventory write-downs will occur.

7. EVALUATION OF INVENTORY MANAGEMENT

The choice of inventory valuation method impacts the financial statements. The financial statement items impacted include cost of sales, gross profit, net income, inventories, current assets, and total assets. Therefore, the choice of inventory valuation method also affects financial

ratios that contain these items. Ratios such as current ratio, return on assets, gross profit margin, and inventory turnover are impacted. As a consequence, analysts must carefully consider inventory valuation method differences when evaluating a company's performance over time or when comparing its performance with the performance of the industry or industry competitors. Additionally, the financial statement items and ratios may be impacted by adjustments of inventory carrying amounts to net realizable value or current replacement cost.

7.1. Presentation and Disclosure

Disclosures are useful when analyzing a company. IFRS require the following financial statement disclosures concerning inventory:

a. The accounting policies adopted in measuring inventories, including the cost formula (inventory valuation method) used.
b. The total carrying amount of inventories and the carrying amount in classifications (for example, merchandise, raw materials, production supplies, work in progress, and finished goods) appropriate to the entity.
c. The carrying amount of inventories carried at fair value less costs to sell.
d. The amount of inventories recognized as an expense during the period (cost of sales).
e. The amount of any write-down of inventories recognized as an expense in the period.
f. The amount of any reversal of any write-down that is recognized as a reduction in cost of sales in the period.
g. The circumstances or events that led to the reversal of a write-down of inventories.
h. The carrying amount of inventories pledged as security for liabilities.

Inventory-related disclosures under U.S. GAAP are very similar to the disclosures cited earlier, except that requirements (f) and (g) are not relevant because U.S. GAAP do not permit the reversal of prior-year inventory write-downs. U.S. GAAP also require disclosure of significant estimates applicable to inventories and of any material amount of income resulting from the liquidation of LIFO inventory.

7.2. Inventory Ratios

Three ratios often used to evaluate the efficiency and effectiveness of inventory management are **inventory turnover**, **days of inventory on hand**, and **gross profit margin**.[17] These ratios are directly impacted by a company's choice of inventory valuation method. Analysts should be aware, however, that many other ratios are also affected by the choice of inventory valuation method, although less directly. These include the current ratio, because inventory is a component of current assets; the return-on-assets ratio, because cost of sales is a key component in deriving net income and inventory is a component of total assets; and even the debt-to-equity ratio, because the cumulative measured net income from the inception of a business is an aggregate component of retained earnings.

The inventory turnover ratio measures the number of times during the year a company sells (i.e., turns over) its inventory. The higher the turnover ratio, the more times that inventory is sold during the year and the lower the relative investment of resources in inventory. Days

[17] *Days of inventory on hand* is also referred to as *days in inventory* and *average inventory days outstanding.*

of inventory on hand can be calculated as days in the period divided by inventory turnover. Thus, inventory turnover and days of inventory on hand are inversely related. It may be that inventory turnover, however, is calculated using average inventory in the year whereas days of inventory on hand is based on the ending inventory amount. In general, inventory turnover and the number of days of inventory on hand should be benchmarked against industry norms and compared across years.

A high inventory turnover ratio and a low number of days of inventory on hand might indicate highly effective inventory management. Alternatively, a high inventory ratio and a low number of days of inventory on hand could indicate that the company does not carry an adequate amount of inventory or that the company has written down inventory values. Inventory shortages could potentially result in lost sales or production problems in the case of the raw materials inventory of a manufacturer. To assess which explanation is more likely, analysts can compare the company's inventory turnover and sales growth rate with those of the industry and review financial statement disclosures. Slower growth combined with higher inventory turnover could indicate inadequate inventory levels. Write-downs of inventory could reflect poor inventory management. Minimal write-downs and sales growth rates at or above the industry's growth rates would support the interpretation that the higher turnover reflects greater efficiency in managing inventory.

A low inventory turnover ratio and a high number of days of inventory on hand relative to industry norms could be an indicator of slow-moving or obsolete inventory. Again, comparing the company's sales growth across years and with the industry and reviewing financial statement disclosures can provide additional insight.

The gross profit margin, the ratio of gross profit to sales, indicates the percentage of sales being contributed to net income as opposed to covering the cost of sales. Firms in highly competitive industries generally have lower gross profit margins than firms in industries with fewer competitors. A company's gross profit margin may be a function of its type of product. A company selling luxury products will generally have higher gross profit margins than a company selling staple products. The inventory turnover of the company selling luxury products, however, is likely to be much lower than the inventory turnover of the company selling staple products.

7.3. Financial Analysis Illustrations

IFRS and U.S. GAAP require companies to disclose, either on the balance sheet or in the notes to the financial statements, the carrying amounts of inventories in classifications suitable to the company. For manufacturing companies, these classifications might include production supplies, raw materials, work in progress, and finished goods. For a retailer, these classifications might include significant categories of merchandise or the grouping of inventories with similar attributes. These disclosures may provide signals about a company's future sales and profits.

For example, a significant increase (attributable to increases in unit volume rather than increases in unit cost) in raw materials and/or work-in-progress inventories may signal that the company expects an increase in demand for its products. This suggests an anticipated increase in sales and profit. However, a substantial increase in finished goods inventories while raw materials and work-in-progress inventories are declining may signal a decrease in demand for the company's products and hence lower future sales and profit. This may also signal a potential future write-down of finished goods inventory. Irrespective of the signal, an analyst should thoroughly investigate the underlying reasons for any significant changes in a company's raw materials, work-in-progress, and finished goods inventories.

Analysts also should compare the growth rate of a company's sales to the growth rate of its finished goods inventories, because this could also provide a signal about future sales and profits. For example, if the growth of inventories is greater than the growth of sales, this could indicate a decline in demand and a decrease in future earnings. The company may have to lower (mark down) the selling price of its products to reduce its inventory balances, or it may have to write down the value of its inventory because of obsolescence, both of which would negatively affect profits. Besides the potential for mark-downs or write-downs, having too much inventory on hand or the wrong type of inventory can have a negative financial effect on a company because it increases inventory-related expenses such as insurance, storage costs, and taxes. In addition, it means that the company has less cash and working capital available to use for other purposes.

Inventory write-downs may have a substantial impact on a company's activity, profitability, liquidity, and solvency ratios. It is critical for the analyst to be aware of industry trends toward product obsolescence and to analyze the financial ratios for their sensitivity to potential inventory impairment. Companies can minimize the impact of inventory write-downs by better matching their inventory composition and growth with prospective customer demand. To obtain additional information about a company's inventory and its future sales, a variety of sources of information are available. Analysts should consider the management's discussion and analysis (MD&A) or similar sections of the company's financial reports, industry-related news and publications, and industry economic data.

When conducting comparisons, differences in the choice of inventory valuation method can significantly affect the comparability of financial ratios between companies. A restatement from the LIFO method to the FIFO method is critical to make a valid comparison with companies using a method other than the LIFO method such as those companies reporting under IFRS. Analysts should seek out as much information as feasible when analyzing the performance of companies.

EXAMPLE 10 Comparative Illustration

1. Using CAT's LIFO numbers as reported and FIFO adjusted numbers (Example 5) and Volvo's numbers as reported (Example 9), compare the following for 2008: inventory turnover ratio, days of inventory on hand, gross profit margin, net profit margin, return on assets, current ratio, total liabilities-to-equity ratio, and return on equity. For the current ratio, include current provisions as part of current liabilities. For the total liabilities-to-equity ratio, include provisions in total liabilities.
2. How much do inventories represent as a component of total assets for CAT using LIFO numbers as reported and FIFO adjusted numbers, and for Volvo using reported numbers in 2007 and 2008? Discuss any changes that would concern an analyst.
3. Using the reported numbers, compare the 2007 and 2008 growth rates of CAT and Volvo for sales, finished goods inventory, and inventories other than finished goods.

Solution to 1: The comparisons between Caterpillar and Volvo for 2008 are as follows:

	CAT(LIFO)	CAT(FIFO)	Volvo
Inventory turnover ratio	4.81	3.47	4.81
Days of inventory on hand	76.1 days	105.5 days	76.1 days
Gross profit margin	20.04%	21.22%	21.76%
Net profit margin	6.93%	7.81%	3.30%
Return on assets[a]	5.74%	6.18%	2.89%
Current ratio[b]	1.21	1.34	1.06
Total liabilities-to-equity ratio[c]	10.05	7.41	3.40
Return on equity[d]	47.5%	42.0%	12.0%

Calculations for ratios previously calculated (see Examples 5 and 9) are not shown again.
[a]Return on assets = Net income ÷ Average total assets Volvo = 2.89 percent = 10,016 ÷ [(372,419 + 321,647) ÷ 2]
[b]Current ratio = Current assets ÷ Current liabilities Volvo = 1.06 = [176,038 ÷ (11,750 + 154,390)]
The question indicates to include current provisions in current liabilities.
[c]Total liabilities-to-equity ratio = Total liabilities ÷ Total shareholders' equity
Volvo = 3.40 = [(29,031 + 92,608 + 11,750 + 154,390) ÷ 84,640]
The question indicates to include provisions in total liabilities.
[d]Return on equity = Net income ÷ Average shareholders' equity
CAT (LIFO) = 47.5 percent = 3,557 ÷ [(6,087 + 8,883) ÷ 2]
CAT (FIFO) = 42.0 percent = 4,010 ÷ {[(6,087 + 3,183 – 898) + (8,883 + 2,617 – 785)] ÷ 2}
Volvo = 12.0 percent = 10,016 ÷ [(84,640 + 82,781) ÷ 2]

Comparing CAT (FIFO) and Volvo, it appears that Volvo manages its inventory more effectively. It has higher inventory turnover and less days of inventory on hand. CAT appears to have superior profitability based on net profit margins. CAT did report some losses as other comprehensive income in the balance sheet (see Exhibit 2) as indicated by the absolute increase in the negative accumulated other comprehensive income. The absolute increase in the negative accumulated other comprehensive income results in a reduction of shareholders' equity which makes CAT's return on equity higher. The higher leverage of CAT also increases the return on equity. The sources of CAT's higher return on equity (reporting losses through other comprehensive income and higher leverage) should be of concern to an analyst. An analyst should investigate further, rather than reaching a conclusion based on ratios alone (in other words, try to identify the underlying causes of changes or differences in ratios).

Solution to 2: The 2008 and 2007 inventory to total assets ratios for CAT using LIFO and adjusted to FIFO and for Volvo as reported, are as follows:

	CAT (LIFO)	CAT (FIFO)	Volvo
2008	12.95%	17.08%	14.78%
2007	12.83%	16.94%	13.57%

Inventory to total assets

CAT (LIFO) 2008 = 12.95 percent = 8,781 ÷ 67,782
CAT (LIFO) 2007 = 12.83 percent = 7,204 ÷ 56,132

CAT (FIFO) 2008 = 17.08 percent = 11,964 ÷ (67,782 + 3,183 − 898)
CAT (FIFO) 2007 = 16.94 percent = 9,821 ÷ (56,132 + 2,617 − 785)
Volvo 2008 = 14.78 percent = 55,045 ÷ 372,419
Volvo 2007 = 13.57 percent = 43,645 ÷ 321,647

Based on the numbers as reported, CAT appears to have a lower percentage of assets tied up in inventory than Volvo. However, when CAT's inventory is adjusted to FIFO, it has a higher percentage of its assets tied up in inventory than Volvo.

The increase in Volvo's inventory as a percentage of total assets is cause for some concern. Higher inventory typically results in higher maintenance costs (for example, storage and financing costs). In addition, Volvo may be building up slow-moving or obsolete inventories that may result in future inventory write-downs for 2009. In Volvo's Note 18, the breakdown by inventory classification shows a small increase in the inventory of production materials. It appears that Volvo is planning on reducing production until it reduces its finished goods inventory. Looking at CAT's Note 9, all classifications of inventory seem to be increasing and because these are valued using the LIFO method, there is some cause for concern. The company must be increasing inventory quantities and adding LIFO layers.

Solution to 3: CAT's and Volvo's 2008 and 2007 growth rates for sales (for CAT use Sales of machinery and engines and for Volvo use Net sales), finished goods, and inventories other than finished goods are as follows:

	CAT	Volvo
2008		
Sales	14.5%	6.4%
Finished goods	31.2%	39.4%
Inventories other than finished goods	15.0%	2.2%
2007		
Sales	8.0%	10.3%
Finished goods	10.1%	37.7%
Inventories other than finished goods	16.0%	12.7%

Growth rate = (Value for year − Value for previous year)/Value for previous year

2008 CAT

Sales = 14.5 percent = (48,044 − 41,962) ÷ 41,962
Finished goods = 31.2 percent = (4,022 − 3,066) ÷ 3,066
Inventories other than finished goods = 15.0 percent = [(3,356 + 1,107 + 296) − (2,990 + 863 + 285)] ÷ (2,990 + 863 + 285)

2008 Volvo

Sales = 6.4 percent = (303,667 − 285,405) ÷ 285,405
Finished products = 39.4 percent = (39,137 − 28,077) ÷ 28,077
Inventories other than finished products = 2.2 percent = (15,908 − 15,568) ÷ 15,568

2007 CAT

Sales = 8.0 percent = (41,962 − 38,869) ÷ 38,869
Finished goods = 10.1 percent = (3,066 − 2,785) ÷ 2,785
Inventories other than finished goods = 16.0 percent = [(2,990 + 863 + 285) − (2,698 + 591 + 277)] ÷ (2,698 + 591 + 277)

2007 Volvo

Sales = 10.3 percent = (285,405 − 258,835) ÷ 258,835
Finished products = 37.7 percent = (28,077 − 20,396) ÷ 20,396
Inventories other than finished products = 12.7 percent = (15,568 − 13,815) ÷ 13,815

For both companies, the growth rates in finished goods inventory exceeds the growth rate in sales; this could be indicative of accumulating excess inventory. Volvo's growth rate in finished goods compared to its growth rate in sales is significantly higher but the lower growth rates in finished goods inventory for CAT is potentially a result of using the LIFO method versus the FIFO method. It appears Volvo is aware that an issue exists and is planning on cutting back production given the relatively small increase in inventories other than finished products. Regardless, an analyst should do further investigation before reaching any conclusion about a company's future prospects for sales and profit.

EXAMPLE 11 Management Discussion and Analysis

The following excerpts commenting on inventory management are from the Volvo Group Annual Report, 2008:

> **From the CEO Comment:** "In a declining economy, it is extremely important to act quickly to reduce the Group's cost level and ensure we do not build inventories, since large inventories generally lead to pressure on prices." . . . "During the second half of the year, we implemented sharp production cutbacks to lower inventories of new trucks and construction equipment as part of efforts to maintain our product prices, which represent one of the most important factors in securing favorable profitability in the future. We have been successful in these efforts. During the fourth quarter, inventories of new trucks declined 13% and of new construction equipment by 19%. During the beginning of 2009, we have continued to work diligently and focused to reduce inventories to the new, lower levels of demand that prevail in most of our markets, and for most of our products."
>
> **From the Board of Directors' Report 2008:** "Inventory reduction contributed to positive operating cash flow of SEK 1.8 billion in Industrial Operations." . . . "The value of inventories increased during 2008 by SEK 11.4 billion. Adjusted for currency changes, the increase amounted to SEK 5.8 billion. The increase is mainly related to the truck operations and to construction equipment and is an effect of the rapidly weakening demand during the second half

of the year." . . . "In order to reduce the capital tied-up in inventory, a number of shutdown days in production were carried out during the end of year. Measures aimed at selling primarily trucks and construction equipment in inventory were prioritized. These measures have continued during the beginning of 2009." and "Overcapacity within the industry can occur if there is a lack of demand, potentially leading to increased price pressure."

From Business Areas 2008 (Ambitions 2009): "Execute on cost reduction and adjust production to ensure inventory levels in line with demand."

Assume inventory write-downs are reported as part of cost of sales. Based on the previous excerpts, discuss the anticipated direction of the following for 2009 compared to 2008:

1. Inventory carrying amounts
2. Inventory turnover ratio
3. Sales
4. Gross profit margin
5. Return on assets
6. Current ratio

Solution to 1: Inventory carrying amounts are expected to decrease as the company cuts back on inventory levels and pressures are exerted on costs and prices.

Solution to 2: Inventory turnover ratio is expected to increase. Any potential change in cost of sales will be more than offset by the decline in inventory carrying amounts. For example, if cost of sales and inventory carrying amounts were 238 billion and 55 billion Swedish krona, before inventory write-downs totaling 1 billion Swedish krona, the inventory turnover ratio will change from 4.33 (238 ÷ 55) to 4.39 (237 ÷ 54).

Solution to 3: Unit sales and sales revenues are expected to decline due to decrease in demand and pressure on prices.

Solution to 4: Gross profit margin is difficult to predict. Sales revenues are expected to decline but cost of sales as a percentage of sales revenue may decline if cost controls are effective, stay the same if cost controls are offset by increased inventory write-downs, or increase if inventory write-downs more than offset cost controls. In this case, an analyst might use 2008's gross profit margin of 21.8 percent as a reasonable prediction. It is less than the 2006 and 2007 gross profit margin of 23.1 percent and may already reflect cost controls, price pressures, and inventory write-downs.

Solution to 5: Return on assets is expected to decline. The positive effects of cost controls and reduction in assets is likely to be offset by decreased net income due to the declining sales revenues.

Solution to 6: The direction of change in the current ratio is difficult to predict. Current assets are expected to be reduced but current liabilities are also expected to be reduced as costs are controlled and purchases are reduced resulting in lower accounts payable.

EXAMPLE 12 Single Company Illustration

Selected excerpts from the consolidated financial statements and notes to consolidated financial statements for Alcatel-Lucent (NYSE: ALU) are presented in Exhibits 8, 9, and 10. Exhibit 8 contains excerpts from the consolidated income statements, and Exhibit 9 contains excerpts from the consolidated balance sheets. Exhibit 10 contains excerpts from three of the notes to consolidated financial statements.

Note 1 (i) discloses that ALU's finished goods inventories and work in progress are valued at the lower of cost or net realizable value. Note 2 (a) discloses that the impact of inventory and work in progress write-downs on ALU's income before tax was a net reduction of €285 million in 2008, a net reduction of €186 million in 2007, and a net reduction of €77 million in 2006.[18] The inventory impairment loss amounts steadily increased from 2006 to 2008 and are included as a component, (additions)/reversals, of ALU's change in valuation allowance as disclosed in Note 19 (b) from Exhibit 10. Observe also that ALU discloses its valuation allowance at 31 December 2008, 2007, and 2006 in Note 19 (b) and details on the allocation of the allowance are included in Note 19 (a). The €654 million valuation allowance is the total of a €629 million allowance for inventories and a €25 million allowance for work in progress on construction contracts. Finally, observe that the €2,196 million net value for inventories (excluding construction contracts) at 31 December 2008 in Note 19 (a) reconciles with the balance sheet amount for inventories and work in progress, net, on 31 December 2008, as presented in Exhibit 9.

The inventory valuation allowance represents the total amount of inventory write-downs taken for the inventory reported on the balance sheet (which is measured at the lower of cost or net realizable value). Therefore, an analyst can determine the historical cost of the company's inventory by adding the inventory valuation allowance to the reported inventory carrying amount on the balance sheet. The valuation allowance increased in magnitude and as a percentage of gross inventory values from 2006 to 2008.

EXHIBIT 8 Alcatel-Lucent Consolidated Income Statements (€ millions)

For Years Ended 31 December	2008	2007	2006
Revenues	16,984	17,792	12,282
Cost of sales	(11,190)	(12,083)	(8,214)
Gross profit	5,794	5,709	4,068
Administrative and selling expenses	(3,093)	(3,462)	(1,911)
Research and development costs	(2,757)	(2,954)	(1,470)
Income from operating activities before restructuring costs, impairment of assets, gain/(loss) on disposal of consolidated entities, and postretirement benefit plan amendments	(56)	(707)	687

(*continued*)

[18] This reduction is often referred to as a *charge*. An accounting charge is the recognition of a loss or expense. In this case, the charge is attributable to the impairment of assets.

EXHIBIT 8 (Continued)

For Years Ended 31 December	2008	2007	2006
Restructuring costs	(562)	(856)	(707)
Impairment of assets	(4,725)	(2,944)	(141)
Gain/(loss) on disposal of consolidated entities	(7)	—	15
Postretirement benefit plan amendments	47	258	—
Income (loss) from operating activities	(5,303)	(4,249)	(146)
⋮	⋮	⋮	⋮
Income (loss) from continuing operations	(5,206)	(4,087)	(219)
Income (loss) from discontinued operations	33	610	158
Net income (loss)	(5,173)	(3,477)	(61)

EXHIBIT 9 Alcatel-Lucent Consolidated Balance Sheets (€ millions)

Year Ended 31 December	2008	2007	2006
⋮	⋮	⋮	⋮
Total noncurrent assets	12,742	20,135	25,665
Inventories and work in progress, net	2,196	2,235	2,259
Amounts due from customers on construction contracts	495	704	615
Trade receivables and related accounts, net	4,330	4,163	3,877
Advances and progress payments	99	110	87
⋮	⋮	⋮	⋮
Total current assets	14,569	13,695	16,225
Total assets	27,311	33,830	41,890
⋮	⋮	⋮	⋮
Retained earnings, fair value, and other reserves	(8,820)	(3,821)	(3,441)
⋮	⋮	⋮	⋮
Total shareholders' equity	5,224	11,702	16,323
Pensions, retirement indemnities, and other postretirement benefits	4,807	4,447	5,449
Bonds and notes issued, long-term	3,931	4,517	4,901
Other long-term debt	67	48	147
Deferred tax liabilities	1,152	1,897	2,583
Other noncurrent liabilities	443	366	276
Total noncurrent liabilities	10,400	11,275	13,356
Provisions	2,424	2,566	2,366
Current portion of long-term debt	1,097	483	1,161
Customers' deposits and advances	929	847	778
Amounts due to customers on construction contracts	188	407	273

EXHIBIT 9 (Continued)

Year Ended 31 December	2008	2007	2006
Trade payables and related accounts	4,571	4,514	4,027
Liabilities related to disposal groups held for sale	—	—	1,606
Current income tax liabilities	185	70	66
Other current liabilities	2,293	1,966	1,934
Total current liabilities	11,687	10,853	12,211
Total liabilities and shareholders' equity	27,311	33,830	41,890

EXHIBIT 10 Alcatel-Lucent Selected Notes to Consolidated Financial Statements

Note 1. Summary of Significant Accounting Policies
(i) Inventories and work in progress
Inventories and work in progress are valued at the lower of cost (including indirect production costs where applicable) or net realizable value.[19] Net realizable value is the estimated sales revenue for a normal period of activity less expected completion and selling costs.

Note 2. Principal Uncertainties Regarding the Use of Estimates
(a) Valuation allowance for inventories and work in progress
Inventories and work in progress are measured at the lower of cost or net realizable value. Valuation allowances for inventories and work in progress are calculated based on an analysis of foreseeable changes in demand, technology, or the market, in order to determine obsolete or excess inventories and work in progress.

The valuation allowances are accounted for in cost of sales or in restructuring costs, depending on the nature of the amounts concerned.

	31 December		
(€ millions)	2008	2007	2006
Valuation allowance for inventories and work in progress on construction contracts	(654)	(514)	(378)
Impact of inventory and work in progress write-downs on income (loss) before income tax related reduction of goodwill and discontinued operations	(285)	(186)	(77)
Note 19. Inventories and Work in Progress			
(a) Analysis of net value			
Raw materials and goods	649	564	542
Work in progress excluding construction contracts	972	958	752
Finished goods	1,204	1,185	1,320
Gross value (excluding construction contracts)	2,825	2,707	2,614
Valuation allowance	(629)	(472)	(355)

(*continued*)

[19] *Cost* approximates cost on a first-in, first-out basis.

EXHIBIT 10 (Continued)

	31 December		
(€ millions)	2008	2007	2006
Net value (excluding construction contracts)	2,196	2,235	2,259
Work in progress on construction contracts, gross (*)	219	272	347
Valuation allowance	(25)	(42)	(23)
Work in progress on construction contracts, net	194	230	324
Total, net	2,390	2,465	2,583
(b) Change in valuation allowance			
At 1 January	(514)	(378)	(423)
(Additions)/reversals	(285)	(186)	(77)
Utilization	69	38	54
Changes in consolidation group	—	—	54
Net effect of exchange rate changes and other changes	75	12	14
At 31 December	(654)	(514)	(378)

(*)Included in the amounts due from/to construction contracts
Rounding differences may result in totals that are different from the sum.

1. Calculate ALU's inventory turnover, number of days of inventory on hand, gross profit margin, current ratio, debt-to-equity ratio, and return on total assets for 2008 and 2007 based on the numbers reported. Use an average for inventory and total asset amounts and year-end numbers for other ratio items. For debt, include only bonds and notes issued, long-term; other long-term debt; and current portion of long-term debt.
2. Based on the answer to Question 1, comment on the changes from 2007 to 2008.
3. If ALU had used the weighted average cost method instead of the FIFO method during 2008, 2007, and 2006, what would be the effect on ALU's reported cost of sales and inventory carrying amounts? What would be the directional impact on the financial ratios that were calculated for ALU in Question 1?

Solution to 1: The financial ratios are as follows:

	2008	2007
Inventory turnover ratio	5.05	5.38
Number of days of inventory	72.3 days	67.8 days
Gross profit margin	34.1%	32.1%
Current ratio	1.25	1.26
Debt-to-equity ratio	0.98	0.43
Return on total assets	−16.9%	−9.2%

Inventory turnover ratio = Cost of sales ÷ Average inventory
2008 inventory turnover ratio = 5.05 = 11,190 ÷ [(2,196 + 2,235) ÷ 2]
2007 inventory turnover ratio = 5.38 = 12,083 ÷ [(2,235 + 2,259) ÷ 2]

Number of days of inventory = 365 days ÷ Inventory turnover ratio
2008 number of days of inventory = 72.3 days = 365 days ÷ 5.05
2007 number of days of inventory = 67.8 days = 365 days ÷ 5.38

Gross profit margin = Gross profit ÷ Total revenue
2008 gross profit margin = 34.1% = 5,794 ÷ 16,984
2007 gross profit margin = 32.1% = 5,709 ÷ 17,792

Current ratio = Current assets ÷ Current liabilities
2008 current ratio = 1.25 = 14,569 ÷ 11,687
2007 current ratio = 1.26 = 13,695 ÷ 10,853

Debt-to-equity ratio = Total debt ÷ Total shareholders' equity
2008 debt-to-equity ratio = 0.98 = (3,931 + 67 + 1,097) ÷ 5,224
2007 debt-to-equity ratio = 0.43 = (4,517 + 48 + 483) ÷ 11,702

Return on assets = Net income ÷ Average total assets
2008 return on assets = −16.9% = −5,173 ÷ [(27,311 + 33,830) ÷ 2]
2007 return on assets = −9.2% = −3,477 ÷ [(33,830 + 41,890) ÷ 2]

Solution to 2: From 2007 to 2008, the inventory turnover ratio declined and the number of days of inventory increased by 4.5 days. ALU appears to be managing inventory less efficiently. The gross profit margin improved by 2.0 percent, from 32.1 percent in 2007 to 34.1 percent in 2008. The current ratio is relatively unchanged from 2007 to 2008. The debt-to-equity ratio has risen significantly in 2008 compared to 2007. Although ALU's total debt has been relatively stable during this time period, the company's equity has been declining rapidly because of the cumulative effect of its net losses on retained earnings.

The return on assets is negative and got worse in 2008 compared to 2007. A larger net loss and lower total assets in 2008 resulted in a higher negative return on assets. The analyst should investigate the underlying reasons for the sharp decline in ALU's return on assets. From Exhibit 8, it is apparent that ALU's gross profit margins were insufficient to cover the administrative and selling expenses and research and development costs in 2007 and 2008. Large restructuring costs and asset impairment losses contributed to the loss from operating activities in both 2007 and 2008.

Solution to 3: If inventory replacement costs were increasing during 2006, 2007, and 2008 (and inventory quantity levels were stable or increasing), ALU's cost of sales would have been higher and its gross profit margin would have been lower under the weighted average cost inventory method than what was reported under the FIFO method (assuming no inventory write-downs that would otherwise neutralize the differences between the inventory valuation methods). FIFO allocates the oldest inventory costs to cost of sales; the reported cost of sales would be lower under FIFO given increasing inventory costs. Inventory carrying amounts would be higher under the FIFO method than under the weighted average cost method because the more recently purchased inventory items would be included in inventory at their higher costs (again assuming no inventory write-downs that would otherwise neutralize the differences between the inventory valuation

methods). Consequently, ALU's reported gross profit, net income, and retained earnings would also be higher for those years under the FIFO method.

The effects on ratios are as follows:

- The inventory turnover ratios would all be higher under the weighted average cost method because the numerator (cost of sales) would be higher and the denominator (inventory) would be lower than what was reported by ALU under the FIFO method.
- The number of days of inventory would be lower under the weighted average cost method because the inventory turnover ratios would be higher.
- The gross profit margin ratios would all be lower under the weighted average cost method because cost of sales would be higher under the weighted average cost method than under the FIFO method.
- The current ratios would all be lower under the weighted average cost method because inventory carrying values would be lower than under the FIFO method (current liabilities would be the same under both methods).
- The return-on-assets ratios would all be lower under the weighted average cost method because the incremental profit added to the numerator (net income) has a greater impact than the incremental increase to the denominator (total assets). By way of example, assume that a company has €3 million in net income and €100 million in total assets using the weighted average cost method. If the company reports another €1 million in net income by using FIFO instead of weighted average cost, it would then also report an additional €1 million in total assets (after tax). Based on this example, the return on assets is 3.00 percent (€3/€100) under the weighted average cost method and 3.96 percent (€4/€101) under the FIFO method.
- The debt-to-equity ratios would all be higher under the weighted average cost method because retained earnings would be lower than under the FIFO method (again assuming no inventory write-downs that would otherwise neutralize the differences between the inventory valuation methods).

Conversely, if inventory replacement costs were decreasing during 2006, 2007, and 2008 (and inventory quantity levels were stable or increasing), ALU's cost of sales would have been lower and its gross profit and inventory would have been higher under the weighted average cost method than were reported under the FIFO method (assuming no inventory write-downs that would otherwise neutralize the differences between the inventory valuation methods). As a result, the ratio assessment that was performed above would result in directly opposite conclusions.

8. SUMMARY

The choice of inventory valuation method (cost formula or cost flow assumption) can have a potentially significant impact on inventory carrying amounts and cost of sales. These in turn impact other financial statement items, such as current assets, total assets, gross profit, and net income. The financial statements and accompanying notes provide important information about a company's inventory accounting policies that the analyst needs to correctly assess

financial performance and compare it with that of other companies. Key concepts in this reading are as follows:

- Inventories are a major factor in the analysis of merchandising and manufacturing companies. Such companies generate their sales and profits through inventory transactions on a regular basis. An important consideration in determining profits for these companies is measuring the cost of sales when inventories are sold.
- The total cost of inventories comprises all costs of purchase, costs of conversion, and other costs incurred in bringing the inventories to their present location and condition. Storage costs of finished inventory and abnormal costs due to waste are typically treated as expenses in the period in which they occurred.
- The allowable inventory valuation methods implicitly involve different assumptions about cost flows. The choice of inventory valuation method determines how the cost of goods available for sale during the period is allocated between inventory and cost of sales.
- IFRS allow three inventory valuation methods (cost formulas): first-in, first-out (FIFO); weighted average cost; and specific identification. The specific identification method is used for inventories of items that are not ordinarily interchangeable and for goods or services produced and segregated for specific projects. U.S. GAAP allow these three methods plus the last-in, first-out (LIFO) method. The LIFO method is widely used in the United States for both tax and financial reporting purposes because of potential income tax savings.
- The choice of inventory method affects the financial statements and any financial ratios that are based on them. As a consequence, the analyst must carefully consider inventory valuation method differences when evaluating a company's performance over time or in comparison to industry data or industry competitors.
- A company must use the same cost formula for all inventories having a similar nature and use to the entity.
- The inventory accounting system (perpetual or periodic) may result in different values for cost of sales and ending inventory when the weighted average cost or LIFO inventory valuation method is used.
- Under U.S. GAAP, companies that use the LIFO method must disclose in their financial notes the amount of the LIFO reserve or the amount that would have been reported in inventory if the FIFO method had been used. This information can be used to adjust reported LIFO inventory and cost of goods sold balances to the FIFO method for comparison purposes.
- LIFO liquidation occurs when the number of units in ending inventory declines from the number of units that were present at the beginning of the year. If inventory unit costs have generally risen from year to year, this will produce an inventory-related increase in gross profits.
- Consistency of inventory costing is required under both IFRS and U.S. GAAP. If a company changes an accounting policy, the change must be justifiable and applied retrospectively to the financial statements. An exception to the retrospective restatement is when a company reporting under U.S. GAAP changes to the LIFO method.
- Under IFRS, inventories are measured at the lower of cost and net realizable value. Net realizable value is the estimated selling price in the ordinary course of business less the estimated costs necessary to make the sale. Under U.S. GAAP, inventories are measured at the lower of cost or market value. Market value is defined as current replacement cost subject to an upper limit of net realizable value and a lower limit of net realizable value less a normal profit margin. Reversals of previous write-downs are permissible under IFRS but not under U.S. GAAP.
- Reversals of inventory write-downs may occur under IFRS but are not allowed under U.S. GAAP.

- Changes in the carrying amounts within inventory classifications (such as raw materials, work-in-process, and finished goods) may provide signals about a company's future sales and profits. Relevant information with respect to inventory management and future sales may be found in the Management Discussion and Analysis or similar items within the annual or quarterly reports, industry news and publications, and industry economic data.
- The inventory turnover ratio, number of days of inventory ratio, and gross profit margin ratio are useful in evaluating the management of a company's inventory.
- Inventory management may have a substantial impact on a company's activity, profitability, liquidity, and solvency ratios. It is critical for the analyst to be aware of industry trends and management's intentions.
- Financial statement disclosures provide information regarding the accounting policies adopted in measuring inventories, the principal uncertainties regarding the use of estimates related to inventories, and details of the inventory carrying amounts and costs. This information can greatly assist analysts in their evaluation of a company's inventory management.

PROBLEMS

1. Inventory cost is *least likely* to include:
   A. production-related storage costs.
   B. costs incurred as a result of normal waste of materials.
   C. transportation costs of shipping inventory to customers.
2. Mustard Seed PLC adheres to IFRS. It recently purchased inventory for €100 million and spent €5 million for storage prior to selling the goods. The amount it charged to inventory expense (€ millions) was *closest* to:
   A. €95.
   B. €100.
   C. €105.
3. Carrying inventory at a value above its historical cost would *most likely* be permitted if:
   A. the inventory was held by a producer of agricultural products.
   B. financial statements were prepared using U.S. GAAP.
   C. the change resulted from a reversal of a previous write-down.
4. Eric's Used Bookstore prepares its financial statements in accordance with IFRS. Inventory was purchased for £1 million and later marked down to £550,000. One of the books, however, was later discovered to be a rare collectible item, and the inventory is now worth an estimated £3 million. The inventory is *most likely* reported on the balance sheet at:
   A. £550,000.
   B. £1,000,000.
   C. £3,000,000.
5. Fernando's Pasta purchased inventory and later wrote it down. The current net realizable value is higher than the value when written down. Fernando's inventory balance will *most likely* be:
   A. higher if it complies with IFRS.
   B. higher if it complies with U.S. GAAP.
   C. the same under U.S. GAAP and IFRS.

For questions 6 through 17, assume the companies use a periodic inventory system.

6. Cinnamon Corp. started business in 2007 and uses the weighted average cost method. During 2007, it purchased 45,000 units of inventory at €10 each and sold 40,000 units for €20 each. In 2008, it purchased another 50,000 units at €11 each and sold 45,000 units for €22 each. Its 2008 cost of sales (€ thousands) was *closest* to:
   A. €490.
   B. €491.
   C. €495.

7. Zimt AG started business in 2007 and uses the FIFO method. During 2007, it purchased 45,000 units of inventory at €10 each and sold 40,000 units for €20 each. In 2008, it purchased another 50,000 units at €11 each and sold 45,000 units for €22 each. Its 2008 ending inventory balance (€ thousands) was *closest* to:
   A. €105.
   B. €109.
   C. €110.

8. Zimt AG uses the FIFO method, and Nutmeg Inc. uses the LIFO method. Compared to the cost of replacing the inventory, during periods of rising prices, the cost of sales reported by:
   A. Zimt is too low.
   B. Nutmeg is too low.
   C. Nutmeg is too high.

9. Zimt AG uses the FIFO method, and Nutmeg Inc. uses the LIFO method. Compared to the cost of replacing the inventory, during periods of rising prices the ending inventory balance reported by:
   A. Zimt is too high.
   B. Nutmeg is too low.
   C. Nutmeg is too high.

10. Like many technology companies, TechnoTools operates in an environment of declining prices. Its reported profits will tend to be *highest* if it accounts for inventory using the:
    A. FIFO method.
    B. LIFO method.
    C. weighted average cost method.

11. Compared to using the weighted average cost method to account for inventory, during a period in which prices are generally rising, the current ratio of a company using the FIFO method would *most likely* be:
    A. lower.
    B. higher.
    C. dependent upon the interaction with accounts payable.

12. Zimt AG wrote down the value of its inventory in 2007 and reversed the write-down in 2008. Compared to the ratios that would have been calculated if the write-down had never occurred, Zimt's reported 2007:
    A. current ratio was too high.
    B. gross margin was too high.
    C. inventory turnover was too high.

13. Zimt AG wrote down the value of its inventory in 2007 and reversed the write-down in 2008. Compared to the results the company would have reported if the write-down had never occurred, Zimt's reported 2008:
    A. profit was overstated.
    B. cash flow from operations was overstated.
    C. year-end inventory balance was overstated.
14. Compared to a company that uses the FIFO method, during periods of rising prices a company that uses the LIFO method will *most likely* appear more:
    A. liquid.
    B. efficient.
    C. profitable.
15. Nutmeg Inc. uses the LIFO method to account for inventory. During years in which inventory unit costs are generally rising and in which the company purchases more inventory than it sells to customers, its reported gross profit margin will *most likely* be:
    A. lower than it would be if the company used the FIFO method.
    B. higher than it would be if the company used the FIFO method.
    C. about the same as it would be if the company used the FIFO method.
16. Compared to using the FIFO method to account for inventory, during periods of rising prices, a company using the LIFO method is *most likely* to report higher:
    A. net income.
    B. cost of sales.
    C. income taxes.
17. Carey Company adheres to U.S. GAAP, whereas Jonathan Company adheres to IFRS. It is *least likely* that:
    A. Carey has reversed an inventory write-down.
    B. Jonathan has reversed an inventory write-down.
    C. Jonathan and Carey both use the FIFO inventory accounting method.

The following information relates to Questions 18 through 25.[20]

Hans Annan, CFA, a food and beverage analyst, is reviewing Century Chocolate's inventory policies as part of his evaluation of the company. Century Chocolate, based in Switzerland, manufactures chocolate products and purchases and resells other confectionery products to complement its chocolate line. Annan visited Century Chocolate's manufacturing facility last year. He learned that cacao beans, imported from Brazil, represent the most significant raw material and that the work-in-progress inventory consists primarily of three items: roasted cacao beans, a thick paste produced from the beans (called chocolate liquor), and a sweetened mixture that needs to be "conched" to produce chocolate. On the tour, Annan learned that the conching process ranges from a few hours for lower-quality products to six days for the highest-quality chocolates. While there, Annan saw the facility's climate-controlled area where manufactured finished products (cocoa and chocolate) and purchased finished goods

[20] Item set developed by Karen Rubsam, CFA (Fountain Hills, Arizona, USA).

are stored prior to shipment to customers. After touring the facility, Annan had a discussion with Century Chocolate's CFO regarding the types of costs that were included in each inventory category.

Annan has asked his assistant, Joanna Kern, to gather some preliminary information regarding Century Chocolate's financial statements and inventories. He also asked Kern to calculate the inventory turnover ratios for Century Chocolate and another chocolate manufacturer for the most recent five years. Annan does not know Century Chocolate's most direct competitor, so he asks Kern to do some research and select the most appropriate company for the ratio comparison.

Kern reports back that Century Chocolate prepares its financial statements in accordance with IFRS. She tells Annan that the policy footnote states that raw materials and purchased finished goods are valued at purchase cost whereas work in progress and manufactured finished goods are valued at production cost. Raw material inventories and purchased finished goods are accounted for using the FIFO (first-in, first-out) method, and the weighted average cost method is used for other inventories. An allowance is established when the net realizable value of any inventory item is lower than the value calculated.

Kern provides Annan with the selected financial statements and inventory data for Century Chocolate shown in Exhibits A through E. The ratio exhibit Kern prepared compares Century Chocolate's inventory turnover ratios to those of Gordon's Goodies, a U.S.-based company. Annan returns the exhibit and tells Kern to select a different competitor that reports using IFRS rather than U.S. GAAP. During this initial review, Annan asks Kern why she has not indicated whether Century Chocolate uses a perpetual or a periodic inventory system. Kern replies that she learned that Century Chocolate uses a perpetual system but did not include this information in her report because inventory values would be the same under either a perpetual or periodic inventory system. Annan tells Kern she is wrong and directs her to research the matter.

While Kern is revising her analysis, Annan reviews the most recent month's Cocoa Market Review from the International Cocoa Organization. He is drawn to the statement that "the ICCO daily price, averaging prices in both futures markets, reached a 29-year high in US$ terms and a 23-year high in SDRs terms (the SDR unit comprises a basket of major currencies used in international trade: US$, Euro, Pound Sterling, and Yen)." Annan makes a note that he will need to factor the potential continuation of this trend into his analysis.

EXHIBIT A Century Chocolate Income Statements (CHF millions)

For Years Ended 31 December	2009	2008
Sales	95,290	93,248
Cost of sales	–41,043	–39,047
Marketing, administration, and other expenses	–35,318	–42,481
Profit before taxes	**18,929**	**11,720**
Taxes	–3,283	–2,962
Profit for the period	**15,646**	**8,758**

EXHIBIT B Century Chocolate Balance Sheets (CHF millions)

For Years Ended 31 December	2009	2008
Cash, cash equivalents, and short-term investments	6,190	8,252
Trade receivables and related accounts, net	11,654	12,910
Inventories, net	8,100	7,039
Other current assets	2,709	2,812
Total current assets	**28,653**	**31,013**
Property, plant, and equipment, net	18,291	19,130
Other noncurrent assets	45,144	49,875
Total assets	**92,088**	**100,018**
Trade and other payables	10,931	12,299
Other current liabilities	17,873	25,265
Total current liabilities	**28,804**	**37,564**
Noncurrent liabilities	15,672	14,963
Total liabilities	**44,476**	**52,527**
Equity		
Share capital	332	341
Retained earnings and other reserves	47,280	47,150
Total equity	**47,612**	**47,491**
Total liabilities and shareholders' equity	**92,088**	**100,018**

EXHIBIT C Century Chocolate Supplementary Footnote Disclosures: Inventories (CHF millions)

For Years Ended 31 December	2009	2008
Raw Materials	2,154	1,585
Work in Progress	1,061	1,027
Finished Goods	5,116	4,665
Total inventories before allowance	8,331	7,277
Allowance for write-downs to net realizable value	−231	−238
Total inventories net of allowance	8,100	7,039

EXHIBIT D Century Chocolate Inventory Record for Purchased Lemon Drops

Date		Cartons	Per Unit Amount (CHF)
	Beginning inventory	100	22
4 Feb 09	Purchase	40	25
3 Apr 09	Sale	50	32
23 Jul 09	Purchase	70	30
16 Aug 09	Sale	100	32
9 Sep 09	Sale	35	32
15 Nov 09	Purchase	100	28

EXHIBIT E Century Chocolate Net Realizable Value Information for Black Licorice Jelly Beans

	2009	2008
FIFO cost of inventory at 31 December (CHF)	314,890	374,870
Ending inventory at 31 December (kilograms)	77,750	92,560
Cost per kilogram (CHF)	4.05	4.05
Net realizable value (CHF per kilogram)	4.20	3.95

18. The costs *least likely* to be included by the CFO as inventory are:
    A. storage costs for the chocolate liquor.
    B. excise taxes paid to the government of Brazil for the cacao beans.
    C. storage costs for chocolate and purchased finished goods awaiting shipment to customers.
19. What is the *most likely* justification for Century Chocolate's choice of inventory valuation method for its finished goods?
    A. It is the preferred method under IFRS.
    B. It allocates the same per unit cost to both cost of sales and inventory.
    C. Ending inventory reflects the cost of goods purchased most recently.
20. In Kern's comparative ratio analysis, the 2009 inventory turnover ratio for Century Chocolate is *closest* to:
    A. 5.07.
    B. 5.42.
    C. 5.55.
21. The *most accurate* statement regarding Annan's reasoning for requiring Kern to select a competitor that reports under IFRS for comparative purposes is that under U.S. GAAP:
    A. fair values are used to value inventory.
    B. the LIFO method is permitted to value inventory.
    C. the specific identification method is permitted to value inventory.
22. Annan's statement regarding the perpetual and periodic inventory systems is most significant when which of the following costing systems is used?
    A. LIFO.
    B. FIFO.
    C. Specific identification.
23. Using the inventory record for purchased lemon drops shown in Exhibit D, the cost of sales for 2009 will be *closest* to:
    A. CHF 3,550.
    B. CHF 4,550.
    C. CHF 4,850.
24. Ignoring any tax effect, the 2009 net realizable value reassessment for the black licorice jelly beans will *most likely* result in:
    A. an increase in gross profit of CHF 9,256.
    B. an increase in gross profit of CHF 11,670.
    C. no impact on cost of sales because under IFRS, write-downs cannot be reversed.

25. If the trend noted in the ICCO report continues and Century Chocolate plans to maintain constant or increasing inventory quantities, the *most likely* impact on Century Chocolate's financial statements related to its raw materials inventory will be:
   A. a cost of sales that more closely reflects current replacement values.
   B. a higher allocation of the total cost of goods available for sale to cost of sales.
   C. a higher allocation of the total cost of goods available for sale to ending inventory.

The following information relates to Questions 26 through 31.[21]

John Martinson, CFA, is an equity analyst with a large pension fund. His supervisor, Linda Packard, asks him to write a report on Karp Inc. Karp prepares its financial statements in accordance with U.S. GAAP. Packard is particularly interested in the effects of the company's use of the LIFO method to account for its inventory. For this purpose, Martinson collects the financial data presented in Exhibits F and G.

EXHIBIT F Balance Sheet Information (US$ millions)

As of 31 December	2009	2008
Cash and cash equivalents	172	157
Accounts receivable	626	458
Inventories	620	539
Other current assets	125	65
Total current assets	1,543	1,219
Property and equipment, net	3,035	2,972
Total assets	4,578	4,191
Total current liabilities	1,495	1,395
Long-term debt	644	604
Total liabilities	2,139	1,999
Common stock and paid in capital	1,652	1,652
Retained earnings	787	540
Total shareholders' equity	2,439	2,192
Total liabilities and shareholders' equity	4,578	4,191

EXHIBIT G Income Statement Information (US$ millions)

For Years Ended 31 December	2009	2008
Sales	4,346	4,161
Cost of goods sold	2,211	2,147
Depreciation and amortization expense	139	119
Selling, general, and administrative expense	1,656	1,637
Interest expense	31	18
Income tax expense	62	48
Net income	247	192

[21] Item set developed by Rodrigo Ribeiro, CFA (Montevideo, Uruguay).

Martinson finds the following information in the notes to the financial statements:

- The LIFO reserves as of 31 December 2009 and 2008 are $155 million and $117 million, respectively; and
- The effective income tax rate applicable to Karp for 2009 and earlier periods is 20%.

26. If Karp had used FIFO instead of LIFO, the amount of inventory reported as of 31 December 2009 would have been *closest* to:
    A. $465 million.
    B. $658 million.
    C. $775 million.
27. If Karp had used FIFO instead of LIFO, the amount of cost of goods sold reported by Karp for the year ended 31 December 2009 would have been *closest* to:
    A. $2,056 million.
    B. $2,173 million.
    C. $2,249 million.
28. If Karp had used FIFO instead of LIFO, its reported net income for the year ended 31 December 2009 would have been higher by an amount *closest* to:
    A. $30 million.
    B. $38 million.
    C. $155 million.
29. If Karp had used FIFO instead of LIFO, Karp's retained earnings as of 31 December 2009 would have been higher by an amount *closest* to:
    A. $117 million.
    B. $124 million.
    C. $155 million.
30. If Karp had used FIFO instead of LIFO, which of the following ratios computed as of 31 December 2009 would *most likely* have been lower?
    A. cash ratio
    B. current ratio
    C. gross profit margin
31. If Karp had used FIFO instead of LIFO, its debt to equity ratio computed as of 31 December 2009 would have:
    A. increased.
    B. decreased.
    C. remained unchanged.

The following information relates to Questions 32 through 37.[22]

Robert Groff, an equity analyst, is preparing a report on Crux Corp. As part of his report, Groff makes a comparative financial analysis between Crux and its two main competitors, Rolby Corp. and Mikko Inc. Crux and Mikko report under U.S. GAAP and Rolby reports under IFRS.

[22] Item set developed by Rodrigo Ribeiro, CFA (Montevideo, Uruguay).

Groff gathers information on Crux, Rolby, and Mikko. The relevant financial information he compiles is in Exhibit H. Some information on the industry is in Exhibit I.

EXHIBIT H Selected Financial Information (US$ millions)

	Crux	Rolby	Mikko
Inventory valuation method	LIFO	FIFO	LIFO
From the Balance Sheets As of 31 December 2009			
Inventory, gross	480	620	510
Valuation allowance	20	25	14
Inventory, net	460	595	496
Total debt	1,122	850	732
Total shareholders' equity	2,543	2,403	2,091
As of 31 December 2008			
Inventory, gross	465	602	401
Valuation allowance	23	15	12
Inventory, net	442	587	389
From the Income Statements Year Ended 31 December 2009			
Revenues	4,609	5,442	3,503
Cost of goods sold[a]	3,120	3,782	2,550
Net income	229	327	205
	13	15	15
LIFO Reserve			
As of 31 December 2009	55	0	77
As of 31 December 2008	72	0	50
As of 31 December 2007	96	0	43
Tax Rate			
Effective tax rate	30%	30%	30%

[a] Charges included in cost of goods sold for inventory write-downs. (This does not match the change in the inventory valuation allowance because the valuation allowance is reduced to reflect the valuation allowance attached to items sold and increased for additional necessary write-downs.)

EXHIBIT I Industry Information

	2009	2008	2007
Raw materials price index	112	105	100
Finished goods price index	114	106	100

To compare the financial performance of the three companies, Groff decides to convert LIFO figures into FIFO figures, and adjust figures to assume no valuation allowance is recognized by any company.

After reading Groff's draft report, his supervisor, Rachel Borghi, asks him the following questions:

Question 1: Which company's gross profit margin would best reflect current costs of the industry?
Question 2: Would Rolby's valuation method show a higher gross profit margin than Crux's under an inflationary, a deflationary, or a stable price scenario?
Question 3: Which group of ratios usually appears more favorable with an inventory write- down?

32. Crux's inventory turnover ratio computed as of 31 December 2009, after the adjustments suggested by Groff, is *closest* to:
    A. 5.67.
    B. 5.83.
    C. 6.13.
33. Rolby's net profit margin for the year ended 31 December 2009, after the adjustments suggested by Groff, is *closest* to:
    A. 6.01%.
    B. 6.20%.
    C. 6.28%.
34. Compared with its unadjusted debt-to-equity ratio, Mikko's debt-to-equity ratio as of 31 December 2009, after the adjustments suggested by Groff, is:
    A. lower.
    B. higher.
    C. the same.
35. The *best* answer to Borghi's Question 1 is:
    A. Crux's.
    B. Rolby's.
    C. Mikko's.
36. The *best* answer to Borghi's Question 2 is:
    A. stable.
    B. inflationary.
    C. deflationary.
37. The *best* answer to Borghi's Question 3 is:
    A. Activity ratios.
    B. Solvency ratios.
    C. Profitability ratios.

The following information relates to Questions 38 through 45.[23]

ZP Corporation is a (hypothetical) multinational corporation headquartered in Japan that trades on numerous stock exchanges. ZP prepares its consolidated financial statements in accordance with U.S. GAAP. Excerpts from ZP's 2009 annual report are shown in Exhibits J–L.

[23] Item set developed by Karen O'Connor Rubsam, CFA (Fountain Hills, Arizona, U.S.A.).

EXHIBIT J Consolidated Balance Sheets (¥ millions)

Year Ended 31 December	2008	2009
Current assets		
Cash and cash equivalents	¥542,849	¥814,760
⋮	⋮	⋮
Inventories	608,572	486,465
⋮	⋮	⋮
Total current assets	4,028,742	3,766,309
⋮	⋮	⋮
Total assets	**¥10,819,440**	**¥9,687,346**
⋮	⋮	⋮
Total current liabilities	¥3,980,247	¥3,529,765
⋮	⋮	⋮
Total long-term liabilities	2,663,795	2,624,002
Minority interest in consolidated subsidiaries	218,889	179,843
Total shareholders' equity	3,956,509	3,353,736
Total liabilities and shareholders' equity	**¥10,819,440**	**¥9,687,346**

EXHIBIT K Consolidated Statements of Income (¥ millions)

For the years ended 31 December	2007	2008	2009
Net revenues			
Sales of products	¥7,556,699	¥8,273,503	¥6,391,240
Financing operations	425,998	489,577	451,950
	7,982,697	8,763,080	6,843,190
Cost and expenses			
Cost of products sold	6,118,742	6,817,446	5,822,805
Cost of financing operations	290,713	356,005	329,128
Selling, general and administrative	827,005	832,837	844,927
⋮	⋮	⋮	⋮
Operating income (loss)	746,237	756,792	– 153,670
⋮	⋮	⋮	⋮
Net income	¥548,011	¥572,626	¥–145,646

EXHIBIT L Selected Disclosures in the 2009 Annual Report

Management's Discussion and Analysis of Financial Condition and Results of Operations
"Cost reduction efforts were offset by increased prices of raw materials, other production materials and parts." . . . "Inventories decreased during fiscal 2009 by ¥122.1 billion, or 20.1%, to

¥486.5 billion. This reflects the impacts of decreased sales volumes and fluctuations in foreign currency translation rates."

Management and Corporate Information
Risk Factors
Industry and Business Risks
The worldwide market for our products is highly competitive. ZP faces intense competition from other manufacturers in the respective markets in which it operates. Competition has intensified due to the worldwide deterioration in economic conditions. In addition, competition is likely to further intensify because of continuing globalization, possibly resulting in industry reorganization. Factors affecting competition include product quality and features, the amount of time required for innovation and development, pricing, reliability, safety, economy in use, customer service, and financing terms. Increased competition may lead to lower unit sales and excess production capacity and excess inventory. This may result in a further downward price pressure.

ZP's ability to adequately respond to the recent rapid changes in the industry and to maintain its competitiveness will be fundamental to its future success in maintaining and expanding its market share in existing and new markets.

Notes to Consolidated Financial Statements
2. Summary of significant accounting policies:
Inventories. Inventories are valued at cost, not in excess of market. Cost is determined on the "average cost" basis, except for the cost of finished products carried by certain subsidiary companies which is determined "last-in, first-out" ("LIFO") basis. Inventories valued on the LIFO basis totaled ¥94,578 million and ¥50,037 million at 31 December 2008 and 2009, respectively. Had the "first-in, first-out" basis been used for those companies using the LIFO basis, inventories would have been ¥10,120 million and ¥19,660 million higher than reported at 31 December 2008 and 2009, respectively.

9. Inventories:
Inventories consist of the following:

Year Ended 31 December (Yen in millions)	2008	2009
Finished goods	¥403,856	¥291,977
Raw materials	99,869	85,966
Work in process	79,979	83,890
Supplies and other	24,868	24,632
	¥608,572	**¥486,465**

38. The MD&A indicated that the prices of raw material, other production materials, and parts increased. Based on the inventory valuation methods described in Note 2, which inventory classification would *least* accurately reflect current prices?
    A. Raw materials
    B. Finished goods
    C. Work in process

39. The 2008 inventory value as reported on the 2009 consolidated balance sheet if the company had used the FIFO inventory valuation method instead of the LIFO inventory valuation method for a portion of its inventory would be *closest* to:
    A. ¥104,698 million.
    B. ¥506,125 million.
    C. ¥618,692 million.

40. What is the *least likely* reason why ZP may need to change its accounting policies regarding inventory at some point after 2009?
    A. The U.S. SEC is likely to require companies to use the same inventory valuation method for all inventories.
    B. The U.S. SEC is likely to prohibit the use of one of the methods ZP currently uses for inventory valuation.
    C. One of the inventory valuation methods used for U.S. tax purposes may be repealed as an acceptable method.

41. If ZP had prepared its financial statement in accordance with IFRS, the inventory turnover ratio (using average inventory) for 2009 would be:
    A. lower.
    B. higher.
    C. the same.

42. Inventory levels decreased from 2008 to 2009 for all of the following reasons *except*:
    A. LIFO liquidation.
    B. sales volume decreased.
    C. fluctuations in foreign currency translation rates.

43. Which observation is *most likely* a result of looking only at the information reported in Note 9?
    A. Increased competition has led to lower unit sales.
    B. There have been significant price increases in supplies.
    C. Management expects a further downturn in sales during 2010.

44. Note 2 indicates that, "Inventories valued on the LIFO basis totaled ¥94,578 million and ¥50,037 million at 31 December 2008 and 2009, respectively." Based on this, the LIFO reserve should *most likely*:
    A. increase.
    B. decrease.
    C. remain the same.

45. The Industry and Business Risk excerpt states that, "Increased competition may lead to lower unit sales and excess production capacity and excess inventory. This may result in a further downward price pressure." The downward price pressure could lead to inventory that is valued above current market prices or net realizable value. Any write-downs of inventory are *least likely* to have a significant effect on the inventory valued using:
    A. weighted average cost.
    B. first-in, first-out (FIFO).
    C. last-in, first-out (LIFO).

CHAPTER 9

LONG-LIVED ASSETS

Elaine Henry, CFA
Elizabeth A. Gordon

LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- Distinguish between costs that are capitalized and costs that are expensed in the period in which they are incurred.
- Compare the financial reporting of the following classifications of intangible assets: purchased, internally developed, acquired in a business combination.
- Explain and evaluate the effects on financial statements and ratios of capitalizing versus expensing costs in the period in which they are incurred.
- Describe the different depreciation methods for property, plant, and equipment and the effects of the choice of depreciation method and the assumptions concerning useful life and residual value on depreciation expense, financial statements, and ratios.
- Calculate depreciation expense.
- Describe the different amortization methods for intangible assets with finite lives and the effects of the choice of amortization method and the assumptions concerning useful life and residual value on amortization expense, financial statements, and ratios.
- Calculate amortization expense.
- Describe the revaluation model.
- Describe the impairment of property, plant, and equipment and intangible assets.
- Describe the derecognition of property, plant, and equipment and intangible assets.
- Explain and evaluate the effects on financial statements and ratios of impairment, revaluation, and derecognition of property, plant, and equipment and intangible assets.
- Describe the financial statement presentation of and disclosures relating to property, plant, and equipment and intangible assets.
- Analyze and interpret the financial statement disclosures regarding property, plant, and equipment and intangible assets.

- Compare the financial reporting of investment property with that of property, plant, and equipment.
- Explain and evaluate the effects on financial statements and ratios of leasing assets instead of purchasing them.
- Explain and evaluate the effects on financial statements and ratios of finance leases and operating leases from the perspectives of both the lessor and the lessee.

1. INTRODUCTION

Long-lived assets, also referred to as noncurrent assets or long-term assets, are assets that are expected to provide economic benefits over a future period of time, typically greater than one year.[1] Long-lived assets may be tangible, intangible, or financial assets. Examples of long-lived tangible assets, typically referred to as **property, plant, and equipment** and sometimes as fixed assets, include land, buildings, furniture and fixtures, machinery and equipment, and vehicles; examples of long-lived **intangible assets** (assets lacking physical substance) include patents and trademarks; and examples of long-lived financial assets include investments in equity or debt securities issued by other companies. The scope of this reading is limited to long-lived tangible and intangible assets (hereafter, referred to for simplicity as long-lived assets).

The first issue in accounting for a long-lived asset is determining its cost at acquisition. The second issue is how to allocate the cost to expense over time. The costs of most long-lived assets are capitalized and then allocated as expenses in the profit or loss (income) statement over the period of time during which they are expected to provide economic benefits. The two main types of long-lived assets with costs that are typically *not* allocated over time are land, which is not depreciated, and those intangible assets with indefinite useful lives. Additional issues that arise are the treatment of subsequent costs incurred related to the asset, the use of the cost model versus the revaluation model, unexpected declines in the value of the asset, classification of the asset with respect to intent (for example, held for use or held for sale), and the derecognition of the asset.

This chapter is organized as follows. Section 2 describes and illustrates accounting for the acquisition of long-lived assets, with particular attention to the impact of capitalizing versus expensing expenditures. Section 3 describes the allocation of the costs of long-lived assets over their useful lives. Section 4 discusses the revaluation model that is based on changes in the fair value of an asset. Section 5 covers the concepts of impairment (unexpected decline in the value of an asset). Section 6 describes accounting for the derecognition of long-lived assets. Section 7 describes financial statement presentation, disclosures, and analysis of long-lived assets. Section 8 discusses differences in financial reporting of investment property compared with property, plant, and equipment. Section 9 describes accounting for leases. A summary is followed by practice problems.

[1] In some instances, industry practice is to include as current assets (inventory) some assets that will be held longer than one year (e.g., leaf tobacco, which is cured and aged over a period longer than one year, and whiskey, which is barrel aged for a period longer than one year).

2. ACQUISITION OF LONG-LIVED ASSETS

Upon acquisition, **property, plant, and equipment** (tangible assets with an economic life of longer than one year and intended to be held for the company's own use) are recorded on the balance sheet at cost, which is typically the same as their fair value.[2] Accounting for an intangible asset depends on how the asset is acquired. If several assets are acquired as part of a group, the purchase price is allocated to each asset on the basis of its fair value. An asset's cost potentially includes expenditures additional to the purchase price.

A key concept in accounting for expenditures related to long-lived assets is whether and when such expenditures are capitalized (i.e., included in the asset shown on the balance sheet) versus expensed (i.e., treated as an expense of the period on the income statement). After examining the specific treatment of certain expenditures, we will consider the general financial statement impact of capitalizing versus expensing and two analytical issues related to the decision—namely, the effects on an individual company's trend analysis and on comparability across companies.

2.1. Property, Plant, and Equipment

This section primarily discusses the accounting treatment for the acquisition of long-lived tangible assets (property, plant, and equipment) through purchase. Assets can be acquired by methods other than purchase.[3] When an asset is exchanged for another asset, the asset acquired is recorded at fair value if reliable measures of fair value exist. Fair value is the fair value of the asset given up unless the fair value of the asset acquired is more clearly evident. If there is no reliable measure of fair value, the acquired asset is measured at the carrying amount of the asset given up. In this case, the carrying amount of the assets is unchanged, and no gain or loss is reported.

Typically, accounting for the exchange involves removing the carrying amount of the asset given up, adding a fair value for the asset acquired, and reporting any difference between the carrying amount and the fair value as a gain or loss. A gain would be reported when the fair value used for the newly acquired asset exceeds the carrying amount of the asset given up. A loss would be reported when the fair value used for the newly acquired asset is less than the carrying amount of the asset given up.

When property, plant, or equipment is purchased, the buyer records the asset at cost. In addition to the purchase price, the buyer also includes, as part of the cost of an asset, all the expenditures necessary to get the asset ready for its intended use. For example, freight costs borne by the purchaser to get the asset to the purchaser's place of business and special installation and testing costs required to make the asset usable are included in the total cost of the asset.

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[2] Fair value is defined in International Financial Reporting Standards (IFRS) and under U.S. generally accepted accounting principles (U.S. GAAP) in the Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date" [IFRS 13 and FASB ASC Topic 820].

[3] IAS 16 *Property, Plant and Equipment*, paragraphs 24–26 [Measurement of Cost]; IAS 38 *Intangible Assets*, paragraphs 45–47 [Exchange of Assets]; and FASB ASC Section 845-10-30 [Nonmonetary Transactions – Overall – Initial Measurement].

Subsequent expenditures related to long-lived assets are included as part of the recorded value of the assets on the balance sheet (i.e., capitalized) if they are expected to provide benefits beyond one year in the future and are expensed if they are not expected to provide benefits in future periods. Expenditures that extend the original life of the asset are typically capitalized. Example 1 illustrates the difference between costs that are capitalized and costs that are expensed in a period.

EXAMPLE 1 Acquisition of PPE

Assume a (hypothetical) company, Trofferini S. A., incurred the following expenditures to purchase a towel and tissue roll machine: €10,900 purchase price including taxes, €200 for delivery of the machine, €300 for installation and testing of the machine, and €100 to train staff on maintaining the machine. In addition, the company paid a construction team €350 to reinforce the factory floor and ceiling joists to accommodate the machine's weight. The company also paid €1,500 to repair the factory roof (a repair expected to extend the useful life of the factory by five years) and €1,000 to have the exterior of the factory and adjoining offices repainted for maintenance reasons. The repainting neither extends the life of factory and offices nor improves their usability.

1. Which of these expenditures will be capitalized and which will be expensed?
2. How will the treatment of these expenditures affect the company's financial statements?

Solution to 1: The company will capitalize as part of the cost of the machine all costs that are necessary to get the new machine ready for its intended use: €10,900 purchase price, €200 for delivery, €300 for installation and testing, and €350 to reinforce the factory floor and ceiling joists to accommodate the machine's weight (which was necessary to use the machine and does not increase the value of the factory). The €100 to train staff is not necessary to get the asset ready for its intended use and will be expensed.

The company will capitalize the expenditure of €1,500 to repair the factory roof because the repair is expected to extend the useful life of the factory. The company will expense the €1,000 to have the exterior of the factory and adjoining offices repainted because the painting does not extend the life or alter the productive capacity of the buildings.

Solution to 2: The costs related to the machine that are capitalized—€10,900 purchase price, €200 for delivery, €300 for installation and testing, and €350 to prepare the factory—will increase the carrying amount of the machine asset as shown on the balance sheet and will be included as investing cash outflows. The item related to the factory that is capitalized—the €1,500 roof repair—will increase the carrying amount of the factory asset as shown on the balance sheet and is an investing cash outflow. The expenditures of €100 to train staff and €1,000 to paint are expensed in the period and will reduce the amount of income reported on the company's income statement (and thus reduce retained earnings on the balance sheet) and the operating cash flow.

Example 1 describes capitalizing versus expensing in the context of purchasing property, plant, and equipment. When a company constructs an asset (or acquires an asset that requires a long period of time to get ready for its intended use), borrowing costs incurred directly related to the construction are generally capitalized. Constructing a building, whether for sale (in which case, the building is classified as inventory) or for the company's own use (in which case, the building is classified as a long-lived asset), typically requires a substantial amount of time. To finance construction, any borrowing costs incurred prior to the asset being ready for its intended use are capitalized as part of the cost of the asset. The company determines the interest rate to use on the basis of its existing borrowings or, if applicable, on a borrowing specifically incurred for constructing the asset. If a company takes out a loan specifically to construct a building, the interest cost on that loan during the time of construction would be capitalized as part of the building's cost. Under IFRS, but not under U.S. GAAP, income earned on temporarily investing the borrowed monies decreases the amount of borrowing costs eligible for capitalization.

Thus, a company's interest costs for a period are included either on the balance sheet (to the extent they are capitalized as part of an asset) or on the income statement (to the extent they are expensed). If the interest expenditure is incurred in connection with constructing an asset for the company's own use, the capitalized interest appears on the balance sheet as a part of the relevant long-lived asset (i.e., property, plant, and equipment). The capitalized interest is expensed over time as the property is depreciated and is thus part of subsequent years' depreciation expense rather than interest expense of the current period. If the interest expenditure is incurred in connection with constructing an asset to sell (for example, by a home builder), the capitalized interest appears on the company's balance sheet as part of inventory. The capitalized interest is expensed as part of the cost of goods sold when the asset is sold. Interest payments made prior to completion of construction that are capitalized are classified as an investing cash outflow. Expensed interest may be classified as an operating or financing cash outflow under IFRS and is classified as an operating cash outflow under U.S. GAAP.

EXAMPLE 2 Capitalized Borrowing Costs

BILDA S. A., a hypothetical company, borrows €1,000,000 at an interest rate of 10 percent per year on 1 January 2010 to finance the construction of a factory that will have a useful life of 40 years. Construction is completed after two years, during which time the company earns €20,000 by temporarily investing the loan proceeds.

1. What is the amount of interest that will be capitalized under IFRS, and how would that amount differ from the amount that would be capitalized under U.S. GAAP?
2. Where will the capitalized borrowing cost appear on the company's financial statements?

Solution to 1: The total amount of interest paid on the loan during construction is €200,000 (= €1,000,000 × 10% × 2 years). Under IFRS, the amount of borrowing cost eligible for capitalization is reduced by the €20,000 interest income from temporarily investing the loan proceeds, so the amount to be capitalized is €180,000. Under U.S. GAAP, the amount to be capitalized is €200,000.

Solution to 2: The capitalized borrowing costs will appear on the company's balance sheet as a component of property, plant, and equipment. In the years prior to completion of construction, the interest paid will appear on the statement of cash flows as an investment activity. Over time, as the property is depreciated, the capitalized interest component is part of subsequent years' depreciation expense on the company's income statement.

2.2. Intangible Assets

Intangible assets are assets lacking physical substance. Intangible assets include items that involve exclusive rights, such as patents, copyrights, trademarks, and franchises. Under IFRS, identifiable intangible assets must meet three definitional criteria. They must be (1) identifiable (either capable of being separated from the entity or arising from contractual or legal rights), (2) under the control of the company, and (3) expected to generate future economic benefits. In addition, two recognition criteria must be met: (1) It is probable that the expected future economic benefits of the asset will flow to the company, and (2) the cost of the asset can be reliably measured. Goodwill, which is not considered an identifiable intangible asset,[4] arises when one company purchases another and the acquisition price exceeds the fair value of the identifiable assets (both the tangible assets and the identifiable intangible assets) acquired.

Accounting for an intangible asset depends on how it is acquired. The following sections describe accounting for intangible assets obtained in three ways: purchased in situations other than business combinations, developed internally, and acquired in business combinations.

2.2.1. Intangible Assets Purchased in Situations Other Than Business Combinations

Intangible assets purchased in situations other than business combinations, such as buying a patent, are treated at acquisition the same as long-lived tangible assets; they are recorded at their fair value when acquired, which is assumed to be equivalent to the purchase price. If several intangible assets are acquired as part of a group, the purchase price is allocated to each asset on the basis of its fair value.

In deciding how to treat individual intangible assets for analytical purposes, analysts are particularly aware that companies must use a substantial amount of judgment and numerous assumptions to determine the fair value of individual intangible assets. For analysis, therefore, understanding the types of intangible assets acquired can often be more useful than focusing on the values assigned to the individual assets. In other words, an analyst would typically be more interested in understanding what assets a company acquired (for example, franchise rights and a mailing list) than in the precise portion of the purchase price a company allocated to each asset. Understanding the types of assets a company acquires can offer insights into the company's strategic direction and future operating potential.

[4]The IFRS definition of an intangible asset as an "identifiable nonmonetary asset without physical substance" applies to intangible assets not specifically dealt with in standards other than IAS 38. The definition of intangible assets under U.S. GAAP—"assets (other than financial assets) that lack physical substance"—includes goodwill in the definition of an intangible asset.

2.2.2. Intangible Assets Developed Internally

In contrast with the treatment of construction costs of tangible assets, the costs to internally develop intangible assets are generally expensed when incurred. There are some situations, however, in which the costs incurred to internally develop an intangible asset are capitalized. The general analytical issues related to the capitalizing-versus-expensing decision apply here—namely, comparability across companies and the effect on an individual company's trend analysis.

The general requirement that costs to internally develop intangible assets be expensed should be compared with capitalizing the cost of acquiring intangible assets in situations other than business combinations. Because costs associated with internally developing intangible assets are usually expensed, a company that has internally developed such intangible assets as patents, copyrights, or brands through expenditures on R&D or advertising will recognize a lower amount of assets than a company that has obtained intangible assets through external purchase. In addition, on the statement of cash flows, costs of internally developing intangible assets are classified as operating cash outflows whereas costs of acquiring intangible assets are classified as investing cash outflows. Differences in strategy (developing versus acquiring intangible assets) can thus impact financial ratios.

IFRS require that expenditures on research (or during the research phase of an internal project) be expensed rather than capitalized as an intangible asset.[5] Research is defined as "original and planned investigation undertaken with the prospect of gaining new scientific or technical knowledge and understanding."[6] The "research phase of an internal project" refers to the period during which a company cannot demonstrate that an intangible asset is being created—for example, the search for alternative materials or systems to use in a production process. IFRS allow companies to recognize an intangible asset arising from development (or the development phase of an internal project) if certain criteria are met, including a demonstration of the technical feasibility of completing the intangible asset and the intent to use or sell the asset. Development is defined as "the application of research findings or other knowledge to a plan or design for the production of new or substantially improved materials, devices, products, processes, systems or services before the start of commercial production or use."[7]

Generally, U.S. GAAP require that both research and development costs be expensed as incurred but require capitalization of certain costs related to software development.[8] Costs incurred to develop a software product for sale are expensed until the product's technological feasibility is established and are capitalized thereafter. Similarly, companies expense costs related to the development of software for internal use until it is probable that the project will be completed and that the software will be used as intended. Thereafter, development costs are capitalized. The probability that the project will be completed is easier to demonstrate than is technological feasibility. The capitalized costs, related directly to developing software for sale or internal use, include the costs of employees who help build and test the software. The treatment of software development costs under U.S. GAAP is similar to the treatment of all costs of internally developed intangible assets under IFRS.

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[5] IAS 38 *Intangible Assets*.

[6] IAS 38 *Intangible Assets,* paragraph 8 [Definitions].

[7] IAS 38 *Intangible Assets,* paragraph 8 [Definitions].

[8] FASB ASC Section 350-40-25 [Intangibles—Goodwill and Other – Internal-Use Software – Recognition] and FASB ASC Section 985-20-25 [Software – Costs of Software to be Sold, Leased, or Marketed – Recognition] specify U.S. GAAP accounting for software development costs for software for internal use and for software to be sold, respectively.

EXAMPLE 3 Software Development Costs

Assume REH AG, a hypothetical company, incurs expenditures of €1,000 per month during the fiscal year ended 31 December 2009 to develop software for internal use. Under IFRS, the company must treat the expenditures as an expense until the software meets the criteria for recognition as an intangible asset, after which time the expenditures can be capitalized as an intangible asset.

1. What is the accounting impact of the company being able to demonstrate that the software met the criteria for recognition as an intangible asset on 1 February versus 1 December?
2. How would the treatment of expenditures differ if the company reported under U.S. GAAP and it had established in 2008 that the project was likely to be completed?

Solution to 1: If the company is able to demonstrate that the software met the criteria for recognition as an intangible asset on 1 February, the company would recognize €1,000 of expense (on the income statement) during the fiscal year ended 31 December 2009. The other €11,000 of expenditures would be recognized as an intangible asset (on the balance sheet). Alternatively, if the company is not able to demonstrate that the software met the criteria for recognition as an intangible asset until 1 December, the company would recognize €11,000 of expense during the fiscal year ended 31 December 2009, with the other €1,000 of expenditures recognized as an intangible asset.

Solution to 2: Under U.S. GAAP, the company would capitalize the entire €12,000 spent to develop software for internal use.

2.2.3. Intangible Assets Acquired in a Business Combination

When one company acquires another company, the transaction is accounted for using the **acquisition method** of accounting.[9] Under the acquisition method, the company identified as the acquirer allocates the purchase price to each asset acquired (and each liability assumed) on the basis of its fair value. If the purchase price exceeds the sum of the amounts that can be allocated to individual identifiable assets and liabilities, the excess is recorded as goodwill. Goodwill cannot be identified separately from the business as a whole.

Under IFRS, the acquired individual assets include identifiable intangible assets that meet the definitional and recognition criteria.[10] Otherwise, if the item is acquired in a business combination and cannot be recognized as a tangible or identifiable intangible asset, it is recognized as goodwill. Under U.S. GAAP, there are two criteria to judge whether an intangible asset acquired in a business combination should be recognized separately from goodwill: The asset

[9] Both IFRS and U.S. GAAP require the use of the acquisition method in accounting for business combinations (IFRS 3 and FASB ASC Section 805).

[10] As previously described, the definitional criteria are identifiability, control by the company, and expected future benefits. The recognition criteria are probable flows of the expected economic benefits to the company, and measurability.

must be either an item arising from contractual or legal rights or an item that can be separated from the acquired company. Examples of intangible assets treated separately from goodwill include the intangible assets previously mentioned that involve exclusive rights (patents, copyrights, franchises, licenses), as well as such items as Internet domain names and video and audiovisual materials.

Exhibit 1 describes how InBev allocated the €40.3 billion purchase price for its acquisition of Anheuser-Busch. The majority of the identifiable intangible asset valuation (€16.473 billion) relates to brands with indefinite life. Another €256 million or €0.256 billion was for the identifiable intangible assets with definite useful lives—distribution agreements and favorable contracts. These assets are being amortized over the life of the associated contracts. In addition, €24.7 billion of goodwill was recognized.

EXHIBIT 1 Acquisition of Intangible Assets through a Business Combination

Excerpt from the 2008 annual report of AB InBev (BRU: ABI):

On 18 November, InBev has completed the acquisition of Anheuser-Busch, following approval from shareholders of both companies. . . . Effective the date of the closing, InBev has changed its name to AB InBev to reflect the heritage and traditions of Anheuser-Busch. Under the terms of the merger agreement, all shares of Anheuser-Busch were acquired for 70 U.S. dollar per share in cash for an aggregate amount of approximately 52.5b U.S. dollar or 40.3b euro.

The transaction resulted in 24.7b euro goodwill provisionally allocated primarily to the U.S. business on the basis of expected synergies. . . . The valuation of the property, plant and equipment, intangible assets, investment in associates, interest bearing loans and borrowings and employee benefits is based on the valuation performed by an independent valuation specialist. The other assets and liabilities are based on the current best estimates of AB InBev's management.

The majority of the intangible asset valuation relates to brands with indefinite life. The valuation of the brands with indefinite life is based on a series of factors, including the brand history, the operating plan and the countries in which the brands are sold. The brands with indefinite life include the Budweiser family (including Bud and Bud Light), the Michelob brand family, the Busch brand family and the Natural brand family and have been fair valued for a total amount of 16,473m euro. Distribution agreements and favorable contracts have been fair valued for a total amount of 256m euro. These are being amortized over the term of the associated contracts ranging from 3 to 18 years.

Source: AB InBev 2008 Annual Report, pp. 74–75.

2.3. Capitalizing versus Expensing—Impact on Financial Statements and Ratios

This section discusses the implications for financial statements and ratios of capitalizing versus expensing costs in the period in which they are incurred. We first summarize the general financial statement impact of capitalizing versus expensing and two analytical issues related to the decision—namely the effect on an individual company's trend analysis and on comparability across companies.

In the period of the expenditure, an expenditure that is capitalized increases the amount of assets on the balance sheet and appears as an investing cash outflow on the statement of cash flows. In subsequent periods, a company allocates the capitalized amount over the asset's useful

life as depreciation or amortization expense (except assets that are not depreciated, i.e., land, or amortized, e.g., intangible assets with indefinite lives). This expense reduces net income on the income statement and reduces the value of the asset on the balance sheet. Depreciation and amortization are noncash expenses and therefore, apart from their effect on taxable income and taxes payable, have no impact on the cash flow statement. In the section of the statement of cash flows that reconciles net income to operating cash flow, depreciation and amortization expenses are added back to net income.

Alternatively, an expenditure that is expensed reduces net income by the after-tax amount of the expenditure in the period it is made. No asset is recorded on the balance sheet and thus no depreciation or amortization occurs in subsequent periods. The lower amount of net income is reflected in lower retained earnings on the balance sheet. An expenditure that is expensed appears as an operating cash outflow in the period it is made. There is no effect on the financial statements of subsequent periods.

Example 4 illustrates the impact on the financial statements of capitalizing versus expensing an expenditure.

EXAMPLE 4 General Financial Statement Impact of Capitalizing versus Expensing

Assume two identical (hypothetical) companies, CAP Inc. (CAP) and NOW Inc. (NOW), start with €1,000 cash and €1,000 common stock. Each year the companies recognize total revenues of €1,500 cash and make cash expenditures, excluding an equipment purchase, of €500. At the beginning of operations, each company pays €900 to purchase equipment. CAP estimates the equipment will have a useful life of three years and an estimated salvage value of €0 at the end of the three years. NOW estimates a much shorter useful life and expenses the equipment immediately. The companies have no other assets and make no other asset purchases during the three-year period. Assume the companies pay no dividends, earn zero interest on cash balances, have a tax rate of 30 percent, and use the same accounting method for financial and tax purposes.

The left side of Exhibit 2 shows CAP's financial statements; that is, with the expenditure capitalized and depreciated at €300 per year based on the straight-line method of depreciation (€900 cost minus €0 salvage value equals €900, divided by a three-year life equals €300 per year). The right side of the exhibit shows NOW's financial statements, with the entire €900 expenditure treated as an expense in the first year. All amounts are in euro.

1. Which company reports higher net income over the three years? Total cash flow? Cash from operations?
2. Based on ROE and net profit margin, how does the profitability of the two companies compare?
3. Why does NOW report change in cash of €70 in Year 1, while CAP reports total change in cash of (€110)?

EXHIBIT 2 Capitalizing versus Expensing

CAP Inc.				NOW Inc.			
Capitalize €900 as Asset and Depreciate				Expense €900 Immediately			
For Year	1	2	3	For Year	1	2	3
Revenue	1,500	1,500	1,500	Revenue	1,500	1,500	1,500
Cash expenses	500	500	500	Cash expenses	1,400	500	500
Depreciation	300	300	300	Depreciation	0	0	0
Income before tax	700	700	700	Income before tax	100	1,000	1,000
Tax at 30%	210	210	210	Tax at 30%	30	300	300
Net income	490	490	490	Net income	70	700	700
Cash from operations	790	790	790	Cash from operations	70	700	700
Cash used in investing	(900)	0	0	Cash used in investing	0	0	0
Total change in cash	(110)	790	790	Total change in cash	70	700	700

As of	Time 0	End of Year 1	End of Year 2	End of Year 3	Time	Time 0	End of Year 1	End of Year 2	End of Year 3
Cash	1,000	890	1,680	2,470	Cash	1,000	1,070	1,770	2,470
PP & E (net)	—	600	300	—	PP & E (net)	—	—	—	—
Total Assets	1,000	1,490	1,980	2,470	Total Assets	1,000	1,070	1,770	2,470
Retained earnings	0	490	980	1,470	Retained earnings	0	70	770	1,470
Common stock	1,000	1,000	1,000	1,000	Common stock	1,000	1,000	1,000	1,000
Total shareholders' equity	1,000	1,490	1,980	2,470	Total shareholders' equity	1,000	1,070	1,770	2,470

Solution to 1: Neither company reports higher total net income or cash flow over the three years. The sum of net income over the three years is identical (€1,470 total) whether the €900 is capitalized or expensed. Also, the sum of the change in cash (€1,470 total) is identical under either scenario. CAP reports higher cash from operations by an amount of €900 because, under the capitalization scenario, the €900 purchase is treated as an investing cash flow.

Note: Because the companies use the same accounting method for both financial and taxable income, absent the assumption of zero interest on cash balances, expensing the €900 would have resulted in higher income and cash flow for NOW because the lower taxes paid in the first year (€30 versus €210) would have allowed NOW to earn interest income on the tax savings.

Solution to 2: In general, Ending shareholders' equity = Beginning shareholders' equity + Net income + Other comprehensive income – Dividends + Net capital contributions from shareholders. Because the companies in this example do not have other comprehensive income, did not pay dividends, and reported no capital contributions from shareholders, Ending retained earnings = Beginning retained earnings + Net income, and Ending shareholders' equity = Beginning shareholders' equity + Net income.

ROE is calculated as Net income divided by Average shareholders' equity, and Net profit margin is calculated as Net income divided by Total revenue. For example, CAP had Year 1 ROE of 39 percent (€490/[(€1,000 + €1,490)/2]), and Year 1 net profit margin of 33 percent (€490/€1,500).

CAP Inc.				NOW inc.			
Capitalize €900 as Asset and Depreciate				Expense €900 Immediately			
For Year	1	2	3	For Year	1	2	3
ROE	39%	28%	22%	ROE	7%	49%	33%
Net profit margin	33%	33%	33%	Net profit margin	5%	47%	47%

As shown, capitalizing results in higher profitability ratios (ROE and net profit margin) in the first year, and lower profitability ratios in subsequent years. For example, CAP's Year 1 ROE of 39 percent was higher than NOW's Year 1 ROE of 7 percent, but in Years 2 and 3, NOW reports superior profitability.

Note also that NOW's superior growth in net income between Year 1 and Year 2 is not attributable to superior performance compared to CAP but rather to the accounting decision to recognize the expense sooner than CAP. In general, all else equal, accounting decisions that result in recognizing expenses sooner will give the appearance of greater subsequent growth. Comparison of the growth of the two companies' net incomes without an awareness of the difference in accounting methods would be misleading. As a corollary, NOW's income and profitability exhibit greater volatility across the three years, not because of more volatile performance but rather because of the different accounting decision.

Solution to 3: NOW reports an increase in cash of €70 in Year 1, while CAP reports a decrease in cash of €110 because NOW's taxes were €180 lower than CAP's taxes (€30 versus €210).

Note that this problem assumes the accounting method used by each company for its tax purposes is identical to the accounting method used by the company for its financial reporting. In many countries, companies are allowed to use different depreciation methods for financial reporting and taxes, which may give rise to deferred taxes.

As shown, discretion regarding whether to expense or capitalize expenditures can impede comparability across companies. Example 4 assumes the companies purchase a single asset in one year. Because the sum of net income over the three-year period is identical whether the asset is capitalized or expensed, it illustrates that although capitalizing results in higher profitability compared to expensing in the first year, it results in lower profitability ratios in the subsequent years. Conversely, expensing results in lower profitability in the first year but higher profitability in later years, indicating a favorable trend.

Similarly, shareholders' equity for a company that capitalizes the expenditure will be higher in the early years because the initially higher profits result in initially higher retained earnings. Example 4 assumes the companies purchase a single asset in one year and report identical amounts of total net income over the three-year period, so shareholders' equity (and retained earnings) for the firm that expenses will be identical to shareholders' equity (and retained earnings) for the capitalizing firm at the end of the three-year period.

Although Example 4 shows companies purchasing an asset only in the first year, if a company continues to purchase similar or increasing amounts of assets each year, the profitability-enhancing effect of capitalizing continues if the amount of the expenditures in a period continues to be more than the depreciation expense. Example 5 illustrates this point.

EXAMPLE 5 Impact of Capitalizing versus Expensing for Ongoing Purchases

A company buys a £300 computer in Year 1 and capitalizes the expenditure. The computer has a useful life of three years and an expected salvage value of £0, so the annual depreciation expense using the straight-line method is £100 per year. Compared to expensing the entire £300 immediately, the company's pretax profit in Year1 is £200 greater.

1. Assume that the company continues to buy an identical computer each year at the same price. If the company uses the same accounting treatment for each of the computers, when does the profit-enhancing effect of capitalizing versus expensing end?
2. If the company buys another identical computer in Year 4, using the same accounting treatment as the prior years, what is the effect on Year 4 profits of capitalizing versus expensing these expenditures?

Solution to 1: The profit-enhancing effect of capitalizing versus expensing would end in Year 3. In Year 3, the depreciation expense on each of the three computers bought in Years 1, 2, and 3 would total £300 (£100 + £100 + £100). Therefore, the total depreciation expense for Year 3 will be exactly equal to the capital expenditure in Year 3. The expense in Year 3 would be £300, regardless of whether the company capitalized or expensed the annual computer purchases.

Solution to 2: There is no impact on Year 4 profits. As in the previous year, the depreciation expense on each of the three computers bought in Years 2, 3, and 4 would total £300 (£100 + £100 + £100). Therefore, the total depreciation expense for Year 4 will be exactly equal to the capital expenditure in Year 4. Pretax profits would be reduced by £300, regardless of whether the company capitalized or expensed the annual computer purchases.

Compared to expensing an expenditure, capitalizing the expenditure typically results in greater amounts reported as cash from operations. Capitalized expenditures are typically treated as an investment cash outflow whereas expenses reduce operating cash flows. Because cash flow from operating activities is an important consideration in some valuation models, companies may try to maximize reported cash flow from operations by capitalizing expenditures that should be expensed. Valuation models that use free cash flow will consider not only operating cash flows but also investing cash flows. Analysts should be alert to evidence of companies manipulating reported cash flow from operations by capitalizing expenditures that should be expensed.

In summary, holding all else constant, capitalizing an expenditure enhances current profitability and increases reported cash flow from operations. The profitability-enhancing effect of capitalizing continues so long as capital expenditures exceed the depreciation expense. Profitability-enhancing motivations for decisions to capitalize should be considered when analyzing performance. For example, a company may choose to capitalize more expenditures (within the allowable bounds of accounting standards) to achieve earnings targets for a given period. Expensing a cost in the period reduces current period profits but enhances future profitability and thus enhances the profit trend. Profit trend–enhancing motivations should also be considered when analyzing performance. If the company is in a reporting environment that requires identical accounting methods for financial reporting and taxes (unlike the United States, which permits companies to use depreciation methods for reporting purposes that differ from the depreciation method required by tax purposes), then expensing will have a more favorable cash flow impact because paying lower taxes in an earlier period creates an opportunity to earn interest income on the cash saved.

In contrast with the relatively simple examples given previously, it is generally neither possible nor desirable to identify individual instances involving discretion about whether to capitalize or expense expenditures. An analyst can, however, typically identify significant items of expenditure treated differently across companies. The items of expenditure giving rise to the most relevant differences across companies will vary by industry. This cross-industry variation is apparent in the following discussion of the capitalization of expenditures.

2.4. Capitalization of Interest Costs

As noted earlier, companies generally must capitalize interest costs associated with acquiring or constructing an asset that requires a long period of time to get ready for its intended use.[11] As a consequence of this accounting treatment, a company's interest costs for a period can appear either on the balance sheet (to the extent they are capitalized) or on the income statement (to the extent they are expensed).

If the interest expenditure is incurred in connection with constructing an asset for the company's own use, the capitalized interest appears on the balance sheet as a part of the relevant long-lived asset. The capitalized interest is expensed over time as the property is depreciated—and is thus part of depreciation expense rather than interest expense. If the interest expenditure is incurred in connection with constructing an asset to sell, for example by a real estate construction company, the capitalized interest appears on the company's balance sheet as part of inventory. The capitalized interest is then expensed as part of the cost of sales when the asset is sold.

[11] IAS 23 [Borrowing Costs] and FASB ASC Subtopic 835-20 [Interest – Capitalization of Interest] specify respectively IFRS and U.S. GAAP for capitalization of interest costs. Although the standards are not completely converged, the standards are in general agreement.

The treatment of capitalized interest poses certain issues that analysts should consider. First, capitalized interest appears as part of investing cash outflows, whereas expensed interest reduces operating cash flow. Although the treatment is consistent with accounting standards, an analyst may want to examine the impact on reported cash flows. Second, interest coverage ratios are solvency indicators measuring the extent to which a company's earnings (or cash flow) in a period covered its interest costs. To provide a true picture of a company's interest coverage, the entire amount of interest expenditure, both the capitalized portion and the expensed portion, should be used in calculating interest coverage ratios. Additionally, if a company is depreciating interest that it capitalized in a previous period, income should be adjusted to eliminate the effect of that depreciation. Example 6 illustrates the calculation.

EXAMPLE 6 Effect of Capitalized Interest Costs on Coverage Ratios and Cash Flow

MTR Gaming Group, Inc. (NasdaqGS: MNTG) disclosed the following information in one of the footnotes to its financial statements: "Interest is allocated and capitalized to construction in progress by applying our cost of borrowing rate to qualifying assets. Interest capitalized in 2007 and 2006 was $2.2 million and $6.0 million, respectively. There was no interest capitalized during 2008."(Form 10-K filed 13 March 2009).

EXHIBIT 3 MTR Gaming Group Selected Data, as Reported (dollars in thousands)

	2008	2007	2006
EBIT (from income statement)	432,686	389,268	268,800
Interest expense (from income statement)	40,764	34,774	17,047
Interest capitalized (from footnote)	0	2,200	6,000
Net cash provided by operating activities	14,693	14,980	42,206
Net cash from (used) in investing activities	41,620	(144,824)	(162,415)

1. Calculate and interpret MTR's interest coverage ratio with and without capitalized interest. Assume that capitalized interest increases depreciation expense by $475 thousand in 2008 and 2007, and by $365 thousand in 2006.
2. Calculate MTR's percentage change in operating cash flow from 2006 to 2007 and from 2007 to 2008. Assuming the financial reporting does not affect reporting for income taxes, what were the effects of capitalized interest on operating and investing cash flows?

Solution to 1: MTR did not capitalize any interest during 2008, so the interest coverage ratio for this year is affected only by depreciation expense related to previously capitalized interest. The interest coverage ratio, measured as earnings before interest and taxes (EBIT) divided by interest expense, was as follows for 2008:

10.61 ($432,686 ÷ $40,764) for 2008 without adjusting for capitalized interest
10.63 [($432,686 + $475) ÷ $40,764] including an adjustment to EBIT for depreciation of previously capitalized interest

For the years 2007 and 2006, interest coverage ratios with and without capitalized interest were as follows:

For 2007

11.19 ($389,268 ÷ $34,774) without adjusting for capitalized interest; and
10.54 [($389,268 + $475) ÷ ($34,774 + $2,200)] including an adjustment to EBIT for depreciation of previously capitalized interest and an adjustment to interest expense for the amount of interest capitalized in 2007.

For 2006

15.77 ($268,800 ÷ $17,047) without adjusting for capitalized interest; and
11.68 [($268,800 + $365) ÷ ($17,047 + $6,000)] including an adjustment to EBIT for depreciation of previously capitalized interest and an adjustment to interest expense for the amount of interest capitalized in 2006.

Because MTR capitalizes interest in previous years, EBIT is adjusted by adding in depreciation expense due to capitalized interest costs.

The earlier calculations indicate that MTR's interest coverage deteriorated over the three-year period from 2006 to 2008, even with no adjustments for capitalized interest. In both 2006 and 2007, the coverage ratio is lower when adjusted for capitalized interest. For 2006, the interest coverage ratio of 11.68 that includes capitalized interest is substantially lower than the ratio without capitalized interest.

Solution to 2: If the interest had been expensed rather than capitalized, operating cash flows would have been substantially lower in 2006, slightly lower in 2007, but unchanged in 2008. If the interest had been expensed rather than capitalized, the trend—at least in the last two years—would have been more favorable; operating cash flows would have increased rather than decreased over the 2007 to 2008 period. On an unadjusted basis, for 2008 compared with 2007, MTR's operating cash flow declined by 1.9 percent [($14,693 ÷ $14,980) – 1]. If the $2,200 of interest had been expensed rather than capitalized in 2007, the change in operating cash flow would have been positive, 15.0 percent {[$14,693 ÷ ($14,980 – $2,200)] – 1}.

If interest had been expensed rather than capitalized, the amount of cash outflow for investing activities would have been lower in 2006 and 2007 but unaffected in 2008. The percentage decline in cash outflows for investing activities from 2006 to 2007 would have been slightly smaller excluding capitalized interest from investing activities, 8.8 percent {[($144,824 – $2,200) ÷ ($162,415 – $6,000)] – 1}.

The treatment of capitalized interest raises issues for consideration by an analyst. First, capitalized interest appears as part of investing cash outflows, whereas expensed interest reduces operating or financing cash flow under IFRS and operating cash flow under U.S. GAAP. An analyst may want to examine the impact on reported cash flows of interest expenditures when comparing companies. Second, interest coverage ratios are solvency indicators measuring the extent to which a company's earnings (or cash flow) in a period covered its interest costs. To provide a true picture of a company's interest coverage, the entire amount of interest, both the capitalized portion and the expensed portion, should be used in calculating interest coverage ratios.

Generally, including capitalized interest in the calculation of interest coverage ratios provides a better assessment of a company's solvency. In assigning credit ratings, rating agencies include capitalized interest in coverage ratios. For example, Standard & Poor's calculates the

EBIT interest coverage ratio as EBIT divided by gross interest (defined as interest prior to deductions for capitalized interest or interest income).

Maintaining a minimum interest coverage ratio is a financial covenant often included in lending agreements, for example, bank loans and bond indentures. The definition of the coverage ratio can be found in the company's credit agreement. The definition is relevant because treatment of capitalized interest in calculating coverage ratios would affect an assessment of how close a company's actual ratios are to the levels specified by its financial covenants and thus the probability of breaching those covenants.

2.5. Capitalization of Internal Development Costs

As noted previously, accounting standards require companies to capitalize software development costs after a product's feasibility is established. Despite this requirement, judgment in determining feasibility means that companies' capitalization practices may differ. For example, as illustrated in Exhibit 4, Microsoft judges product feasibility to be established very shortly before manufacturing begins and, therefore, effectively expenses—rather than capitalizes—research and development costs.

EXHIBIT 4 Disclosure on Software Development Costs

Excerpt from Management's Discussion and Analysis (MD&A) of Microsoft Corporation (NasdaqGS: MSFT), Application of Critical Accounting Policies, Research and Development Costs:

SFAS No.86 specifies that costs incurred internally in researching and developing a computer software product should be charged to expense until technological feasibility has been established for the product. Once technological feasibility is established, all software costs should be capitalized until the product is available for general release to customers. Judgment is required in determining when technological feasibility of a product is established. We have determined that technological feasibility for our software products is reached after all high-risk development issues have been resolved through coding and testing. Generally, this occurs shortly before the products are released to manufacturing. The amortization of these costs is included in cost of revenue over the estimated life of the products.

Source: Microsoft Corporation Annual Report 2009, p. 36.

Expensing rather than capitalizing development costs results in lower net income in the current period. Expensing rather than capitalizing will continue to result in lower net income so long as the amount of the current-period development expenses is higher than the amortization expense that would have resulted from amortizing prior periods' capitalized development costs—the typical situation when a company's development costs are increasing. On the statement of cash flows, expensing rather than capitalizing development costs results in lower net operating cash flows and higher net investing cash flows. This is because the development costs are reflected as operating cash outflows rather than investing cash outflows.

In comparing the financial performance of a company that expenses most or all software development costs, such as Microsoft, with another company that capitalizes software development costs, adjustments can be made to make the two comparable. For the company that capitalizes software development costs, an analyst can adjust (a) the income statement to include software development costs as an expense and to exclude amortization of prior years' software development costs; (b) the balance sheet to exclude capitalized software (decrease assets and equity); and (c) the statement of cash flows to decrease operating cash flows and decrease cash used in investing by the amount of the current period development costs. Any ratios that include income, long-lived assets, or cash flow from operations—such as return on equity—will also be affected.

EXAMPLE 7 Software Development Costs

You are working on a project involving the analysis of JHH Software, a (hypothetical) software development company that established technical feasibility for its first product in 2007. Part of your analysis involves computing certain market-based ratios, which you will use to compare JHH to another company that expenses all of its software development expenditures. Relevant data and excerpts from the company's annual report are included in Exhibit 5.

EXHIBIT 5 JHH SOFTWARE (dollars in thousands, except per-share amounts)

CONSOLIDATED STATEMENT OF EARNINGS—Abbreviated			
For Year Ended 31 December	2009	2008	2007
Total revenue	$91,424	$91,134	$96,293
Total operating expenses	78,107	78,908	85,624
Operating income	13,317	12,226	10,669
Provision for income taxes	3,825	4,232	3,172
Net income	$ 9,492	$ 7,934	$ 7,479
Earnings per share (EPS)	$ 1.40	$ 0.81	$ 0.68

STATEMENT OF CASH FLOWS—Abbreviated			
For Year Ended 31 December	2009	2008	2007
Net cash provided by operating activities	$15,007	$14,874	$15,266
Net cash used in investing activities*	(11,549)	(4,423)	(5,346)
Net cash used in financing activities	(8,003)	(7,936)	(7,157)
Net change in cash and cash equivalents	($4,545)	$2,515	$2,763
**Includes software development expenses of*	*($6,000)*	*($4,000)*	*($2,000)*
and includes capital expenditures of	*($2,000)*	*($1,600)*	*($1,200)*

Additional information:			
For Year Ended 31 December	2009	2008	2007
Market value of outstanding debt	0	0	0
Amortization of capitalized software development expenses	($2,000)	($667)	0
Depreciation expense	($2,200)	($1,440)	($1,320)
Market price per share of common stock	$ 42	$ 26	$ 17
Shares of common stock outstanding (thousands)	6,780	9,765	10,999

Footnote disclosure of accounting policy for software development:
Expenses that are related to the conceptual formulation and design of software products are expensed to research and development as incurred. The company capitalizes expenses that are incurred to produce the finished product after technological feasibility has been established.

1. Compute the following ratios for JHH based on the reported financial statements for fiscal year ended 31 December 2009, with no adjustments. Next, determine the approximate impact on these ratios if the company had expensed rather than capitalized its investments in software. (Assume the financial reporting does not affect reporting for income taxes. There would be no change in the effective tax rate.)
   A. P/E: Price/Earnings per share
   B. P/CFO: Price/Operating cash flow per share
   C. EV/EBITDA: Enterprise value/EBITDA, where enterprise value is defined as the total market value of all sources of a company's financing, including equity and debt, and EBITDA is earnings before interest, taxes, depreciation, and amortization.
2. Interpret the changes in the ratios.

Solution to 1: (Dollars are in thousands, except per-share amounts.) JHH's 2009 ratios are presented in the following table:

	Ratios	As Reported	As Adjusted
A.	P/E ratio	30.0	42.9
B.	P/CFO	19.0	31.6
C.	EV/EBITDA	16.3	24.7

A. Based on the information as reported, the P/E ratio was 30.0 ($42 ÷ $1.40). Based on EPS adjusted to expense software development costs, the P/E ratio was 42.9 ($42 ÷ $0.98).
   - Price: Assuming that the market value of the company's equity is based on its fundamentals, the price per share is $42, regardless of a difference in accounting.
   - EPS: As reported, EPS was $1.40. Adjusted EPS was $0.98. Expensing software development costs would have reduced JHH's 2009 operating income by $6,000, but the company would have reported no amortization of prior years' software costs, which would have increased operating income by $2,000. The net change of $4,000 would have reduced operating income from the reported $13,317 to $9,317. The effective tax rate for 2009 ($3,825 ÷ $13,317) is 28.72%, and using this effective tax rate would give an adjusted net income of $6,641 [$9,317 × (1 – 0.2872)], compared to $9,492 before the adjustment. The EPS would therefore be reduced from the reported $1.40 to $0.98 (adjusted net income of $6,641 divided by 6,780 shares).

B. Based on information as reported, the P/CFO was 19.0 ($42 ÷ $2.21). Based on CFO adjusted to expense software development costs, the P/CFO was 31.6 ($42 ÷ $1.33).
   - Price: Assuming that the market value of the company's equity is based on its fundamentals, the price per share is $42, regardless of a difference in accounting.
   - CFO per share, as reported, was $2.21 (total operating cash flows $15,007 ÷ 6,780 shares).
   - CFO per share, as adjusted, was $1.33. The company's $6,000 expenditure on software development costs was reported as a cash outflow from investing activities, so expensing those costs would reduce cash from operating activities by $6,000, from the reported $15,007 to $9,007. Dividing adjusted total operating cash flow of $9,007 by 6,780 shares results in cash flow per share of $1.33.

C. Based on information as reported, the EV/EBITDA was 16.3 ($284,760 ÷ $17,517). Based on EBITDA adjusted to expense software development costs, the EV/EBITDA was 24.7 ($284,760 ÷ $11,517).
   - Enterprise Value: Enterprise value is the sum of the market value of the company's equity and debt. JHH has no debt, and therefore the enterprise value is equal to the market value of its equity. The market value of its equity is $284,760 ($42 per share × 6,780 shares).
   - EBITDA, as reported, was $17,517 (earnings before interest and taxes of $13,317 plus $2,200 depreciation plus $2,000 amortization).
   - EBITDA, adjusted for expensing software development costs by the inclusion of $6,000 development expense and the exclusion of $2,000 amortization of prior expense, would be $11,517 (earnings before interest and taxes of $9,317 plus $2,200 depreciation plus $0 amortization).

Solution to 2: Expensing software development costs would decrease historical profits, operating cash flow, and EBITDA, and would thus increase all market multiples. So JHH's stock would appear more expensive if it expensed rather than capitalized the software development costs.

If the unadjusted market-based ratios were used in the comparison of JHH to its competitor that expenses all software development expenditures, then JHH might appear to be underpriced when the difference is solely related to accounting factors. JHH's adjusted market-based ratios provide a better basis for comparison.

For the company in Example 7, current period software development expenditures exceed the amortization of prior periods' capitalized software development expenditures. As a result, expensing rather than capitalizing software development costs would have the effect of lowering income. If, however, software development expenditures slowed such that current expenditures were lower than the amortization of prior periods' capitalized software development expenditures, then expensing software development costs would have the effect of increasing income relative to capitalizing it.

This section illustrated how decisions about capitalizing versus expensing impact financial statements and ratios. Earlier expensing lowers current profits but enhances trends, whereas capitalizing now and expensing later enhances current profits. Having described the accounting for acquisition of long-lived assets, we now turn to the topic of measuring long- lived assets in subsequent periods.

3. DEPRECIATION AND AMORTIZATION OF LONG-LIVED ASSETS

Under the cost model of reporting long-lived assets, which is permitted under IFRS and required under U.S. GAAP, the capitalized costs of long-lived tangible assets (other than land, which is not depreciated) and intangible assets with finite useful lives are allocated to subsequent periods as depreciation and amortization expenses. Depreciation and amortization are effectively the same concept, with the term depreciation referring to the process of

allocating tangible assets' costs and the term amortization referring to the process of allocating intangible assets' costs.[12] The alternative model of reporting long-lived assets is the **revaluation model**, which is permitted under IFRS but not under U.S. GAAP. Under the revaluation model, a company reports the long-lived asset at fair value rather than at acquisition cost (historical cost) less accumulated depreciation or amortization, as in the cost model.

An asset's carrying amount is the amount at which the asset is reported on the balance sheet. Under the cost model, at any point in time, the carrying amount (also called carrying value or net book value) of a long-lived asset is equal to its historical cost minus the amount of depreciation or amortization that has been accumulated since the asset's purchase (assuming that the asset has not been impaired, a topic which will be addressed in Section 5). Companies may present on the balance sheet the total net amount of property, plant, and equipment and the total net amount of intangible assets. However, more detail is disclosed in the notes to financial statements. The details disclosed typically include the acquisition costs, the depreciation and amortization expenses, the accumulated depreciation and amortization amounts, the depreciation and amortization methods used, and information on the assumptions used to depreciate and amortize long-lived assets.

3.1. Depreciation Methods and Calculation of Depreciation Expense

Depreciation methods include the **straight-line method**, in which the cost of an asset is allocated to expense evenly over its useful life; **accelerated methods**, in which the allocation of cost is greater in earlier years; and the **units-of-production method**, in which the allocation of cost corresponds to the actual use of an asset in a particular period. The choice of depreciation method affects the amounts reported on the financial statements, including the amounts for reported assets and operating and net income. This, in turn, affects a variety of financial ratios, including fixed asset turnover, total asset turnover, operating profit margin, operating return on assets, and return on assets.

Using the straight-line method, depreciation expense is calculated as depreciable cost divided by estimated useful life and is the same for each period. Depreciable cost is the historical cost of the tangible asset minus the estimated residual (salvage) value.[13] A commonly used accelerated method is the declining balance method, in which the amount of depreciation expense for a period is calculated as some percentage of the carrying amount (i.e., cost net of accumulated depreciation at the beginning of the period). When an accelerated method is used, depreciable cost is not used to calculate the depreciation expense but the carrying amount should not be reduced below the estimated residual value. In the units-of-production method, the amount of depreciation expense for a period is based on the proportion of the asset's production during the period compared with the total estimated productive capacity of the asset over its useful life. The depreciation expense is calculated as depreciable cost times production in the period divided by estimated productive capacity over the life of the asset. Equivalently, the company may estimate a depreciation cost per unit (depreciable cost divided by estimated productive capacity) and calculate depreciation expense as depreciation cost per unit times production in the period. Regardless of the depreciation method used, the carrying amount of the asset is not reduced below the estimated residual value. Example 8 provides an example of these depreciation methods.

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[12] Depletion is the term applied to a similar concept for natural resources; costs associated with those resources are allocated to a period on the basis of the usage or extraction of those resources.

[13] The residual value is the estimated amount that an entity will obtain from disposal of the asset at the end of its useful life.

EXAMPLE 8 Alternative Depreciation Methods

You are analyzing three hypothetical companies: EVEN-LI Co., SOONER Inc., and AZUSED Co. At the beginning of Year 1, each company buys an identical piece of box manufacturing equipment for $2,300 and has the same assumptions about useful life, estimated residual value, and productive capacity. The annual production of each company is the same, but each company uses a different method of depreciation. As disclosed in each company's notes to the financial statements, each company's depreciation method, assumptions, and production are as follows:

Depreciation method
- EVEN-LI Co.: straight-line method
- SOONER Inc.: double-declining balance method (the rate applied to the carrying amount is double the depreciation rate for the straight-line method)
- AZUSED Co.: units-of-production method

Assumptions and production
- Estimated residual value: $100
- Estimated useful life: 4 years
- Total estimated productive capacity: 800 boxes
- Production in each of the four years: 200 boxes in the first year, 300 in the second year, 200 in the third year, and 100 in the fourth year

1. Using the following template for each company, record its beginning and ending net book value (carrying amount), end-of-year accumulated depreciation, and annual depreciation expense for the box manufacturing equipment.

Template:

	Beginning Net Book Value	Depreciation Expense	Accumulated Depreciation	Ending Net Book Value
Year 1				
Year 2				
Year 3				
Year 4				

2. Explain the significant differences in the timing of the recognition of the depreciation expense.
3. For each company, assume that sales, earnings before interest, taxes, and depreciation, and assets other than the box manufacturing equipment are as shown in the following table. Calculate the total asset turnover ratio, the operating profit margin, and the operating return on assets for each company for each of the four years. Discuss the ratios, comparing results within and across companies.

	Sales	Earnings before Interest, Taxes, and Depreciation	Carrying Amount of Total Assets, Excluding the Box Manufacturing Equipment, at Year End*
Year 1	$300,000	$36,000	$30,000
Year 2	320,000	38,400	32,000
Year 3	340,000	40,800	34,000
Year 4	360,000	43,200	36,000

*Assume that total assets at the beginning of Year 1, *including* the box manufacturing equipment, had a value of $30,300. Assume that depreciation expense on assets other than the box manufacturing equipment totaled $1,000 per year.

Solution to 1: For *each* company, the following information applies: Beginning net book value in Year 1 equals the purchase price of $2,300; accumulated year-end depreciation equals the balance from the previous year plus the current year's depreciation expense; ending net book value (carrying amount) equals original cost minus accumulated year-end depreciation (which is the same as beginning net book value minus depreciation expense); and beginning net book value in Years 2, 3, and 4 equals the ending net book value of the prior year. The following text and filled-in templates describe how depreciation *expense* is calculated for each company.

EVEN-LI Co. uses the straight-line method, so depreciation expense in each year equals $550, which is calculated as ($2,300 original cost – $100 residual value)/4 years. The net book value at the end of Year 4 is the estimated residual value of $100.

EVEN-LI Co.	Beginning Net Book Value	Depreciation Expense	Accumulated Year-End Depreciation	Ending Net Book Value
Year 1	$2,300	$550	$550	$1,750
Year 2	1,750	550	1,100	1,200
Year 3	1,200	550	1,650	650
Year 4	650	550	2,200	100

SOONER Inc. uses the double-declining balance method. The depreciation rate for the double-declining balance method is double the depreciation rate for the straight-line method. The depreciation rate under the straight-line method is 25 percent (100 percent divided by 4 years). Thus, the depreciation rate for the double-declining balance method is 50 percent (2 times 25 percent). The depreciation expense for the first year is $1,150 (50 percent of $2,300). Note that under this method, the depreciation rate of 50 percent is applied to the carrying amount (net book value) of the asset, without adjustment for expected residual value. Because the carrying amount of the asset is not depreciated below its estimated residual value, however, the depreciation expense in the final year of depreciation decreases the ending net book value (carrying amount) to the estimated residual value.

SOONER Inc.	Beginning Net Book Value	Depreciation Expense	Accumulated Year-End Depreciation	Ending Net Book Value
Year 1	$2,300	$1,150	$1,150	$1,150
Year 2	1,150	575	1,725	575
Year 3	575	288	2,013	287
Year 4	287	187	2,200	100

Another common approach (not required in this question) is to use an accelerated method, such as the double-declining method, for some period (a year or more) and then to change to the straight-line method for the remaining life of the asset. If SOONER had used the double-declining method for the first year and then switched to the straight-line method for Years 2, 3, and 4, the depreciation expense would be $350 [($1,150 – $100 estimated residual value)/3 years] a year for Years 2, 3, and 4. The results for SOONER under this alternative approach are shown here.

SOONER Inc.	Beginning Net Book Value	Depreciation Expense	Accumulated Year-End Depreciation	Ending Net Book Value
Year 1	$2,300	$1,150	$1,150	$1,150
Year 2	1,150	350	1,500	800
Year 3	800	350	1,850	450
Year 4	450	350	2,200	100

AZUSED Co. uses the units-of-production method. Dividing the equipment's total depreciable cost by its total productive capacity gives a cost per unit of $2.75, calculated as ($2,300 original cost – $100 residual value)/800. The depreciation expense recognized each year is the number of units produced times $2.75. For Year 1, the amount of depreciation expense is $550 (200 units times $2.75). For Year 2, the amount is $825 (300 units times $2.75). For Year 3, the amount is $550. For Year 4, the amount is $275.

AZUSED Co.	Beginning Net Book Value	Depreciation Expense	Accumulated Year-End Depreciation	Ending Net Book Value
Year 1	$2,300	$550	$550	$1,750
Year 2	1,750	825	1,375	925
Year 3	925	550	1,925	375
Year 4	375	275	2,200	100

Solution to 2: All three methods result in the same total amount of accumulated depreciation over the life of the equipment. The significant differences are simply in the timing of the recognition of the depreciation expense. The straight-line method

recognizes the expense evenly, the accelerated method recognizes most of the expense in the first year, and the units-of-production method recognizes the expense on the basis of production (or use of the asset). Under all three methods, the ending net book value is $100.

Solution to 3:

Total asset turnover ratio = Total revenue ÷ Average total assets

Operating profit margin = Earnings before interest and taxes ÷ Total revenue

Operating return on assets = Earnings before interest and taxes ÷ Average total assets

Ratios are shown in the table following, and details of the calculations for Years 1 and 2 are described after discussion of the ratios.

	EVEN-LI Co.			SOONER Inc.			AZUSED Co.		
Ratio*	AT	PM (%)	ROA (%)	AT	PM (%)	ROA (%)	AT	PM (%)	ROA (%)
Year 1	9.67	11.48	111.04	9.76	11.28	110.17	9.67	11.48	111.04
Year 2	9.85	11.52	113.47	10.04	11.51	115.57	9.90	11.43	113.10
Year 3	10.02	11.54	115.70	10.17	11.62	118.21	10.10	11.54	116.64
Year 4	10.18	11.57	117.74	10.23	11.67	119.42	10.22	11.65	118.98

*AT = Total asset turnover ratio. PM = Operating profit margin. ROA = Operating return on assets.

For all companies, the asset turnover ratio increased over time because sales grew at a faster rate than that of the assets. SOONER had consistently higher asset turnover ratios than the other two companies, however, because higher depreciation expense in the earlier periods decreased its average total assets. In addition, the higher depreciation in earlier periods resulted in SOONER having lower operating profit margin and operating ROA in the first year and higher operating profit margin and operating ROA in the later periods. SOONER appears to be more efficiently run, on the basis of its higher asset turnover and greater increases in profit margin and ROA over time; however, these comparisons reflect differences in the companies' choice of depreciation method. In addition, an analyst might question the sustainability of the extremely high ROAs for all three companies because such high profitability levels would probably attract new competitors, which would likely put downward pressure on the ratios.

EVEN-LI Co.
Year 1:

Total asset turnover ratio = 300,000/[(30,300 + 30,000 + 1,750)/2] = 300,000/31,025 = 9.67
Operating profit margin = (36,000 − 1,000 − 550)/300,000 = 34,450/300,000 = 11.48%
Operating ROA = 34,450/31,025 = 111.04%

Year 2:

Total asset turnover ratio = 320,000/[(30,000 + 1,750 + 32,000 + 1,200)/2] = 320,000/32,475 = 9.85
Operating profit margin = (38,400 – 1,000 – 550)/320,000 = 36,850/320,000 = 11.52%
Operating ROA = 36,850/32,475 = 113.47%

SOONER Inc.
Year 1:

Total asset turnover ratio = 300,000/[(30,300 + 30,000 + 1,150)/2] = 300,000/30,725 = 9.76
Operating profit margin = (36,000 – 1,000 – 1,150)/300,000 = 33,850/300,000 = 11.28%
Operating ROA = 33,850/30,725 = 110.17%

Year 2:

Total asset turnover ratio = 320,000/[(30,000 + 1,150 + 32,000 + 575)/2] = 320,000/31,862.50 = 10.04
Operating profit margin = (38,400 – 1,000 – 575)/320,000 = 36,825/320,000 = 11.51%
Operating ROA = 36,825/31,862.50 = 115.57%

AZUSED Co.
Year 1:

Total asset turnover ratio = 300,000/[(30,300 + 30,000 + 1,750)/2] = 300,000/31,025 = 9.67
Operating profit margin = (36,000 – 1,000 – 550)/300,000 = 34,450/300,000 = 11.48%
Operating ROA = 34,450/31,025 = 111.04%

Year 2:

Total asset turnover ratio = 320,000/[(30,000 + 1,750 + 32,000 + 925)/2] = 320,000/32,337.50 = 9.90
Operating profit margin = (38,400 – 1,000 – 825)/320,000 = 36,575/320,000 = 11.43%
Operating ROA = 36,575/32,337.50 = 113.10%

In many countries, a company must use the same depreciation methods for both financial and tax reporting. In other countries, including the United States, a company need not use the same depreciation method for financial reporting and taxes. As a result of using different depreciation methods for financial and tax reporting, pretax income on the income statement and taxable income on the tax return may differ. Thus, the amount of tax expense computed on the basis of pretax income and the amount of taxes actually owed on the basis of taxable income may differ. Although these differences eventually reverse because the total depreciation is the same regardless of the timing of its recognition in financial statements versus on tax returns, during the

period of the difference, the balance sheet will show what is known as deferred taxes. For instance, if a company uses straight-line depreciation for financial reporting and an accelerated depreciation method for tax purposes, the company's financial statements will report lower depreciation expense and higher pretax income in the first year, compared with the amount of depreciation expense and taxable income in its tax reporting. (Compare the depreciation expense in Year 1 for EVEN-LI Co. and SOONER Inc. in the previous example.) Tax expense calculated on the basis of the financial statements' pretax income will be higher than taxes payable on the basis of taxable income; the difference between the two amounts represents a deferred tax liability. The deferred tax liability will be reduced as the difference reverses (i.e., when depreciation for financial reporting is higher than the depreciation for tax purposes) and the income tax is paid.

Significant estimates required for calculating depreciation include the useful life of the asset (or its total lifetime productive capacity) and its expected residual value at the end of that useful life. A longer useful life and higher expected residual value decrease the amount of annual depreciation expense relative to a shorter useful life and lower expected residual value. Companies should review their estimates periodically to ensure they remain reasonable. IFRS require companies to review estimates annually.

Although no significant differences exist between IFRS and U.S. GAAP with respect to the definition of depreciation and the acceptable depreciation methods, IFRS require companies to use a component method of depreciation.[14] Companies are required to separately depreciate the significant components of an asset (parts of an item with a cost that is significant in relation to the total cost and/or with different useful lives) and thus require additional estimates for the various components. For instance, it may be appropriate to depreciate separately the engine, frame, and interior furnishings of an aircraft. Under U.S. GAAP, the component method of depreciation is allowed but is seldom used in practice.[15] The following example illustrates depreciating components of an asset.

EXAMPLE 9 Illustration of Depreciating Components of an Asset

CUTITUP Co., a hypothetical company, purchases a milling machine, a type of machine used for shaping metal, at a total cost of $10,000. $2,000 was estimated to represent the cost of the rotating cutter, a significant component of the machine. The company expects the machine to have a useful life of eight years and a residual value of $3,000 and that the rotating cutter will need to be replaced every two years. Assume the entire residual value is attributable to the milling machine itself, and assume the company uses straight-line depreciation for all assets.

1. How much depreciation expense would the company report in Year 1 if it uses the component method of depreciation, and how much depreciation expense would the company report in Year 1 if it does not use the component method?
2. Assuming a new cutter with an estimated two-year useful life is purchased at the end of Year 2 for $2,000, what depreciation expenses would the company report in Year 3 if it uses the component method and if it does not use the component method?

[14] IAS 16 *Property, Plant and Equipment*, paragraphs 43–47 [Depreciation].
[15] According to the Ernst & Young Academic Resource Center.

3. Assuming replacement of the cutter every two years at a price of $2,000, what is the total depreciation expense over the eight years if the company uses the component method compared with the total depreciation expense if the company does not use the component method?
4. How many different items must the company estimate in the first year to compute depreciation expense for the milling machine if it uses the component method, and how does this compare with what would be required if it does not use the component method?

Solution to 1: Depreciation expense in Year 1 under the component method would be $1,625. For the portion of the machine excluding the cutter, the depreciable base is total cost minus the cost attributable to the cutter minus the estimated residual value = $10,000 – $2,000 – $3,000 = $5,000. Depreciation expense for the machine excluding the cutter in the first year equals $625 (depreciable cost divided by the useful life of the machine = $5,000/8 years). For the cutter, the depreciation expense equals $1,000 (depreciable cost divided by the useful life of the cutter = $2,000/2 years). Thus, the total depreciation expense for Year 1 under the component method is $1,625 (the sum of the depreciation expenses of the two components = $625 + $1,000). Depreciation expense in Year 2 would also be $1,625.

If the company does not use the component method, depreciation expense in Year 1 is $875 (the depreciable cost of the total milling machine divided by its useful life = [$10,000 – $3,000]/8 years). Depreciation expense in Year 2 would also be $875.

Solution to 2: Assuming that at the end of Year 2, the company purchases a new cutter for $2,000 with an estimated two-year life, under the component method, the depreciation expense in Year 3 will remain at $1,625. If the company does not use the component method and purchases a new cutter with an estimated two-year life for $2,000 at the end of Year 2, the depreciation expense in Year 3 will be $1,875 [$875 + ($2,000/2) = $875 + $1,000].

Solution to 3: Over the eight years, assuming replacement of the cutters every two years at a price of $2,000, the total depreciation expense will be $13,000 [$1,625 × 8 years] when the component method is used. When the component method is not used, the total depreciation expense will also be $13,000 [$875 × 2 years + $1,875 × 6 years]. This amount equals the total expenditures of $16,000 [$10,000 + 3 cutters × $2,000] less the residual value of $3,000.

Solution to 4: The following table summarizes the estimates required in the first year to compute depreciation expense if the company does or does not use the component method:

Estimate	Required Using Component Method?	Required If Not Using Component Method?
Useful life of milling machine	Yes	Yes
Residual value of milling machine	Yes	Yes
Portion of machine cost attributable to cutter	Yes	No
Portion of residual value attributable to cutter	Yes	No
Useful life of cutter	Yes	No

Total depreciation expense may be allocated between the cost of sales and other expenses. Within the income statement, depreciation expense of assets used in production is usually allocated to the cost of sales, and the depreciation expense of assets not used in production may be allocated to some other expense category. For instance, depreciation expense may be

allocated to selling, general, and administrative expenses if depreciable assets are used in those functional areas. Notes to the financial statements sometimes disclose information regarding which income statement line items include depreciation expense, although the exact amount of detail disclosed by individual companies varies.

3.2. Amortization Methods and Calculation of Amortization Expense

Amortization is similar in concept to depreciation. The term amortization applies to intangible assets, and the term depreciation applies to tangible assets. Both terms refer to the process of allocating the cost of an asset over the asset's useful life. Only those intangible assets assumed to have finite useful lives are amortized over their useful lives, following the pattern in which the benefits are used up. Acceptable amortization methods are the same as the methods acceptable for depreciation. Assets assumed to have an indefinite useful life (in other words, without a finite useful life) are not amortized. An intangible asset is considered to have an indefinite useful life when there is "no foreseeable limit to the period over which the asset is expected to generate net cash inflows" for the company.[16]

Intangible assets with finite useful lives include an acquired customer list expected to provide benefits to a direct-mail marketing company for two to three years, an acquired patent or copyright with a specific expiration date, an acquired license with a specific expiration date and no right to renew the license, and an acquired trademark for a product that a company plans to phase out over a specific number of years. Examples of intangible assets with indefinite useful lives include an acquired license that, although it has a specific expiration date, can be renewed at little or no cost and an acquired trademark that, although it has a specific expiration, can be renewed at a minimal cost and relates to a product that a company plans to continue selling for the foreseeable future.

As with depreciation for a tangible asset, the calculation of amortization for an intangible asset requires the original amount at which the intangible asset is recognized and estimates of the length of its useful life and its residual value at the end of its useful life. Useful lives are estimated on the basis of the expected use of the asset, considering any factors that may limit the life of the asset, such as legal, regulatory, contractual, competitive, or economic factors.

EXAMPLE 10 Amortization Expense

IAS 38 *Intangible Assets* provides illustrative examples regarding the accounting for intangible assets, including the following:

> A direct-mail marketing company acquires a customer list and expects that it will be able to derive benefit from the information on the list for at least one year, but no more than three years. The customer list would be amortized over management's best estimate of its useful life, say 18 months. Although the direct-mail marketing company may intend to add customer names and other information to the list in the future, the expected benefits of the acquired customer list relate only to the customers on that list at the date it was acquired.

[16] IAS 38 *Intangible Assets*, paragraph 88.

In this example, in what ways would management's decisions and estimates affect the company's financial statements?

Solution: Because the acquired customer list is expected to generate future economic benefits for a period greater than one year, the cost of the list should be capitalized and not expensed. The acquired customer list is determined to not have an indefinite life and must be amortized. Management must estimate the useful life of the customer list and must select an amortization method. In this example, the list appears to have no residual value. Both the amortization method and the estimated useful life affect the amount of the amortization expense in each period. A shorter estimated useful life, compared with a longer estimated useful life, results in a higher amortization expense each year over a shorter period, but the *total* accumulated amortization expense over the life of the intangible asset is unaffected by the estimate of the useful life. Similarly, the total accumulated amortization expense over the life of the intangible asset is unaffected by the choice of amortization method. The amortization expense per period depends on the amortization method. If the straight-line method is used, the amortization expense is the same for each year of useful life. If an accelerated method is used, the amortization expense will be higher in earlier years.

4. THE REVALUATION MODEL

The revaluation model is an alternative to the cost model for the periodic valuation and reporting of long-lived assets. IFRS permit the use of either the revaluation model or the cost model, but the revaluation model is not allowed under U.S. GAAP. Revaluation changes the carrying amounts of classes of long-lived assets to fair value (the fair value must be measured reliably). Under the cost model, carrying amounts are historical costs less accumulated depreciation or amortization. Under the revaluation model, carrying amounts are the fair values at the date of revaluation less any subsequent accumulated depreciation or amortization.

IFRS allow companies to value long-lived assets either under a cost model at historical cost minus accumulated depreciation or amortization or under a revaluation model at fair value. In contrast, U.S. accounting standards require that the cost model be used. A key difference between the two models is that the cost model allows only decreases in the values of long-lived assets compared with historical costs but the revaluation model may result in increases in the values of long-lived assets to amounts greater than historical costs.

IFRS allow a company to use the cost model for some classes of assets and the revaluation model for others, but the company must apply the same model to all assets within a particular class of assets and must revalue all items within a class to avoid selective revaluation. Examples of different classes of assets include land, land and buildings, machinery, motor vehicles, furniture and fixtures, and office equipment. The revaluation model may be used for classes of intangible assets but only if an active market for the assets exists, because the revaluation

model may only be used if the fair values of the assets can be measured reliably. For practical purposes, the revaluation model is rarely used for either tangible or intangible assets, but its use is especially rare for intangible assets.

Under the revaluation model, whether an asset revaluation affects earnings depends on whether the revaluation initially increases or decreases an asset class' carrying amount. If a revaluation initially decreases the carrying amount of the asset class, the decrease is recognized in profit or loss. Later, if the carrying amount of the asset class increases, the increase is recognized in profit or loss to the extent that it reverses a revaluation decrease of the same asset class previously recognized in profit or loss. Any increase in excess of the reversal amount will not be recognized in the income statement but will be recorded directly to equity in a revaluation surplus account. An upward revaluation is treated the same as the amount in excess of the reversal amount. In other words, if a revaluation initially increases the carrying amount of the asset class, the increase in the carrying amount of the asset class bypasses the income statement and goes directly to equity under the heading of revaluation surplus. Any subsequent decrease in the asset's value first decreases the revaluation surplus and then goes to income. When an asset is retired or disposed of, any related amount of revaluation surplus included in equity is transferred directly to retained earnings.

Asset revaluations offer several considerations for financial statement analyses. First, an increase in the carrying amount of depreciable long-lived assets increases total assets and shareholders' equity, so asset revaluations that increase the carrying amount of an asset can be used to reduce reported leverage. Defining leverage as average total assets divided by average shareholders' equity, increasing both the numerator (assets) and denominator (equity) by the same amount leads to a decline in the ratio. (Mathematically, when a ratio is greater than one, as in this case, an increase in both the numerator and the denominator by the same amount leads to a decline in the ratio.) Therefore, the leverage motivation for the revaluation should be considered in analysis. For example, a company may revalue assets up if it is seeking new capital or approaching leverage limitations set by financial covenants.

Second, assets revaluations that decrease the carrying amount of the assets reduce net income. In the year of the revaluation, profitability measures such as return on assets and return on equity decline. However, because total assets and shareholders' equity are also lower, the company may appear more profitable in future years. Additionally, reversals of downward revaluations also go through income, thus increasing earnings. Managers can then opportunistically time the reversals to manage earnings and increase income. Third, asset revaluations that increase the carrying amount of an asset initially increase depreciation expense, total assets, and shareholders' equity. Therefore, profitability measures, such as return on assets and return on equity, would decline. Although upward asset revaluations also generally decrease income (through higher depreciation expense), the increase in the value of the long-lived asset is presumably based on increases in the operating capacity of the asset, which will likely be evidenced in increased future revenues.

Finally, an analyst should consider who did the appraisal—that is, an independent external appraiser or management—and how often revaluations are made. Appraisals of the fair value of long-lived assets involve considerable judgment and discretion. Presumably, appraisals of assets from independent external sources are more reliable. How often assets are revalued can provide an indicator of whether their reported value continues to be representative of their fair values.

The next two examples illustrate revaluation of long-lived assets under IFRS.

EXAMPLE 11 Revaluation Resulting in an Increase in Carrying Amount Followed by Subsequent Revaluation Resulting in a Decrease in Carrying Amount

UPFIRST, a hypothetical manufacturing company, has elected to use the revaluation model for its machinery. Assume for simplicity that the company owns a single machine, which it purchased for €10,000 on the first day of its fiscal period, and that the measurement date occurs simultaneously with the company's fiscal period end.

1. At the end of the first fiscal period after acquisition, assume the fair value of the machine is determined to be €11,000. How will the company's financial statements reflect the asset?
2. At the end of the second fiscal period after acquisition, assume the fair value of the machine is determined to be €7,500. How will the company's financial statements reflect the asset?

Solution to 1: At the end of the first fiscal period, the company's balance sheet will show the asset at a value of €11,000. The €1,000 increase in the value of the asset will appear in other comprehensive income and be accumulated in equity under the heading of revaluation surplus.

Solution to 2: At the end of the second fiscal period, the company's balance sheet will show the asset at a value of €7,500. The total decrease in the carrying amount of the asset is €3,500 (€11,000 – €7,500). Of the €3,500 decrease, the first €1,000 will reduce the amount previously accumulated in equity under the heading of revaluation surplus. The other €2,500 will be shown as a loss on the income statement.

EXAMPLE 12 Revaluation Resulting in a Decrease in Asset's Carrying Amount Followed by Subsequent Revaluation Resulting in an Increase in Asset's Carrying Amount

DOWNFIRST, a hypothetical manufacturing company, has elected to use the revaluation model for its machinery. Assume for simplicity that the company owns a single machine, which it purchased for €10,000 on the first day of its fiscal period, and that the measurement date occurs simultaneously with the company's fiscal period end.

1. At the end of the first fiscal period after acquisition, assume the fair value of the machine is determined to be €7,500. How will the company's financial statements reflect the asset?
2. At the end of the second fiscal period after acquisition, assume the fair value of the machine is determined to be €11,000. How will the company's financial statements reflect the asset?

Solution to 1: At the end of the first fiscal period, the company's balance sheet will show the asset at a value of €7,500. The €2,500 decrease in the value of the asset will appear as a loss on the company's income statement.

Solution to 2: At the end of the second fiscal period, the company's balance sheet will show the asset at a value of €11,000. The total increase in the carrying amount of the asset is an increase of €3,500 (€11,000 – €7,500). Of the €3,500 increase, the first €2,500 reverses a previously reported loss and will be reported as a gain on the income statement. The other €1,000 will bypass profit or loss and be reported as other comprehensive income and be accumulated in equity under the heading of revaluation surplus.

Exhibit 6 provides an example of a company's disclosures concerning revaluation. The exhibit shows an excerpt from the 2006 annual report of KPN, a Dutch telecommunications and multimedia company. The excerpt is from the section of the annual report in which the company explains differences between its reporting under IFRS and its reporting under U.S. GAAP.[17] One of these differences, as previously noted, is that U.S. GAAP do not allow revaluation of fixed assets held for use. KPN elected to report a class of fixed assets (cables) at fair value and explained that under U.S. GAAP, using the cost model, the value of the class at the end of 2006 would have been €350 million lower.

EXHIBIT 6 Impact of Revaluation

Excerpt from the annual report of Koninklijke KPN N. V. (NYSE: KPN) explaining certain differences between IFRS and U.S. GAAP regarding "Deemed cost fixed assets":

> KPN elected the exemption to revalue certain of its fixed assets upon the transition to IFRS to fair value and to use this fair value as their deemed cost. KPN applied the depreciated replacement cost method to determine this fair value. The revalued assets pertain to certain cables, which form part of property, plant & equipment. Under U.S. GAAP, this revaluation is not allowed and therefore results in a reconciling item. As a result, the value of these assets as of December 31, 2006, under U.S. GAAP is EUR 350 million lower (2005: EUR 415 million; 2004: EUR 487 million) than under IFRS.

Source: KPN's Form 20-F, p. 168, filed 1 March 2007.

Clearly, the use of the revaluation model as opposed to the cost model can have a significant impact on the financial statements of companies. This has potential consequences for comparing financial performance using financial ratios of companies that use different models.

5. IMPAIRMENT OF ASSETS

In contrast with depreciation and amortization charges, which serve to allocate the depreciable cost of a long-lived asset over its useful life, impairment charges reflect an unanticipated decline in the value of an asset. Both IFRS and U.S. GAAP require companies to write down the carrying amount of impaired assets. Impairment reversals are permitted under IFRS but not under U.S. GAAP.

[17] On 15 November 2007, the SEC approved rule amendments under which financial statements from foreign private issuers in the United States will be accepted without reconciliation to U.S. GAAP if the financial statements are prepared in accordance with IFRS as issued by the International Accounting Standards Board. The new rule is effective for the 2007 fiscal year. As a result, companies such as KPN no longer need to provide reconciliations to U.S. GAAP.

An asset is considered to be impaired when its carrying amount exceeds its recoverable amount ("the higher of fair value less cost to sell or value in use" according to IAS 36 *Impairment of Assets*) or under U.S. GAAP when its carrying amount exceeds its fair value. Under U.S. GAAP, however, impairment losses are only recognizable when the carrying amount of the impaired asset is determined to be not recoverable. Therefore, in general, impairment losses are recognized when the asset's carrying amount is not recoverable. However, IFRS and U.S. GAAP define recoverability differently. The following paragraphs describe accounting for impairment for different categories of assets.

5.1. Impairment of Property, Plant, and Equipment

Accounting standards do not require that property, plant, and equipment be tested annually for impairment. Rather, at the end of each reporting period (generally, a fiscal year), a company assesses whether there are indications of asset impairment. If there is no indication of impairment, the asset is not tested for impairment. If there is an indication of impairment, such as evidence of obsolescence, decline in demand for products, or technological advancements, the recoverable amount of the asset should be measured in order to test for impairment. For property, plant, and equipment, impairment losses are recognized when the asset's carrying amount is not recoverable; the carrying amount is more than the recoverable amount. The amount of the impairment loss will reduce the carrying amount of the asset on the balance sheet and will reduce net income on the income statement. The impairment loss is a noncash item and will not affect cash from operations.

IFRS and U.S. GAAP differ somewhat both in the guidelines for determining that impairment has occurred and in the measurement of an impairment loss. Under IAS 36, an impairment loss is measured as the excess of carrying amount over the recoverable amount of the asset. The recoverable amount of an asset is defined as "the higher of its fair value less costs to sell and its value in use." Value in use is a discounted measure of expected future cash flows. Under U.S. GAAP, assessing recoverability is separate from measuring the impairment loss. An asset's carrying amount is considered not recoverable when it exceeds the undiscounted expected future cash flows. If the asset's carrying amount is considered not recoverable, the impairment loss is measured as the difference between the asset's fair value and carrying amount.

EXAMPLE 13 Impairment of Property, Plant, and Equipment

Sussex, a hypothetical manufacturing company in the United Kingdom, has a machine it uses to produce a single product. The demand for the product has declined substantially since the introduction of a competing product. The company has assembled the following information with respect to the machine:

Carrying amount	£18,000
Undiscounted expected future cash flows	£19,000
Present value of expected future cash flows	£16,000
Fair value if sold	£17,000
Costs to sell	£2,000

1. Under IFRS, what would the company report for the machine?
2. Under U.S. GAAP, what would the company report for the machine?

Solution to 1: Under IFRS, the company would compare the carrying amount (£18,000) with the higher of its fair value less costs to sell (£15,000) and its value in use (£16,000). The carrying amount exceeds the value in use, the higher of the two amounts, by £2,000. The machine would be written down to the recoverable amount of £16,000, and a loss of £2,000 would be reported in the income statement. The carrying amount of the machine is now £16,000. A new depreciation schedule based on the carrying amount of £16,000 would be developed.

Solution to 2: Under U.S. GAAP, the carrying amount (£18,000) is compared with the undiscounted expected future cash flows (£19,000). The carrying amount is less than the undiscounted expected future cash flows, so the carrying amount is considered recoverable. The machine would continue to be carried at £18,000, and no loss would be reported.

5.2. Impairment of Intangible Assets with a Finite Life

Intangible assets with a finite life are amortized (carrying amount decreases over time) and may become impaired. As is the case with property, plant, and equipment, the assets are not tested annually for impairment. Instead, they are tested only when significant events suggest the need to test. The company assesses at the end of each reporting period whether a significant event suggesting the need to test for impairment has occurred. Examples of such events include a significant decrease in the market price or a significant adverse change in legal or economic factors. Impairment accounting for intangible assets with a finite life is essentially the same as for tangible assets; the amount of the impairment loss will reduce the carrying amount of the asset on the balance sheet and will reduce net income on the income statement.

5.3. Impairment of Intangibles with Indefinite Lives

Intangible assets with indefinite lives are not amortized. Instead, they are carried on the balance sheet at historical cost but are tested at least annually for impairment. Impairment exists when the carrying amount exceeds its fair value.

5.4. Impairment of Long-Lived Assets Held for Sale

A long-lived (noncurrent) asset is reclassified as held for sale rather than held for use when it ceases to be used and management's intent is to sell it. For instance, if a building ceases to be used and management's intent is to sell it, the building is reclassified from property, plant, and equipment to noncurrent assets held for sale. At the time of reclassification, assets previously held for use are tested for impairment. If the carrying amount at the time of reclassification exceeds the fair value less costs to sell, an impairment loss is recognized and the asset is written down to fair value less costs to sell. Long-lived assets held for sale cease to be depreciated or amortized.

5.5. Reversals of Impairments of Long-Lived Assets

After an asset has been deemed impaired and an impairment loss has been reported, the asset's recoverable amount could potentially increase. For instance, a lawsuit appeal may successfully challenge a patent infringement by another company, with the result that a patent previously written down has a higher recoverable amount. IFRS permit impairment losses to be reversed if the recoverable amount of an asset increases regardless of whether the asset is classified as held for use or held for sale. Note that IFRS permit the reversal of impairment losses only. IFRS do not permit the revaluation to the recoverable amount if the recoverable amount exceeds the previous carrying

amount. Under U.S. GAAP, the accounting for reversals of impairments depends on whether the asset is classified as held for use or held for sale.[18] Under U.S. GAAP, once an impairment loss has been recognized for assets held for use, it cannot be reversed. In other words, once the value of an asset held for use has been decreased by an impairment charge, it cannot be increased. For assets held for sale, if the fair value increases after an impairment loss, the loss can be reversed.

6. DERECOGNITION

A company derecognizes an asset (i.e., removes it from the financial statements) when the asset is disposed of or is expected to provide no future benefits from either use or disposal. A company may dispose of a long-lived operating asset by selling it, exchanging it, or abandoning it. As previously described, noncurrent assets that are no longer in use and are to be sold are reclassified as noncurrent assets held for sale.

6.1. Sale of Long-Lived Assets

The gain or loss on the sale of long-lived assets is computed as the sales proceeds minus the carrying amount of the asset at the time of sale. An asset's carrying amount is typically the net book value (i.e., the historical cost minus accumulated depreciation), unless the asset's carrying amount has been changed to reflect impairment and/or revaluation, as previously discussed.

EXAMPLE 14 Calculation of Gain or Loss on the Sale of Long-Lived Assets

Moussilauke Diners Inc., a hypothetical company, as a result of revamping its menus to focus on healthier food items, sells 450 used pizza ovens and reports a gain on the sale of $1.2 million. The ovens had a carrying amount of $1.9 million (original cost of $5.1 million less $3.2 million of accumulated depreciation). At what price did Moussilauke sell the ovens?

A. $0.7 million
B. $3.1 million
C. $6.3 million

Solution: B is correct. The ovens had a carrying amount of $1.9 million, and Moussilauke recognized a gain of $1.2 million. Therefore, Moussilauke sold the ovens at a price of $3.1 million. The gain on the sale of $1.2 million is the selling price of $3.1 million minus the carrying amount of $1.9 million. Ignoring taxes, the cash flow from the sale is $3.1 million, which would appear as a cash inflow from investing.

A gain or loss on the sale of an asset is disclosed on the income statement, either as a component of other gains and losses or in a separate line item when the amount is material. A company typically discloses further detail about the sale in the management discussion and analysis and/or financial statement footnotes. In addition, a statement of cash flows prepared using the indirect method adjusts net income to remove any gain or loss on the sale from operating cash flow and

[18] FASB ASC Section 360-10-35 [Property, Plant, and Equipment – Overall – Subsequent Measurement].

to include the amount of proceeds from the sale in cash from investing activities. Recall that the indirect method of the statement of cash flows begins with net income and makes all adjustments to arrive at cash from operations, including removal of gains or losses from nonoperating activities.

6.2. Long-Lived Assets Disposed of Other Than by a Sale

Long-lived assets to be disposed of other than by a sale (e.g., abandoned, exchanged for another asset, or distributed to owners in a spin-off) are classified as held for use until disposal.[19] Thus, the long-lived assets continue to be depreciated and tested for impairment, unless their carrying amount is zero, as required for other long-lived assets owned by the company.

When an asset is retired or abandoned, the accounting is similar to a sale, except that the company does not record cash proceeds. Assets are reduced by the carrying amount of the asset at the time of retirement or abandonment, and a loss equal to the asset's carrying amount is recorded.

When an asset is exchanged, accounting for the exchange typically involves removing the carrying amount of the asset given up, adding a fair value for the asset acquired, and reporting any difference between the carrying amount and the fair value as a gain or loss. The fair value used is the fair value of the asset given up unless the fair value of the asset acquired is more clearly evident. If no reliable measure of fair value exists, the acquired asset is measured at the carrying amount of the asset given up. A gain is reported when the fair value used for the newly acquired asset exceeds the carrying amount of the asset given up. A loss is reported when the fair value used for the newly acquired asset is less than the carrying amount of the asset given up. If the acquired asset is valued at the carrying amount of the asset given up because no reliable measure of fair value exists, no gain or loss is reported.

When a spin-off occurs, typically, an entire cash-generating unit of a company with all its assets is spun off. As an illustration of a spin-off, Altria Group Inc. effected a spin-off of Kraft Foods on 30 March 2007 by distributing about 89 percent of Kraft's shares to Altria's shareholders. The company prepared unaudited pro forma income statements and balance sheets (for illustrative purposes only) as if the spin-off had occurred at the beginning of the year. Exhibit 7 summarizes information from the asset portion of the company's pro forma balance sheets. The items in the column labeled "Spin-Off of Kraft" reflect Kraft's assets being removed from Altria's balance sheet at the time of the spin-off. For example, Kraft's property, plant, and equipment (net of depreciation) totaled $9.7 billion.

EXHIBIT 7 Altria Group, Inc. and Subsidiaries Pro Forma Condensed Consolidated Balance Sheet [partial]

As of 31 December 2006 (unaudited)				
Assets ($ in millions)	Historical Altria[a]	Spin-Off of Kraft[b]	Adjustments[c]	Pro Forma Altria
Cash and cash equivalents	$ 5,020	($239)	$369	$ 5,150
Receivables, net	6,070	(3,869)		2,201
Inventories	12,186	(3,506)		8,680
Other current assets	2,876	(640)		2,236
Total current assets	$26,152	($8,254)	$369	$18,267

(continued)

[19]In a spin-off, shareholders of the parent company receive a proportional number of shares in a new, separate entity.

EXHIBIT 7 (Continued)

Assets ($ in millions)	Historical Altria[a]	Spin-Off of Kraft[b]	Adjustments[c]	Pro Forma Altria
Property, plant, and equipment, net	17,274	(9,693)		7,581
Goodwill	33,235	(25,553)	(1,485)	6,197
Other intangible assets, net	12,085	(10,177)		1,908
Other assets	8,734	(1,897)	305	7,142
Total consumer products assets	$ 97,480	($55,574)	($811)	$41,095
Financial services assets	6,790	0		6,790
Total assets	$104,270	($55,574)	($811)	$47,885

[a]Historical consolidated balance sheet of Altria.
[b]Reflects the removal of Kraft's consolidated balance sheet from the Altria historical consolidated balance sheet.
[c]Represents adjustments, such as for proforma cash payments by Kraft to Altria, arising from modifications to existing stock awards and tax contingencies, adjustments to goodwill, etc.
Source: Altria's Form 8-K filed with the SEC on 5 April 2007.

7. PRESENTATION AND DISCLOSURES

Under IFRS, for each class of property, plant, and equipment, a company must disclose the measurement bases, the depreciation method, the useful lives (or, equivalently, the depreciation rate) used, the gross carrying amount and the accumulated depreciation at the beginning and end of the period, and a reconciliation of the carrying amount at the beginning and end of the period.[20] In addition, disclosures of restrictions on title and pledges as security of property, plant, and equipment and contractual agreements to acquire property, plant, and equipment are required. If the revaluation model is used, the date of revaluation, details of how the fair value was obtained, the carrying amount under the cost model, and the revaluation surplus must be disclosed.

The disclosure requirements under U.S. GAAP are less exhaustive.[21] A company must disclose the depreciation expense for the period, the balances of major classes of depreciable assets, accumulated depreciation by major classes or in total, and a general description of the depreciation method(s) used in computing depreciation expense with respect to the major classes of depreciable assets.

Under IFRS, for each class of intangible assets, a company must disclose whether the useful lives are indefinite or finite. If finite, for each class of intangible asset, a company must disclose the useful lives (or, equivalently, the amortization rate) used, the amortization methods used, the gross carrying amount and the accumulated amortization at the beginning and end of the period, where amortization is included on the income statement, and a reconciliation of the carrying amount at the beginning and end of the period.[22] If an asset has an indefinite life, the company must disclose the carrying amount of the asset and why it is considered to have

[20]IAS 16 *Property, Plant and Equipment*, paragraphs 73–78 [Disclosure].
[21]FASB ASC Section 360-10-50 [Property, Plant, and Equipment – Overall – Disclosure].
[22]IAS 38 *Intangible Assets*, paragraphs 118–128 [Disclosure].

an indefinite life. Similar to property, plant, and equipment, disclosures of restrictions on title and pledges as security of intangible assets and contractual agreements to acquire intangible assets are required. If the revaluation model is used, the date of revaluation, details of how the fair value was obtained, the carrying amount under the cost model, and the revaluation surplus must be disclosed.

Under U.S. GAAP, companies are required to disclose the gross carrying amounts and accumulated amortization in total and by major class of intangible assets, the aggregate amortization expense for the period, and the estimated amortization expense for the next five fiscal years.[23]

The disclosures related to impairment losses also differ under IFRS and U.S. GAAP. Under IFRS, a company must disclose for each class of assets the amounts of impairment losses and reversals of impairment losses recognized in the period and where those are recognized on the financial statements.[24] The company must also disclose in aggregate the main classes of assets affected by impairment losses and reversals of impairment losses and the main events and circumstances leading to recognition of these impairment losses and reversals of impairment losses. Under U.S. GAAP, there is no reversal of impairment losses. The company must disclose a description of the impaired asset, what led to the impairment, the method of determining fair value, the amount of the impairment loss, and where the loss is recognized on the financial statements.[25]

Disclosures about long-lived assets appear throughout the financial statements: in the balance sheet, the income statement, the statement of cash flows, and the notes. The balance sheet reports the carrying value of the asset. For the income statement, depreciation expense may or may not appear as a separate line item. Under IFRS, whether the income statement discloses depreciation expense separately depends on whether the company is using a "nature of expense" method or a "function of expense" method. Under the nature of expense method, a company aggregates expenses "according to their nature (for example, depreciation, purchases of materials, transport costs, employee benefits and advertising costs), and does not reallocate them among functions within the entity."[26] Under the function of expense method, a company classifies expenses according to the function, for example as part of cost of sales or of SG&A (selling, general, and administrative expenses). At a minimum, a company using the function of expense method must disclose cost of sales, but the other line items vary.

The statement of cash flows reflects acquisitions and disposals of fixed assets in the investing section. In addition, when prepared using the indirect method, the statement of cash flows typically shows depreciation expense (or depreciation plus amortization) as a line item in the adjustments of net income to cash flow from operations. The notes to the financial statements describe the company's accounting method(s), the range of estimated useful lives, historical cost by main category of fixed asset, accumulated depreciation, and annual depreciation expense.

To illustrate financial statement presentation and disclosures, the following example provides excerpts relating to intangible assets and property, plant, and equipment from the annual report of Vodafone Group Plc for the year ended 31 March 2009.

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[23] FASB ASC Section 350-30-50 [Intangibles – General – Disclosure].

[24] IAS 36 *Impairment of Assets,* paragraphs 126–131 [Disclosure].

[25] FASB ASC Section 360-10-50 [Property, Plant, and Equipment – Overall – Disclosure] and FASB ASC Section 350-30-50 [Intangibles – General – Disclosure].

[26] IAS 1 paragraph 102.

EXAMPLE 15 Financial Statement Presentation and Disclosures for Long-Lived Assets

The following exhibits include excerpts from the annual report for the year ended 31 March 2009 of Vodafone Group Plc (London: VOD), a global mobile telecommunications company headquartered in the United Kingdom.

EXHIBIT 8 Vodafone Group Plc Excerpts from the Consolidated Financial Statements

Excerpt from the Consolidated Income Statement
For the Years Ended 31 March (currency in £ millions)

⋮	Note	2009	2008
Revenue	3	41,017	35,478
⋮	⋮	⋮	⋮
Impairment losses	10*	(5,900)	—
⋮	⋮	⋮	⋮
Operating profit/(loss)	4	5,857	10,047
⋮	⋮	⋮	⋮
Profit/(loss) before taxation		4,189	9,001
Income tax expense	6	(1,109)	(2,245)
Profit/(loss) for the financial year from continuing operations		3,080	6,756
Loss for the year from discontinued operations	30	—	—
Profit/(loss) for the financial year		**3,080**	**6,756**
Attributable to:			
– Equity shareholders	23	3,078	6,660
– Minority interests		2	96
		3,080	**6,756**

*Notes relating to property, plant, and equipment and intangible assets are underlined.

Excerpt from the Consolidated Statement of Recognized Income and Expense for the Years Ended 31 March (currency in £ millions)

	Note	2009	2008
(Losses)/gains on revaluation of available-for-sale investments, net of tax	22	(2,383)	1,949

EXHIBIT 8 (Continued)

Excerpt from the Consolidated Statement of Recognized Income and Expense for the Years Ended 31 March (currency in £ millions)

	Note	2009	2008
⋮	⋮	⋮	⋮
Revaluation gain	22	68	—
⋮	⋮	⋮	⋮
Net gain/(loss) recognized directly in equity		**9,854**	**6,909**
Profit/(loss) for the financial year		3,080	6,756
Total recognized income and expense relating to the year		**12,934**	**13,665**
Attributable to:			
– Equity shareholders		13,037	13,912
– Minority interests		(103)	(247)
		12,934	13,665

Excerpt from the Consolidated Balance Sheet at 31 March (currency in £ millions)

	Note	2009	2008
Noncurrent assets			
Goodwill	9	53,958	51,336
Other intangible assets	9	20,980	18,995
Property, plant and equipment	11	19,250	16,735
⋮	⋮	⋮	⋮
		139,670	118,546
Current assets		13,029	8,724
Total assets		**152,699**	**127,270**
Equity			
⋮	⋮	⋮	⋮
Accumulated other recognized income and expense	22	20,517	10,588
⋮	⋮	⋮	⋮
Total equity		84,777	76,471
Noncurrent liabilities		39,975	28,826
Current liabilities		27,947	21,973
Total equity and liabilities		**152,699**	**127,270**

EXHIBIT 9 Vodafone Group Plc Excerpts from the Notes to the Consolidated Financial Statements

Excerpt from Note 9. Intangible Assets (currency in £ millions)

Intangible Assets	Goodwill	Licenses and Spectrum	Computer Software	Other	Total
Cost:					
31 March 2008	91,762	22,040	5,800	1,188	120,790
Exchange movements	14,298	2,778	749	153	17,978
Arising on acquisition	613	199	69	130	1,011
Additions	—	1,138	1,144	—	2,282
Disposals	—	(1)	(403)	—	(404)
Transfer to investments in associated undertakings	(9)	(16)	—	—	(25)
31 March 2009	106,664	**26,138**	**7,359**	**1,471**	141,632
Accumulated impairment losses and amortization:					
31 March 2008	40,426	5,132	4,160	741	50,459
Exchange movements	6,630	659	569	126	7,984
Amortization charge for the year	—	1,522	885	346	2,753
Impairment losses	5,650	250	—	—	5,900
Disposals	—	—	(391)	—	(391)
Transfers to investments in associated undertakings	—	(11)	—	—	(11)
31 March 2009	52,706	**7,552**	**5,223**	**1,213**	66,694
Net book value:					
31 March 2008	51,336	**16,908**	**1,640**	**447**	70,331
31 March 2009	53,958	**18,586**	**2,136**	**258**	74,938

For licenses and spectrum and other intangible assets, amortization is included within the cost of sales line within the consolidated income statement. Licenses and spectrum with a net book value of £2,765m (2008: £nil) have been pledged as security against borrowings.

Excerpt from Note 10. Impairment
Impairment losses
Impairment losses recognized in the consolidated income statement as a separate line item within operating profit, in respect of goodwill and licenses and spectrum fees are as follows (£m):

Cash Generating Unit	Reportable Segment	2009	2008	2007
⋮	⋮	⋮	—	—
Turkey	Other Africa and Central Europe	2,250	—	—
⋮	⋮	⋮	—	—
Total		5,900	—	11,600

. . . The impairment losses were based on value in use calculations. . . .

Turkey

. . . At 30 September 2008, the goodwill was impaired by £1,700 million. . . . During the second half of the 2009 financial year, impairment losses of £300 million in relation to goodwill and £250 million in relation to licenses and spectrum resulted from adverse changes in both the discount rate and a fall in the long-term GDP growth rate. The cash flow projections . . . were substantially unchanged from those used at 30 September 2008. . . .

Sensitivity to changes in assumptions

. . . The estimated recoverable amount of the Group's operations in Spain, Turkey, and Ghana equaled their respective carrying value and, consequently, any adverse change in key assumption would, in isolation, cause a further impairment loss to be recognized. . . .

The changes in the following table to assumptions used in the impairment review would, in isolation, lead to an (increase)/decrease to the aggregate impairment loss recognized in the year ended 31 March 2009:

	Spain		Turkey		Ghana		All Other	
	⋮	⋮	Increase by 2% £bn	Decrease by 2% £bn	⋮	⋮	⋮	⋮
Pretax adjusted discount rate	⋮	⋮	(0.4)	0.6	⋮	⋮	⋮	⋮
Long-term growth rate	⋮	⋮	0.3	(0.2)	⋮	⋮	⋮	⋮
Budgeted EBITDA	⋮	⋮	0.1	(0.1)	⋮	⋮	⋮	⋮
Budgeted capital expenditure	⋮	⋮	(0.1)	0.1	⋮	⋮	⋮	⋮

Excerpt from Note 11. Property, Plant, and Equipment

The net book value of land and buildings and equipment, fixtures, and fittings includes £106 million and £82 million, respectively (2008: £110 million and £51 million) in relation to assets held under finance leases. Included in the net book value of land and buildings and equipment, fixtures and fittings are assets in the course of construction, which are not depreciated, with a cost of £44 million and £1,186 million, respectively (2008: £28 million and £1,013 million). Property, plant, and equipment with a net book value of £148 million (2008: £1,503 million) has been pledged as security against borrowings.

Excerpt from Note 22. Movements in Accumulated Other Recognized Income and Expense (currency in £ millions)

	Translation Reserve	Pensions Reserve	Available-for-Sale Investments Reserve	Asset Revaluation Surplus	Other	Total
⋮	⋮	⋮	⋮	⋮	⋮	⋮
31 March 2008	**5,974**	**(96)**	**4.531**	**112**	**37**	**10,558**
Gains/(losses) arising in the year	⋮	⋮	⋮	68	⋮	10,023
Transfer to the income statement on disposal	⋮	⋮	⋮	—	⋮	(3)
Tax effect	⋮	⋮	⋮	—	⋮	(61)
31 March 2009	**18,451**	**(259)**	**2,148**	**180**	**(3)**	**20,517**

1. As of 31 March 2009, what percentage of other intangible assets and property, plant, and equipment is pledged as security against borrowings?
2. What caused the £250 million impairment losses in relation to licenses and spectrum during the year ended 31 March 2009?
3. By what amount would impairment losses related to Turkey change if the pretax adjusted discount rate decreased by 2 percent?
4. Where are impairment losses reported on the financial statements? Where is amortization included within the consolidated income statement?
5. What percentage of property, plant, and equipment, based on net book value, is held under finance leases rather than owned as of 31 March 2009?
6. The gains and losses arising in the year on asset revaluation *most likely* are:
   A. reflected on the consolidated income statement.
   B. reported in the notes to the financial statements only.
   C. recognized directly in equity and shown on the consolidated statement of recognized income and expense.

Solution to 1: Assets that have been pledged as security against borrowings are licenses and spectrum, with a net book value of £2,765 million (Note 9), and property, plant, and equipment, with a net book value of £148 million (Note 11). These assets represent 7.24 percent [(2,765 + 148)/(20,980 + 19,250)] of the other intangible assets and property, plant, and equipment.

Solution to 2: The £250 million impairment losses in relation to licenses and spectrum resulted from an increase in the pretax adjusted discount rate and a decrease in the long-term growth rate in Turkey (Note 10).

Solution to 3: A 2 percent decrease in the pretax adjusted discount rate related to Turkey would reduce impairment losses by £0.6 billion or £600 million (Note 10).

Solution to 4: Impairment losses are reported on the consolidated income statement (Exhibit 8). Impairment losses reduce the value of the assets impaired (Note 9) and are thus recognized within the consolidated balance sheet. Amortization is included within the cost of sales line within the consolidated income statement (Note 9).

Solution to 5: The net book value of land and buildings and equipment, fixtures, and fittings includes £106 million and £82 million, respectively, in relation to assets held under finance leases (Note 22). The sum of these values represents 0.98 percent of the property, plant, and equipment [(106 + 82)/19,250].

Solution to 6: C is correct. The gains and losses arising in the year on asset revaluation are recognized directly in equity and shown on the consolidated statement of recognized income and expense. They are also reported in the notes to the financial statements (Note 22).

Note that the exhibits in the previous example contain relatively brief excerpts from the company's disclosures. The complete text of the disclosures concerning the company's noncurrent assets spans seven different footnotes, most of which are several pages long. In addition to information about the discount rate and other assumptions used to calculate impairment charges, the disclosures provide information about the sensitivity of impairment charges to changes in the assumptions.

Overall, an analyst can use the disclosures to understand a company's investments in tangible and intangible assets, how those investments changed during a reporting period, how those changes affected current performance, and what those changes might indicate about future performance.

Ratios used in analyzing fixed assets include the fixed asset turnover ratio and several asset age ratios. The fixed asset turnover ratio (total revenue divided by average net fixed assets) reflects the relationship between total revenues and investment in PPE. The higher this ratio, the higher the amount of sales a company is able to generate with a given amount of investment in fixed assets. A higher asset turnover ratio is often interpreted as an indicator of greater efficiency.

Asset age ratios generally rely on the relationship between historical cost and depreciation. Under the revaluation model (permitted under IFRS but not U.S. GAAP), the relationship between carrying amount, accumulated depreciation, and depreciation expense will differ when the carrying amount differs significantly from the depreciated historical cost. Therefore, the following discussion of asset age ratios applies primarily to PPE reported under the cost model.

Asset age and remaining useful life, two asset age ratios, are important indicators of a company's need to reinvest in productive capacity. The older the assets and the shorter the remaining life, the more a company may need to reinvest to maintain productive capacity. The average age of a company's asset base can be estimated as accumulated depreciation divided by depreciation expense. The average remaining life of a company's asset base can be estimated as net PPE divided by depreciation expense. These estimates simply reflect the following relationships for assets accounted for on a historical cost basis: total historical cost minus accumulated depreciation equals net PPE; and, under straight-line depreciation, total historical cost less salvage value divided by estimated useful life equals annual depreciation expense. Equivalently,

total historical cost less salvage value divided by annual depreciation expense equals estimated useful life. Assuming straight-line depreciation and no salvage value (for simplicity), we have the following:

Estimated total useful life	=	Time elapsed since purchase (Age)	+	Estimated remaining life
Historical cost ÷ annual depreciation expense	=	Estimated total useful life		
Historical cost	=	Accumulated depreciation	+	Net PPE

Equivalently,

Estimated total useful life	=	Estimated age of equipment	+	Estimated remaining life
Historical cost ÷ annual depreciation expense	=	Accumulated depreciation ÷ annual depreciation expense	+	Net PPE ÷ annual depreciation expense

The application of these estimates can be illustrated by a hypothetical example of a company with a single depreciable asset. Assume the asset initially cost $100, had an estimated useful life of 10 years, and an estimated salvage value of $0. Each year, the company records a depreciation expense of $10, so accumulated depreciation will equal $10 times the number of years since the asset was acquired (when the asset is 7 years old, accumulated depreciation will be $70). Equivalently, the age of the asset will equal accumulated depreciation divided by the annual depreciation expense.

In practice, such estimates are difficult to make with great precision. Companies use depreciation methods other than the straight-line method and have numerous assets with varying useful lives and salvage values, including some assets that are fully depreciated, so this approach produces an estimate only. Moreover, fixed asset disclosures are often quite general. Consequently, these estimates may be primarily useful to identify areas for further investigation.

One further measure compares a company's current reinvestment in productive capacity. Comparing annual capital expenditures to annual depreciation expense provides an indication of whether productive capacity is being maintained. It is a very general indicator of the rate at which a company is replacing its PPE relative to the rate at which PPE is being depreciated.

EXAMPLE 16 Using Fixed Asset Disclosure to Compare Companies' Fixed Asset Turnover and Average Age of Depreciable Assets

You are analyzing the property, plant, and equipment of three international paper and paper products companies:

- AbitibiBowater Inc. (NYSE: ABY) is a Canadian company that manufactures newsprint, commercial printing papers, and other wood products.
- International Paper Company (NYSE: IP) is a U.S. paper and packaging company.

- UPM-Kymmene Corporation (UPM) is a Finnish company that manufactures fine and specialty papers, newsprint, magazine papers, and other related products. The company's common stock is listed on the Helsinki and New York stock exchanges.

Exhibit 10 presents selected information from the companies' financial statements.

EXHIBIT 10

Currency (in millions):	ABY Canadian $	IP U.S. $	UPM Euro €
Historical cost total PPE, end of year	$9,013	$29,815	€16,382
Accumulated depreciation, end of year	4,553	15,613	10,694
Net PPE, end of year	4,460	14,202	5,688
Land included in PPE	161	Not separated	347
Average Net PPE	5,067	12,172	5,934
Net Sales	6,771	24,829	9,461
Annual depreciation expense (annual impairment)	726	1,347	(182)
Capital expenditure	186	1,002	558
Accounting standards	Canadian GAAP	U.S. GAAP	IFRS
PPE measurement	Historical cost	Historical cost	Historical cost
Depreciation method	Straight-line	Units-of-production for pulp and paper mills;* straight-line for other	Straight-line
Useful life of assets, in years, except as noted	20–40 (buildings); 5–20 (machinery and equipment); 40 (power plants)	Straight-line depreciation rates are 2.5% to 8.5% (buildings) and 5% to 33% (machinery and equipment)	25–40 (buildings); 15–20 (heavy equip.); 5–15 (light equip.)

*Pulp and paper mills historical cost as disclosed in a footnote total $21,819 million. Depreciation expense and accumulated depreciation is not separately reported for mills.

Sources: For ABY, Form 10-K for the year ended 31 December 2008, filed 31 March 2009. For IP, Form 10-K for the year ended 31 December 2008, filed 20 February 2009. For UPM, annual report for the year ended 31 December 2008.

1. Based on the earlier data for each company, estimate the total useful life, age, and remaining useful life of PPE.
2. Interpret the estimates. What items might affect comparisons across these companies?
3. How does each company's 2008 depreciation expense compare to its capital expenditures for the year?
4. Calculate and compare fixed asset turnover for each company.

Solution to 1: The following table presents the estimated total useful life, estimated age, and estimated remaining useful life of PPE for each of the companies.

Estimates	ABY	IP	UPM
Estimated total useful life (years)	12.4	22.1	22.0
Estimated age (years)	6.3	11.6	14.4
Estimated remaining life (years)	6.1	10.5	7.6

The computations are explained using UPM's data. The estimated total useful life of PPE is total historical cost of PPE of €16,382 divided by annual depreciation expense of €745, giving 22.0 years. Estimated age and estimated remaining life are obtained by dividing accumulated depreciation of €10,694 and net PPE of €5,688 by the annual depreciation expense of €745, giving 14.4 years and 7.6 years, respectively.

Ideally, the estimates of asset lives illustrated in this example should exclude land, which is not depreciable, when the information is available; however, IP does not separately disclose land. We will use UPM, for which land appeared to be disclosed separately in the previous table, to illustrate the estimates with adjusting for land. As an illustration of the calculations to exclude land, excluding UPM's land would give an estimated total useful life for the nonland PPE of 21.5 years [(total cost €16,382 minus land cost of €347) divided by annual depreciation expense of €745 million].

Solution to 2: The estimated total useful life suggests that IP and UPM depreciate PPE over a much longer period than ABY: 22.1 and 22.0 years for IP and UPM, respectively, versus 12.4 years for ABY. This result can be compared, to an extent, to the useful life of assets noted by the companies, and the composition of fixed assets. For instance, ABY and UPM depreciate their buildings over similar periods and their equipment over the same period (5 to 20 years). That the estimated useful life of PPE overall differs so much between the companies suggests that equipment reflects a higher proportion of ABY's assets. An inspection of the companies' footnoted information (not shown) on asset composition confirms that equipment accounts for a larger portion of ABY gross fixed assets (86%) compared to UPM (76%).

The estimated age of the equipment suggests that ABY has the newest PPE with an estimated age of 6.3 years. Additionally, the estimates suggest that around 50 percent of ABY's assets' useful lives have passed (6.3 years ÷ 12.4 years, or equivalently, C$4,553 million ÷ C$9,013 million). In comparison, around 67 percent of the useful lives of the PPE of UPM have passed. Items that can affect comparisons across the companies include business differences, such as differences in composition of the companies' operations and differences in acquisition and divestiture activity. In addition, the companies all report under different accounting standards, and IP discloses that it uses the units-of-production method for the largest component of its PPE. Differences in disclosures, for example, in the categories of assets disclosed, also can affect comparisons.

Solution to 3: Capital expenditure as a percentage of depreciation is 26 percent for ABY, 74 percent for IP, and 75 percent for UPM. Based on this measure, IP and UPM are replacing their PPE at rates closer to the rate PPE are being depreciated. ABY's measure

suggests the company is replacing its PPE at a slower rate than the PPE is being depreciated, consistent with the company's apparently newer asset base.

Solution to 4: Fixed asset turnover for each company is presented here, calculated as total revenues divided by average net PPE. Net sales is used as an approximation for total revenues, because differences like sales returns are not consistently disclosed by companies. We can see that IP's fixed asset turnover is highest, implying it is able to generate more sales from each unit of investment in fixed assets.

	ABY	IP	UPM
Fixed Asset Turnover	1.3	2.0	1.6
Currency, millions of:	*Canadian $*	*U.S. $*	*Euro €*
Net Sales	6,771	24,829	9,461
Average Net PPE	5,067	12,172	5,934

8. INVESTMENT PROPERTY

Investment property is defined under IFRS as property that is owned (or, in some cases, leased under a finance lease) for the purpose of earning rentals or capital appreciation or both.[27] An example of investment property is a building owned by a company and leased out to tenants. In contrast, other long-lived tangible assets (i.e., property considered to be property, plant, and equipment) are owner-occupied properties used for producing the company's goods and services or for housing the company's administrative activities. Investment properties do not include long-lived tangible assets held for sale in the ordinary course of business. For example, the houses and property owned by a housing construction company are considered to be its inventory.

Under IFRS, companies are allowed to value investment properties using either a cost model or a fair value model. The cost model is identical to the cost model used for property, plant, and equipment. The fair value model, however, differs from the revaluation model used for property, plant, and equipment. Under the revaluation model, whether an asset revaluation affects net income depends on whether the revaluation initially increases or decreases the carrying amount of the asset. In contrast, under the fair value model, all changes in the fair value of the asset affect net income. To use the fair value model, a company must be able to reliably determine the property's fair value on a continuing basis.[28] Under U.S. GAAP, there is no specific definition of investment property. Most operating companies and real estate companies in the United States that hold investment-type property use the historical cost model.

Example 17 presents an excerpt from the annual report of a property company reporting under IFRS.

[27] IAS 40 *Investment Property* prescribes the accounting treatment for investment property.

[28] Fair value of investment property is defined as the price at which the property could be exchanged between knowledgeable, willing parties in an arm's length transaction (IAS 40 *Investment Property*, paragraph 36).

EXAMPLE 17 Financial Statement Presentation and Disclosures for Long-Lived Assets

The following exhibit presents an excerpt from the annual report for the year ended 31 March 2009 of Daejan Holdings PLC (London: DJAN), a property company headquartered in the United Kingdom.

EXHIBIT 11 Excerpt from the Consolidated Income Statements at 31 March (Currency in £ thousands)

	2009	2008
Gross rental income	83,918	73,590
Service charge income	12,055	13,362
Total Rental and Related Income from Investment Properties	95,973	86,952
Property operating expenses	(53,470)	(46,464)
Net Rental and Related Income from Investment Properties	42,503	40,488
Profit on Disposal of Investment Properties	6,758	6,578
Valuation gains on investment properties	6,646	46,646
Valuation losses on investment properties	(268,249)	(25,982)
Net Valuation (Losses)/Gains on Investment Properties	(261,603)	20,664
Administrative expenses	(12,039)	(8,629)
Net Operating (Loss)/Profit before Net Financing Costs	(224,381)	59,101

1. What was the primary cause of the company's £224,381 thousand net operating loss before net financing costs for the year ended 31 March 2009?
2. What was the primary cause of the company's £59,101 thousand net operating profit before financing costs for the year ended 31 March 2008?
3. What was the primary cause of the change from a £59,101 thousand net operating profit in 2008 to a £224,381 thousand net operating loss in 2009?
4. Do the valuation gains and losses on investment properties indicate that the properties have been sold?

Solution to 1: The primary cause of the company's net operating loss for the year ended 31 March 2009 was the net valuation loss on investment properties. The net valuation loss of £262 million (valuation gain of £6,646 thousand minus the valuation loss of £268,249 thousand) exceeded the company's net rental income plus its profit on disposal of investment properties.

Solution to 2: The primary cause of the company's net operating profit for the year ended 31 March 2008 was the £40 million net rental income. Additionally, the company reported net valuation gains on investment properties of £21 million (valuation gain of £46,646 thousand minus the valuation loss of £25,982 thousand) and profit on disposal of investment properties of £7 million.

Solution to 3: The change from a net operating profit to a net operating loss was primarily due to valuation gains exceeding valuation losses (net valuation gains) in 2008 and valuation losses significantly exceeding valuation gains (net valuation losses) in 2009.

Solution to 4: No. The valuation gains and losses on investment properties arise from changes in the fair value of properties that are owned by the company. The gains and losses on properties that have been sold are reported as Profit (Loss) on Disposal of Investment Properties. In neither 2008 nor 2009 did the company experience a loss on disposal of investment properties so the line item was reported as Profit on Disposal of Investment Properties.

In general, a company must apply its chosen model (cost or fair value) to all of its investment property. If a company chooses the fair value model for its investment property, it must continue to use the fair value model until it disposes of the property or changes its use such that it is no longer considered investment property (e.g., it becomes owner-occupied property or part of inventory). The company must continue to use the fair value model for that property even if transactions on comparable properties, used to estimate fair value, become less frequent.

Certain valuation issues arise when a company changes the use of property such that it moves from being an investment property to owner-occupied property or part of inventory. If a company's chosen model for investment property is the cost model, such transfers do not change the carrying amount of the property transferred. If a company's chosen model is the fair value model, transfers from investment property to owner-occupied property or to inventory are made at fair value. In other words, the property's fair value at the time of transfer is considered to be its cost for ongoing accounting for the property. If a company's chosen model for investment property is the fair value model and it transfers a property from owner-occupied to investment property, the change in measurement of the property from depreciated cost to fair value is treated like a revaluation. If a company's chosen model is the fair value model and it transfers a property from inventory to investment property, any difference between the inventory carrying amount and the property's fair value at the time of transfer is recognized as profit or loss.

Investment property appears as a separate line item on the balance sheet. Companies are required to disclose whether they use the fair value model or the cost model for their investment property. If the company uses the fair value model, it must make additional disclosures about how it determines fair value and must provide reconciliation between the beginning and ending carrying amounts of investment property. If the company uses the cost model, it must make additional disclosures similar to those for property, plant, and equipment—for example, the depreciation method and useful lives must be disclosed. In addition, if the company uses the cost model, it must also disclose the fair value of investment property.

9. LEASING

A lease is a contract between the owner of an asset—the **lessor**—and another party seeking use of the assets—the **lessee**. Through the lease, the lessor grants the right to use the asset to the lessee. The right to use the asset can be a long period, such as 20 years, or a much shorter period, such as a month. In exchange for the right to use the asset, the lessee makes periodic

lease payments to the lessor. A lease, then, is a form of financing to the lessee provided by the lessor that enables the lessee to purchase the *use* of the leased asset.

9.1. The Lease versus Buy Decision

There are several advantages to leasing an asset compared to purchasing it. Leases can provide less costly financing, usually require little, if any, down payment, and are often at fixed interest rates. The negotiated lease contract may contain less restrictive provisions than other forms of borrowing. A lease can also reduce the risks of obsolescence, residual value, and disposition to the lessee because the lessee does not own the asset. The lessor may be better positioned to manage servicing the asset and to take advantage of tax benefits of ownership. As a result, leasing the asset may be less costly than owning the asset for the lessee.

Leases also have perceived financial and tax reporting advantages. While providing a form of financing, certain types of leases are not reported as debt on the balance sheet. The items leased under these types of leases also do not appear as assets on the balance sheet. Therefore, no interest expense or depreciation expense is included in the income statement. Additionally, in some countries such as the United States, financial reporting standards may differ from reporting under tax regulations; thus, in some cases, a company may own an asset for tax purposes (and thus obtain deductions for depreciation expense for tax purposes) while not reflecting the ownership in its financial statements. A lease that is structured to provide a company with the tax benefits of ownership while not requiring the asset to be reflected on the company's financial statements is known as a **synthetic lease**.

9.2. Finance versus Operating Leases

Differences in economic substance and accounting exist for two main types of leases—finance and operating. The economic substance of a finance (or capital)[29] lease is different from an operating lease, as are the implications of each for the financial statements of the lessee and lessor. In substance, a **finance lease** is equivalent to the purchase of some asset (lease to own) by the buyer (lessee) that is directly financed by the seller (lessor). An **operating lease** is an agreement allowing the lessee to use the asset for a period of time, essentially a rental.

Under IFRS, if substantially *all* the risks and rewards incidental to ownership are transferred to the lessee, the lease is classified as a finance lease and the lessee reports a leased asset and a lease obligation on the balance sheet.[30] Otherwise, the lease is reported as an operating lease. While a similar principle of the transfer of benefits and risks guides U.S. GAAP, U.S. accounting standards are currently more prescriptive in their criteria for classifying finance and operating leases. Under U.S. GAAP, a lease that meets any one of four specific requirements is classified as a finance lease; however, recently proposed accounting standards would eliminate those criteria.[31]

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[29] Finance lease is IFRS terminology and capital lease is U.S. GAAP terminology. IAS 17 [Leases] and FASB ASC Topic 840 [Leases].

[30] International accounting for leases is prescribed under IAS 17 [Leases].

[31] The four criteria are: (1) ownership of the leased asset transfers to lessee at end of lease, (2) the lease contains an option for the lessee to purchase the leased asset cheaply (bargain purchase option), (3) the lease term is 75 percent or more of the useful life of the leased asset, and (4) the present value of lease payments is 90 percent or more of the fair value of the leased asset (ASC 840-10-25-1). An Exposure Draft, Leasing, issued jointly by the FASB and IASB in August 2010 would eliminate these criteria from U.S. GAAP.

The example following illustrates and compares the accounting and financial statement effects of buying an asset using debt, leasing an asset under an operating lease, and leasing an asset under a finance lease.

EXAMPLE 18 Comparison of Accounting and Financial Statement Effects of the Buy versus Lease Decision

Bi-ly Company is considering the following alternatives in obtaining the use of a new piece of equipment at the beginning of Year 1:

Alternative 1: Buy the equipment and finance the purchase with new debt.
Alternative 2: Lease the equipment under an operating lease (the equipment is not reported as an asset, the lease payments each period are treated as an operating expense on the income statement).
Alternative 3: Lease the equipment under a finance lease (the equipment is reported as an asset and an obligation is recorded equal to the present value of future lease payments).

The fair value of the equipment, having a five-year useful life and no salvage value, is \$1,000. If Bi-ly leases the equipment, annual lease payments would be \$264 due at the end of each year. Bi-ly's discount rate is 10 percent. The company uses straight-line depreciation. (For illustration, assume the company can record the lease as either operating or financing.)

1. For each alternative under consideration, determine the effect on assets and liabilities at the beginning of Year 1.
2. For each alternative, determine the effect on the income statement in Year 1.
3. For each alternative, calculate Bi-ly's return on assets and debt-to-asset ratio at the end of Year 1. For simplicity, assume that—excluding any effects of Bi-ly's choice among the three alternatives for obtaining the assets—total assets at the beginning and end of the year are \$4,500, total liabilities at the beginning and end of the year are \$3,000, and net income for the year is \$800.

Solution to 1: At the beginning of Year 1, Bi-ly would show the following assets and debt:

Alternative	1	2	3
Buy/Lease	Buy	Lease	Lease
Finance/Accounting	Issue new debt	Operating	Finance*
Long-lived asset	\$1,000		\$1,000
Debt/lease obligation	1,000		1,000

*Under a finance lease, the present value of five future lease payments of \$264 discounted at 10 percent is reported on the balance sheet as a lease obligation and an asset of \$1,000 (rounded).

Solution to 2: For Year 1, Bi-ly would show the following expenses related to the equipment:

Alternative	1	2	3
Rent expense		$264	
Depreciation expense	$200		$200
Interest expense	100		100
Total expenses	$300	$264	$300

For Alternatives 1 and 3, depreciation expense is the acquisition cost of $1,000 divided by the 5-year useful life. Salvage value is 0.

For Alternatives 1 and 3, interest expense is the beginning balance of debt, $1,000 times the discount rate of 10 percent. Each year the interest expense will decline.

For Alternative 2, rent expense is the lease payment of $264.

Solution to 3: To calculate the return on assets:

Alternative	1	2	3
Net income, excluding new asset	$800	$800	$800
Add additional expenses (solution to 2)	$300	$264	$300
Net income, adjusted	$500	$536	$500
Total assets, beginning, excluding new asset	$4,500	$4,500	$4,500
Add additional asset (solution to 1)	1,000		1,000
Total assets, beginning, adjusted	$5,500	$4,500	$5,500
Total assets, end, excluding new asset	$4,500	$4,500	$4,500
Add additional asset*	800		800
Total assets, end, adjusted	$5,300	$4,500	$5,300
Average total assets	$5,400	$4,500	$5,400
Return on assets, adjusted	9.3%	11.9%	9.3%

*The book value of the new asset at the end of the year is its beginning balance of $1,000 less $200 accumulated depreciation.

In this example, the highest return on assets is found when the equipment is leased under an operating lease which is expected because net income is highest and the asset base is lowest. Buying an asset and seeking to finance it with new debt and leasing it under a finance lease result in the same return on assets.

To calculate the debt-to-asset ratio at the end of the year:

Alternative	1	2	3
Total assets, end, excluding new asset	$4,500	$4,500	$4,500
Add additional asset	800		800
Total assets, end, adjusted	$5,300	$4,500	$5,300

Alternative	1	2	3
Total liabilities, end, excluding new asset	$3,000	$3,000	$3,000
Add additional debt*	837		837
Total liabilities, end, adjusted	$3,837	$3,000	$3,837
Debt-to-asset ratio	0.724	0.667	0.724

*Additional debt at the end of the first year is the present value of the four remaining debt/lease payments of $264 discounted at 10 percent (and rounded).

In this example, the lowest debt-to-asset ratio is found when the equipment is financed through an operating lease. Buying an asset and seeking to finance it with new debt and leasing it under a finance lease result in the same return on assets.

9.2.1. Accounting and Reporting by the Lessee

A finance lease is economically similar to borrowing money and buying an asset; therefore, a company that enters into a finance lease as the lessee reports an asset (leased asset) and related debt (lease payable) on the balance sheet. The initial value of both the leased asset and the lease payable is the lower of the fair value of the leased asset or the present value of future lease payments. On the income statement, the company reports interest expense on the debt; and if the asset acquired is depreciable, the company reports depreciation expense. (The lessor, as we illustrate in Section 9.2.2, reports the sale of an asset and the lease as a receivable.)

Because an operating lease is economically similar to renting an asset, the lessee records a lease expense on its income statement during the period it uses the asset. No asset or liability is recorded on its balance sheet. The main accounting differences between a finance lease and an operating lease are that under a finance lease, reported debt and assets are higher and expenses are generally higher in the early years. Because of the higher reported assets, debt, and expenses—and therefore the lower ROA, all else equal—lessees often prefer operating leases to finance leases. As we illustrate in the next section, lessors' preferences generally differ. Lessors would prefer a finance lease because, under an operating lease, lessors continue to show the asset and its associated financing on their balance sheets.

On the lessee's statement of cash flows, for an operating lease, the full lease payment is shown as an operating cash outflow. For a finance lease, only the portion of the lease payment relating to interest expense potentially reduces operating cash flows,[32] the portion of the lease payment that reduces the lease liability appears as a cash outflow in the financing section.

A company reporting a lease as an operating lease will typically show higher profits in early years, higher return measures in early years, and a stronger solvency position than an identical company reporting an identical lease as a finance lease. However, the company reporting the lease as a finance lease will show higher operating cash flows because a portion of the lease payment will be reflected as a financing cash outflow rather than an operating cash outflow.

The following example illustrates the effect on a lessee's income, debt, and cash flows when reporting a lease as a finance lease versus an operating lease.

[32] Interest expense may be classified as a financing cash flow or an operating cash flow under IFRS (IAS 7 paragraph 33) but is classified as an operating cash flow under U.S. GAAP (FASB ASC paragraph 230-10-45-17).

EXAMPLE 19 Financial Statement Impact of a Finance versus an Operating Lease for the Lessee

Assume two similar (hypothetical) companies, CAPBS Inc. and OPIS Inc., enter into similar lease agreements for a piece of machinery on 1 January Year 1. The leases require four annual payments of €28,679 starting on 1 January Year 1. The useful life of the machine is four years and its salvage value is zero. CAPBS accounts for the lease as a finance lease and uses straight-line depreciation, while OPIS has determined the lease is an operating lease. For simplicity, this example assumes that the accounting rules governing these hypothetical companies do not mandate either type of lease. The present value of lease payments and fair value of the equipment is €100,000. (A reminder relevant for present value calculations: Lease payments are made at the beginning of each period.)

At the beginning of Year 1, before entering into the lease agreements, both companies reported liabilities of €100,000 and equity of €200,000. Each year the companies receive total revenues of €50,000, and all revenues are cash. Assume the companies have a tax rate of 30 percent and use the same accounting for financial and tax purposes. Both companies' discount rate is 10 percent. In order to focus only on the differences in the type of lease, assume neither company incurs expenses other than those associated with the lease, and neither invests excess cash.

1. Which company reports higher expenses/net income in Year 1? Over the four years?
2. Which company reports higher total cash flow over the four years? Cash flow from operations?
3. Based on return on equity (ROE), how do the two companies' profitability measures compare?
4. Based on the ratio of debt-to-equity, how do the two companies' solvency positions compare?

Solution to 1: In Year 1 and Year 2, CAPBS reports higher expenses because the depreciation expense and interest expense of its finance lease exceeds the lease expense of OPIS's operating lease. Therefore, OPIS reports higher net income in Year 1 and Year 2. The companies' total expense over the entire four-year period, however, is equal as is the companies' total net income.

Each year, OPIS reports lease expense of €28,679 associated with its operating lease. For CAPBS, its finance lease is treated as being economically similar to borrowing money and purchasing an asset. So, on its income statement, CAPBS reports depreciation expense on the leased asset acquired and interest expense on the lease liability.

The following table shows by year CAPBS's depreciation expense and book values on the leased asset.

Year	Acquisition Cost (a)	Depreciation Expense (b)	Accumulated Depreciation (c)	Carrying Amount (year end) (d)
1	€100,000	€ 25,000	€25,000	€75,000
2	100,000	25,000	50,000	50,000
3	100,000	25,000	75,000	25,000
4	100,000	25,000	100,000	0
		€100,000		

- Column (a) is acquisition cost of €100,000 of the leased equipment.
- Column (b) is depreciation expense of €25,000 per year, calculated using the straight-line convention, as the acquisition costs less salvage value divided by useful life [(€100,000 – €0)/4 years].
- Column (c) is the accumulated depreciation on the leased asset calculated as the prior year's accumulated depreciation plus the current year's depreciation expense.
- Column (d) is the carrying amount at year end of the leased equipment, which is the difference between the acquisition cost and accumulated depreciation.

The following table shows CAPBS's lease payment, interest expense, and carrying amount for its lease liability by year.[33]

Year	Lease Liability, 1 January (a)	Annual Lease Payment, 1 January (b)	Interest (at 10%; accrued in previous year) (c)	Reduction of Lease Liability, 1 January (d)	Lease Liability on 31 December after Lease Payment on 1 January of Same Year (e)
1	€100,000	€28,679	€0	€28,679	€71,321
2	71,321	28,679	7,132	21,547	49,774
3	49,774	28,679	4,977	23,702	26,072
4	26,072	28,679	2,607	26,072	0
		€114,717	€14,717	€100,000	

[33] The computations included throughout the example were made using an Excel worksheet; small discrepancies in the calculations are due to rounding.

(continued)

EXAMPLE 19 (Continued)

- Column (a) is the lease liability at the beginning of the year.
- Year 1: €100,000
- Years thereafter: lease liability at end of previous year
- Column (b) is the annual lease payment made at the beginning of the year. Part of the lease payment pays any interest accrued in the previous year, and the remainder of the lease payment reduces the lease liability. For example, in Year 2, the €28,679 paid on 1 January reduces the interest payable of €7,132 that accrued in Year 1 ($0.10 \times 71{,}321$) and then reduces the lease liability by €21,547.
- Column (c) is the interest portion of the 1 January lease payment made on that date. This amount of interest was accrued as interest payable during the *prior* year and is reported as the interest expense of the *prior* year.
- Column (d) is the reduction of the lease liability, which is the difference between the annual lease payment and the interest portion.
- Column (e) is the lease liability on 31 December of a given year just before the lease payment is made on the first day of the next year. It is equal to the lease liability on 1 January of the same year (column a) less the reduction of the lease liability (column d).

The following table summarizes and compares the income statement effects of the lease for CAPBS and OPIS. Notice that over the four-year lease, both companies report the same total amount of expense but CAPBS shows higher expenses earlier in the life of the lease.

	CAPBS			OPIS	
Year	Depreciation Expense	Interest Expense	Total	Lease Expense	Difference
1	€25,000	€7,132	€32,132	€28,679	€3,453
2	25,000	4,977	29,977	28,679	1,298
3	25,000	2,607	27,607	28,679	(1,072)
4	25,000	=	25,000	28,679	(3,679)
Total	€100,000	€14,717	€114,717	€114,717	€(0)

The complete income statements for CAPBS and OPIS follow. Notice under the assumption that the same accounting is used for financial and tax purposes, CAPBS's taxes are lower in Year 1 and Year 2. The lower taxes in the earlier years reflect the higher expenses in those years.

Income Statements	CAPBS 1	CAPBS 2	CAPBS 3	CAPBS 4	CAPBS Total	OPIS 1	OPIS 2	OPIS 3	OPIS 4	OPIS Total
Sales	€50,000	€50,000	€50,000	€50,000	€200,000	€50,000	€50,000	€50,000	€50,000	€200,000
Depreciation expense	25,000	25,000	25,000	25,000	€100,000					
Interest expense	7,132	4,977	2,607		14,717					
Lease expense						28,679	28,679	28,679	28,679	114,717
Income before taxes	17,868	20,023	22,393	25,000	85,283	21,321	21,321	21,321	21,321	85,283
Tax expense	5,360	6,007	6,718	7,500	25,585	6,396	6,396	6,396	6,396	25,585
Net income	€12,508	€14,016	€15,675	€17,500	€59,698	€14,925	€14,925	€14,925	€14,925	€59,698

Solution to 2: On the statement of cash flows, observe that over the four years, both CAPBS and OPIS report the same total change in cash of €59,698. Operating cash flows reported by CAPBS are higher because a portion of the lease payment each year is categorized as a financing cash flow rather than an operating cash flow. In the first two years, CAPBS's change in cash is higher due to its lower taxes in those years.

Statements of Cash Flows	CAPBS 1	CAPBS 2	CAPBS 3	CAPBS 4	CAPBS Total	OPIS 1	OPIS 2	OPIS 3	OPIS 4	OPIS Total
Sales	€50,000	€50,000	€50,000	€50,000	€200,000	€50,000	€50,000	€50,000	€50,000	€200,000
Interest paid	—	7,132	4,977	2,607	€14,717					
Taxes paid	5,360	6,007	6,718	7,500	25,585	6,396	6,396	6,396	6,396	€25,585
Lease expense	—	—	—	—	—	28,679	28,679	28,679	28,679	114,717
Operating cash flows	44,640	36,861	38,305	39,893	159,698	14,925	14,925	14,925	14,925	59,698
Payment to reduce lease liability	(28,679)	(21,547)	(23,702)	(26,072)	(100,000)					
Financing cash flows	(28,679)	(21,547)	(23,702)	(26,072)	(100,000)	—	—	—		—
Total change in cash	€15,960	€15,314	€14,603	€13,821	€59,698	€14,925	€14,925	€14,925	€14,925	€59,698

(continued)

EXAMPLE 19 (Continued)

Solution to 3: Based on ROE, CAPBS looks less profitable than OPIS in the earlier years. Computing ROE requires forecasting shareholders' equity. In general, ending Shareholders' equity = Beginning shareholders' equity + Net income + Other comprehensive income – Dividends + Net capital contributions by shareholders. Because the companies in this example do not have other comprehensive income, did not pay dividends, and experienced no capital contributions from shareholders, Ending shareholders' equity = Beginning shareholders' equity + Net income. The forecasts are presented here.

CAPBS	0	1	2	3	4
Retained earnings	€0	€12,508	€26,523	€42,198	€59,698
Common stock	200,000	200,000	200,000	200,000	200,000
Total shareholders' equity	€200,000	€212,508	€226,523	€242,198	€259,698

OPIS	0	1	2	3	4
Retained earnings	€0	€14,925	€29,849	€44,774	€59,698
Common stock	200,000	200,000	200,000	200,000	200,000
Total shareholders' equity	€200,000	€214,925	€229,849	€244,774	€259,698

ROE is calculated as Net income divided by Average shareholders' equity. For example, CAPBS Inc. had Year 1 ROE of 6.1 percent: €12,508/ [(€200,000 + €212,508)/2].

	CAPBS				OPIS			
	1	2	3	4	1	2	3	4
ROE	6.1%	6.4%	6.7%	7.0%	7.2%	6.7%	6.3%	5.9%

Solution to 4: Based on the ratio of debt-to-equity, the solvency position of CAPBS appears weaker than that of OPIS.

For the debt-to-equity ratio, take the total shareholders' equity from Part 3 given earlier. Initially, both companies had reported liabilities of €100,000. For OPIS, the amount of total liabilities remains constant at €100,000. For CAPBS, add the lease liability at the end of the year and the amount of accrued interest payable at the end of each year from Part 1. So at the end of Year 1, CAPBS's total liabilities are €178,453 (€100,000 + €71,321 lease liability + €7,132 accrued interest payable at the end of the year), and its debt-to-equity ratio is 0.84 (€178,453/€212,508). At the end of Year 2, CAPBS total liabilities equal €154,751 (€100,000 + €49,774 lease liability + €4,977 accrued interest payable at the end of the year). The remaining years are computed in the same manner. The following table presents the ratios for each year.

	CAPBS				OPIS			
	1	2	3	4	1	2	3	4
Total debt	178,453	154,751	128,679	100,000	100,000	100,000	100,000	100,000
Shareholders' equity	212,508	226,523	242,198	259,698	214,925	229,849	244,774	259,698
Debt-to-equity ratio	0.84	0.68	0.53	0.39	0.47	0.44	0.41	0.39

In summary, a company reporting a lease as an operating lease will typically show higher profits in early years, higher return measures in early years, and a stronger solvency position than an identical company reporting an identical lease as a finance lease.[34] However, the company reporting the lease as a finance lease will show higher operating cash flows because a portion of the lease payment will be reflected as a financing cash outflow rather than an operating cash outflow.

The precisely defined accounting standards in the United States that determine when a company should report a capital (finance) versus an operating lease enable a company to structure a lease so as to avoid meeting any of the four capital lease criteria and thereby record an operating lease. Similar to debt disclosures, lease disclosures show payments under both capital and operating leases for the next five years and afterwards. Future payments under U.S. GAAP are disclosed year by year for the first five years and then aggregated for all subsequent years. Under IFRS, future payments are disclosed for the first year, in aggregate for years two through five, and then in aggregate for all subsequent years. These disclosures can help to estimate the extent of a company's off-balance-sheet lease financing through operating leases. Example 20 illustrates the disclosures and how these disclosures can be used to determine the effect on the financial statements if all operating leases were capitalized.

EXAMPLE 20 Financial Statement Impact of Treating Operating Leases as Finance Leases for the Lessee

CEC Entertainment, Inc. (NYSE: CEC) has significant commitments under capital (finance) and operating leases. Following is selected financial statement information and note disclosure to the financial statements for the company.

Commitments and Contingencies Footnote from CEC's Financial Statements:

8. Commitments and contingencies:

The company leases certain restaurants and related property and equipment under operating and capital leases. All leases require the company to pay property taxes, insurance, and maintenance of the leased assets. The leases generally have initial terms of 10 to 20 years with various renewal options.

Scheduled annual maturities of the obligations for capital and operating leases as of 28 December 2008 are as follows (US$ thousands):

[34] Example 11 assumes the company uses the straight-line depreciation method, which is common under IFRS and U.S. GAAP. If the company estimated depreciation expense based on the "economic" depreciation of the leased asset, there would be no difference in reported income under a finance lease and operating lease.

Years	Capital	Operating
2009	$ 1,683	$ 66,849
2010	1,683	66,396
2011	1,683	66,558
2012	1,600	65,478
2013	1,586	63,872
Thereafter	9,970	474,754
Minimum future lease payments	18,205	$803,907
Less amounts representing interest	(5,997)	
Present value of future minimum lease payments	12,208	
Less current portion	(806)	
Long-term finance lease obligation	$11,402	

Selected Financial Statement Information for CEC:

	28 December 2008	30 December 2007
Total liabilities	$608,854	$519,900
Shareholders' equity	$128,586	$217,993

1. A. Calculate the implicit interest rate used to discount the "scheduled annual maturities" under capital leases to obtain the "present value of future minimum lease payments" of $12,208 disclosed in the Commitments and Contingencies footnote. To simplify the calculation, assume that future minimum lease payments on the company's capital leases for the "thereafter" lump sum are as follows: $1,586 on 31 December of each year from 2014 to 2019, and $454 in 2020. Assume annual lease payments are made at the end of each year.
   B. Why is the implicit interest rate estimate in Part A important in assessing a company's leases?
2. If the operating lease agreements had been treated as capital leases, what additional amount would be reported as a lease obligation on the balance sheet at 28 December 2008? To simplify the calculation, assume that future minimum lease payments on the company's operating leases for the "thereafter" lump sum are as follows: $63,872 on 31 December each year from 2014 to 2020, and $27,650 in 2021. Based on the implicit interest rate obtained in Part 1A, use 7.245 percent to discount future cash flows on the operating leases.
3. What would be the effect on the debt-to-equity ratio of treating all operating leases as finance leases (i.e., the ratio of total liabilities to equity) at 28 December 2008?

Solution to 1A: The implicit interest rate on finance leases is 7.245 percent. The implicit interest rate used to discount the finance lease payments is the internal rate of return

on the stream of cash flows; that is, the interest rate that will make the present value of the lease payments equal to $12,208. You can use an Excel spreadsheet or a financial calculator for the computations. Set the cash flow at time zero equal to $12,208 (note on Excel and on most financial calculators, you will input this amount as a negative number), input each of the annual payments on the finance leases, and solve for the internal rate of return.

To demonstrate how the internal rate of return corresponds to the individual present values, refer to the following schedule of the undiscounted minimum lease payments based on information from footnote 8 and the assumptions given. Exhibit 12 presents the present value computations.

EXHIBIT 12 Present Value Computations

Implicit Interest Rate (Internal Rate of Return) based on Capital Leases (7.245%)

Fiscal Year	Years to Discount	Minimum Capital Lease Payment	Times Present Value Factor	Equals Present Value
2009	1	1,683	$1/(1 + \text{interest rate})^{1}$	1,569
2010	2	1,683	$1/(1 + \text{interest rate})^{2}$	1,463
2011	3	1,683	$1/(1 + \text{interest rate})^{3}$	1,364
2012	4	1,600	$1/(1 + \text{interest rate})^{4}$	1,210
2013	5	1,586	$1/(1 + \text{interest rate})^{5}$	1,118
2014	6	1,586	$1/(1 + \text{interest rate})^{6}$	1,042
2015	7	1,586	$1/(1 + \text{interest rate})^{7}$	972
2016	8	1,586	$1/(1 + \text{interest rate})^{8}$	906
2017	9	1,586	$1/(1 + \text{interest rate})^{9}$	845
2018	10	1,586	$1/(1 + \text{interest rate})^{10}$	788
2019	11	1,586	$1/(1 + \text{interest rate})^{11}$	735
2020	12	454	$1/(1 + \text{interest rate})^{12}$	196
Undiscounted sums of minimum future lease payments		$18,205		
Present value of future minimum lease payments			$12,208	$12,208

The interest rate of 7.245 percent approximately equates the future minimum lease payments with the present value of future minimum lease payments of $12,208 that CEC reports.

Solution to 1B: The implicit interest rate is important because it will be used to estimate the present value of the lease obligations reported as a liability, the value of the leased assets on the balance sheet, the interest expense, and the lease amortization on the income statement. For instance, by selecting a higher rate a company could, if desired,

opportunistically reduce the present value of its finance leases and thus its reported debt. The reasonableness of the implicit interest rate can be gauged by comparing it to the interest rates of the company's other debt instruments outstanding, which are disclosed in financial statement footnotes, and by considering recent market conditions. Note, however, that the interest rate implicit in capitalization of the finance lease obligations reflects the interest rate at the time the lease occurred and thus may differ from current rates.

Solution to 2: If the operating leases had been treated as finance leases, the additional amount that would be reported as a lease obligation on the balance sheet at 28 December 2008, using a discount rate of 7.245 percent determined in Part 1 given earlier, is \$520,256. Exhibit 13 presents the present value computations. An alternative short cut approach is to divide the discounted finance lease cash flows of \$12,208 by the undiscounted finance lease cash flows of \$18,205 and then apply the resulting percentage of 67.06 percent to the undiscounted operating lease cash flows of \$803,907. The shortcut approach estimates the present value of the operating lease payments as \$539,100, which is close to the estimate obtained using the longer method. It is likely to be most accurate when the timing and relative quantities of the two sets of cash flows are similar.

EXHIBIT 13 Present Value Computations

(Implicit Interest Rate: 7.245%)

Fiscal Year	Years to Discount	Operating Lease Payments	Times Present Value Factor	Equals Present Value
2009	1	66,849	$1/(1 + 0.07245)^{1}$	\$62,333
2010	2	66,396	$1/(1 + 0.07245)^{2}$	57,728
2011	3	66,558	$1/(1 + 0.07245)^{3}$	53,960
2012	4	65,478	$1/(1 + 0.07245)^{4}$	49,498
2013	5	63,872	$1/(1 + 0.07245)^{5}$	45,022
2014	6	63,872	$1/(1 + 0.07245)^{6}$	41,981
2015	7	63,872	$1/(1 + 0.07245)^{7}$	39,145
2016	8	63,872	$1/(1 + 0.07245)^{8}$	36,500
2017	9	63,872	$1/(1 + 0.07245)^{9}$	34,034
2018	10	63,872	$1/(1 + 0.07245)^{10}$	31,735
2019	11	63,872	$1/(1 + 0.07245)^{11}$	29,591
2020	12	63,872	$1/(1 + 0.07245)^{12}$	27,592
2021	13	27,650	$1/(1 + 0.07245)^{13}$	11,138
Undiscounted sum of future operating lease payment		\$803,907		
Present value of future operating lease payments				\$520,256

Solution to 3: The debt-to-equity ratio almost doubles, increasing to 8.78x from 4.74x when capitalizing the operating leases. The adjusted debt-to-equity ratio is computed as follows:

	Unadjusted for Operating Leases	Adjustment to Capitalize Operating Leases	Adjusted to Capitalize Operating Leases
Total liabilities	$608,854	$520,256	$1,129,110
Common shareholders' equity	128,586		128,586
Debt-to-equity ratio	4.74x		8.78x

9.2.2. Accounting and Reporting by the Lessor

Lessors that report under U.S. GAAP determine whether a lease is a finance (also called "capital lease") or operating lease using the same four criteria as a lessee, plus additional revenue recognition criteria. If a lessor enters into an operating lease, the lessor records any lease revenue when earned. The lessor also continues to report the leased asset on the balance sheet and the asset's associated depreciation expense on the income statement.

Under a finance lease, the lessor reports a lease receivable based on the present value of future lease payments, and the lessor also reduces its assets by the carrying amount of the asset leased. Under U.S. GAAP, the carrying amount of the asset leased relative to the present value of lease payments distinguishes a direct financing lease from a sales-type lease. The income statement will show interest revenue on the lease.

EXAMPLE 21 Financial Statement Impact of a Direct Financing Lease versus Operating Lease for the Lessor

Assume two similar (hypothetical) companies, DIRFIN Inc. and LOPER Inc., own a similar piece of machinery and make similar agreements to lease the machinery on 1 January Year 1. In the lease contract, each company requires four annual payments of €28,679 starting on 1 January Year 1. The useful life of the machine is four years and its salvage value is zero. DIRFIN Inc. accounts for the lease as a direct financing lease while LOPER has determined the lease is an operating lease. (For simplicity, this example assumes that the accounting rules governing these hypothetical companies do not mandate either type of lease.) The present value of lease payments and fair value of the equipment is €100,000.

At the beginning of Year 1, before entering into the lease agreement, both companies reported liabilities of €100,000 and equity of €200,000. Assets on hand include the asset about to be leased. Each year the companies receive total revenues of €50,000 cash, apart from any revenue earned on the lease. Assume the companies have a tax rate of 30 percent, and use the same accounting for financial and tax purposes. Both companies' discount rate is 10 percent. In order to focus only on the differences in the type of lease, assume that neither company incurs revenues or expenses other than those associated with the lease and that neither invests excess cash.

1. Which company reports higher expenses/net income in Year 1? Over the four years?
2. Which company reports higher total cash flow over the four years? Cash flow from operations?
3. Based on ROE, how do the two companies' profitability measures compare?

Solution to 1: LOPER reports higher expenses in Year 1 because, under an operating lease, the lessor retains ownership of the asset and continues to report associated depreciation expense. DIRFIN, treating the lease as a finance lease, does not reflect ownership of the asset or the associated depreciation expense. DIRFIN has higher net income in Year 1 because the interest revenue component of the lease payment in that year exceeds the lease revenue net of depreciation reported by LOPER.

On its income statement, LOPER reports depreciation expense for the asset it has leased and lease revenue based on the lease payment received. The following table shows LOPER's depreciation and book values on leased equipment by year.[35]

(continued)

[35] The computations included throughout the example were made using an Excel worksheet; small apparent discrepancies in the calculations are due to the rounding.

EXAMPLE 21 (Continued)

Year	Cost (a)	Depreciation Expense (b)	Accumulated Depreciation (c)	Book Value (Year End) (d)
1	€100,000	€25,000	€25,000	€75,000
2	100,000	25,000	50,000	50,000
3	100,000	25,000	75,000	25,000
4	100,000	25,000	100,000	0
		€100,000		

- Column (a) is the cost of €100,000 of the leased equipment.
- Column (b) is depreciation expense of €25,000 per year, calculated using the straight-line method as the cost less the salvage value divided by the useful life [(€100,000 – €0)/4 years].
- Column (c) is the accumulated depreciation on the leased asset calculated as the prior year's accumulated depreciation plus the current year's depreciation expense.
- Column (d) is the ending book value of the leased equipment, which is the difference between the cost and accumulated depreciation.

DIRFIN, however, records the lease as a direct financing lease. It removes the leased asset from its assets and records a lease receivable. On its income statement, DIRFIN reports interest revenues earned from financing the lease. The table following shows DIRFIN's interest revenues and carrying amounts on the lease receivable.

Year	Lease Receivable, 1 January (a)	Annual Lease Payment Received, 1 January (b)	Interest (at 10%; accrued in previous year) (c)	Reduction of Lease Receivable, 1 January (d)	Lease Receivable on 31 December after Lease Payment on 1 January of Same Year (e)
1	€100,000	€28,679	€0	€28,679	€71,321
2	71,321	28,679	7,132	21,547	49,774
3	49,774	28,679	4,977	23,702	26,072
4	26,072	28,679	2,607	26,072	0
		€114,717	€14,717	€100,000	

- Column (a) is the lease receivable at the beginning of the year.
- Column (b) is annual lease payment received at the beginning of the year, which is allocated to interest and reduction of the lease receivable.
- Column (c) is interest accrued in the previous year calculated as the lease receivable outstanding for the year times the interest rate.
- Column (d) is the reduction of the lease receivable which is the difference between the annual lease payments received and interest. Because the lease payment is due on 1 January, this amount of interest is a receivable at the end of the *prior* year and is reported as interest revenue in the *prior* year.
- Column (e) is the lease receivable after the lease payment is received and at the end of the year. It is the lease receivable at 1 January (Column a) less the reduction of the lease receivable (Column d).

The table following summarizes and compares the income statement effects of the lease for DIRFIN and LOPER. Notice that over the four-year lease, both companies report the same total amount of revenue, but DIRFIN's revenues in the earlier years of the lease are higher than the net of lease revenues less depreciation reported by LOPER in those years.

	DIFRIN	LOPER			
Year	Lease Revenue	Lease Revenue	Depreciation Expense	Total	Difference
1	€7,132	€28,679	€25,000	€3,679	€3,453
2	4,977	28,679	25,000	3,679	1,298
3	2,607	28,679	25,000	3,679	(1,072)
4	—	28,679	25,000	3,679	(–3,679)
Total	€14,717	€114,717	€100,000	€14,717	€0

The complete income statements for DIRFIN and LOPER follow. Notice that, under the assumption that the same accounting is used for financial and tax purposes, DIRFIN's taxes are higher than those of LOPER in Years 1 and 2.

(continued)

EXAMPLE 21 (Continued)

	DIRFIN					LOPER				
Income Statements	1	2	3	4	Total	1	2	3	4	Total
Sales	€50,000	€50,000	€50,000	€50,000	€200,000	€50,000	€50,000	€50,000	€50,000	€200,000
Depreciation expense						(25,000)	(25,000)	(25,000)	(25,000)	(100,000)
Interest revenue	7,132	4,977	2,607		14,717					
Lease revenue						28,679	28,679	28,679	28,679	114,717
Income before taxes	€57,132	€54,977	€52,607	€50,000	€214,717	€53,679	€53,679	€53,679	€53,679	€214,717
Tax expense	17,140	16,493	15,782	15,000	64,415	16,104	16,104	16,104	16,104	64,415
Net income	€39,992	€38,484	€36,825	€35,000	€150,302	€37,575	€37,575	€37,575	€37,575	€150,302

Solution to 2: Looking at the statement of cash flows, observe that operating cash flows reported by DIRFIN are lower, but investing cash flows are higher than LOPER. Over the four years, both DIRFIN and LOPER report the same total change in cash.

	DIRFIN					LOPER				
Statements of Cash Flows	1	2	3	4	Total	1	2	3	4	Total
Net income	€39,992	€38,484	€36,825	€35,000	€150,302	€37,575	€37,575	€37,575	€37,575	€150,302
Increase (decrease) in interest receivable	7,132	(2,155)	(2,370)	(2,607)	0					
Add back depreciation expense						25,000	25,000	25,000	25,000	100,00
Operating cash flows	€32,860	€40,639	€39,195	€37,607	€150,302	€62,575	€62,575	€62,575	€62,575	€250,302
Payments received on finance leases	28,679	21,547	23,702	26,072	100,000					
Investing cash flows	28,679	21,547	23,702	26,072	100,000					
Change in cash	€61,540	€62,186	€62,897	€63,679	€250,302	€62,575	€62,575	€62,575	€62,575	€250,302

Solution to 3: Based on ROE, DIRFIN appears more profitable than LOPER in the early years of the lease.

Computing ROE requires forecasting shareholders' equity. In general, Ending shareholders' equity = Beginning shareholders' equity + Net income + Other comprehensive income – Dividends + Net capital contributions by shareholders. Because the companies in this example do not have other comprehensive income, do not pay dividends, and have no capital contributions, Ending shareholders' equity = Beginning shareholders' equity + Net income. The forecasts are presented here.

DIRFIN	0	1	2	3	4
Retained earnings	€0	€39,992	€78,477	€115,302	€150,302
Common stock	200,000	200,000	200,000	200,000	200,000
Total shareholders' equity	€200,000	€239,992	€278,477	€315,302	€350,302
LOPER	0	1	2	3	4
Retained earnings	€0	€37,575	€75,151	€112,726	€150,302
Common stock	200,000	200,000	200,000	200,000	200,000
Total shareholders' equity	€200,000	€237,575	€275,151	€312,726	€350,302

ROE is calculated as net income divided by average shareholders' equity. For example, DIRFIN Inc. had Year 1 ROE of 18.2 percent: €39,992/[(€200,000 + €239,992)/2].

	DIRFIN				LOPER			
	1	2	3	4	1	2	3	4
ROE	18.2%	14.8%	12.4%	10.5%	17.2%	14.7%	12.8%	11.3%

From the comparisons given earlier, DIRFIN looks more profitable in the early years of the lease, but less profitable in the later years.

U.S. GAAP make a further distinction in defining two types of nonoperating leases: (1) **direct financing leases**, and (2) **sales-type leases** from the lessor's perspective.[36] A direct financing lease results when the present value of lease payments (and thus the amount recorded as a lease receivable) equals the carrying amount of the leased asset. Because there is no "profit" on the asset itself, the lessor is essentially providing financing to the lessee, and the revenues earned by the lessor are financing in nature (i.e., interest revenue). If, however, the present value of lease payments (and thus the amount recorded as a lease receivable) exceeds the carrying value of the leased asset, the lease is treated as a sale.

When a company enters into a sales-type lease, a lease agreement where the present value of lease payment is greater than the value of the leased asset to the lessor, it will show a profit on the transaction in the year of inception and interest revenue over the life of the lease.

EXAMPLE 22 Financial Statement Impact of a Sales-Type Lease for the Lessor

Assume a (hypothetical) company, Selnow Inc., owns a piece of machinery and enters into an agreement to lease the machinery on 1 January Year 1. In the lease contract, the company requires four annual payments of €28,679 starting on 1 January Year 1. The present value of the lease payments (using a 10 percent discount rate) is €100,000, and the fair value of the equipment is €90,000. The useful life of the machinery is four years and its salvage value is zero.

1. Is the lease a direct financing or sales-type lease?
2. What is Selnow's income related to the lease in Year 1? In Year 2? Ignore taxes.

Solution to 1: This is a sales-type lease: The present value of lease payments is more than the lessor's carrying amount of the leased asset. The difference between the present value of the lease payments and the carrying amount of the leased asset is the lessor's profit from selling the machinery. The lessor will record a profit of €10,000 on the sale of the leased equipment in Year 1 (€100,000 present value of lease payments receivable less €90,000 value of leased equipment).

Solution to 2: In Year 1, Selnow shows income of €17,132 related to the lease. One part of this is the €10,000 gain on the sale of the lease equipment (sales revenues of €100,000 less costs of goods sold of €90,000). Selnow also shows interest revenue of €7,132 on its financing of the lease (lease receivable of €71,321 after the initial lease payment is received times the 10 percent discount rate). In Year 2, Selnow reports only the interest revenue of €4,977 (lease receivable of €49,774 after the 1 January lease payment is received times the 10 percent discount rate). The table following shows lease payments received, interest revenue, and reduction of the lease receivable for Selnow's sales-type

[36] IFRS does not make the distinction between a sales-type lease and a direct financing lease. However, a similar treatment to "sales-type" is allowed for finance leases originated by "manufacturer or dealer lessors," within the general provisions for finance leases.

lease. Note that this table is the same as DIRFIN's table in the previous example with the direct financing lease. They are the same because the present value of the lease payments in both cases is the same. It is the fair value of the equipment that differs between the two examples.

Year	Lease Receivable, 1 January (a)	Annual Lease Payment Received, 1 January (b)	Interest (at 10%; accrued in previous year) (c)	Reduction of Lease Receivable, 1 January (d)	Lease Receivable on 31 December after Lease Payment on 1 January of Same year (e)
1	€100,000	€28,679	€0	€28,679	€71,321
2	71,321	28,679	7,132	21,547	49,774
3	49,774	28,679	4,977	23,702	26,072
4	26,072	28,679	2,607	26,072	0
		€114,717	€14,717	€100,000	

10. SUMMARY

Understanding the reporting of long-lived assets at inception requires distinguishing between expenditures that are capitalized (i.e., reported as long-lived assets) and those that are expensed. Once a long-lived asset is recognized, it is reported under the cost model at its historical cost less accumulated depreciation (amortization) and less any impairment or under the revaluation model at its fair value. IFRS permit the use of either the cost model or the revaluation model, whereas U.S. GAAP require the use of the cost model. Most companies reporting under IFRS use the cost model. The choice of different methods to depreciate (amortize) long-lived assets can create challenges for analysts comparing companies.

Key points include the following:

- Expenditures related to long-lived assets are capitalized as part of the cost of assets if they are expected to provide future benefits, typically beyond one year. Otherwise, expenditures related to long-lived assets are expensed as incurred.
- Although capitalizing expenditures, rather than expensing them, results in higher reported profitability in the initial year, it results in lower profitability in subsequent years; however, if a company continues to purchase similar or increasing amounts of assets each year, the profitability-enhancing effect of capitalization continues.
- Capitalizing an expenditure rather than expensing it results in a greater amount reported as cash from operations because capitalized expenditures are classified as an investing cash outflow rather than an operating cash outflow.
- Companies must capitalize interest costs associated with acquiring or constructing an asset that requires a long period of time to prepare for its intended use.
- Including capitalized interest in the calculation of interest coverage ratios provides a better assessment of a company's solvency.
- IFRS require research costs be expensed but allow all development costs (not only software development costs) to be capitalized under certain conditions. Generally, U.S. accounting

standards require that research and development costs be expensed; however, certain costs related to software development are required to be capitalized.
- When one company acquires another company, the transaction is accounted for using the acquisition method of accounting in which the company identified as the acquirer allocates the purchase price to each asset acquired (and each liability assumed) on the basis of its fair value. Under acquisition accounting, if the purchase price of an acquisition exceeds the sum of the amounts that can be allocated to individual identifiable assets and liabilities, the excess is recorded as goodwill.
- The capitalized costs of long-lived tangible assets and of intangible assets with finite useful lives are allocated to expense in subsequent periods over their useful lives. For tangible assets, this process is referred to as depreciation, and for intangible assets, it is referred to as amortization.
- Long-lived tangible assets and intangible assets with finite useful lives are reviewed for impairment whenever changes in events or circumstances indicate that the carrying amount of an asset may not be recoverable.
- Intangible assets with an indefinite useful life are not amortized but are reviewed for impairment annually.
- Impairment disclosures can provide useful information about a company's expected cash flows.
- Methods of calculating depreciation or amortization expense include the straight-line method, in which the cost of an asset is allocated to expense in equal amounts each year over its useful life; accelerated methods, in which the allocation of cost is greater in earlier years; and the units-of-production method, in which the allocation of cost corresponds to the actual use of an asset in a particular period.
- Estimates required for depreciation and amortization calculations include the useful life of the equipment (or its total lifetime productive capacity) and its expected residual value at the end of that useful life. A longer useful life and higher expected residual value result in a smaller amount of annual depreciation relative to a shorter useful life and lower expected residual value.
- IFRS permit the use of either the cost model or the revaluation model for the valuation and reporting of long-lived assets, but the revaluation model is not allowed under U.S. GAAP.
- Under the revaluation model, carrying amounts are the fair values at the date of revaluation less any subsequent accumulated depreciation or amortization.
- In contrast with depreciation and amortization charges, which serve to allocate the cost of a long-lived asset over its useful life, impairment charges reflect an unexpected decline in the fair value of an asset to an amount lower than its carrying amount.
- IFRS permit impairment losses to be reversed, with the reversal reported in profit. U.S. GAAP do not permit the reversal of impairment losses.
- The gain or loss on the sale of long-lived assets is computed as the sales proceeds minus the carrying amount of the asset at the time of sale.
- Estimates of average age and remaining useful life of a company's assets reflect the relationship between assets accounted for on a historical cost basis and depreciation amounts.
- The average remaining useful life of a company's assets can be estimated as net PPE divided by depreciation expense, although the accounting useful life may not necessarily correspond to the economic useful life.
- Long-lived assets reclassified as held for sale cease to be depreciated or amortized. Long-lived assets to be disposed of other than by a sale (e.g., by abandonment, exchange for another asset, or distribution to owners in a spin-off) are classified as held for use until disposal. Thus, they continue to be depreciated and tested for impairment.

- Investment property is defined as property that is owned (or, in some cases, leased under a finance lease) for the purpose of earning rentals, capital appreciation, or both.
- Under IFRS, companies are allowed to value investment properties using either a cost model or a fair value model. The cost model is identical to the cost model used for property, plant, and equipment, but the fair value model differs from the revaluation model used for property, plant, and equipment. Under the fair value model, all changes in the fair value of investment property affect net income.
- Under U.S. GAAP, investment properties are generally measured using the cost model.
- Accounting standards generally define two types of leases: operating leases and finance (or capital) leases. Current U.S. GAAP specify four criteria to determine when a lease is classified as a capital lease, although proposed standards would eliminate those specific criteria. IFRS are less prescriptive in determining the classification of a lease as a finance lease.
- When a lessee reports a lease as an operating lease rather than a finance lease, it usually appears more profitable in early years of the lease and less so later, and it appears less leveraged over the entire lease period.
- When a lessor reports a lease as a finance lease rather than an operating lease, it usually appears more profitable in early years of the lease.

PROBLEMS

1. JOOVI Inc. has recently purchased and installed a new machine for its manufacturing plant. The company incurred the following costs:

Purchase price	\$12,980
Freight and insurance	\$1,200
Installation	\$700
Testing	\$100
Maintenance staff training costs	\$500

The total cost of the machine to be shown on JOOVI's balance sheet is *closest* to:
A. \$14,180.
B. \$14,980.
C. \$15,480.

2. BAURU, S.A., a Brazilian corporation, borrows capital from a local bank to finance the construction of its manufacturing plant. The loan has the following conditions:

Borrowing date	1 January 2009
Amount borrowed	500 million Brazilian real (BRL)
Annual interest rate	14 percent
Term of the loan	3 years
Payment method	Annual payment of interest only. Principal amortization is due at the end of the loan term.

The construction of the plant takes two years, during which time BAURU earned BRL 10 million by temporarily investing the loan proceeds. Which of the following is the amount of interest related to the plant construction (in BRL million) that can be capitalized in BAURU's balance sheet?

A. 130
B. 140
C. 210

3. After reading the financial statements and footnotes of a company that follows IFRS, an analyst identified the following intangible assets:
   - product patent expiring in 40 years
   - copyright with no expiration date
   - goodwill acquired 2 years ago in a business combination

   Which of these assets is an intangible asset with a finite useful life?

	Product Patent	Copyright	Goodwill
A.	Yes	Yes	No
B.	Yes	No	No
C.	No	Yes	Yes

4. Intangible assets with finite useful lives *mostly* differ from intangible assets with infinite useful lives with respect to accounting treatment of:
   A. revaluation.
   B. impairment.
   C. amortization.

5. A financial analyst is studying the income statement effect of two alternative depreciation methods for a recently acquired piece of equipment. She gathers the following information about the equipment's expected production life and use:

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Units of production	2,000	2,000	2,000	2,000	2,500	10,500

   Compared with the units-of-production method of depreciation, if the company uses the straight-line method to depreciate the equipment, its net income in Year 1 will *most likely* be:
   A. lower.
   B. higher.
   C. the same.

6. Juan Martinez, CFO of VIRMIN, S.A., is selecting the depreciation method to use for a new machine. The machine has an expected useful life of six years. Production is expected to be relatively low initially but to increase over time. The method chosen for tax reporting must be the same as the method used for financial reporting. If Martinez wants to minimize tax payments in the first year of the machine's life, which of the following depreciation methods is Martinez *most likely* to use?
   A. Straight-line method
   B. Units-of-production method
   C. Double-declining balance method

The following information relates to Questions 7 and 8.

Miguel Rodriguez of MARIO, S.A., an Uruguayan corporation, is computing the depreciation expense of a piece of manufacturing equipment for the fiscal year ended 31 December 2009. The equipment was acquired on 1 January 2009. Rodriguez gathers the following information (currency in Uruguayan pesos, UYP):

Cost of the equipment	UYP 1,200,000
Estimated residual value	UYP 200,000
Expected useful life	8 years
Total productive capacity	800,000 units
Production in FY 2009	135,000 units
Expected production for the next 7 years	95,000 units each year

7. If MARIO uses the straight-line method, the amount of depreciation expense on MARIO's income statement related to the manufacturing equipment is *closest* to:
   A. 125,000.
   B. 150,000.
   C. 168,750.
8. If MARIO uses the units-of-production method, the amount of depreciation expense (in UYP) on MARIO's income statement related to the manufacturing equipment is *closest* to:
   A. 118,750.
   B. 168,750.
   C. 202,500.
9. Which of the following amortization methods is *most likely* to evenly distribute the cost of an intangible asset over its useful life?
   A. Straight-line method
   B. Units-of-production method
   C. Double-declining balance method
10. Which of the following will cause a company to show a lower amount of amortization of intangible assets in the first year after acquisition?
    A. A higher residual value
    B. A higher amortization rate
    C. A shorter useful life
11. An analyst in the finance department of BOOLDO, S.A., a French corporation, is computing the amortization of a customer list, an intangible asset, for the fiscal year ended 31 December 2009. She gathers the following information about the asset:

Acquisition cost	€2,300,000
Acquisition date	1 January 2008
Expected residual value at time of acquisition	€500,000
The customer list is expected to result in extra sales for three years after acquisition. The present value of these expected extra sales exceeds the cost of the list.	

If the analyst uses the straight-line method, the amount of accumulated amortization related to the customer list as of 31 December 2009 is *closest* to:
A. €600,000.
B. €1,200,000.
C. €1,533,333.

12. A financial analyst is analyzing the amortization of a product patent acquired by MAKETTI S.p.A., an Italian corporation. He gathers the following information about the patent:

Acquisition cost	€5,800,000
Acquisition date	1 January 2009
Patent expiration date	31 December 2015
Total plant capacity of patented product	40,000 units per year
Production of patented product in fiscal year ended 31 December 2009	20,000 units
Expected production of patented product during life of the patent	175,000 units

If the analyst uses the units-of-production method, the amortization expense on the patent for fiscal year 2009 is *closest* to:
A. €414,286.
B. €662,857.
C. €828,571.

13. MARU S.A. de C.V., a Mexican corporation that follows IFRS, has elected to use the revaluation model for its property, plant, and equipment. One of MARU's machines was purchased for 2,500,000 Mexican pesos (MXN) at the beginning of the fiscal year ended 31 March 2010. As of 31 March 2010, the machine has a fair value of MXN 3,000,000. Should MARU show a profit for the revaluation of the machine?
A. Yes.
B. No, because this revaluation is recorded directly in equity.
C. No, because value increases resulting from revaluation can never be recognized as a profit.

14. An analyst is studying the impairment of the manufacturing equipment of WLP Corp., a U.K.-based corporation that follows IFRS. He gathers the following information about the equipment:

Fair value	£16,800,000
Costs to sell	£800,000
Value in use	£14,500,000
Net carrying amount	£19,100,000

The amount of the impairment loss on WLP Corp.'s income statement related to its manufacturing equipment is *closest* to:
A. £2,300,000.
B. £3,100,000.
C. £4,600,000.

15. A financial analyst at BETTO, S.A. is analyzing the result of the sale of a vehicle for 85,000 Argentine pesos (ARP) on 31 December 2009. The analyst compiles the following information about the vehicle:

Acquisition cost of the vehicle	ARP 100,000
Acquisition date	1 January 2007
Estimated residual value at acquisition date	ARP 10,000
Expected useful life	9 years
Depreciation method	Straight-line

The result of the sale of the vehicle is *most likely*:
A. a loss of ARP 15,000.
B. a gain of ARP 15,000.
C. a gain of ARP 18,333.

16. CROCO S.p.A. sells an intangible asset with a historical acquisition cost of €12 million and an accumulated depreciation of €2 million and reports a loss on the sale of €3.2 million. Which of the following amounts is *most likely* the sale price of the asset?
A. €6.8 million
B. €8.8 million
C. €13.2 million

17. According to IFRS, all of the following pieces of information about property, plant, and equipment must be disclosed in a company's financial statements and footnotes *except for*:
A. useful lives.
B. acquisition dates.
C. amount of disposals.

18. According to IFRS, all of the following pieces of information about intangible assets must be disclosed in a company's financial statements and footnotes *except for*:
A. fair value.
B. impairment loss.
C. amortization rate.

19. Which of the following characteristics is *most likely* to differentiate investment property from property, plant, and equipment?
A. It is tangible.
B. It earns rent.
C. It is long-lived.

20. If a company uses the fair value model to value investment property, changes in the fair value of the asset are *least likely* to affect:
A. net income.
B. net operating income.
C. other comprehensive income.

21. Investment property is *most likely* to:
A. earn rent.
B. be held for resale.
C. be used in the production of goods and services.

22. A company is *most likely* to:
    A. use a fair value model for some investment property and a cost model for other investment property.
    B. change from the fair value model when transactions on comparable properties become less frequent.
    C. change from the fair value model when the company transfers investment property to property, plant, and equipment.

The following information relates to Questions 23 through 28.[37]

Melanie Hart, CFA, is a transportation analyst. Hart has been asked to write a research report on Altai Mountain Rail Company (AMRC). Like other companies in the railroad industry, AMRC's operations are capital intensive, with significant investments in such long-lived tangible assets as property, plant, and equipment. In November of 2008, AMRC's board of directors hired a new team to manage the company. In reviewing the company's 2009 annual report, Hart is concerned about some of the accounting choices that the new management has made. These choices differ from those of the previous management and from common industry practice. Hart has highlighted the following statements from the company's annual report:

Statement 1:	"In 2009, AMRC spent significant amounts on track replacement and similar improvements. AMRC expensed rather than capitalized a significant proportion of these expenditures."
Statement 2:	"AMRC uses the straight-line method of depreciation for both financial and tax reporting purposes to account for plant and equipment."
Statement 3:	"In 2009, AMRC recognized an impairment loss of €50 million on a fleet of locomotives. The impairment loss was reported as 'other income' in the income statement and reduced the carrying amount of the assets on the balance sheet."
Statement 4:	"AMRC acquires the use of many of its assets, including a large portion of its fleet of rail cars, under long-term lease contracts. In 2009, AMRC acquired the use of equipment with a fair value of €200 million under 20-year lease contracts. These leases were classified as operating leases. Prior to 2009, most of these lease contracts were classified as finance leases."

Exhibits A and B contain AMRC's 2009 consolidated income statement and balance sheet. AMRC prepares its financial statements in accordance with International Financial Reporting Standards.

EXHIBIT A Consolidated Statement of Income

	2009		2008	
For the years ended 31 December	€ in millions	% Revenues	€ in millions	% Revenues
Operating revenues	2,600	100.0%	2,300	100.0%
Operating expenses				
Depreciation	(200)	(7.7%)	(190)	(8.3%)
Lease payments	(210)	(8.1%)	(195)	(8.5%)
Other operating expense	(1,590)	(61.1%)	(1,515)	(65.9%)
Total operating expenses	(2,000)	(76.9%)	(1,900)	(82.6%)

[37] Item set developed by Christopher Anderson, CFA (Lawrence, Kansas, U.S.A.)

EXHIBIT A (Continued)

	2009		2008	
For the years ended 31 December	€ in millions	% Revenues	€ in millions	% Revenues
Operating income	600	23.1%	400	17.4%
Other income	(50)	(1.9%)	—	0.0%
Interest expense	(73)	(2.8%)	(69)	(3.0%)
Income before taxes	477	18.4%	331	14.4%
Income taxes	(189)	(7.3%)	(125)	(5.4%)
Net income	288	11.1%	206	9.0%

EXHIBIT B Consolidated Balance Sheet

	2009		2008	
As of 31 December	€ in millions	% Assets	€ in millions	% Assets
Assets				
Current assets	500	9.4%	450	8.5%
Property & equipment:				
Land	700	13.1%	700	13.2%
Plant & equipment	6,000	112.1%	5,800	109.4%
Total property & equipment	6,700	125.2%	6,500	122.6%
Accumulated depreciation	(1,850)	(34.6%)	(1,650)	(31.1%)
Net property & equipment	4,850	90.6%	4,850	91.5%
Total assets	5,350	100.0%	5,300	100.0%
Liabilities and Shareholders' Equity				
Current liabilities	480	9.0%	430	8.1%
Long-term debt	1,030	19.3%	1,080	20.4%
Other long-term provisions and liabilities	1,240	23.1%	1,440	27.2%
Total liabilities	2,750	51.4%	2,950	55.7%
Shareholders' equity				
Common stock and paid-in-surplus	760	14.2%	760	14.3%
Retained earnings	1,888	35.3%	1,600	30.2%
Other comprehensive losses	(48)	(0.9%)	(10)	(0.2%)
Total shareholders' equity	2,600	48.6%	2,350	44.3%
Total liabilities & shareholders' equity	5,350	100.0%	5,300	100.0%

23. With respect to Statement 1, which of the following is the *most likely* effect of management's decision to expense rather than capitalize these expenditures?
    A. 2009 net profit margin is higher than if the expenditures had been capitalized.
    B. 2009 total asset turnover is lower than if the expenditures had been capitalized.
    C. Future profit growth will be higher than if the expenditures had been capitalized.

24. With respect to Statement 2, what would be the *most likely* effect in 2010 if AMRC were to switch to an accelerated depreciation method for both financial and tax reporting?
    A. Net profit margin would decrease.
    B. Total asset turnover would increase.
    C. Cash flow from operating activities would increase.

25. With respect to Statement 3, what is the *most likely* effect of the impairment loss?
    A. Net income in years prior to 2009 was likely understated.
    B. Net profit margins in years after 2009 will likely exceed the 2009 net profit margin.
    C. Cash flow from operating activities in 2009 was likely lower due to the impairment loss.

26. Based on Exhibits A and B, the *best estimate* of the average remaining useful life of the company's plant and equipment at the end of 2009 is:
    A. 20.75 years.
    B. 24.25 years.
    C. 30.00 years.

27. With respect to Statement 4, if AMRC had used its old classification method for its leases instead of its new classification method, its 2009 total asset turnover ratio would *most likely* be:
    A. lower.
    B. higher.
    C. the same.

28. With respect to Statement 4 and Exhibit A, if AMRC had used its old classification method for its leases instead of its new classification method, the *most likely* effect on its 2009 ratios would be a:
    A. higher net profit margin.
    B. higher fixed asset turnover.
    C. higher total liabilities-to-total assets ratio.

The following information relates to Questions 29 through 35.[38]

Brian Jordan is interviewing for a junior equity analyst position at Orion Investment Advisors. As part of the interview process, Mary Benn, Orion's Director of Research, provides Jordan with information about two hypothetical companies, Alpha and Beta, and asks him to comment on the information on their financial statements and ratios. Both companies prepare their financial statements in accordance with International Financial Reporting Standards (IFRS) and are identical in all respects except for their accounting choices.

Jordan is told that at the beginning of the current fiscal year, both companies purchased a major new computer system and began building new manufacturing plants for their own use. Alpha capitalized and Beta expensed the cost of the computer system; Alpha capitalized and Beta expensed the interest costs associated with the construction of the manufacturing plants. In mid-year, both companies leased new office headquarters. Alpha classified the lease as an operating lease, and Beta classified it as a finance lease.

[38] Item set developed by Philip Fanara Jr., CFA (Hyattsville, Maryland, U.S.A)

Benn asks Jordan, "What was the impact of these decisions on each company's current fiscal year financial statements and ratios?"

Jordan responds, "Alpha's decision to capitalize the cost of its new computer system instead of expensing it results in lower net income, lower total assets, and higher cash flow from operating activities in the current fiscal year. Alpha's decision to capitalize its interest costs instead of expensing them results in a lower fixed asset turnover ratio and a higher interest coverage ratio. Alpha's decision to classify its lease as an operating lease instead of a finance lease results in higher net income, higher cash flow from operating activities, and stronger solvency and activity ratios compared to Beta."

Jordan is told that Alpha uses the straight-line depreciation method and Beta uses an accelerated depreciation method; both companies estimate the same useful lives for long-lived assets. Many companies in their industry use the units-of-production method.

Benn asks Jordan, "What are the financial statement implications of each depreciation method, and how do you determine a company's need to reinvest in its productive capacity?"

Jordan replies, "All other things being equal, the straight-line depreciation method results in the least variability of net profit margin over time, while an accelerated depreciation method results in a declining trend in net profit margin over time. The units-of-production can result in a net profit margin trend that is quite variable. I use a three-step approach to estimate a company's need to reinvest in its productive capacity. First, I estimate the average age of the assets by dividing net property, plant, and equipment by annual depreciation expense. Second, I estimate the average remaining useful life of the assets by dividing accumulated depreciation by depreciation expense. Third, I add the estimates of the average remaining useful life and the average age of the assets in order to determine the total useful life."

Jordan is told that at the end of the current fiscal year, Alpha revalued a manufacturing plant; this increased its reported carrying amount by 15 percent. There was no previous downward revaluation of the plant. Beta recorded an impairment loss on a manufacturing plant; this reduced its carrying by 10 percent.

Benn asks Jordan "What was the impact of these decisions on each company's current fiscal year financial ratios?"

Jordan responds, "Beta's impairment loss increases its debt to total assets and fixed asset turnover ratios, and lowers its cash flow from operating activities. Alpha's revaluation increases its debt to capital and return on assets ratios, and reduces its return on equity."

At the end of the interview, Benn thanks Jordan for his time and states that a hiring decision will be made shortly.

29. Jordan's response about the financial statement impact of Alpha's decision to capitalize the cost of its new computer system is most likely *correct* with respect to:
    A. lower net income.
    B. lower total assets.
    C. higher cash flow from operating activities.

30. Jordan's response about the ratio impact of Alpha's decision to capitalize interest costs is most likely *correct* with respect to the:
    A. interest coverage ratio.
    B. fixed asset turnover ratio.
    C. interest coverage and fixed asset turnover ratios.

31. Jordan's response about the impact of Alpha's decision to classify its lease as an operating lease instead of finance lease is most likely *incorrect* with respect to:
    A. net income.
    B. solvency and activity ratios.
    C. cash flow from operating activities.

32. Jordan's response about the impact of the different depreciation methods on net profit margin is most likely *incorrect* with respect to:
    A. accelerated depreciation.
    B. straight-line depreciation.
    C. units-of-production depreciation.

33. Jordan's response about his approach to estimating a company's need to reinvest in its productive capacity is most likely *correct* regarding:
    A. estimating the average age of the asset base.
    B. estimating the total useful life of the asset base.
    C. estimating the average remaining useful life of the asset base.

34. Jordan's response about the effect of Beta's impairment loss is most likely *incorrect* with respect to the impact on its:
    A. debt to total assets.
    B. fixed asset turnover.
    C. cash flow from operating activities.

35. Jordan's response about the effect of Alpha's revaluation is most likely *correct* with respect to the impact on its:
    A. return on equity.
    B. return on assets.
    C. debt to capital ratio.

CHAPTER 10

NON-CURRENT (LONG-TERM) LIABILITIES

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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- determine the initial recognition, initial measurement, and subsequent measurement of bonds;
- describe the effective interest method and calculate interest expense, amortisation of bond discounts/premiums, and interest payments;
- explain the derecognition of debt;
- describe the role of debt covenants in protecting creditors;
- describe the financial statement presentation of and disclosures relating to debt;
- explain motivations for leasing assets instead of purchasing them;
- distinguish between a finance lease and an operating lease from the perspectives of the lessor and the lessee;
- determine the initial recognition, initial measurement, and subsequent measurement of finance leases;
- compare the disclosures relating to finance and operating leases;
- compare the presentation and disclosure of defined contribution and defined benefit pension plans;
- calculate and interpret leverage and coverage ratios.

1. INTRODUCTION

A **non-current liability** (long-term liability) broadly represents a probable sacrifice of economic benefits in periods generally greater than one year in the future. Common types of non-current liabilities reported in a company's financial statements include long-term debt (e.g., bonds payable, long-term notes payable), finance leases, pension liabilities, and deferred tax liabilities. This chapter focuses on bonds payable and leases. Pension liabilities are also introduced.

This chapter is organised as follows. Section 2 describes and illustrates the accounting for long-term bonds, including the issuance of bonds, the recording of interest expense and interest payments, the amortisation of any discount or premium, the derecognition of debt, and the disclosure of information about debt financings. In discussing the financial statement effects and analyses of these issues, we focus on solvency and coverage ratios. Section 3 discusses leases, including benefits of leasing and accounting for leases by both lessees and lessors. Section 4 provides an introduction to pension accounting and the resulting non-current liabilities. Section 5 discusses the use of leverage and coverage ratios in evaluating solvency. Section 6 concludes and summarises the chapter. Practice problems in the CFA Institute format are included after the summary.

2. BONDS PAYABLE

This section discusses accounting for bonds payable—a common form of long-term debt. In some contexts (e.g., some government debt obligations), the word "bond" is used only for a debt security with a maturity of 10 years or longer; "note" refers to a debt security with a maturity between 2 and 10 years; and "bill" refers to a debt security with a maturity of less than 2 years. In this chapter, we use the terms bond and note interchangeably because the accounting treatments of bonds payable and long-term notes payable are similar. In the following sections, we discuss bond issuance (initial recognition and measurement); bond amortisation, interest expense, and interest payments; market rates and fair value (subsequent measurement); repayment of bonds, including retirements and redemptions (derecognition); and other issues concerning disclosures related to debt. We also discuss debt covenants.

2.1. Accounting for Bond Issuance

Bonds are contractual promises made by a company (or other borrowing entity) to pay cash in the future to its lenders (i.e., bondholders) in exchange for receiving cash in the present. The terms of a bond contract are contained in a document called an indenture. The cash or sales proceeds received by a company when it issues bonds is based on the value (price) of the bonds at the time of issue; the price at the time of issue is determined as the present value of the future cash payments promised by the company in the bond agreement.

Ordinarily, bonds contain promises of two types of future cash payments: (1) the face value of the bonds, and (2) periodic interest payments. The **face value** of the bonds is the amount of cash payable by the company to the bondholders when the bonds mature. The face value is also referred to as the principal, par value, stated value, or maturity value. The date of maturity of the bonds (the date on which the face value is paid to bondholders) is stated in the bond contract and typically is a number of years in the future. Periodic interest payments are made based on the interest rate promised in the bond contract applied to the bonds' face value. The interest rate promised in the contract, which is the rate used to calculate the periodic interest payments, is referred to as the **coupon rate**, nominal rate, or stated rate. Similarly, the periodic interest payment is referred to as the coupon payment or simply the coupon. For fixed rate bonds (the primary

focus of our discussion here), the coupon rate remains unchanged throughout the life of the bonds. The frequency with which interest payments are made is also stated in the bond contract. For example, bonds paying interest semi-annually will make two interest payments per year.[1]

The future cash payments are discounted to the present to arrive at the market value of the bonds. The **market rate of interest** is the rate demanded by purchasers of the bonds given the risks associated with future cash payment obligations of the particular bond issue. The market rate of interest at the time of issue often differs from the coupon rate because of interest rate fluctuations that occur between the time the issuer establishes the coupon rate and the day the bonds are actually available to investors. If the market rate of interest when the bonds are issued equals the coupon rate, the market value (price) of the bonds will equal the face value of the bonds. Thus, ignoring issuance costs, the issuing company will receive sales proceeds (cash) equal to the face value of the bonds. When a bond is issued at a price equal to its face value, the bond is said to have been issued at par.

If the coupon rate when the bonds are issued is higher than the market rate, the market value of the bonds—and thus the amount of cash the company receives—will be higher than the face value of the bonds. In other words, the bonds will sell at a premium to face value because they are offering an attractive coupon rate compared to current market rates. If the coupon rate is lower than the market rate, the market value and thus the sale proceeds from the bonds will be less than the face value of the bonds; the bond will sell at a discount to face value. The market rate at the time of issuance is the **effective interest rate** or borrowing rate that the company incurs on the debt. The effective interest rate is the discount rate that equates the present value of the two types of promised future cash payments to their selling price. For the issuing company, interest expense reported for the bonds in the financial statements is based on the effective interest rate.

On the issuing company's statement of cash flows, the cash received (sales proceeds) from issuing bonds is reported as a financing cash inflow. On the issuing company's balance sheet at the time of issue, bonds payable normally are measured and reported at the sales proceeds. In other words, the bonds payable are initially reported at the face value of the bonds minus any discount, or plus any premium.

Using a three-step approach, the following two examples illustrate accounting for bonds issued at face value and then accounting for bonds issued at a discount to face value. Accounting for bonds issued at a premium involves steps similar to the steps followed in the examples below. For simplicity, these examples assume a flat interest rate yield curve (i.e., that the market rate of interest is the same for each period). More precise bond valuations use the interest rate applicable to each time period in which a payment of interest or principal occurs.

EXAMPLE 1 Bonds Issued at Face Value

Debond Corp. (a hypothetical company) issues £1,000,000 worth of five-year bonds, dated 1 January 2010, when the market interest rate on bonds of comparable risk and terms is 5 percent per annum. The bonds pay 5 percent interest annually on 31 December. What are the sales proceeds of the bonds when issued, and how is the issuance reflected in the financial statements?

Solution: Calculating the value of the bonds at issuance and thus the sales proceeds involves three steps: (1) identifying key features of the bonds and the market interest

[1]Interest rates are stated on an annual basis regardless of the frequency of payment.

rate, (2) determining future cash outflows, and (3) discounting the future cash flows to the present.

First, identify key features of the bonds and the market interest rate necessary to determine sales proceeds:

Face value (principal):	£1,000,000	
Time to maturity:	5 years	
Coupon rate:	5%	
Market rate at issuance:	5%	
Frequency of interest payments:	annual	
Interest payment:	£50,000	Each annual interest payment is the face value times the coupon rate (£1,000,000 × 5%). If interest is paid other than annually, adjust the interest rate to match the interest payment period (e.g., divide the annual coupon rate by two for semi-annual interest payments).

Second, determine future cash outflows. Debond will pay bondholders £1,000,000 when the bonds mature in five years. On 31 December of each year until the bonds mature, Debond will make an interest payment of £50,000.

Third, sum the present value[2] of the future payments of interest and principal to obtain the value of the bonds and thus the sales proceeds from issuing the bonds. In this example, the sum is £1,000,000 = (£216,474 + £783,526).

Date	Interest Payment	Present Value at Market Rate (5%)	Face Value Payment	Present Value at Market Rate (5%)	Total Present Value
31 December 2010	£50,000	£47,619			
31 December 2011	50,000	45,352			
31 December 2012	50,000	43,192			
31 December 2013	50,000	41,135			
31 December 2014	50,000	39,176	£1,000,000	£783,526	
Total		£216,474		£783,526	£1,000,000
					Sales Proceeds

The sales proceeds of the bonds when issued are £1,000,000. There is no discount or premium because these bonds are issued at face value. The issuance is reflected on the balance sheet as an increase of cash and an increase in a long-term liability, bonds payable, of £1,000,000. The issuance is reflected in the statement of cash flows as a financing cash inflow of £1,000,000.

[2]Alternative ways to calculate the present value include (1) to treat the five annual interest payments as an annuity and use the formula for finding the present value of an annuity and then add the present value of the principal payment, or (2) to use a financial calculator to calculate the total present value.

The price of bonds is often expressed as a percentage of face value. For example, the price of bonds issued at par, as in Example 1, is 100 (i.e., 100 percent of face value). In Example 2, in which bonds are issued at a discount, the price is 95.79 (i.e., 95.79 percent of face value).

EXAMPLE 2 Bonds Issued at a Discount

Debond Corp. issues £1,000,000 worth of five-year bonds, dated 1 January 2010, when the market interest rate on bonds of comparable risk and terms is 6 percent. The bonds pay 5 percent interest annually on 31 December. What are the sales proceeds of the bonds when issued, and how is the issuance reflected in the financial statements?

Solution: The key features of the bonds and the market interest rate are:

Face value (principal):	£1,000,000	
Time to maturity:	5 years	
Coupon rate:	5%	
Market rate at issuance:	6%	
Frequency of interest payments:	annual	
Interest payment:	£50,000	Each annual interest payment is the face value times the coupon rate (£1,000,000 × 5%).

The future cash outflows (interest payments and face value payment), the present value of the future cash outflows, and the total present value are:

Date	Interest Payment	Present Value at Market Rate (6%)	Face Value Payment	Present Value at Market Rate (6%)	Total Present Value
31 December 2010	£50,000	£47,170			
31 December 2011	50,000	44,500			
31 December 2012	50,000	41,981			
31 December 2013	50,000	39,605			
31 December 2014	50,000	37,363	£1,000,000	£747,258	
Total		£210,618		£747,258	£957,876
					Sales Proceeds

The sales proceeds of the bonds when issued are £957,876. The bonds sell at a discount of £42,124 = (£1,000,000 – £957,876) because the market rate when the bonds

are issued (6 percent) is greater than the bonds' coupon rate (5 percent). The issuance is reflected on the balance sheet as an increase of cash and an increase in a long-term liability, bonds payable, of £957,876. The bonds payable is composed of the face value of £1,000,000 minus a discount of £42,124. The issuance is reflected in the statement of cash flows as a financing cash inflow of £957,876.

In Example 2, the bonds were issued at a discount to face value because the bonds' coupon rate of 5 percent was less than the market rate. Bonds are issued at a premium to face value when the bonds' coupon rate exceeds the market rate.

Bonds issued with a coupon rate of zero (zero-coupon bonds) are always issued at a discount to face value. The value of zero-coupon bonds is based on the present value of the principal payment only because there are no periodic interest payments.

Such issuance costs as printing, legal fees, commissions, and other types of charges are costs incurred when bonds are issued. Under International Financial Reporting Standards (IFRS), all debt issuance costs are included in the measurement of the liability, bonds payable. Under US generally accepted accounting principles (US GAAP), companies generally show these debt issuance costs as an asset (a deferred charge), which is amortised on a straight-line basis to the relevant expense (e.g., legal fees) over the life of the bonds.[3] Under IFRS and US GAAP, cash outflows related to bond issuance costs are included in the financing section of the statement of cash flows, usually netted against bond proceeds.

2.2. Accounting for Bond Amortisation, Interest Expense, and Interest Payments

In this section, we discuss accounting and reporting for bonds after they are issued. Most companies maintain the historical cost (sales proceeds) of the bonds after issuance, and they amortise any discount or premium over the life of the bond. The amount reported on the balance sheet for bonds is thus the historical cost plus or minus the cumulative amortisation, which is referred to as amortised cost. Companies also have the option to report the bonds at their current fair values.

The rationale for reporting the bonds at amortised historical cost is the company's intention to retain the debt until it matures. Therefore, changes in the underlying economic value of the debt are not relevant from the issuing company's perspective. From an investor's perspective, however, analysis of a company's underlying economic liabilities and solvency is more difficult when debt is reported at amortised historical cost. The rest of this section illustrates accounting and reporting of bonds at amortised historical cost. Section 2.3 discusses the alternative of reporting bonds at fair value.

Companies initially report bonds as a liability on their balance sheet at the amount of the sales proceeds net of issuance costs under IFRS and at the amount of the sales proceeds under US GAAP, ignoring any bond issuance costs. The amount at which bonds are reported on the company's balance sheet is referred to as the carrying amount, carrying value, book value, or

[3]The Financial Accounting Standards Board (FASB), as part of the convergence project with the International Accounting Standards Board (IASB), has proposed that the treatment of issuance costs be amended to that under IFRS.

net book value. If the bonds are issued at par, the initial carrying amount will be identical to the face value, and usually the carrying amount will not change over the life of the bonds.[4] For bonds issued at face value, the amount of periodic interest *expense* will be the same as the amount of periodic interest *payment* to bondholders.

If, however, the market rate differs from the bonds' coupon rate at issuance such that the bonds are issued at a premium or discount, the premium or discount is amortised systematically over the life of the bonds as a component of interest expense. For bonds issued at a premium to face value, the carrying amount of the bonds is initially greater than the face value. As the premium is amortised, the carrying amount (amortised cost) of the bonds will decrease to the face value. The reported interest expense will be less than the coupon payment. For bonds issued at a discount to face value, the carrying amount of the bonds is initially less than the face value. As the discount is amortised, the carrying amount (amortised cost) of the bonds will increase to the face value. The reported interest expense will be higher than the coupon payment.

The accounting treatment for bonds issued at a discount reflects the fact that the company essentially paid some of its borrowing costs at issuance by selling its bonds at a discount. Rather than there being an actual cash transfer in the future, this "payment" was made in the form of accepting less than the face value for the bonds at the date of issuance. The remaining borrowing cost occurs as a cash interest payment to investors each period. The total interest expense reflects both components of the borrowing cost: the periodic interest payments plus the amortisation of the discount. The accounting treatment for bonds issued at a premium reflects the fact that the company essentially received a reduction on its borrowing costs at issuance by selling its bonds at a premium. Rather than there being an actual reduced cash transfer in the future, this "reduction" was made in the form of receiving more than face value for the bonds at the date of issuance. The total interest expense reflects both components of the borrowing cost: the periodic interest payments less the amortisation of the premium. When the bonds mature, the carrying amount will be equal to the face value regardless of whether the bonds were issued at face value, a discount, or a premium.

Two methods for amortising the premium or discount of bonds that were issued at a price other than par are the effective interest rate method and the straight-line method. The effective interest rate method is required under IFRS and preferred under US GAAP because it better reflects the economic substance of the transaction. The effective interest rate method applies the market rate in effect when the bonds were issued (historical market rate or effective interest rate) to the current amortised cost (carrying amount) of the bonds to obtain interest expense for the period. The difference between the interest expense (based on the effective interest rate and amortised cost) and the interest payment (based on the coupon rate and face value) is the **amortisation** of the discount or premium. The straight-line method of amortisation evenly amortises the premium or discount over the life of the bond, similar to straight-line depreciation on long-lived assets. Under either method, as the bond approaches maturity, the amortised cost approaches face value.

Example 3 illustrates both methods of amortisation for bonds issued at a discount. Example 4 shows amortisation for bonds issued at a premium.

[4] If a company reports debt at fair value, rather than amortised cost, the carrying value may change.

EXAMPLE 3 Amortising a Bond Discount

Debond Corp. issues £1,000,000 face value of five-year bonds, dated 1 January 2010, when the market interest rate is 6 percent. The sales proceeds are £957,876. The bonds pay 5 percent interest annually on 31 December.

1. What is the interest *payment* on the bonds each year?
2. What amount of interest *expense* on the bonds would be reported in 2010 and 2011 using the effective interest rate method?
3. Determine the reported value of the bonds (i.e., the carrying amount) at 31 December 2010 and 2011, assuming the effective interest rate method is used to amortise the discount.
4. What amount of interest expense on the bonds would be reported under the straight-line method of amortising the discount?

Solution to 1: The interest payment equals £50,000 annually (£1,000,000 × 5%).

Solution to 2: The sales proceeds of £957,876 are less than the face value of £1,000,000; the bonds were issued at a discount of £42,124. The bonds are initially reported as a long-term liability, bonds payable, of £957,876, which comprises the face value of £1,000,000 minus a discount of £42,124. The discount is amortised over time, ultimately, increasing the carrying amount (amortised cost) to face value.

Under the effective interest rate method, interest expense on the bonds is calculated as the bonds' carrying amount times the market rate in effect when the bonds are issued (effective interest rate). For 2010, interest expense is £57,473 = (£957,876 × 6%). The amount of the discount amortised in 2010 is the difference between the interest expense of £57,473 and the interest payment of £50,000 (i.e., £7,473). The bonds' carrying amount increases by the discount amortisation; at 31 December 2010, the bonds' carrying amount is £965,349 (beginning balance of £957,876 plus £7,473 discount amortisation). At this point, the carrying amount reflects a remaining unamortised discount of £34,651 (£42,124 discount at issuance minus £7,473 amortised).

For 2011, interest expense is £57,921 = (£965,349 × 6%), the carrying amount of the bonds on 1 January 2011 times the effective interest rate. The amount of the discount amortised in 2011 is the difference between the interest expense of £57,921 and the interest payment of £50,000 (i.e., £7,921). At 31 December 2011, the bonds' carrying amount is £973,270 (beginning balance of £965,349 plus £7,921 discount amortisation).

The following table illustrates interest expense, discount amortisation, and carrying amount (amortised cost) over the life of the bonds.

Year	Carrying Amount (beginning of year)	Interest Expense (at effective interest rate of 6%)	Interest Payment (at coupon rate of 5%)	Amortisation of Discount	Carrying Amount (end of year)
	(a)	(b)	(c)	(d)	(e)
2010	£957,876	£57,473	£50,000	£7,473	£965,349
2011	965,349	57,921	50,000	7,921	973,270
2012	973,270	58,396	50,000	8,396	981,666
2013	981,666	58,900	50,000	8,900	990,566
2014	990,566	59,434	50,000	9,434	1,000,000
Total		£292,124	£250,000	£42,124	

Solution to 3: The carrying amounts of the bonds at 31 December 2010 and 2011 are £965,349 and £973,270, respectively. Observe that the carrying amount of the bonds issued at a discount increases over the life of the bonds. At maturity, 31 December 2014, the carrying amount of the bonds equals the face value of the bonds. The carrying amount of the bonds will be reduced to zero when the principal payment is made.

Solution to 4: Under the straight-line method, the discount (or premium) is evenly amortised over the life of the bonds. In this example, the £42,124 discount would be amortised by £8,424.80 (£42,124 divided by 5 years) each year under the straight-line method. So, the annual interest expense under the straight-line method would be £58,424.80 (£50,000 plus £8,424.80).

The accounting and reporting for zero-coupon bonds is similar to the example above except that no interest payments are made; thus, the amount of interest expense each year is the same as the amount of the discount amortisation for the year.

EXAMPLE 4 Amortising a Bond Premium

Prembond Corp. issues £1,000,000 face value of five-year bonds, dated 1 January 2010, when the market interest rate is 4 percent. The sales proceeds are £1,044,518. The bonds pay 5 percent interest annually on 31 December.

1. What is the interest *payment* on the bonds each year?
2. What amount of interest *expense* on the bonds would be reported in 2010 and 2011 using the effective interest rate method?
3. Determine the reported value of the bonds (i.e., the carrying amount) at 31 December 2010 and 2011, assuming the effective interest rate method is used to amortise the premium.

4. What amount of interest expense on the bonds would be reported under the straight-line method of amortising the premium?

Solution to 1: The interest payment equals £50,000 annually (£1,000,000 × 5%).

Solution to 2: The sales proceeds of £1,044,518 are more than the face value of £1,000,000; the bonds were issued at a premium of £44,518. The bonds are initially reported as a long-term liability, bonds payable, of £1,044,518, which comprises the face value of £1,000,000 plus a premium of £44,518. The premium is amortised over time, ultimately decreasing the carrying amount (amortised cost) to face value.

Under the effective interest rate method, interest expense on the bonds is calculated as the bonds' carrying amount times the market rate in effect when the bonds are issued (effective interest rate). For 2010, interest expense is £41,781 = (£1,044,518 × 4%). The amount of the premium amortised in 2010 is the difference between the interest expense of £41,781 and the interest payment of £50,000 (i.e., £8,219). The bonds' carrying amount decreases by the premium amortisation; at 31 December 2010, the bonds' carrying amount is £1,036,299 (beginning balance of £1,044,518 less £8,219 premium amortisation). At this point, the carrying amount reflects a remaining unamortised premium of £36,299 (£44,518 premium at issuance minus £8,219 amortised).

For 2011, interest expense is £41,452 = (£1,036,299 × 4%). The amount of the premium amortised in 2011 is the difference between the interest expense of £41,452 and the interest payment of £50,000 (i.e., £8,548). At 31 December 2011, the bonds' carrying amount is £1,027,751 (beginning balance of £1,036,299 less £8,548 premium amortisation).

The following table illustrates interest expense, premium amortisation, and carrying amount (amortised cost) over the life of the bonds.

Year	Carrying Amount (beginning of year)	Interest Expense (at effective interest rate of 4%)	Interest Payment (at coupon rate of 5%)	Amortisation of Premium	Carrying Amount (end of year)
	(a)	(b)	(c)	(d)	(e)
2010	£1,044,518	£41,781	£50,000	£8,219	£1,036,299
2011	1,036,299	41,452	50,000	8,548	1,027,751
2012	1,027,751	41,110	50,000	8,890	1,018,861
2013	1,018,861	40,754	50,000	9,246	1,009,615
2014	1,009,615	40,385	50,000	9,615	1,000,000
Total				£44,518	

Solution to 3: The carrying amounts of the bonds at 31 December 2010 and 2011 are £1,036,299 and £1,027,751, respectively. Observe that the carrying amount of the bonds issued at a premium decreases over the life of the bonds. At maturity, 31 December 2014, the carrying amount of the bonds equals the face value of the bonds. The carrying amount of the bonds will be reduced to zero when the principal payment is made.

Solution to 4: Under the straight-line method, the premium is evenly amortised over the life of the bonds. In this example, the £44,518 premium would be amortised by £8,903.64 (£44,518 divided by 5 years) each year under the straight-line method. So, the annual interest expense under the straight-line method would be £41,096.36 (£50,000 less £8,903.64).

The reporting of interest payments on the statement of cash flows can differ under IFRS and US GAAP. Under IFRS, interest payments on bonds can be included as an outflow in either the operating section or the financing section of the statement of cash flows. US GAAP require interest payments on bonds to be included as an operating cash outflow. (Some financial statement users consider the placement of interest payments in the operating section to be inconsistent with the placement of bond issue proceeds in the financing section of the statement of cash flows.) Typically, cash interest paid is not shown directly on the statement of cash flows, but companies are required to disclose interest paid separately.

Amortisation of a discount (premium) is a non-cash item and thus, apart from its effect on taxable income, has no effect on cash flow. In the section of the statement of cash flows that reconciles net income to operating cash flow, amortisation of a discount (premium) is added back to (subtracted from) net income.

2.3. Current Market Rates and Fair Value Reporting Option

Reporting bonds at amortised historical costs (historical cost plus or minus the cumulative amortisation) reflects the market rate at the time the bonds were *issued* (i.e., historical market rate or effective interest rate). As market interest rates change, the bonds' carrying amount diverges from the bonds' fair market value. When market interest rates decline, the fair value of a bond with a fixed coupon rate increases. As a result, a company's economic liabilities may be higher than its reported debt based on amortised historical cost. Conversely, when market interest rates increase, the fair value of a bond with a fixed coupon rate decreases and the company's economic liability may be lower than its reported debt. Using financial statement amounts based on amortised cost may underestimate (or overestimate) a company's debt-to-total-capital ratio and similar leverage ratios.

Companies recently have been given the option to report financial liabilities at fair values. Financial liabilities reported at fair value are designated as financial liabilities at fair value through profit or loss. Even if a company does not opt to report financial liabilities at fair value, the availability of fair value information in the financial statements has increased. IFRS and US GAAP require fair value disclosures in the financial statements unless the carrying amount approximates fair value or the fair value cannot be reliably measured.[5]

A company selecting the fair value option for a liability with a fixed coupon rate will report gains (losses) when market interest rates increase (decrease). When market interest rates increase or other factors cause the fair value of a company's bonds to decline, the company reports a decrease in the fair value of its liability and a corresponding gain. When interest rates decrease or other factors cause the fair value of a company's bonds to increase, the company

[5] IFRS (IAS 32, IAS 39, and IFRS 7) and US GAAP (FASB ASC 820 and 825).

reports an increase in the fair value of its liability and a corresponding loss. The gains or losses resulting from changes in fair values are recognised in profit or loss.

Few companies have selected the option to report financial liabilities at fair value. Those that have are primarily companies in the financial sector. Reporting standards for financial investments and derivatives already required these companies to report a significant portion of their assets at fair values. Measuring financial liabilities at other than fair value, when financial assets are measured at fair value, results in earnings volatility. This volatility is the result of using different bases of measurement for financial assets and financial liabilities. Goldman Sachs (NYSE:GS) elected to account for some financial liabilities at fair value under the fair value option. In its fiscal year 2008 10-K filing (page 74), Goldman explains this choice:

> The primary reasons for electing the fair value option are to reflect economic events in earnings on a timely basis, to mitigate volatility in earnings from using different measurement attributes and to address simplification and cost-benefit considerations.

Most companies, as required under IFRS and US GAAP, disclose the fair values of financial liabilities. The primary exception to the disclosure occurs when fair value cannot be reliably measured. Example 5 illustrates Sony's fair value disclosures, including the fair values of long-term debt.

EXAMPLE 5 Fair Value Disclosures of Debt and Financial Instruments

The following are excerpts from Notes 2 and 13 of Sony Corporation's (NYSE: SNE) 20-F filing for the fiscal year ended 31 March 2009. These discuss the option for reporting fair values in the balance sheet and illustrate financial statement disclosures of fair values.

Excerpt from Note 2: Summary of significant accounting policies

. . . "The Fair Value Option for Financial Assets and Financial Liabilities." . . . permits companies to choose to measure, on an instrument-by-instrument basis, various financial instruments and certain other items at fair value that are not currently required to be measured at fair value. The fair value measurement election is irrevocable and subsequent changes in fair value must be recorded in earnings. . . . Sony did not elect the fair value option for any assets or liabilities that were not previously carried at fair value.

Excerpt from Note 13: Fair value measurements

The estimated fair values of Sony's financial instruments are summarised as follows. The following summary excludes cash and cash equivalents, call loans, time deposits, notes and accounts receivable, trade, call money, short-term borrowings, notes and accounts payable, trade and deposits from customers in the banking business because the carrying values of these financial instruments approximated their fair values due to their short-term nature.

	Yen in millions			
	March 31, 2008		March 31, 2009	
	Carrying Amount	Estimated Fair Value	Carrying Amount	Estimated Fair Value
Long-term debt including the current portion	1,020,938	1,024,879	807,687	809,377
Investment contracts included in policyholders' account in the life insurance business	274,779	275,967	286,104	289,905

> The fair values of long-term debt including the current portion and investment contracts included in policyholders' account in the life insurance business were estimated based on either the market value or the discounted future cash flows using Sony's current incremental borrowing rates for similar liabilities.

Use the excerpts from the notes to Sony's financial statements to address the following questions:

1. Does Sony report the fair values of its long-term debt on the balance sheet?
2. How does Sony measure the long-term debt reported on the balance sheet?
3. As of 31 March 2008 and 31 March 2009, what is the percent difference in the carrying amount and fair value of Sony's long-term debt?

Solution to 1: Sony does not report the fair values of its long-term debt on the balance sheet; Sony discloses that it did not elect the fair value option for any assets or liabilities that were not previously carried at fair value in Note 2. In Note 13, we also observe that Sony discloses the estimated fair value of long-term debt separately from its carrying amount.

Solution to 2: Notes 2 and 13 indicate that Sony did not elect the fair value option. Therefore, the carrying amount of its debt must be its amortised historical cost.

Solution to 3: In each year, the fair value of Sony's long-term debt is less than 0.5% greater than its carrying amount: 0.4% [= (1,024,879/1,020,938) – 1] on 31 March 2008 and 0.2% [= (809,377/807,687) – 1] on 31 March 2009. Although the estimated fair values are higher, the difference is small and would most likely not materially affect an analysis of the company.

2.4. Derecognition of Debt

Once bonds are issued, a company may leave the bonds outstanding until maturity or redeem the bonds before maturity either by calling the bonds (if the bond issue includes a call provision) or by purchasing the bonds in the open market. If the bonds remain outstanding until the maturity date, the company pays bondholders the face value of the bonds at maturity. The discount or premium on the bonds would be fully amortised at maturity;

the carrying amount would equal face value. Upon repayment, bonds payable is reduced by the carrying amount at maturity (face value) of the bonds and cash is reduced by an equal amount. Repayment of the bonds appears in the statement of cash flows as a financing cash outflow.

If a company decides to redeem bonds before maturity and thus extinguish the liability early, bonds payable is reduced by the carrying amount of the redeemed bonds. The difference between the cash required to redeem the bonds and the carrying amount of the bonds is a gain or loss on the extinguishment of debt. Under IFRS, debt issuance costs are included in the measurement of the liability and are thus part of its carrying amount. Under US GAAP, debt issuance costs are accounted for separately from bonds payable and are amortised over the life of the bonds. Any unamortised debt issuance costs must be written off at the time of redemption and included in the gain or loss on debt extinguishment.

For example, a company reporting under IFRS has a £10 million bond issuance with a carrying amount equal to its face value and five years remaining until maturity. The company redeems the bonds at a call price of 103. The redemption cost is £10.3 million (= £10 million × 103%). The company's loss on redemption would be £300 thousand (£10 million carrying amount minus £10.3 million cash paid to redeem the callable bonds).

A gain or loss on the extinguishment of debt is disclosed on the income statement, in a separate line item, when the amount is material. A company typically discloses further detail about the extinguishment in the management discussion and analysis (MD&A) and/or notes to the financial statements.[6] In addition, in a statement of cash flows prepared using the indirect method, net income is adjusted to remove any gain or loss on the extinguishment of debt from operating cash flows and the cash paid to redeem the bonds is classified as cash used for financing activities. (Recall that the indirect method of the statement of cash flows begins with net income and makes necessary adjustments to arrive at cash from operations, including removal of gains or losses from non-operating activities.)

To illustrate the financial statement impact of the extinguishment of debt, consider the notes payable repurchase by B+H Ocean Carriers in Example 6 below.

EXAMPLE 6 Debt Extinguishment Disclosure

The following excerpts are from the 2008 20-F filing of B+H Ocean Carriers (NYSE Alternext: BHO). In its statement of cash flows, the company uses the indirect method to reconcile net income with net cash (used in) provided by operations.

[6]We use the term MD&A generally to refer to any management commentary provided on a company's financial condition, changes in financial condition, and results of operations. In the United States, the Securities and Exchange Commission (SEC) requires a management discussion and analysis for companies listed on US public markets. Reporting requirements for such a commentary as the SEC-required MD&A vary across exchanges, but some are similar to the SEC requirements. Currently, the IASB is developing a standard for a management commentary that would be consistent for all companies reporting under IFRS.

Excerpt from Consolidated Statements of Income
For the years ended 31 December 2008, 2007, and 2006

	2008	2007	2006
Revenues:			
⋮	⋮	⋮	⋮
Total revenues	104,908,915	112,416,831	96,879,051
⋮	⋮	⋮	⋮
Total operating expenses	100,279,906	96,140,562	71,018,929
Income from vessel operations	4,629,009	16,276,269	25,860,122
Other income (expense):			
⋮	⋮	⋮	⋮
Gain on debt extinguishment	2,345,000	—	—
⋮	⋮	⋮	⋮
Total other income (expense), net	11,236,107	(14,257,092)	(7,085,809)
Net income	$15,865,116	$2,019,177	$18,774,313

Excerpt from Consolidated Statements of Cash Flows
For the years ended 31 December 2008, 2007, and 2006

	2008	2007	2006
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net Income	$15,865,116	$2,019,177	$18,774,313
Adjustments to reconcile net income to net cash (used in) provided by operating activities:			
⋮	⋮	⋮	⋮
Gain on debt extinguishment	(2,345,000)	—	—
⋮	⋮	⋮	⋮
Total adjustments	(16,635,993)	38,842,386	19,815,773
Net cash (used in) provided by operating activities	(770,877)	40,861,563	38,590,086
⋮	⋮	⋮	

(*continued*)

(Continued)

	2008	2007	2006
CASH FLOWS FROM FINANCING ACTIVITIES:			
Payments for debt financing costs	(294,999)	(1,526,501)	(1,481,505)
⋮	⋮	⋮	⋮
Purchase of debt securities	(2,155,000)	—	(5,000,000)
⋮	⋮	⋮	⋮
Payments of unsecured debt	—	(31,402,960)	(1,356,092)

***Excerpt from* NOTE 2: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**

. . . The carrying amount of the Company's variable rate long-term debt approximates fair value.

***Excerpt from* NOTE 8: BONDS PAYABLE**

On December 12, 2006, the Company issued $25 million of unsecured bonds. . . . Interest on the bonds is equal to Libor plus 4%, payable quarterly in arrears. . . . During the 4th quarter of 2008, the Company repurchased the unsecured bonds with a face value of $4.5 million and realized a $2.3 million gain.

1. The balance in bonds payable was reduced at redemption by:
   A. $2,155,000.
   B. $2,345,000.
   C. $4,500,000.

Solution to 1: C is correct. The bonds payable is reduced at redemption by the carrying amount of the bonds redeemed. The cash paid to extinguish the bonds plus the gain on redemption equals the carrying amount of the bonds. The carrying amount of the bonds was $4,500,000. In this case, the carrying amount equals the face value. The company recognised a gain of $2,345,000 when it extinguished the debt of $4,500,000 by paying only $2,155,000.

2.5. Debt Covenants

Borrowing agreements (the bond indenture) often include restrictions called covenants that protect creditors by restricting activities of the borrower. Debt covenants benefit borrowers to the extent that they lower the risk to the creditors and thus reduce the cost of borrowing. Affirmative covenants restrict the borrower's activities by requiring certain actions. For instance, covenants may require that the borrower maintain certain ratios above a specified amount or perform regular maintenance on real assets used as collateral. Negative covenants require that

the borrower not take certain actions. Covenants may restrict the borrower's ability to invest, pay dividends, or make other operating and strategic decisions that might adversely affect the company's ability to pay interest and principal.

Common covenants include limitations on how borrowed monies can be used, maintenance of collateral pledged as security (if any), restrictions on future borrowings, requirements that limit dividends, and requirements to meet specific working capital requirements. Covenants may also specify minimum acceptable levels of financial ratios, such as debt-to-equity, current, or interest coverage.

When a company violates a debt covenant, it is a breach of contract. Depending on the severity of the breach and the terms of the contract, lenders may choose to waive the covenant, be entitled to a penalty payment or higher interest rate, renegotiate, or call for payment of the debt. Bond contracts typically require that the decision to call for immediate repayment be made, on behalf of all the bondholders, by holders of some minimum percentage of the principal amount of the bond issue.

Example 7 illustrates common disclosures related to debt covenants included in financial statement disclosures (notes to the financial statements).

EXAMPLE 7 Illustration of Debt Covenant Disclosures

The following excerpt is from TORM A/S (NASDAQ: TORM) from the Risk Factors section of Item 3, Key Information, in its fiscal year 2008 20-F filing. The excerpt illustrates debt covenants and their disclosure:

> Certain of our loan agreements contain restrictive covenants, which may limit our liquidity and corporate activities and prevent proper service of debt, which could result in the loss of our vessels.
>
> Some loan agreements impose operating and financial restrictions upon us. These restrictions may limit our ability to:
>
> - change the management of our vessels without the lenders' consent (which they are not entitled to unreasonably withhold); and
> - enter into mergers or corporate restructurings, or effect material divestments, if such would be materially adverse to the company.
>
> Our lenders' interests may be different from ours and we cannot guarantee that we will be able to obtain our lenders' permission when needed. This may prevent us from taking actions that are in our best interest.

The following excerpt is an additional excerpt from "Note 8: Bonds Payable" of B+H Ocean Carriers that was referenced in Example 6.

> The bond facility contains certain restrictive covenants which restrict the payment of dividends. The facility requires a minimum value adjusted equity ratio (as defined) of 25%. At December 31, 2008, the Company was in compliance

with these covenants and is likely to remain in compliance throughout 2009. However, the bond agreement contains a cross default provision that essentially enables the lender to call the bonds if the Company defaults on a separate loan facility. The Company reclassified its long term debt because of a determination prospectively that certain covenants in certain long term agreements may be breached during 2009. As such, the Company has recorded the entire balance of the bonds as current as of December 31, 2008.

1. Which of the covenants described in the above excerpts is an affirmative covenant?
2. Based on the excerpt from B+H Ocean Carriers, what is the implied consequence of breaching certain covenants?

Solution to 1: The requirement that "a minimum value adjusted equity ratio (as defined) of 25%" be maintained by B+H Ocean Carriers is an example of an affirmative covenant. It requires the issuer to do something. The covenants on TORM A/S require that TORM not take certain actions (e.g., not change management of vessels without lenders' consent and not enter into mergers that would be materially adverse) and are negative covenants.

Solution to 2: If B+H Ocean Carriers breaches certain covenants, it seems that the entire balance of bonds payable becomes due. The bonds payable have been prospectively moved from non-current to current liabilities.

2.6. Presentation and Disclosure of Long-Term Debt

The non-current (long-term) liabilities section of the balance sheet usually includes a single line item of the total amount of a company's long-term debt due after one year, with the portion of long-term debt due in the next twelve months shown as a current liability. Notes to the financial statements provide more information on the types and nature of a company's debt. These note disclosures can be used to determine the amount and timing of future cash outflows. The notes generally include stated and effective interest rates, maturity dates, restrictions imposed by creditors (covenants), and collateral pledged (if any). The amount of scheduled debt repayments for the next five years also is shown in the notes.

Example 8 contains an excerpt from Johnson & Johnson's 2008 10-K filing that illustrates common long-term debt disclosures.

EXAMPLE 8 Illustration of Long-Term Debt Disclosures

Exhibit 1 is an excerpt from Note 6 of Johnson & Johnson's (NYSE: JNJ) 2008 financial statements that illustrates financial statement disclosure for long-term debt, including type and nature of long-term debt, effective interest rates, and required payments over the next five years. Johnson & Johnson reports its debt at amortised cost.

EXHIBIT 1 Johnson & Johnson

Excerpt from 6. Borrowings

The components of long-term debt are as follows:

(Dollars in Millions)	2008	Effective Rate %	2007	Effective Rate %
3% Zero Coupon Convertible Subordinated Debentures due 2020	$183	3	178	3
4.95% Debentures due 2033	500	4.95	500	4.95
3.80% Debentures due 2013	500	3.82	500	3.82
6.95% Notes due 2029	294	7.14	294	7.14
6.73% Debentures due 2023	250	6.73	250	6.73
6.625% Notes due 2009	199	6.8	199	6.8
5.55% Debentures due 2017	1,000	5.55	1,000	5.55
5.95% Notes due 2037	995	5.99	995	5.99
5.50% Notes due 2024 (500 GBP 1.4759)[b](500 GBP 1.9944)[c]	731	5.71	989	5.71
4.75% Notes due 2019 (1B Euro 1.4000)[b](1B Euro 1.4573)[c]	1,390	5.35	1,447	5.35
5.15% Debentures due 2012	599	5.18	599	5.18
5.86% Debentures due 2038	700	5.86		
5.15% Debentures due 2018	898	5.15		
Other (Includes Industrial Revenue Bonds)	102		132	
	8,341[d]	**5.46**[a]	**7,083**[d]	**5.47**[a]
Less current portion	221		9	—
	$8,120		**7,074**	

[a]Weighted average effective rate.
[b]Translation rate at December 28, 2008.
[c]Translation rate at December 30, 2007.
[d]The excess of the fair value over the carrying value of debt was $1.4 billion in 2008 and $0.3 billion in 2007.

The Company has access to substantial sources of funds at numerous banks worldwide. In September 2008, the Company secured a new 364-day and 5-year Credit Facility. Total credit available to the Company approximates $7.7 billion of which $6.3 billion expires September 24, 2009, and $1.4 billion expires September 25, 2013. Interest charged on borrowings under the credit line agreements is based on either bids provided by banks, the prime rate or London Interbank Offered Rates (Libor), plus applicable margins. Commitment fees under the agreements are not material.

. . .

Aggregate maturities of long-term obligations commencing in 2007 are (dollars in millions):

2009	2010	2011	2012	2013	After 2014
$221	22	18	620	507	6,953

Use the information in Exhibit 1 to answer the following questions:

1. Why are the effective interest rates unchanged from 2007 and 2008 for the first 11 borrowings listed?
2. Why does the carrying amount of the "4.95% Debentures due 2033" remain the same in 2007 and 2008?
3. Why does the carrying amount of the "4.75% Notes due 2019" decrease from 2007 to 2008?

Solution to 1: The effective interest rate is the market rate at which the bonds are issued and does not change from year to year.

Solution to 2: The carrying amount of the "4.95% Debentures due 2033" remains the same because the effective interest rate at which the debentures were issued is the same as the coupon rate. The debentures were issued at par, and the carrying amount does not change.

Solution to 3: The notes are denominated in euros, with a face value of €1 billion. The dollar/euro translation exchange rate at the end of 2008 was lower than the exchange rate at the end of 2007 (1.4000 versus 1.4573). That decline explains the decrease in carrying value. Note that the face amount of the debt at the translation rate (at the end of 2008, €1 billion times 1.4000 = $1.4 billion) is higher than the carrying amount (at the end of 2008, $1.39 billion). The reason for this difference is that the notes were issued at a discount; the effective interest rate of 5.35 percent is higher than the 4.75 percent coupon rate. The carrying amount of the notes thus reflects the amortisation of the discount at issuance; the amortisation of the discount will increase the carrying amount.

In this chapter, we focus on accounting for simple debt contracts. Debt contracts can take on additional features, which lead to more complexity. For instance, convertible debt and debt with warrants are more complex instruments that have both debt and equity features. Convertible debt gives the debt holder the option to exchange the debt for equity. Bonds issued with warrants give holders the right to purchase shares of the issuer's common stock at a specific price, similar to stock options. Issuance of bonds with warrants is more common by non-US companies. Example 9 provides an example of a financial statement disclosure of bonds with warrants issued by a Chinese company.

EXAMPLE 9 Financial Statement Disclosure of Bonds with Warrants

The following excerpt is from the fiscal year 2008 Annual Report of the China Petroleum & Chemical Corporation (NYSE Euronext: SNP).

> **Excerpt from NOTE 29: DEBENTURES PAYABLE**
>
> On 26 February 2008, the Company issued convertible bonds with stock warrants due 2014 with an aggregate principal amount of RMB 30 billion in the PRC (the "Bonds with Warrants"). The Bonds with Warrants with fixed interest rate of 0.8% per annum and interest payable annually, were issued at par value of RMB 100. The Bonds with Warrants were guaranteed by Sinopec Group Company. Each lot of the Bonds with Warrants, comprising ten Bonds with Warrants, are entitled to warrants (the "Warrants") to subscribe 50.5 A shares of the Company during the 5 trading days prior to 3 March 2010 at an initial exercise price of RMB 19.68 per share, subject to adjustment for, amongst other things, cash dividends, subdivision or consolidation of shares, bonus issues, rights issues, capital distribution, change of control and other events which have a dilutive effect on the issued share capital of the Company.

If all warrants were exercised, how many shares would be subscribed for?

Solution: 1,515,000,000 shares would be subscribed for [aggregate principal amount divided by par value of a lot times shares subscribed per lot = (RMB 30,000,000,000/ RMB 1,000) $\times$ 50.5 shares].

In addition to disclosures in the notes to the financial statements, an MD&A commonly provides other information about a company's capital resources, including debt financing and off-balance-sheet financing. In the MD&A, management often provides a qualitative discussion on any material trends, favorable or unfavorable, in capital resources and indicates any expected material changes in their mix and relative cost. Additional quantitative information is typically provided, including schedules summarising a company's contractual obligations (e.g., bond payables) and other commitments (e.g., lines of credit and guarantees) in total and over the next five years.

3. LEASES

A company wishing to obtain the use of an asset can either purchase the asset or lease the asset. Section 3.1 describes some advantages to leasing from the viewpoint of the **lessee** (the party obtaining the use of an asset through a lease). Section 3.2 describes the classification of leases. Section 3.2.1 describes the accounting treatments of different types of leases from the perspective of the lessee, and section 3.2.2 discusses leases from the perspective of the **lessor** (the owner of the asset).

3.1. Advantages of Leasing

A lease is a contract between the owner of an asset—the lessor—and another party seeking use of the asset—the lessee. Through the lease, the lessor grants the right to use the asset to the lessee. The right to use the asset can be for a long period, such as 20 years, or a much shorter period, such as a month. In exchange for the right to use the asset, the lessee makes periodic lease payments to the lessor. A lease, then, is a form of financing to the lessee provided by the lessor that enables the lessee to obtain the *use* of the leased asset.

There are several advantages to leasing an asset compared to purchasing it. Leases can provide less costly financing; they usually require little, if any, down payment; and often are at lower fixed interest rates than those incurred if the asset was purchased. This financing advantage is the result of the lessor having advantages over the lessee and/or another lender. The lessor may be in a better position to take advantage of tax benefits of ownership, such as depreciation and interest. The lessor may be better able to value and bear the risks associated with ownership, such as obsolescence, residual value, and disposition of asset. The lessor may enjoy economies of scale for servicing assets. As a result of these advantages, the lessor may offer attractive lease terms and leasing the asset may be less costly for the lessee than owning the asset. Further, the negotiated lease contract may contain less-restrictive provisions than other forms of borrowing.

Companies also use certain types of leases because of perceived financial reporting and tax advantages. Although they provide a form of financing, certain types of leases are not shown as debt on the balance sheet. The items leased under these types of leases also do not appear as assets on the balance sheet. Therefore, no interest expense or depreciation expense is included in the income statement. In addition, in some countries—including the United States—because financial reporting rules differ from tax regulations, a company may own an asset for tax purposes (and thus obtain deductions for depreciation expense for tax purposes) while not reflecting the ownership in its financial statements. A lease that is structured to provide a company with the tax benefits of ownership while not requiring the asset to be reflected on the company's financial statements is known as a synthetic lease.

3.2. Finance (or Capital) Leases versus Operating Leases

There are two main classifications of leases: **finance leases** (or **capital leases**) and **operating leases**.[7] The economic substance of a finance (or capital) lease is very different from an operating lease, as are the implications of each for the financial statements for the lessee and lessor. In substance, a finance (capital) lease is equivalent to the purchase of some asset (lease to own) by the buyer (lessee) that is directly financed by the seller (lessor). An operating lease is an agreement allowing the lessee to use some asset for a period of time, essentially a rental.

Under IFRS, the classification of a lease as a finance lease or an operating lease depends on the transfer of the risks and rewards incidental to ownership of the leased asset.[8] If substantially *all* the risks and rewards are transferred to the lessee, the lease is classified as a finance lease and the lessee reports a leased asset and lease obligation on its balance sheet. Otherwise, the lease is reported as an operating lease, in which case the lessee reports neither an asset nor a liability; the lessee reports only the lease expense. Similarly, if the lessor transfers substantially *all* the risks and rewards incidental to legal ownership, the lease is reported as a finance lease and the lessor reports a lease receivable on its balance sheet and removes the leased asset from

[7] "Finance lease" is IFRS terminology and "capital lease" is US GAAP terminology.
[8] IAS 17 [Leases].

its balance sheet. Otherwise, the lease is reported as an operating lease, and the lessor keeps the leased asset on its balance sheet. Examples of situations that would normally lead to a lease being classified as a finance lease include the following:[9]

- The lease transfers ownership of the asset to the lessee by the end of the lease term.
- The lessee has the option to purchase the asset at a price that is expected to be sufficiently lower than the fair value at the date the option becomes exercisable for it to be reasonably certain, at the inception of the lease, that the option will be exercised.
- The lease term is for the major part of the economic life of the asset, even if the title is not transferred.
- At the inception of the lease, the present value of the minimum lease payments amounts to at least substantially all of the fair value of the leased asset.
- The leased assets are of such a specialized nature that only the lessee can use them without major modifications.

Although accounting for leases under US GAAP is guided by a similar principle of the transfer of benefits and risks, US GAAP is more prescriptive in its criteria for classifying capital and operating leases. Four criteria are specified to identify when a lease is a capital lease:[10]

1. Ownership of the leased asset transfers to the lessee at the end of the lease.
2. The lease contains an option for the lessee to purchase the leased asset cheaply (bargain purchase option).
3. The lease term is 75 percent or more of the useful life of the leased asset.
4. The present value of lease payments is 90 percent or more of the fair value of the leased asset.

Only one of these criteria has to be met for the lease to be considered a capital lease by the lessee. On the lessor side, satisfying at least one of these four criteria plus meeting revenue recognition requirements (that is, being reasonably assured of cash collection and having performed substantially under the lease) determine a capital lease. If none of the four criteria are met or if the revenue recognition requirement is not met, the lessor reports the lease as an operating lease.

3.2.1. Accounting and Reporting by the Lessee

Because a finance lease is economically similar to borrowing money and buying an asset, a company that enters into a finance lease as the lessee reports an asset (leased asset) and related debt (lease payable) on its balance sheet. The initial value of both the leased asset and lease payable is the lower of the present value of future lease payments and the fair value of the leased asset; in many cases, these will be equal. On the income statement, the company reports interest expense on the debt, and if the asset acquired is depreciable, the company reports depreciation expense. (The lessor, as we illustrate in the next section, reports the sale of an asset and a lease as receivable.)

Because an operating lease is economically similar to renting an asset, a company that enters into an operating lease as the lessee records a lease expense on its income statement during the period it uses the asset. No asset or liability is recorded on its balance sheet. The

[9] Examples are from IAS 17, paragraph 10, and do not include all indicators that would lead to a lease being classified as a finance lease.
[10] FASB ASC Topic 840 [Leases].

main accounting differences for a lessee between a finance lease and an operating lease, then, are that reported assets and debt are higher and expenses are generally higher in the early years under a finance lease. Because of the higher reported debt and expenses under a finance lease, lessees often prefer operating leases to finance leases. (Although classifying a lease as an operating lease can make reported profitability ratios and debt-to-equity ratios appear better, financial analysts are aware of this impact and typically adjust the reported numbers accordingly.)

On the lessee's statement of cash flows, for an operating lease, the full lease payment is shown as an operating cash outflow. For a finance lease, only the portion of the lease payment relating to interest expense potentially reduces operating cash flow; the portion of the lease payment that reduces the lease liability appears as a cash outflow in the financing section.

Example 10 illustrates the accounting of a finance lease by a lessee.

EXAMPLE 10 Determining the Initial Recognition and Measurement and Subsequent Measurement of a Finance Lease for a Lessee

CAPBS Inc. enters into a lease agreement to acquire the use of a piece of machinery for four years beginning on 1 January 2010. The lease requires four annual payments of €28,679 starting on 1 January 2010. The useful life of the machine is four years, and its salvage value is zero. CAPBS accounts for the lease as a finance lease. The fair value of the machine is €100,000. The present value of the lease payments using the company's discount rate of 10 percent is €100,000. (A reminder is relevant for present value calculations: Lease payments are made at the beginning of each period.) The company uses straight-line depreciation.

1. Comment on the appropriateness of CAPBS treating the lease agreement as a finance lease under IFRS and a capital lease under US GAAP.
2. What is the amount reported as a leased asset on the balance sheet on 1 January 2010? What depreciation expense is reported in fiscal year 2010?
3. What is the amount of the machinery reported as a leased asset on the balance sheet on 31 December 2010?
4. What is the amount of the lease liability reported on the balance sheet on 1 January 2010? What interest expense is reported in fiscal year 2010?
5. What is the amount of the lease liability reported on the balance sheet on 31 December 2010? What interest expense is reported in fiscal year 2011?
6. If CAPBS had determined that the above lease was an operating lease, what amount of expenses would be reported on the income statements in fiscal 2010 and 2011? How does this expense compare to the expenses reported under a capital lease?

Solution to 1: CAPBS should treat this lease as a finance lease under IFRS. The machine is leased for the major part of its useful life (the useful life of the machine and the lease are each four years). Also, the present value of lease payments equals substantially the fair value of the machine (both are €100,000). CAPBS should treat this lease as a capital

lease under US GAAP. The machine is leased for more than 75 percent of its useful life, and the present value of the lease payments exceeds 90 percent of the fair value of the leased asset.

Solution to 2: The amount initially reported as a leased asset on 1 January 2010 is €100,000. Depreciation expense each year is €25,000 [(€100,000 – €0)/4 years].

The table below shows CAPBS's depreciation expense and carrying amount for the leased asset by year.

Year	Initial Recognition Amount	Depreciation Expense	Accumulated Depreciation	Carrying Amount (year-end)
	(a)	(b)	(c)	(d)
2010	€100,000	€25,000	€25,000	€75,000
2011	100,000	25,000	50,000	50,000
2012	100,000	25,000	75,000	25,000
2013	100,000	25,000	100,000	0
		€100,000		

- Column (a) is the lower of the fair value of the machinery and the present value (PV) of lease payments at lease inception. In this example, they are the same.
- Column (b) is the depreciation expense of €25,000 per year [straight-line depreciation = acquisition cost less salvage value divided by useful life = (€100,000 – €0)/4 years].
- Column (c) is the accumulated depreciation on the leased asset calculated as the prior year's accumulated depreciation plus the current year's depreciation expense.
- Column (d) is the carrying amount of the machine (the leased asset), which is the difference between the initial recognition amount and accumulated depreciation.

Solution to 3: From the table presented in *Solution to 2*, the carrying amount on 31 December 2010 is €75,000.

Solution to 4: The amount of the lease liability initially recognised on 1 January 2010 is €100,000, which is both the fair value of the leased asset and the present value of lease payments. However, the first lease payment of €28,679, due on 1 January 2010, immediately reduces the lease liability balance to €71,321. Interest expense in 2010 is based on the €71,321 carrying amount. Interest expense reported in fiscal year 2010 is €7,132 (€71,321 × 10%).

The table below shows CAPBS's lease payment, interest expense, and carrying values for its lease liability by year.[11]

[11] The computations included throughout the example were made using an Excel worksheet; small apparent discrepancies in the calculations are because of rounding.

Year	Lease Liability, 1 January	Annual Lease Payment, 1 January	Interest (at 10%; accrued in previous year)	Reduction of Lease Liability, 1 January	Lease Liability on 31 December after Lease Payment on 1 January Same Year
	(a)	(b)	(c)	(d)	(e)
2010	€100,000	€28,679	€0	€28,679	€71,321
2011	71,321	28,679	7,132	21,547	49,774
2012	49,774	28,679	4,977	23,702	26,072
2013	26,072	28,679	2,607	26,072	0
		€114,717	€14,717	€100,000	

- Column (a) is the lease liability at the beginning of the year.
  - 2010: €100,000
  - Years thereafter: It is the lease liability at the end of the previous year
- Column (b) is the annual lease payment made at the beginning of the year. A portion of the lease payment reduces interest accrued in the previous year, and the remainder of the lease payment reduces the carrying amount of the lease liability.
  - For example, in 2011, the €28,679 paid on 1 January reduces the interest payable of €7,132 that accrued in 2010 (€71,321 × 10%) and then reduces the lease liability by €21,547.
- Column (c) is the interest portion of the 1 January lease payment made on that date. This amount of interest was accrued as interest payable during the *prior* year and is reported as the interest expense of the *prior* year. For example, at 31 December 2010, interest expense and interest payable in the amount of €7,132 was recognised.
- Column (d) is the reduction of the lease liability, which is the difference between the annual lease payment and the interest portion.
- Column (e) is the lease liability on 31 December of a given year just before the lease payment is made on the first day of the next year. It is equal to the lease liability on 1 January of the same year (column a) less the reduction of the lease liability (column d).

Solution to 5: From the table presented in *Solution to 4*, the interest expense in fiscal year 2011 is €4,977 (€49,744 × 10%).

Solution to 6: As an operating lease, a rent expense of €28,679 would be reported on the income statement each year. Under a capital lease, the expenses related to the lease are depreciation and interest expense. In 2010, the depreciation expense is €25,000 and the interest expense is €7,132. In 2011, the depreciation expense is €25,000 and the interest expense is €4,977.

A company reporting a lease as an operating lease will typically show higher profits in early years, higher return measures in early years, and a stronger solvency position than an identical company reporting an identical lease as a finance lease. However, the company reporting the lease as a finance lease will show higher operating cash flows because the portion of the lease payment that reduces the carrying amount of the lease liability will be reflected as a financing cash outflow rather than an operating cash outflow. The interest expense portion of the lease

payment on the statement of cash flows can be treated as operating or financing cash outflow under IFRS and is treated as an operating cash outflow under US GAAP.

The explicit standards in the United States that determine when a company should report a capital lease versus an operating lease make it easier for a company to structure a lease so that it is reported as an operating lease. The company structures the lease so that none of the four capital lease identifying criteria is met. Similar to debt disclosures, however, lease disclosures show payments under both capital and operating leases for the next five years and afterward. These disclosures can help to estimate the extent of a company's off-balance-sheet lease financing through operating leases. Example 11 illustrates the disclosures of operating and finance leases. Although these disclosures can be used to determine the effect on the financial statements if all operating leases were capitalized, this chapter focuses solely on the information that is disclosed.

EXAMPLE 11 Financial Statement Disclosure of Leases by the Lessee

BASF Group (OTC: BASFY) has significant commitments under finance and operating leases. Presented below is selected note disclosure from its fiscal year 2008 financial statements.

27. LEASING

Leased assets

Property, plant and equipment include those assets which are considered to be economically owned through a finance lease. They primarily concern the following items:

	2008		2007	
Leased assets (million €)	Acquisition Cost	Net book Value	Acquisition Cost	Net book Value
Land, land rights and buildings	**20**	**13**	26	18
Machinery and technical equipment	**223**	**96**	226	118
Miscellaneous equipment and fixtures	**73**	**18**	71	20
Advance payments and construction in progress	—	—	—	—
	316	**127**	323	156

	2008			2007		
Liabilities from Finance Leases (million €)	Minimum Lease Payments	Interest Portion	Leasing Liability	Minimum Lease Payments	Interest Portion	Leasing Liability
Following year 1	**20**	**5**	**15**	29	6	23
Following year 2	**20**	**5**	**14**	19	5	13
Following year 3	**22**	**5**	**18**	18	5	13

(*continued*)

(Continued)

Liabilities from Finance Leases (million €)	2008 Minimum Lease Payments	2008 Interest Portion	2008 Leasing Liability	2007 Minimum Lease Payments	2007 Interest Portion	2007 Leasing Liability
Following year 4	**11**	**2**	**9**	21	5	16
Following year 5	**7**	**2**	**4**	10	3	8
Over 5 years	**29**	**10**	**20**	35	12	23
	108	**29**	**80**	132	36	96

In the current business year and in 2007, no additional lease payments arising from contractual obligations were recognized in income above the minimum lease payments.

In 2008, leasing liabilities were not offset by any expected minimum lease payments from sub-leases.

In addition, BASF is a lessee under operating lease contracts. The resulting lease obligations totaling €1,449 million in 2008 and €1,272 in 2007 are due in the following years:

Commitments Due to Operating Lease Contracts (million €)

	Nominal Value of The Future Minimum Payments Dec. 31, 2008	Nominal Value of The Future Minimum Payments Dec. 31, 2007
Less than 1 year	**280**	292
1–5 years	**613**	505
Over 5 years	**556**	475
	1,449	1,272

1. At the end of fiscal year 2008, what is the total amount of finance lease liabilities BASF reports on its balance sheet?
2. Based on finance lease agreements in place at the end of fiscal year 2008, how much will BASF pay out on finance lease commitments in fiscal year 2009?
3. Based on finance lease agreements in place at the end of fiscal year 2008, what is the amount of interest expense that BASF will report in fiscal year 2009?
4. At the end of fiscal 2008, what are BASF's total commitments under operating leases?
5. Based on operating lease agreements in place at the end of fiscal year 2008, what is the minimum amount of rent expense that BASF will report in fiscal year 2009?
6. At the end of fiscal year 2008, what is the amount of leased assets (carrying amount) BASF reports on its balance sheet?

Solution to 1: €80 million—the total of the 2008 column "Leasing liability" in the "Liabilities from finance leases" table.

Solution to 2: €20 million—reported in the 2008 column "Minimum lease payments," row "Following year 1," in the "Liabilities from finance leases" table.

Solution to 3: €5 million—reported in the 2008 column "Interest portion," row "Following year 1," in the "Liabilities from finance leases" table.

Solution to 4: €1,449 million—the total of the 2008 column "Nominal value of the future minimum payments" in the "Commitments due to operating lease contracts" table.

Solution to 5: €280 million—reported in the 2008 column "Nominal value of the future minimum payments," row "Less than 1 year," in the "Commitments due to operating lease contracts" table.

Solution to 6: €127 million—the total of the 2008 column "Net book value" in the "Leased assets" table.

Example 12 contains information from Royal Dutch Shell's (LSE: RDSA) 2008 financial statements. As required by IFRS, the balance sheet presents finance lease obligations in the line items labeled "Debt." Additionally, IFRS require certain disclosures to be made in the notes; the layout of disclosure notes on debt varies across companies. For Royal Dutch, the disclosure note on debt, Note 18[A], first shows a breakdown of total debt reported on the balance sheet into two components: the amount of debt excluding finance lease obligations and the amount of finance lease obligations. Note 18[B] provides disclosures on the component of on-balance-sheet debt, excluding finance lease obligations. Next, Note 18[C] presents information about all the companies' lease obligations—both finance leases (which are a component of the on-balance-sheet total debt) and operating leases (for which no obligation appears on the balance sheet). This disclosure clearly illustrates that although finance leases and operating leases are both contractual obligations, only the finance leases are reported on the balance sheet. As mentioned above, a subsequent chapter demonstrates how analysts adjust the total amount of debt as reported on the balance sheet to also include the off-balance-sheet obligations for operating leases. Analysts also should be aware that the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) are addressing the lease accounting standards, so these standards may change in the coming years.

EXAMPLE 12 Long-Term Debt and Lease Disclosures

Use the following excerpts taken from Royal Dutch Shell (LSE: RDSA) 2008 consolidated financial statements and notes to the consolidated financial statements to answer the questions below.

Excerpt from CONSOLIDATED BALANCE SHEET

$ million	NOTES	Dec 31, 2008	Dec 31, 2007
LIABILITIES			
Non-current liabilities			
Debt	*18*	**13,772**	12,363
⋮		⋮	⋮
Current liabilities			
Debt	*18*	**9,497**	5,736
⋮		⋮	⋮
Total liabilities		**153,535**	143,502

(*continued*)

(Continued)

$ million	NOTES	Dec 31, 2008	Dec 31, 2007
EQUITY			
⋮		⋮	⋮
Total equity		**128,866**	125,968
Total liabilities and equity		**282,401**	269,470

Excerpt from CONSOLIDATED STATEMENT OF CASH FLOWS

	Dec 31, 2008	Dec 31, 2007
Net increase/(decrease) in debt with maturity period within three months	**4,161**	(455)
Other debt:		
New borrowings	**3,555**	4,565
Repayments	**(2,890)**	(2,796)

Excerpt from **Note 1: Basis of Preparation**

The Consolidated Financial Statements of Royal Dutch Shell plc (the Company) and its subsidiaries (collectively known as "Shell" or the "Shell group") have been prepared in accordance with the provisions of the Companies Act 1985, Article 4 of the International Accounting Standards (IAS) Regulation and with International Financial Reporting Standards (IFRS) as adopted by the European Union. As applied to Shell, there are no material differences with IFRS as issued by the International Accounting Standards Board (IASB), therefore the Consolidated Financial Statements have been prepared in accordance with IFRS as issued by the IASB.

Excerpt from **Note 2: Accounting Policies**

Financial liabilities

Debt and accounts payable are recognised initially at fair value based on amounts exchanged and subsequently at amortised cost, except for fixed rate debt subject to fair value hedging, which is re-measured for the hedged risk (see "Derivative contracts").

Interest on debt is accounted for using the effective interest method and, other than interest capitalised, is recognised in income.

Where fair value is not applied subsequent to initial recognition but is required for disclosure purposes, it is based on market prices where available, otherwise it is calculated as the net present value of expected future cash flows.

Excerpt from Note 18: Debt and Lease Arrangements
[A] DEBT ($ million)

	Dec 31, 2008			Dec 31, 2007		
	Debt (excluding finance lease obligations)	Finance Lease Obligations	Total	Debt (excluding finance lease obligations)	Finance Lease Obligations	Total
Short-term debt	7,879	—	7,879	3,292	—	3,292
Long-term debt due within one year	1,314	304	1,618	2,290	154	2,444
Current debt	9,193	304	9,497	5,582	154	5,736
Non-current debt	10,061	3,711	13,772	8,533	3,830	12,363
Total	19,254	4,015	23,269	14,115	3,984	18,099

The fair value of debt approximates the carrying amount.

[B] DEBT (EXCLUDING FINANCE LEASE OBLIGATIONS)

The following tables compare contractual cash flows for debt (excluding finance lease obligations) owed by subsidiaries at December 31, by year of maturity, with the carrying amount in the Consolidated Balance Sheet. The carrying amount reflects the effects of discounting, premiums and fair value adjustments where hedging is applied.

2008								$ million, except where otherwise indicated	
	Contractual Repayments (excluding interest)							Difference from Carrying Amount	Carrying Amount
	2009	2010	2011	2012	2013	2014 and After	Total		
Fixed rate dollar debt	6,821	506	1,001	503	1	3,539	12,371	290	12,661
Average interest rate	2.6%	5.2%	5.6%	5.0%	7.3%	5.4%			
Variable rate dollar debt	521	156	5	—	—	122	804	—	804
Average interest rate	1.8%	3.8%	6.3%	—	—	0.0%			
Fixed rate European debt	568	1,146	285	—	—	2,117	4,116	197	4,313
Average interest rate	2.9%	4.8%	2.0%	—	—	4.6%			
Variable rate European debt	237	—	—	—	—	—	237	—	237

(*continued*)

(Continued)

	Contractual Repayments (excluding interest)							Difference from Carrying Amount	Carrying Amount
	2009	2010	2011	2012	2013	2014 and After	Total		
Average interest rate	3.1%	—	—	—	—	—			
Other fixed rate debt	426	—	2	—	1	—	429	—	429
Average interest rate	18.4%	—	11.7%	—	12.4%	—			
Other variable rate debt	620	33	143	14	—	—	810	—	810
Average interest rate	9.4%	11.5%	7.8%	4.8%	—	—			
Total	9,193	1,841	1,436	517	2	5,778	18,767	487	19,254

The table above excludes interest estimated to be $827 million in 2009, $480 million in 2010, $389 million in 2011, $316 million in 2012, $290 million in 2013 and $290 million in 2014 and after (assuming interest rates with respect to variable rate debt remain constant and there is no change in aggregate principal amount of debt other than repayment at scheduled maturity as reflected in the table).

The weighted average interest rate on short-term debt excluding the short-term portion of long-term debt at December 31, 2008, was 4% (2007: 7%).

[C] LEASE ARRANGEMENTS

The future minimum lease payments for finance and operating leases and the present value of minimum finance lease payments at December 31, by maturity date, are as follows:

2008				$ million
	Total Future Minimum Finance Lease Payments	Interest	Present Value of Minimum Finance Lease Payments	Total Future Minimum Operating Lease Payments
2009	608	304	304	4,648
2010–2013	2,008	1,094	914	9,905
2014 and after	4,076	1,279	2,797	4,712
Total	6,692	2,677	4,015	19,265

Operating lease expenses were as follows ($ million):

	2008	2007	2006
Minimum lease payments	**3,339**	3,091	2,571
Contingent rentals	**68**	63	59
Sub-lease income	**(161)**	(138)	(132)
Total	**3,246**	3,016	2,498

Use the above information to answer the following questions:

1. How does Royal Dutch Shell initially value its debt on the balance sheet? How is debt subsequently measured on the balance sheet?
2. What method does Shell use to calculate interest expense on its debt?
3. What is the total amount of debt appearing within current liabilities on the balance sheet at 31 December 2008, and what does it include?
4. What is the total amount of debt due after one year appearing on the balance sheet at 31 December 2008, and what does it include?
5. How does the interest rate in 2008 on short-term debt (excluding finance lease obligations and the short-term portion of long-term debt) compare to that in 2007?
6. What is the fair value of Royal Dutch Shell's debt at 31 December 2008?
7. What was Royal Dutch Shell's rent expense in fiscal year 2008 related to operating leases?
8. Comment on the relative magnitude of operating leases compared to finance leases.
9. What are Shell's debt-to-equity ratios for 2008 and 2007? Comment on year-to-year changes.

Solution to 1: From Note 2, debt is initially reported at fair value based on amounts exchanged. After issuance, debt is reported at amortised cost except for certain fixed rate debt that is subject to fair value hedging. That debt is remeasured to fair value.

Solution to 2: Note 2 indicates that Shell uses the effective interest rate method to calculate interest expense.

Solution to 3: The total amount of debt included in current liabilities on the balance sheet is $9,497. Note 18[A] shows that this amount comprises $7,879 short-term debt (excluding finance lease obligations), $1,314 long-term debt due within one year (excluding finance lease obligations), and $304 finance lease obligations. The finance lease obligations are those due within one year.

Solution to 4: The total amount of debt due after next year (non-current debt) is $13,722. Note 18[A] shows that this amount comprises $10,061 debt (excluding finance lease obligations) and $3,711 finance lease obligations.

Solution to 5: In Note 18 [B], Shell indicates that the interest rate on short-term debt has declined significantly. The weighted average interest rate at 31 December on short-term debt was 4 percent in 2008 and 7 percent in 2007.

Solution to 6: From Note 18 [A], Shell reports that the fair value of debt approximates its carrying amount. The carrying amount is $23,269.

Solution to 7: From Note 18 [C], rent expense on operating leases was $3,246 in 2008.

Solution to 8: Although operating and finance leases are accounted for differently, we can compare the undiscounted future minimum lease payments under operating leases and finance leases reported in Note 18 [C] to gain an initial understanding of their relative magnitude. The total future minimum lease payments under operating leases of $19,265 are more than two and one-half times the $6,692 under finance leases.

Solution to 9: Debt-to-equity ratios are calculated as follows ($ million):

	2008	2007
Debt (included in non-current liabilities)	13,772	12,363
Debt (included in current liabilities)	9,497	5,736
Total current and non-current debt	23,269	18,099
Total equity	128,866	125,966
Debt-to-equity	18.06%	14.37%

The debt-to-equity ratio increased to 18.06 percent in 2008 from 14.37 percent in 2007. This increase is primarily attributable to an increase in short-term debt. From Note 18 [A] disclosures, short-term debt increased by $4,587 million (from $3,292 million in 2007 to $7,879 million in 2008), while the current portion of long-term debt decreased by $826 million (from $2,444 million to $1,618 million) and the non-current portion of debt increased by only $1,409 million (from $12,363 million to $13,772 million). The financing section of the statement of cash flows discloses that Shell issued $4,161 million in short-term debt in 2008, compared with repaying short-term debt in 2007.

3.2.2. Accounting and Reporting by the Lessor

Similar to accounting and reporting on the lessee side, the lessor also must determine whether a lease is classified as operating or finance. Under IFRS, the determination of a finance lease on the lessor's side mirrors that of the lessee's. That is, in a finance lease the lessor transfers substantially all the risks and rewards incidental to legal ownership.[12] Under US GAAP, the lessor determines whether a lease is a capital or operating lease using the same four identifying criteria as a lessee, plus the additional revenue recognition criterion. That is, the lessor must be reasonably assured of cash collection and has performed substantially under the lease. From the lessor's perspective, US GAAP distinguishes between types of capital leases. There are two

[12] IAS 17, paragraph 36.

main types of capital leases from a lessor's perspective: (1) **direct financing leases**, and (2) **sales-type leases**.[13]

Under IFRS and US GAAP, if a lessor enters into an operating lease, the lessor records any lease revenue when earned. The lessor also continues to report the leased asset on the balance sheet and the asset's associated depreciation expense on the income statement.

Under IFRS, if a lessor enters into a finance lease, the lessor reports a receivable at an amount equal to the net investment in the lease (the present value of the minimum lease payments receivable and any estimated unguaranteed residual value accruing to the lessor).[14] The leased asset is derecognised; assets are reduced by the carrying amount of the leased asset. Initial direct costs incurred by a lessor, other than a manufacturer or dealer lessor, are added to the receivable and reduce the amount of income recognised over the lease term. The lease payment is treated as repayment of principal (reduces lease receivable) and finance income. The recognition of finance income should reflect a constant periodic rate of return on the lessor's net investment in the lease.

For lessors that are manufacturers or dealers, the initial direct costs are treated as an expense when the selling profit is recognised; typically, selling profit is recognised at the beginning of the lease term. Sales revenue equals the lower of the fair value of the asset or the present value of the minimum lease payments. The cost of sale is the carrying amount of the leased asset less the present value of the estimated unguaranteed residual value.

Under US GAAP, a direct financing lease results when the present value of lease payments (and thus the amount recorded as a lease receivable) equals the carrying value of the leased asset. Because there is no "profit" on the asset itself, the lessor is essentially providing financing to the lessee and the revenues earned by the lessor are financing in nature (i.e., interest revenue). If, however, the present value of lease payments (and thus the amount recorded as a lease receivable) exceeds the carrying amount of the leased asset, the lease is treated as a sales-type lease.

Both types of capital leases have similar effects on the balance sheet: The lessor reports a lease receivable based on the present value of future lease payments and derecognises the leased asset. The carrying value of the leased asset relative to the present value of lease payments distinguishes a direct financing lease from a sales-type lease. A direct financing lease is reported when the present value of lease payment is equal to the value of the leased asset to the lessor. When the present value of lease payments is greater than the value of the leased asset, the lease is a sales-type lease. The income statement effect will thus differ based on the type of lease.

In a direct financing lease, the lessor exchanges a lease receivable for the leased asset, no longer reporting the leased asset on its books. The lessor's revenue is derived from interest on the lease receivable. In a sales-type lease, the lessor "sells" the asset to the lessee and also provides financing on the sale. Therefore, in a sales-type lease, a lessor reports revenue from the sale, cost of goods sold (i.e., the carrying amount of the asset leased), profit on the sale, and interest revenue earned from financing the sale. The lessor will show a profit on the transaction in the year of inception and interest revenue over the life of the lease.

[13] A leveraged lease is a third type of capital lease from the lessor's perspective under US GAAP. FASB ASC paragraph 840-3-05-4.

[14] Some lease contracts specify minimum lease payments with the potential for additional payments based upon some criteria.

EXAMPLE 13 Determining Initial Recognition and Measurement and Subsequent Measurement of a Finance Lease when the Present Value of Lease Payments Equals the Value of the Leased Asset

DIRFIN Inc. owns a piece of machinery and plans to lease the machine on 1 January 2010. In the lease contract, DIRFIN requires four annual payments of €28,679 starting on 1 January 2010. DIRFIN is confident that the payments will be received. The useful life of the machine is four years, and its salvage value is zero. The present value of the lease payments and the fair value of the machine are each €100,000. The carrying amount for the machine also is €100,000. DIRFIN's discount rate is 10 percent.

1. Comment on the appropriateness of DIRFIN's treating the lease as a finance lease under IFRS and a capital lease under US GAAP.
2. What is the amount of the lease receivable reported on the balance sheet on 1 January 2010? What is interest revenue reported in fiscal year 2010?
3. What is the carrying amount of the machine reported on the balance sheet on 1 January 2010?
4. What is the amount of the lease receivable reported on the balance sheet on 31 December 2010? What is interest income reported in fiscal year 2011?
5. If DIRFIN had determined the above lease was an operating lease, what amount of income would be reported on the income statement in fiscal year 2010?

Solution to 1: Treating this lease as a finance lease under IFRS and a capital lease under US GAAP is appropriate. Under IFRS, the lease meets at least two of the suggested criteria for a finance lease: (1) The lease term is for the major part of the economic life of the asset, and (2) at inception of the lease, the present value of the minimum lease payments amounts to at least substantially all of the fair value of the leased asset. Under US GAAP, the lease meets more than one of the required criteria for a capital lease: (1) The lease term is 75 percent or more of the useful life of the leased asset (the lease term and useful life are both four years), and (2) the present value is 90 percent or more of the fair value of the leased asset (the present value of lease payments approximately equals the fair value of the machine). The revenue recognition requirement also is met. Under US GAAP, this capital lease is classified as a direct financing lease because the present value of lease payment is equal to the value of the leased asset.

Solution to 2: DIRFIN removes the leased asset from its records and records a lease receivable. On its income statement, DIRFIN reports interest revenues earned from financing the lease. The table below shows DIRFIN's interest revenue and carrying amounts for the lease receivable.

On 1 January 2010, the lease receivable is initially recorded at €100,000. Immediately after the first lease payment is received on 1 January 2010, the carrying amount of the lease receivable decreases to €71,321 and remains at this amount through 31 December 2010. Interest revenue for 2010 is €7,132 (10 percent interest rate times the loan receivable balance of €71,321 throughout 2010).

Year	Lease Receivable, 1 January	Annual Lease Payment Received, 1 January	Interest (at 10%; Accrued in Previous Year)	Reduction of Lease Receivable, 1 January	Lease Receivable on 31 December after Lease Payment on 1 January of Same Year
	(a)	(b)	(c)	(d)	(e)
2010	€100,000	€28,679	€0	€28,679	€71,321
2011	71,321	28,679	7,132	21,547	49,774
2012	49,774	28,679	4,977	23,702	26,072
2013	26,072	28,679	2,607	26,072	0
		€114,717	€14,717	€100,000	

- Column (a) is the lease receivable at the beginning of the year.
- Column (b) is the annual lease payment received at the beginning of the year, which is allocated to interest and reduction of the lease receivable.
- Column (c) is interest for the year calculated as the lease receivable outstanding for the year multiplied by the interest rate.
- Column (d) is the reduction of the lease receivable, which is the difference between the annual lease payments received and interest. Because the lease payment is due on 1 January, this amount of interest is a receivable at the end of the *prior* year and interest revenue of the *prior* year.
- Column (e) is the lease receivable after the lease payment is received and at the end of the year. It is the lease receivable at 1 January (column a) less the reduction of the lease receivable (column d).

Solution to 3: DIRFIN effectively sells the machine through the finance lease and so reports no carrying amount for the machine.

Solution to 4: The lease receivable is €71,321 at 31 December 2010. At 1 January 2011, the lease receivable decreases to €49,774 after the second lease payment is received on 1 January 2011. Interest revenue for 2011 is €4,977 (10 percent interest rate times the loan receivable balance of €49,774 throughout 2011).

Solution to 5: As an operating lease, rent income of €28,679 would be reported on the income statement.

When a lessor enters into a sales-type lease (a lease agreement where the present value of the future lease payments is greater than the value of the leased asset to the lessor), it will show a profit on the transaction in the year of lease inception and interest revenue over the life of the lease.

EXAMPLE 14 Determining the Financial Statement Impact of a Finance Lease by the Lessor when the Present Value of Lease Payments Is Greater than the Value of the Leased Asset

Assume a (hypothetical) company, Selnow, manufactures machinery and enters into an agreement to lease a machine on 1 January 2010. Under the lease, the company is to receive four annual payments of €28,679 starting on 1 January 2010. Selnow is confident that the payments will be received. The fair value of the machine and present value of the lease payments (using a 10 percent discount rate) are each €100,000, and the carrying amount of the machine is €90,000. The useful life of the machine is four years, and its salvage value is zero.

1. Comment on the appropriateness of Selnow's treatment of the lease agreement as a finance lease under IFRS and a capital lease under US GAAP.
2. Ignoring taxes, what is Selnow's income related to the lease in 2010? In 2011?

Solution to 1: Treating this lease as a finance lease under IFRS and a capital lease under US GAAP is appropriate.

Under IFRS, the lease meets at least two of the suggested criteria for a finance lease: (1) The lease term is for the major part of the economic life of the asset (the lease term and useful life of the machine are both four years), and (2) at inception of the lease the present value of the minimum lease payments amounts to at least substantially all of the fair value of the leased asset (the present value of lease payments equals the fair value of the machine).

Under US GAAP, the lease meets more than one of the required capital lease criteria, including the following: (1) The lease term is 75 percent or more of the useful life of the leased asset (the lease term and useful life of the machine are both four years), and (2) the present value is 90 percent or more of the fair value of the leased asset. The revenue recognition requirement also is met (Selnow is confident that the payments will be received). Further, under US GAAP this lease is classified as a sales-type lease because the present value of the lease payments is greater than the carrying amount of the leased asset.

There is no difference, however, in accounting between IFRS and US GAAP as a result of this additional classification under US GAAP. The present value of the future lease payments is more than the lessor's carrying amount for the machine, and the difference is the lessor's profit from selling the machine. The lessor will record a profit of €10,000 on the sale of the machine in 2010 (€100,000 present value of lease payments receivable less €90,000 value of the machine).

Solution to 2: In 2010, Selnow shows income of €17,132 related to the lease. One part of this income is the €10,000 gain on the sale of the machine (sales revenues of €100,000 less costs of goods sold of €90,000). Selnow also shows interest revenue of €7,132 on its financing of the lease (lease receivable of €71,321 after the initial lease payment is received times the 10 percent discount rate). In 2011, Selnow reports only the interest revenue of €4,977 (lease receivable of €49,774 after the 1 January lease payment is received times the 10 percent discount rate). The table below shows lease payments received, interest revenue, and reduction of the lease receivable for Selnow's sales-type lease. Note that this table is the same as DIRFIN's table in Example 13 with the direct

financing lease. They are the same because the present value of the lease payments in both cases is the same. It is the carrying amount of the machine that differs between the two examples.

Year	Lease Receivable, 1 January	Annual Lease Payment Received, 1 January	Interest (at 10%; accrued in previous year)	Reduction of Lease Receivable, 1 January	Lease Receivable on 31 December after Lease Payment on 1 January of Same Year
	(a)	(b)	(c)	(d)	(e)
2010	€100,000	€28,679	€0	€28,679	€71,321
2011	71,321	28,679	7,132	21,547	49,774
2012	49,774	28,679	4,977	23,702	26,072
2013	26,072	28,679	2,607	26,072	0
		€114,717	€14,717	€100,000	

Exhibit 2 summarises the financial statement impact of operating and financing leases on the lessee and lessor.

EXHIBIT 2 Summary of Financial Statement Impact of Operating and Financing Leases on the Lessee and Lessor

	Balance Sheet	Income Statement	Statement of Cash Flows
Lessee			
Operating Lease	No effect	Reports rent expense	Rent payment is an operating cash outflow
Finance Lease under IFRS (capital lease under US GAAP)	Recognises leased asset and lease liability	Reports depreciation expense on leased asset Reports interest expense on lease liability	Reduction of lease liability is a financing cash outflow Interest portion of lease payment is either an operating or financing cash outflow under IFRS and an operating cash outflow under US GAAP
Lessor			
Operating Lease	Retains asset on balance sheet	Reports rent income Reports depreciation expense on leased asset	Rent payments received are an operating cash inflow

(*continued*)

EXHIBIT 2 (Continued)

	Balance Sheet	Income Statement	Statement of Cash Flows
Finance Lease[a]			
When present value of lease payments equals the carrying amount of the leased asset (called a direct financing lease in US GAAP)	Removes asset from balance sheet Recognises lease receivable	Reports interest revenue on lease receivable	Interest portion of lease payment received is either an operating or investing cash inflow under IFRS and an operating cash inflow under US GAAP Receipt of lease principal is an investing cash inflow[b]
When present value of lease payments exceeds the carrying amount of the leased asset (called a sales-type lease in US GAAP)	Removes asset Recognises lease receivable	Reports profit on sale Reports interest revenue on lease receivable	Interest portion of lease payment received is either an operating or investing cash inflow under IFRS and an operating cash inflow under US GAAP Receipt of lease principal is an investing cash inflow[b]

[a]US GAAP distinguishes between a direct financing lease and a sales-type lease, but IFRS does not. The accounting is the same for IFRS and US GAAP despite this additional classification under US GAAP.
[b]If providing leases is part of a company's normal business activity, the cash flows related to the leases are classified as operating cash.

4. INTRODUCTION TO PENSIONS AND OTHER POST-EMPLOYMENT BENEFITS

Pensions and other post-employment benefits give rise to non-current liabilities reported by many companies. Companies may offer various types of benefits to their employees following retirement, such as pension plans, health care plans, medical insurance, and life insurance. Pension plans often are the most significant post-employment benefits provided to retired employees.

The accounting and reporting for pension plans depends on the type of pension plan offered. Two common types of pension plans are **defined-contribution plans** and **defined-benefit plans**. Under a defined-contribution plan, a company contributes an agreed-upon (defined) amount into the plan. The agreed-upon amount is the pension expense. The amount the company contributes to the plan is treated as an operating cash outflow. The only impact on assets and liabilities is a decrease in cash, although if some portion of the agreed-upon amount has not been paid by fiscal year-end, a liability would be recognised on the balance sheet. Because the amount of the contribution is defined and the company has no further obligation once the contribution has been made, accounting for a defined-contribution plan is fairly straightforward.

Accounting for a defined-benefit plan is more complicated. Under a defined-benefit plan, a company makes promises of future benefits to be paid to the employee during retirement. For example, a company could promise an employee annual pension payments equal to 70 percent of his final salary at retirement until death. Estimating the eventual amount of the obligation arising from that promise requires the company to make many assumptions, such as

the employee's expected salary at retirement and the number of years the employee is expected to live beyond retirement. The company estimates the future amounts to be paid and discounts the future estimated amounts to a present value (using a rate reflective of a high-quality corporate bond yield) to determine the pension obligation. The discount rate used to determine the pension obligation significantly affects the amount of the pension obligation. The pension obligation is allocated over the employee's employment as part of pension expense.

Most defined-benefit pension plans are funded through a separate legal entity, typically a pension trust fund. A company makes payments into the pension fund, and retirees are paid from the fund. The payments that a company makes into the fund are invested until they are needed to pay the retirees. If the fair value of the fund's assets is higher than the present value of the estimated pension obligation, the plan has a surplus and the company's balance sheet will reflect a net pension asset.[15] Conversely, if the present value of the estimated pension obligation exceeds the fund's assets, the plan has a deficit and the company's balance sheet will reflect a net pension liability.[16] Thus, a company reports either a net pension asset or a net pension liability. Each period, the change in the net pension asset or liability is recognised either in profit or loss or in other comprehensive income.

Under IFRS, the change in the net pension asset or liability each period is viewed as having three general components. Two of the components of this change are recognised as pension expense in profit and loss: (1) employees' service costs and (2) the net interest expense or income accrued on the beginning net pension asset or liability. The service cost during the period for an employee is the present value of the increase in the pension benefit earned by the employee as a result of providing one more year of service. The service cost also includes past service costs, which are changes in the present value of the estimated pension obligation related to employees' service in prior periods, such as might arise from changes in the plan. The net interest expense or income is calculated as the net pension asset or liability multiplied by the discount rate used in estimating the present value of the pension obligation. The third component of the change in the net pension asset or liability during a period—"remeasurements"—is recognised in other comprehensive income. Remeasurements are not amortised into profit or loss over time.

Remeasurements include (a) actuarial gains and losses and (b) the actual return on plan assets less any return included in the net interest expense or income. Actuarial gains and losses can occur when changes are made to the assumptions on which a company bases its estimated pension obligation (e.g., employee turnover, mortality rates, retirement ages, compensation increases). The actual return on plan assets would likely differ from the amount included in the net interest expense or income, which is calculated using a rate reflective of a high-quality corporate bond yield; plan assets are typically allocated across various asset classes, including equity as well as bonds.

Under US GAAP, the change in net pension asset or liability each period is viewed as having five components, some of which are recognised in profit and loss in the period incurred and some of which are recognised in other comprehensive income and amortised into profit and loss over time. The three components recognised in profit and loss in the period incurred are (1) employees' service costs for the period, (2) interest expense accrued on the beginning pension obligation, and (3) expected return on plan assets, which reduces the amount of expense recognised. The other two components are past service costs and actuarial gains and

[15] The amount of any reported net pension asset is capped at the amount of any expected future economic benefits to the company from the plan; this cap is referred to as the asset ceiling.

[16] The description of accounting for pensions presented in this chapter corresponds to the June 2011 version of IAS 19 *Employee Benefits*, which takes effect on 1 January 2013. Both IFRS and US GAAP require companies to present the amount of net pension liability or asset on the balance sheet.

losses. Past service costs are recognised in other comprehensive income in the period in which they arise and then subsequently amortised into pension expense over the future service period of the employees covered by the plan. Actuarial gains and losses are also recognised in other comprehensive income in the period in which they occur and then amortised into pension expense over time. In effect, US GAAP allows companies to "smooth" the effects on pension expense over time for these latter two components.

Similar to other forms of employee compensation for a manufacturing company, the pension expense related to production employees is added to inventory and expensed through cost of sales (cost of goods sold). For employees not involved directly in the production process, the pension expense is included with salaries and other administrative expenses. Therefore, pension expense is not directly reported on the income statement. Rather, extensive disclosures are included in the notes to the financial statements.

Example 15 presents excerpts of pension-related disclosures from Novo Nordisk's 2010 Annual Report.

EXAMPLE 15 Pension-Related Disclosures

The following are excerpts of pension-related disclosures from Novo Nordisk's (NYSE: NVO) 2010 Annual Report. NOVO Nordisk reports under IFRS. *These financial statements were issued prior to the updated IFRS for pension accounting, which (effective January 2013) requires companies to show the entire amount of net liability or asset on the balance sheet and to recognise the entire change in that amount each period.*

1. Summary of significant accounting policies

Pensions

The Group operates a number of defined contribution plans throughout the world. In a few countries the group still operates defined benefit plans. The costs for the year for defined benefit plans are determined using the projected unit credit method. This reflects services rendered by employees to the dates of valuation and is based on actuarial assumptions primarily regarding discount rates used in determining the present value of benefits, projected rates of remuneration growth and long-term expected rates of return for plan assets. Discount rates are based on the market yields of high-rated corporate bonds in the country concerned.

21. Retirement Benefit Obligations

DKK million	2010	2009	2008	2007	2006
Retirement obligations	**1,452**	1,063	1,103	885	938
Plan assets	**(766)**	(620)	(649)	(566)	(495)

Use information in the excerpts to answer the following questions:

1. What type(s) of pension plans does Novo Nordisk have?
2. Under the updated standards, what would have been reported on Novo Nordisk's 2009 and 2010 balance sheets with respect to pensions?

3. Under the updated standards, what amount of pension costs would Novo Nordisk have recognised in 2010? Describe how these costs would have been reported.

Solution to 1: Note 1 "Summary of significant accounting policies" indicates that the company has both defined contribution and defined benefit pension plans. The note indicates that the company continues to operate defined benefit plans in only a few countries.

Solution to 2: Under the updated standards, Novo Nordisk would have reported a net pension obligation of DKK 686 million in 2010 and DKK 443 million in 2009:

(DKK million)	2010	2009
Retirement obligations	1,452	1,063
Plan assets	(766)	(620)
Deficit/(surplus)	686	443

Solution to 3: Under the updated standards, Novo Nordisk would have reported total pension cost of DKK 243 million in 2010, which is the change in the pension deficit from DKK 443 million in 2009 to DKK 686 million in 2010.

Of the total pension cost, two components would be recognised in profit and loss (service costs and net interest expense on the pension deficit) and one component would be recognised in other comprehensive income (remeasurements).

5. EVALUATING SOLVENCY: LEVERAGE AND COVERAGE RATIOS

Solvency refers to a company's ability to meet its long-term debt obligations, including both principal and interest payments. In evaluating a company's solvency, ratio analyses can provide information about the relative amount of debt in the company's capital structure and the adequacy of earnings and cash flow to cover interest expense and other fixed charges (such as lease or rental payments) as they come due. Ratios are useful to evaluate a company's performance over time compared to the performance of other companies and industry norms. Ratio analysis has the advantage of allowing the comparison of companies regardless of their size and reporting currency.

The two primary types of solvency ratios are leverage ratios and coverage ratios. Leverage ratios focus on the balance sheet and measure the extent to which a company uses liabilities rather than equity to finance its assets. Coverage ratios focus on the income statement and cash flows and measure the ability of a company to cover its debt-related payments.

Exhibit 3 describes the two types of commonly used solvency ratios. The first three leverage ratios use total debt in the numerator.[17] The *debt-to-assets ratio* expresses the percentage

[17] For calculations in this chapter, total debt is the sum of interest-bearing short-term and long-term debt, excluding non-interest-bearing liabilities, such as accrued expenses, accounts payable, and deferred income taxes. This definition of total debt differs from other definitions that are more inclusive (e.g., all liabilities) or more restrictive (e.g., long-term debt only). If the use of different definitions of total debt materially changes conclusions about a company's solvency, the reasons for the discrepancies should be further investigated.

of total assets financed with debt. Generally, the higher the ratio, the higher the financial risk and thus the weaker the solvency. The *debt-to-capital ratio* measures the percentage of a company's total capital (debt plus equity) financed through debt. The *debt-to-equity ratio* measures the amount of debt financing relative to equity financing. A debt-to-equity ratio of 1.0 indicates equal amounts of debt and equity, which is the same as a debt-to-capital ratio of 50 percent. Interpretations of these ratios are similar. Higher debt-to-capital or debt-to-equity ratios imply weaker solvency. A caveat must be made when comparing debt ratios of companies in different countries. Within certain countries, companies historically have obtained more capital from debt than equity financing, so debt ratios tend to be higher for companies in these countries.

EXHIBIT 3 Definitions of Commonly Used Solvency Ratios

Solvency Ratios	Numerator	Denominator
Leverage ratios		
Debt-to-assets ratio	Total debt[a]	Total assets
Debt-to-capital ratio	Total debt[a]	Total debt[a] + Total shareholders' equity
Debt-to-equity ratio	Total debt[a]	Total shareholders' equity
Financial leverage ratio	Average total assets	Average shareholders' equity
Coverage ratios		
Interest coverage ratio	EBIT[b]	Interest payments
Fixed charge coverage ratio	EBIT[b] + lease payments	Interest payments + lease payments

[a]In this chapter, debt is defined as the sum of interest-bearing short-term and long-term debt.
[b]EBIT is earnings before interest and taxes.

The *financial leverage ratio* (also called the "leverage ratio" or "equity multiplier") measures the amount of total assets supported by one money unit of equity. For example, a value of 4 for this ratio means that each €1 of equity supports €4 of total assets. The higher the financial leverage ratio, the more leveraged the company in the sense of using debt and other liabilities to finance assets. This ratio often is defined in terms of average total assets and average total equity and plays an important role in the DuPont decomposition of return on equity.[18]

The *interest coverage ratio* measures the number of times a company's EBIT could cover its interest payments. A higher interest coverage ratio indicates stronger solvency, offering greater assurance that the company can service its debt from operating earnings. The *fixed charge coverage ratio* relates fixed financing charges, or obligations, to the cash flow generated by the company. It measures the number of times a company's earnings (before interest, taxes, and lease payments) can cover the company's interest and lease payments.

Example 16 demonstrates the use of solvency ratios in evaluating the creditworthiness of a company.

[18]The basic DuPont decomposition is: Return on Equity = Net income/Average shareholders' equity = (Sales/Average total assets) × (Net income/Sales) × (Average total assets/Average shareholders' equity).

EXAMPLE 16 Evaluating Solvency Ratios

A credit analyst is evaluating and comparing the solvency of two companies—Nokia Corporation (NYSE: NOK) and LM Ericsson Telephone Company (NYSE: ERIC)—at the beginning of 2009. The following data are gathered from the companies' 2008 annual reports and 20-F filings:

	Nokia (€ millions)		Ericsson (SEK millions)	
	2008	2007	2008	2007
Short-term borrowings	3,578	714	1,639	2,831
Current portion of long-term interest bearing debt	13	173	3,903	3,068
Long-term interest bearing debt	861	203	24,939	21,320
Total shareholders' equity	14,208	14,773	140,823	134,112
Total assets	39,582	37,599	285,684	245,117
EBIT	4,966	7,985	16,252	30,646
Interest payments	155	59	1,689	1,513

Use the above information to answer the following questions:

1. A. What are each company's debt-to-assets, debt-to-capital, and debt-to-equity ratios for 2008 and 2007?
   B. Comment on any changes in the calculated leverage ratios from year-to-year for both companies.
   C. Comment on the calculated leverage ratios of Nokia compared to Ericsson.
2. A. What is each company's interest coverage ratio for 2008 and 2007?
   B. Comment on any changes in the interest coverage ratio from year to year for both companies.
   C. Comment on the interest coverage ratio of Nokia compared to Ericsson.

Solution to 1:

A. For Nokia

Debt-to-assets for 2008: 11.2% = (3,578 + 13 + 861)/39,582

Debt-to-assets for 2007: 2.9% = (714 + 173 + 203)/37,599

Debt-to-capital for 2008: 23.9% = (3,578 + 13 + 861)/(3,578 + 13 + 861 + 14,208)

Debt-to-capital for 2007: 6.9% = (714 + 173 + 203)/(714 + 173 + 203 + 14,773)

Debt-to-equity for 2008: 31.3% = (3,578 + 13 + 861)/(14,208)

Debt-to-equity for 2007: 7.4% = (714 + 173 + 203)/(14,773)

For Ericsson

Debt-to-assets for 2008: 10.7% = (1,639 + 3,903 + 24,939)/(285,684)

Debt-to-assets for 2007: 11.1% = (2,831 + 3,068 + 21,320)/(245,117)

Debt-to-capital for 2008: 17.8% = (1,639 + 3,903 + 24,939)/(1,639 + 3,903 + 21,320 + 140,823)

Debt-to-capital for 2007: 16.9% = (2,831 + 3,068 + 21,320)/(2,831 + 3,068 + 21,320 + 134,112)

Debt-to-equity for 2008: 21.6% = (1,639 + 3,903 + 24,939)/(140,823)

Debt-to-equity for 2007: 20.3% = (2,831 + 3,068 + 21,320)/(134,112)

B. Nokia's leverage ratios all increased from 2007 to 2008, suggesting weakening solvency. Comparing debt year to year, we observe that leverage ratios increased because of a significant increase in short-term borrowings and an increase in long-term interest bearing debt without a similar increase in shareholders' equity. In fact, shareholders' equity declined.

On the other hand, Ericsson's leverage ratios appear fairly similar for 2007 and 2008. During 2008, it appears as though Ericsson shifted away from short borrowings to long-term debt.

C. In 2007, all three of Nokia's leverage ratios were lower than Ericsson's. In 2008, the opposite was true. Ericsson's capital structure seems fairly constant over the two years, whereas Nokia's capital structure has shifted toward more debt.

Solution to 2:

A. For Nokia

Interest coverage ratio for 2008: 32.0 = (4,966/155)

Interest coverage ratio for 2007: 135.3 = (7,985/59)

For Ericsson

Interest coverage ratio for 2008: 9.6 = (16,252/1,689)

Interest coverage ratio for 2007: 20.3 = (30,646/1,513)

B. Nokia's interest coverage ratio decreased from 2007 to 2008 because of a decrease in EBIT and an increase in interest payments. Even with the decrease, Nokia appears to have sufficient operating earnings to cover interest payments. Similarly, Ericsson's interest coverage ratio decreased from 2007 to 2008, primarily because of a decrease in EBIT. Ericsson also appears to have sufficient operating earnings to cover interest payments.

C. Nokia's ability to cover interest payments is greater than Ericsson's, although both companies appear to have sufficient operating earnings to cover interest payments.

6. SUMMARY

Non-current liabilities arise from different sources of financing and different types of creditors. Bonds are a common source of financing from debt markets. Bonds are initially valued at fair value when issued, and then companies have the choice of whether to subsequently measure bonds at fair value or amortised cost.

Leases are related to the use of specific assets. In a finance lease, the lessee assumes substantially all the risks and benefits of ownership of the leased asset so the lessee reports an asset and related obligation. Typically, the lessor will report a lease receivable and derecognise the asset. In an operating lease, the lessee secures the right to use the leased asset but substantially all the risk and rewards of ownership are not transferred. The lessor does not derecognise the asset and reports lease (rent) income, and the lessee reports lease (rent) expense.

Pensions and other post-employment benefits are additional forms of compensation. Employees work currently to earn current salaries and wages and also to earn benefits for retirement or post-employment. Companies with defined contribution plans report the agreed upon contribution paid into a plan as an expense. Defined benefit plans provide for agreed upon future benefits. Understanding the reporting of non-current liabilities when they arise and how they are subsequently valued is important in assessing a company's solvency and potential changes in its solvency.

Key points in accounting and reporting of non-current liabilities include the following:

- The sales proceeds of a bond issue are determined by discounting future cash payments using the market rate of interest at the time of issuance (effective interest rate). The reported interest expense on bonds is based on the effective interest rate.
- Future cash payments on bonds usually include periodic interest payments (made at the stated interest rate or coupon rate) and the principal amount at maturity.
- When the market rate of interest equals the coupon rate for the bonds, the bonds will sell at par (i.e., at a price equal to the face value). When the market rate of interest is higher than the bonds' coupon rate, the bonds will sell at a discount. When the market rate of interest is lower than the bonds' coupon rate, the bonds will sell at a premium.
- An issuer amortises any issuance discount or premium on bonds over the life of the bonds.
- If a company redeems bonds before maturity, it reports a gain or loss on debt extinguishment computed as the net carrying amount of the bonds (including bond issuance costs under IFRS) less the amount required to redeem the bonds.
- Debt covenants impose restrictions on borrowers, such as limitations on future borrowing or requirements to maintain a minimum debt-to-equity ratio.
- The carrying amount of bonds is typically amortised historical cost, which can differ from their fair value.
- Companies are required to disclose the fair value of financial liabilities, including debt. Although permitted to do so, few companies opt to report debt at fair values on the balance sheet.
- Accounting standards require leases to be classified as either operating leases or finance (capital) leases. Leases are classified as finance leases when substantially all the risks and rewards of legal ownership are transferred to the lessee.
- When a lessee reports a lease as an operating lease rather than a finance lease, the lessee usually appears more profitable in the early years of the lease and less so later, and it appears more solvent over the whole period.
- When a lessor reports a lease as a finance lease rather than an operating lease, the lessor usually appears more profitable in the early years of the lease.

- In a finance lease where the present value of lease payments equals the carrying amount of the leased asset, a lessor earns only interest revenue. In a finance lease where the present value of lease payments exceeds the carrying amount of the leased asset, a lessor earns both interest revenue and a profit (or loss) on the sale of the leased asset.
- Two types of pension plans are defined contribution plans and defined benefits plans. In a defined contribution plan, the amount of contribution into the plan is specified (i.e., defined) and the amount of pension that is ultimately paid by the plan (received by the retiree) depends on the performance of the plan's assets. In a defined benefit plan, the amount of pension that is ultimately paid by the plan (received by the retiree) is defined, usually according to a benefit formula.
- Under a defined contribution plan, the cash payment made into the plan is recognised as pension expense.
- Under both IFRS and US GAAP, companies must report the difference between the defined benefit pension obligation and the pension assets as an asset or liability on the balance sheet.
- Under IFRS, the change in the defined benefit plan net asset or liability is recognised as a cost of the period, with two components of the change (service cost and net interest expense or income) recognised in profit and loss and one component (remeasurements) of the change recognised in other comprehensive income.
- Under US GAAP, the change in the defined benefit plan net asset or liability is also recognised as a cost of the period with three components of the change (current service costs, interest expense on the beginning pension obligation, and expected return on plan assets) recognised in profit and loss and two components (past service costs and actuarial gains and losses) recognised in other comprehensive income.
- Solvency refers to a company's ability to meet its long-term debt obligations.
- In evaluating solvency, leverage ratios focus on the balance sheet and measure the amount of debt financing relative to equity financing.
- In evaluating solvency, coverage ratios focus on the income statement and cash flows and measure the ability of a company to cover its interest payments.

PROBLEMS

1. A company issues €1 million of bonds at face value. When the bonds are issued, the company will record a:
   A. cash inflow from investing activities.
   B. cash inflow from financing activities.
   C. cash inflow from operating activities.

2. At the time of issue of 4.50% coupon bonds, the effective interest rate was 5.00%. The bonds were *most likely* issued at:
   A. par.
   B. a discount.
   C. a premium.

3. Oil Exploration LLC paid $45,000 in printing, legal fees, commissions, and other costs associated with its recent bond issue. It is *most likely* to record these costs on its financial statements as:
   A. an asset under US GAAP and reduction of the carrying value of the debt under IFRS.

B. a liability under US GAAP and reduction of the carrying value of the debt under IFRS.
C. a cash outflow from investing activities under both US GAAP and IFRS.

4. On 1 January 2010, Elegant Fragrances Company issues £1,000,000 face value, five-year bonds with annual interest payments of £55,000 to be paid each 31 December. The market interest rate is 6.0 percent. Using the effective interest rate method of amortisation, Elegant Fragrances is *most likely* to record:
   A. an interest expense of £55,000 on its 2010 income statement.
   B. a liability of £982,674 on the 31 December 2010 balance sheet.
   C. a £58,736 cash outflow from operating activity on the 2010 statement of cash flows.

5. Consolidated Enterprises issues €10 million face value, five-year bonds with a coupon rate of 6.5 percent. At the time of issuance, the market interest rate is 6.0 percent. Using the effective interest rate method of amortisation, the carrying value after one year will be *closest* to:
   A. €10.17 million.
   B. €10.21 million.
   C. €10.28 million.

6. The management of Bank EZ repurchases its own bonds in the open market. They pay €6.5 million for bonds with a face value of €10.0 million and a carrying value of €9.8 million. The bank will *most likely* report:
   A. other comprehensive income of €3.3 million.
   B. other comprehensive income of €3.5 million.
   C. a gain of €3.3 million on the income statement.

7. Innovative Inventions, Inc. needs to raise €10 million. If the company chooses to issue zero-coupon bonds, its debt-to-equity ratio will *most likely*:
   A. rise as the maturity date approaches.
   B. decline as the maturity date approaches.
   C. remain constant throughout the life of the bond.

8. Fairmont Golf issued fixed rate debt when interest rates were 6 percent. Rates have since risen to 7 percent. Using only the carrying amount (based on historical cost) reported on the balance sheet to analyze the company's financial position would *most likely* cause an analyst to:
   A. overestimate Fairmont's economic liabilities.
   B. underestimate Fairmont's economic liabilities.
   C. underestimate Fairmont's interest coverage ratio.

9. Debt covenants are *least likely* to place restrictions on the issuer's ability to:
   A. pay dividends.
   B. issue additional debt.
   C. issue additional equity.

10. Compared to using a finance lease, a lessee that makes use of an operating lease will *most likely* report higher:
    A. debt.
    B. rent expense.
    C. cash flow from operating activity.

11. Which of the following is *most likely* a lessee's disclosure about operating leases?
    A. Lease liabilities.
    B. Future obligations by maturity.
    C. Net carrying amounts of leased assets.
12. For a lessor, the leased asset appears on the balance sheet and continues to be depreciated when the lease is classified as:
    A. a sales-type lease.
    B. an operating lease.
    C. a financing lease.
13. Under US GAAP, a lessor's reported revenues at lease inception will be *highest* if the lease is classified as:
    A. a sales-type lease.
    B. an operating lease.
    C. a direct financing lease.
14. A lessor will record interest income if a lease is classified as:
    A. a capital lease.
    B. an operating lease.
    C. either a capital or an operating lease.
15. Cavalier Copper Mines has $840 million in total liabilities and $520 million in shareholders' equity. It discloses operating lease commitments over the next five years with a present value of $100 million. If the lease commitments are treated as debt, the debt-to-total-capital ratio is *closest* to:
    A. 0.58.
    B. 0.62.
    C. 0.64.
16. Penben Corporation has a defined benefit pension plan. At 31 December, its pension obligation is €10 million and pension assets are €9 million. Under either IFRS or US GAAP, the reporting on the balance sheet would be *closest* to which of the following?
    A. €10 million is shown as a liability, and €9 million appears as an asset.
    B. €1 million is shown as a net pension obligation.
    C. Pension assets and obligations are not required to be shown on the balance sheet but only disclosed in footnotes.

CHAPTER 11

FINANCIAL REPORTING QUALITY

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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- distinguish between financial reporting quality and quality of reported results (including quality of earnings, cash flow, and balance sheet items);
- describe a spectrum for assessing financial reporting quality;
- distinguish between conservative and aggressive accounting;
- describe motivations that might cause management to issue financial reports that are not high quality;
- describe conditions that are conducive to issuing low-quality, or even fraudulent, financial reports;
- describe mechanisms that discipline financial reporting quality and the potential limitations of those mechanisms;
- describe presentation choices, including non-GAAP measures, that could be used to influence an analyst's opinion;
- describe accounting methods (choices and estimates) that could be used to manage earnings, cash flow, and balance sheet items;
- describe accounting warning signs and methods for detecting manipulation of information in financial reports.

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1. INTRODUCTION

Ideally, analysts would always have access to financial reports that are based on sound financial reporting standards, such as those from the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB), and are free from manipulation. But, in practice, the quality of financial reports can vary greatly. High-quality financial reporting provides information that is useful to analysts in assessing a company's performance and prospects. Low-quality financial reporting contains inaccurate, misleading, or incomplete information.

Extreme lapses in financial reporting quality have given rise to high-profile scandals that resulted not only in investor losses but also in reduced confidence in the financial system. Financial statement users who were able to accurately assess financial reporting quality were better positioned to avoid losses. These lapses illustrate the challenges analysts face as well as the potential costs of failing to recognize practices that result in misleading or inaccurate financial reports.[1] Examples of misreporting can provide an analyst with insight into various signals that may indicate poor-quality financial reports.

It is important to be aware, however, that high-profile financial scandals reflect only those instances of misreporting that were identified. Although no one can know the extent of undetected misreporting, some research suggests that it is relatively widespread. An Ernst & Young 2013 survey of more than 3,000 board members, executives, managers, and other employees in 36 countries across Europe, the Middle East, India, and Africa indicates that 20% of the respondents had seen manipulation (such as overstated sales and understated costs) occurring in their own companies, and 42% of board directors and senior managers were aware of some type of irregular financial reporting in their own companies (Ernst & Young, 2013). Another survey of 169 chief financial officers of public US companies found that they believed, on average, that "in any given period, about 20% of companies manage earnings to misrepresent economic performance, and for such companies 10% of EPS [earnings per share] is typically managed" (Dichev, Graham, Harvey, and Rajgopal, 2013).

This chapter addresses *financial reporting quality*, which pertains to the quality of information in financial reports, including disclosures in notes. High-quality reporting provides decision-useful information, which is relevant and faithfully represents the economic reality of the company's activities during the reporting period as well as the company's financial condition at the end of the period. A separate but interrelated attribute of quality is *quality of reported results* or *earnings quality*, which pertains to the earnings and cash generated by the company's actual economic activities and the resulting financial condition. The term "earnings quality" is commonly used in practice and will be used broadly to encompass the quality of earnings, cash flow, and/or balance sheet items. High-quality earnings result from activities that a company will likely be able to sustain in the future and provide a sufficient return on the company's investment. The concepts of earnings quality and financial reporting quality

[1] In this chapter, the examples of misleading or inaccurate financial reports occurred in prior years—*not* because there are no current examples of questionable financial reporting, but rather because it has been conclusively resolved that misreporting occurred in the historical examples.

are interrelated because a correct assessment of earnings quality is possible only when there is some basic level of financial reporting quality. Beyond this basic level, as the quality of reporting increases, the ability of financial statement users to correctly assess earnings quality and to develop expectations for future performance arguably also increases.

Section 2 provides a conceptual overview of reporting quality. Section 3 discusses motivations that might cause, and conditions that might enable, management to issue financial reports that are not high quality and mechanisms that aim to provide discipline to financial reporting quality. Section 4 describes choices made by management that can affect financial reporting quality—presentation choices, accounting methods, and estimates—as well as warning signs of poor-quality financial reporting.

2. CONCEPTUAL OVERVIEW

As indicated in the introduction, financial reporting quality and results or earnings quality are interrelated attributes of quality. Exhibit 1 illustrates this interrelationship and its implications.

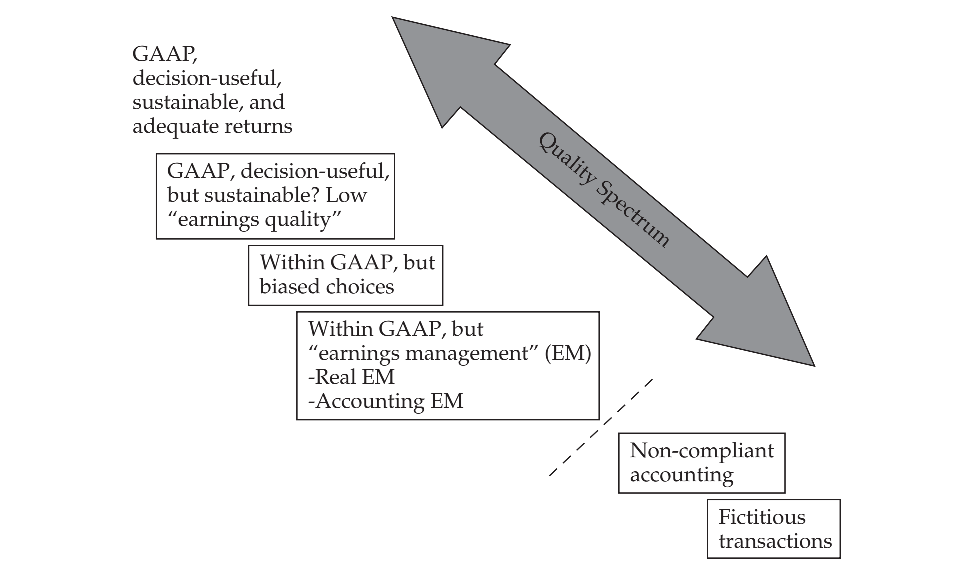
EXHIBIT 1 Relationships between Financial Reporting Quality and Earnings Quality

<table>
<tr><th></th><th></th><th colspan="2">Financial Reporting Quality</th></tr>
<tr><th></th><th></th><th>Low</th><th>High</th></tr>
<tr><td rowspan="2">Earnings (Results) Quality</td><td>High</td><td rowspan="2">LOW financial reporting quality impedes assessment of earnings quality and impedes valuation.</td><td>HIGH financial reporting quality enables assessment. HIGH earnings quality increases company value.</td></tr>
<tr><td>Low</td><td>HIGH financial reporting quality enables assessment. LOW earnings quality decreases company value.</td></tr>
</table>

As can be seen in Exhibit 1, if financial reporting quality is low, the information provided is not useful to assess the company's performance and thus to make investment and other decisions.

Financial reporting quality varies across companies. High-quality reports contain information that is relevant, complete, neutral, and free from error. The lowest-quality reports contain information that is pure fabrication. Earnings (results) quality can range from high and sustainable to low and unsustainable. Providers of resources prefer high and sustainable earnings. Combining the two measures of quality—financial reporting and earnings—the overall quality of financial reports from a user perspective can be thought of as spanning a continuum from the highest to the lowest. Exhibit 2 presents a quality spectrum that provides a basis for evaluating better versus poorer quality reports. This spectrum ranges from reports that are of high financial reporting quality and reflect high and sustainable earnings quality to reports that are not useful because of poor financial reporting quality.

EXHIBIT 2 Quality Spectrum of Financial Reports



2.1. GAAP, Decision-Useful, Sustainable, and Adequate Returns

At the top of the spectrum, labeled in Exhibit 2 as "GAAP, decision-useful, sustainable, and adequate returns" are high-quality reports that provide useful information about high-quality earnings.

- High-quality financial reports conform to the generally accepted accounting principles (GAAP) of the jurisdiction, such as International Financial Reporting Standards (IFRS), US GAAP, or other home-country GAAP. The exhibit uses the term GAAP to refer generically to the accounting standards accepted in a company's jurisdiction.
- In addition to conforming to GAAP, high-quality financial reports also embody the characteristics of decision-useful information such as those defined in the *Conceptual Framework*.[2] Recall that the fundamental characteristics of useful information are relevance and faithful representation. Relevant information is defined as information that can affect a decision and encompasses the notion of materiality. (Information is considered material

[2] The characteristics of decision-useful information are identical under IFRS and US GAAP. In September 2010, the IASB adopted the *Conceptual Framework for Financial Reporting* in place of the *Framework for the Preparation and Presentation of Financial Statements* (1989). The *Conceptual Framework* represents the partial completion of a joint convergence project between the IASB and FASB on an updated framework. The *Conceptual Framework* (2010) contains two updated chapters: "The Objective of Financial Reporting" and "Qualitative Characteristics of Useful Financial Information." The remainder of the material in the *Conceptual Framework* is from the *Framework* (1989) and will be updated as the project is completed. Also in September 2010, the FASB issued Concepts Statement 8, "Conceptual Framework for Financial Reporting," to replace Concepts Statements 1 and 2.

if "omitting it or misstating it could influence decisions that users make on the basis of the financial information of a specific reporting entity."[3]) Faithful representation of economic events is complete, neutral, and free from error.

The *Conceptual Framework* also enumerates enhancing characteristics of useful information: comparability, verifiability, timeliness, and understandability. Of course, the desirable characteristics for financial information require trade-offs. For example, financial reports must balance the aim of providing information that is produced quickly enough to be timely and thus relevant, and yet not so quickly that errors occur. Financial reports must balance the aim of providing information that is complete but not so exhaustive that immaterial information is included. High-quality information results when these and other tradeoffs are made in an unbiased, skillful manner.

- High-quality earnings indicate an adequate level of return on investment and derive from activities that a company will likely be able to sustain in the future. An adequate level of return on investment exceeds the cost of the investment and also equals or exceeds the expected return. Sustainable activities and sustainable earnings are those expected to recur in the future. Sustainable earnings that provide a high return on investment contribute to higher valuation of a company and its securities.

2.2. GAAP, Decision-Useful, but Sustainable?

The next level down in Exhibit 2, "GAAP, decision-useful, but sustainable?" refers to circumstances in which high-quality reporting provides useful information, but that information reflects results or earnings that are not sustainable (lower earnings quality). The earnings may not be sustainable because the company cannot expect earnings that generate the same level of return on investment in the future or because the earnings, although replicable, will not generate sufficient return on investment to sustain the company. Earnings quality is low in both cases. Reporting can be high quality even when the economic reality being depicted is not of high quality. For example, consider a company that generates a loss, or earnings that do not provide an adequate return on investment, or earnings that resulted from non-recurring activities. The relatively undesirable economic reality could nonetheless be depicted in financial reporting that provides high-quality, decision-useful information.

Exhibit 3 presents an excerpt from the fiscal year 2014 first-quarter results of Toyota Motor Corporation (TYO: 7203), a Japanese automobile company. As highlighted by a *Wall Street Journal* article,[4] the company sold fewer cars but reported an 88% increase in operating profits compared with the prior year, primarily because of the change in exchange rates. The weaker yen benefited Toyota both because the company manufacturers more cars in Japan (compared with its competitors) and because the company sells a significant number of cars outside of Japan. Exchange rate weakening is a less sustainable source of profits than manufacturing and selling cars. In summary, this example is a case of high-quality financial reporting coupled with lower earnings quality.

[3]Text from conceptual frameworks referenced in Note 4.
[4]Back (2013).

EXHIBIT 3 Excerpt from Toyota Motor Corporation's Consolidated Financial Results for FY2014 First Quarter Ending 30 June 2013

Consolidated vehicle unit sales in Japan and overseas decreased by 37 thousand units, or 1.6%, to 2,232 thousand units in FY2014 first quarter (the three months ended June 30, 2013) compared with FY2013 first quarter (the three months ended June 30, 2012). Vehicle unit sales in Japan decreased by 51 thousand units, or 8.8%, to 526 thousand units in FY2014 first quarter compared with FY2013 first quarter. Meanwhile, overseas vehicle unit sales increased by 14 thousand units, or 0.8%, to 1,706 thousand units in FY2014 first quarter compared with FY2013 first quarter.

As for the results of operations, net revenues increased by 753.7 billion yen, or 13.7%, to 6,255.3 billion yen in FY2014 first quarter compared with FY2013 first quarter, and operating income increased by 310.2 billion yen, or 87.9%, to 663.3 billion yen in FY2014 first quarter compared with FY2013 first quarter. The factors contributing to an increase in operating income were the effects of changes in exchange rates of 260.0 billion yen, cost reduction efforts of 70.0 billion yen, marketing efforts of 30.0 billion yen and other factors of 10.2 billion yen. On the other hand, the factors contributing to a decrease in operating income were the increase in expenses and others of 60.0 billion yen.

2.3. Biased Accounting Choices

The next level down in the spectrum in Exhibit 2 is "Within GAAP, but biased choices." Biased choices result in financial reports that do not faithfully represent economic phenomena. The problem with bias in financial reporting, as with other deficiencies in financial reporting quality, is that it impedes an investor's ability to correctly assess a company's past performance, to accurately forecast future performance, and thus, to appropriately value the company.

Choices are deemed to be "aggressive" if they increase a company's reported performance and financial position in the current period. The choice can increase the amount of revenues, earnings, and/or operating cash flow reported in the period or decrease the amount of expenses reported in the period and/or the amount of debt reported on the balance sheet. Aggressive choices may decrease the company's reported performance and financial position in later periods. In contrast, choices are deemed "conservative" if they decrease a company's reported performance and financial position in the current period. Conservative choices may decrease the amount of revenues, earnings, and/or operating cash flow reported in the period or increase the amount of expenses reported in the period and/or the amount of debt reported on the balance sheet. Conservative choices may increase the company's reported performance and financial position in later periods.

Another type of bias is understatement of earnings volatility, so-called earnings "smoothing." Earnings smoothing can result from conservative choices to understate earnings in periods when a company's operations are performing well plus aggressive choices in periods when the company's operations are struggling.

Biased choices can be made not only in the context of reported amounts but also in the context of how information is presented. For example, companies can disclose information transparently and in a manner that facilitates analysis, or they can disclose information in a manner that aims to obscure unfavorable information and/or to emphasize favorable information.

EXAMPLE 1 Quality of Financial Reports

PACCAR Inc. (PCAR: NasdaqGS) designs, manufactures, and distributes trucks and related aftermarket parts that are sold worldwide under the Kenworth, Peterbilt, and DAF nameplates. In 2013, the US SEC charged PACCAR for various accounting deficiencies that "clouded their financial reporting to investors in the midst of the financial crisis." The SEC complaint cites the company's 2009 segment reporting. Exhibit 4A presents an excerpt from the notes to PACCAR's financial statements, and Exhibit 4B presents an excerpt from the management's discussion and analysis (MD&A) of PACCAR's annual report.

EXHIBIT 4A Excerpt from Notes to PACCAR's 2009 Financial Statements

S. SEGMENT AND RELATED INFORMATION
PACCAR operates in two principal segments, Truck and Financial Services.
The Truck segment includes the manufacture of trucks and the distribution of related aftermarket parts, both of which are sold through a network of independent dealers. . . . The Financial Services segment is composed of finance and leasing products and services provided to truck customers and dealers. . . . Included in All Other is PACCAR's industrial winch manufacturing business. Also within this category are other sales, income and expenses not attributable to a reportable segment, including a portion of corporate expense.

Business Segment Data ($ millions)

	2009	2008	2007
Income before Income Taxes			
Truck	$ 25.9	$1,156.5	$1,352.8
All other	42.2	6.0	32.0
	68.1	1,162.5	1,384.8
Financial services	84.6	216.9	284.1
Investment income	22.3	84.6	95.4
	$175.0	$1,464.0	$1,764.3

EXHIBIT 4B Excerpt from MD&A of PACCAR's 2009 Annual Report

Net sales and revenues and gross margins for truck units and aftermarket parts are provided below. The aftermarket parts gross margin includes direct revenues and costs, but excludes certain truck segment costs.

	2009	2008	% Change
Net Sales and Revenues			
Trucks	$5,103.30	$11,281.30	–55
Aftermarket parts	1,890.70	2,266.10	–17
	$6,994.00	$13,547.40	–48
Gross Margin			
Trucks	–$ 46.6	$ 1,141.70	–104
Aftermarket parts	625.7	795.20	–21
	$ 579.1	$ 1,936.90	–70

1. Based on the segment data excerpted from the notes to the financial statements, was PACCAR's truck segment profitable in 2009?
2. Based on the data about the truck's gross margin presented in the MD&A, was PACCAR's truck segment profitable in 2009?
3. What is the main difference between the note presentation and the MD&A presentation?
4. The SEC complaint stated that "PACCAR failed to report the operating results of its aftermarket parts business separately from its truck sales business as required under segment reporting requirements, which are in place to ensure that investors gain the same insight into a company as its executives." Is the PACCAR situation an example of issues with financial reporting quality, earnings quality, or both?

Solution to 1: Yes, the segment data presented in the note to the financial statements indicates that the Truck segment earned $25.9 million in 2009.

Solution to 2: No, the segment data presented in the MD&A indicates that the Truck segment had a negative gross margin.

Solution to 3: The main difference between the note presentation and the MD&A presentation is that the aftermarket parts business is combined with the trucks business in the notes but separated in the MD&A. Although the data are not exactly comparable in the two disclosures (because the note shows income before taxes and the MD&A shows gross profit), the two disclosures present a different picture of PACCAR's profits from truck sales.

Solution to 4: The PACCAR situation appears to be an example of issues with both financial reporting quality and earnings quality. The substantial decrease in truck sales and the negative gross margin reflect poor earnings quality. The failure to disclose clear segment information is an instance of poor financial reporting quality.

Emphasizing non-GAAP financial measures (such as pro forma earnings) in order to deflect attention from less-than-desirable financial results is an example of an aggressive presentation choice. Exhibit 5 illustrates an aggressive presentation choice. In 1999, Trump Hotels & Casino Resorts announced third-quarter earnings before interest, taxes, depreciation, and amortization (EBITDA) of $106.7 million, a significant increase relative to the prior year. In fact, the reported EBITDA excluded a one-time charge of $81.4 million but included a one-time gain of $17.2 million. The release stated that the one-time charge was excluded but did not disclose the one-time gain, which was classified in revenues. On a GAAP basis, the company's quarterly net income had decreased from a $5.3 million profit to a loss of $67.5 million. The SEC reviewed this disclosure and concluded that the press release was misleading because "it created the false and misleading impression that the Company had exceeded earnings expectations primarily through operational improvements, when in fact it had not."[5]

EXHIBIT 5 Illustration of Aggressive Presentation Choice: Earnings Announcement

TRUMP HOTELS & CASINO RESORTS THIRD QUARTER RESULTS

October 25, 1999
EBITDA INCREASED TO $106.7 MILLION VS. $90.6 MILLION IN 1998
NET PROFIT INCREASED TO 63 CENTS PER SHARE VS. 24 CENTS PER SHARE IN 1998
Trump Hotels & Casino Resorts, Inc. (NYSE:DJT) announced today that for the third quarter ended September 30, 1999, consolidated net revenues were $403.1 million compared to $397.4 million reported for the same period in 1998. THCR's EBITDA (earnings before interest, taxes, depreciation, amortization, Trump World's Fair charge and corporate expenses) for the quarter was $106.7 million versus $90.6 million reported for the prior year's third quarter. Net income increased to $14.0 million or $0.63 per share, before a one-time Trump World's Fair charge, compared to $5.3 million or $0.24 per share in 1998.

Since 2003, if a company uses a non-GAAP financial measure[6] in an SEC filing, it is required to display the most directly comparable GAAP measure with equal prominence and to provide a reconciliation between the non-GAAP measure and the equivalent GAAP measure. In other words, a company is not allowed to give more prominence to a non-GAAP financial measure in an SEC filing.

[5]Accounting and Auditing Enforcement Release No. 1499, "In the Matter of Trump Hotels & Casino Resorts," SEC (16 January 2002): www.sec.gov/litigation/admin/34-45287.htm. Since 2003, the SEC has required that companies display GAAP earnings and non-GAAP earnings with equal prominence and has required a reconciliation. See "Final Rule: Conditions for Use of Non-GAAP Financial Measures," (Releases 33-8176 and 34-47226, File S7-43-02): www.sec.gov/rules/final/33-8176.htm.

[6]Non-domestic private issuers can file financial statements prepared in accordance with IFRS without reconciliation to US GAAP. The SEC recognizes US GAAP and IFRS as GAAP.

Similarly, the IFRS Practice Statement "Management Commentary," issued December 2010, requires disclosures when non-IFRS measures are included in financial reports:

> If information from the financial statements has been adjusted for inclusion in management commentary, that fact should be disclosed. If financial performance measures that are not required or defined by IFRSs are included within management commentary, those measures should be defined and explained, including an explanation of the relevance of the measure to users. When financial performance measures are derived or drawn from the financial statements, those measures should be reconciled to measures presented in the financial statements that have been prepared in accordance with IFRSs. (Page 17)

The reconciliation between as-reported measures (GAAP financial measures presented in the financial statements) and as-adjusted measures (non-GAAP financial measures presented in places other than the financial statements) can provide important information.

EXAMPLE 2 Presentation of Non-GAAP Financial Measures

Nokia Corporation (NASDAQ OMX Helsinki and NYSE:NOK), a global telecommunications company headquartered in Finland, operates three businesses: Devices & Services, HERE (the new brand for location and mapping services, formerly called Location & Commerce), and Nokia Siemens Networks. Exhibit 6 presents an excerpt from the company's Interim Report for the second quarter ending June 2013.

EXHIBIT 6 Excerpt from Summary Financial Information

	Reported and Non-IFRS Second Quarter 2013 Results[1,2,3]				
EUR million	Q2/13	Q2/12	YoY Change	Q1/13	QoQ Change
Nokia					
Net sales	5,695	7,542	–24%	5,852	–3%
Operating profit	–115	–824		–150	
Operating profit (non-IFRS)	303	–325		181	67%
EPS, EUR diluted	–0.06	–0.38		–0.07	
EPS, EUR diluted (non-IFRS)	0.00	–0.08		–0.02	

The following excerpt explains the term "non-IFRS."

> **Note 1 relating to non-IFRS (also referred to as "underlying") results:** In addition to information on our reported IFRS results, we provide certain information on a non-IFRS, or underlying business performance, basis. Non-IFRS results exclude all material special items for all periods. In

> addition, non-IFRS results exclude intangible asset amortization, other purchase price accounting related items and inventory value adjustments arising from (i) the formation of Nokia Siemens Networks and (ii) all business acquisitions completed after June 30, 2008. Nokia believes that our non-IFRS results provide meaningful supplemental information to both management and investors regarding Nokia's underlying business performance by excluding the above-described items that may not be indicative of Nokia's business operating results. These non-IFRS financial measures should not be viewed in isolation or as substitutes to the equivalent IFRS measure(s), but should be used in conjunction with the most directly comparable IFRS measure(s) in the reported results. See note 2 below for information about the exclusions from our non-IFRS results. More information, including a reconciliation of our Q2 2013 and Q2 2012 non-IFRS results to our reported results, can be found. . . .

In an excerpt from Note 2, the company also disclosed the following.

Note 2 relating to non-IFRS exclusions:

Q2 2013—EUR 418 million (net) consisting of:

- EUR 157 million restructuring charge and other associated items in Nokia Siemens Networks.
- EUR 151 million losses related to divestments of businesses in Nokia Siemens Networks.
- EUR 10 million restructuring charge in HERE.
- EUR 12 million of intangible asset amortization and other purchase price accounting related items arising from the acquisition of Motorola Solutions' networks assets.
- EUR 87 million of intangible asset amortization and other purchase price accounting related items arising from the acquisition of NAVTEQ.
- EUR 1 million of intangible assets amortization and other purchase price accounting related items arising from the acquisition of Novarra, MetaCarta and Motally in Devices & Services.

Note 3 related to changes to historical comparative financial results due to revised IFRS accounting standard, IAS 19 Employee benefits.

1. Based on the information provided, explain the differences between the following two disclosures contained in Nokia's interim statement:
   A. The first page of the interim report includes the following statement as a second-quarter 2013 highlight: "Nokia Group achieved underlying operating profitability for the fourth consecutive quarter, with a Q2 non-IFRS operating margin of 5.3% . . . ."
   B. Nokia's Consolidated Income Statements (found on page 20 of the interim report) report a EUR278 million net loss.
2. How does the heading "Q2 2013—EUR418 million" from Nokia's Note 2 correspond with the excerpt from the company's Summary Financial Information shown in Exhibit 6?

Solution to 1: As shown in Note 1, the company uses the term "underlying" to refer to non-IFRS metrics. The non-IFRS metric disclosed in A, "non-IFRS operating margin"—by definition—does not appear within financial statements prepared in accordance with IFRS. Here, it is referred to as a non-IFRS metric because information on the company's financial statements has been adjusted. In contrast, the IFRS metric disclosed in B, "net loss," is clearly presented on an income statement prepared in accordance with IFRS. Another difference between Disclosures A and B is that they refer to two different metrics: A refers to operating profit and B refers to net profit (loss). These two items appear on two different lines of the income statement. In general, operating profit (or operating loss) is before deductions for non-operating items, such as interest and taxes. The company's operating profit in accordance with IFRS was a negative EUR115 million—in other words, a EUR115 million operating loss. Note that as shown in Exhibit 6, the second-quarter non-IFRS operating profit was EUR303 million and second-quarter net sales totaled EUR5,695 million. As indicated in Disclosure A, the non-IFRS operating margin is 5.3% (= 303/5,695).

Overall, there are three key differences between Disclosures A and B: (1) A refers to a non-IFRS metric rather than an IFRS metric; (2) A refers to operating profit, which was positive, rather than to net income, which was negative; and (3) A highlights a positive economic outcome. An analyst should be aware of the alternative means by which earnings announcements can paint a positive picture of companies' results.

Solution to 2: The heading "Q2 2013—EUR418 million" refers to the difference between the company's non-IFRS operating profit of EUR303 million and the company's operating loss of EUR115 million calculated in accordance with IFRS. The next lines indicate the components of the EUR418 million that were excluded when calculating the non-IFRS operating profit but included when calculating the IFRS operating profit (loss).

Often, poor reporting quality occurs simultaneously with poor earnings quality; for example, aggressive accounting choices are made to obscure poor performance. It is also possible, of course, for poor reporting quality to occur with high-quality earnings. Although a company with good performance would not require aggressive accounting choices to obscure poor performance, it might nonetheless produce poor-quality reports for other reasons. A company with good performance might be unable to produce high-quality reports because of inadequate internal systems.

Another scenario in which poor reporting quality might occur simultaneously with high quality earnings is that a company with good performance might deliberately produce reports based on "conservative" rather than aggressive accounting choices—that is, choices that make current performance look worse. One motivation might be to avoid unwanted political attention. Another motivation could arise in a period in which management had already exceeded targets before the end of the period and thus made conservative accounting choices that would delay reporting profits until the following period (so-called "hidden reserves"). Similar motivations might also contribute to accounting choices that create the appearance that the trajectory of future results would appear more attractive. For example, a company might make choices to accelerate losses in the first year of an acquisition or the first year of a new CEO's tenure so that the trajectory of future results would appear more attractive.

Overall, *unbiased* financial reporting is the ideal and the preference. Investors may prefer conservative choices rather than aggressive ones, however, because a positive surprise is easier to tolerate than a negative surprise. Biased reporting, whether conservative or aggressive, adversely affects a user's ability to assess a company.

The quality spectrum considers the more intuitive situation in which less-than-desired underlying economics are the central motivation for poor reporting quality. In addition, it is necessary to have some degree of reporting quality in order to evaluate earnings quality. Proceeding down the spectrum, therefore, the concepts of reporting quality and earnings quality become progressively less distinguishable.

2.3.1. Within GAAP, but "Earnings Management"

The next level down on the spectrum in Exhibit 2 is labeled "Within GAAP, but 'earnings management.'" The term "earnings management" is defined here as making intentional choices that create biased financial reports.[7] The distinction between earnings management and biased choices is subtle and, primarily, a matter of intent. Earnings management represents "deliberate actions to influence reported earnings and their interpretation" (Ronen and Yaari, 2008). Earnings can be "managed" upward (increased) by taking *real* actions, such as deferring research and development (R&D) expenses into the next reporting period. Alternatively, earnings can be increased by *accounting* choices, such as changing accounting estimates. For example, the amount of estimated product returns, bad debt expense, or asset impairment could be decreased. Because it is difficult to determine intent, we include earnings management under the biased choices discussion.

2.4. Departures from GAAP

The next levels down on the spectrum in Exhibit 2 mark departures from GAAP. Financial reporting that departs from GAAP can generally be considered low quality. In such situations, earnings quality is likely difficult or impossible to assess because comparisons with earlier periods and/or other entities cannot be made. An example of improper accounting was Enron (accounting issues revealed in 2001), whose inappropriate use of off-balance-sheet structures and other complex transactions resulted in vastly understated indebtedness as well as overstated profits and operating cash flow. Another notorious example of improper accounting was WorldCom (accounting issues discovered in 2002), a company that by improperly capitalizing certain expenditures dramatically understated its expenses and thus overstated its profits. More recently, New Century Financial (accounting issues revealed in 2007) issued billions of dollars of subprime mortgages and improperly reserved only minimal amounts for loan repurchase losses. Each of these companies subsequently filed for bankruptcy.

In the 1980s, Polly Peck International (PPI) reported currency losses, incurred in the normal course of operations, directly through equity rather than in its profit and loss statements. In the 1990s, Sunbeam improperly reported revenues from "bill-and-hold" sales and also manipulated the timing of expenses in an effort to falsely portray outstanding performance of its then-new chief executive.

[7] Various definitions have appeared in academic research. Closest to the discussion here is Schipper (1989), which uses the term "earnings management" to mean "'disclosure management' in the sense of a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed to, say, merely facilitating the neutral operation of the process)."

At the bottom of the quality spectrum, fabricated reports portray fictitious events, either to fraudulently obtain investments by misrepresenting the company's performance and/or to obscure fraudulent misappropriation of the company's assets. Examples of fraudulent reporting are unfortunately easy to find, although they were not necessarily easy to identify at the time. In the 1970s, Equity Funding Corp. created fictitious revenues and even fictitious policyholders. In the 1980s, Crazy Eddie's reported fictitious inventory as well as fictitious revenues supported by fake invoices. In 2004, Parmalat reported fictitious bank balances.

EXAMPLE 3 Spectrum for Assessing Quality of Financial Reports

Jake Lake, a financial analyst, has identified several items in the financial reports of several (hypothetical) companies. Describe each of these items in the context of the financial reporting quality spectrum.

1. ABC Co.'s 2012 earnings totaled $233 million, including a $100 million gain from selling one of its less profitable divisions. ABC's earnings for the prior three years totaled $120 million, $107 million, and $111 million. The company's financial reports are extremely clear and detailed, and the company's earnings announcement highlights the one-time nature of the $100 million gain.
2. DEF Co. discloses that in 2012, it changed the depreciable life of its equipment from 3 years to 15 years. Equipment represents a substantial component of the company's assets. The company's disclosures indicate that the change is permissible under the accounting standards of its jurisdiction but provide only limited explanation of the change.
3. GHI Co.'s R&D expenditures for the past five years have been approximately 3% of sales. In 2012, the company significantly reduced its R&D expenditures. Without the reduction in R&D expenditures, the company would have reported a loss. No explanation is disclosed.

Solution to 1: ABC's 2012 total earnings quality can be viewed as low because nearly half of the earnings are derived from a non-sustainable activity, namely the sale of a division. ABC's 2012 quality of earnings from continuing operations may be high because the amounts are fairly consistent from year to year, although an analyst would undertake further analysis to confirm earnings quality. In general, a user of financial reports should look beyond the bottom-line net income. The description provided suggests that the company's reporting quality is high; the reports are clear and detailed, and the one-time nature of the $100 million gain is highlighted.

Solution to 2: DEF's accounting choice appears to be within permissible accounting standards, but its effect is to substantially lower depreciation expense and thus to increase earnings for the year. The quality of reported earnings is questionable. Although the new level of earnings may be sustainable, similar increases in earnings for future periods might not be achievable, because increasing earnings solely by changing accounting estimates is likely not sustainable. In addition, the description provided suggests that

the company's reporting quality is low because it offers only a limited explanation for the change.

Solution to 3: GHI's operational choice to reduce its R&D may reflect real earnings management because the change enabled the company to avoid reporting a loss. In addition, the description provided suggests that the company's reporting quality is low because it does not offer an explanation for the change.

2.5. Differentiate between Conservative and Aggressive Accounting

This section returns to the implications of conservative and aggressive accounting choices. As mentioned earlier, *unbiased* financial reporting is the ideal. But investors may prefer or be perceived to prefer conservative rather than aggressive accounting choices because a positive surprise is acceptable. In contrast, management may prefer or be perceived to prefer aggressive accounting choices because they increase the company's reported performance and financial position in the current period.

Aggressive accounting choices in the current period may decrease the company's reported performance and financial position in later periods, which creates a sustainability issue. Conservative choices do not typically create a sustainability issue, because they decrease the company's reported performance and financial position in the current period and may increase its reported performance and financial position in later periods. In terms of establishing expectations for the future, however, financial reporting that is relevant and faithfully representative is the most useful.

A common presumption is that financial reports are typically biased upward, but that is not always the case. Although accounting standards ideally promote unbiased financial reporting, some accounting standards may specifically require a conservative treatment of a transaction or an event. Also, managers may choose to take a conservative approach when applying standards. It is important that an analyst consider the possibility of conservative choices and their effects.

At its most extreme, conservatism follows accounting practices that "anticipate no profit, but anticipate all losses" (Bliss, 1924). But in general, conservatism means that revenues may be recognized once a verifiable and legally enforceable receivable has been generated and that losses need not be recognized until it becomes "probable" that an actual loss will be incurred. Conservatism is not an absolute but is characterized by degrees, such as "the accountant's tendency to require a higher degree of verification to recognize good news as gains than to recognize bad news as losses" (Basu, 1997). From this perspective, "verification" (e.g., physical existence of inventories, evidence of costs incurred or to be incurred, or establishment of rights and obligations on legal grounds) drives the degree of conservatism: For recognition of revenues, a higher degree of verification would be required than for expenses.

2.5.1. Conservatism in Accounting Standards

The *Conceptual Framework* supports neutrality of information: "A neutral depiction is without bias in the selection or presentation of financial information."[8] Neutrality—lack of upward or

[8]IASB and FASB, *The Conceptual Framework for Financial Reporting* (2010):QC 14.

downward bias—is considered a desirable characteristic of financial reporting. Conservatism directly conflicts with the characteristic of neutrality because the asymmetric nature of conservatism leads to bias in measuring assets and liabilities—and ultimately, earnings.

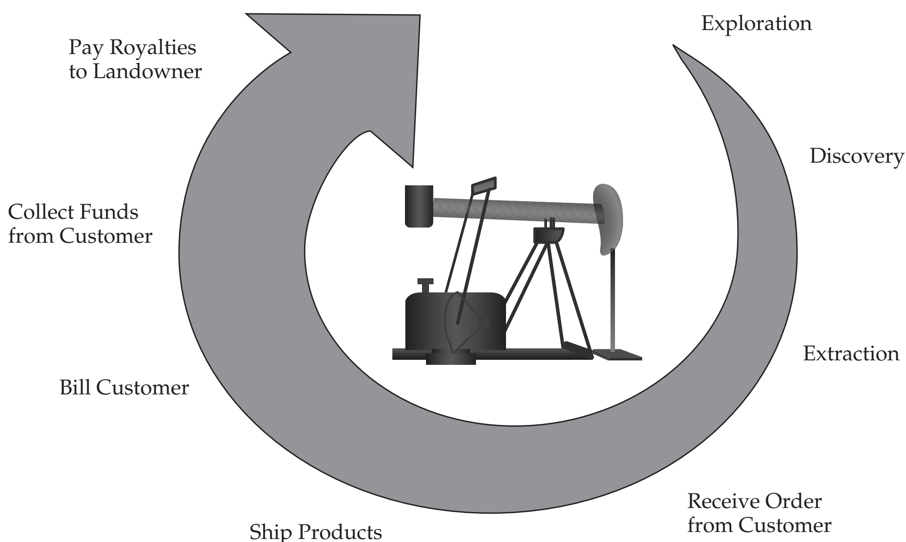
Despite efforts to support neutrality in financial reporting, however, many conservatively biased standards remain. These standards result in downward-biased pictures of earnings and financial position within financial reports. Without care, this biased portrayal can result in biased estimates of future prospects developed using financial reports.

Example 4 illustrates the issues posed by conservative accounting practices for analyzing financial reports of companies engaged in the exploration and production of underground natural resources—oil and gas, coal, precious metals, and so on.

EXAMPLE 4 Accounting Conservatism in Extractive Industries

Exhibit 7 depicts the typical exploration and production operating cycle, beginning with exploration activities, through realization of cash from customers, and beyond, to the payment of royalties from cash collections that are often due to landowners and/or host governments.

EXHIBIT 7 The Extractive Industries Production Cycle



Under both IFRS and US GAAP, companies in the oil and gas industry recognize revenue after the product has been shipped. In addition, under both sets of standards, companies may capitalize some acquisition, exploration, and development costs, but extraction costs are expensed as they are incurred. Thus, extraction costs are expensed during the period between discovery and the time of sale.

1. Why is the revenue recognition accounting standard in the oil and gas industry characterized as conservative?
2. Why is the expense recognition accounting standard in the oil and gas industry characterized as conservative?

Solution to 1: The most significant "good news" events for an oil exploration and production company, by far, are discoveries of oil and gas "reserves." Ironically, one could not possibly know this critical fact from looking at the company's reported earnings, because conservative accounting standards delay recognition of sales revenue until the energy resources are extracted, a customer is identified, and product is shipped. Conservative accounting standards prohibit recognition of the first revenues from an oil and gas reserve until years after its actual discovery.

Solution to 2: Because extraction costs must be expensed rather than capitalized, a company may report losses (or reduced profits) during the periods between discovery and the first sales from an oil field—even though the oil exists with certainty and possesses saleable value.

The unavoidable conclusion is that conservatism—which can now be characterized as a delay in the recognition in profits from when they are actually created until a point at which they are subject to a sufficiently high level of verification—sometimes impairs the relevance of financial statements for external decision makers. In the particular case of oil and gas exploration and production, many jurisdictions require extensive supplemental disclosures about operations, which reduce the problem to a degree.

Standards across jurisdictions may differ on the extent of conservatism embedded within the standards. An analyst should be aware of the implications of accounting standards on the financial reports.

An example is the different treatment by IFRS and US GAAP for the impairment of long-lived assets.[9] Both IFRS and US GAAP specify an impairment analysis protocol that begins with an assessment of whether recent events indicate that the economic benefit from an individual or group of long-lived assets may be less than its carrying amount(s). From that point on, however, the two regimes diverge:

- Under IFRS, if the "recoverable amount" (a concept similar to fair value) is less than the carrying amount, then an impairment charge will be recorded.
- Under US GAAP, an impairment charge will be recorded only when the sum of the undiscounted future cash flows expected to be derived from the asset(s) is less than the carrying amount(s).

To illustrate the difference in application, assume that a factory is the unit of account eligible for impairment testing: Its carrying amount is $10,000,000; "fair value" and "recoverable amount" are both $6,000,000; and the undiscounted future net cash flows associated with the factory total $10,000,000. Under IFRS, an impairment charge of $4,000,000 would be recorded; but under US GAAP, no impairment charge would be recognized.

[9] See IAS 36 and FASB ASC Section 360-10-35.

Thus, on its face, IFRS would be regarded as more conservative than US GAAP because impairment losses would normally be recognized earlier under IFRS than under US GAAP. But, taking the analysis one step further, such a broad generalization may not hold up. For example, IFRS permits the recognition of recoveries of the recoverable amount in subsequent periods if evidence indicates that the recoverable amount has subsequently increased. In contrast, US GAAP prohibits the subsequent write-up of an asset after an impairment charge has been taken; it would recognize the asset's increased value only when the asset is ultimately sold.

Other common examples of conservatism in accounting standards include the following:

- *Research costs*. Because the future benefit of research costs is uncertain at the time the costs are incurred, both US GAAP and IFRS require immediate expensing instead of capitalization.
- *Litigation losses*. When it becomes "probable" that a cost will be incurred, both US GAAP and IFRS require expense recognition, even though a legal liability may not be incurred until a future date.
- *Insurance recoverables*. Generally, a company that receives payment on an insurance claim may not recognize a receivable until the insurance company acknowledges the validity of the claimed amount.
- *Commodity inventories*. Increases in the market prices of commodity inventories held may not be recognized unless they are sold, despite the fact that identifying a specific buyer is a relatively inconsequential activity from an economic standpoint.

Watts (2003) reviews empirical studies of conservatism, and identifies four potential benefits of conservatism:

- Given asymmetrical information, conservatism may protect the contracting parties with less information and greater risk. This protection is necessary because the contracting party may be at a disadvantage. For example, corporations that access debt markets have limited liability, and lenders thus have limited recourse to recover their losses from shareholders. As another example, executives who receive earnings-based bonuses might not be subject to having those bonuses "clawed back" if earnings are subsequently discovered to be overstated.
- Conservatism reduces the possibility of litigation and, by extension, litigation costs. Rarely, if ever, is a company sued because it understated good news or overstated bad news.
- Conservative rules may protect the interests of regulators and politicians by reducing the possibility that fault will be found with them if companies overstate earnings or assets.
- In many tax jurisdictions, financial and tax reporting rules are linked. For example, in Germany and Japan, only deductions taken against reported income can be deducted against taxable income. Hence, companies can reduce the present value of their tax payments by electing conservative accounting policies for certain types of events.

Analysts should consider possible conservative and aggressive biases and their consequences when examining financial reports. Current-period financial reports may be unbiased, upward biased through aggressive accounting choices, downward biased through conservative accounting choices, or biased through a combination of conservative and aggressive accounting choices.

2.5.2. Bias in the Application of Accounting Standards

Any application of accounting standards, whether the standard itself is neutral or not, often requires significant amounts of judgment. Characterizing the application of an accounting standard as conservative or aggressive is more a matter of intent rather than definition.

Careful analysis of disclosures, facts, and circumstances contributes to making an accurate inference of intent. Management seeking to manipulate earnings may take a longer view by sacrificing short-term profitability in order to ensure higher profits in later periods. One example of biased accounting in the guise of conservatism is the so-called "big bath" restructuring charges. Both US GAAP and IFRS provide for accrual of future costs associated with restructurings, and these costs are often associated with and presented along with asset impairments. But in some instances, companies use the accounting provisions to estimate "big" losses in the current period so that performance in future periods will appear better. Having observed numerous instances of manipulative practices in the late 1990s, in which US companies set up opportunities to report higher profits in future periods that were not connected with performance in those periods, the SEC staff issued rules that narrowed the circumstances under which costs can be categorized as part of a "non-recurring" restructuring event and enhanced the transparency surrounding restructuring charges and asset impairments.[10]

A similar manifestation of "big bath" accounting is often referred to as "cookie jar reserve accounting." Both US GAAP and IFRS require accruals of estimates of future non-payments of loans. In his 1998 speech "The 'Numbers Game,'" SEC chair Arthur Levitt expressed the general concern that corporations were overstating loans and other forms of loss allowances for the purpose of smoothing income over time.[11] In 2003, the SEC issued interpretive guidance that essentially requires a company to provide a separate section in management's discussion and analysis (MD&A) titled "Critical Accounting Estimates."[12] If the effects of subjective estimates and judgments of highly uncertain matters are material to stakeholders (investors, customers, suppliers, and other users of the financial statements), disclosures of their nature and exposure to uncertainty should be made in the MD&A. This requirement is in addition to required disclosures in the notes to the financial statements.

3. CONTEXT FOR ASSESSING FINANCIAL REPORTING QUALITY

In assessing financial reporting quality, it is useful to consider whether a company's managers may be motivated to issue financial reports that are not high quality. If motivation exists, an analyst should consider whether the reporting environment is conducive to managers' misreporting. It is important to consider mechanisms within the reporting environment that discipline financial reporting quality, such as the regulatory regime.

3.1. Motivations

Managers may be motivated to issue financial reports that are not high quality to mask poor performance, such as loss of market share or lower profitability than competitors. Lewis (2012)

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[10] SEC, "Restructuring and Impairment Charges," Staff Accounting Bulletin (SAB) No. 100 (1999): www.sec.gov/interps/account/sab100.htm.

[11] Arthur Levitt, "The 'Numbers Game,'" Remarks given at NYU Center for Law and Business (28 September 1998): www.sec.gov/news/speech/speecharchive/1998/spch220.txt.

[12] SEC, "Commission Guidance Regarding Management's Discussion and Analysis of Financial Condition and Results of Operations," Financial Reporting Release (FRR) No. 72 (2003): www.sec.gov/rules/interp/33-8350.htm.

stated, "A firm experiencing performance problems, particularly those it considers transient, may induce a response that inflates current earnings numbers in exchange for lower future earnings."

- Even when there is no need to mask poor performance, managers frequently have incentives to meet or beat market expectations as reflected in analysts' forecasts and/or management's own forecasts. Exceeding forecasts typically increases stock price, if only temporarily. Additionally, exceeding forecasts can increase management compensation that is linked to increases in stock price or to reported earnings. Graham, Harvey, and Rajgopal (2005) found that the CFOs they surveyed view earnings as the most important financial metric to financial markets. Achieving (or exceeding) particular benchmarks, including prior-year earnings and analysts' forecasts, is very important. The authors examined a variety of motivations for why managers might "exercise accounting discretion to achieve some desirable earnings goal." Motivations to meet earnings benchmarks include equity market effects (for example, building credibility with market participants and positively affecting stock price) and trade effects (for example, enhancing reputation with customers and suppliers). Equity market effects are the most powerful incentives, but trade effects are important, particularly for smaller companies.
- Career concerns and incentive compensation may motivate accounting choices. For example, managers might be concerned that working for a company that performs poorly will limit their future career opportunities or that they will not receive a bonus based on exceeding a particular earnings target. In both cases, management might be motivated to make accounting choices to increase earnings. In a period of marginally poor performance, a manager might accelerate or inflate revenues and/or delay or under report expenses. Conversely, in a period of strong performance, a manager might delay revenue recognition or accelerate expense recognition to increase the probability of exceeding the next period's targets (i.e., to "bank" some earnings for the next period.) The surveyed managers indicated a greater concern with career implications of reported results than with incentive compensation implications.

Avoiding debt covenant violations can motivate managers to inflate earnings. Graham, Harvey, and Rajgopal's survey indicates that avoidance of bond covenant violation is important to highly leveraged and unprofitable companies but relatively unimportant overall.

3.2. Conditions Conducive to Issuing Low-Quality Financial Reports

As discussed, deviations from a neutral presentation of financial results could be driven by management choices or by a jurisdiction's financial reporting standards. Ultimately, a decision to issue low-quality, or even fraudulent, financial reports is made by an individual or individuals. Why individuals make such choices is not always immediately apparent. For example, why would the newly appointed CEO of Sunbeam, who already had a net worth of more than $100 million, commit accounting fraud by improperly reporting revenues from "bill-and-hold" sales and manipulating the timing of expenses, rather than admit to lower-than-expected financial results?

Typically, three conditions exist when low-quality financial reports are issued: opportunity, motivation, and rationalization. Opportunity can be the result of internal conditions, such as poor internal controls or an ineffective board of directors, or external conditions, such as accounting standards that provide scope for divergent choices or minimal consequences for an

inappropriate choice. Motivation can result from pressure to meet some criteria for personal reasons, such as a bonus, or corporate reasons, such as concern about financing in the future. Rationalization is important because if an individual is concerned about a choice, he or she needs to be able to justify it to him- or herself.

Former Enron CFO Andrew Fastow, speaking at the 2013 Association of Certified Fraud Examiners Annual Fraud Conference, indicated that he knew at the time he was doing something wrong but followed procedure to justify his decision (Pavlo, 2013). He made sure to get management and board approval, as well as legal and accounting opinions, and to include appropriate disclosures. The incentive and corporate culture was to create earnings rather than focus on long-term value. Clearly, as reflected in his prison sentence, he did something that was not only wrong but illegal.

3.3. Mechanisms That Discipline Financial Reporting Quality

Markets potentially discipline financial reporting quality. Companies and nations compete for capital, and the cost of capital is a function of perceived risk—including the risk that a company's financial statements will skew investors' expectations. Thus, in the absence of other conflicting economic incentives, a company seeking to minimize its long-term cost of capital should aim to provide high-quality financial reports. In addition to markets, other mechanisms that discipline financial reporting quality include market regulatory authorities, auditors, and private contracts.

3.3.1. Market Regulatory Authorities

Companies seeking to minimize the cost of capital should maximize reporting quality, but as discussed earlier, conflicting incentives often exist. For this reason, national regulations, and the regulators that establish and enforce rules, can play a significant role in financial reporting quality. Many of the world's securities regulators are members of the International Organization of Securities Commissions (IOSCO). IOSCO is recognized as the "global standard setter for the securities sector." IOSCO's membership includes more than 120 securities regulators and 80 other securities market participants, such as stock exchanges.[13]

One member of IOSCO is the European Securities and Markets Authority (ESMA),[14] an independent EU authority with a mission to "enhance the protection of investors and reinforce stable and well-functioning financial markets in the European Union."[15] ESMA organizes financial reporting enforcement activities through a forum consisting of European enforcers from European Economic Area countries. Direct supervision and enforcement activities are performed at the national level. For example, the Financial Conduct Authority (FCA) is the IOSCO member with primary responsibility for securities regulation in the United Kingdom. ESMA reported that European enforcers performed 850 full and 1,100 partial reviews

[13] Visit www.iosco.org for more information.

[14] ESMA is an associate member of IOSCO. The individual countries' authorities are ordinary members of IOSCO. An ordinary member has primary responsibility for securities regulation in its jurisdiction and is the voting member of IOSCO. Some countries' stock exchanges are ordinary or affiliate members. An affiliate member is a self-regulatory body (SRO), or an international body, with an appropriate interest in securities regulation.

[15] Text from ESMA's mission statement on their website: www.esma.europa.eu.

of companies' accounts in 2011, which in turn led to enforcement actions with the following outcomes: 18 amended reports to restate financial statements, approximately 150 public corrective notes or announcements, and approximately 420 required corrections in future financial statements.[16]

Another member of IOSCO is the US regulatory authority, the Securities and Exchange Commission. The SEC is responsible for overseeing approximately 9,100 US public companies (along with investment advisers, broker/dealers, securities exchanges, and other entities) and reviews the disclosures of these companies at least once every three years with the aim of improving information available to investors and potentially uncovering possible violations of securities laws.[17] In 2002, the SEC reported that it had filed 515 enforcement actions for financial reporting and disclosure violations during the preceding five-year period (along with around 2,000 other types of enforcement actions) in which 68% of the named parties were charged with fraud.[18]

Examples of regulatory bodies in Asia include the Securities and Futures Commission in Hong Kong, the Financial Services Agency in Japan, the China Securities Regulatory Commission in the People's Republic of China, and the Securities and Exchange Board of India. Examples of regulatory bodies in South America include the Comisión Nacional de Valores in Argentina, Comissão de Valores Mobiliários in Brazil, and Superintendencia de Valores y Seguros in Chile. A full list of IOSCO members can be found on the organization's website.

Typical features of a regulatory regime that most directly affect financial reporting quality include the following:

- *Registration requirements*. Market regulators typically require publicly traded companies to register securities before offering the securities for sale to the public. A registration document typically contains current financial statements, other relevant information about the risks and prospects of the company issuing the securities, and information about the securities being offered.
- *Disclosure requirements*. Market regulators typically require publicly traded companies to make public periodic reports, including financial reports and management comments. Standard-setting bodies, such as the IASB and FASB, are typically private sector, self-regulated organizations with board members who are experienced accountants, auditors, users of financial statements, and academics. Regulatory authorities, such as the Accounting and Corporate Regulatory Authority in Singapore, the Securities and Exchange Commission in the United States, the Securities and Exchange Commission in Brazil, and the Financial Reporting Council in the United Kingdom, have the legal authority to enforce financial reporting requirements and exert other controls over entities that participate in the capital markets within their jurisdiction. In other words, *generally*, standard-setting bodies set the standards, and regulatory authorities recognize and enforce those standards. Without

[16] ESMA, "Activity Report on IFRS Enforcement in the European Economic Area in 2011," European Securities and Markets Authority (28 June 2012): www.esma.europa.eu.

[17] SEC, "FY2013 Congressional Justification," Securities and Exchange Commission (February 2012): www.sec.gov/about/secfy13congbudgjust.pdf.

[18] SEC, "Report Pursuant to Section 704 of the Sarbanes–Oxley Act of 2002," Securities and Exchange Commission (30 July 2002): www.sec.gov/news/studies/sox704report.pdf.

the recognition of standards by regulatory authorities, the private-sector standard-setting bodies would have no authority. Regulators often retain the legal authority to establish financial reporting standards in their jurisdiction and can overrule the private-sector standard-setting bodies.
- *Auditing requirements*. Market regulators typically require companies' financial statements to be accompanied by an audit opinion attesting that the financial statements conform to the relevant set of accounting standards. Some regulators, such as the SEC in the United States, require an additional audit opinion attesting to the effectiveness of the company's internal controls over financial reporting.
- *Management commentaries.* Regulations typically require publicly traded companies' financial reports to include statements by management. For example, the FCA in the United Kingdom requires a management report containing "(1) a fair review of the issuer's business; and (2) a description of the principal risks and uncertainties facing the issuer."
- *Responsibility statements*. Regulations typically require a statement from the person or persons responsible for the company's filings. Such statements require the responsible individuals to explicitly acknowledge responsibility and to attest to the correctness of the financial reports. Some regulators, such as the SEC in the United States, require formal certifications that carry specific legal penalties for false certifications.
- *Regulatory review of filings*. Regulators typically undertake a review process to ensure that the rules have been followed. The review process typically covers all initial registrations and a sample of subsequent periodic financial reports.
- *Enforcement mechanisms*. Regulators are granted various powers to enforce the securities market rules. Such powers can include assessing fines, suspending or permanently barring market participants, and bringing criminal prosecutions. Public announcements of disciplinary actions are also a type of enforcement mechanism.

In summary, market regulatory authorities play a central role in encouraging high-quality financial reporting.

3.3.2. Auditors

As noted, regulatory authorities typically require that publicly traded companies' financial statements be audited by an independent auditor. Private companies also obtain audit opinions for their financial statements, either voluntarily or because audit reports are required by an outside party, such as providers of debt or equity capital.

Audit opinions provide financial statement users with some assurance that the information complies with the relevant set of accounting standards and presents the company's information fairly. Exhibits 8, 9, and 10 provide excerpts from the independent auditors' reports for GlaxoSmithKline plc, Novartis Group, and the Nestlé Group, respectively. Note that for each company, the auditor issued an unqualified or clean opinion that reflects the specific requirements of the company's regulatory regime. For example, the audit opinions for Novartis include an SEC-required opinion on the effectiveness of internal controls because Novartis' securities trade in the United States. The SEC permits non-US companies to report using US GAAP, IFRS as issued by the IASB, or home-country GAAP. If a company reports using home-country GAAP, a reconciliation to US GAAP must be provided. Regardless of the standards used by a non-US company in preparing its financial statements, an opinion on internal controls' effectiveness is required.

EXHIBIT 8 Excerpts from Audit Opinion of PricewaterhouseCoopers LLP from the 2012 Annual Report of GlaxoSmithKline plc

In our opinion the Group financial statements:

- give a true and fair view of the state of the Group's affairs as at 31 December 2012 and of its profit and cash flows for the year then ended;
- have been properly prepared in accordance with IFRS as adopted by the European Union; and
- have been prepared in accordance with the requirements of the Companies Act 2006 and Article 4 of the IAS Regulation.

. . .

In our opinion the Group financial statements comply with IFRSs as issued by the IASB.

. . .

In our opinion the information given in the Directors' Report for the financial year for which the Group financial statements are prepared is consistent with the Group financial statements.

EXHIBIT 9 Excerpts from Audit Opinion of PricewaterhouseCoopers AG from the 2012 Annual Report of Novartis Group

In our opinion, the consolidated financial statements for the year ended December 31, 2012 present fairly, in all material respects, the financial position, the results of operations and the cash flows in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board and comply with Swiss law.

. . .

In our opinion, Novartis Group maintained, in all material respects, effective internal control over financial reporting as of December 31, 2012, based on criteria established in Internal Control – Integrated Framework issued by the COSO.

EXHIBIT 10 Excerpt from Audit Opinion of KPMG SA from the 2012 Annual Report of Nestlé Group

In our opinion, the consolidated financial statements [of the Nestlé Group] for the year ended 31 December 2012 give a true and fair view of the financial position, the results of operations and the cash flows in accordance with International Financial Reporting Standards (IFRS) and comply with Swiss law.

Although audit opinions provide discipline for financial reporting quality, inherent limitations exist. First, an audit opinion is based on a review of information prepared by the company. If a company deliberately intends to deceive its auditor, a review of information might not uncover misstatements. Second, an audit is based on sampling, and the

sample might not reveal misstatements. Third, an "expectations gap" may exist between the auditor's role and the public's expectation of auditors. An audit is not typically intended to detect fraud; it is intended to provide assurance that the financial reports are fairly presented. Finally, the company being audited pays the audit fees, often established through a competitive process. This situation could provide an auditor with an incentive to show leniency to the company being audited, particularly if the auditor's firm provides additional services to the company.

3.3.3. Private Contracting

Aspects of private contracts, such as loan agreements or investment contracts, can serve as mechanisms to discipline financial reporting quality. Many parties that have a contractual arrangement with a company have an incentive to monitor that company's performance and to ensure that the company's financial reports are high quality. For example, loan agreements often contain loan covenants, which create specifically tailored financial reporting requirements that are legally binding for the issuer. As noted earlier, avoidance of debt covenant violation is a potential motivation for managers to inflate earnings. As another example, an investment contract could contain provisions giving investors the option to recover all or part of their investment if certain financial triggers occur. Such provisions could motivate the investee's managers to manipulate reported results to avoid the financial triggers.

Because the financial reports prepared by the investees or borrowers directly affect the contractual outcomes—potentially creating a motivation for misreporting—investors and lenders are motivated to monitor financial reports and to ensure that they are high quality.

EXAMPLE 5 Financial Reporting Manipulation: Motivations and Disciplining Mechanisms

For each of the following two scenarios, identify (1) factors that might motivate the company's managers to manipulate reported financial amounts and (2) applicable mechanisms that could discipline financial reporting quality.

1. ABC Co. is a private company. Bank NTBig has made a loan to ABC Co. ABC is required to maintain a minimum 2.0 interest coverage ratio. In its most recent financial reports, ABC reported earnings before interest and taxes of $1,200 and interest expense of $600. In the report's notes, the company discloses that it changed the estimated useful life of its property, plant, and equipment during the year. Depreciation was approximately $150 lower as a result of this change in estimate.
2. DEF Co. is a publicly traded company. For the most recent quarter, the average of analysts' forecasts for earnings per share was $2.50. In its quarterly earnings announcement, DEF reported net income of $3,458,780. The number of common shares outstanding was 1,378,000. DEF's main product is a hardware device that includes a free two-year service contract in the selling price. Based on management estimates, the company allocates a portion of revenues to the hardware device, which it recognizes immediately, and a portion to the service contract, which it defers and

recognizes over the two years of the contract. Based on the disclosures, a higher percentage of revenue was allocated to hardware than in the past, with an estimated after-tax impact on net income of $27,000.

Solution to 1: The need to maintain a minimum interest coverage ratio of 2.0 might motivate ABC's managers to manipulate reported financial amounts. The company's coverage ratio based on the reported amounts is exactly equal to 2.0. If ABC's managers had not changed the estimated useful life of the property, plant, and equipment, the coverage ratio would have fallen below the required level.

EBIT, as reported	$1,200
Impact on depreciation expense of changed assumptions about useful life	150
EBIT, as adjusted	$1,050
Interest expense	$ 600
Coverage ratio, as reported	2.00
Coverage ratio, as adjusted	1.75

The potential disciplining mechanisms include the auditors, who will assess the reasonableness of the depreciable lives estimates. In addition, the lenders will carefully scrutinize the change in estimate because the company only barely achieved the minimum coverage ratio and would not have achieved the minimum without the change in accounting estimate.

Solution to 2: The desire to meet or exceed the average of analysts' forecasts for earnings per share might motivate DEF Co.'s managers to manipulate reported financial amounts. As illustrated in the following calculations, the impact of allocating a greater portion of revenue to hardware enabled the company to exceed analysts' earnings per share forecasts by $0.01.

Net income, as reported	$3,458,780
Impact on gross profit of changed revenue recognition, net of tax	27,000
Net income, as adjusted	$3,431,780
Weighted average number of shares	1,378,000
Earnings per share, as reported	$ 2.51
Earnings per share, as adjusted	$ 2.49

The potential disciplining mechanisms include the auditors, market regulators, financial analysts, and financial journalists.

4. DETECTION OF FINANCIAL REPORTING QUALITY ISSUES

Choices in the application of accounting standards abound, which is perhaps one reason why accounting literature and texts are so voluminous. Compounding the complexity, measurement often depends on estimates of economic phenomena. Two estimates might be justifiable, but they may have significantly different effects on the company's financial statements. As discussed earlier, the choice of a particular estimate may depend on the motivations of the reporting company's managers. With many choices available, and the inherent flexibility of estimates in the accounting process, managers have many tools for managing and meeting analysts' expectations through financial reporting.

An understanding of the choices that companies make in financial reporting is fundamental to evaluating the overall quality—both financial reporting and earnings quality—of the reports produced. Choices exist both in how information is presented (financial reporting quality) and in how financial results are calculated (earnings quality). Choices in presentation (financial reporting quality) may be fairly transparent to investors. Choices in the calculation of financial results (earnings quality), however, are more difficult to discern because they can be deeply embedded in the construction of reported financial results.

The availability of accounting choices enables managers to affect the reporting of financial results. Some choices increase performance and financial position in the current period (aggressive choices), and others increase them in later periods (conservative choices). A manager that wants to increase performance and financial position in the current period could:

- Recognize revenue prematurely;
- Use non-recurring transactions to increase profits;
- Defer expenses to later periods;
- Measure and report assets at higher values; and/or
- Measure and report liabilities at lower values.

A manager that wants to increase performance and financial position in a later period could:

- Defer current income to a later period (save income for a "rainy day"); and/or
- Recognize future expenses in a current period, setting the table for improving future performance.

The following sections describe some of the potential choices for how information is presented and how accounting elements [assets, liabilities, owners' equity, revenue and gains (income), and expenses and losses] are recognized, measured, and reported. In addition to choices within GAAP, companies may prepare fraudulent reports. For example, these reports may include non-existent revenue or assets. Section 4 concludes with some of the warning signs that can indicate poor-quality financial reports.

4.1. Presentation Choices

The technology boom of the 1990s and the internet bubble of the early 2000s featured companies, popular with investors, that often shared the same characteristic: They could not generate enough current earnings to justify their stock prices using the traditional price-to-earnings ratio (P/E) approaches to valuation. Many investors chose to explain these apparent anomalies

by rationalizing that the old focus on profits and traditional valuation approaches no longer applied to such companies. Strange new metrics for determining operating performance emerged. Website operators spoke of the "eyeballs" they had captured in a quarter, or the "stickiness" of their websites for web surfers' visits. Various versions of "pro forma earnings"—that is, "non-GAAP earnings measures"—became a financial reporting staple of the era.

Many technology companies were accomplished practitioners of pro forma reporting, but they were not the first to use it. In the early 1990s, downsizing of large companies was a commonplace event, and massive restructuring charges obscured the operating performance at many established companies. For example, as it learned to cope in a world that embraced the personal computer rather than mainframe computing, International Business Machines (IBM) reported massive restructuring charges in 1991, 1992, and 1993: $3.7 billion, $11.6 billion, and $8.9 billion, respectively. IBM was not alone. Sears incurred $2.7 billion of restructuring charges in 1993, and AT&T reported restructuring charges of $7.7 billion in 1995. These events were not isolated; restructuring charges were a standard quarterly reporting event. To counter perceptions that their operations were floundering, and supposedly to assist investors in evaluating operating performance, companies often sanitized earnings releases by excluding restructuring charges in pro forma measures of financial performance.

Accounting principles for reporting business combinations also played a role in boosting the popularity of pro forma earnings. Before 2001, acquisitions of one company by another often resulted in goodwill amortization charges that made subsequent earnings reports look weak. Complicating matters, there were two accounting methods for recording acquisitions: pooling-of-interests and purchase methods. The now-extinct pooling-of-interests treatment was difficult for companies to achieve because of the many restrictive criteria for its use, but it was greatly desired because it did not result in goodwill amortization charges. In the technology boom period, acquisitions were common and many were reported as purchases, with consequential goodwill amortization dragging down earnings for as long as 40 years under the then-existing rules. Acquisitive companies reporting under purchase accounting standards perceived themselves to be at a reporting disadvantage compared with companies able to apply pooling-of-interests accounting. The companies reporting under purchase accounting began to present earnings adjusted for the exclusion of amortization of intangible assets and goodwill.

Because investors try to make intercompany comparisons on a consistent basis, earnings before interest, taxes, depreciation, and amortization has become an extremely popular performance measure. EBITDA is widely viewed as eliminating noisy reporting signals. That noise may be introduced by different accounting methods among companies for depreciation, amortization of intangible assets, and restructuring charges. Companies may construct and report their own version of EBITDA, sometimes referring to it as "adjusted EBITDA," by adding to the list of items to exclude from net income. Items that analysts might encounter include the following:

- Rental payments for operating leases, resulting in EBITDAR (earnings before interest, taxes, depreciation, amortization, and rentals);
- Equity-based compensation, usually justified on the grounds that it is a non-cash expense;
- Acquisition-related charges;
- Impairment charges for goodwill or other intangible assets;
- Impairment charges for long-lived assets;
- Litigation costs; and
- Loss/gain on debt extinguishments.

Among other incentives for the spread of non-GAAP earnings measures are loan covenants. Lenders may make demands on a borrowing company that require achieving and maintaining performance criteria defined by using GAAP net income as a starting point but arriving at a measure suitable to the lender. The company may use this measure as its preferred non-GAAP metric in earnings releases, and it also may use the measure in describing its liquidity or solvency situation in the management commentary (called management discussion and analysis in the United States).

As mentioned earlier, if a company uses a non-GAAP financial measure in an SEC filing, it must display the most directly comparable GAAP measure with equal prominence and provide a reconciliation of the non-GAAP measure and the equivalent GAAP measure. Management must explain why it believes that the non-GAAP financial measure provides useful information regarding the company's financial condition and operations. Management must also disclose additional purposes, if material, for which it uses the non-GAAP financial measures.

Similarly, IFRS requires a definition and explanation of any non-IFRS measures included in financial reports, including why the measure is potentially relevant to users of the financial reports. Management must provide reconciliations of non-IFRS measures with IFRS measures presented in the financial reports. There seems to be a general concern that management may use non-GAAP measures to distract a user's attention from GAAP measures.

The SEC intended that the definition of non-GAAP financial measure capture all measures that have the effect of depicting either

- a measure of performance that differs from that presented in the financial statements, such as income or loss before taxes or net income or loss, as calculated in accordance with GAAP; or
- a measure of liquidity that differs from cash flow or cash flow from operations computed in accordance with GAAP.[19]

The SEC prohibits the exclusion of charges or liabilities requiring cash settlement from any non-GAAP liquidity measures, other than EBIT and EBITDA. Also prohibited is the calculation of a non-GAAP performance measure intended to eliminate or smooth items tagged as non-recurring, infrequent, or unusual when such items are very likely to occur again. The SEC views the period within two years of either before or after the reporting date as the relevant time frame for considering whether a charge or gain is a recurring item. Example 6 describes a case of misuse and misreporting of non-GAAP measures.

EXAMPLE 6 Misuse and Misreporting of Non-GAAP Measures

Groupon is an online discount merchant. In the company's initial S-1 registration statement in 2011, then-CEO Andrew Mason gave prospective investors an up-front warning in a section entitled "We don't measure ourselves in conventional ways." He described Groupon's adjusted consolidated segment operating income (adjusted CSOI)

[19] SEC, "Final Rule: Conditions for Use of Non-GAAP Financial Measures," Securities and Exchange Commission (www.sec.gov/rules/final/33-8176.htm).

measure. Exhibit 11 provides excerpts from a section entitled "Non-GAAP Financial Measures," which offered a more detailed explanation of the measure. Exhibit 12, also from the initial registration statement, shows a reconciliation of CSOI to the most comparable US GAAP measure. In its review, the SEC took the position that online marketing expenses were a recurring cost of business. Groupon responded that the marketing costs were similar to acquisition costs, not recurring costs, and that "we'll ramp down marketing just as fast as we ramped it up, reducing the customer acquisition part of our marketing expenses" as time passes.[20]

Eventually, and after much negative publicity, Groupon changed its non-GAAP measure. Exhibit 13 shows an excerpt from the final prospectus filed in November, after the SEC's review. Use the three exhibits to answer the questions that follow.

EXHIBIT 11 Groupon's "Non-GAAP Financial Measures"

Disclosures from June S-1 Filing

Adjusted CSOI is operating income of our two segments, North America and International, adjusted for online marketing expense, acquisition-related costs and stock-based compensation expense. Online marketing expense primarily represents the cost to acquire new subscribers and is dictated by the amount of growth we wish to pursue. Acquisition-related costs are non-recurring non-cash items related to certain of our acquisitions. Stock-based compensation expense is a non-cash item. We consider Adjusted CSOI to be an important measure of the performance of our business as it excludes expenses that are non-cash or otherwise not indicative of future operating expenses. We believe it is important to view Adjusted CSOI as a complement to our entire consolidated statements of operations.

Our use of Adjusted CSOI has limitations as an analytical tool, and you should not consider this measure in isolation or as a substitute for analysis of our results as reported under GAAP. Some of these limitations are:

- Adjusted CSOI does not reflect the significant cash investments that we currently are making to acquire new subscribers;
- Adjusted CSOI does not reflect the potentially dilutive impact of issuing equity-based compensation to our management team and employees or in connection with acquisitions;
- Adjusted CSOI does not reflect any interest expense or the cash requirements necessary to service interest or principal payments on any indebtedness that we may incur;
- Adjusted CSOI does not reflect any foreign exchange gains and losses;
- Adjusted CSOI does not reflect any tax payments that we might make, which would represent a reduction in cash available to us;
- Adjusted CSOI does not reflect changes in, or cash requirements for, our working capital needs; and
- Other companies, including companies in our industry, may calculate Adjusted CSOI differently or may use other financial measures to evaluate their profitability, which reduces the usefulness of it as a comparative measure.

[20] Correspondence between Groupon and SEC, filed in EDGAR on 16 September 2011.

Because of these limitations, Adjusted CSOI should not be considered as a measure of discretionary cash available to us to invest in the growth of our business. When evaluating our performance, you should consider Adjusted CSOI alongside other financial performance measures, including various cash flow metrics, net loss and our other GAAP results.

EXHIBIT 12 Groupon's "Adjusted CSOI"

Excerpt from June S-1 Filing

The following is a reconciliation of CSOI to the most comparable US GAAP measure, "loss from operations," for the years ended December 31, 2008, 2009, and 2010 and the three months ended March 31, 2010 and 2011:

	Year Ended December 31,			Three Months Ended March 31,	
(in $ thousands)	2008	2009	2010	2010	2011
(Loss) Income from operations	(1,632)	(1,077)	(420,344)	8,571	(117,148)
Adjustments:					
Online marketing	162	4,446	241,546	3,904	179,903
Stock-based compensation	24	115	36,168	116	18,864
Acquisition-related	—	—	203,183	—	—
Total adjustments	186	4,561	480,897	4,020	198,767
Adjusted CSOI	(1,446)	3,484	60,553	12,591	81,619

EXHIBIT 13 Groupon's "CSOI"

Excerpt from Revised S-1 Filing

The following is a reconciliation of CSOI to the most comparable US GAAP measure, "loss from operations," for the years ended December 31, 2008, 2009, and 2010 and the nine months ended September 30, 2010 and 2011:

	Year Ended December 31,			Nine Months Ended September 30,	
(in $ thousands)	2008	2009	2010	2010	2011
Loss from operations	(1,632)	(1,077)	(420,344)	(84,215)	(218,414)
Adjustments:					
Stock-based compensation	24	115	36,168	8,739	60,922
Acquisition-related	—	—	203,183	37,844	(4,793)
Total adjustments	24	115	239,351	46,583	56,129
CSOI	(1,608)	(962)	(180,993)	(37,632)	(162,285)

1. What cautions did Groupon include along with its description of the "Adjusted CSOI" metric?
2. Groupon excludes "online marketing" from "Adjusted CSOI." How does the exclusion of this expense compare with the SEC's limits on non-GAAP performance measures?
3. In the first quarter of 2011, what was the effect of excluding online marketing expenses on the calculation of "Adjusted CSOI"?
4. For 2010, how did results under the revised non-GAAP metric compare with the originally reported metric?

Solution to 1: Groupon cautioned that the "Adjusted CSOI" metric should not be considered in isolation, should not be considered as a substitute for analysis using GAAP results, and "should not be considered a measure of discretionary cash flow." The company lists numerous limitations, primarily citing items that adjusted CSOI did not reflect.

Solution to 2: The SEC specifies that non-GAAP measures should not eliminate items tagged as non-recurring, infrequent, or unusual when such items may be very likely to occur again. Because the online marketing expense occurred in every period reported and is likely to occur again, exclusion of this item appears contrary to SEC requirements.

Solution to 3: As shown in Exhibit 12, in the first quarter of 2011, the exclusion of the online marketing expense was enough to swing the company from a net loss under US GAAP reporting to a profit—at least, a profit as defined by adjusted CSOI. Using adjusted CSOI as a performance measure, the company showed results that were 35% higher for the first *quarter* of 2011 compared with the entire previous *year*.

Solution to 4: As shown in Exhibit 13, the revised metric is now called "CSOI" and no longer refers to "Adjusted CSOI." For 2010, results under the revised non-GAAP metric, which includes online marketing costs, shows a loss of $180,993,000 instead of a profit of $60,553,000.

4.2. Accounting Choices and Estimates

Choices do not necessarily involve complex accounting standards. Something as simple as the shipping terms for goods delivered to customers can have a profound effect on the timing of revenue. On the last day of the first quarter, suppose a company ships $10,000 of goods to a customer on the terms "free on board (FOB) shipping point," arriving the next day. This shipping term means that the customer takes title to the goods, and bears the risk of loss, at the time the goods leave the seller's loading dock. Barring any issues with collectability of the receivable, or a likelihood of a return, the seller would be able to recognize revenue on the sale along with the associated profit. That revenue and profit would be recognized in the first quarter of the year. Change the point at which the goods' title transfers to the customer to "FOB destination" and the revenue pattern will be completely different. Under these terms, the title—and risk of loss—transfers to the customer when

the goods arrive at their destination, which is the customer's address. The seller cannot recognize the sale and profit until the shipment arrives the following day, which is the start of a new accounting period.

A simple change in shipping terms can make the difference between revenue and profits in the current period or postponing them until the next period. Shipping terms can also influence management behavior: To "make the numbers," managers might push product out the door prematurely under FOB shipping point arrangements in order to reflect as much revenue as possible in the current period. Alternatively, in the case of an overabundance of orders, the company could run the risk of exceeding analysts' consensus estimates by a large margin. Management might be uncomfortable with this situation because investors might extrapolate too much from one reporting period in which expectations were exceeded. Management might want to prevent investors from becoming too optimistic and, if possible, delay revenue recognition until the next quarter. This result could be accomplished by fulfilling customer orders by initiating delivery on the last day of the quarter, with shipping terms set as FOB destination. By doing so, title would transfer in the next accounting period. Another possibility in this scenario is that if the customers insisted on FOB shipping point terms, the selling company could simply delay shipment until after the close of the quarter.

This illustration also highlights a difficult distinction for investors to make. A company may use accounting as a tool to aggressively promote earnings growth—as in the example with the premature shipment of goods with FOB shipping point terms—but it may be aggressively managing the business flow by slacking off on shipping goods when business is "too good," as in the second example. In either case, a desired management outcome is obtained by a simple change in shipping terms. Yet, many investors might be inclined to say that the second example is a conservative kind of earnings management and accept it, even though it artificially masks the actual economic activity that occurred at the time.

4.2.1. How Accounting Choices and Estimates Affect Earnings and Balance Sheets

Assumptions about inventory cost flows provide another example of how accounting choices can affect financial reporting. Companies may assume that their purchases of inventory items are sold to customers on a first-in-first-out (FIFO) basis, with the result that the remaining inventory reflects the most recent costs. Alternatively, they may assume that their purchases of inventory items are sold to customers on a weighted-average cost basis. Example 7 makes the point that merely choosing a cost flow assumption can affect profitability.

EXAMPLE 7 Effect of Cost Flow Assumption

A company starts operations with no inventory at the beginning of a fiscal year and makes purchases of a good for resale five times during the period at increasing prices. Each purchase is for the same number of units of the good. The purchases, and the cost of goods available for sale, appear in the following table. Notice that the price per unit has increased by 140% by the end of the period.

	Units	Price	Cost
Purchase 1	5	$100	$ 500
Purchase 2	5	150	750
Purchase 3	5	180	900
Purchase 4	5	200	1,000
Purchase 5	5	240	1,200
Cost of goods available for sale			$4,350

During the period, the company sells all of the goods purchased except for five of them. Although the ending inventory consists of five units, the cost attached to those units can vary greatly.

1. What are the ending inventory and cost of goods sold if the company uses the FIFO method of inventory costing?
2. What are the ending inventory and cost of goods sold if the company uses the weighted-average method of inventory costing?
3. Compare cost of goods sold and gross profit calculated under the two methods.

Solution to 1: The ending inventory and cost of goods sold if the company uses the FIFO method of inventory costing are $1,200 and $3,150.

Solution to 2: The ending inventory and cost of goods sold if the company uses the weighted-average method of inventory costing are $870 and $3,480.

Solution to 3: The following table shows how the choice of inventory costing methods—FIFO versus weighted average—affects the cost of goods sold and gross profit.

Cost Flow Assumption	FIFO	Weighted Average
Cost of goods available for sale	$4,350	$4,350
Ending inventory (5 units)	(1,200)	(870)
Cost of goods sold	$3,150	$3,480
Sales	$5,000	$5,000
Cost of goods sold	3,150	3,480
Gross profit	$1,850	$1,520
Gross profit margin	37.0%	30.4%

Note: Average inventory cost is calculated as Cost of goods available for sale/Units purchased = $4,350/25 = $174. There are five units in ending inventory, yielding an inventory value of $870.

Depending on which cost flow assumption the company uses, the end-of-period inventory is either $870 (under the weighted-average method) or $1,200 (under FIFO). The choice of method results in a difference of $330 in gross profit and 6.6% in gross profit margin.

The previous example is simplified and extreme for purposes of illustration clarity, but the point is important: Management's choice among acceptable inventory assumptions and methods affects profit. The selection of an inventory costing method is a policy decision, and companies cannot arbitrarily switch from one method to another at random. The selection does matter to profitability, however, and it also matters to the balance sheet.

In periods of changing prices, the FIFO cost assumption will provide a more current picture of ending inventory value, because the most recent purchases will remain in inventory. The balance sheet will be more relevant to investors. Under the weighted-average cost assumption, however, the balance sheet will display a blend of old and new costs. During inflationary periods, the value of the inventory will be understated: The company will not be able to replenish its inventory at the value shown. At the same time, the weighted-average inventory cost method ensures that the more current costs are shown in cost of sales, making the income statement more relevant than under the FIFO assumption. Trade-offs exist, and investors should be aware of how accounting choices affect financial reports. High-quality financial reporting provides users sufficient information to assess the effects of accounting choices.

Estimates abound in financial reporting because of the use of accrual accounting, which attempts to show the effects of all economic events on a company during a particular period. Accrual accounting stands in contrast to cash basis accounting, which shows only the cash transactions conducted by a company. Although a high degree of certainty exists with reporting only cash transactions, much information is hidden. For instance, a company with growing revenues that makes the majority of its sales on credit would be understating its revenues for each period if it reported only cash transactions. On an accrual basis, revenues reflect all transactions that occurred, whether they transacted on a cash basis or credit-extended basis. Estimates enter the process because some facts related to events occurring in a particular period might not yet be known. Estimates can be well grounded in reality and applied to present a complete picture of the events affecting a company, or they can be management tools for achieving a desired financial picture.

To illustrate how estimates affect financial reporting, consider revenues that include credit sales. A company sells $1,000,000 of merchandise on credit and records the sale just before year end. Under accrual accounting, that amount is included in revenues and accounts receivable. The company's managers know from experience that they will never collect every dollar of the accounts receivable. Past experience is that, on average, only 97% of accounts receivable is collected. The company would estimate an amount of the uncollectible accounts at the time the sales occur and record an uncollectible accounts expense of $30,000, lowering earnings. The other side of the entry would be to establish an allowance for uncollectible accounts of $30,000. This allowance would be a contra asset account, presented as an offset to accounts receivable. The accounts receivable, net of the allowance for uncollectible accounts, would be stated at $970,000, which is the amount of cash the company ultimately expects to receive. If cash basis accounting had been used, no revenues or accounts receivable would have been reported even though sales of merchandise had occurred. Accrual accounting, which contains estimates about future events, provides a much fuller picture of what transpired in the period than pure cash basis accounting.

Yet, accrual accounting poses temptations to managers to manage the numbers, rather than to manage the business. Suppose a company's managers realize that the company will not meet analysts' consensus estimates in a particular quarter, and further, their bonus pay is dependent on reaching specified earnings targets. By offering special payment terms, or discounts, the managers may induce customers to take delivery of products that they would normally not order so they could ship the products on FOB shipping point terms and recognize

the revenues in the current quarter. They could even be so bold as to ship the goods under those terms even if the customer did not order them, in hopes that the customer would keep them or, at worst, return them in the next accounting period. Their focus would be to move the product off the company's property with FOB shipping point terms.

To further improve earnings in order to meet the consensus estimates, the company's managers might revise their estimate of the uncollectible accounts. The company's collection history shows a typical non-collection rate of 3% of sales, but the managers might rationalize the use of a 2% non-collection rate. This change will reduce the allowance for uncollectible accounts and uncollectible accounts expense reported for the period. The managers might be able to justify the reduction on the grounds that the sales occurred in a part of the country that was experiencing an improved economic outlook, or that the company's collection history had been biased by the inclusion of a prolonged period of economic downturn. Whatever the justification, it would be hard to prove that the new estimate is completely right or wrong until time has passed. Because proof of the reliability of estimates is rarely available at the time the estimate is recorded, managers have a readily available means for manipulating earnings at their discretion.

ConAgra Foods, Inc. provides an example of how the allowance for uncollectible accounts may be manipulated in order to manage earnings.[21] A subsidiary of ConAgra Foods, called United Agri-Products (UAP), engaged in several improper accounting practices, one of them being the understatement of uncollectible accounts expense for several years. Exhibit 14 presents an excerpt from the SEC's Accounting and Auditing Enforcement Release.

EXHIBIT 14 SEC's Accounting and Auditing Enforcement Release Regarding United Agri-Products

. . . Generally, UAP's policy required that accounts which were past due between 90 days and one year should be reserved at 50%, and accounts over one year past due were to be reserved at 100%.

. . . In FY 1999 and continuing through FY 2000, UAP had substantial bad debt problems. In FY 2000, certain former UAP senior executives were informed that UAP needed to record an additional $50 million of bad debt expense. Certain former UAP senior executives were aware that in FY 1999 the size of the bad debt at certain IOCs had been substantial enough that it could have negatively impacted those IOC's ability to achieve PBT (profits before taxes) targets. In addition, just prior to the end of UAP's FY 2000, the former UAP COO (chief operating officer), in the presence of other UAP employees, ordered that UAP's bad debt reserve be reduced by $7 million in order to assist the Company in meeting its PBT target for the fiscal year.

. . . At the end of FY 2000, former UAP senior executives reported financial results to ConAgra which they knew, or were reckless in not knowing, overstated UAP's income before income taxes because UAP had failed to record sufficient bad debt expense. The misconduct with respect to bad debt expense caused ConAgra to overstate its reported income before income taxes by $7 million, or 1.13%, in FY 2000. At the Agricultural Products' segment level, the misconduct caused that segment's reported operating profit to be overstated by 5.05%.

[21] Accounting and Auditing Enforcement Release No. 2542, "SEC v. James Charles Blue, Randy Cook, and Victor Campbell,) United States District Court for the District of Colorado, Civ. Action No. 07-CV-00095 REB-MEH (17 January 2007).

Deferred-tax assets provide another example of choices in estimates that are very similar to the ones encountered in accrual accounting for credit sales. Deferred-tax assets may arise when a company reports a net operating loss under tax accounting rules. A company may record a deferred-tax asset based on the expectation that current net tax operating losses will offset expected future profits and reduce the company's future income tax liability. Accounting standards require that the deferred tax asset be reduced by a "valuation allowance" to account for the possibility that the company will be unable to generate enough profit to use all of the available tax benefits.[22]

Assume a company loses €1 billion in 2012, generating a net operating loss of the same amount for tax purposes. The company's income tax rate is 25%, and it will be able to apply the net operating loss to its taxable income for the next 10 years. The net operating loss results in a deferred tax asset with a nominal value of €250 million (25% × €1,000,000,000). Initial recognition would result in a deferred tax asset of €250 million and a credit to deferred tax expense of €250 million. The company must address the question of whether or not the €250 million will ever be completely applied to future income. It may be experiencing increased competition and other circumstances that resulted in the €1 billion loss, and it may be unreasonable to assume that the company will have taxable income against which to apply the loss. In fact, the company's managers might believe it is reasonable to assume only that it will survive for five years, and with marginal profitability. The €250 million deferred tax asset is thus overstated if no valuation allowance is recorded to offset it.

The managers believe that only €100 million of the net operating losses will actually be applied to the company's taxable income. That belief implies that only €25 million of the tax benefits will ever be realized. The deferred tax assets reported on the balance sheet should not exceed this amount. The company should record a valuation allowance of €225 million, which would offset the deferred tax asset balance of €250 million, resulting in a net deferred tax asset balance of €25 million. There would also be a €225 million credit to the deferred tax provision. It is important to understand that the valuation allowance should be revised whenever facts and circumstances change.

The ultimate value of the deferred tax asset is driven by management's outlook for the future—and that outlook may be influenced by other factors. If the company needs to stay in compliance with debt covenants and needs every euro of value that can be justified by the outlook, its managers may take a more optimistic view of the future and keep the valuation allowance artificially low (in other words, the net deferred tax asset high).

PowerLinx, Inc. provides an example of how over-optimism about the realizability of a deferred tax asset can lead to misstated financial reports. PowerLinx was a maker of security video cameras, underwater cameras, and accessories. Aside from fraudulently reporting 90% of its fiscal year 2000 revenue, PowerLinx had problems with valuation of its deferred tax assets. Exhibit 15 provides an excerpt from the SEC's Accounting and Auditing Enforcement Release with emphasis added.[23]

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[22] See Accounting Standards Codification 740-10-30-16 to 25, "Establishment of a Valuation Allowance for Deferred Tax Assets."

[23] Accounting and Auditing Enforcement Release No. 2448, "In the Matter of Douglas R. Bauer, Respondent," SEC (27 June 2006): www.sec.gov/litigation/admin/2006/34-54049.pdf.

EXHIBIT 15 SEC's Accounting and Auditing Enforcement Release Regarding PowerLinx

PowerLinx improperly recorded on its fiscal year 2000 balance sheet a deferred tax asset of $1,439,322 without any valuation allowance. The tax asset was material, representing almost forty percent of PowerLinx's total assets of $3,841,944. PowerLinx also recorded deferred tax assets of $180,613, $72,907, and $44,921, respectively, in its financial statements for the first three quarters of 2000.

PowerLinx did not have a proper basis for recording the deferred tax assets. The company had accumulated significant losses in 2000 and had no historical operating basis from which to conclude that it would be profitable in future years. Underwater camera sales had declined significantly and the company had devoted most of its resources to developing its SecureView product. The sole basis for PowerLinx's "expectation" of future profitability was the purported $9 million backlog of SecureView orders, which management assumed would generate taxable income; however, this purported backlog, which predated Bauer's hiring, did not reflect actual demand for SecureView cameras and, consequently, was not a reasonable or reliable indicator of future profitability.

Another example of how choices and estimates can affect balance sheets is in the area of selecting a depreciation method for allocating the cost of long-lived assets to accounting periods subsequent to their acquisition. A company's managers may choose to depreciate long-lived assets (1) on a straight-line basis, with each year bearing the same amount of depreciation expense; (2) using an accelerated method, with greater depreciation expense recognition in the earlier part of an asset's life; or (3) using an activity-based depreciation method, which allocates depreciation expense based on units of use or production. Depreciation expense is affected by another set of choices and estimates regarding the salvage value of the assets being depreciated. A salvage value of zero will always increase depreciation expense under any method compared with the choice of a non-zero salvage value.

Assume a company invests $1,000,000 in manufacturing equipment and expects it to have a useful economic life of 10 years. During its expected life, the equipment will produce 400,000 units of product, or $2.50 depreciation expense per unit produced. When it is disposed of at the end of its expected life, the company's managers expect to realize no value for the equipment. The following table shows the differences in three alternative methods of depreciation: straight-line, accelerated on a double-declining balance basis, and units-of-production method, with no salvage value assumed at the end of the equipment's life.

	Straight-Line Method	Double-Declining Balance Method			Units-of-Production Method		
Year	Depreciation Expense	Balance	Declining Balance Rate[1]	Depreciation Expense	Units Produced	Depreciation Rate/Unit	Depreciation Expense
1	$100,000	$1,000,000	20%	$200,000	90,000	$2.50	$225,000
2	100,000	800,000	20%	160,000	80,000	$2.50	200,000

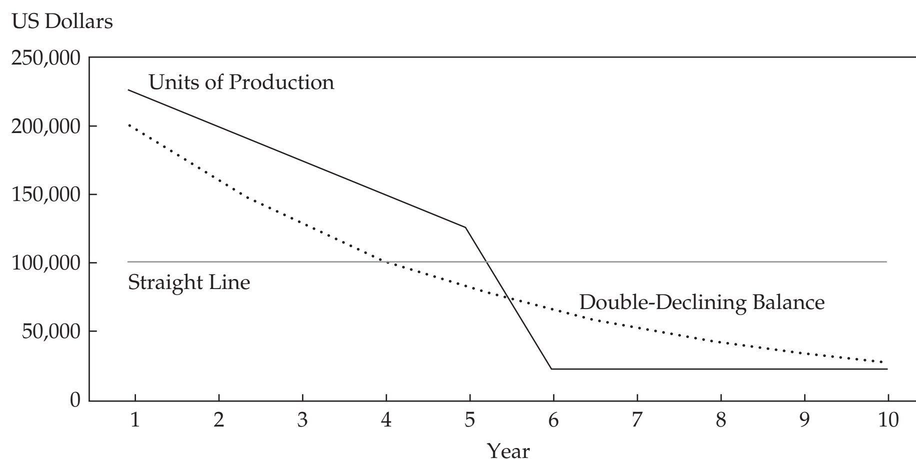
	Straight-Line Method	Double-Declining Balance Method			Units-of-Production Method		
Year	Depreciation Expense	Balance	Declining Balance Rate[1]	Depreciation Expense	Units Produced	Depreciation Rate/Unit	Depreciation Expense
3	100,000	640,000	20%	128,000	70,000	$2.50	175,000
4	100,000	512,000	20%	102,400	60,000	$2.50	150,000
5	100,000	409,600	20%	81,920	50,000	$2.50	125,000
6	100,000	327,680	20%	65,536	10,000	$2.50	25,000
7	100,000	262,144	20%	52,429	10,000	$2.50	25,000
8	100,000	209,715	20%	41,943	10,000	$2.50	25,000
9	100,000	167,772	20%	33,554	10,000	$2.50	25,000
10	100,000	134,218	20%	26,844	10,000	$2.50	25,000
Total	$1,000,000			$892,626	400,000		$1,000,000

[1]Declining balance rate of 20% calculated as 10-year life being equivalent to 10% annual depreciation rate, multiplied by 2 = 20%.

The straight-line method allocates the cost of the equipment evenly to all 10 years of the equipment's life. The double-declining balance method will have a higher allocation of cost to the earlier years of the equipment's life, and as its name implies, the depreciation expense will decline in each succeeding year because it is based on a fixed rate applied to a declining balance. The rate used was double the straight-line rate, but it could have been any other rate that the company's managers believed was representative of the way the actual equipment depreciation occurred. Notice that the double-declining balance method also results in an incomplete depreciation of the machine at the end of 10 years; a balance of $107,374 (= $1,000,000 – $892,626) remains at the end of the expected life, which will result in a loss upon the retirement of the equipment if the company's expectation of zero salvage value turns out to be correct. Some companies may choose to depreciate the equipment to its expected salvage, zero in this case, in its final year of use. Some companies may use a policy of switching to straight-line depreciation after the mid-life of its depreciable assets in order to fully depreciate them. That particular pattern is coincidentally displayed in the units-of-production example, in which the equipment is used most heavily in the earliest part of its useful life, and then levels off to much less utilization in the second half of the expected life.

Exhibit 16 shows the different expense allocation patterns of the methods over the same life. Each will affect earnings differently.

EXHIBIT 16 Expense Allocation Patterns of Different Depreciation Methods



The company's managers could justify any one of these methods. Each might fairly represent the way the equipment will be consumed over its expected economic life, which is a subjective estimate itself. The choices of methods and lives can profoundly affect reported income. These choices are not proven right or wrong until far into the future—but managers must estimate their effects in the present.

Exhibit 17 shows the effects of the three different methods on operating profit and operating profit margins, assuming that the production output of the equipment generates revenues of $500,000 each year and $200,000 of cash operating expenses are incurred, leaving $300,000 of operating profit before depreciation expense.

EXHIBIT 17 Effects of Depreciation Methods on Operating Profit

	Straight Line		
Year	Depreciation	Operating Profit	Operating Profit Margin
1	$100,000	$200,000	40.0%
2	100,000	200,000	40.0%
3	100,000	200,000	40.0%
4	100,000	200,000	40.0%
5	100,000	200,000	40.0%
6	100,000	200,000	40.0%
7	100,000	200,000	40.0%
8	100,000	200,000	40.0%
9	100,000	200,000	40.0%
10	100,000	200,000	40.0%

EXHIBIT 17 (Continued)

	Double-Declining Balance		
Year	Depreciation	Operating Profit	Operating Profit Margin
1	$200,000	$100,000	20.0%
2	160,000	140,000	28.0%
3	128,000	172,000	34.4%
4	102,400	197,600	39.5%
5	81,920	218,080	43.6%
6	65,536	234,464	46.9%
7	52,429	247,571	49.5%
8	41,943	258,057	51.6%
9	33,554	266,446	53.3%
10	134,218*	165,782	33.2%

	Units of Production		
Year	Depreciation	Operating Profit	Operating Profit Margin
1	$225,000	$75,000	15.0%
2	200,000	100,000	20.0%
3	175,000	125,000	25.0%
4	150,000	150,000	30.0%
5	125,000	175,000	35.0%
6	25,000	275,000	55.0%
7	25,000	275,000	55.0%
8	25,000	275,000	55.0%
9	25,000	275,000	55.0%
10	25,000	275,000	55.0%

* Includes $107,374 of undepreciated basis, treated as depreciation expense in final year of service.

The straight-line method shows consistent operating profit margins, and the other two methods show varying degrees of increasing operating profit margins as the depreciation expense decreases over time.

The example above shows the differences among several alternative methods, but even more depreciation expense variation is possible by changing estimated lives and assumptions about salvage value. For instance, change the expected life assumption to 5 years from 10 and add an expectation that the equipment will have a 10% salvage value at the end of its expected life. Exhibit 18 shows the revised depreciation calculations. Notice that under the double-declining balance method, the depreciation rate is applied to the gross cost, unlike the other two methods. The straight-line method and the units-of-production method subtract the salvage value from the cost before depreciation expense is calculated. Also note that the assumption about the usage of the equipment is revised so that it is depreciated only to its salvage value of $100,000 by the end of its estimated life. The total depreciation under each method is $900,000.

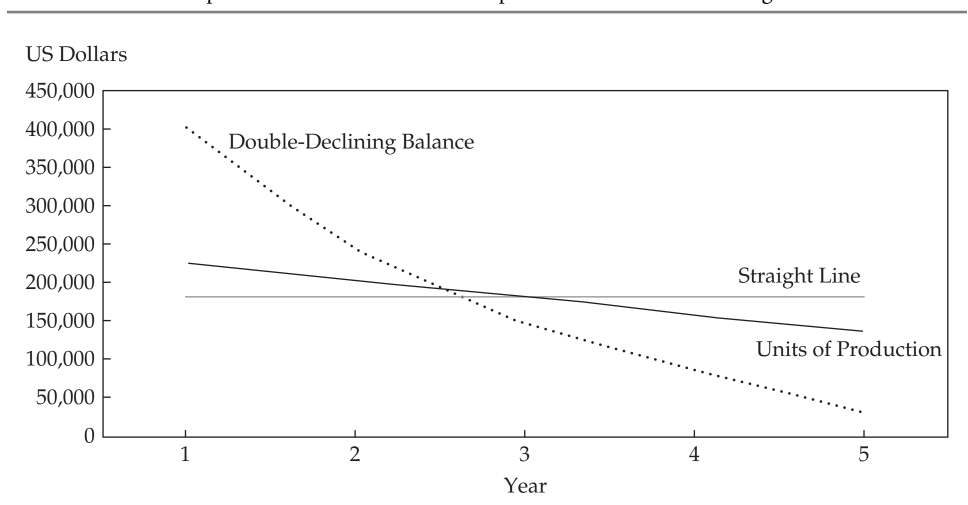
EXHIBIT 18 Depreciation Calculations for Each Method in Changed Scenario

	Straight-Line Method	Double-Declining Balance Method			Units-of-Production Method		
Year	Depreciation Expense	Balance	Declining Balance Rate[1]	Depreciation Expense	Units Produced	Depreciation Rate/Unit	Depreciation Expense
1	**$180,000**	$1,000,000	40%	**$400,000**	100,000	$2.25	**$225,000**
2	**180,000**	600,000	40%	**240,000**	90,000	$2.25	**202,500**
3	**180,000**	360,000	40%	**144,000**	80,000	$2.25	**180,000**
4	**180,000**	216,000	40%	**86,400**	70,000	$2.25	**157,500**
5	**180,000**	129,600	40%	**29,600**[2]	60,000	$2.25	**135,000**
Total	**$900,000**			**$900,000**	400,000		**$900,000**

[1] Declining balance rate of 40% calculated as 5-year life being equivalent to 20% annual depreciation rate, multiplied by 2 = 40%.
[2] Depreciation calculated as $29,600 instead of 40% × $129,600. Rote application of the declining-balance rate would have resulted in $51,840 of expense, which would have depreciated the asset below salvage value.

Exhibit 19 shows the different expense allocation patterns of the methods over the five-year expected life, and assuming a 10% salvage value. Although each method is distinctly different in the timing of the cost allocation over time, the variation is less pronounced than over the longer life used in the previous example.

EXHIBIT 19 Expense Allocation Patterns of Depreciation Methods in Changed Scenario



Perhaps one of the clearest examples of how choices affect both the balance sheet and income statement can be found in the area of capitalization practices. In classifying a payment made, management must determine whether the payment will benefit only the current period—making it an expense—or whether it will benefit future periods, leading to classification

as a cost to be capitalized as an asset. This management judgment embodies an implicit forecast of how the item acquired by the payment will be used, or not used, in the future.

That judgment can be biased by the powerful effect a capitalization policy can have on current earnings. Every amount capitalized on the balance sheet as a building, an item of inventory, a deferred cost, or any "other asset" is an amount that does not get recognized as an expense in the current period.

A real-life example can be found in the case of WorldCom, Inc., a telecom concern that grew rapidly in the late 1990s. Much of WorldCom's financial reporting was eventually found to be fraudulent, and one important part of the misreporting centered on its treatment of what is known in the telecom industry as "line costs." These are the costs of carrying a voice call or data transmission from its starting point to its ending point, and they represented WorldCom's largest expense. WorldCom's chief financial officer decided to capitalize such costs instead of treating them as an operating expense. As a consequence, from the second quarter of 1999 through the first quarter of 2002, WorldCom increased its operating income by $7 billion. In three of the five quarters in which the improper line cost capitalization took place, WorldCom would have recognized pretax losses instead of profits.[24]

Similarly, acquisitions are an area in which the managers charged with recording an acquisition must exercise judgment. An allocation of purchase price must be made to all of the different assets acquired based on their fair values, and those fair values are not always objectively verifiable. Management may have to make its own estimate of fair values for assets acquired, and management may be biased towards a low estimate for the values of depreciable assets in order to depress future depreciation expense. Another benefit to keeping depreciable asset values low is that the amount of the purchase price that cannot be allocated to specific assets is classified as goodwill, which is neither depreciated nor amortized in future reporting periods.

Goodwill reporting has choices of its own. Although goodwill has no effect on future earnings when unimpaired, annual testing of its fair value may reveal that the excess of price paid over the fair value of assets may not be recoverable, which should lead to a write-down of goodwill. The estimation process for the fair value of goodwill may depend heavily on projections of future performance. Those projections may be biased upward in order to avoid a goodwill write-down.

4.2.2. How Choices Affect the Cash Flow Statement

The cash flow statement consists of three sections: the operating section, which shows the cash generated or used by operations; the investing section, which shows the cash used for investments or provided by their disposal; and the financing section, which shows the cash transactions attributable to financing activities.

The operating section of the cash flow statement is often the portion most scrutinized by investors. Many of them consider the operating section to be a reality check on the reported earnings, on the grounds that significant earnings that are attributable only to accrual accounting methods and unsupported by actual cash flows may indicate earnings manipulation. Such investors believe that amounts shown for cash generated by operations is more insulated from managerial manipulation than the income statement. Cash generated by operations can be managed to an extent, however.

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[24] See Report of Investigation by the Special Investigative Committee of the Board of Directors of WorldCom, Inc., by Dennis R. Beresford, Nicholas deB. Katzenbach, & C.B. Rogers, Jr.PP 9-11: www.sec.gov/Archives/edgar/data/723527/000093176303001862/dex991.htm.

The operating section of the cash flow statement can be shown either under the direct method or the indirect method. Under the direct method, "entities are encouraged to report major classes of gross cash receipts and gross cash payments and their arithmetic sum—the net cash flow from operating activities."[25] In practice, companies rarely use the direct method. Instead, they use the indirect method, which shows a reconciliation of net income to cash provided by operations. The reconciliation shows the non-cash items affecting net income along with changes in working capital accounts affecting cash provided by operations. Exhibit 20 provides an example of the indirect presentation method.

EXHIBIT 20 Indirect Presentation Method

Cash Flows from Operating Activities ($ millions)	2012
Net income	$3,000
Adjustments to reconcile net income to net cash provided by operating activities:	
Provision for doubtful receivables	10
Provision for depreciation and amortization	1,000
Goodwill impairment charges	35
Share-based compensation expense	100
Provision for deferred income taxes	200
Changes in assets and liabilities:	
Trade, notes, and financing receivables related to sales	(2,000)
Inventories	(1,500)
Accounts payable	1,200
Accrued income taxes payable/receivable	(80)
Retirement benefits	90
Other	(250)
Net cash provided by operating activities	$1,805

Whether the indirect method or direct method is used, simple choices exist for managers to improve the *appearance* of cash flow provided by operations without actually improving it. One such choice is in the area of accounts payable management, shaded in Exhibit 20. Assume that the accounts payable balance is $5,200 million at the end of the period, an increase of $1,200 million from its previous year-end balance of $4,000 million. The $1,200 million increase in accounts payable matched increased expenses and/or assets but did not require cash. If the company's managers had further delayed paying creditors $500 million until the day *after* the balance sheet date, they could have increased the cash provided by operating activities by $500 million. If the managers believe that the cash generated from operations is a metric of focus for investors, the managers could impress them with an artificially stronger cash flow by simply stretching the accounts payable credit period.

[25]Accounting Standards Codification Section 230-10-45-25, "Reporting Operating, Investing, and Financing Activities." The direct method and indirect method are similar in IFRS, as addressed in IAS 7, Paragraph 18.

What might alert investors to such machinations? They need to examine the composition of the operations section of the cash flow statement—if they do not, then *nothing* will ever alert them. Studying changes in the working capital can reveal unusual patterns that may indicate manipulation of the cash provided by operations.

Another practice that might lead an investor to question the quality of cash provided by operations is to compare a company's cash generation with an industry-wide level or with the cash operating performance of one or more similar competitors. Cash generation performance can be measured several ways. One way is to compare the relationship between cash generated by operations and net income. Cash generated by operations in excess of net income signifies better quality of earnings, whereas a chronic excess of net income over cash generated by operations should be a cause for concern; it may signal the use of accounting methods to simply raise net income instead of depicting financial reality. Another way to measure cash generation performance is to compare cash generated by operations with debt service, capital expenditures, and dividends (if any). When there is a wide variance between the company's cash generation performance and that of its benchmarks, investors should seek an explanation and carefully examine the changes in working capital accounts.

Because investors may focus on cash provided by operations as an important metric, managers may resort to managing the working capital accounts as described in order to present the most favorable picture of cash provided by operations. But there are other means to improve the cash generation picture. A company may misclassify operating uses of cash into either the investing or financing sections of the cash flow statement, which enhances the appearance of cash generated by operating activities.

Dynegy Inc. provides an example of manipulation of cash from operations through clever construction of contracts and assistance from an unconsolidated special purpose entity named ABG Gas Supply LLC (ABG). In April 2001, Dynegy entered into a contract for the purchase of natural gas from ABG. According to the contract, Dynegy would purchase gas at *below-market* rates from ABG for nine months and sell it at the current market rate. The nine-month term coincided with Dynegy's 2001 year end and would result in gains backed by cash flows. Dynegy also agreed to buy gas at *above-market* rates from ABG for the following 51 months and sell it at the current market rate. The contract was reported at its fair value at the end of fiscal year 2001. It had no effect on net income for the year. The earlier portion of the contract resulted in a gain, supported by $300 million of cash flow, but the latter portion of the contract resulted in non-cash losses that offset the profit. The mark-to-market rules required the recognition of both gains and losses from all parts of the contract, and hence the net effect on earnings was zero.

In April 2002, a *Wall Street Journal* article exposed the chicanery, thanks to leaked documents. The SEC required Dynegy to restate the cash flow statement by reclassifying $300 million from the operating section of the cash flow statement to the financing section, on the grounds that Dynegy had used ABG as a conduit to effectively borrow $300 million from Citigroup. The bank had extended credit to ABG, which it used to finance its losses on the contract (Lee, 2012).

Another area of flexibility in cash flow statement reporting is found in the area of interest capitalization, which creates differences between total interest payments and total interest costs.[26] Assume a company incurs total interest cost of $30,000, composed of $3,000 of

[26] See Nurnberg and Largay (1998) and Nurnberg (2006).

discount amortization and $27,000 of interest payments. Of the $30,000, two-thirds of it ($20,000) is expensed; the remaining third ($10,000) is capitalized as plant assets. If the company uses the same interest expense/capitalization proportions to allocate the interest payments between operating and investing activities, then it will report $18,000 (2/3 × $27,000) as an operating outflow and $9,000 (1/3 × $27,000) as an investing outflow. The company might also choose to offset the entire $3,000 of non-cash discount amortization against the $20,000 treated as expense, resulting in an operating outflow as low as $17,000, or as much as $20,000 if it allocated all of the non-cash discount amortization to interest capitalized as investing activities. Similarly, the investing outflow could be as much as $10,000 or as little as $7,000, depending on the treatment of the non-cash discount amortization. There are choices within the choices, all in areas where investors believe choices do not even exist. Nurnberg and Largay (1998) note that companies apparently favor the method that reports the lowest operating outflow, presumably to maximize reported cash from operations.

Investors and analysts need to be aware that presentation choices permitted in IAS 7, "Statement of Cash Flows," offer flexibility in classification of certain items in the cash flow statement. This flexibility can drastically change the results in the operating section of the cash flow statement. An excerpt from IAS 7, Paragraphs 33 and 34, provides the background:

> 33. Interest paid and interest and dividends received are usually classified as operating cash flows for a financial institution. However, there is no consensus on the classification of these cash flows for other entities. Interest paid and interest and dividends received may be classified as operating cash flows because they enter into the determination of profit or loss. *Alternatively, interest paid and interest and dividends received may be classified as financing cash flows and investing cash flows respectively, because they are costs of obtaining financial resources or returns on investments.*
>
> 34. Dividends paid may be classified as a financing cash flow because they are a cost of obtaining financial resources. *Alternatively, dividends paid may be classified as a component of cash flows from operating activities in order to assist users to determine the ability of an entity to pay dividends out of operating cash flows.* [Emphasis added.]

By allowing a choice of operating or financing for the placement of interest and dividends received or paid, IAS 7 gives a company's managers the opportunities to select the presentation that gives the best-looking picture of operating performance. An example is Norse Energy Corp. ASA, a Norwegian gas explorer and producer, which changed its classifications of interest paid and interest received in 2007 (Gordon, Henry, Jorgensen, and Linthicum, 2012). Interest paid was switched to financing instead of decreasing cash generated from operations. Norse Energy also switched its classification of interest received to investing from operating cash flow. The net effect of these changes was to report positive, rather than negative, operating cash flows in both 2007 and 2008. With these simple changes, the company could also change the perception of its operations. The cash flow statement formerly presented the appearance of a company with operations that used more cash than it generated, and it possibly raised questions about the sustainability of operations. After the revision, the operating section of the cash flow statement depicted a much more viable operation.

Exhibit 21 shows the net effect of the reclassifications on Norse Energy's cash flows.

EXHIBIT 21 Reclassification of Cash Flows

	As Reported (following 2007 reclassification)		Adjustments, If No Reclassification*		Pro-Forma (if no reclassification)	
	2008	2007	2008	2007	2008	2007
Operating	**$ 5.30**	**$ 2.80**	**($13.70)**	**($14.40)**	**($ 8.40)**	**($11.60)**
Investing	$ 0.90	($56.80)	($ 9.00)	($ 3.50)	($ 8.10)	($60.30)
Financing	($16.60)	$34.50	$22.70	$17.90	$ 6.10	$52.40
Total	($10.40)	($19.50)	$ 0	$ 0	($10.40)	($19.50)

* The adjustments reverse the addition of interest received to investing and instead add it to operating. The adjustments also reverse the deduction of interest paid from financing and instead subtract it from operating.

4.2.3. Choices That Affect Financial Reporting

Exhibit 22 summarizes some of the areas where choices can be made that affect financial reports.

EXHIBIT 22 Areas Where Choices and Estimates Affect Financial Reporting

Area of Choice/ Estimate	Analyst Concerns
Revenue recognition	• How is revenue recognized: upon shipment or upon delivery of goods? • Is the company engaging in "channel stuffing"—the practice of overloading a distribution channel with more product than it is normally capable of selling? This can be accomplished by inducing customers to buy more through unusual discounts, the threat of near-term price increases, or both—or simply by shipping goods that were not ordered. These transactions may be corrected in a subsequent period and may even result in restated results. Are accounts receivable relative to revenues abnormally high for a company relative to its history or its peers? If so, channel stuffing may have occurred. • Is there unusual activity in the allowance for sales returns relative to past history? • Does the company's days sales outstanding indicate any collection issues that might indicate shipment of unneeded or unwanted goods to customers? • Does the company engage in "bill-and-hold" transactions? In such transactions, a customer purchases goods but requests that the goods remain with the seller until a later date. This kind of transaction makes it possible for a seller to manufacture fictitious sales by declaring end-of-period inventory as "sold but held," with a minimum of effort and phony documentation. • Does the company use rebates as part of its marketing approach? If so, how significantly do the estimates of rebate fulfillment affect net revenues, and have any unusual breaks with history occurred?

(*continued*)

EXHIBIT 22 (Continued)

Area of Choice/ Estimate	Analyst Concerns
	• Does the company separate its revenue arrangements into multiple deliverables of goods or services? This area is one of great revenue recognition flexibility, and also one that provides little visibility to investors. They simply cannot examine a company's arrangements and decide for themselves as to the propriety of revenue allocation to different components of a contract. If a company uses multiple deliverable arrangements with its customers as a routine matter, investors might be more sensitive to revenue reporting risks. In seeking a comfort level, investors might ask the following questions: Does the company explain adequately how it determines the different allocations of deliverables and how revenue is recognized on each one? Do deferred revenues result? If not, does it seem reasonable that there are no deferred revenues for this kind of arrangement? Are there unusual trends in revenues and receivables, particularly with regard to cash conversion? If an investor cannot be satisfied with the answers from these questions, he or she might be more comfortable with other investment choices.
Long-lived assets: Depreciation policies	• Do the estimated life spans of the associated assets make sense, or are they unusually low compared with others in the same industry? • Have there been changes in depreciable lives that have a positive effect on current earnings? • Do recent asset write-downs indicate that company policy on asset lives might need to be reconsidered?
Intangibles: Capitalization policies	• Does the company capitalize expenditures related to intangibles, such as software? Does its balance sheet show any R&D capitalized as a result of acquisitions? Or, if the company is an IFRS filer, has it capitalized any internally generated development costs? • How do the company's capitalization policies compare with the competition? • Are amortization policies reasonable?
Allowance for doubtful accounts/ loan loss reserves	• Are additions to such allowances lower or higher than in the past? • Does the collection experience justify any difference from historical provisioning? • Is there a possibility that any lowering of the allowance may be the result of industry difficulties along with the difficulty of meeting earnings expectations?
Inventory cost methods	• Does the company use a costing method that produces fair reporting results in view of its environment? How do its inventory methods compare with others in its industry? Are there differences that will make comparisons uneven if there are unusual changes in inflation? • Does the company use reserves for obsolescence in its inventory valuation? If so, are they subject to unusual fluctuations that might indicate adjusting them to arrive at a specified earnings result? • If a company reports under US GAAP and uses last-in-first-out (LIFO) inventory accounting, does LIFO liquidation (the assumed sale of old, lower-cost layers of inventory) occur through inventory reduction programs? This inventory reduction may generate earnings without supporting cash flow, and management may intentionally reduce the layers to produce specific earnings benefits.

EXHIBIT 22 (Continued)

Area of Choice/ Estimate	Analyst Concerns
Tax asset valuation accounts	• Tax assets, if present, must be stated at the value at which management expects to realize them, and an allowance must be set up to restate tax assets to the level expected to eventually be converted into cash. Determining the allowance involves an estimate of future operations and tax payments. Does the amount of the valuation allowance seem reasonable, overly optimistic, or overly pessimistic? • Are there contradictions between the management commentary and the allowance level, or the tax note and the allowance level? There cannot be an optimistic management commentary and a fully reserved tax asset, or vice versa. One of them has to be wrong. • Look for changes in the tax asset valuation account. It may be 100% reserved at first, and then "optimism" increases whenever an earnings boost is needed. Lowering the reserve decreases tax expense and increases net income.
Goodwill	• Companies must annually assess goodwill balances for impairment on a qualitative basis. If further testing appears necessary, it is based on estimates of the fair value of reporting units (US GAAP issuers) or cash-generating units (IFRS issuers), which are associated with goodwill balances. The tests are based on subjective estimates, including future cash flows and the employment of discount rates. • Do the disclosures relating to the goodwill testing suggest that the testing was skewed to avoid goodwill impairment charges?
Warranty reserves	• Have additions to the reserves been reduced, perhaps to make earnings targets? Examine the trend in the charges of actual costs against the reserves: Do they support or contradict the warranty provisioning activity? Do the actual costs charged against the reserve give the analyst any indication about the quality of the products sold?
Related-party transactions	• Is the company engaged in transactions that disproportionately benefit members of management? Does one company have control over another's destiny through supply contracts or other dealings? • Do extensive dealings take place with *non-public* companies that are under management control? If so, non-public companies could absorb losses (through supply arrangements that are unfavorable to the private company, for example) in order to make the public company's performance look good. This scenario may provide opportunities for an owner to cash out.

The most important lesson is that choices exist among accounting methods and estimates, and an analyst needs a working knowledge of them in order to understand whether management may have made choices to achieve a desired result.

4.3. Warning Signs

The choices management makes to achieve desired results leave a trail, like tracks in sand or snow. The evidence or warning signs of information manipulation in financial reports are directly linked to the basic means of manipulation: biased revenue recognition and biased expense recognition. The bias may relate to timing and/or location of recognition. For example, a company may choose to defer expenses by capitalizing them, which relates to when an

expense is recognized. In another example, a company may choose to recognize a loss in other comprehensive income or directly through equity rather than through the profit and loss statement, which relates to where the loss is recognized. The alert investor or analyst should do the following to find warning signs.

1) Pay attention to revenue. The single largest number on the income statement is revenue, and revenue recognition is a recurring source of accounting manipulation and even outright fraud. Answering the question, "Is revenue higher or lower than the previous comparable period?" is not sufficient. Many analytical procedures can be routinely performed to provide warning signals of accounting malfeasance:

- *Examine the accounting policies note for a company's revenue recognition policies.*
  - Consider whether the policies make it easier to prematurely recognize revenue, such as recognizing revenue immediately upon shipment of goods, or if the company uses bill-and-hold arrangements whereby a sale is recognized before goods are actually shipped to the customer.
  - Barter transactions may exist, which can be difficult to value properly.
  - Rebate programs involve many estimates, including forecasts of the amount of rebates that will ultimately be incurred. These estimates can have significant effects on revenue recognition.
  - Multiple-deliverable arrangements of goods and services are common, but clarity about the timing of revenue recognition for each item or service delivered is necessary for the investor to be comfortable with the reporting of revenues.

  Although none of these decisions violates accounting standards, each can raise investor suspicions if other warning signs are present.
- *Look at revenue relationships.* Compare a company's revenue growth with its primary competitors or its industry peer group.
  - If a company's revenue growth is out of line with its competitors, its industry, or the economy, the investor or analyst needs to understand the reasons for the outperformance. It may be a result of superior management or products and services, but not all management is superior, nor are the products and services of their companies. Revenue quality might be suspect, and the investor should take additional analytical steps.
  - Compare accounts receivable with revenues over several years.
    - Examine the trend to determine whether receivables are increasing as a percentage of total revenues. If so, a company might be engaging in channel-stuffing activities, or worse, recording fictitious sales transactions.
    - Calculate receivables turnover for several years:
      - Examine the trend for unusual changes and seek an explanation if they exist.
      - Compare a company's days sales outstanding (DSO) or receivables turnover with that of relevant competitors or an industry peer group and determine whether the company is an outlier.

    An increase in DSO or decrease in receivables turnover could suggest that some revenues are recorded prematurely or are even fictitious, or that the allowance for doubtful accounts is insufficient.
  - Examine asset turnover. If a company's managers make poor asset allocation choices, revenues may not be sufficient to justify the investment. Be particularly alert when asset allocation choices involve acquisitions of entire companies. If post-acquisition revenue generation is weak, managers might reach for revenue growth anywhere it can be found.

That urge for growth might result in accounting abuses.

Revenues, divided by total assets, indicate the productivity of assets in generating revenues. If the company's asset turnover is continually declining, or lagging the asset turnover of competitors or industry, it may portend future asset write-downs, particularly in the area of goodwill balances for acquisitive companies.

2) Pay attention to signals from inventories. Although inventory is not a component of every company's asset base, its presence creates an opportunity for accounting manipulation.

- *Look at inventory relationships.* Because revenues involve items sold from inventory, the kind of examination an investor should perform on inventory is similar to that for revenues.
  - Compare growth in inventories with competitors and industry benchmarks. If a company's inventory growth is out of line with its peers, without any concurrent sales growth, then it may be simply the result of poor inventory management—an operational inefficiency that might affect an investor's view of a company. It may also signal obsolescence problems in the company's inventory that have not yet been recognized through markdowns to the inventory's net realizable value. Current gross and net profits could be overstated because of overstated inventory.
  - Calculate the inventory turnover ratio. This ratio is the cost of sales divided by the average ending inventory. Declining inventory turnover could also suggest obsolescence problems that should be recognized.
  - Companies reporting under US GAAP may use LIFO inventory cost flow assumptions. When this assumption is part of the accounting policies, and a company operates in an inflationary environment, investors should note whether old, low-cost inventory costs have been passed through current earnings and artificially improved gross, operating, and net profits.

3) Pay attention to capitalization policies and deferred costs. In a study of enforcement actions over a five-year period, the SEC found that improper revenue recognition was the most prevalent accounting issue.[27] Suppression of expenses was the next most prevalent problem noted. As the earlier discussion of WorldCom showed, improper capitalization practices can result in a significant misstatement of financial results.

- *Examine the company's accounting policy note for its capitalization policy for long-term assets, including interest costs, and for its handling of other deferred costs.* Compare the company's policy with the industry practice. If the company is the only one capitalizing certain costs while other industry participants treat them as expenses, a red flag is raised. If an outlier company of this type is encountered, it would be useful to cross-check such a company's asset turnover and profitability margins with others in its industry. An investor might expect such a company to be more profitable than its competitors, but the company might have lower confidence in the quality of the reported numbers.

4) Pay attention to the relationship of cash flow and net income. Net income propels stock prices, but cash flow pays bills. Management can manipulate either one, but sooner or later, net

[27] SEC, "Report Pursuant to Section 704 of the Sarbanes–Oxley Act of 2002" (www.sec.gov/news/studies/sox704report.pdf): 5–6.

income must be realized in cash if a company is to remain viable. When net income is higher than cash provided by operations, one possibility is that aggressive accrual accounting policies have shifted current expenses to later periods. Increasing earnings in the presence of declining cash generated by operations might signal accounting irregularities.

- *Construct a time series of cash generated by operations divided by net income.* If the ratio is consistently below 1.0 or has declined repeatedly, there may be problems in the company's accrual accounts.

5) Other potential warnings signs. Other areas that might suggest further analysis include the following:

- *Depreciation methods and useful lives.* As discussed earlier, depreciation methods and the useful lives selected can greatly influence profitability. An investor should compare a company's policies with those of its peers to determine whether it is particularly lenient in its effects on earnings. Investors should likewise compare the length of depreciable lives used by a company with those used by its peers.
- *Fourth-quarter surprises.* An investor should be suspicious of possible earnings management if a company routinely disappoints investors with poor earnings or overachieves in the fourth quarter of the year when no seasonality exists in the business. The company may be over- or under-reporting profits in the first three quarters of the year.
- *Presence of related-party transactions.* Related-party transactions often arise when a company's founders are still very active in managing the company, with much of their wealth tied to the company's fortunes. They may be more biased in their view of a company's performance because it relates directly to their own wealth and reputations, and they may be able to transact business with the company in ways that may not be detected. For instance, they may purchase unsellable inventory from the company for disposal in another company of their own in order to avoid markdowns.
- *Non-operating income or one-time sales included in revenue.* To disguise weakening revenue growth, or just to enhance revenue growth, a company might classify non-operating income items into revenues or fail to clarify the nature of revenues. In the Trump Hotels example, the company's presentation of pro forma earnings included in revenues a one-time gain from a lease termination.[28] In the first quarter of 1997, Sunbeam Corporation included one-time disposal of product lines in sales without indicating that such non-recurring sales were included in revenues. This inclusion gave investors a false impression of the company's sustainable revenue-generating capability.
- *Classification of expenses as "non-recurring."* To make operating performance look more attractive, managers might carve out "special items" in the income statement. Particularly when such special items appear period after period, equity investors might find their interests best served by not giving serial "special items" such treatment and instead focusing on the net income line in evaluating performance over long periods.
- *Gross/operating margins out of line with competitors or industry.* This disparity is an ambivalent warning sign. It might signal superior management ability. But it might also signal the presence of accounting manipulations to add a veneer of superior management ability to the

[28] Accounting and Auditing Enforcement Release No. 1499, "In the Matter of Trump Hotels & Casino Resorts," SEC (16 January 2002): www.sec.gov/litigation/admin/34-45287.htm.

company's reputation. Only the compilation and examination of other warning signals will enable an investor or analyst to decide which signal is being given.

Warning signals are just that: signals, not indisputable declarations of accounting manipulation guilt. Investors and analysts need to evaluate them cohesively, not on an isolated basis. When an investor finds a number of these signals, the subject investment should be viewed with caution or even discarded in favor of alternatives.

Furthermore, as discussed earlier, context is important in judging the value of warning signals. A few examples of facts and circumstances to be aware of are as follows.

- *Younger companies with an unblemished record of meeting growth projections.* It is plausible, especially for a younger company with new and popular product offerings, to generate above-average returns for a period of time. But, as demand dissipates, products mature, and competitors challenge for market share, management may seek to extend its recent record of rapid growth in sales and profitability by unconventional means. At this point, the "earnings games" begin: aggressive estimates, drawing down "cookie jar" reserves, selling assets for accounting gains, taking on excess leverage, or entering into financial transactions with no apparent business purpose other than financial statement "window dressing."
- *Management has adopted a minimalist approach to disclosure.* Confidence in accounting quality depends on disclosure. For example, when large companies claim that they have only one reportable segment or that management's commentary is similar from period to period, there is cause for concern. If management does not seem to take seriously its obligation to provide information, one needs to be concerned. A plausible explanation for minimalist disclosure policies could be that management is protecting investors' interests by withholding valuable information from competitors. But, this explanation is not necessarily the case. For example, after Sony Corporation acquired CBS Records and Columbia Pictures, it incurred substantial losses for a number of years. Yet, Sony chose to hide its negative trends and doubtful future prospects by aggregating the results within a much larger "Entertainment Division." In 1998, after Sony ultimately wrote off much of the goodwill associated with these ill-fated acquisitions, the SEC sanctioned Sony and its CFO for failing to separately discuss them in MD&A in a balanced manner.[29]
- *Management fixation on earnings reports.* Beware of companies whose management appears to be fixated on reported earnings, sometimes to the detriment of attending to real drivers of value. Indicators of excessive earnings fixation include the aggressive use of non-GAAP measures of performance, special items, or non-recurring charges. Another indicator of earnings fixation is highly decentralized operations in which division managers' compensation packages are heavily weighted toward the attainment of reported earnings or non-GAAP measures of performance.

A company's culture is an intangible that investors should bear in mind when they are evaluating financial statements for the possibility of accounting manipulation. A management's highly competitive mentality may serve investors well when the company conducts buisness (assuming that actions taken are not unethical, illegal, or harmfully myopic), but that kind of thinking should not extend to communications with the owners of the company: the shareholders. That

[29] Accounting and Auditing Enforcement Release No. 1061, "In the Matter of Sony Corporation and Sumio Sano, Respondents," SEC (5 August 1998).

mentality can lead to the kind of accounting gamesmanship seen in the early part of the century. In examining financial statements for warning signs of manipulation, the investor should consider whether that mindset exists in the preparation of the financial statements.

One notable example of the mindset comes from one of the most recognized corporate names in the world, General Electric. In the mid-1980s, GE acquired Kidder Peabody, and it was ultimately determined that much of the earnings that Kidder had reported were bogus. As a consequence, GE would announce within two days that it would take a non-cash write-off of $350 million. Here is how former CEO/Chair Jack Welsh described the ensuing meeting with senior management in his memoir, *Straight from the Gut*:

> "The response of our business leaders to the crisis was typical of the GE *culture* [emphasis added]. Even though the books had closed on the quarter, many immediately offered to pitch in to cover the Kidder gap. Some said they could find an extra $10 million, $20 million, and even $30 million from their businesses to offset the surprise. Though it was too late, their willingness to help was a dramatic contrast to the excuses I had been hearing from the Kidder people." (p. 225)

It appears that the corporate governance apparatus fostered a GE culture that extended the concept of teamwork to the point of "sharing" profits to win one for the team as a whole, which is incompatible with the concept of neutral financial reporting. Although research is not conclusive on this question, it may also be worth considering that predisposition to earnings manipulation is more likely to be present when the CEO and board chair are one and the same, or when the audit committee of the board essentially serves at the pleasure of the CEO and lacks financial reporting sophistication. Finally, one could discuss whether the financial reporting environment today would reward or penalize a CEO who openly endorsed a view that he could legitimately exercise financial reporting discretion—albeit within limits—for the purpose of artificially smoothing earnings.

Restructuring and/or impairment charges. At times, a company's stock price has been observed to rise after it recognized a "big bath" charge to earnings of the current period. The conventional wisdom explaining the stock price rise is that accounting recognition signals something positive: that management is now ready to part with the lagging portion of a company, so as to redirect its attention and talents to more-profitable activities. Consequently, the earnings charge should be disregarded for being solely related to past events.

The analyst should also consider, however, that the events leading ultimately to the big bath on the financial statements did not happen overnight, even though the accounting for those events occurs at a point subsequent. Management may want to communicate that the accounting adjustments will reflect the company's new path, but the restructuring charge also indicates that the old path of reported earnings was not real. In particular, expenses reported in prior years were very likely understated—even assuming that no improper financial statement manipulation had occurred. To extrapolate historical earnings trends, an analyst should consider making pro forma analytical adjustments of prior years' earnings to reflect in those prior years a reasonable share of the current period's restructuring and impairment charges.

Management has a merger and acquisition orientation. Tyco International Ltd. acquired more than 700 companies from 1996 to 2002. Even assuming the best of intentions regarding financial reporting, a growth-at-any-cost corporate culture poses a severe challenge to operational and financial reporting controls. In Tyco's case, the SEC found that it consistently

and fraudulently understated assets acquired (lowering future depreciation and amortization charges) and overstated liabilities assumed (avoiding expense recognition and the earnings banks to be drawn down in future periods).[30]

5. SUMMARY

Financial reporting quality varies across companies. The ability to assess the quality of a company's financial reporting is an important skill for analysts. Indications of low-quality financial reporting can prompt an analyst to maintain heightened skepticism when reading a company's reports, to review disclosures critically when undertaking financial statement analysis, and to incorporate appropriate adjustments in assessments of past performance and forecasts of future performance.

- Financial reporting quality can be thought of as spanning a continuum from the highest (containing information that is relevant, correct, complete, and unbiased) to the lowest (containing information that is not just biased or incomplete but possibly pure fabrication).
- *Reporting quality*, the focus of this chapter, pertains to the information disclosed. High-quality reporting represents the economic reality of the company's activities during the reporting period and the company's financial condition at the end of the period.
- *Results quality* (commonly referred to as earnings quality) pertains to the earnings and cash generated by the company's actual economic activities and the resulting financial condition, relative to expectations of current and future financial performance.
- An aspect of financial reporting quality is the degree to which accounting choices are conservative or aggressive. "Aggressive" typically refers to choices that aim to enhance the company's reported performance and financial position by inflating the amount of revenues, earnings, and/or operating cash flow reported in the period; or by decreasing the amount of expenses reported in the period and/or the amount of debt reported on the balance sheet.
- Conservatism in financial reports can result from either (1) accounting standards that specifically require a conservative treatment of a transaction or an event or (2) judgments necessarily made by managers when applying accounting standards that result in more- or less-conservative results.
- An example of conservatism in the oil and gas industry is the revenue recognition accounting standard. This standard permits recognition of revenue only at time of shipment rather than closer to the time of actual value creation, which is the time of discovery.
- Managers may be motivated to issue less than high quality financial reports in order to mask poor performance, to boost the stock price, to increase personal compensation, and/or to avoid violation of debt covenants.
- Conditions that are conducive to the issuance of low-quality financial reports include cultural environment attributes that result in fewer or less transparent financial disclosures, book/tax conformity that shifts emphasis toward legal compliance and away from fair presentation, and limited capital markets regulation.
- Mechanisms that discipline financial reporting quality include the free market and incentives for companies to minimize cost of capital, auditors, contract provisions specifically tailored to penalize misreporting, and enforcement by regulatory entities.

[30] Accounting and Auditing Enforcement Release No. 2414, "SEC Brings Settled Charges Against Tyco International Ltd. Alleging Billion Dollar Accounting Fraud," SEC (17 April 2006): www.sec.gov/litigation/litreleases/2006/lr19657.htm.

- Pro forma earnings (also commonly referred to as non-GAAP or non-IFRS earnings) adjust earnings as reported on the income statement. Pro forma earnings that exclude negative items are a hallmark of aggressive presentation choices.
- Companies are required to make additional disclosures when presenting any non-GAAP or non-IFRS metric.
- Managers' considerable flexibility in choosing their companies' accounting policies and in formulating estimates provides opportunities for aggressive accounting.
- Examples of accounting choices that affect earnings and balance sheets include inventory cost flow assumptions, estimates of uncollectible accounts receivable, estimated realizability of deferred tax assets, depreciation method, estimated salvage value of depreciable assets, and estimated useful life of depreciable assets.
- Cash from operations is a metric of interest to investors that can be enhanced by operating choices, such as stretching accounts payable, and potentially by classification choices.

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PROBLEMS

1. The information provided by a low-quality financial report will *most likely*:
   A. decrease company value.
   B. indicate earnings are not sustainable.
   C. impede the assessment of earnings quality.
2. To properly assess a company's past performance, an analyst requires:
   A. high earnings quality.
   B. high financial reporting quality.
   C. both high earnings quality and high financial reporting quality.
3. Low quality earnings *most likely* reflect:
   A. low-quality financial reporting.
   B. company activities which are unsustainable.
   C. information that does not faithfully represent company activities.
4. Financial reports of the lowest level of quality reflect:
   A. fictitious events.
   B. biased accounting choices.
   C. accounting that is non-compliant with GAAP.
5. If a particular accounting choice is considered aggressive in nature, then the financial performance for the current period would *most likely*:
   A. be neutral.
   B. exhibit an upward bias.
   C. exhibit a downward bias.
6. Which of the following is *most likely* to reflect conservative accounting choices?
   A. Decreased reported earnings in later periods
   B. Increased reported earnings in the current period
   C. Increased debt reported on the balance sheet at the end of the current period
7. Which of the following statements *most likely* describes a situation that would motivate a manager to issue low-quality financial reports?
   A. The manager's compensation is tied to stock price performance.
   B. The manager has increased the market share of products significantly.
   C. The manager has brought the company's profitability to a level higher than competitors.
8. A company is experiencing a period of strong financial performance. In order to increase the likelihood of exceeding analysts' earnings forecasts in the next reporting period, the company would *most likely* undertake accounting choices that:
   A. inflate reported revenue in the current period.
   B. delay expense recognition in the current period.
   C. accelerate expense recognition in the current period.

This question set was developed by Dan Reeder, CFA (Shawnee, OK, USA). Copyright © 2014 CFA Institute.

9. Which of the following situations will *most likely* motivate managers to inflate earnings in the current period?
   A. Possibility of bond covenant violation
   B. Earnings in excess of analysts' forecasts
   C. Earnings that are greater than the previous year
10. Which of the following *best* describes an opportunity for management to issue low-quality financial reports?
    A. Ineffective board of directors
    B. Pressure to achieve some performance level
    C. Corporate concerns about financing in the future
11. An audit opinion of a company's financial reports is *most likely* intended to:
    A. detect fraud.
    B. reveal misstatements.
    C. assure that financial information is presented fairly.
12. If a company uses a non-GAAP financial measure in an SEC filing, then the company must:
    A. give more prominence to the non-GAAP measure if it is used in earnings releases.
    B. provide a reconciliation of the non-GAAP measure and equivalent GAAP measure.
    C. exclude charges requiring cash settlement from any non-GAAP liquidity measures.
13. A company wishing to increase earnings in the current period may choose to:
    A. decrease the useful life of depreciable assets.
    B. lower estimates of uncollectible accounts receivables.
    C. classify a purchase as an expense rather than a capital expenditure.
14. Bias in revenue recognition would *least likely* be suspected if:
    A. the firm engages in barter transactions.
    B. reported revenue is higher than the previous quarter.
    C. revenue is recognized before goods are shipped to customers.
15. Which of the following is an indication that a company may be recognizing revenue prematurely? Relative to its competitors, the company's:
    A. asset turnover is decreasing.
    B. receivables turnover is increasing.
    C. days sales outstanding is increasing.
16. Which of the following would *most likely* signal that a company may be using aggressive accrual accounting policies to shift current expenses to later periods? Over the last five-year period, the ratio of cash flow to net income has:
    A. increased each year.
    B. decreased each year.
    C. fluctuated from year to year.

CHAPTER 12

FINANCIAL STATEMENT ANALYSIS: APPLICATIONS

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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- evaluate a company's past financial performance and explain how a company's strategy is reflected in past financial performance;
- forecast a company's future net income and cash flow;
- describe the role of financial statement analysis in assessing the credit quality of a potential debt investment;
- describe the use of financial statement analysis in screening for potential equity investments;
- explain appropriate analyst adjustments to a company's financial statements to facilitate comparison with another company.

1. INTRODUCTION

This chapter presents several important applications of financial statement analysis. Among the issues we will address are the following:

- What are the key questions to address in evaluating a company's past financial performance?
- How can an analyst approach forecasting a company's future net income and cash flow?

- How can financial statement analysis be used to evaluate the credit quality of a potential fixed-income investment?
- How can financial statement analysis be used to screen for potential equity investments?
- How can differences in accounting methods affect financial ratio comparisons between companies, and what are some adjustments analysts make to reported financials to facilitate comparability among companies.

The chapter "Financial Statement Analysis: An Introduction" described a framework for conducting financial statement analysis. Consistent with that framework, prior to undertaking any analysis, an analyst should explore the purpose and context of the analysis. The purpose and context guide further decisions about the approach, the tools, the data sources, and the format in which to report results of the analysis, and also suggest which aspects of the analysis are most important. Having identified the purpose and context, the analyst should then be able to formulate the key questions that the analysis must address. The questions will suggest the data the analyst needs to collect to objectively address the questions. The analyst then processes and analyzes the data to answer these questions. Conclusions and decisions based on the analysis are communicated in a format appropriate to the context, and follow-up is undertaken as required. Although this chapter will not formally present applications as a series of steps, the process just described is generally applicable.

Section 2 of this chapter describes the use of financial statement analysis to evaluate a company's past financial performance, and Section 3 describes basic approaches to projecting a company's future financial performance. Section 4 presents the use of financial statement analysis in assessing the credit quality of a potential debt investment. Section 5 concludes the survey of applications by describing the use of financial statement analysis in screening for potential equity investments. Analysts often encounter situations in which they must make adjustments to a company's reported financial results to increase their accuracy or comparability with the financials of other companies. Section 6 illustrates several common types of analyst adjustments. Section 7 presents a summary, and practice problems in the CFA Institute multiple-choice format conclude the chapter.

2. APPLICATION: EVALUATING PAST FINANCIAL PERFORMANCE

Analysts examine a company's past financial performance for a number of reasons. Cross-sectional analysis of financial performance facilitates understanding of the comparability of companies for a market-based valuation.[1] Analysis of a company's historical performance over time can provide a basis for a forward-looking analysis of the company. Both cross-sectional and trend analysis can provide information for evaluating the quality and performance of a company's management.

[1] Pinto et al. (2010) describe market-based valuation as using price multiples—ratios of a stock's market price to some measure of value per share (e.g., price-to-earnings ratios). Although the valuation method may be used independently of an analysis of a company's past financial performance, such an analysis may provide reasons for differences in companies' price multiples.

An evaluation of a company's past performance addresses not only *what* happened (i.e., how the company performed) but also *why* it happened—the causes behind the performance and how the performance reflects the company's strategy. Evaluative judgments assess whether the performance is better or worse than a relevant benchmark, such as the company's own historical performance, a competitor's performance, or market expectations. Some key analytical questions include the following:

- How and why have corporate measures of profitability, efficiency, liquidity, and solvency changed over the periods being analyzed?
- How do the level and trend in a company's profitability, efficiency, liquidity, and solvency compare with the corresponding results of other companies in the same industry? What factors explain any differences?
- What aspects of performance are critical for a company to successfully compete in its industry, and how did the company perform relative to those critical performance aspects?
- What are the company's business model and strategy, and how did they influence the company's performance as reflected in, for example, its sales growth, efficiency, and profitability?

Data available to answer these questions include the company's (and its competitors') financial statements, materials from the company's investor relations department, corporate press releases, and non-financial-statement regulatory filings, such as proxies. Useful data also include industry information (e.g., from industry surveys, trade publications, and government sources), consumer information (e.g., from consumer satisfaction surveys), and information that is gathered by the analyst firsthand (e.g., through on-site visits). Processing the data typically involves creating common-size financial statements, calculating financial ratios, and reviewing or calculating industry-specific metrics. Example 1 illustrates the effects of strategy on performance and the use of basic economic reasoning in interpreting results.

EXAMPLE 1 A Change in Strategy Reflected in Financial Performance

Apple Inc. (NASDAQ: AAPL) is a company that has evolved and adapted over time. In its 1994 Prospectus (Form 424B5) filed with the US SEC, Apple identified itself as "one of the world's leading personal computer technology companies." At that time, most of its revenue was generated by computer sales. In the prospectus, however, Apple stated, "The Company's strategy is to expand its market share in the personal computing industry while developing and expanding into new related business such as Personal Interactive Electronics and Apple Business Systems." Over time, products other than computers became significant generators of revenue and profit. In its 2010 Annual Report (Form 10-K) filed with the SEC, Apple stated in Part I, Item 1, under Business Strategy, "The Company is committed to bringing the best user experience to its customers through its innovative hardware, software, peripherals, services, and Internet offerings. The Company's business strategy leverages its unique ability to design and develop . . . to

provide its customers new products and solutions with superior ease-of-use, seamless integration, and innovative industrial design. . . . The Company is therefore uniquely positioned to offer superior and well-integrated digital lifestyle and productivity solutions." Clearly, the company is no longer simply a personal computer technology company.

In analyzing the historical performance of Apple as of the beginning of 2011, an analyst might refer to the information presented in Exhibit 1. Panel A presents selected financial data for the company from 2007 to 2010. Panels B and C present excerpts from the segment footnote. Panel B reports the net sales by product, in millions of dollars, and Panel C reports the unit sales by product, in thousands. [Because Apple manages its business on the basis of geographical segments, the more complete data required in segment reporting (i.e., segment operating income and segment assets) is available only by geographical segment, not by product.]

In 2005, an article in *Barron's* said, "In the last year, the iPod has become Apple's best-selling product, bringing in a third of revenues for the Cupertino, Calif. firm. . . . Little noticed by these iPod zealots, however is a looming threat. . . . Wireless phone companies are teaming up with the music industry to make most mobile phones into music players" (*Barron's* 27 June 2005, p. 19). The threat noted by *Barron's* was not unnoticed or ignored by Apple.

In June 2007, Apple itself entered the mobile phone market with the launch of the original iPhone, followed in June 2008 by the second-generation iPhone 3G (a handheld device combining the features of a mobile phone, an iPod, and an internet connection device). Soon after, the company launched the iTunes App Store, which allows users to download third-party applications onto their iPhones. As noted in a 2009 *Business Week* article, Apple "is the world's largest music distributor, having passed Wal-Mart Stores in early 2008. Apple sells around 90% of song downloads and 75% of digital music players in the United States" (*Business Week*, 28 September 2009, p. 34). Product innovations continue as evidenced by the introduction of the iPad in January 2010.

EXHIBIT 1 Selected Data for Apple Inc. (for the four years ended 25 September 2010)

Panel A: Data for Apple Inc.	Fiscal Year			
(dollars in millions)	2010	2009	2008	2007
Net sales	$65,225	$42,905	$37,491	$24,578
Gross margin	25,684	17,222	13,197	8,152
Net income	14,013	8,235	6,119	3,495
Cash and marketable securities	51,011	33,992	24,490	15,386
Total current assets	41,678	31,555	30,006	21,956
Total assets	75,183	47,501	36,171	24,878
Total current liabilities	20,722	11,506	11,361	9,280

Panel B: Net Sales by Product				
(dollars in millions)	2010	2009	2008	2007
Desktops	$6,201	$4,324	$5,622	$4,023
Portables	11,278	9,535	8,732	6,313
Total Mac net sales	17,479	13,859	14,354	10,336

EXHIBIT 1 (Continued)

(dollars in millions)	2010	2009	2008	2007
iPod	8,274	8,091	9,153	8,305
Other music related products and services	4,948	4,036	3,340	2,496
iPhone and related products and services	25,179	13,033	6,742	630
iPad and related products and services	4,958	0	0	0
Peripherals and other hardware	1,814	1,475	1,694	1,303
Software, service and other sales	2,573	2,411	2,208	1,508
Total net sales	$65,225	$42,905	$37,491	$24,578

Panel C: Unit Sales by Product

(units in thousands)	2010	2009	2008	2007
Desktops	4,627	3,182	3,712	2,714
Portables	9,035	7,214	6,003	4,337
Total Mac unit sales	13,662	10,396	9,715	7,051
Net sales per Mac unit sold	$1,279	$1,333	$1,478	$1,466
iPod unit sales	50,312	54,132	54,828	51,630
Net sales per iPod unit sold	$164	$149	$167	$161
iPhone units sold	39,989	20,731	11,627	1,389
iPad units sold	7,458	0	0	0

Source: Apple Inc. 2008 Form 10-K, 2009 Form 10-K/A, and 2010 Form 10-K.

Using the information provided, address the following:

1. Typically, products that are differentiated either through recognizable brand names, proprietary technology, unique styling, or some combination of these features can be sold at a higher price than commodity products.
   A. In general, would the selling prices of differentiated products be more directly reflected in a company's operating profit margin or gross profit margin?
   B. Does Apple's financial data (Panel A) reflect a successful differentiation strategy?
2. How liquid is Apple at the end of fiscal 2009 and 2010? In general, what are some of the considerations that a company makes in managing its liquidity?
3. Based on the product segment data for 2007 (Panels B and C), Apple's primary source of revenue was from sales of computers (the $10,336 million in sales of Mac computers represented 42 percent of total net sales) and its secondary source of revenue was from iPods. How has the company's product mix changed since 2007, and what might this change suggest for an analyst examining Apple relative to its competitors?

Solution to 1:

A. Sales of differentiated products at premium prices would generally be reflected more directly in the gross profit margin; such sales would have a higher gross profit margin, all else equal. The effect of premium pricing generally would also be reflected in a higher operating margin. Expenditures on advertising and/or

research are required to support differentiation, however, which means that the effect of premium pricing on operating profit margins is often weaker than the effect on gross profit margins.

B. Based on Apple's financial data in Panel A, the company appears to have successfully implemented a differentiation strategy, with gross margin increasing from 33 percent of sales to 40 percent of sales, as shown in the following table:

	2010		2009		2008		2007	
	$ Millions	Percent of Sales	$ Millions	Percent of Sales	$ Millions	Percent of Sales	$ Millions	Percent of Sales
Net sales	$65,225	100%	$42,905	100%	$37,491	100%	$24,578	100%
Cost of sales	39,541	61%	25,683	60%	24,294	65%	16,426	67%
Gross margin	$25,684	39%	$17,222	40%	$13,197	35%	$8,152	33%

In general, in addition to a successful differentiation strategy, higher gross margins can result from lower input costs and/or a change in sales mix to include more product types with high gross margins.

Solution to 2: Apple was very liquid at the end of fiscal 2009 and 2010, with current ratios of, respectively, 2.7 ($31,555/$11,506) and 2.0 (= $41,678/$20,722). In addition, the company had 71.6 and 67.8 percent of total assets invested in cash and marketable securities at the end of, respectively, 2009 and 2010. In general, some of the considerations that a company makes in managing its liquidity include the following: (1) maintaining enough cash and other liquid assets to ensure that it can meet near-term operating expenditures and unexpected needs, (2) avoiding excessive amounts of cash because the return on cash assets is almost always less than the company's costs of capital to finance its assets, and (3) accumulating cash that will be used for acquisitions (sometimes referred to as a "war chest," which is illustrated in Exhibit 2). Apple may be accumulating a war chest, but an analyst might, given point 2 above, question the amount of cash and marketable securities on hand.

Solution to 3: In 2009, the proportion of Apple's total sales from computers declined from 42 percent to 32 percent and the proportion of total sales from iPods declined from 34 percent to 19 percent. The biggest shift in product sales was the increase in iPhone sales from 3 percent in 2007, the year of the product's introduction, to 30 percent in 2009. In 2010, the proportion of Apple's total sales from computers and iPods continued to decline and the proportion from iPhones continued to increase. These proportions in 2010 were, respectively, 27 percent, 13 percent, and 39 percent of total sales. The iPad introduced in fiscal 2010 represented 8 percent of total sales that year. For an analyst examining Apple relative to its competitors, the relevant comparable companies clearly changed from 2007 to 2010. Recently, the company may be more appropriately compared not only with other computer manufacturers but also with mobile phone manufacturers and companies developing competing software and systems for mobile internet devices. Apple's product innovation has reshaped the competitive landscape.

To illustrate the use of a war chest, Exhibit 2 provides descriptions of several companies' cash positions and potential uses of their funds. When a company has accumulated large amounts of cash, an analyst should consider the likely implications for a company's strategic actions (i.e., potential acquisitions) or financing decisions (e.g., share buybacks, dividends, or debt repayment).

EXHIBIT 2 War Chests

The expression "war chest" is sometimes used to refer to large cash balances that a company accumulates prior to making acquisitions. Some examples are shown here:

Apple Inc.

Apple (NASDAQ: AAPL) closed 2009 with nearly $40 billion in the bank, in the form of cash, short-term and long-term marketable securities. That "war chest," as one shareholder described it [during Apple's annual shareholder's meeting], has fueled speculation about what the company might do with the funds. Options could include large acquisitions or returning cash to shareholders in the form of a buyback or dividend.

Dan Gallagher, *MarketWatch*, 25 February 2010.

Asahi Breweries

The head of Japan's Asahi Breweries said he expects to have $9.2 billion on tap for acquisitions over the next five years as it looks for new growth drivers outside the shrinking domestic beer market. Asahi President Naoki Izumiya also told Reuters that he wanted to lift its stake in China's Tsingtao Brewery pending regulatory changes, and is eyeing closer ties in South Korea with that country's top soft drinks maker, the Lotte Group.

Taiga Uranaka and Ritsuko Shimizu, *Reuters*, Tuesday, 3 August 2010.

McLeod Russel India Ltd.

McLeod Russel India Ltd., the world's biggest tea grower, plans to use rising prices to build a "war chest" of as much as $250 million to acquire companies. . . . The plantation company, based in Kolkata, may buy tea companies in India and Africa as it targets a 50 percent increase in production to 150 million kilograms in three to four years, said Aditya Khaitan, managing director of McLeod Russel.

Arijit Ghosh and Thomas Kutty Abraham, *Bloomberg*, 14 May 2010.

In calculating and interpreting financial statement ratios, an analyst needs to be aware of the potential impact on the financial statements and related ratios of companies reporting under different accounting standards, such as international financial reporting standards (IFRS), US generally accepted accounting principles (US GAAP), or other home-country GAAP. Furthermore, even within a given set of accounting standards, companies still have discretion to choose among acceptable methods. A company also may make different assumptions and estimates even when applying the same method as another company. Therefore, making selected adjustments to a company's financial statement data may be useful to facilitate comparisons with other companies or with the industry overall. Examples of such analyst adjustments will be discussed in Section 6.

Non-US companies that use any acceptable body of accounting standards (other than IFRS or US GAAP) and file with the US SEC (because their shares or depositary receipts based on their shares trade in the United States) are required to reconcile their net income and shareholders' equity accounts to US GAAP. Note that in 2007, the SEC eliminated the reconciliation requirement for non-US companies using IFRS and filing with the SEC. Example 2 uses reconciliation data from SEC filings to illustrate how differences in accounting standards can affect financial ratio comparisons. The differences in the example are very large.

EXAMPLE 2 The Effect of Differences in Accounting Standards on ROE Comparisons

In the process of comparing the 2009 performance of three telecommunication companies—Teléfonos de México, S.A.B. DE C.V. (NYSE: TMX), Tele Norte Leste Participações S.A. (NYSE: TNE), and Verizon Communications Inc. (NYSE: VZ)—an analyst prepared Exhibit 3 to evaluate whether the differences in accounting standards affect the comparison of the three companies' return on equity (ROE). Panel A presents selected data for TMX for 2008 and 2009 under Mexican GAAP and US GAAP. Panel B presents data for TNE under Brazilian GAAP and US GAAP. Panel C presents data for VZ under US GAAP.

EXHIBIT 3 Data for TMX, TNE, and VZ for a ROE Calculation (years ended 31 December)

Panel A: Selected Data for Teléfonos de México (TMX)		
(in millions of Mexican pesos)	2009	2008
Mexican GAAP		
Net income	20,469	20,177
Shareholders' equity	38,321	39,371
US GAAP		
Net income	19,818	19,782
Shareholders' equity	7,465	11,309

Panel B: Selected Data for Tele Norte Leste Participações S.A. (TNE)		
(in millions of Brazilian reais[a])	2009	2008
Brazilian GAAP		
Net income	(1,056)	1,432
Shareholders' equity	15,352	11,411
US GAAP		
Net income	4,866	1,252
Shareholders' equity	21,967	11,203

(Continued)

Panel C: Selected Data for Verizon Communications Inc.		
(in millions of US dollars)	2009	2008
US GAAP		
Net income	10,358	12,583
Shareholders' equity	84,367	78,905

[a]"Reais" is the plural of "real."
Sources: TMX's and TME's 2009 Form 20-F; VZ's 2009 10-K.

Based on TMX's reconciliation footnote, the most significant adjustment for TMX between Mexican GAAP and US GAAP was an adjustment to shareholders' equity for "Labor obligations (SFAS 158)." The US accounting standard SFAS 158, *Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans*, now codified as Accounting Standards Codification (ASC) 715 (i.e., Expenses: Compensation–Retirement Benefits) requires companies to reflect on their balance sheets the funded status of pensions and other post-employment benefits. (Funded status equals plan assets minus plan obligations.) For an underfunded plan—i.e., one in which assets that are held in trust to pay for the obligation are less than the amount of the obligation—the amount of underfunding is shown as a liability and as a reduction to shareholders' equity. [The full reconciliation between shareholders' equity under Mexican FRS and US GAAP (not presented here) shows that the adjustment related to SFAS 158 reduced equity at TMX by 50,028 million pesos and 46,637 million pesos in 2009 and 2008, respectively.]

Based on TNE's reconciliation footnote, the most significant adjustment for TNE between Brazilian GAAP and US GAAP was an increase to net income to recognize a "bargain purchase gain on business combination." A bargain purchase gain under US GAAP results when the purchase price of an acquisition is less than the fair value (as of the acquisition date) of the net identified assets acquired. The adjustment for the bargain purchase gain represented an increase of 6,591 million Brazilian reais to net income as reported under Brazilian GAAP.

Does the difference in accounting standards affect the ROE comparison?

Solution: When ROE is compared under different standards, both of the non-US companies report significantly higher ROE under US GAAP than under home-country GAAP (Mexican GAAP for TMX and Brazilian GAAP for TNE).

When ROE is compared across companies, TMX's ROE is higher than that of both of the other two companies regardless of whether the comparison is based on home-country amounts or US GAAP amounts. For TNE, however, the company reported a loss and thus a negative ROE under home-country (Brazilian) GAAP but a profit under US GAAP. The ROE for TNE is lower than VZ's ROE when calculations are based on home-country GAAP but higher than VZ's ROE when calculations are based on US GAAP.

Results of the calculations are summarized in the following table, with the calculations based on TMX's Mexican GAAP explained after the table:

Panel A: Teléfonos de México (TMX)	
Mexican GAAP	
Return on average shareholders' equity	52.69%
US GAAP	
Return on average shareholders' equity	211.12%

Panel B: Tele Norte Leste Participações S.A. (TNE)	
Brazilian GAAP	
Return on average shareholders' equity	–7.89%
US GAAP	
Return on average shareholders' equity	29.34%

Panel C: Verizon Communications Inc. (VZ)	
US GAAP	
Return on average shareholders' equity	12.69%

For an illustration of the ROE calculation, we have calculated TMX's ROE (with all numbers in thousands of Mexican pesos) as 20,468,983/[(38,320,773 + 39,371,099)/2] = 52.69%. Note that TMX's significantly higher ROE under US GAAP is the result of a much lower shareholders' equity under US GAAP than under Mexican GAAP.

In Example 2, the 2009 ROE for both TMX and TNE differed substantially under home-country GAAP and US GAAP. In general, because the reconciliation data are no longer required by the SEC, we cannot determine whether differences in net income, equity, and thus ROE also exist between IFRS and the companies' home-country GAAP (including US GAAP). Historically, research indicates that for most non-US companies filing with the SEC, differences in net income between US GAAP and home-country GAAP average 1–2 percent of market value of equity, but large variations do occur.[2] Additionally, research indicates that for most non-US companies filing with the SEC, ROE was historically higher under IFRS than under US GAAP.[3]

Comparison of the levels and trends in a company's performance provide information about *how* the company performed. The company's management presents its view about causes underlying its performance in the management commentary or management discussion and analysis (MD&A) section of its annual report and during periodic conference calls with ana-

[2]Pownall and Schipper (1999).

[3]In a study of European companies' reconciliations in the last year that reconciliations were required by the SEC, Henry, Lin, and Yang (2009) found that most of the companies reported IFRS net income higher than US GAAP net income and reported IFRS shareholders' equity lower than US GAAP shareholders' equity. The result was that 28 percent of the sample companies' 2006 ROE under IFRS was more than 5 percentage points higher than under US GAAP whereas fewer than 10 percent of the sample report ROE more than 5 percentage points lower.

lysts and investors. To gain additional understanding of the causes underlying a company's performance, an analyst can review industry information or seek information from additional sources, such as consumer surveys.

The results of an analysis of past performance provide a basis for reaching conclusions and making recommendations. For example, an analysis undertaken as the basis for a forward-looking study might conclude that a company's future performance is or is not likely to reflect continuation of recent historical trends. As another example, an analysis to support a market-based valuation of a company might focus on whether the company's profitability and growth outlook, which is better (worse) than the peer group median, justifies its relatively high (low) valuation. This analysis would consider market multiples, such as price-to-earnings ratio (P/E), price-to-book ratio, and total invested capital to EBITDA (earnings before interest, taxes, depreciation, and amortization).[4] As another example, an analysis undertaken as part of an evaluation of the management of two companies might result in conclusions about whether one company has grown as fast as another company, or as fast as the industry overall, and whether each company has maintained profitability while growing.

3. APPLICATION: PROJECTING FUTURE FINANCIAL PERFORMANCE

Projections of future financial performance are used in determining the value of a company or its equity component. Projections of future financial performance are also used in credit analysis—particularly in project finance or acquisition finance—to determine whether a company's cash flows will be adequate to pay the interest and principal on its debt and to evaluate whether a company will likely remain in compliance with its financial covenants.

Sources of data for analysts' projections include some or all of the following: the company's projections, the company's previous financial statements, industry structure and outlook, and macroeconomic forecasts.

Evaluating a company's past performance may provide a basis for forward-looking analyses. An evaluation of a company's business and economic environment and its history may persuade the analyst that historical information constitutes a valid basis for such analyses and that the analyst's projections may be based on the continuance of past trends, perhaps with some adjustments. Alternatively, in the case of a major acquisition or divestiture, for a start-up company, or for a company operating in a volatile industry, past performance may be less relevant to future performance.

Projections of a company's near-term performance may be used as an input to market-based valuation or relative valuation (i.e., valuation based on price multiples). Such projections may involve projecting next year's sales and using the common-size income statement to project major expense items or particular margins on sales (e.g., gross profit margin or operating profit margin). These calculations will then lead to the development of an income measure for a valuation calculation, such as net income, earnings per share (EPS) or EBITDA. More complex projections of a company's future performance involve developing a more detailed

[4] **Total invested capital** is the sum of market value of common equity, book value of preferred equity, and face value of debt.

analysis of the components of performance for multiple periods—for example, projections of sales and gross margin by product line, projection of operating expenses based on historical patterns, and projection of interest expense based on requisite debt funding, interest rates, and applicable taxes. Furthermore, a projection should include sensitivity analyses applied to the major assumptions.

3.1. Projecting Performance: An Input to Market-Based Valuation

One application of financial statement analysis involves projecting a company's near-term performance as an input to market-based valuation. For example, an analyst might project a company's sales and profit margin to estimate EPS and then apply a projected P/E to establish a target price for the company's stock.

Analysts often take a top-down approach to projecting a company's sales.[5] First, industry sales are projected on the basis of their historical relationship with some macroeconomic indicator, such as growth in real gross domestic product (GDP). In researching the automobile industry, for example, the analyst may find that the industry's annual domestic unit car sales (number of cars sold in domestic markets) bears a relationship to annual changes in real GDP. Regression analysis is often used to establish the parameters of such relationships. Other factors in projecting sales may include consumer income or tastes, technological developments, and the availability of substitute products or services. After industry sales are projected, a company's market share is projected. Company-level market share projections may be based on historical market share and a forward-looking assessment of the company's competitive position. The company's sales are then estimated as its projected market share multiplied by projected total industry sales.

After developing a sales forecast for a company, an analyst can choose among various methods for forecasting income and cash flow. An analyst must decide on the level of detail to consider in developing forecasts. For example, separate forecasts may be made for individual expense items or for more aggregated expense items, such as total operating expenses. Rather than stating a forecast in terms of expenses, the forecast might be stated in terms of a forecasted profit margin (gross, operating, or net). The net profit margin, in contrast to the gross or operating profit margins, is affected by financial leverage and tax rates, which are subject to managerial and legal/regulatory revisions; therefore, historical data may sometimes be more relevant for projecting gross or operating profit margins than for projecting net profit margins. Whatever the margin used, the forecasted amount of profit for a given period is the product of the forecasted amount of sales and the forecast of the selected profit margin.

As Example 3 illustrates, for relatively mature companies operating in non-volatile product markets, historical information on operating profit margins can provide a useful starting point for forecasting future operating profits (at least over short forecasting horizons). Historical operating profit margins are typically less reliable for projecting future margins for a new or relatively volatile business or one with significant fixed costs (which can magnify the volatility of operating margins).

[5]The discussion in this paragraph is indebted to Benninga and Sarig (1997).

EXAMPLE 3 Using Historical Operating Profit Margins to Forecast Operating Profit

One approach to projecting operating profit is to determine a company's average operating profit margin over the previous several years and apply that margin to a forecast of the company's sales. Use the following information on three companies to answer Questions 1 and 2 below:

- Johnson & Johnson (JNJ). This US health care conglomerate, founded in 1887, had 2009 sales of around $61.9 billion from its three main businesses: pharmaceuticals, medical devices and diagnostics, and consumer products.
- BHP Billiton (BHP). This company, with group headquarters in Australia and secondary headquarters in London, is the world's largest natural resources company, reporting revenue of approximately US$50.2 billion for the fiscal year ended June 2009. The company mines, processes, and markets coal, copper, nickel, iron, bauxite, and silver and also has substantial petroleum operations.
- Baidu. This Chinese company, which was established in 2000 and went public on NASDAQ in 2005, is the leading Chinese language search engine. The company's revenues for 2009 were 4.4 billion renminbi (RMB), an increase of 40 percent from 2008 and more than 14 times greater than revenues in 2005.
    1. For each of the three companies, state and justify whether the suggested forecasting method (applying the average operating profit over the previous several years to a forecast of sales) would be a reasonable starting point for projecting future operating profit.
    2. Assume that the 2009 forecast of sales was perfect and, therefore, equal to the realized sales by the company in 2009. Compare the forecast of 2009 operating profit, using an average of the previous four years' operating profit margins, with the actual 2009 operating profit reported by the company given the following additional information:
- JNJ: For the four years prior to 2009, JNJ's average operating profit margin was approximately 25.0 percent. The company's actual operating profit for 2009 was $15.6 billion.
- BHP: For the four years prior to the year ending June 2009, BHP's average operating profit margin was approximately 38.5 percent. The company's actual operating profit for the year ended June 2009 was US$12.2 billion.
- Baidu: Over the four years prior to 2009, Baidu's average operating profit margin was approximately 27.1 percent. The company's actual operating profit for 2009 was RMB1.6 billion.

Using the additional information given, state and justify whether actual results support the usefulness of the stable operating margin assumption.

Solution to 1:

JNJ. Because JNJ is an established company with diversified operations in relatively stable businesses, the suggested approach to projecting the company's operating profit would be a reasonable starting point.

BHP. Because commodity prices tend to be volatile and the mining industry is relatively capital intensive, the suggested approach to projecting BHP's operating profit would probably not be a useful starting point.

Baidu. A relatively new company such as Baidu has limited operating history on which to judge stability of margins. The company appears to have been in a period of rapid growth and is in an industry that has been changing rapidly in recent years. This important aspect about the company suggests that the broad approach to projecting operating profit would not be a useful starting point for Baidu.

Solution to 2:

JNJ. JNJ's actual operating profit margin for 2009 was 25.2 percent ($15.6 billion divided by sales of $61.9 billion), which is very close to the company's three-year average operating profit margin of approximately 25.0 percent. If the average operating profit margin had been applied to perfectly forecasted 2009 sales to obtain forecasted operating profit, the forecasting error would have been minimal.

BHP. BHP's actual operating profit margin for the year ended June 2009 was 24.3 percent ($12.2 billion divided by sales of $50.2 billion). If the company's average profit margin of 38.5 percent had been applied to perfectly forecasted sales, the forecasted operating profit would have been approximately US$19.3 billion, around 58 percent higher than actual operating profit.

Baidu. Baidu's actual operating profit margin for 2009 was 36.4 percent (RMB1.6 billion divided by sales of RMB4.4 billion). If the average profit margin of 27.1 percent had been applied to perfectly forecasted sales, the forecasted operating profit would have been approximately RMB1.2 billion, or around 25 percent below Baidu's actual operating profit.

Although prior years' profit margins can provide a useful starting point in projections for companies with relatively stable business, the underlying data should, nonetheless, be examined to identify items that are not likely to occur again in the following year(s). Such non-recurring (i.e., transitory) items should be removed from computations of any profit amount or profit margin that will be used in projections. Example 4 illustrates this principle.

EXAMPLE 4 Issues in Forecasting

Following are excerpts from the annual reports of two global companies. Indicate the relevance of each disclosure in forecasting the company's future net income. (Business descriptions are from the companies' websites.)

1. Anheuser-Busch InBev SA/NV (Euronext: ABI, NYSE: BUD), the world's largest brewing company by volume, with brands such as Budweiser, Stella Artois, and Beck's, disclosed the following items, which are primarily related to its acquisition of Anheuser-Busch.

1.1. "The 2009 restructuring charges of (153)m US dollar primarily relate to the Anheuser-Busch integration, organizational alignments and outsourcing activities in the global headquarters, Western Europe and Asia Pacific. These changes aim to eliminate overlap or duplicated processes and activities across functions and zones. These one time expenses as a result of the series of decisions will provide the company with a lower cost base besides a stronger focus on AB InBev's core activities, quicker decision-making and improvements to efficiency, service and quality…"

1.2. "2009 business and asset disposals resulted in an exceptional income of 1,541m US dollar mainly representing the sale of assets of InBev USA LLC (also doing business under the name Labatt USA) to an affiliate of KPS Capital Partners, L.P. (54m US dollar), the sale of the Korean subsidiary Oriental Brewery to an affiliate of Kohlberg Kravis Roberts & Co. L.P. (428m US dollar) and the sale of the Central European operations to CVC Capital Partners (1,088m US dollar) . . . "

Source: 2009 Annual Report, note 8.

2. Nestlé Group (NESN.VX), the largest food and beverages manufacturer in the world, disclosed the following information about the sale of its holding in the eye care company Alcon Inc. (NYSE: ACL).

2.1. "The most significant divestment was announced on 4 January 2010, with the agreement to sell our remaining holding in Alcon, for about USD 28 billion. The completion of this transaction will bring the total value realised from the three-part disposal of Alcon to over USD 40 billion. Alcon was acquired by Nestlé in 1977 for USD 280 million."

Source: 2009 Annual Report, Shareholder Letter, p. 4.

2.2. "On 7 July 2008, the Group sold 24.8% of Alcon outstanding capital to Novartis for a total amount of USD 10.4 billion, resulting in a profit on disposal of CHF 9208 million and in an increase of non-controlling interests of CHF 1537 million. The agreement further included the option for Novartis to acquire Nestlé's remaining shareholding in Alcon at a price of USD 181.– per share from January 2010 until July 2011. During the same period, Nestlé had the option to sell its remaining shareholding in Alcon to Novartis at the lower of either the call price of USD 181.– per share or the average share price during the week preceding the exercise plus a premium of 20.5%. On 4 January 2010, Novartis exercised its call option to acquire the remaining 52% shareholding from Nestlé at a price of USD 181.– per share. The transaction is now pending regulatory approval which can be expected during the course of 2010. As IFRS 5 criteria were met on 31 December 2009, Alcon's related assets and liabilities are classified as a disposal group in Assets held for sale and Liabilities directly associated with assets held for sale. Moreover, Alcon operations are disclosed as discontinued operations in the 2009 Consolidated Financial Statements. The results of Alcon discontinued operations are disclosed separately in the income statement."

Source: 2009 Financial Statements, note 25.

2.3. Excerpt from Nestlé's consolidated income statement for the year ended 31 December 2009:

(CHF millions)	2009	2008
Sales		
Continuing operations	100,579	103,086
Discontinued operations	7,039	6,822
Total	107,618	109,908
EBIT (earnings before interest, taxes, restructuring and impairments)		
Continuing operations	13,222	13,240
Discontinued operations	2,477	2,436
Total	15,699	15,676
Profit for the year		
Continuing operations	9,551	7,656
Discontinued operations	2,242	11,395
Total	11,793	19,051

Source: 2009 Financial Statements.

Discussion of 1.1.
This item relates to one-time restructuring charges aimed at eliminating duplication between the pre-acquisition operations of the two companies (InBev and Anheuser-Busch). The restructuring charges themselves are not directly relevant in forecasting the future net income of the company. If the restructuring successfully reduced the company's cost base, however, the combined companies' expenses in the future are likely to be less than the sum of the two individual companies' expenses. Also, if the cost base was successfully reduced, the profit margin for the combined company is likely to be higher than a profit margin calculated as the sum of the individual companies' profits divided by the sum of the individual companies' sales revenues.

Discussion of 1.2.
Gains on sales of businesses and assets that result in exceptional income are not a core part of a company's business. This item should typically not be viewed as an ongoing source of earnings and should not, therefore, be a component of forecasts of net income. Additionally, any portion of the company's past income that had been generated by the businesses sold should be excluded from forecasted net income.

Discussion of 2.1.
These disclosures pertain to Nestlé's total USD40 billion return on the USD280 million investment in Alcon over 33 years (between 1977 and 2010). The information is not directly relevant to forecasting future net income. Although forecasts of net income must exclude the income from the divested business, information about the amount of that income is disclosed elsewhere.

Discussion of 2.2.
Gains on sales of businesses and assets that result in exceptional income are not a core part of a company's business, so neither the CHF9,208 million gain in 2008 nor any further gains on the transaction should be included in ongoing, long-term forecasts. An analyst can, however, use the disclosed information about the sale price and information about the net book value of the investment to estimate the gain that will be reported in 2010 net income. In addition, results of discontinued items should not be included when assessing past performance or when forecasting future net income. As noted, the results of the discontinued items are shown separately on the income statement, as shown in excerpt 2.3.

Discussion of 2.3.
Results of discontinued items should not be included when assessing past performance or when forecasting future net income. For example, the company's EBIT margin (EBIT/sales) for continuing operations for 2009 of 13 percent should be included in an analysis (not the 15 percent for the combined continuing and discontinued operations).

In general, when earnings projections are used as a foundation for market-based valuations, an analyst will make appropriate allowance for transitory components of past earnings.

3.2. Projecting Multiple-Period Performance

Projections of future financial performance over multiple periods are needed in valuation models that estimate the value of a company or its equity by discounting future cash flows. The value of a company or its equity developed in this way can then be compared with its current market price as a basis for investment decisions.

Projections of future performance are also used for credit analysis. These projections are important in assessing a borrower's ability to repay interest and principal of debt obligations. Investment recommendations depend on the needs and objectives of the client and on an evaluation of the risk of the investment relative to its expected return—both of which are a function of the terms of the debt obligation itself as well as financial market conditions. Terms of the debt obligation include amount, interest rate, maturity, financial covenants, and collateral.

Example 5 presents an elementary illustration of net income and cash flow forecasting to illustrate a format for analysis and some basic principles. In Example 5, assumptions are shown first; then, the period-by-period abbreviated financial statement resulting from the assumptions is shown.

Depending on the use of the forecast, an analyst may choose to compute further, more specific cash flow metrics. For example, free cash flow to equity, which is used in discounted cash flow approaches to equity valuation, can be estimated as net income adjusted for noncash items, minus investment in net working capital and in net fixed assets, plus net borrowing.[6]

[6]See Pinto, Henry, Robinson, and Stowe (2010) for further information.

EXAMPLE 5 Basic Example of Financial Forecasting

Assume a company is formed with $100 of equity capital, all of which is immediately invested in working capital. Assumptions are as follows:

Dividends	Non-Dividend-Paying
First-year sales	$100
Sales growth	10% per year
Cost of goods sold/Sales	20%
Operating expense/Sales	70%
Interest income rate	5%
Tax rate	30%
Working capital as percent of sales	90%

Based on this information, forecast the company's net income and cash flow for five years.

Solution: Exhibit 4 shows the net income forecasts in Line 7 and cash flow forecasts ("Change in cash") in Line 18.

EXHIBIT 4 Basic Financial Forecasting

	Time Period					
	0	1	2	3	4	5
(1) Sales		100.0	110.0	121.0	133.1	146.4
(2) Cost of goods sold		(20.0)	(22.0)	(24.2)	(26.6)	(29.3)
(3) Operating expenses		(70.0)	(77.0)	(84.7)	(93.2)	(102.5)
(4) Interest income		0.0	0.9	0.8	0.8	0.7
(5) Income before tax		10.0	11.9	12.9	14.1	15.3
(6) Taxes		(3.0)	(3.6)	(3.9)	(4.2)	(4.6)
(7) Net income		7.0	8.3	9.0	9.9	10.7
(8) Cash/Borrowing	0.0	17.0	16.3	15.4	14.4	13.1
(9) Working capital (non-cash)	100.0	90.0	99.0	108.9	119.8	131.8
(10) Total assets	100.0	107.0	115.3	124.3	134.2	144.9
(11) Liabilities	0.0	0.0	0.0	0.0	0.0	0.0
(12) Equity	100.0	107.0	115.3	124.3	134.2	144.9
(13) Total liabilities + Equity	100.0	107.0	115.3	124.3	134.2	144.9
(14) Net income		7.0	8.3	9.0	9.9	10.7
(15) Plus: Non-cash items		0.0	0.0	0.0	0.0	0.0
(16) Less: Investment in working capital		–10.0	9.0	9.9	10.9	12.0

EXHIBIT 4 (Continued)

	Time Period					
	0	1	2	3	4	5
(17) Less: Investment in fixed capital		0.0	0.0	0.0	0.0	0.0
(18) Change in cash		17.0	–0.7	–0.9	–1.0	–1.3
(19) Beginning cash		0.0	17.0	16.3	15.4	14.4
(20) Ending cash		17.0	16.3	15.4	14.4	13.1

Exhibit 4 indicates that at time 0, the company is formed with $100 of equity capital (Line 12). All of the company's capital is assumed to be immediately invested in working capital (Line 9). In future periods, because it is assumed that no dividends are paid, book equity increases each year by the amount of net income (Line 14). Future periods' required working capital (Line 9) is assumed to be 90 percent of annual sales (Line 1). Sales are assumed to be $100 in the first period and to grow at a constant rate of 10 percent per year (Line 1). The cost of goods sold is assumed to be constant at 20 percent of sales (Line 2), so the gross profit margin is 80 percent. Operating expenses are assumed to be 70 percent of sales each year (Line 3). Interest income (Line 4) is calculated as 5 percent of the beginning balance of cash/borrowing or the ending balance of the previous period (Line 8) and is an income item when there is a cash balance, as in this example. (If available cash is inadequate to cover required cash outflows, the shortfall is presumed to be covered by borrowing. This borrowing would be shown as a negative balance on Line 8 and an associated interest expense on Line 4. Alternatively, a forecast can be presented with separate lines for cash and borrowing.) Taxes of 30 percent are deducted to obtain net income (Line 7).

To calculate each period's cash flow, begin with net income (Line 7 = Line 14), add back any noncash items, such as depreciation (Line 15), deduct investment in working capital in the period or change in working capital over the period (Line 16), and deduct investment in fixed capital in the period (Line 17).[7] In this simple example, we are assuming that the company does not invest in any fixed capital (long-term assets) but, rather, rents furnished office space. Therefore, there is no depreciation and noncash items are zero. Each period's change in cash (Line 18) is added to the beginning cash balance (Line 19) to obtain the ending cash balance (Line 20 = Line 8).

Example 5 is simplified to demonstrate some principles of forecasting. In practice, each aspect of a forecast presents a range of challenges. Sales forecasts may be very detailed, with separate forecasts for each year of each product line, each geographical, and/or each business segment. Sales forecasts may be based on past results (for relatively stable businesses), management forecasts, industry studies, and/or macroeconomic forecasts. Similarly, gross profit

[7] Working capital represents funds that must be invested in the daily operations of a business to, for example, carry inventory and accounts receivable. The term "investment" in this context means "addition to" or "increase in." The "investment in fixed capital" is also referred to as "capital expenditure" ("capex"). See Pinto et al. (2010), Chapter 4, for further information.

margins may be based on past results or forecasted relationships and may be detailed. Expenses other than cost of goods sold may be broken down into more detailed line items, each of which may be forecasted on the basis of its relationship with sales (if variable) or on the basis of its historical levels. Working capital requirements may be estimated as a proportion of the amount of sales (as in Example 5) or the change in sales or as a compilation of specific forecasts for inventory, receivables, and payables. Most forecasts will involve some investment in fixed assets, in which case, depreciation amounts affect taxable income and net income but not cash flow. Example 5 makes the simplifying assumption that interest is paid on the beginning-of-year cash balance.

Example 5 develops a series of point estimates for future net income and cash flow. In practice, forecasting generally includes an analysis of the risk in forecasts—in this case, an assessment of the impact on income and cash flow if the realized values of variables differ significantly from the assumptions used in the base case or if actual sales are much different from forecasts. Quantifying the risk in forecasts requires an analysis of the economics of the company's businesses and expense structure and the potential impact of events affecting the company, the industry, and the economy in general. When that investigation is completed, the analyst can use scenario analysis or Monte Carlo simulation to assess risk. Scenario analysis involves specifying assumptions that differ from those used as the base-case assumptions. In Example 5, the projections of net income and cash flow could be recast in a more pessimistic scenario, with assumptions changed to reflect slower sales growth and higher costs. A Monte Carlo simulation involves specifying probability distributions of values for variables and random sampling from those distributions. In the analysis in Example 5, the projections would be repeatedly recast with the selected values for the drivers of net income and cash flow, thus permitting the analyst to evaluate a range of possible results and the probability of simulating the possible actual outcomes.

An understanding of financial statements and ratios can enable an analyst to make more detailed projections of income statement, balance sheet, and cash flow statement items. For example, an analyst may collect information on normal inventory and receivables turnover and use this information to forecast accounts receivable, inventory, and cash flows based on sales projections rather than use a composite working capital investment assumption, as in Example 5.

As the analyst makes detailed forecasts, he or she must ensure that the forecasts are consistent with each other. For instance, in Example 6, the analyst's forecast concerning days of sales outstanding (which is an estimate of the average time to collect payment from sales made on credit) should flow from a model of the company that yields a forecast of the change in the average accounts receivable balance. Otherwise, predicted days of sales outstanding and accounts receivable will not be mutually consistent.

EXAMPLE 6 Consistency of Forecasts[8]

Brown Corporation had an average days-of-sales-outstanding (DSO) period of 19 days in 2009. An analyst thinks that Brown's DSO will decline in 2010 (because of expected improvements in the company's collections department) to match the industry average of 15 days. Total sales (all on credit) in 2009 were $300 million, and Brown expects total

[8]Adapted from a past CFA Institute examination question.

sales (all on credit) to increase to $320 million in 2010. To achieve the lower DSO, the change in the average accounts receivable balance from 2009 to 2010 that must occur is *closest* to:

A. –$3.51 million.
B. –$2.46 million.
C. $2.46 million.
D. $3.51 million.

Solution: B is correct. The first step is to calculate accounts receivable turnover from the DSO collection period. Receivable turnover equals 365/19 (DSO) = 19.2 for 2009 and 365/15 = 24.3 in 2010. Next, the analyst uses the fact that the average accounts receivable balance equals sales/receivable turnover to conclude that for 2009, average accounts receivable was $300,000,000/19.2 = $15,625,000 and for 2010, it must equal $320,000,000/24.3 = $13,168,724. The difference is a reduction in receivables of $2,456,276.

The next section illustrates the application of financial statement analysis to credit risk analysis.

4. APPLICATION: ASSESSING CREDIT RISK

Credit risk is the risk of loss caused by a counterparty's or debtor's failure to make a promised payment. For example, credit risk with respect to a bond is the risk that the obligor (the issuer of the bond) will not be able to pay interest and/or principal according to the terms of the bond indenture (contract). **Credit analysis** is the evaluation of credit risk. Credit analysis may relate to the credit risk of an obligor in a particular transaction or to an obligor's overall creditworthiness.

In assessing an obligor's overall creditworthiness, one general approach is credit scoring, a statistical analysis of the determinants of credit default. Credit analysis for specific types of debt (e.g., acquisition financing and other highly leveraged financing) typically involves projections of period-by-period cash flows.

Whatever the techniques adopted, the analytical focus of credit analysis is on debt-paying ability. Unlike payments to equity investors, payments to debt investors are limited by the agreed contractual interest. If a company experiences financial success, its debt becomes less risky but its success does not increase the amount of payments to its debtholders. In contrast, if a company experiences financial distress, it may be unable to pay interest and principal on its debt obligations. Thus, credit analysis has a special concern with the sensitivity of debt-paying ability to adverse events and economic conditions—cases in which the creditor's promised returns may be most at risk. Because those returns are generally paid in cash, credit analysis usually focuses on cash flow rather than accrual income. Typically, credit analysts use return measures related to operating cash flow because it represents cash generated internally, which is available to pay creditors.

These themes are reflected in Example 7, which illustrates the application to an industry group of four groups of quantitative factors in credit analysis: (1) scale and diversification, (2) tolerance for leverage, (3) operational efficiency, and (4) margin stability.

"Scale and diversification" relate to a company's sensitivity to adverse events, adverse economic conditions, and other factors—such as market leadership, purchasing power with suppliers, and access to capital markets—that may affect debt-paying ability.

Financial policies, or "tolerance for leverage," relate to the obligor's ability to service its indebtedness (i.e., make the promised payments on debt). In Example 7, various solvency ratios are used to measure tolerance for leverage. One set of tolerance-for-leverage measures is based on retained cash flow (RCF). RCF is defined by Moody's Investors Service as operating cash flow before working capital changes less dividends. For example, under the assumption of no capital expenditures, a ratio of RCF to total debt of 0.5 indicates that the company may be able to pay off debt from cash flow retained in the business in approximately 1/0.5 = 2 years (at current levels of RCF and debt); a ratio adjusting for capital expenditures is also used. Other factors include interest coverage ratios based on EBITDA, which are also chosen by Moody's in specifying factors for operational efficiency and margin stability.

"Operational efficiency" as defined by Moody's relates to cost structure: Companies with lower costs are better positioned to deal with financial stress.

"Margin stability" relates to the past volatility of profit margins: Higher stability should be associated with lower credit risk.

EXAMPLE 7 Moody's Evaluation of Quantifiable Rating Factors for a Specific Industry[9]

Moody's considers a number of items when assigning credit ratings for the global aerospace and defense industry, including quantitative measures of three broad factors: size and scale; business profile, revenue sustainability, and efficiency; and financial leverage and flexibility. A company's ratings for each of these factors are weighted and aggregated in determining the overall credit rating assigned. The broad factors, the sub-factors, and weightings are as follows:

Broad Factor	Sub-Factors	Sub-Factor Weighting (%)	Broad Factor Weighting (%)
Size and scale	Total revenue	10	25
	Operating profit	15	
Business profile, revenue sustainability, and efficiency	Expected business profile (e.g., prime contractor versus easily replaced small supplier)	10	25
	Revenue visibility (backlog/revenue)	5	
	Revenue protection (competitive factors; e.g., barriers to entry)	5	
	EBITA/Average assets	5	

[9] "Rating Methodology: Global Aerospace and Defense" (Moody's, 2010), p. 21.

(Continued)

Broad Factor	Sub-Factors	Sub-Factor Weighting (%)	Broad Factor Weighting (%)
Financial leverage and flexibility	Debt/EBITDA	10	50
	Free cash flow/Net debt	10	
	Retained cash flow/Debt	10	
	Cash and marketable securities/ Debt	10	
	EBIT/Interest	10	
Total		100	100

1. What are some reasons why Moody's may have selected these three broad factors as being important in assigning a credit rating in the aerospace and defense industry?
2. Why might financial leverage and flexibility be weighted so heavily?

Solution to 1: Size and scale:

- Larger size can strengthen negotiating position with customers and suppliers, leading to better contract terms and potential cost savings.
- Larger scale typically indicates prior success.
- Larger scale can enhance a company's ability to manage and react to variable market conditions.
- Larger scale often indicates greater geographical, product, and customer diversification.

Business profile, revenue sustainability, and efficiency:

- A business profile that provides some protection from competition, a sustainable flow of revenues as indicated by a strong order backlog, and better operating efficiency should contribute to higher and more sustainable cash flows.

Financial leverage and flexibility:

- Strong financial policies should increase the likelihood of cash flows being sufficient to service debt.

Solution to 2: The level of debt relative to earnings and cash flow is a critical factor in assessing creditworthiness. The higher the current level of debt, the higher the risk of default.

A point to note regarding Example 7 is that the rating factors and the metrics used to represent each can vary by industry group. For example, for heavy manufacturing (manufacturing of the capital assets used in other manufacturing and production processes), Moody's distinguishes order trends and quality as distinctive credit factors affecting future revenues, factory load, and profitability patterns.

Analyses of a company's historical and projected financial statements are an integral part of the credit evaluation process. As noted by Moody's, financial statement information is an important source of information for the rating process:

> Much of the information used in assessing performance for the sub-factors is found in or calculated using the company's financial statements; others are derived from observations or estimates by the analysts. … Moody's ratings are forward-looking and incorporate our expectations for future financial and operating performance. We use both historical and projected financial results in the rating process. Historical results help us understand patterns and trends for a company's performance as well as for peer comparison.[10]

As noted, Moody computes a variety of ratios in assessing creditworthiness. A comparison of a company's ratios with the ratios of its peers is informative in evaluating relative creditworthiness, as demonstrated in Example 8.

EXAMPLE 8 Peer Comparison of Ratios

A credit analyst is assessing the efficiency and leverage of two aerospace companies on the basis of certain sub-factors identified by Moody's. The analyst collects the information from the companies' annual reports and calculates the following ratios:[11]

	Bombardier Inc.	BAE Systems plc
EBITDA/Average assets	7.5%	10.1%
Debt/EBITDA	3.9	3.1
Retained cash flow to debt	6.1%	13.7%
Free cash flow to net debt	–7.0%	7.7%

Based solely on the data given, which company is more likely to be assigned a higher credit rating, and why?

Solution: The ratio comparisons are all in favor of BAE Systems plc. BAE has a higher level of EBITDA in relation to average assets, higher retained cash flow relative to debt, and higher free cash flow to net debt. BAE also has a lower level of debt relative to EBITDA. Based on the data given, therefore, BAE is likely to be assigned a higher credit rating.

[10] Ibid., p. 7.

[11] In calculating financial ratios (values not disclosed in the rating report), Moody's makes various adjustments to the financial data reported by companies in order to better reflect underlying obligations and/or to achieve greater comparability with other companies in the industry. The adjustments made in calculating ratios for this example do not necessarily correspond exactly to those calculated by Moody's.

Before calculating ratios such as those presented in Example 8, rating agencies make certain adjustments to reported financial statements, such as adjusting debt to include off-balance-sheet debt in a company's total debt.[12] We will describe in Section 6 some common adjustments.

Financial statement analysis, especially financial ratio analysis, can also be an important tool in selecting equity investments, as discussed in the next section.

5. APPLICATION: SCREENING FOR POTENTIAL EQUITY INVESTMENTS

Ratios constructed from financial statement data and market data are often used to screen for potential equity investments. **Screening** is the application of a set of criteria to reduce a set of potential investments to a smaller set having certain desired characteristics. Criteria involving financial ratios generally involve comparing one or more ratios with some pre-specified target or cutoff values.

A security selection approach incorporating financial ratios may be applied whether the investor uses top-down analysis or bottom-up analysis. **Top-down analysis** involves identifying attractive geographical segments and/or industry segments, from which the investor chooses the most attractive investments. **Bottom-up analysis** involves selection of specific investments from all companies within a specified investment universe. Regardless of the direction, screening for potential equity investments aims to identify companies that meet specific criteria. An analysis of this type may be used as the basis for directly forming a portfolio, or it may be undertaken as a preliminary part of a more thorough analysis of potential investment targets.

Fundamental to this type of analysis are decisions about which metrics to use as screens, how many metrics to include, what values of those metrics to use as cutoff points, and what weighting to give each metric. Metrics may include not only financial ratios but also characteristics such as market capitalization or membership as a component security in a specified index. Exhibit 5 presents a hypothetical example of a simple stock screen based on the following criteria: a valuation ratio (P/E) less than a specified value, a solvency ratio measuring financial leverage (total debt/assets) not exceeding a specified value, positive net income, and dividend yield (dividends per share divided by price per share) greater than a specified value. Exhibit 5 shows the results of applying the screen in August 2010 to a set of 5,187 US companies with market capitalization greater than $100 million, which compose a hypothetical equity manager's investment universe.

EXHIBIT 5 Example of a Stock Screen

	Stocks Meeting Criterion	
Criterion	Number	Percent of Total
P/E <15	1,471	28.36%
Total debt/Assets ≤ 0.5	880	16.97%
Net income/Sales > 0	2,907	56.04%
Dividend yield > 0.5%	1,571	30.29%
Meeting all four criteria simultaneously	101	1.95%

Source for data: http://google.com/finance/.

[12] Ibid., p. 6.

Several points about the screen in Exhibit 5 are consistent with many screens used in practice:

- Some criteria serve as checks on the results from applying other criteria. In this hypothetical example, the first criterion selects stocks that appear relatively cheaply valued. The stocks might be cheap for a good reason, however, such as poor profitability or excessive financial leverage. So, the requirement for net income to be positive serves as a check on profitability, and the limitation on financial leverage serves as a check on financial risk. Of course, financial ratios or other statistics cannot generally control for exposure to certain other types of risk (e.g., risk related to regulatory developments or technological innovation).
- If all the criteria were completely independent of each other, the set of stocks meeting all four criteria would be 42, equal to 5,187 times 0.82 percent—the product of the fraction of stocks satisfying the four criteria individually (i.e., $0.2836 \times 0.1697 \times 0.5604 \times 0.3029 = 0.0082$, or 0.82 percent). As the screen illustrates, criteria are often not independent, and the result is that more securities pass the screening than if criteria were independent. In this example, 101 (or 1.95 percent) of the securities pass all four screens simultaneously. For an example of the lack of independence, we note that dividend-paying status is probably positively correlated with the ability to generate positive earnings and the value of the third criterion. If stocks that pass one test tend to also pass another, few are eliminated after the application of the second test.
- The results of screens can sometimes be relatively concentrated in a subset of the sectors represented in the benchmark. The financial leverage criterion in Exhibit 5 would exclude banking stocks, for example. What constitutes a high or low value of a measure of a financial characteristic can be sensitive to the industry in which a company operates.

Screens can be used by both **growth investors** (focused on investing in high-earnings-growth companies), **value investors** (focused on paying a relatively low share price in relation to earnings or assets per share), and **market-oriented investors** (an intermediate grouping of investors whose investment disciplines cannot be clearly categorized as value or growth). Growth screens would typically feature criteria related to earnings growth and/or momentum. Value screens, as a rule, feature criteria setting upper limits for the value of one or more valuation ratios. Market-oriented screens would not strongly emphasize valuation or growth criteria. The use of screens involving financial ratios may be most common among value investors.

Many studies have assessed the most effective items of accounting information for screening equity investments. Some research suggests that certain items of accounting information can help explain (and potentially predict) market returns (e.g., Chan et al. 1991; Lev and Thiagarajan 1993; Lakonishok et al. 1994; Davis 1994; Abarbanell and Bushee 1998). Representative of such investigations is Piotroski (2000), whose screen uses nine accounting-based fundamentals that aim to identify financially strong and profitable companies among those with high book value/market value ratios. For example, the profitability measures relate to whether the company reported positive net income, positive cash flow, and an increase in return on assets (ROA).

An analyst may want to evaluate how a portfolio based on a particular screen would have performed historically. For this purpose, the analyst uses a process known as "back-testing." **Back-testing** applies the portfolio selection rules to historical data and calculates what returns would have been earned if a particular strategy had been used. The relevance of back-testing to investment success in practice, however, may be limited. Haugen and Baker (1996) described some of these limitations:

- Survivorship bias: If the database used in back-testing eliminates companies that cease to exist because of a bankruptcy or merger, then the remaining companies collectively will appear to have performed better.
- Look-ahead bias: If a database includes financial data updated for restatements (where companies have restated previously issued financial statements to correct errors or reflect changes in accounting principles),[13] then there is a mismatch between what investors would have actually known at the time of the investment decision and the information used in the back-testing.
- Data-snooping bias: If researchers build a model on the basis of previous researchers' findings, then use the same database to test that model, they are not actually testing the model's predictive ability. When each step is backward looking, the same rules may or may not produce similar results in the future. The predictive ability of the model's rules can validly be tested only by using future data. One academic study has argued that the apparent ability of value strategies to generate excess returns is largely explainable as the result of collective data snooping (Conrad, Cooper, and Kaul, 2003).

EXAMPLE 9 Ratio-Based Screening for Potential Equity Investments

Below are two alternative strategies under consideration by an investment firm:

> *Strategy A*: Invest in stocks that are components of a global equity index, have a ROE above the median ROE of all stocks in the index, and have a P/E less than the median P/E.
>
> *Strategy B*: Invest in stocks that are components of a broad-based US equity index, have a ratio of price to operating cash flow in the lowest quartile of companies in the index, and have shown increases in sales for at least the past three years.

Both strategies were developed with the use of back-testing.

1. How would you characterize the two strategies?
2. What concerns might you have about using such strategies?

Solution to 1: Strategy A appears to aim for global diversification and combines a requirement for high relative profitability with a traditional measure of value (low P/E). Strategy B focuses on both large and small companies in a single market and apparently aims to identify companies that are growing and have a lower price multiple based on cash flow from operations.

Solution to 2: The use of *any* approach to investment decisions depends on the objectives and risk profile of the investor. With that crucial consideration in mind, we note

[13] In the United States, restatements of previously issued financial statements have increased in recent years. The US Government Accounting Office (2002) reported 919 restatements by 834 public companies from January 1997 to June 2002. The *Wall Street Journal* has reported that the number of restatements increased from 613 in 2004 to 1,195 in 2005 (*Wall Street Journal*, 2006).

that ratio-based benchmarks may be an efficient way to screen for potential equity investments. In screening, however, many questions arise.

First, unintentional selections can be made if criteria are not specified carefully. For example, Strategy A might unintentionally select a loss-making company with negative shareholders' equity because negative net income divided by negative shareholders' equity arithmetically results in a positive ROE. Strategy B might unintentionally select a company with negative operating cash flow because price to operating cash flow will be negative and thus very low in the ranking. In both cases, the analyst can add additional screening criteria to avoid unintentional selections; these additional criteria could include requiring positive shareholders' equity in Strategy A and requiring positive operating cash flow in Strategy B.

Second, the inputs to ratio analysis are derived from financial statements, and companies may differ in the financial standards they apply (e.g., IFRS versus US GAAP), the specific accounting method(s) they choose within those allowed by the reporting standards, and/or the estimates made in applying an accounting method.

Third, back-testing may not provide a reliable indication of future performance because of survivorship bias, look-ahead bias, or data-snooping bias. Also, as suggested by finance theory and by common sense, the past is not necessarily indicative of the future.

Fourth, implementation decisions can dramatically affect returns. For example, decisions about frequency and timing of portfolio re-evaluation and changes affect transaction costs and taxes paid out of the portfolio.

6. ANALYST ADJUSTMENTS TO REPORTED FINANCIALS

When comparing companies that use different accounting methods or estimate key accounting inputs in different ways, analysts frequently adjust a company's financials. In this section, we first provide a framework for considering potential analyst adjustments to facilitate such comparisons and then provide examples of such adjustments. In practice, required adjustments vary widely. The examples presented here are not intended to be comprehensive but, rather, to illustrate the use of adjustments to facilitate a meaningful comparison.

6.1. A Framework for Analyst Adjustments

In this discussion of potential analyst adjustments to a company's financial statements, we use a framework focused on the *balance sheet*. Because the financial statements are interrelated, however, adjustments to items reported on one statement may also be reflected in adjustments to items on another financial statement. For example, an analyst adjustment to inventory on the balance sheet affects cost of goods sold on the income statement (and thus also affects net income and, subsequently, the retained earnings account on the balance sheet).

Regardless of the particular order in which an analyst considers the items that may require adjustment for comparability, the following aspects are appropriate:

- *Importance* (*materiality*). Is an adjustment to this item likely to affect the conclusions? In other words, does it matter? For example, in an industry where companies require

minimal inventory, does it matter that two companies use different inventory accounting methods?
- *Body of standards*. Is there a difference in the body of standards being used (US GAAP versus IFRS)? If so, in which areas is the difference likely to affect a comparison?
- *Methods*. Is there a difference in accounting methods used by the companies being compared?
- *Estimates*. Is there a difference in important estimates used by the companies being compared?

The following sections illustrate analyst adjustments—first, those relating to the asset side of the balance sheet and then those relating to the liability side.

6.2. Analyst Adjustments Related to Investments

Accounting for investments in the debt and equity securities of other companies (other than investments accounted for under the equity method and investments in consolidated subsidiaries) depends on management's intention (i.e., whether to actively trade the securities, make them available for sale, or in the case of debt securities, hold them to maturity). When securities are classified as "financial assets measured at fair value through profit or loss" (similar to "trading" securities in US GAAP), unrealized gains and losses are reported in the income statement. When securities are classified as "financial assets measured at fair value through other comprehensive income" (similar to "available-for-sale" securities in US GAAP), unrealized gains and losses are not reported in the income statement and, instead, are recognized in equity. If two otherwise comparable companies have significant differences in the classification of investments, analyst adjustments may be useful to facilitate comparison.

6.3. Analyst Adjustments Related to Inventory

With inventory, adjustments may be required for different accounting methods. As described in previous chapters, a company's decision about inventory method will affect the value of inventory shown on the balance sheet as well as the value of inventory that is sold (cost of goods sold). If a company not reporting under IFRS[14] uses LIFO (last-in, first-out) and another uses FIFO (first-in, first-out), comparability of the financial results of the two companies will suffer. Companies that use the LIFO method, must also, however, disclose the value of their inventory under the FIFO method. To recast inventory values for a company using LIFO reporting on a FIFO basis, the analyst adds the ending balance of the LIFO reserve to the ending value of inventory under LIFO accounting. To adjust cost of goods sold to a FIFO basis, the analyst subtracts the change in the LIFO reserve from the reported cost of goods sold under LIFO accounting. Example 10 illustrates the use of a disclosure of the value of inventory under the FIFO method to make a more consistent comparison of the current ratios of two companies reporting in different methods.

[14] IAS No. 2 does not permit the use of LIFO.

EXAMPLE 10 Adjustment for a Company Using LIFO Accounting for Inventories

An analyst is comparing the financial performance of Carpenter Technology Corporation (NYSE: CRS), a US company operating in the specialty metals industry, with the financial performance of a similar company that uses IFRS for reporting. Under IFRS, this company uses the FIFO method of inventory accounting. Therefore, the analyst must convert results to a comparable basis. Exhibit 6 provides balance sheet information on CRS.

EXHIBIT 6 Data for Carpenter Technology Corporation

	30 June	
	2010	2009
Total current assets	820.2	749.7
Total current liabilities	218.1	198.5
NOTE 6. INVENTORIES		
Inventories consist of the following ($ millions):		
Raw materials	$30.7	$29.5
Work in process	109.1	90.8
Finished goods	63.8	65.1
	$203.6	$185.4

If the first-in, first-out method of inventory had been used instead of the LIFO method, inventories would have been $331.8 and $305.8 million higher as of June 30, 2010 and 2009, respectively.

Source: 10-K for Carpenter Technology Corporation for the year ended 30 June 2010.

1. Based on the information in Exhibit 6, calculate CRS's current ratio under FIFO and LIFO for 2009 and 2010.
2. CRS makes the following disclosure in the risk section of its MD&A. Assuming an effective tax rate of 35 percent, estimate the impact on CRS's tax liability.

> **"We value most of our inventory using the LIFO method, which could be repealed resulting in adverse affects on our cash flows and financial condition.**
>
> The cost of our inventories is primarily determined using the Last-In First-Out ("LIFO") method. Under the LIFO inventory valuation method, changes in the cost of raw materials and production activities are recognized in cost of sales in the current period even though these materials and other costs may have been incurred at significantly different values due to the length of time of our production cycle. Generally in a period of rising prices, LIFO recognizes higher costs of goods sold, which both reduces current income and

assigns a lower value to the year-end inventory. Recent proposals have been initiated aimed at repealing the election to use the LIFO method for income tax purposes. According to these proposals, generally taxpayers that currently use the LIFO method would be required to revalue their LIFO inventory to its first-in, first-out ("FIFO") value. As of June 30, 2010, if the FIFO method of inventory had been used instead of the LIFO method, our inventories would have been about $332 million higher. This increase in inventory would result in a one time increase in taxable income which would be taken into account ratably over the first taxable year and the following several taxable years. The repeal of LIFO could result in a substantial tax liability which could adversely impact our cash flows and financial condition."

Source: 10-K for Carpenter Technology Corporation for the year ended 30 June 2010.

3. CRS reported cash flow from operations of $115.2 million for the year ended 30 June 2010. In comparison with the company's operating cash flow, how significant is the additional potential tax liability?

Solution to 1: The calculations of CRS's current ratio (current assets divided by current liabilities) are as follows:

	2010	2009
I. Current ratio (unadjusted)		
Total current assets	$820.2	$749.7
Total current liabilities	$218.1	$198.5
Current ratio (unadjusted)	3.8	3.8
II. Current ratio (adjusted)		
Total current assets	$820.2	$749.7
Adjust inventory to FIFO, add:	331.8	305.8
Total current assets (adjusted)	$1,152	$1,056
Total current liabilities	218.1	198.5
Current ratio (adjusted)	5.3	5.3

To adjust the LIFO inventory to FIFO, add the excess amounts of FIFO cost over LIFO cost to LIFO inventory and increase current assets by an equal amount. The effect of adjusting inventory on the current ratio is to increase the current ratio from 3.8 to 5.3 in both 2009 and 2010. CRS has greater liquidity according to the adjusted current ratio.

Solution to 2: Assuming an effective tax rate of 35 percent, we find the total increase in CRS's tax liability to be $116.1 million ($0.35 \times \$331.8$ million).

Solution to 3: The additional tax liability would be greater than the entire amount of the company's cash flow from operations of $115.2 million; the additional tax liability would be apportioned, however, over several years.

In summary, the information disclosed by companies that use LIFO allows an analyst to calculate the value of the company's inventory as if the company were using the FIFO method. In Example 10, the portion of inventory valued under the LIFO method was a relatively small portion of total inventory; the LIFO reserve (excess of FIFO cost over LIFO) was also relatively small. If the LIFO method is used for a substantial part of a company's inventory and the LIFO reserve is large relative to reported inventory, however, the adjustment to a FIFO basis can be important for comparison of the LIFO-reporting company with a company that uses the FIFO method of inventory valuation. Example 11 illustrates a case in which such an adjustment would have a major impact on an analyst's conclusions.

EXAMPLE 11 Analyst Adjustment to Inventory Value for Comparability in a Current Ratio Comparison

Company A reports under IFRS and uses the FIFO method of inventory accounting. Company B reports under US GAAP and uses the LIFO method. Exhibit 7 gives data pertaining to current assets, LIFO reserves, and current liabilities of these companies.

EXHIBIT 7 Data for Companies Accounting for Inventory on Different Bases

	Company A (FIFO)	Company B (LIFO)
Current assets (includes inventory)	\$300,000	\$80,000
LIFO reserve	NA	\$20,000
Current liabilities	\$150,000	\$45,000

NA = not applicable.

Based on the data given in Exhibit 7, compare the liquidity of the two companies as measured by the current ratio.

Solution: Company A's current ratio is 2.0. Based on unadjusted balance sheet data, Company B's current ratio is 1.78. Company A's higher current ratio indicates that Company A appears to be more liquid than Company B; however, the use of unadjusted data for Company B is not appropriate for making comparisons with Company A.

After adjusting Company B's inventory to a comparable basis (i.e., to a FIFO basis), the conclusion changes. The following table summarizes the results when Company B's inventory is left on a LIFO basis and when it is placed on a FIFO basis for comparability with Company A.

		Company B	
	Company A (FIFO)	Unadjusted (LIFO basis)	Adjusted (FIFO basis)
Current assets (includes inventory)	\$300,000	\$80,000	\$100,000
Current liabilities	\$150,000	\$45,000	\$45,000
Current ratio	2.00	1.78	2.22

When both companies' inventories are stated on a FIFO basis, Company B appears to be the more liquid, as indicated by its current ratio of 2.22 versus Company A's ratio of 2.00.

The adjustment to place Company B's inventory on a FIFO basis was significant because Company B was assumed to use LIFO for its entire inventory and its inventory reserve was $20,000/$80,000 = 0.25, or 25 percent of its reported inventory.

As mentioned earlier, an analyst can also adjust the cost of goods sold for a company using LIFO to a FIFO basis by subtracting the change in the amount of the LIFO reserve from cost of goods sold. Such an adjustment would be appropriate for making profitability comparisons with a company reporting on a FIFO basis and is important to make when the impact of the adjustment would be material.

6.4. Analyst Adjustments Related to Property, Plant, and Equipment

Management generally has considerable discretion in determination of depreciation expense. Depreciation expense affects the values of reported net income and reported net fixed assets. Analysts often consider management's choices related to depreciation as a qualitative factor in evaluating the quality of a company's financial reporting, and in some cases, analysts may adjust reported depreciation expense for a specific analytical purpose.

The amount of depreciation expense depends on both the accounting method and the estimates used in the calculations. Companies can use the straight-line method, an accelerated method, or a usage method to depreciate fixed assets (other than land). The straight-line method reports an equal amount of depreciation expense each period, and the expense is computed as the depreciable cost divided by the estimated useful life of the asset (when acquired, an asset's depreciable cost is calculated as its total cost minus its estimated salvage value). Accelerated methods depreciate the asset more quickly; they apportion a greater amount of the depreciable cost to depreciation expense in the earlier periods. Usage-based methods depreciate an asset in proportion to its usage. In addition to selecting a depreciation method, companies must estimate an asset's salvage value and useful life to compute depreciation.

Disclosures required for depreciation often do not facilitate specific adjustments, so comparisons of companies concerning their decisions in depreciating assets are often qualitative and general. The accounts that are associated with depreciation include the balance sheet accounts for gross property, plant, and equipment (PPE) and accumulated depreciation; the income statement amount for depreciation expense; and the statement of cash flows disclosure of capital expenditure (capex) and asset disposals. The relationships among these items can reveal various pieces of information. Note, however, that PPE typically includes a mix of assets with different depreciable lives and salvage values, so the items in the following list reflect general relationships in the total pool of assets.

- Accumulated depreciation divided by gross PPE, from the balance sheet, suggests how much of the useful life of the company's overall asset base has passed.
- Accumulated depreciation divided by depreciation expense suggests how many years' worth of depreciation expense have already been recognized (i.e., the average age of the asset base).
- Net PPE (net of accumulated depreciation) divided by depreciation expense is an approximate indicator of how many years of useful life remain for the company's overall asset base.

- Gross PPE divided by depreciation expense suggests the average life of the assets at installation.
- Capex divided by the sum of gross PPE plus capex can suggest what percentage of the asset base is being renewed through new capital investment.
- Capex in relation to asset disposal provides information on growth of the asset base.

As Example 12 shows, these relationships can be evaluated for companies in an industry to suggest differences in their strategies for asset utilization or areas for further investigation.

EXAMPLE 12 Differences in Depreciation

An analyst is evaluating the financial statements of two companies in the same industry. The companies have similar strategies with respect to the use of equipment in manufacturing their products. The following information is provided (amounts in millions):

	Company A	Company B
Net PPE	$1,200	$750
Depreciation expense	$120	$50

1. Based on the information given, estimate the average remaining useful lives of the asset bases of Company A and Company B.
2. Suppose that, based on a physical inspection of the companies' plants and other industry information, the analyst believes that the actual remaining useful lives of Company A's and Company B's assets are roughly equal at 10 years. Based only on the facts given, what might the analyst conclude about Company B's reported net income?

Solution to 1: The estimated average remaining useful life of Company A's asset base is 10 years (calculated as net PPE divided by depreciation expense, or $1,200/$120 = 10 years). For Company B, the average remaining useful life of the asset base appears to be far longer, 15 years ($750/$50).

Solution to 2: If 10 years were used to calculate Company B's depreciation expense, the expense would be $75 million (i.e., $25 million higher than reported) and higher depreciation expense would decrease net income. The analyst might conclude that Company B's reported net income reflects relatively more aggressive accounting estimates than estimates reflected in Company A's reported net income.

6.5. Analyst Adjustments Related to Goodwill

Goodwill arises when one company purchases another for a price that exceeds the fair value of the net identifiable assets acquired. Net identifiable assets include current assets, fixed assets, and certain intangible assets that have value and meet recognition criteria under accounting standards. A broad range of intangible assets might require valuation in the context of a business combination—for example, brands, technology, and customer lists. Goodwill is

recorded as an asset and essentially represents the difference between the purchase price and the net identifiable assets. For example, assume ParentCo purchases TargetCo for a purchase price of $400 million and the fair value of TargetCo's identifiable assets is $300 million (which includes the fair values of current assets, fixed assets, and a recognized brand). ParentCo will record total assets of $400 million consisting of $300 million in identifiable assets (including the fair value of the brand) and $100 million of goodwill. The goodwill is tested annually for impairment and if the value of the goodwill is determined to be impaired, ParentCo will then reduce the amount of the asset and report a write-off resulting from impairment.

One of the conceptual difficulties with goodwill arises in comparative financial statement analysis. Consider, for example, two hypothetical US companies, one of which has grown by making an acquisition and the other of which has grown internally. Assume that the economic value of the two companies is identical: Each has an identically valuable branded product, well-trained workforce, and proprietary technology. The company that has grown by acquisition will have recorded the transaction to acquire the target company and its underlying net assets on the basis of the total consideration paid for the acquisition. The company that has grown internally will have done so by incurring expenditures for advertising, staff training, and research, all of which are expensed as incurred under US GAAP. Given the immediate expensing, the value of the internally generated assets is not capitalized onto the balance sheet and is thus not directly reflected on the company's balance sheet (revenues, income, and cash flows should reflect the benefits derived from the investment in the intangible assets). Ratios based on asset values and/or income, including profitability ratios (such as ROA) and market value to book value (MV/BV),[15] will generally differ for the two companies because of differences in the accounting values of assets and income related to acquired intangibles and goodwill, although, by assumption, the economic value of the companies is identical.

EXAMPLE 13 Ratio Comparisons for Goodwill

Miano Marseglia is an analyst who is evaluating the relative valuation of two securities brokerage companies: TD Ameritrade Holding Corporation (NasdaqGS: AMTD) and the Charles Schwab Corporation (NYSE: SCHW). As one part of an overall analysis, Marseglia would like to see how the two companies compare with each other and with the industry based on market value to book value. Because both companies are large players in the industry, Marseglia expects them to sell at a higher MV/BV than the industry median of 1.2. He collects the following data on the two companies.

	SCHW	AMTD
Market capitalization on January 2010 (market price per share times the number of shares outstanding)	$21,871	$11,525
Total shareholders' equity as of most recent quarter	$5,073	$3,551
Goodwill	$528	$2,472
Other intangible assets	$23	$1,225

[15] MV/BV equals the total market value of the stock (the market capitalization) divided by total stockholders' equity. It is also referred to as the price-to-book ratio because it can also be calculated as price per share divided by stockholders' equity per share.

Marseglia computes the MV/BV for the companies as follows:

SCHW $21,871/$5,073 = 4.3
AMTD $11,525/$3,551 = 3.2

As expected, each company appears to be selling at a premium to the industry average MV/BV of 1.2. The companies have similar MV/BVs (i.e., they are somewhat equally valued relative to the book value of shareholders' equity), but based solely on MV/BV, AMTD appears to be a better value. Marseglia is concerned, however, because he notes that AMTD has significant amounts of goodwill and acquired intangible assets. He wonders what the relative value would be if the MV/BV were computed after adjusting book value, first, to remove goodwill and, second, to remove all intangible assets. Book value reduced by all intangible assets (including goodwill) is known as "tangible book value." The median price/tangible book value for the industry is 1.3.

1. Compute the MV/BV adjusted for goodwill and the price/tangible book value for each company.
2. Which company appears to be a better value based *solely* on this data? (Note that the MV/BV is only one part of a broader analysis. Much more evidence related to the valuations and the comparability of the companies would be required to reach a conclusion about whether one company is a better value.)

Solution to 1:

	($ millions)	
	SCHW	AMTD
Total stockholders' equity	$5,073	$3,551
Less: Goodwill	$528	$2,472
Book value, adjusted	$4,545	$1,079
Adjusted MV/BV	**4.8**	**10.7**

	($ millions)	
	SCHW	AMTD
Total stockholders' equity	$5,073	$3,551
Less: Goodwill	$528	$2,472
Less: Other intangible assets	$23	$1,225
Tangible book value	$4,522	($146)
MV/tangible book value	**4.8**	**NM**

NM = not meaningful.

Solution to 2: After adjusting for goodwill, SCHW appears to be selling for a lower price relative to book value than does AMTD (4.8 versus 10.7). Both companies are selling at a premium to the industry, particularly AMTD, after adjusting for goodwill.

SCHW is also selling for a higher multiple than the industry (4.8 versus 1.3) based on price/tangible book value. AMTD has a negative tangible book value and, therefore, its price/tangible book value is not meaningful. Based on this interpretation and based *solely* on this information, Marseglia would conclude that AMTD is relatively more expensive than SCHW.

6.6. Analyst Adjustments Related to Off-Balance-Sheet Financing

A number of business activities give rise to obligations that, although they are economically liabilities of a company, are not required to be reported on a company's balance sheet. Including such off-balance-sheet obligations in a company's liabilities can affect ratios and conclusions based on such ratios. In this section, we describe adjustments to financial statements related to one type of off-balance-sheet obligation, the operating lease. (Note that revised leasing standards proposed in 2011 eliminate the existing operating lease distinction; if implemented, these standards are likely to change or even eliminate adjustments required for operating leases.)

The rights of a lessee (the party that is leasing some asset) may be similar to the rights of an owner, but if the terms of the lease can be structured so it can be accounted for as an operating lease, the lease is treated like a rental contract and neither the leased asset nor the associated liability is reported on the balance sheet.[16] The lessee simply records the periodic lease payment as a rental expense in its income statement. In contrast, when a company actually owns an asset, the asset is shown on the balance sheet, together with any corresponding liability, such as financing for the asset. Similarly, if a lease is accounted for as a capital lease—essentially equivalent to ownership—the leased asset and associated liability appear on the lessee's balance sheet.

What is of concern to analysts is when a lease conveys to the lessee most of the benefits and risks of ownership but the lease is accounted for as an operating lease—giving rise to off-balance-sheet financing. International accounting standard setters have stated that the entities should not avoid balance sheet recording of leases through artificial leasing structures.

A 2005 report by the US SEC on off-balance-sheet financing estimates that more than 63 percent of companies in the United States report having an operating lease. The SEC estimate of total future lease payments under operating leases was $1.2 trillion over the remaining terms of the leases.

Because companies are required to disclose in their financial statements the amount and timing of lease payments, an analyst can use this information to answer the question: How would a company's financial position look if operating lease obligations were included in its total liabilities?

Exhibit 8 presents selected items from the balance sheet of AMR Corporation (the parent of American Airlines) and the text of the footnote from the financial statements about the company's leases. We use the information in this exhibit to illustrate analyst adjustments.

[16] A lessee classifies a lease as an operating lease if certain guidelines concerning the term of the lease, the present value of the lease payments, and the ownership of the asset at the end of the lease term are satisfied. Under US GAAP, FASB ASC 840-10-25 (Leases: Overall–Recognition) specifies the criteria for classification.

EXHIBIT 8 Lease Arrangements of AMR Corporation (NYSE: AMR) Selected Items from Balance Sheet ($ millions)

	31 December	
	2009	2008
Total Assets	$25,438	$25,175
Current maturities of long-term debt	$1,024	$1,845
Long-term debt, less current maturities	9,984	8,423
Total long-term debt	11,008	10,268
Current obligations under capital leases	90	107
Obligations under capital leases, less current obligations	599	582
Total long-term debt and capital leases	$11,697	$10,957

From Footnote 5. Leases
AMR's subsidiaries lease various types of equipment and property, primarily aircraft and airport facilities. The future minimum lease payments required under capital leases, together with the present value of such payments, and future minimum lease payments required under operating leases that have initial or remaining non-cancelable lease terms in excess of one year as of December 31, 2009, were (in millions):

Year Ending December 31,	Capital Leases	Operating Leases
2010	$181	$1,057
2011	184	1,032
2012	134	848
2013	119	755
2014	98	614
2015 and thereafter	436	5,021
	$1,152	$9,327[1]
Less amount representing interest	463	
Present value of net minimum lease payments	$689	

[1]As of December 31, 2009, included in Accrued liabilities and Other liabilities and deferred credits on the accompanying consolidated balance sheet is approximately $1.2 billion relating to rent expense being recorded in advance of future operating lease payments.
Source: AMR Corporation's Form 10-K for period ending 31 December 2009.

To evaluate the company's solvency, we can calculate the debt-to-assets ratio, defined as the ratio of total debt to total assets. When we include obligations under capital leases (amounting to $689 million in 2009), the debt-to-assets ratio for 2009 is 46.0 percent (total

long-term debt/total assets = $11,697/$25,438). The company's footnote on leases discloses a total of $9.3 billion of future payments for operating leases on an undiscounted basis. The footnote also indicates that of this amount, only $1.2 billion is shown on the balance sheet. To determine the impact of including operating lease obligations in total liabilities, we can calculate the present value of the future operating lease payments. Calculating the present value of these payments requires a discount rate. We can estimate an appropriate discount rate from the information about the present value of the capital lease payments. Using the present value of the capital lease payments and the schedule of future payments, we can calculate the internal rate of return (i.e., the return that results in the discounted future payments equaling the present value). The internal rate of return from the capital lease information can then be used as the discount rate to estimate the present value of the series of operating lease payments.

For AMR, the present value of the capital lease payments is $689 million. Exhibit 9 shows different assumed streams of payments based on the information given in the footnote and illustrates the sensitivity of the analysis to assumptions about the timing of cash flows. Each assumed stream results in a different implied discount rate on the lease or internal rate of return to the lease. Using the stream of payments shown in the footnote and assuming that all of the $436 million payments indicated for 2015 and thereafter are made in the year 2015 results in an internal rate of return of 15.04 percent. Based on the schedule of payments shown, a more reasonable assumption, however, is that the $436 million payments do not all occur in a single year. One approach to estimating the timing of these payments is to assume that the payments in 2015 and subsequent years equal the average annual payments in years 2010–2014 of $143 = ($181 + $184 + $134 + $119 + $98)/5. Using this approach, we assume payments in 2015 and the following three years that total the amount shown in the footnote for 2015 and the internal rate of return of the capital lease is 13.90 percent. Given that lease payments have been generally declining over 2010–2015, another approach is to assume that the amount of the lease payment after 2015 remains constant in subsequent years at an amount equal to the payment in 2014 until the total amount shown in the note for 2015 is reached. Using this assumption, we find the internal rate of return of the capital lease payments is 13.24 percent.[17]

[17] If the term structure of the capital and operating leases can be assumed to be similar, an alternative, shortcut, way to estimate the present value of future operating lease payments that do not appear on the balance sheet is to assume that the relationship between the discounted and undiscounted operating lease payments is approximately the same as the relationship between the discounted and undiscounted capital lease payments. The discounted capital lease payments of $689 million as reported on the balance sheet are 64.9 percent of the undiscounted noncurrent capital lease payments of $1,062 million ($1,152 million total minus $90 million current liabilities). Applying the same relationship to operating lease payments, we find that 64.9 percent of the undiscounted noncurrent operating lease payments of $8,127 million ($9,327 million total minus $1,200 million current) equals $5.3 billion, close to the estimate of the present value of future operating lease payments given in Exhibit 9 with a discount rate of 13.90 percent.

EXHIBIT 9 Present Value of Operating Lease Payments Using a Discount Rate Derived from Present Value of Capital Lease Payments ($ millions)

	Capital Lease			Operating Lease	
	Payments (as given in footnote)	Payments including Estimated Annual Payments for 2015 and Thereafter (Through 2018)	Payments including Estimated Annual Payments for 2015 and Thereafter (Through 2019)	Payments as Given	Payments including Estimated Annual Payments for 2015 and Thereafter
Present value, *given*	($689)	($689)	($689)		
2010	$181	$181	$181	$1,065	$1,065
2011	$184	$184	$184	$1,039	$1,039
2012	$134	$134	$134	$973	$973
2013	$119	$119	$119	$872	$872
2014	$98	$98	$98	$815	$815
2015 and thereafter	$436	$143	$98	$7,453	$815
		$143	$98		$815
		$143	$98		$815
		$7	$98		$815
			$44		$815
					$815
					$815
					$815
					$815
					$118
Internal rate of return	15.04%	13.90%	13.24%		
Present value of operating lease payments with 15.04% discount rate					$5,193
Present value of operating lease payments with 13.90% discount rate					$5,466
Present value of operating lease payments with 13.24% discount rate					$5,632

We developed discount rate estimates of 13.90 percent and 13.24 percent. Using a discount rate of 13.90 percent, the present value of future operating lease payments would be roughly $5.5 billion, and using a discount rate of 13.24 percent, the present value would be around $5.6 billion. Because $1.2 billion of the amounts related to operating leases already appear on the balance sheet (as disclosed in the company's lease footnote), the value of the future operating lease payments that do not appear on the balance sheet are estimated to be in the range of $5,466 million – $1,200 million = $4,266 million to $5,632 million – $1,200 million = $4,432 million. The lower the assumed discount rate, the higher the present value of the lease payments.

We now add the present value of the off-balance-sheet future operating lease payments to the company's total assets and total debt. Making this adjustment increases the debt-to-assets ratio to an amount between ($11,697 + $4,266)/($25,438 + $4,266) = 67.5 percent and ($11,697 + $4,432)/($25,438 + $4,432) = 68.1 percent. The discount rates implied by the company's capital lease structure are significantly higher, however, than yields on investment-grade bonds as of the date of the example; therefore, an analyst might choose to examine the sensitivity of the lease obligation to alternative discount rates.

EXAMPLE 14 Analyst Adjustment to Debt for Operating Lease Payments

An analyst is evaluating the capital structure of two (hypothetical) companies, Koller Semiconductor and MacRae Manufacturing, as of the beginning of 2010. Koller Semiconductor makes somewhat less use of operating leases than MacRae Manufacturing. The analyst has the additional information in Exhibit 10.

EXHIBIT 10

	Koller Semiconductor	MacRae Manufacturing
Total debt	$1,200	$2,400
Total equity	$2,000	$4,000
Average interest rate on debt	10%	8%
Lease payments on operating leases:		
2010	10	90
2011	18	105
2012	22	115
2013	25	128
2014 and thereafter	75	384

Based on the information given in Exhibit 10 and assuming no adjustment to equity, discuss how adjusting for operating leases affects the companies' solvency on the basis of debt/debt-plus-equity. (Assume payments after 2013 occur at the same rate as for 2013. For example, for Koller Semiconductor, the payments for 2014 through 2016 would be assumed to be $25 each year.)

Solution: Before the adjustment is made, the companies' debt/debt-plus-equity are identical, both at 37.5 percent. To make the adjustment for operating leases, the first step is to calculate the present value of the operating lease payments. Assuming that payments after 2013 occur at the same rate as for 2013, the analyst finds Koller's payment would be $25 in 2014, 2015, and 2016. The present value of $25 discounted for five years at 10 percent is $15.52. MacRae's payment is assumed to be $128 in each of 2014, 2015, and 2016. The present value of $128 discounted for five years at 8 percent

is $87.11. Calculations for 2015 and 2016 are made in the same manner, resulting in the present values shown in Exhibit 11.

EXHIBIT 11

	Koller Semiconductor	MacRae Manufacturing
2010	$9.09	$83.33
2011	$14.88	$90.02
2012	$16.53	$91.29
2013	$17.08	$94.08
2014	$15.52	$87.11
2015	$14.11	$80.66
2016	$12.83	$74.69
Total present value	$100.04	$601.18

After the present value of capitalized lease obligations is added to total debt, MacRae Manufacturing's debt/debt-plus-equity is significantly higher, at 42.9 percent, than the debt/debt-plus-equity of Koller Semiconductor, as shown in Exhibit 12. The higher ratio reflects the impact of lease obligations on MacRae's solvency, as measured by debt/debt-plus-equity.

EXHIBIT 12

	Koller Semiconductor		MacRae Manufacturing	
	Before Capitalizing	After Capitalizing	Before Capitalizing	After Capitalizing
Total debt	$1,200	$1,300	$2,400	$3,001
Total equity	$2,000	$2,000	$4,000	$4,000
Debt/(Debt + Equity)	37.5%	39.4%	37.5%	42.9%

The adjustment for operating leases essentially treats the transaction as if the asset subject to the operating lease had been purchased rather than leased. The present value of the capitalized lease obligations is the amount owed and the amount at which the asset is valued. Further adjustments reflect the reduction of rent expenses (if the asset is owned, rent would not be paid), the related interest expense on the amount owed, and a depreciation expense for the asset. The reduction of rent expense can be estimated as the average of two years of rent expense. Interest expense is estimated as the interest rate times the present value of the lease payments. Depreciation is estimated on a straight-line basis for the number of years of future lease payments.

EXAMPLE 15 Effect on Coverage Ratio for Operating Lease Adjustment

The analyst is also evaluating the interest coverage ratio of the companies in the previous example, Koller Semiconductor and MacRae Manufacturing.

	Koller Semiconductor	MacRae Manufacturing
EBIT before adjustment	$850	$1,350
Interest expense before adjustment	$120	$192

The prior-year (2009) rent expense was $11 for Koller Semiconductor and $90 for MacRae Manufacturing.

Using the information in Example 14 and the additional information given here, discuss how adjustment for operating leases affects the companies' solvency as measured by their coverage ratios.

Solution: Interest coverage is calculated as EBIT divided by interest. For the adjustments, rent expense is the average of two years of rent. For Koller Semiconductor, rent expense is calculated as ($11 + $10)/2. The cost of interest on lease obligations is estimated as the interest rate multiplied by the present value of the lease payments. For Koller Semiconductor, this interest expense is calculated as 10% × $100.04, and for MacRae Manufacturing, it is calculated as 8% × $601.18. Depreciation is estimated on a straight-line basis by dividing the present value of lease payments by the number of years of lease payments (seven years). After the adjustment, both companies show a decline in interest coverage ratio, reflecting the increased obligation associated with the operating leases. Also the apparent difference in the coverage between the two companies is larger than it was in Example 14.

EXHIBIT 13

	Koller Semiconductor	MacRae Manufacturing
Interest coverage before adjustment	7.1	7.0
EBIT before adjustment	$850.0	$1,350.0
Rent expense (an add-back to EBIT)	10.5	90.0
Depreciation (a deduction from EBIT)	(14.3)	(85.9)
EBIT after adjustment	$846.2	$1354.1
Interest expense before adjustment	$120.0	$192.0
Assumed cost of interest on lease obligation (to add to interest)	10.0	48.1
Interest expense after adjustment	$130.0	$240.1
Interest coverage after adjustment	6.5	5.6

In summary, adjusting a company's financial statements to include amounts of lease payments provides a more complete picture of the company's financial condition and enables the comparison of companies with varying arrangements for financing assets. The analyst may also need to adjust for amounts associated with other off-balance-sheet financing arrangements.

7. SUMMARY

This chapter described selected applications of financial statement analysis, including the evaluation of past financial performance, the projection of future financial performance, the assessment of credit risk, and the screening of potential equity investments. In addition, the chapter introduced analyst adjustments to reported financials. In all cases, the analyst needs to have a good understanding of the financial reporting standards under which the financial statements were prepared. Because standards evolve over time, analysts must stay current in order to make good investment decisions.

The main points in the chapter are as follows:

- Evaluating a company's historical performance addresses not only what happened but also the causes behind the company's performance and how the performance reflects the company's strategy.
- The projection of a company's future net income and cash flow often begins with a top-down sales forecast in which the analyst forecasts industry sales and the company's market share. By projecting profit margins or expenses and the level of investment in working and fixed capital needed to support projected sales, the analyst can forecast net income and cash flow.
- Projections of future performance are needed for discounted cash flow valuation of equity and are often needed in credit analysis to assess a borrower's ability to repay interest and principal of a debt obligation.
- Credit analysis uses financial statement analysis to evaluate credit-relevant factors, including tolerance for leverage, operational stability, and margin stability.
- When ratios constructed from financial statement data and market data are used to screen for potential equity investments, fundamental decisions include which metrics to use as screens, how many metrics to include, what values of those metrics to use as cutoff points, and what weighting to give each metric.
- Analyst adjustments to a company's reported financial statements are sometimes necessary (e.g., when comparing companies that use different accounting methods or assumptions). Adjustments include those related to investments; inventory; property, plant, and equipment; goodwill; and off-balance-sheet financing.

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PROBLEMS

1. Projecting profit margins into the future on the basis of past results would be *most* reliable when the company:
   A. is in the commodities business.
   B. operates in a single business segment.
   C. is a large, diversified company operating in mature industries.

2. Galambos Corporation had an average receivables collection period of 19 days in 2003. Galambos has stated that it wants to decrease its collection period in 2004 to match the industry average of 15 days. Credit sales in 2003 were $300 million, and analysts expect credit sales to increase to $400 million in 2004. To achieve the company's goal of decreasing the collection period, the change in the average accounts receivable balance from 2003 to 2004 that must occur is *closest* to:
   A. –$420,000.
   B. $420,000.
   C. $836,000.

3. Credit analysts are likely to consider which of the following in making a rating recommendation?
   A. Business risk but not financial risk
   B. Financial risk but not business risk
   C. Both business risk and financial risk

4. When screening for potential equity investments based on return on equity, to control risk, an analyst would be *most likely* to include a criterion that requires:
   A. positive net income.
   B. negative net income.
   C. negative shareholders' equity.

5. One concern when screening for stocks with low price-to-earnings ratios is that companies with low P/Es may be financially weak. What criterion might an analyst include to avoid inadvertently selecting weak companies?
   A. Net income less than zero
   B. Debt-to-total assets ratio below a certain cutoff point
   C. Current-year sales growth lower than prior-year sales growth

6. When a database eliminates companies that cease to exist because of a merger or bankruptcy, this can result in:
   A. look-ahead bias.
   B. back-testing bias.
   C. survivorship bias.

7. In a comprehensive financial analysis, financial statements should be:
   A. used as reported without adjustment.
   B. adjusted after completing ratio analysis.
   C. adjusted for differences in accounting standards, such as international financial reporting standards and US generally accepted accounting principles.

8. When comparing financial statements prepared under IFRS with those prepared under US GAAP, analysts may need to make adjustments related to:
   A. realized losses.
   B. unrealized gains and losses for trading securities.
   C. unrealized gains and losses for available-for-sale securities.

9. When comparing a US company that uses the last in, first out (LIFO) method of inventory with companies that prepare their financial statements under international financial reporting standards (IFRS), analysts should be aware that according to IFRS, the LIFO method of inventory:
   A. is never acceptable.
   B. is always acceptable.
   C. is acceptable when applied to finished goods inventory only.

10. An analyst is evaluating the balance sheet of a US company that uses last in, first out (LIFO) accounting for inventory. The analyst collects the following data:

	31 Dec 05	31 Dec 06
Inventory reported on balance sheet	$500,000	$600,000
LIFO reserve	$ 50,000	$70,000
Average tax rate	30%	30%

After adjusting the amounts to convert to the first in, first out (FIFO) method, inventory at 31 December 2006 would be closest to:
   A. $600,000.
   B. $620,000.
   C. $670,000.

11. An analyst gathered the following data for a company ($ millions):

	31 Dec 2000	31 Dec 2001
Gross investment in fixed assets	$2.8	$2.8
Accumulated depreciation	$1.2	$1.6

The average age and average depreciable life of the company's fixed assets at the end of 2001 are *closest* to:

	Average Age	Average Depreciable Life
A.	1.75 years	7 years
B.	1.75 years	14 years
C.	4.00 years	7 years

12. To compute tangible book value, an analyst would
    A. add goodwill to stockholders' equity.
    B. add all intangible assets to stockholders' equity.
    C. subtract all intangible assets from stockholders' equity.

13. Which of the following is an off-balance-sheet financing technique? The use of
    A. capital leases.
    B. operating leases.
    C. the last in, first out inventory method.

14. To better evaluate the solvency of a company, an analyst would most likely add to total liabilities
    A. the present value of future capital lease payments.
    B. the total amount of future operating lease payments.
    C. the present value of future operating lease payments.

CHAPTER 13

INCOME TAXES

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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- describe the differences between accounting profit and taxable income, and define key terms, including deferred tax assets, deferred tax liabilities, valuation allowance, taxes payable, and income tax expense;
- explain how deferred tax liabilities and assets are created and the factors that determine how a company's deferred tax liabilities and assets should be treated for the purposes of financial analysis;
- calculate the tax base of a company's assets and liabilities;
- calculate income tax expense, income taxes payable, deferred tax assets, and deferred tax liabilities, and calculate and interpret the adjustment to the financial statements related to a change in the income tax rate;
- evaluate the impact of tax rate changes on a company's financial statements and ratios;
- distinguish between temporary and permanent differences in pre-tax accounting income and taxable income;
- describe the valuation allowance for deferred tax assets—when it is required and what impact it has on financial statements;
- compare a company's deferred tax items;
- analyze disclosures relating to deferred tax items and the effective tax rate reconciliation, and explain how information included in these disclosures affects a company's financial statements and financial ratios;
- identify the key provisions of and differences between income tax accounting under International Financial Reporting Standards (IFRS) and US generally accepted accounting principles (GAAP).

1. INTRODUCTION

For those companies reporting under International Financial Reporting Standards (IFRS), IAS 12 covers accounting for a company's income taxes and the reporting of deferred taxes. For those companies reporting under United States generally accepted accounting principles (US GAAP), SFAS No. 109[1] is the primary source for information on accounting for income taxes. Although IFRS and US GAAP follow similar conventions on many income tax issues, there are some key differences that will be discussed in the chapter.

Differences between how and when transactions are recognized for financial reporting purposes relative to tax reporting can give rise to differences in tax expense and related tax assets and liabilities. To reconcile these differences, companies that report under either IFRS or US GAAP create a provision on the balance sheet called deferred tax assets or deferred tax liabilities, depending on the nature of the situation.

Deferred tax assets or liabilities usually arise when accounting standards and tax authorities recognize the timing of revenues and expenses at different times. Because timing differences such as these will eventually reverse over time, they are called "temporary differences." Deferred tax assets represent taxes that have been recognized for tax reporting purposes (or often the carrying forward of losses from previous periods) but have not yet been recognized on the income statement prepared for financial reporting purposes. Deferred tax liabilities represent tax expense that has appeared on the income statement for financial reporting purposes, but has not yet become payable under tax regulations.

This chapter provides a primer on the basics of income tax accounting and reporting. The chapter is organized as follows. Section 2 describes the differences between taxable income and accounting profit. Section 3 explains the determination of tax base, which relates to the valuation of assets and liabilities for tax purposes. Section 4 discusses several types of timing differences between the recognition of taxable and accounting profit. Section 5 examines unused tax losses and tax credits. Section 6 describes the recognition and measurement of current and deferred tax. Section 7 discusses the disclosure and presentation of income tax information on companies' financial statements and illustrates its practical implications for financial analysis. Section 8 provides an overview of the similarities and differences for income-tax reporting between IFRS and US GAAP. A summary of the key points and practice problems in the CFA Institute multiple-choice format conclude the chapter.

2. DIFFERENCES BETWEEN ACCOUNTING PROFIT AND TAXABLE INCOME

A company's **accounting profit** is reported on its income statement in accordance with prevailing accounting standards. Accounting profit (also referred to as income before taxes or pretax income) does not include a provision for income tax expense.[2] A company's **taxable income** is the portion of its income that is subject to income taxes under the tax laws of its jurisdiction. Because of different guidelines for how income is reported on a company's financial statements and how it is measured for income tax purposes, accounting profit and taxable income may differ.

[1] FASB ASC Topic 740 [Income Taxes].
[2] As defined under IAS 12, paragraph 5.

A company's taxable income is the basis for its **income tax payable** (a liability) or recoverable (an asset), which is calculated on the basis of the company's tax rate and appears on its balance sheet. A company's **tax expense**, or tax benefit in the case of a recovery, appears on its income statement and is an aggregate of its income tax payable (or recoverable in the case of a tax benefit) and any changes in deferred tax assets and liabilities.

When a company's taxable income is greater than its accounting profit, then its income taxes payable will be higher than what would have otherwise been the case had the income taxes been determined based on accounting profit. **Deferred tax assets**, which appear on the balance sheet, arise when an excess amount is paid for income taxes (taxable income higher than accounting profit) and the company expects to recover the difference during the course of future operations. Actual income taxes payable will thus exceed the financial accounting income tax expense (which is reported on the income statement and is determined based on accounting profit). Related to deferred tax assets is a **valuation allowance**, which is a reserve created against deferred tax assets. The valuation allowance is based on the likelihood of realizing the deferred tax assets in future accounting periods. **Deferred tax liabilities**, which also appear on the balance sheet, arise when a deficit amount is paid for income taxes and the company expects to eliminate the deficit over the course of future operations. In this case, financial accounting income tax expense exceeds income taxes payable.

Income tax paid in a period is the actual amount paid for income taxes (not a provision, but the actual cash outflow). The income tax paid may be less than the income tax expense because of payments in prior periods or refunds received in the current period. Income tax paid reduces the income tax payable, which is carried on the balance sheet as a liability.

The **tax base** of an asset or liability is the amount at which the asset or liability is valued for tax purposes, whereas the **carrying amount** is the amount at which the asset or liability is valued according to accounting principles.[3] Differences between the tax base and the carrying amount also result in differences between accounting profit and taxable income. These differences can carry through to future periods. For example, a **tax loss carry forward** occurs when a company experiences a loss in the current period that may be used to reduce future taxable income. The company's tax expense on its income statement must not only reflect the taxes payable based on taxable income, but also the effect of these differences.

2.1. Current Tax Assets and Liabilities

A company's current tax liability is the amount payable in taxes and is based on current taxable income. If the company expects to receive a refund for some portion previously paid in taxes, the amount recoverable is referred to as a current tax asset. The current tax liability or asset may, however, differ from what the liability would have been if it was based on accounting profit rather than taxable income for the period. Differences in accounting profit and taxable income are the result of the application of different rules. Such differences between accounting profit and taxable income can occur in several ways, including:

- Revenues and expenses may be recognized in one period for accounting purposes and a different period for tax purposes;

[3] The terms "tax base" and "tax basis" are interchangeable. "Tax basis" is more commonly used in the United States. Similarly, "carrying amount" and "book value" refer to the same concept.

- Specific revenues and expenses may be either recognized for accounting purposes and not for tax purposes; or not recognized for accounting purposes but recognized for tax purposes;
- The carrying amount and tax base of assets and/or liabilities may differ;
- The deductibility of gains and losses of assets and liabilities may vary for accounting and income tax purposes;
- Subject to tax rules, tax losses of prior years might be used to reduce taxable income in later years, resulting in differences in accounting and taxable income (tax loss carryforward); and
- Adjustments of reported financial data from prior years might not be recognized equally for accounting and tax purposes or might be recognized in different periods.

2.2. Deferred Tax Assets and Liabilities

Deferred tax assets represent taxes that have been paid (or often the carrying forward of losses from previous periods) but have not yet been recognized on the income statement. Deferred tax liabilities occur when financial accounting income tax expense is greater than regulatory income tax expense. Deferred tax assets and liabilities usually arise when accounting standards and tax authorities recognize the timing of taxes due at different times; for example, when a company uses accelerated depreciation when reporting to the tax authority (to increase expense and lower tax payments in the early years) but uses the straight-line method on the financial statements. Although not similar in treatment on a year-to-year basis (e.g., depreciation of 5 percent on a straight-line basis may be permitted for accounting purposes whereas 10 percent is allowed for tax purposes) over the life of the asset, both approaches allow for the total cost of the asset to be depreciated (or amortized). Because these timing differences will eventually reverse or self-correct over the course of the asset's depreciable life, they are called "temporary differences."

Under IFRS, deferred tax assets and liabilities are always classified as noncurrent. Under US GAAP, however, deferred tax assets and liabilities are classified on the balance sheet as current and noncurrent based on the classification of the underlying asset or liability.

Any deferred tax asset or liability is based on temporary differences that result in an excess or a deficit amount paid for taxes, which the company expects to recover from future operations. Because taxes will be recoverable or payable at a future date, it is only a temporary difference and a deferred tax asset or liability is created. Changes in the deferred tax asset or liability on the balance sheet reflect the difference between the amounts recognized in the previous period and the current period. The changes in deferred tax assets and liabilities are added to income tax payable to determine the company's income tax expense (or credit) as it is reported on the income statement.

At the end of each fiscal year, deferred tax assets and liabilities are recalculated by comparing the tax bases and carrying amounts of the balance sheet items. Identified temporary differences should be assessed on whether the difference will result in future economic benefits. For example, Pinto Construction (a hypothetical company) depreciates equipment on a straight-line basis of 10 percent per year. The tax authorities allow depreciation of 15 percent per year. At the end of the fiscal year, the carrying amount of the equipment for accounting purposes would be greater than the tax base of the equipment thus resulting in a temporary difference. A deferred tax item may only be created if it is not doubtful that the company will realize economic benefits in the future. In our example, the equipment is used in the core business of Pinto Construction. If the company is a going concern and stable, there should be no doubt that future economic benefits will result from the equipment and it would be appropriate to create the deferred tax item.

Should it be doubtful that future economic benefits will be realized from a temporary difference (such as Pinto Construction being under liquidation), the temporary difference will

not lead to the creation of a deferred tax asset or liability. If a deferred tax asset or liability resulted in the past, but the criteria of economic benefits is not met on the current balance sheet date, then, under IFRS, an existing deferred tax asset or liability related to the item will be reversed. Under US GAAP, a valuation allowance is established. In assessing future economic benefits, much is left to the discretion of the auditor in assessing the temporary differences and the issue of future economic benefits.

EXAMPLE 1

The following information pertains to a fictitious company, Reston Partners:

Reston Partners Consolidated Income Statement

Period Ending 31 March (£ Millions)	2006	2005	2004
Revenue	£40,000	£30,000	£25,000
Other net gains	2,000	0	0
Changes in inventories of finished goods and work in progress	400	180	200
Raw materials and consumables used	(5,700)	(4,000)	(8,000)
Depreciation expense	(2,000)	(2,000)	(2,000)
Other expenses	(6,000)	(5,900)	(4,500)
Interest expense	(2,000)	(3,000)	(6,000)
Profit before tax	£26,700	£15,280	£4,700

The financial performance and accounting profit of Reston Partners on this income statement is based on accounting principles appropriate for the jurisdiction in which Reston Partners operates. The principles used to calculate accounting profit (profit before tax in the example above) may differ from the principles applied for tax purposes (the calculation of taxable income). For illustrative purposes, however, assume that all income and expenses on the income statement are treated identically for tax and accounting purposes *except* depreciation.

The depreciation is related to equipment owned by Reston Partners. For simplicity, assume that the equipment was purchased at the beginning of the 2004 fiscal year. Depreciation should thus be calculated and expensed for the full year. Assume that accounting standards permit equipment to be depreciated on a straight-line basis over a 10-year period, whereas the tax standards in the jurisdiction specify that equipment should be depreciated on a straight-line basis over a 7-year period. For simplicity, assume a salvage value of £0 at the end of the equipment's useful life. Both methods will result in the full depreciation of the asset over the respective tax or accounting life.

The equipment was originally purchased for £20,000. In accordance with accounting standards, over the next 10 years the company will recognize annual depreciation of £2,000 (£20,000 ÷ 10) as an expense on its income statement and for the determination of accounting profit. For tax purposes, however, the company will recognize £2,857 (£20,000 ÷ 7) in depreciation each year. Each fiscal year the depreciation expense related to the use of the equipment will, therefore, differ for tax and accounting purposes

(tax base vs. carrying amount), resulting in a difference between accounting profit and taxable income.

The previous income statement reflects accounting profit (depreciation at £2,000 per year). The following table shows the taxable income for each fiscal year.

Taxable Income (£ Millions)	2006	2005	2004
Revenue	£40,000	£30,000	£25,000
Other net gains	2,000	0	0
Changes in inventories of finished goods and work in progress	400	180	200
Raw materials and consumables used	(5,700)	(4,000)	(8,000)
Depreciation expense	(2,857)	(2,857)	(2,857)
Other expenses	(6,000)	(5,900)	(4,500)
Interest expense	(2,000)	(3,000)	(6,000)
Taxable income	£25,843	£14,423	£3,843

The carrying amount and tax base for the equipment is as follows:

(£ Millions)	2006	2005	2004
Equipment value for accounting purposes (*carrying amount*) (depreciation of £2,000/year)	£14,000	£16,000	£18,000
Equipment value for tax purposes (*tax base*) (depreciation of £2,857/year)	£11,429	£14,286	£17,143
Difference	£2,571	£1,714	£857

At each balance sheet date, the tax base and carrying amount of all assets and liabilities must be determined. The income tax payable by Reston Partners will be based on the taxable income of each fiscal year. If a tax rate of 30 percent is assumed, then the income taxes payable for 2004, 2005, and 2006 are £1,153 (30% × 3,843), £4,327 (30% × 14,423), and £7,753 (30% × 25,843).

Remember, though, that if the tax obligation is calculated based on accounting profits, it will differ because of the differences between the tax base and the carrying amount of equipment. The difference in each fiscal year is reflected in the table above. In each fiscal year the carrying amount of the equipment exceeds its tax base. For tax purposes, therefore, the asset tax base is less than its carrying value under financial accounting principles. The difference results in a deferred tax liability.

(£ Millions)	2006	2005	2004
Deferred tax liability	£771	£514	£257
(Difference between tax base and carrying amount)			
2004: £(18,000 − 17,143) × 30% = 257			
2005: £(16,000 − 14,286) × 30% = 514			
2006: £(14,000 − 11,429) × 30% = 771			

The comparison of the tax base and carrying amount of equipment shows what the deferred tax liability should be on a particular balance sheet date. In each fiscal year, only the change in the deferred tax liability should be included in the calculation of the income tax expense reported on the income statement prepared for accounting purposes.

On the income statement, the company's income tax expense will be the sum of the deferred tax liability and income tax payable.

(£ Millions)	2006	2005	2004
Income tax payable (based on tax accounting)	£7,753	£4,327	£1,153
Deferred tax liability	257	257	257
Income tax (based on financial accounting)	£8,010	£4,584	£1,410
(Difference between tax base and carrying amount)			
2004: £(18,000 – 17,143) × 30% = 257			
2005: £(16,000 – 14,286) × 30% – 257 = 257			
2006: £(14,000 – 11,429) × 30% – 514 = 257			

Note that because the different treatment of depreciation is a temporary difference, the income tax on the income statement is 30 percent of the accounting profit, although only a part is income tax payable and the rest is a deferred tax liability.

The consolidated income statement of Reston Partners including income tax is presented as follows:

Reston Partners Consolidated Income Statement			
Period Ending 31 March (£ Millions)	2006	2005	2004
Revenue	£40,000	£30,000	£25,000
Other net gains	2,000	0	0
Changes in inventories of finished goods and work in progress	400	180	200
Raw materials and consumables used	(5,700)	(4,000)	(8,000)
Depreciation expense	(2,000)	(2,000)	(2,000)
Other expenses	(6,000)	(5,900)	(4,500)
Interest expense	(2,000)	(3,000)	(6,000)
Profit before tax	£26,700	£15,280	£4,700
Income tax	(8,010)	(4,584)	(1,410)
Profit after tax	£18,690	£10,696	£3,290

Any amount paid to the tax authorities will reduce the liability for income tax payable and be reflected on the statement of cash flows of the company.

3. DETERMINING THE TAX BASE OF ASSETS AND LIABILITIES

As mentioned in Section 2, temporary differences arise from a difference in the tax base and carrying amount of assets and liabilities. The tax base of an asset or liability is the amount attributed to the asset or liability for tax purposes, whereas the carrying amount is based on

accounting principles. Such a difference is considered temporary if it is expected that the taxes will be recovered or payable at a future date.

3.1. Determining the Tax Base of an Asset

The tax base of an asset is the amount that will be deductible for tax purposes in future periods as the economic benefits become realized and the company recovers the carrying amount of the asset.

For example, our previously mentioned Reston Partners (from Example 1) depreciates equipment on a straight-line basis at a rate of 10 percent per year. The tax authorities allow depreciation of approximately 15 percent per year. At the end of the fiscal year, the carrying amount of equipment for accounting purposes is greater than the asset tax base thus resulting in a temporary difference.

EXAMPLE 2 Determining the Tax Base of an Asset

The following information pertains to Entiguan Sports, a hypothetical developer of products used to treat sports-related injuries. (The treatment of items for accounting and tax purposes is based on fictitious accounting and tax standards and is not specific to a particular jurisdiction.) Calculate the tax base and carrying amount for each item.

1. *Dividends receivable*: On its balance sheet, Entiguan Sports reports dividends of €1 million receivable from a subsidiary. Assume that dividends are not taxable.
2. *Development costs*: Entiguan Sports capitalized development costs of €3 million during the year. Entiguan amortized €500,000 of this amount during the year. For tax purposes amortization of 25 percent per year is allowed.
3. *Research costs*: Entiguan incurred €500,000 in research costs, which were all expensed in the current fiscal year for financial reporting purposes. Assume that applicable tax legislation requires research costs to be expensed over a four-year period rather than all in one year.
4. *Accounts receivable*: Included on the income statement of Entiguan Sports is a provision for doubtful debt of €125,000. The accounts receivable amount reflected on the balance sheet, after taking the provision into account, amounts to €1,500,000. The tax authorities allow a deduction of 25 percent of the gross amount for doubtful debt.

Solutions:

	Carrying Amount (€)	Tax Base (€)	Temporary Difference (€)
1. Dividends receivable	1,000,000	1,000,000	0
2. Development costs	2,500,000	2,250,000	250,000
3. Research costs	0	375,000	(375,000)
4. Accounts receivable	1,500,000	1,218,750	281,250

Comments:

1. *Dividends receivable*: Although the dividends received are economic benefits from the subsidiary, we are assuming that dividends are not taxable. Therefore, the carrying amount equals the tax base for dividends receivable.
2. *Development costs*: First, we assume that development costs will generate economic benefits for Entiguan Sports. Therefore, it may be included as an asset on the balance sheet for the purposes of this example. Second, the amortization allowed by the tax authorities exceeds the amortization accounted for based on accounting rules. Therefore, the carrying amount of the asset exceeds its tax base. The carrying amount is (€3,000,000 − €500,000) = €2,500,000 whereas the tax base is [€3,000,000 − (25% × €3,000,000)] = €2,250,000.
3. *Research costs*: We assume that research costs will result in future economic benefits for the company. If this were not the case, creation of a deferred tax asset or liability would not be allowed. The tax base of research costs exceeds their carrying amount. The carrying amount is €0 because the full amount has been expensed for financial reporting purposes in the year in which it was incurred. Therefore, there would not have been a balance sheet item "Research costs" for tax purposes, and only a proportion may be deducted in the current fiscal year. The tax base of the asset is (€500,000 − €500,000/4) = €375,000.
4. *Accounts receivable*: The economic benefits that should have been received from accounts receivable have already been included in revenues included in the calculation of the taxable income when the sales occurred. Because the receipt of a portion of the accounts receivable is doubtful, the provision is allowed. The provision, based on tax legislation, results in a greater amount allowed in the current fiscal year than would be the case under accounting principles. This results in the tax base of accounts receivable being lower than its carrying amount. Note that the example specifically states that the balance sheet amount for accounts receivable after the provision for accounting purposes amounts to €1,500,000. Therefore, accounts receivable before any provision was €1,500,000 + €125,000 = €1,625,000. The tax base is calculated as (€1,500,000 + €125,000) − [25% × (€1,500,000 + €125,000)] = €1,218,750.

3.2. Determining the Tax Base of a Liability

The tax base of a liability is the carrying amount of the liability less any amounts that will be deductible for tax purposes in the future. With respect to payments from customers received in advance of providing the goods and services, the tax base of such a liability is the carrying amount less any amount of the revenue that will not be taxable in future. Keep in mind the following fundamental principle: In general, a company will recognize a deferred tax asset or liability when recovery/settlement of the carrying amount will affect future tax payments by either increasing or reducing the taxable profit. Remember, an analyst is not only evaluating the difference between the carrying amount and the tax base, but the relevance of that difference on future profits and losses and thus by implication future taxes.

IFRS offers specific guidelines with regard to revenue received in advance: IAS 12 states that the tax base is the carrying amount less any amount of the revenue that will not be taxed at a future date. Under US GAAP, an analysis of the tax base would result in a similar outcome. The tax legislation within the jurisdiction will determine the amount recognized on

the income statement and whether the liability (revenue received in advance) will have a tax base greater than zero. This will depend on how tax legislation recognizes revenue received in advance.

EXAMPLE 3 Determining the Tax Base of a Liability

The following information pertains to Entiguan Sports for the 2006 year-end. The treatment of items for accounting and tax purposes is based on fictitious accounting and tax standards and is not specific to a particular jurisdiction. Calculate the tax base and carrying amount for each item.

1. *Donations*: Entiguan Sports made donations of €100,000 in the current fiscal year. The donations were expensed for financial reporting purposes, but are not tax deductible based on applicable tax legislation.
2. *Interest received in advance*: Entiguan Sports received in advance interest of €300,000. The interest is taxed because tax authorities recognize the interest to accrue to the company (part of taxable income) on the date of receipt.
3. *Rent received in advance*: Entiguan recognized €10 million for rent received in advance from a lessee for an unused warehouse building. Rent received in advance is deferred for accounting purposes but taxed on a cash basis.
4. *Loan*: Entiguan Sports secured a long-term loan for €550,000 in the current fiscal year. Interest is charged at 13.5 percent per annum and is payable at the end of each fiscal year.

Solutions:

	Carrying Amount (€)	Tax Base (€)	Temporary Difference (€)
1. Donations	0	0	0
2. Interest received in advance	300,000	0	(300,000)
3. Rent received in advance	10,000,000	0	(10,000,000)
4. Loan (capital)	550,000	550,000	0
Interest paid	0	0	0

Comments:

1. *Donations*: The amount of €100,000 was immediately expensed on Entiguan's income statement; therefore, the carrying amount is €0. Tax legislation does not allow donations to be deducted for tax purposes, so the tax base of the donations equals the carrying amount. Note that while the carrying amount and tax base are the same, the difference in the treatment of donations for accounting and tax purposes (expensed for accounting purposes, but not deductible for tax purposes) represents a permanent difference (a difference that will not be reversed in future). Permanent and temporary differences are elaborated on in Section 4 and it will refer to this particular case with an expanded explanation.

2. *Interest received in advance*: Based on the information provided, for tax purposes, interest is deemed to accrue to the company on the date of receipt. For tax purposes, it is thus irrelevant whether it is for the current or a future accounting period; it must be included in taxable income in the financial year received. Interest received in advance is, for accounting purposes though, included in the financial period in which it is deemed to have been earned. For this reason, the interest income received in advance is a balance sheet liability. It was not included on the income statement because the income relates to a future financial year. Because the full €300,000 is included in taxable income in the current fiscal year, the tax base is €300,000 – 300,000 = €0. Note that although interest received in advance and rent received in advance are both taxed, the timing depends on how the particular item is treated in tax legislation.
3. *Rent received in advance*: The result is similar to interest received in advance. The carrying amount of rent received in advance would be €10,000,000 while the tax base is €0.
4. *Loan*: Repayment of the loan has no tax implications. The repayment of the capital amount does not constitute an income or expense. The interest paid is included as an expense in the calculation of taxable income as well as accounting income. Therefore, the tax base and carrying amount is €0. For clarity, the interest paid that would be included on the income statement for the year amounts to 13.5% × €550,000 = €74,250 if the loan was acquired at the beginning of the current fiscal year.

3.3. Changes in Income Tax Rates

The measurement of deferred tax assets and liabilities is based on current tax law. But if there are subsequent changes in tax laws or new income tax rates, existing deferred tax assets and liabilities must be adjusted for the effects of these changes. The resulting effects of the changes are also included in determining accounting profit in the period of change.

When income tax rates change, the deferred tax assets and liabilities are adjusted to the new tax rate. If income tax rates increase, deferred taxes (that is, the deferred tax assets and liabilities) will also increase. Likewise, if income tax rates decrease, deferred taxes will decrease. A decrease in tax rates decreases deferred tax liabilities, which reduces future tax payments to the taxing authorities. A decrease in tax rates will also decrease deferred tax assets, which reduces their value toward the offset of future tax payments to the taxing authorities.

To illustrate the effect of a change in tax rate, consider Example 1 again. In that illustration, the timing difference that led to the recognition of a deferred tax liability for Reston Partners was attributable to differences in the method of depreciation and the related effects on the accounting carrying value and the asset tax base. The relevant information is restated below.

The carrying amount and tax base for the equipment is:

(£ Millions)	2006	2005	2004
Equipment value for accounting purposes (*carrying amount*) (depreciation of £2,000/year)	£14,000	£16,000	£18,000
Equipment value for tax purposes (*tax base*) (depreciation of £2,857/year)	£11,429	£14,286	£17,143
Difference	£2,571	£1,714	£857

At a 30 percent income tax rate, the deferred tax liability was then determined as follows:

(£ Millions)	2006	2005	2004
Deferred tax liability	£771	£514	£257
(Difference between tax base and carrying amount)			
2004: £(18,000 − 17,143) × 30% = £257			
2005: £(16,000 − 14,286) × 30% = £514			
2006: £(14,000 − 11,429) × 30% = £771			

For this illustration, assume that the taxing authority has changed the income tax rate to 25 percent for 2006. Although the difference between the carrying amount and the tax base of the depreciable asset are the same, the deferred tax liability for 2006 will be £643 (instead of £771 or a reduction of £128 in the liability). 2006: £(14,000 − 11,429) × 25% = £643.

Reston Partners' provision for income tax expense is also affected by the change in tax rates. Taxable income for 2006 will now be taxed at a rate of 25 percent. The benefit of the 2006 accelerated depreciation tax shield is now only £214 (£857 × 25%) instead of the previous £257 (a reduction of £43). In addition, the reduction in the beginning carrying value of the deferred tax liability for 2006 (the year of change) further reduces the income tax expense for 2006. The reduction in income tax expense attributable to the change in tax rate is £85. 2006: (30% − 25%) × £1,714 = £85. Note that these two components together account for the reduction in the deferred tax liability (£43 + £85 = £128).

As may be seen from this discussion, changes in the income tax rate have an effect on a company's deferred tax asset and liability carrying values as well as an effect on the measurement of income tax expense in the year of change. The analyst must thus note that proposed changes in tax law can have a quantifiable effect on these accounts (and any related financial ratios that are derived from them) if the proposed changes are subsequently enacted into law.

4. TEMPORARY AND PERMANENT DIFFERENCES BETWEEN TAXABLE AND ACCOUNTING PROFIT

Temporary differences arise from a difference between the tax base and the carrying amount of assets and liabilities. The creation of a deferred tax asset or liability from a temporary difference is only possible if the difference reverses itself at some future date and to such an extent that the balance sheet item is expected to create future economic benefits for the company. IFRS and US GAAP both prescribe the balance sheet liability method for recognition of deferred tax. This balance sheet method focuses on the recognition of a deferred tax asset or liability should there be a temporary difference between the carrying amount and tax base of balance sheet items.[4]

[4]Previously, IAS 12 required recognition of deferred tax based on the deferred method (also known as the income statement method), which focused on timing differences. Timing differences are differences in the recognition of income and expenses for accounting and tax purposes that originate in one period and will reverse in a future period. Given the definition of timing differences, all timing differences are temporary differences, such as the different treatment of depreciation for tax and accounting purposes (although the timing is different with regard to the allowed depreciation for tax and accounting purposes, the asset will eventually be fully depreciated).

Permanent differences are differences between tax and financial reporting of revenue (expenses) that *will not* be reversed at some future date. Because they will not be reversed at a future date, these differences do not give rise to deferred tax. These items typically include

- Income or expense items not allowed by tax legislation, and
- Tax credits for some expenditures that directly reduce taxes.

Because no deferred tax item is created for permanent differences, all permanent differences result in a difference between the company's effective tax rate and statutory tax rate. The effective tax rate is also influenced by different statutory taxes should an entity conduct business in more than one tax jurisdiction. The formula for the reported effective tax rate is thus equal to:

$$\text{Reported effective tax rate} = \text{Income tax expense} \div \text{Pretax income (accounting profit)}$$

The net change in deferred tax during a reporting period is the difference between the balance of the deferred tax asset or liability for the current period and the balance of the previous period.

4.1. Taxable Temporary Differences

Temporary differences are further divided into two categories, namely taxable temporary differences and deductible temporary differences. **Taxable temporary differences** are temporary differences that result in a taxable amount in a future period when determining the taxable profit as the balance sheet item is recovered or settled. Taxable temporary differences result in a deferred tax liability when the carrying amount of an asset exceeds its tax base and, in the case of a liability, when the tax base of the liability exceeds its carrying amount.

Under US GAAP, a deferred tax asset or liability is not recognized for unamortizable goodwill. Under IFRS, a deferred tax account is not recognized for goodwill arising in a business combination. Since goodwill is a residual, the recognition of a deferred tax liability would increase the carrying amount of goodwill. Discounting deferred tax assets or liabilities is generally not allowed for temporary differences related to business combinations as it is for other temporary differences.

IFRS provides an exemption (that is, deferred tax is not provided on the temporary difference) for the initial recognition of an asset or liability in a transaction that: a) is not a business combination (e.g., joint ventures, branches and unconsolidated investments); and b) affects neither accounting profit nor taxable profit at the time of the transaction. US GAAP does not provide an exemption for these circumstances.

As a simple example of a temporary difference with no recognition of deferred tax liability, assume that a fictitious company, Corporate International, a holding company of various leisure related businesses and holiday resorts, buys an interest in a hotel in the current financial year. The goodwill related to the transaction will be recognized on the financial statements, but the related tax liability will not, as it relates to the initial recognition of goodwill.

4.2. Deductible Temporary Differences

Deductible temporary differences are temporary differences that result in a reduction or deduction of taxable income in a future period when the balance sheet item is recovered or

settled. Deductible temporary differences result in a deferred tax asset when the tax base of an asset exceeds its carrying amount and, in the case of a liability, when the carrying amount of the liability exceeds its tax base. The recognition of a deferred tax asset is only allowed to the extent there is a reasonable expectation of future profits against which the asset or liability (that gave rise to the deferred tax asset) can be recovered or settled.

To determine the probability of sufficient future profits for utilization, one must consider the following: 1) Sufficient taxable temporary differences must exist that are related to the same tax authority and the same taxable entity; and 2) The taxable temporary differences that are expected to reverse in the same periods as expected for the reversal of the deductible temporary differences.

As with deferred tax liabilities, IFRS states that deferred tax assets should not be recognized in cases that would arise from the initial recognition of an asset or liability in transactions that are not a business combination and when, at the time of the transaction, there is no impact on either accounting or taxable profit. Subsequent to initial recognition under IFRS and US GAAP, any deferred tax assets that arise from investments in subsidiaries, branches, associates, and interests in joint ventures are recognized as a deferred tax asset.

IFRS and US GAAP allow the creation of a deferred tax asset in the case of tax losses and tax credits. These two unique situations will be further elaborated on in Section 6. IAS 12 *does not* allow the creation of a deferred tax asset arising from negative goodwill. Negative goodwill arises when the amount that an entity pays for an interest in a business is less than the net fair market value of the portion of assets and liabilities of the acquired company, based on the interest of the entity.

4.3. Examples of Taxable and Deductible Temporary Differences

Exhibit 1 summarizes how differences between the tax bases and carrying amounts of assets and liabilities give rise to deferred tax assets or deferred tax liabilities.

EXHIBIT 1 Treatment of Temporary Differences

Balance Sheet Item	Carrying Amount vs. Tax Base	Results in Deferred Tax Asset/Liability
Asset	Carrying amount > tax base	Deferred tax liability
Asset	Carrying amount < tax base	Deferred tax asset
Liability	Carrying amount > tax base	Deferred tax asset
Liability	Carrying amount < tax base	Deferred tax liability

EXAMPLE 4 Taxable and Deductible Temporary Differences

Examples 2 and 3 illustrated how to calculate the tax base of assets and liabilities, respectively. Based on the information provided in Examples 2 and 3, indicate whether the difference in the tax base and carrying amount of the assets and liabilities are temporary or permanent differences and whether a deferred tax asset or liability will be recognized based on the difference identified.

Solution to Example 2:

	Carrying Amount (€)	Tax Base (€)	Temporary Difference (€)	*Will Result in Deferred Tax Asset/Liability*
1. Dividends receivable	1,000,000	1,000,000	0	*N/A*
2. Development costs	2,500,000	2,250,000	250,000	*Deferred tax liability*
3. Research costs	0	375,000	(375,000)	*Deferred tax asset*
4. Accounts receivable	1,500,000	1,218,750	281,250	*Deferred tax liability*

Example 2 included comments on the calculation of the carrying amount and tax base of the assets.

1. *Dividends receivable*: As a result of non-taxability, the carrying amount equals the tax base of dividends receivable. This constitutes a permanent difference and will not result in the recognition of any deferred tax asset or liability. A temporary difference constitutes a difference that will, at some future date, be reversed. Although the timing of recognition is different for tax and accounting purposes, in the end the full carrying amount will be expensed/recognized as income. A permanent difference will never be reversed. Based on tax legislation, dividends from a subsidiary are not recognized as income. Therefore, no amount will be reflected as dividend income when calculating the taxable income, and the tax base of dividends receivable must be the total amount received, namely €1,000,000. The taxable income and accounting profit will permanently differ with the amount of dividends receivable, even on future financial statements as an effect on the retained earnings reflected on the balance sheet.
2. *Development costs*: The difference between the carrying amount and tax base is a temporary difference that, in the future, will reverse. In this fiscal year, it will result in a deferred tax liability.
3. *Research costs*: The difference between the carrying amount and tax base is a temporary difference that results in a deferred tax asset. Remember the explanation in Section 2 for deferred tax assets—a deferred tax asset arises because of an excess amount paid for taxes (when taxable income is greater than accounting profit), which is expected to be recovered from future operations. Based on accounting principles, the full amount was deducted resulting in a lower accounting profit, while the taxable income by implication, should be greater because of the lower amount expensed.
4. *Accounts receivable*: The difference between the carrying amount and tax base of the asset is a temporary difference that will result in a deferred tax liability.

Solution to Example 3:

	Carrying Amount (€)	Tax Base (€)	Temporary Difference (€)	*Will Result in Deferred Tax Asset/Liability*
1. Donations	0	0	0	*N/A*
2. Interest received in advance	300,000	0	(300,000)	*Deferred tax asset*
3. Rent received in advance	10,000,000	0	(10,000,000)	*Deferred tax asset*
4. Loan (capital)	550,000	550,000	0	*N/A*
Interest paid	0	0	0	*N/A*

Example 3 included extensive comments on the calculation of the carrying amount and tax base of the liabilities.

1. *Donations*: It was assumed that tax legislation does not allow donations to be deducted for tax purposes. No temporary difference results from donations, and thus a deferred tax asset or liability will not be recognized. This constitutes a permanent difference.
2. *Interest received in advance*: Interest received in advance results in a temporary difference that gives rise to a deferred tax asset. A deferred tax asset arises because of an excess amount paid for taxes (when taxable income is greater than accounting profit), which is expected to be recovered from future operations.
3. *Rent received in advance*: The difference between the carrying amount and tax base is a temporary difference that leads to the recognition of a deferred tax asset.
4. *Loan*: There are no temporary differences as a result of the loan or interest paid, and thus no deferred tax item is recognized.

4.4. Temporary Differences at Initial Recognition of Assets and Liabilities

In some situations the carrying amount and tax base of a balance sheet item may vary at initial recognition. For example, a company may deduct a government grant from the initial carrying amount of an asset or liability that appears on the balance sheet. For tax purposes, such grants may not be deducted when determining the tax base of the balance sheet item. In such circumstances, the carrying amount of the asset or liability will be lower than its tax base. Differences in the tax base of an asset or liability as a result of the circumstances described above may not be recognized as deferred tax assets or liabilities.

For example, a government may offer grants to Small, Medium, and Micro Enterprises (SMME) in an attempt to assist these entrepreneurs in their endeavors that contribute to the country's GDP and job creation. Assume that a particular grant is offered for infrastructure needs (office furniture, property, plant, and equipment, etc). In these circumstances, although the carrying amount will be lower than the tax base of the asset, the related deferred tax may not be recognized. As mentioned earlier, deferred tax assets and liabilities should not be recognized in cases that would arise from the initial recognition of an asset or liability in transactions that are not a business combination and when, at the time of the transaction, there is no impact on either accounting or taxable profit.

A deferred tax liability will also not be recognized at the initial recognition of goodwill. Although goodwill may be treated differently across tax jurisdictions, which may lead to differences in the carrying amount and tax base of goodwill, IAS 12 does not allow the recognition of such a deferred tax liability. Any impairment that an entity should, for accounting purposes, impose on goodwill will again result in a temporary difference between its carrying amount and tax base. Any impairment that an entity should, for accounting purposes, impose on goodwill and if part of the goodwill is related to the initial recognition, that part of the difference in tax base and carrying amount should not result in any deferred taxation because the initial deferred tax liability was not recognized. Any future differences between the carrying amount and tax base as a result of amortization and the deductibility of a portion of goodwill constitute a temporary difference for which provision should be made.

4.5. Business Combinations and Deferred Taxes

The fair value of assets and liabilities acquired in a business combination is determined on the acquisition date and may differ from the previous carrying amount. It is highly probable that the values of acquired intangible assets, including goodwill, would differ from their carrying amounts. This temporary difference will affect deferred taxes as well as the amount of goodwill recognized as a result of the acquisition.

4.6. Investments in Subsidiaries, Branches, Associates, and Interests in Joint Ventures

Investments in subsidiaries, branches, associates, and interests in joint ventures may lead to temporary differences on the consolidated versus the parent's financial statements. The related deferred tax liabilities as a result of temporary differences will be recognized unless both of the following criterion are satisfied:

- The parent is in a position to control the timing of the future reversal of the temporary difference, and
- It is probable that the temporary difference will not reverse in the future.

With respect to deferred tax assets related to subsidiaries, branches, associates, and interests, deferred tax assets will only be recognized if the following criteria are satisfied:

- The temporary difference will reverse in the future, and
- Sufficient taxable profits exist against which the temporary difference can be used.

5. UNUSED TAX LOSSES AND TAX CREDITS

IAS 12 allows the recognition of unused tax losses and tax credits only to the extent that it is probable that in the future there will be taxable income against which the unused tax losses and credits can be applied. Under US GAAP, a deferred tax asset is recognized in full but is then reduced by a valuation allowance if it is more likely than not that some or all of the deferred tax asset will not be realized. The same requirements for creation of a deferred tax asset as a result of deductible temporary differences also apply to unused tax losses and tax credits. The existence of tax losses may indicate that the entity cannot reasonably be expected to generate sufficient future taxable income. All other things held constant, the greater the history of tax losses, the greater the concern regarding the company's ability to generate future taxable profits.

Should there be concerns about the company's future profitability, then the deferred tax asset may not be recognized until it is realized. When assessing the probability that sufficient taxable profit will be generated in the future, the following criteria can serve as a guide:

- If there is uncertainty as to the probability of future taxable profits, a deferred tax asset as a result of unused tax losses or tax credits is only recognized to the extent of the available taxable temporary differences;
- Assess the probability that the entity will in fact generate future taxable profits before the unused tax losses and/or credits expire pursuant to tax rules regarding the carry forward of the unused tax losses;

- Verify that the above is with the same tax authority and based on the same taxable entity;
- Determine whether the past tax losses were a result of specific circumstances that are unlikely to be repeated; and
- Discover if tax planning opportunities are available to the entity that will result in future profits. These may include changes in tax legislation that are phased in over more than one financial period to the benefit of the entity.

It is imperative that the timing of taxable and deductible temporary differences also be considered before creating a deferred tax asset based on unused tax credits.

6. RECOGNITION AND MEASUREMENT OF CURRENT AND DEFERRED TAX

Current taxes payable or recoverable from tax authorities are based on the applicable tax rates at the balance sheet date. Deferred taxes should be measured at the tax rate that is expected to apply when the asset is realized or the liability settled. With respect to the income tax for a current or prior period not yet paid, it is recognized as a tax liability until paid. Any amount paid in excess of any tax obligation is recognized as an asset. The income tax paid in excess or owed to tax authorities is separate from deferred taxes on the company's balance sheet.

When measuring deferred taxes in a jurisdiction, there are different forms of taxation such as income tax, capital gains tax (any capital gains made), or secondary tax on companies (tax payable on the dividends that a company declares) and possibly different tax bases for a balance sheet item (as in the case of government grants influencing the tax base of an asset such as property). In assessing which tax laws should apply, it is dependent on how the related asset or liability will be settled. It would be prudent to use the tax rate and tax base that is consistent with how it is expected the tax base will be recovered or settled.

Although deferred tax assets and liabilities are related to temporary differences expected to be recovered or settled at some future date, neither are discounted to present value in determining the amounts to be booked. Both must be adjusted for changes in tax rates.

Deferred taxes as well as income taxes should always be recognized on the income statement of an entity unless it pertains to:

- Taxes or deferred taxes charged directly to equity, or
- A possible provision for deferred taxes relates to a business combination.

The carrying amount of the deferred tax assets and liabilities should also be assessed. The carrying amounts may change even though there may have been no change in temporary differences during the period evaluated. This can result from:

- Changes in tax rates;
- Reassessments of the recoverability of deferred tax assets; or
- Changes in the expectations for how an asset will be recovered and what influences the deferred tax asset or liability.

All unrecognized deferred tax assets and liabilities must be reassessed at the balance sheet date and measured against the criteria of probable future economic benefits. If such a

deferred asset is likely to be recovered, it may be appropriate to recognize the related deferred tax asset.

Different jurisdictions have different requirements for determining tax obligations that can range from different forms of taxation to different tax rates based on taxable income. When comparing financial statements of entities that conduct business in different jurisdictions subject to different tax legislation, the analyst should be cautious in reaching conclusions because of the potentially complex tax rules that may apply.

6.1. Recognition of a Valuation Allowance

Deferred tax assets must be assessed at each balance sheet date. If there is any doubt whether the deferral will be recovered, then the carrying amount should be reduced to the expected recoverable amount. Should circumstances subsequently change and suggest the future will lead to recovery of the deferral, the reduction may be reversed.

Under US GAAP, deferred tax assets are reduced by creating a valuation allowance. Establishing a valuation allowance reduces the deferred tax asset and income in the period in which the allowance is established. Should circumstances change to such an extent that a deferred tax asset valuation allowance may be reduced, the reversal will increase the deferred tax asset and operating income. Because of the subjective judgment involved, an analyst should carefully scrutinize any such changes.

6.2. Recognition of Current and Deferred Tax Charged Directly to Equity

In general, IFRS and US GAAP require that the recognition of deferred tax liabilities and current income tax should be treated similarly to the asset or liability that gave rise to the deferred tax liability or income tax based on accounting treatment. Should an item that gives rise to a deferred tax liability be taken directly to equity, the same should hold true for the resulting deferred tax.

The following are examples of such items:

- Revaluation of property, plant, and equipment (revaluations are not permissible under US GAAP);
- Long-term investments at fair value;
- Changes in accounting policies;
- Errors corrected against the opening balance of retained earnings;
- Initial recognition of an equity component related to complex financial instruments; and
- Exchange rate differences arising from the currency translation procedures for foreign operations.

Whenever it is determined that a deferred tax liability will not be reversed, an adjustment should be made to the liability. The deferred tax liability will be reduced and the amount by which it is reduced should be taken directly to equity. Any deferred taxes related to a business combination must also be recognized in equity.

Depending on the items that gave rise to the deferred tax liabilities, an analyst should exercise judgment regarding whether the taxes should be included with deferred tax liabilities or whether it should be taken directly to equity. It may be more appropriate simply to ignore deferred taxes.

EXAMPLE 5 Taxes Charged Directly to Equity

The following information pertains to Anderson Company (a hypothetical company). A building owned by Anderson Company was originally purchased for €1,000,000 on 1 January 2004. For accounting purposes, buildings are depreciated at 5 percent a year on a straight-line basis, and depreciation for tax purposes is 10 percent a year on a straight-line basis. On the first day of 2006, the building is revalued at €1,200,000. It is estimated that the remaining useful life of the building from the date of revaluation is 20 years. *Important*: For tax purposes the revaluation of the building is not recognized.

Based on the information provided, the following illustrates the difference in treatment of the building for accounting and tax purposes.

	Carrying Amount of Building	Tax Base of Building
Balance on 1 January 2004	€1,000,000	€1,000,000
Depreciation 2004	50,000	100,000
Balance on 31 December 2004	€950,000	€900,000
Depreciation 2005	50,000	100,000
Balance on 31 December 2005	€900,000	€800,000
Revaluation on 1 January 2006	300,000	n/a
Balance on 1 January 2006	€1,200,000	€800,000
Depreciation 2006	60,000	100,000
Balance on 31 December 2006	€1,140,000	€700,000
Accumulated depreciation		
Balance on 1 January 2004	€0	€0
Depreciation 2004	50,000	100,000
Balance on 31 December 2004	€50,000	€100,000
Depreciation 2005	50,000	100,000
Balance on 31 December 2005	€100,000	€200,000
Revaluation at 1 January 2006	(100,000)	n/a
Balance on 1 January 2006	€0	€200,000
Depreciation 2006	60,000	100,000
Balance on 30 November 2006	€60,000	€300,000

	Carrying Amount	Tax Base
On 31 December 2004	€950,000	€900,000
On 31 December 2005	€900,000	€800,000
On 31 December 2006	€1,140,000	€700,000

31 December 2004: On 31 December 2004, different treatments for depreciation expense result in a temporary difference that gives rise to a deferred tax liability. The

difference in the tax base and carrying amount of the building was a result of different depreciation amounts for tax and accounting purposes. Depreciation appears on the income statement. For this reason the deferred tax liability will also be reflected on the income statement. If we assume that the applicable tax rate in 2004 was 40 percent, then the resulting deferred tax liability will be 40% × (€950,000 – €900,000) = €20,000.

31 December 2005: As of 31 December 2005, the carrying amount of the building remains greater than the tax base. The temporary difference again gives rise to a deferred tax liability. Again, assuming the applicable tax rate to be 40 percent, the deferred tax liability from the building is 40% × (€900,000 – €800,000) = €40,000.

31 December 2006: On 31 December 2006, the carrying amount of the building again exceeds the tax base. This is not the result of disposals or additions, but is a result of the revaluation at the beginning of the 2006 fiscal year and the different rates of depreciation. The deferred tax liability would seem to be 40% × (€1,140,000 – €700,000) = €176,000, *but* the treatment is different than it was for 2004 and 2005. In 2006, revaluation of the building gave rise to a balance sheet equity account, namely "Revaluation Surplus" in the amount of €300,000, which is not recognized for tax purposes.

The deferred tax liability would usually have been calculated as follows:

	2006	2005	2004
Deferred tax liability (closing balance at end of fiscal year)	€176,000	€40,000	€20,000
(Difference between tax base and carrying amount)			
2004: €(950,000 – 900,000) × 40% = 20,000			
2005: €(900,000 – 800,000) × 40% = 40,000			
2006: €(1,140,000 – 700,000) × 40% = 176,000			

The change in the deferred tax liability in 2004 is €20,000, in 2005: €20,000 (€40,000 – €20,000) and, it would seem, in 2006: €136,000 (€176,000 – €40,000). In 2006, although it would seem that the balance for deferred tax liability should be €176,000, the revaluation is not recognized for tax purposes. Only the portion of the difference between the tax base and carrying amount that is not a result of the revaluation is recognized as giving rise to a deferred tax liability.

The effect of the revaluation surplus and the associated tax effects are accounted for in a direct adjustment to equity. The revaluation surplus is reduced by the tax provision associated with the excess of the fair value over the carry value and it affects retained earnings (€300,000 × 40% = €120,000).

The deferred tax liability that should be reflected on the balance sheet is thus not €176,000 but only €56,000 (€176,000 – €120,000). Given the balance of deferred tax liability at the beginning of the 2006 fiscal year in the amount of €40,000, the change in the deferred tax liability is only €56,000 – €40,000 = €16,000.

In the future, at the end of each year, an amount equal to the depreciation as a result of the revaluation minus the deferred tax effect will be transferred from the revaluation reserve to retained earnings. In 2006 this will amount to a portion of depreciation resulting from the revaluation, €15,000 (€300,000 ÷ 20), minus the deferred tax effect of €6,000 (€15,000 × 40%), thus €9,000.

7. PRESENTATION AND DISCLOSURE

We will discuss the presentation and disclosure of income tax related information by way of example. The Consolidated Statements of Operations (Income Statements) and Consolidated Balance Sheets for Micron Technology (MU) are provided in Exhibits 2 and 3, respectively. Exhibit 4 provides the income tax note disclosures for MU for the 2004, 2005, and 2006 fiscal years.

MU's income tax provision (i.e., income tax expense) for fiscal year 2006 is $18 million (see Exhibit 2). The income tax note disclosure in Exhibit 4 reconciles how the income tax provision was determined beginning with MU's reported income before taxes (shown in Exhibit 2 as $433 million for fiscal year 2006). The note disclosure then denotes the income tax provision for 2006 that is current ($42 million), which is then offset by the deferred tax benefit for foreign taxes ($24 million), for a net income tax provision of $18 million. Exhibit 4 further shows a reconciliation of how the income tax provision was derived from the US federal statutory rate. Many public companies comply with this required disclosure by displaying the information in percentage terms, but MU has elected to provide the disclosure in absolute dollar amounts. From this knowledge, we can see that the dollar amount shown for US federal income tax provision at the statutory rate ($152 million) was determined by multiplying MU's income before taxes by the 35 percent US federal statutory rate ($\$433 \times 0.35 = \$152$). Furthermore, after considering tax credits and changes in the valuation allowance for deferred tax assets, MU's $18 million tax provision for 2006 is only 4.16 percent of its income before taxes ($\$18 \div \$433 = 4.16\%$).

In addition, the note disclosure in Exhibit 4 provides detailed information about the derivation of the deferred tax assets ($26 million current and $49 million noncurrent) and deferred tax liabilities ($28 million noncurrent) that are shown on MU's consolidated balance sheet for fiscal year 2006 in Exhibit 3.

EXHIBIT 2 Micron Technology, Inc. Consolidated Statements of Operations (Amounts in Millions Except Per Share)

For the Year Ended	31 Aug. 2006	1 Sept. 2005	2 Sept. 2004
Net sales	$5,272	$4,880	$4,404
Cost of goods sold	4,072	3,734	3,090
Gross margin	1,200	1,146	1,314
Selling, general and administrative	460	348	332
Research and development	656	604	755
Restructure	—	(1)	(23)
Other operating (income) expense, net	(266)	(22)	—
Operating income	350	217	250
Interest income	101	32	15
Interest expense	(25)	(47)	(36)
Other non-operating income (expense), net	7	(3)	3
Income before taxes	433	199	232
Income tax (provision)	(18)	(11)	(75)

EXHIBIT 2 (Continued)

For the Year Ended	31 Aug. 2006	1 Sept. 2005	2 Sept. 2004
Noncontrolling interests in net income	(7)	—	—
Net income	$408	$188	$157
Earnings per share:			
Basic	$0.59	$0.29	$0.24
Diluted	$0.56	$0.27	$0.24
Number of shares used in per share calculations:			
Basic	692	648	641
Diluted	725	702	646

EXHIBIT 3 Micron Technology, Inc. Consolidated Balance Sheets (Dollars in Millions)

As of	31 Aug. 2006	1 Sept. 2005
Assets		
Cash and equivalents	$1,431	$524
Short-term investments	1,648	766
Receivables	956	794
Inventories	963	771
Prepaid expenses	77	39
Deferred income taxes	26	32
Total current assets	5,101	2,926
Intangible assets, net	388	260
Property, plant and equipment, net	5,888	4,684
Deferred income taxes	49	30
Goodwill	502	16
Other assets	293	90
Total assets	$12,221	$8,006
Liabilities and shareholders' equity		
Accounts payable and accrued expenses	$1,319	$753
Deferred income	53	30
Equipment purchase contracts	123	49
Current portion of long-term debt	166	147
Total current liabilities	1,661	979
Long-term debt	405	1,020
Deferred income taxes	28	35
Other liabilities	445	125
Total liabilities	2,539	2,159

(continued)

EXHIBIT 3 (Continued)

As of	31 Aug. 2006	1 Sept. 2005
Commitments and contingencies	—	—
Noncontrolling interests in subsidiaries	1,568	—
Common stock of $0.10 par value, authorized 3 billion shares, issued and outstanding 749.4 million and 616.2 million shares	75	62
Additional capital	6,555	4,707
Retained earnings	1,486	1,078
Accumulated other comprehensive loss	(2)	—
Total shareholders' equity	8,114	5,847
Total liabilities and shareholders' equity	$12,221	$8,006

EXHIBIT 4 Micron Technology, Inc. Income Taxes Note to the Consolidated Financial Statements

Income (loss) before taxes and the income tax (provision) benefit consisted of the following:

(Millions)	2006	2005	2004
Income (loss) before taxes:			
US	$351	$108	($19)
Foreign	82	91	251
	$433	$199	$232
Income tax (provision) benefit:			
Current:			
US federal	($12)	—	—
State	(1)	(3)	—
Foreign	(29)	(18)	(12)
	(42)	(21)	(12)
Deferred:			
US federal	—	—	—
State	—	—	—
Foreign	24	10	(63)
	24	10	(63)
Income tax (provision)	($18)	($11)	($75)

The company's income tax (provision) computed using the US federal statutory rate and the company's income tax (provision) benefit is reconciled as follows:

(Millions)	2006	2005	2004
US federal income tax (provision) benefit at statutory rate	$(152)	$(70)	$(81)
State taxes, net of federal benefit	5	6	(9)
Foreign operations	3	9	(44)

EXHIBIT 4 (Continued)

(Millions)	2006	2005	2004
Change in valuation allowance	103	(7)	(11)
Tax credits	7	28	7
Export sales benefit	13	16	16
Resolution of tax matters	—	—	37
Other	3	7	10
	$(18)	$(11)	$(75)

State taxes reflect investment tax credits of $23 million, $14 million, and $9 million for 2006, 2005, and 2004, respectively. Deferred income taxes reflect the net tax effects of temporary differences between the bases of assets and liabilities for financial reporting and income tax purposes. The company's deferred tax assets and liabilities consist of the following as of the end of the periods shown below:

($ Millions)	2006	2005
Deferred tax assets:		
Net operating loss and credit carryforwards	$929	$1,202
Basis differences in investments in joint ventures	301	—
Deferred revenue	160	76
Accrued compensation	51	40
Accounts payable	43	25
Inventories	16	33
Accrued product and process technology	11	12
Other	36	87
Gross deferred assets	1,547	1,475
Less valuation allowance	(915)	(1,029)
Deferred tax assets, net of valuation allowance	632	446
Deferred tax liabilities:		
Excess tax over book depreciation	(308)	(315)
Receivables	(91)	—
Intangibles	(68)	—
Unremitted earnings on certain subsidiaries	(58)	(49)
Product and process technology	(45)	(39)
Other	(15)	(16)
Deferred tax liabilities	(585)	(419)
Net deferred tax assets	$47	$27
Reported as:		
Current deferred tax assets	$26	$32
Noncurrent deferred tax assets	49	30
Noncurrent deferred tax liabilities	(28)	(35)
Net deferred tax assets	$47	$27

The company has a valuation allowance against substantially all of its US net deferred tax assets. As of 31 August 2006, the company had aggregate US tax net operating loss carryforwards of $1.7 billion and unused US tax credit carryforwards of $164 million. The company also has unused state tax net operating loss carryforwards of $1.4 billion and unused state tax credits of $163 million. During 2006, the company utilized approximately $1.1 billion of its US tax net operating loss carryforwards as a result of IMFT, MP Mask, and related transactions.[5] Substantially all of the net operating loss carryforwards expire in 2022 to 2025 and substantially all of the tax credit carryforwards expire in 2013 to 2026.

The changes in valuation allowance of ($114) million and $25 million in 2006 and 2005, respectively, are primarily a result of uncertainties of realizing certain US net operating losses and certain tax credit carryforwards. The change in the valuation allowance in 2006 and 2005 includes $12 million and $2 million, respectively, for stock plan deductions, which will be credited to additional capital if realized.

Provision has been made for deferred taxes on undistributed earnings of non-US subsidiaries to the extent that dividend payments from such companies are expected to result in additional tax liability. Remaining undistributed earnings of $686 million as of 31 August 2006 have been indefinitely reinvested; therefore, no provision has been made for taxes due upon remittance of these earnings. Determination of the amount of unrecognized deferred tax liability on these unremitted earnings is not practicable.

EXAMPLE 6 Financial Analysis Example

Use the financial statement information and disclosures provided by MU in Exhibits 2, 3, and 4 to answer the following questions:

1. MU discloses a valuation allowance of $915 million (see Exhibit 4) against total deferred assets of $1,547 million in 2006. Does the existence of this valuation allowance have any implications concerning MU's future earning prospects?
2. How would MU's deferred tax assets and deferred tax liabilities be affected if the federal statutory tax rate was changed to 32 percent? Would a change in the rate to 32 percent be beneficial to MU?
3. How would reported earnings have been affected if MU were not using a valuation allowance?
4. How would MU's $929 million in net operating loss carryforwards in 2006 (see Exhibit 4) affect the valuation that an acquiring company would be willing to offer?
5. Under what circumstances should the analyst consider MU's deferred tax liability as debt or as equity? Under what circumstances should the analyst exclude MU's deferred tax liability from both debt and equity when calculating the debt-to-equity ratio?

Solution to 1: According to Exhibit 4, MU's deferred tax assets expire gradually until 2026 (2022 to 2025 for the net operating loss carryforwards and 2013 to 2026 for the tax credit carryforwards).

[5] Micron Technology entered into profitable joint ventures and acquired profitable companies in 2006. The company was able to apply its net operating tax loss carryforwards (NOLs) toward these profits thereby reducing the income tax payments that would otherwise have been made without the NOLs.

Because the company is relatively young, it is likely that most of these expirations occur toward the end of that period. Because cumulative federal net operating loss carryforwards total $1.7 billion, the valuation allowance could imply that MU is not reasonably expected to earn $1.7 billion over the next 20 years. However, as we can see in Exhibit 2, MU has earned profits for 2006, 2005, and 2004, thereby showing that the allowance could be adjusted downward if the company continues to generate profits in the future, making it more likely than not that the deferred tax asset would be recognized.

Solution to 2: MU's total deferred tax assets exceed total deferred tax liabilities by $47 million. A change in the federal statutory tax rate to 32 percent from the current rate of 35 percent would make these net deferred assets less valuable. Also, because it is possible that the deferred tax asset valuation allowance could be adjusted downward in the future (see discussion to solution 1), the impact could be far greater in magnitude.

Solution to 3: The disclosure in Exhibit 4 shows that the reduction in the valuation allowance reduced the income tax provision as reported on the income statement by $103 million in 2006. Additional potential reductions in the valuation allowance could similarly reduce reported income taxes (actual income taxes would not be affected by a valuation allowance established for financial reporting) in future years (see discussion to solution 1).

Solution to 4: If an acquiring company is profitable, it may be able to use MU's tax loss carryforwards to offset its own tax liabilities. The value to an acquirer would be the present value of the carryforwards, based on the acquirer's tax rate and expected timing of realization. The higher the acquiring company's tax rate, and the more profitable the acquirer, the sooner it would be able to benefit. Therefore, an acquirer with a high current tax rate would theoretically be willing to pay more than an acquirer with a lower tax rate.

Solution to 5: The analyst should classify the deferred tax liability as debt if the liability is expected to reverse with subsequent tax payment. If the liability is not expected to reverse, there is no expectation of a cash outflow and the liability should be treated as equity. By way of example, future company losses may preclude the payment of any income taxes, or changes in tax laws could result in taxes that are never paid. The deferred tax liability should be excluded from both debt and equity when both the amounts and timing of tax payments resulting from the reversals of temporary differences are uncertain.

8. COMPARISON OF IFRS AND US GAAP

As mentioned earlier, though IFRS and US GAAP follow similar conventions on many tax issues, there are some notable differences (such as revaluation). Exhibit 5 summarizes many of the key similarities and differences between IFRS and US GAAP. Though both frameworks require a provision for deferred taxes, there are differences in the methodologies.

EXHIBIT 5 Deferred Income Tax Issues IFRS and US GAAP Methodology Similarities and Differences

Issue	IFRS	US GAAP
General considerations:		
General approach	Full provision.	Similar to IFRS.
Basis for deferred tax assets and liabilities	Temporary differences—i.e., the difference between carrying amount and tax base of assets and liabilities (see exceptions below).	Similar to IFRS.
Exceptions (i.e., deferred tax is not provided on the temporary difference)	Nondeductible goodwill (that which is not deductible for tax purposes) does not give rise to taxable temporary differences.	Similar to IFRS, except no initial recognition exemption and special requirements apply in computing deferred tax on leveraged leases.
General considerations:		
	Initial recognition of an asset or liability in a transaction that: a) is not a business combination; and b) affects neither accounting profit nor taxable profit at the time of the transaction. Other amounts that do not have a tax consequence (commonly referred to as permanent differences) exist and depend on the tax rules and jurisdiction of the entity.	
Specific applications:		
Revaluation of plant, property, and equipment and intangible assets	Deferred tax recognized in equity.	Not applicable, as revaluation is prohibited.
Foreign nonmonetary assets/liabilities when the tax reporting currency is not the functional currency	Deferred tax is recognized on the difference between the carrying amount, determined using the historical rate of exchange, and the tax base, determined using the balance sheet date exchange rate.	No deferred tax is recognized for differences related to assets and liabilities that are remeasured from local currency into the functional currency resulting from changes in exchange rates or indexing for tax purposes.
Investments in subsidiaries—treatment of undistributed profit	Deferred tax is recognized except when the parent is able to control the distribution of profit and it is probable that the temporary difference will not reverse in the foreseeable future.	Deferred tax is required on temporary differences arising after 1992 that relate to investments in domestic subsidiaries, unless such amounts can be recovered tax-free and the entity expects to use that method. No deferred taxes are recognized on undistributed profits of foreign subsidiaries that meet the indefinite reversal criterion. Deferred tax assets may be recorded only to the extent they will reverse in the foreseeable future.

EXHIBIT 5 (Continued)

Issue	IFRS	US GAAP
Investments in joint ventures—treatment of undistributed profit	Deferred tax is recognized except when the venturer can control the sharing of profits and if it is probable that the temporary difference will not reverse in the foreseeable future.	Deferred tax is required on temporary differences arising after 1992 that relate to investment in domestic corporate joint ventures. No deferred taxes are recognized on undistributed profits of foreign corporate joint ventures that meet the indefinite reversal criterion. Deferred tax assets may be recorded only to the extent they will reverse in the foreseeable future.
Investment in associates—treatment of undistributed profit	Deferred tax is recognized except when the investor can control the sharing of profits and it is probable that the temporary difference will not reverse in the foreseeable future.	Deferred tax is recognized on temporary differences relating to investments in investees.
Uncertain tax positions	Reflects the tax consequences that follow from the manner in which the entity expects, at the balance sheet date, to be paid to (recovered from) the taxation authorities.	A tax benefit from an uncertain tax position may be recognized only if it is "more likely than not" that the tax position is sustainable based on its technical merits. The tax position is measured as the largest amount of tax benefit that is greater than 50 percent likely of being realized upon ultimate settlement.
Measurement of deferred tax:		
Tax rates	Tax rates and tax laws that have been enacted or substantively enacted.	Use of substantively enacted rates is not permitted. Tax rate and tax laws used must have been enacted.
Recognition of deferred tax assets	A deferred tax asset is recognized if it is probable (more likely than not) that sufficient taxable profit will be available against which the temporary difference can be utilized.	A deferred tax asset is recognized in full but is then reduced by a valuation allowance if it is more likely than not that some or all of the deferred tax asset will not be realized.
Business combinations—Acquisitions:		
Step-up of acquired assets/liabilities to fair value	Deferred tax is recorded unless the tax base of the asset is also stepped up.	Similar to IFRS.
Previously unrecognized tax losses of the acquirer	A deferred tax asset is recognized if the recognition criteria for the deferred tax asset are met as a result of the acquisition. Offsetting credit is recorded in income.	Similar to IFRS, except the offsetting credit is recorded against goodwill.
Tax losses of the acquiree (initial recognition)	Similar requirements as for the acquirer except the offsetting credit is recorded against goodwill.	Similar to IFRS.

(continued)

EXHIBIT 5 (Continued)

Issue	IFRS	US GAAP
Subsequent resolution of income tax uncertainties in a business combination	If the resolution is more than one year after the year in which the business combination occurred, the result is recognized on the income statement.	The subsequent resolution of any tax uncertainty relating to a business combination is recorded against goodwill.
Subsequent recognition of deferred tax assets that were not "probable" at the time of the business combination	A deferred tax asset that was not considered probable at the time of the business combination but later becomes probable is recognized. The adjustment is to income tax expense with a corresponding adjustment to goodwill. The income statement shows a debit to goodwill expense and a credit to income tax expense. There is no time limit for recognition of this deferred tax asset.	The subsequent resolution of any tax uncertainty relating to a business combination is recorded first against goodwill, then noncurrent intangibles, and then income tax expense. There is no time limit for recognition of this deferred tax asset.
Presentation of deferred tax:		
Offset of deferred tax assets and liabilities	Permitted only when the entity has a legally enforceable right to offset and the balance relates to tax levied by the same authority.	Similar to IFRS.
Current/noncurrent	Deferred tax assets and liabilities are classified net as noncurrent on the balance sheet, with supplemental note disclosure for 1) the components of the temporary differences, and 2) amounts expected to be recovered within 12 months and more than 12 months from the balance sheet date.	Deferred tax assets and liabilities are either classified as current or noncurrent, based on the classification of the related non-tax asset or liability for financial reporting. Tax assets or liabilities not associated with an underlying asset or liability are classified based on the expected reversal period.
Reconciliation of actual and expected tax expense	Required. Computed by applying the applicable tax rates to accounting profit, disclosing also the basis on which the applicable tax rates are calculated.	Required for public companies only. Calculated by applying the domestic federal statutory tax rates to pre-tax income from continuing operations.

Sources: IFRS: IAS 1, IAS 12, and IFRS 3.

US GAAP: FAS 109 and FIN 48.

"Similarities and Differences—A Comparison of IFRS and US GAAP," PricewaterhouseCoopers, October 2006.

9. SUMMARY

Income taxes are a significant category of expense for profitable companies. Analyzing income tax expenses is often difficult for the analyst because there are many permanent and

temporary timing differences between the accounting that is used for income tax reporting and the accounting that is used for financial reporting on company financial statements. The financial statements and notes to the financial statements of a company provide important information that the analyst needs to assess financial performance and to compare a company's financial performance with other companies. Key concepts in this chapter are as follows:

- Differences between the recognition of revenue and expenses for tax and accounting purposes may result in taxable income differing from accounting profit. The discrepancy is a result of different treatments of certain income and expenditure items.
- The tax base of an asset is the amount that will be deductible for tax purposes as an expense in the calculation of taxable income as the company expenses the tax basis of the asset. If the economic benefit will not be taxable, the tax base of the asset will be equal to the carrying amount of the asset.
- The tax base of a liability is the carrying amount of the liability less any amounts that will be deductible for tax purposes in the future. With respect to revenue received in advance, the tax base of such a liability is the carrying amount less any amount of the revenue that will not be taxable in the future.
- Temporary differences arise from recognition of differences in the tax base and carrying amount of assets and liabilities. The creation of a deferred tax asset or liability as a result of a temporary difference will only be allowed if the difference reverses itself at some future date and to the extent that it is expected that the balance sheet item will create future economic benefits for the company.
- Permanent differences result in a difference in tax and financial reporting of revenue (expenses) that will not be reversed at some future date. Because it will not be reversed at a future date, these differences do not constitute temporary differences and do not give rise to a deferred tax asset or liability.
- Current taxes payable or recoverable are based on the applicable tax rates on the balance sheet date of an entity; in contrast, deferred taxes should be measured at the tax rate that is expected to apply when the asset is realized or the liability settled.
- All unrecognized deferred tax assets and liabilities must be reassessed on the appropriate balance sheet date and measured against their probable future economic benefit.
- Deferred tax assets must be assessed for their prospective recoverability. If it is probable that they will not be recovered at all or partly, the carrying amount should be reduced. Under US GAAP, this is done through the use of a valuation allowance.

PROBLEMS

1. Using the straight-line method of depreciation for reporting purposes and accelerated depreciation for tax purposes would *most likely* result in a:
   A. valuation allowance.
   B. deferred tax asset.
   C. temporary difference.

2. In early 2009 Sanborn Company must pay the tax authority €37,000 on the income it earned in 2008. This amount was recorded on the company's 31 December 2008 financial statements as:
   A. taxes payable.
   B. income tax expense.
   C. a deferred tax liability.

3. Income tax expense reported on a company's income statement equals taxes payable, plus the net increase in:
   A. deferred tax assets and deferred tax liabilities.
   B. deferred tax assets, less the net increase in deferred tax liabilities.
   C. deferred tax liabilities, less the net increase in deferred tax assets.

4. Analysts should treat deferred tax liabilities that are expected to reverse as:
   A. equity.
   B. liabilities.
   C. neither liabilities nor equity.

5. Deferred tax liabilities should be treated as equity when:
   A. they are not expected to reverse.
   B. the timing of tax payments is uncertain.
   C. the amount of tax payments is uncertain.

6. When both the timing and amount of tax payments are uncertain, analysts should treat deferred tax liabilities as:
   A. equity.
   B. liabilities.
   C. neither liabilities nor equity.

7. When accounting standards require recognition of an expense that is not permitted under tax laws, the result is a:
   A. deferred tax liability.
   B. temporary difference.
   C. permanent difference.

8. When certain expenditures result in tax credits that directly reduce taxes, the company will *most likely* record:
   A. a deferred tax asset.
   B. a deferred tax liability.
   C. no deferred tax asset or liability.

9. When accounting standards require an asset to be expensed immediately but tax rules require the item to be capitalized and amortized, the company will *most likely* record:
   A. a deferred tax asset.
   B. a deferred tax liability.
   C. no deferred tax asset or liability.

10. A company incurs a capital expenditure that may be amortized over five years for accounting purposes, but over four years for tax purposes. The company will *most likely* record:
    A. a deferred tax asset.
    B. a deferred tax liability.
    C. no deferred tax asset or liability.

11. A company receives advance payments from customers that are immediately taxable but will not be recognized for accounting purposes until the company fulfills its obligation. The company will *most likely* record:
    A. a deferred tax asset.
    B. a deferred tax liability.
    C. no deferred tax asset or liability.

The following information relates to Questions 12–14

Note I
Income Taxes

The components of earnings before income taxes are as follows ($ thousands):

	2007	2006	2005
Earnings before income taxes:			
United States	$88,157	$75,658	$59,973
Foreign	116,704	113,509	94,760
Total	$204,861	$189,167	$154,733

The components of the provision for income taxes are as follows ($ thousands):

	2007	2006	2005
Income taxes			
Current:			
Federal	$30,632	$22,031	$18,959
Foreign	28,140	27,961	22,263
	$58,772	$49,992	$41,222
Deferred:			
Federal	($4,752)	$5,138	$2,336
Foreign	124	1,730	621
	(4,628)	6,868	2,957
Total	$54,144	$56,860	$44,179

12. In 2007, the company's US GAAP income statement recorded a provision for income taxes *closest* to:
    A. $30,632.
    B. $54,144.
    C. $58,772.
13. The company's effective tax rate was *highest* in:
    A. 2005.
    B. 2006.
    C. 2007.

14. Compared to the company's effective tax rate on US income, its effective tax rate on foreign income was:
    A. lower in each year presented.
    B. higher in each year presented.
    C. higher in some periods and lower in others.

15. Zimt AG presents its financial statements in accordance with US GAAP. In 2007, Zimt discloses a valuation allowance of $1,101 against total deferred tax assets of $19,201. In 2006, Zimt disclosed a valuation allowance of $1,325 against total deferred tax assets of $17,325. The change in the valuation allowance *most likely* indicates that Zimt's:
    A. deferred tax liabilities were reduced in 2007.
    B. expectations of future earning power has increased.
    C. expectations of future earning power has decreased.
16. Cinnamon, Inc. recorded a total deferred tax asset in 2007 of $12,301, offset by a $12,301 valuation allowance. Cinnamon *most likely*:
    A. fully utilized the deferred tax asset in 2007.
    B. has an equal amount of deferred tax assets and deferred tax liabilities.
    C. expects not to earn any taxable income before the deferred tax asset expires.

The following information relates to Questions 17–19

The tax effects of temporary differences that give rise to deferred tax assets and liabilities are as follows ($ thousands):

	2007	2006
Deferred tax assets:		
Accrued expenses	$8,613	$7,927
Tax credit and net operating loss carryforwards	2,288	2,554
LIFO and inventory reserves	5,286	4,327
Other	2,664	2,109
Deferred tax assets	18,851	16,917
Valuation allowance	(1,245)	(1,360)
Net deferred tax assets	$17,606	$15,557
Deferred tax liabilities:		
Depreciation and amortization	$(27,338)	$(29,313)
Compensation and retirement plans	(3,831)	(8,963)
Other	(1,470)	(764)
Deferred tax liabilities	(32,639)	(39,040)
Net deferred tax liability	$(15,033)	$(23,483)

17. A reduction in the statutory tax rate would *most likely* benefit the company's:
    A. income statement and balance sheet.
    B. income statement but not the balance sheet.
    C. balance sheet but not the income statement.

18. If the valuation allowance had been the same in 2007 as it was in 2006, the company would have reported $115 *higher*:
    A. net income.
    B. deferred tax assets.
    C. income tax expense.
19. Compared to the provision for income taxes in 2007, the company's cash tax payments were:
    A. lower.
    B. higher.
    C. the same.

The following information relates to Questions 20–22

A company's provision for income taxes resulted in effective tax rates attributable to loss from continuing operations before cumulative effect of change in accounting principles that varied from the statutory federal income tax rate of 34 percent, as summarized in the table below.

Year Ended 30 June	2007	2006	2005
Expected federal income tax expense (benefit) from continuing operations at 34 percent	($112,000)	$768,000	$685,000
Expenses not deductible for income tax purposes	357,000	32,000	51,000
State income taxes, net of federal benefit	132,000	22,000	100,000
Change in valuation allowance for deferred tax assets	(150,000)	(766,000)	(754,000)
Income tax expense	$227,000	$56,000	$82,000

20. In 2007, the company's net income (loss) was *closest* to:
    A. ($217,000).
    B. ($329,000).
    C. ($556,000).
21. The $357,000 adjustment in 2007 *most likely* resulted in:
    A. an increase in deferred tax assets.
    B. an increase in deferred tax liabilities.
    C. no change to deferred tax assets and liabilities.
22. Over the three years presented, changes in the valuation allowance for deferred tax assets were *most likely* indicative of:
    A. decreased prospect for future profitability.
    B. increased prospects for future profitability.
    C. assets being carried at a higher value than their tax base.

CHAPTER 14

EMPLOYEE COMPENSATION: POST-EMPLOYMENT AND SHARE-BASED

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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- describe the types of post-employment benefit plans and implications for financial reports;
- explain and calculate measures of a defined benefit pension obligation (i.e., present value of the defined benefit obligation and projected benefit obligation) and net pension liability (or asset);
- describe the components of a company's defined benefit pension costs;
- explain and calculate the effect of a defined benefit plan's assumptions on the defined benefit obligation and periodic pension cost;
- explain and calculate how adjusting for items of pension and other post-employment benefits that are reported in the notes to the financial statements affects financial statements and ratios;
- interpret pension plan note disclosures including cash flow related information;
- explain issues associated with accounting for share-based compensation;
- explain how accounting for stock grants and stock options affects financial statements, and the importance of companies' assumptions in valuing these grants and options.

1. INTRODUCTION

This chapter covers two complex aspects of employee compensation: post-employment (retirement) benefits and share-based compensation. Retirement benefits include pensions and other

post-employment benefits, such as health insurance. Examples of share-based compensation are stock options and stock grants.

A common issue underlying both of these aspects of employee compensation is the difficulty in measuring the value of the compensation. One factor contributing to the difficulty is that employees earn the benefits in the periods that they provide service but typically receive the benefits in future periods, so measurement requires a significant number of assumptions.

This chapter provides an overview of the methods companies use to estimate and measure the benefits they provide to their employees and how this information is reported in financial statements. There has been some convergence between International Financial Reporting Standards (IFRS) and US generally accepted accounting principles (US GAAP) in the measurement and accounting treatment for pensions, other post-employment benefits, and share-based compensation, but some differences remain. Although this chapter focuses on IFRS as the basis for discussion, instances where US GAAP significantly differ are discussed.

The chapter is organized as follows: Section 2 addresses pensions and other post-employment benefits, and Section 3 covers share-based compensation with a primary focus on the accounting for and analysis of stock options. A summary and practice problems conclude the chapter.

2. PENSIONS AND OTHER POST-EMPLOYMENT BENEFITS

This section discusses the accounting and reporting of pensions and other post-employment benefits by the companies that provide these benefits (accounting and reporting by pension and other retirement funds are not covered in this chapter). Under IFRS, IAS 19, *Employee Benefits*, provides the principal source of guidance in accounting for pensions and other post-employment benefits.[1] Under US GAAP, the guidance is spread across several sections of the FASB Codification.[2]

The discussion begins with an overview of the types of benefits and measurement issues involved, including the accounting treatment for defined contribution plans. It then continues with financial statement reporting of pension plans and other post-employment benefits, including an overview of critical assumptions used to value these benefits. The section concludes with a discussion of evaluating defined benefit pension plan and other post-employment benefit disclosures.

2.1. Types of Post-Employment Benefit Plans

Companies may offer various types of benefits to their employees following retirement, including pension plans, health care plans, medical insurance, and life insurance. Some of these benefits involve payments in the current period, but many are promises of future benefits. The objectives of accounting for employee benefits is to measure the cost associated with providing

[1] This chapter describes IFRS requirements contained in IAS 19 as updated in June 2011 and effective beginning January 2013.

[2] Guidance on pension and other post-employment benefits is included in FASB ASC Topic 712 [Compensation-Nonretirement Postemployment Benefits], FASB ASC Topic 715 [Compensation-Retirement Benefits], FASB ASC Topic 960 [Plan Accounting-Defined Benefit Pension Plans], and FASB ASC Topic 965 [Plan Accounting-Health and Welfare Benefit Plans].

these benefits and to recognise these costs in the sponsoring company's financial statements during the employees' periods of service. Complexity arises because the sponsoring company must make assumptions to estimate the value of future benefits. The assumptions required to estimate and recognise these future benefits can have a significant impact on the company's reported performance and financial position. In addition, differences in assumptions can reduce comparability across companies.

Pension plans, as well as other post-employment benefits, may be either defined contribution plans or defined benefit plans. Under a defined contribution (DC) pension plan, specific (or agreed-upon) contributions are made to an employee's pension plan. The agreed upon amount is the pension expense. Typically, in a DC pension plan, an individual account is established for each participating employee. The accounts are generally invested through a financial intermediary, such as an investment management company or an insurance company. The employees and the employer may each contribute to the plan. After the employer makes its agreed-upon contribution to the plan on behalf of an employee—generally in the same period in which the employee provides the service—the employer has no obligation to make payments beyond this amount. The future value of the plan's assets depends on the performance of the investments within the plan. Any gains or losses related to those investments accrue to the employee. Therefore, in DC pension plans, the employee bears the risk that plan assets will not be sufficient to meet future needs. The impact on the company's financial statements of DC pension plans is easily assessed because the company has no obligations beyond the required contributions.

In contrast to DC pension plans, defined benefit (DB) pension plans are essentially promises by the employer to pay a defined amount of pension in the future. As part of total compensation, the employee works in the current period in exchange for a pension to be paid after retirement. In a DB pension plan, the amount of pension benefit to be provided is defined, usually by reference to age, years of service, compensation, etc. For example, a DB pension plan may provide for the retiree to be paid, annually until death, an amount equal to 1 percent of the final year's salary times the number of years of service. The future pension payments represent a liability or obligation of the employer (i.e., the sponsoring company). To measure this obligation, the employer must make various actuarial assumptions (employee turnover, average retirement age, life expectancy after retirement) and computations. It is important for an analyst to evaluate such assumptions for their reasonableness and to analyse the impact of these assumptions on the financial reports of the company.

Under IFRS and US GAAP, all plans for pensions and other post-employment benefits other than those explicitly structured as DC plans are classified as DB plans.[3] DB plans include both formal plans and those informal arrangements that create a constructive obligation by the employer to its employees.[4] The employer must estimate the total cost of the benefits promised and then allocate these costs to the periods in which the employees provide service. This estimation and allocation further increases the complexity of pension reporting because the timing of cash flows (contributions into the plan and payments from the plan) can differ

[3] Multi-employer plans are an exception under IFRS. These are plans to which many different employers contribute on behalf of their employees, such as an industry association pension plan. For multi-employer plans, the employer accounts for its proportionate share of the plan. If, however, the employer does not have sufficient information from the plan administrator to meet the reporting requirement for a defined benefit plan, IFRS allow the employer to account for the plan as if it were a defined contribution plan.

[4] For example, a company has a constructive obligation if the benefits it promises are not linked solely to the amount of its contributions or if it indirectly or directly guarantees a specified return on pension assets.

significantly from the timing of accrual-basis reporting. Accrual-basis reporting is based on when the services are rendered and the benefits are earned.

Most DB pension plans are funded through a separate legal entity, typically a pension trust, and the assets of the trust are used to make the payments to retirees. The sponsoring company is responsible for making contributions to the plan. The company also must ensure that there are sufficient assets in the plan to pay the ultimate benefits promised to plan participants. Regulatory requirements usually specify minimum funding levels for DB pension plans, but those requirements vary by country. The funded status of a pension plan—overfunded or underfunded—refers to whether the amount of assets in the pension trust is greater than or less than the estimated liability. If the amount of assets in the DB pension trust exceeds the present value of the estimated liability, the DB pension plan is said to be overfunded; conversely, if the amount of assets in the pension trust is less than the estimated liability, the plan is said to be underfunded. Because the company has promised a defined amount of benefit to the employees, it is obligated to make those pension payments when they are due regardless of whether the pension plan assets generate sufficient returns to provide the benefits. In other words, the company bears the investment risk. Many companies are reducing the use of DB pension plans because of this risk.

Similar to DB pension plans, other post-employment benefits (OPB) are promises by the company to pay benefits in the future, such as life insurance premiums and all or part of health care insurance for its retirees. OPB are typically classified as DB plans, with accounting treatment similar to DB pension plans. However, the complexity in reporting for OPB may be even greater than for DB pension plans because of the need to estimate future increases in costs, such as health care, over a long time horizon. Unlike DB pension plans, however, companies may not be required by regulation to fund an OPB in advance to the same degree as DB pension plans. This is partly because governments, through some means, often insure DB pension plans but not OPB, partly because OPB may represent a much smaller financial liability, and partly because OPB are often easier to eliminate should the costs become burdensome. It is important that an analyst determine what OPB are offered by a company and the obligation they represent.

Types of post-employment benefits offered by employers differ across countries. For instance, in countries where government-sponsored universal health care plans exist (such as Germany, France, Canada, Brazil, Mexico, New Zealand, South Africa, India, Israel, Bhutan, and Singapore), companies are less likely to provide post-retirement health care benefits to employees. The extent to which companies offer DC or DB pension plans also varies by country.

Exhibit 1 summarizes these three types of post-employment benefits.

EXHIBIT 1 Types of Post-Employment Benefits

Type of Benefit	Amount of Post-Employment Benefit to Employee	Obligation of Sponsoring Company	Sponsoring Company's Pre-funding of its Future Obligation
Defined contribution pension plan	Amount of future benefit is not defined. Actual future benefit will depend on investment performance of plan assets. Investment risk is borne by employee.	Amount of the company's obligation (contribution) is defined in each period. The contribution, if any, is typically made on a periodic basis with no additional future obligation.	Not applicable.

EXHIBIT 1 (Continued)

Type of Benefit	Amount of Post-Employment Benefit to Employee	Obligation of Sponsoring Company	Sponsoring Company's Pre-funding of its Future Obligation
Defined benefit pension plan	Amount of future benefit is defined, based on the plan's formula (often a function of length of service and final year's compensation). Investment risk is borne by company.	Amount of the future obligation, based on the plan's formula, must be estimated in the current period.	Companies typically pre-fund the DB plans by contributing funds to a pension trust. Regulatory requirements to pre-fund vary by country.
Other post-employment benefits (e.g., retirees' health care)	Amount of future benefit depends on plan specifications and type of benefit.	Eventual benefits are specified. The amount of the future obligation must be estimated in the current period.	Companies typically do not pre-fund other post-employment benefit obligations.

The following sections provide additional detail on how DB pension plan liabilities and periodic costs are measured, the financial statement impact of reporting pension and other post-employment benefits, and how disclosures in the notes to the financial statements can be used to gain insights about the underlying economics of a company's defined benefit plans. Section 2.2 describes how a DB pension plan's obligation is estimated and the key inputs into and assumptions behind the estimate. Section 2.3 describes financial statement reporting of pension and OPB plans and demonstrates the calculation of defined benefit obligations and current costs and the effects of assumptions. Section 2.4 describes disclosures in financial reports about pension and OPB plans. These include disclosures about assumptions that can be useful in analysing and comparing pension and OPB plans within and among companies.

2.2. Measuring a Defined Benefit Pension Plan's Obligations

Both IFRS and US GAAP measure the pension obligation as the present value of future benefits earned by employees for service provided to date. The obligation is called the present value of the defined benefit obligation (PVDBO) under IFRS and the projected benefit obligation (PBO) under US GAAP.[5] This measure is defined as "the present value, without deducting any plan assets, of expected future payments required to settle the obligation arising from employee

[5] In addition to the projected benefit obligation, US GAAP identify two other measures of the pension liability. The vested benefit obligation (VBO) is the "actuarial present value of vested benefits" (FASB ASC Glossary). The accumulated benefit obligation (ABO) is "the actuarial present value of benefits (whether vested or non-vested) attributed, generally by the pension benefit formula, to employee service rendered before a specified date and based on employee service and compensation (if applicable) before that date. The accumulated benefit obligation differs from the projected benefit obligation in that it includes no assumption about future compensation levels" (FASB ASC Glossary). Both the vested benefit obligation and the accumulated benefit obligation are based on the amounts promised as a result of an employee's service up to a specific date. Thus, both of these measures will be less than the projected benefit obligation (VBO < ABO < PBO).

service in the current and prior periods" under IFRS and "the actuarial present value as of a date of all benefits attributed by the pension benefit formula to employee service rendered prior to that date" under US GAAP. In the remainder of this chapter, the term "pension obligation" will be used to generically refer to PVDBO and PBO.

In determining the pension obligation, a company estimates the future benefits it will pay. To estimate the future benefits, the company must make a number of assumptions[6] such as future compensation increases and levels, discount rates, and expected vesting. For instance, an estimate of future compensation is made if the pension benefit formula is based on future compensation levels (examples include pay-related, final-pay, final-average-pay, or career-average-pay plans). The expected annual increase in compensation over the employee service period can have a significant impact on the defined benefit obligation. The determination of the benefit obligation implicitly assumes that the company will continue to operate in the future (the "going concern assumption") and recognises that benefits will increase with future compensation increases.

Another key assumption is the discount rate—the interest rate used to calculate the present value of the future benefits. This rate is based on current rates of return on high-quality corporate bonds (or government bonds in the absence of a deep market in corporate bonds) with currency and durations consistent with the currency and durations of the benefits.

Under both DB and DC pension plans, the benefits that employees earn may be conditional on remaining with the company for a specified period of time. "Vesting" refers to a provision in pensions plans whereby an employee gains rights to future benefits only after meeting certain criteria, such as a pre-specified number of years of service. If the employee leaves the company before meeting the criteria, he or she may be entitled to none or a portion of the benefits earned up until that point. However, once the employee has met the vesting requirements, he or she is entitled to receive the benefits earned in prior periods (i.e., once the employee has become vested, benefits are not forfeited if the employee leaves the company). In measuring the defined benefit obligation, the company considers the probability that some employees may not satisfy the vesting requirements (i.e., may leave before the vesting period) and uses this probability to calculate the current service cost and the present value of the obligation. Current service cost is the increase in the present value of a defined benefit obligation as a result of employee service in the current period. Current service cost is not the only cause of change in the present value of a defined benefit obligation.

The estimates and assumptions about future salary increases, the discount rate, and the expected vesting can change. Of course, any changes in these estimates and assumptions will change the estimated pension obligation. If the changes increase the obligation, the increase is referred to as an actuarial loss. If the changes decrease the obligation, the change is referred to as an actuarial gain. Section 2.3.3 further discusses estimates and assumptions and the effect on the pension obligation and expense.

2.3. Financial Statement Reporting of Pension Plans and Other Post-Employment Benefits

Sections 2.3.1 to 2.3.3 describe how pension plans and other post-employment benefits are reported in the financial statements of the sponsoring company and how assumptions affect the amounts reported. Disclosures related to pensions plans and OPB are described in Section 2.4.

[6]These assumptions are referred to as "actuarial assumptions." Thus, losses or gains due to changes in these assumptions, or due to differences between these assumptions and what actually occurs, are referred to as "actuarial gains or losses."

2.3.1. Defined Contribution Pension Plans

The accounting treatment for defined contribution pension plans is relatively simple. From a financial statement perspective, the employer's obligation for contributions into the plan, if any, is recorded as an expense on the income statement. Because the employer's obligation is limited to a defined amount that typically equals its contribution, no significant pension-related liability accrues on the balance sheet. An accrual (current liability) is recognised at the end of the reporting period only for any unpaid contributions.

2.3.2. Defined Benefit Pension Plans

The accounting treatment for defined benefit pension plans is more complex, primarily because of the complexities of measuring the pension obligation and expense.

2.3.2.1. Balance Sheet Presentation Both IFRS and US GAAP require a pension plan's funded status to be reported on the balance sheet. The funded status is determined by netting the pension obligation against the fair value of the pension plan assets. If the pension obligation exceeds the pension plan assets, the plan has a deficit. If the plan assets exceed the pension obligation, the plan has a surplus. Summarizing this information in equation form gives

Funded status = Fair value of the plan assets – PV of the Defined benefit obligation

If the plan has a deficit, an amount equal to the net underfunded pension obligation is reported on the balance sheet as a net pension liability. If the plan has a surplus, an asset equal to the overfunded pension obligation is reported on the balance sheet as a net pension asset (except that the amount of reported assets is subject to a ceiling defined as the present value of future economic benefits, such as refunds from the plan or reductions of future contributions). Disclosures in the notes provide additional information about the net pension liability or asset reported on the balance sheet.

EXAMPLE 1 Determination of Amounts to Be Reported on the Balance Sheet

The following information pertains to two hypothetical companies' defined benefit pension plans as of 31 December 2010:

- For company ABC, the present value of the company's defined benefit obligation is €6,723 and the fair value of the pension plan's assets is €4,880.
- For company DEF, the present value of the company's defined benefit obligation is €5,485 and the fair value of the pension plan assets is €5,998. In addition, the present value of available future refunds and reductions in future contributions is €326.

Calculate the amount each company would report as a pension asset or liability on its 2010 balance sheet.

Solution: Company ABC would report the full underfunded status of its pension plan (i.e., the amount by which the present value of the defined benefit obligation exceeds the

fair value of plan assets) as a liability. Specifically, the company would report a pension liability of €1,843.

Present value of defined benefit obligation	€6,723
Fair value of plan assets	(4,880)
Net pension liability	€1,843

Company DEF's pension plan is overfunded by €513, which is the amount by which the fair value of the plan's assets exceed the defined benefit obligation (€5,998 – €5,485). However, when a company has a surplus in a defined benefit plan, the amount of asset that can be reported is the lower of the surplus and the asset ceiling (the present value of future economic benefits, such as refunds from the plan or reductions of future contributions). In this case, the asset ceiling is given as €326, so the amount of company DEF's reported net pension asset would be limited to €326.

2.3.2.2. Periodic Pension Cost The periodic cost of a company's DB pension plan is the change in the net pension liability or asset adjusted for the employer's contributions. Each period, the periodic pension cost is recognised in profit or loss (P&L) and/or in other comprehensive income (OCI). (In some cases, amounts of pension costs may qualify for inclusion as part of the costs of such assets as inventories and thus be included in P&L as part of cost of goods sold when those inventories are later sold. The focus here is on the amounts not capitalised.) IFRS and US GAAP differ in the way that the periodic pension cost is divided between P&L and OCI.

Under IFRS, the periodic pension cost is viewed as having three components, two of which are recognised in P&L and one of which is recognised in OCI.

1. *Service costs.* The first component of periodic pension cost is service cost. Current service cost is the amount by which a company's pension obligation increases as a result of employees' service in the current period. Past service cost is the amount by which a company's pension obligation relating to employees' service in prior periods changes as a result of plan amendments or a plan curtailment.[7] Under IFRS, service costs (including both current service costs and past service costs) are recognised as an expense in P&L.
2. *Net interest expense/income.* The second component of periodic pension cost is net interest expense or income, which we will refer to as "net interest expense/income." Net interest expense/income is calculated by multiplying the net pension liability or net pension asset by the discount rate used in determining the present value of the pension liability. A net interest expense represents the financing cost of deferring payments related to the plan, and a net interest income represents the financing income from prepaying amounts related to the plan. Under IFRS, the net interest expense/income is recognised in P&L.

[7] A curtailment occurs when there is a significant reduction by the entity either in the number of employees covered by a plan or in benefits.

3. *Remeasurement.* The third component of periodic pension cost is remeasurement of the net pension liability or asset. Remeasurement includes (a) actuarial gains and losses and (b) any differences between the actual return on plan assets and the amount included in the net interest expense/income calculation. Under IFRS, remeasurement amounts are recognised in OCI. Remeasurement amounts are not subsequently amortised to P&L.

Similar to IFRS, under US GAAP current service cost is recognised in P&L. However, under US GAAP, past service costs are reported in OCI in the period in which the change giving rise to the cost occurs. In subsequent periods, these past service costs are amortised to P&L over the average service lives of the affected employees.

Also similar to IFRS, under US GAAP the periodic pension cost for P&L includes interest expense on pension obligations (which increases the amount of the periodic cost) and returns on the pension plan assets (which reduce the amount of the periodic cost). Unlike IFRS, however, under US GAAP, the two components are not presented net. Also, under US GAAP, returns on plan assets included in the P&L recognition of pension costs (pension expense) use an expected return rather than the actual return. (Under IFRS, returns on plan assets included in the P&L recognition of pension costs (pension expense) use the discount rate as the expected return.) Thus, under US GAAP, differences between the expected return and the actual return on plan assets represent another source of actuarial gains or losses. As noted, actuarial gains and losses can also result from changes in the actuarial assumptions used in determining the benefit obligation. Under US GAAP, all actuarial gains and losses are included in the net pension liability or net pension asset and can be reported either in P&L or in OCI. Typically, companies report actuarial gains and losses in OCI and recognise gains and losses in P&L only when certain conditions are met under a so-called corridor approach.

Under the corridor approach, the net cumulative unrecognised actuarial gains and losses at the beginning of the reporting period are compared with the defined benefit obligation and the fair value of plan assets at the beginning of the period. If the cumulative amount of unrecognised actuarial gains and losses becomes too large (i.e., exceeds 10 percent of the greater of the defined benefit obligation or the fair value of plan assets), then the excess is amortised over the expected average remaining working lives of the employees participating in the plan and is included as a component of periodic pension cost in P&L. The term "corridor" refers to the 10 percent range, and only amounts in excess of the corridor must be amortised.

To illustrate the corridor approach, assume that the beginning balance of the defined benefit obligation is $5,000,000, the beginning balance of fair value of plan assets is $4,850,000, and the beginning balance of unrecognised actuarial losses is $610,000. The expected average remaining working lives of the plan employees is 10 years. In this scenario, the corridor is $500,000, which is 10 percent of the defined benefit obligation (selected as the greater of the defined benefit obligation or the fair value of plan assets). Because the balance of unrecognised actuarial losses exceeds the $500,000 corridor, amortisation is required. The amount of the amortisation is $11,000, which is the excess of the unrecognised actuarial loss over the corridor divided by the expected average remaining working lives of the plan employees [($610,000 – $500,000) ÷ 10 years]. Actuarial gains or losses can also be amortised more quickly than under the corridor method; companies may use a faster recognition method, provided the company applies the method of amortisation to both gains and losses consistently in all periods presented.

To summarize, under IFRS, the periodic pension costs recognised in P&L include service costs (both current and past) and net interest expense/income. The periodic pension costs recognised in OCI include remeasurements that comprise net return on plan assets and actuarial

gains and losses. Under US GAAP, the periodic pension costs recognised in P&L include current service costs, interest expense on plan liabilities, expected returns on plan assets (which is a reduction of the cost), the amortisation of past service costs, and actuarial gains and losses to the extent not reported in OCI. The components of a company's defined benefit periodic pension costs are summarized in Exhibit 2.

EXHIBIT 2 Components of a Company's Defined Benefit Pension Periodic Costs

IFRS Component	IFRS Recognition	US GAAP Component	US GAAP Recognition
Service costs	Recognised in P&L.	Current service costs	Recognised in P&L.
		Past service costs	Recognised in OCI and subsequently amortised to P&L over the service life of employees.
Net interest income/expense	Recognised in P&L as the following amount: Net pension liability or asset × interest rate[a]	Interest expense on pension obligation	Recognised in P&L.
		Expected return on plan assets	Recognised in P&L as the following amount: Plan assets × expected return.
Remeasurements: Net return on plan assets and actuarial gains and losses	Recognised in OCI and not subsequently amortised to P&L. • Net return on plan **assets** = Actual return – (Plan assets × Interest rate). • Actuarial gains and losses = Changes in a company's pension obligation arising from changes in actuarial assumptions.	Actuarial gains and losses including differences between the actual and expected returns on plan assets	Recognised immediately in P&L or, more commonly, recognised in OCI and subsequently amortised to P&L using the corridor or faster recognition method.[b] • Difference between expected and actual return on assets = Actual return – (Plan assets × Expected return). • Actuarial gains and losses = Changes in a company's pension obligation arising from changes in actuarial assumptions.

[a]The interest rate used is equal to the discount rate used to measure the pension liability (the yield on high-quality corporate bonds.)
[b]If the cumulative amount of unrecognised actuarial gains and losses exceeds 10 percent of the greater of the value of the plan assets or of the present value of the DB obligation (under US GAAP, the projected benefit obligation), the difference must be amortised over the service lives of the employees.

Reporting the Periodic Pension Cost. As noted above, some amounts of pension costs may qualify for capitalisation as part of the costs of self-constructed assets, such as inventories. Pension costs included in inventories would thus be recognised in P&L as part of cost of goods sold

when those inventories are sold. For pension costs that are not capitalised, IFRS do not specify where companies present the various components of periodic pension cost beyond differentiating between components included in P&L and in OCI. In contrast, for pension costs that are not capitalised, US GAAP require all components of periodic pension cost that are recognised in P&L to be aggregated and presented as a net amount within the same line item on the income statement. Both IFRS and US GAAP require total periodic pension cost to be disclosed in the notes to the financial statements.

2.3.3. More on the Effect of Assumptions and Actuarial Gains and Losses on Pension and Other Post-Employment Benefits Costs

As noted, a company's pension obligation for a DB pension plan is based on many estimates and assumptions. The amount of future pension payments requires assumptions about employee turnover, length of service, and rate of increase in compensation levels. The length of time the pension payments will be made requires assumptions about employees' life expectancy post-employment. Finally, the present value of these future payments requires assumptions about the appropriate discount rate (which is used as the rate at which interest expense or income will subsequently accrue on the net pension liability or asset).

Changes in any of the assumptions will increase or decrease the pension obligation. An increase in pension obligation resulting from changes in actuarial assumptions is considered an actuarial loss, and a decrease is considered an actuarial gain. The estimate of a company's pension liability also affects several components of periodic pension costs, apart from actuarial gains and losses. First, the service cost component of annual pension cost is essentially the amount by which the pension liability increases as a result of the employees' service during the year. Second, the interest expense component of annual pension cost is based on the amount of the liability. Third, the past service cost component of annual pension cost is the amount by which the pension liability increases because of changes to the plan.

Estimates related to plan assets can also affect annual pension cost reported in P&L (pension expense), primarily under US GAAP. Because a company's periodic pension cost reported in P&L under US GAAP includes the *expected* return on pension assets rather than the actual return, the assumptions about the expected return on plan assets can have a significant impact. Also, the expected return on plan assets requires estimating in which future period the benefits will be paid. As noted above, a divergence of actual returns on pension assets from expected returns results in an actuarial gain or loss.

Understanding the effect of assumptions on the estimated pension obligation and on periodic pension costs is important both for interpreting a company's financial statements and for evaluating whether a company's assumptions appear relatively conservative or aggressive.

The projected unit credit method is the IFRS approach to measuring the DB obligation. Under the projected unit credit method, each period of service (e.g., year of employment) gives rise to an additional unit of benefit to which the employee is entitled at retirement. In other words, for each period in which an employee provides service, they earn a portion of the post-employment benefits that the company has promised to pay. An equivalent way of thinking about this is that the amount of eventual benefit increases with each additional year of service. The employer measures each unit of service as it is earned to determine the amount of benefits it is obligated to pay in future reporting periods.

The objective of the projected unit credit method is to allocate the entire expected retirement costs (benefits) for an employee over the employee's service periods. The defined benefit obligation represents the actuarial present value of all units of benefit (credit) to which the

employee is entitled (i.e., those that the employee has earned) as a result of prior and current periods of service. This obligation is based on actuarial assumptions about demographic variables, such as employee turnover and life expectancy, and on estimates of financial variables, such as future inflation and the discount rate. If the pension benefit formula is based on employees' future compensation levels, then the unit of benefit earned each period will reflect this estimate.

Under both IFRS and US GAAP, the assumed rate of increase in compensation—the expected annual increase in compensation over the employee service period—can have a significant impact on the defined benefit obligation. Another key assumption is the discount rate used to calculate the present value of the future benefits. It represents the rate at which the defined benefit obligation could be effectively settled. This rate is based on current rates of return on high quality corporate bonds with durations consistent with the durations of the benefit.

The following example illustrates the calculation of the defined benefit pension obligation and current service costs, using the projected unit credit method, for an individual employee under four different scenarios. Interest on the opening obligation also increases the obligation and is part of current costs. The fourth scenario is used to demonstrate the impact on a company's pension obligation of changes in certain key estimates. Examples 2 and 3 focus on the pension obligation. The change in pension obligation over the period is included in the calculation of pension expense (pension cost reported in P&L).

EXAMPLE 2 Calculation of Defined Benefit Pension Obligation for an Individual Employee

The following information applies to each of the four scenarios. Assume that a (hypothetical) company establishes a DB pension plan. The employee has a salary in the coming year of €50,000 and is expected to work five more years before retiring. The assumed discount rate is 6 percent, and the assumed annual compensation increase is 4.75 percent. For simplicity, assume that there are no changes in actuarial assumptions, all compensation increases are awarded on the first day of the service year, and no additional adjustments are made to reflect the possibility that the employee may leave the company at an earlier date.

Current salary	€50,000.00
Years until retirement	5
Annual compensation increases	4.75%
Discount rate	6.00%
Final year's estimated salary[a]	€60,198.56

[a]Final year's estimated salary = Current year's salary × [(1 + Annual compensation increase)$^{\text{Years until retirement}}$].

At the end of Year 1, the final year's estimated salary = €50,000 × [(1 + 0.0475)^4] = €60,198.56, assuming that the employee's salary increases by 4.75 percent each year.

With no change in assumption about the rate of increase in compensation or the date of retirement, the estimate of the final year's salary will remain unchanged.

At the end of Year 2, assuming the employee's salary actually increased by 4.75 percent, the final year's estimated salary = €52,375 × [(1 + 0.0475)^3] = €60,198.56.

Scenario 1: Benefit is paid as a lump sum amount upon retirement.
The plan will pay a lump sum pension benefit equal to 1.5 percent of the employee's final salary for each year of service beyond the date of establishment. The lump sum payment to be paid upon retirement = (Final salary × Benefit formula) × Years of service = (€60,198.56 × 0.015) × 5 = €4,514.89.

Annual unit credit (benefit) per service year = Value at retirement/
Years of service = €4,514.89/5 = €902.98.

If the discount rate (the interest rate at which the defined benefit obligation could be effectively settled) is assumed to be 0 percent, the amount of annual unit credit per service year is the amount of the company's annual obligation and the closing obligation each year is simply the annual unit credit multiplied by the number of past and current years of service. However, because the assumed discount rate must be based on the yield on high-quality corporate bonds and will thus not equal 0 percent, the future obligation resulting from current and prior service is discounted to determine the value of the obligation at any point in time.

The following table shows how the obligation builds up for this employee.

Year	1	2	3	4	5
Estimated annual salary	€50,000.00	€52,375.00	€54,862.81	€57,468.80	€60,198.56
Benefits attributed to:					
Prior years[a]	€0.00	€902.98	€1,805.96	€2,708.94	€3,611.92
Current year[b]	902.98	902.98	902.98	902.98	902.97*
Total benefits earned	€902.98	€1,805.96	€2,708.94	€3,611.92	€4,514.89
Opening obligation[c]	€0.00	€715.24	€1,516.31	€2,410.94	€3,407.47
Interest cost at 6 percent[d]	0.00	42.91	90.98	144.66	204.45
Current service costs[e]	715.24	758.16	803.65	851.87	902.97
Closing obligation[f]	€715.24	€1,516.31	€2,410.94	€3,407.47	€4,514.89

*Final amounts may differ slightly to compensate for rounding in earlier years.
[a]The benefit attributed to prior years = Annual unit credit × Years of prior service.

For Year 2, €902.98 × 1 = €902.98.
For Year 3, €902.98 × 2 = €1,805.96.

[b]The benefit attributed to current year = Annual unit credit based on benefit formula = Final year's estimated salary × Benefit formula = Value at retirement date/Years of service = (€60,198.56 × 1.5%) = €4,514.89/5 = €902.98.

(continued)

(Continued)

[c]The opening obligation is the closing obligation at the end of the previous year, but can also be viewed as the present value of benefits earned in prior years:

Benefits earned in prior years/[(1 + Discount rate)$^{\text{Years until retirement}}$].
Opening obligation Year 1 = €0.
Opening obligation Year 2 = €902.98/[(1 + 0.06)^4] = €715.24.
Opening obligation Year 3 = €1,805.96/[(1 + 0.06)^3] = €1,516.32.

[d] The interest cost is the increase in the present value of the defined benefit obligation due to the passage of time:
Interest cost = Opening obligation × Discount rate.

For Year 2 = €715.24 × 0.06 = €42.91.
For Year 3 = €1,516.32 × 0.06 = €90.98.

[e] Current service costs are the present value of annual unit credits earned in the current period:

Annual unit credit/[(1 + Discount rate)$^{\text{Years until retirement}}$].
For Year 1 = €902.98/[(1 + 0.06)^4] = €715.24.
For Year 2 = €902.98/[(1 + 0.06)^3] = €758.16.

Note: Given no change in actuarial assumptions and estimates of financial growth, the current service costs in any year (except the first) are the previous year's current service costs increased by the discount rate; the current service costs increase with the passage of time.

[f] The closing obligation is the opening obligation plus the interest cost and the current service costs but can also be viewed as the present value of benefits earned in prior and current years. There is a slight difference due to rounding.

Total benefits earned/[(1 + Discount rate)$^{\text{Years until retirement}}$].
Closing obligation Year 1 = €902.98/[(1 + 0.06)^4] = €715.24.
Closing obligation Year 2 = €1,805.96/[(1 + 0.06)^3] = €1,516.32.
Closing obligation Year 3 = €2,708.94/[(1 + 0.06)^2] = €2,410.95.

Note: Assuming no past service costs or actuarial gains/losses, the closing obligation less the fair value of the plan assets represents both the funded status of the plan and the net pension liability/asset. The change in obligation is the amount of expense for pensions on the income statement.

Scenario 2: Prior years of service, and benefit paid as a lump sum upon retirement. The plan will pay a lump sum pension benefit equal to 1.5 percent of the employee's final salary for each year of service beyond the date of establishment. In addition, at the time the pension plan is established, the employee is given credit for 10 years of prior service with immediate vesting. The lump sum payment to be paid upon retirement = (Final salary × Benefit formula) × Years of service = (€60,198.56 × 0.015) × 15 = €13,544.68.

Annual unit credit = Value at retirement date/Years of service
= €13,544.68/15 = €902.98.

The following table shows how the obligation builds up for this employee.

Year	1	2	3	4	5
Benefits attributed to:					
Prior years[a]	€9,029.78	€9,932.76	€10,835.74	€11,738.72	€12,641.70
Current years	902.98	902.98	902.98	902.98	902.98
Total benefits earned	€9,932.76	€10,835.74	€11,738.72	€12,641.70	€13,544.68

(continued)

Year	1	2	3	4	5
Opening obligation[b]	€6,747.58	€7,867.67	€9,097.89	€10,447.41	€11,926.13
Interest at 6 percent	404.85	472.06	545.87	626.85	715.57
Current service costs	715.24	758.16	803.65	851.87	902.98
Closing obligation	€7,867.67	€9,097.89	€10,447.41	€11,926.13	€13,544.68

[a] Benefits attributed to prior years of service = Annual unit credit × Years of prior service. At beginning of Year 1 = (€60,198.56 × 0.015) × 10 = €9,029.78.
[b] Opening obligation is the present value of the benefits attributed to prior years = Benefits attributed to prior years/(1 + Discount rate)$^{\text{Number of years to retirement}}$.
At beginning of Year 1 = €9,029.78/(1.06)^5 = €6,747.58. This is treated as past service costs in Year 1 because there was no previous recognition and there is immediate vesting.

Scenario 3: Employee to receive benefit payments for 20 years (no prior years of service).

Years of receiving pension = 20.

Estimated annual payment (end of year) for each of the 20 years = (Estimated final salary × Benefit formula) × Years of service = (€60,198.56 × 0.015) × 5 = €4,514.89.

Value at the end of Year 5 (retirement date) of the estimated future payments = PV of €4,514.89 for 20 years at 6 percent = €51,785.46.[8]

Annual unit credit = Value at retirement date/Years of service = €51,785.46/5
= €10,357.09.

Year	1	2	3	4	5
Benefit attributed to:					
Prior years	€0.00	€10,357.09	€20,714.18	€31,071.27	€41,428.36
Current year	10,357.09	10,357.09	10,357.09	10,357.09	10,357.10
Total benefits earned	€10,357.09	€20,714.18	€31,071.27	€41,428.36	€51,785.46
Opening obligation	€0.00	€8,203.79	€17,392.03	€27,653.32	€39,083.36
Interest at 6 percent	0.00	492.23	1,043.52	1,659.20	2,345.00
Current service costs	8,203.79	8,696.01	9,217.77	9,770.84	10,357.10
Closing obligation	€8,203.79	€17,392.03	€27,653.32	€39,083.36	€51,785.46

In this scenario, the pension obligation at the end of Year 3 is €27,653.32 and the portion of pension expense (pension costs reported in P&L) attributable to interest

[8] This is a simplification of the valuation process for illustrative purposes. For example, the actuarial valuation would use mortality rates, not just assumed life expectancy. Additionally, annualizing the present value of an ordinary annuity probably understates the liability because the actual benefit payments are usually made monthly or bi-weekly rather than annually.

and current service costs for Year 3 is €10,261.29 (= €1,043.52 + €9,217.77). The total pension expense would include other items such as a reduction for return on plan assets.

Scenario 4: Employee to receive benefit payments for 20 years and is given credit for 10 years of prior service with immediate vesting.

Estimated annual payment (end of year) for each of the 20 years =
(Estimated final salary × Benefit formula) × Years of service =
(€60,198.56 × 0.015) × (10 + 5) = €13,544.68.

Value at the end of Year 5 (retirement date) of the estimated future payments =
PV of €13,544.68 for 20 years at 6 percent = €155,356.41.

Annual unit credit = Value at retirement date/Years of service =
€155,356.41/15 = €10,357.09.

Year	1	2	3	4	5
Benefit attributed to:					
Prior years	€103,570.94	€113,928.03	€124,285.12	€134,642.21	€144,999.30
Current year	10,357.09	10,357.09	10,357.09	10,357.09	10,357.11
Total benefits earned	€113,928.03	€124,285.12	€134,642.21	€144,999.30	€155,356.41
Opening obligation[a]	€77,394.23	€90,241.67	€104,352.18	€119,831.08	€136,791.79
Interest at 6 percent	4,643.65	5,414.50	6,261.13	7,189.87	8,207.51
Current service costs	8,203.79	8,696.01	9,217.77	9,770.84	10,357.11
Closing obligation	€90,241.67	€104,352.18	€119,831.08	€136,791.79	€155,356.41

[a]This is treated as past service costs in Year 1 because there was no previous recognition and there is immediate vesting.

EXAMPLE 3 The Effect of a Change in Assumptions

Based on Scenario 4 of Example 2 (10 years of prior service and the employee receives benefits for 20 years after retirement):

1. What is the effect on the Year 1 closing pension obligation of a 100 basis point increase in the assumed discount rate—that is, from 6 percent to 7 percent? What is the effect on pension cost in Year 1?
2. What is the effect on the Year 1 closing pension obligation of a 100 basis point increase in the assumed annual compensation increase—that is, from 4.75 percent to 5.75 percent? Assume this is independent of the change in Question 1.

Solution to 1: The estimated final salary and the estimated annual payments after retirement are unchanged at €60,198.56 and €13,544.68, respectively. However, the value at the retirement date is changed. Value at the end of Year 5 (retirement date) of the estimated future payments = PV of €13,544.68 for 20 years at 7 percent = €143,492.53. Annual unit credit = Value at retirement date/Years of service = €143,492.53/15 = €9,566.17.

Year	1
Benefit attributed to:	
Prior years	€95,661.69
Current year	9,566.17
Total benefits earned	€105,227.86
Opening obligation[a]	€68,205.46
Interest at 7 percent	4,774.38
Current service costs	7,297.99
Closing obligation	€80,277.83

[a]Opening obligation = Benefit attributed to prior years discounted for the remaining time to retirement at the assumed discount rate = $95{,}661.69/(1 + 0.07)^5$.

A 100 basis point increase in the assumed discount rate (from 6 percent to 7 percent) will *decrease* the Year 1 closing pension obligation by €90,241.67 – €80,277.83 = €9,963.84. The Year 1 pension cost declined from €12,847.44 (= 4,643.65 + 8,203.79) to €12,072.37 (= 4,774.38 + 7,297.99). The change in the interest component is a function of the decline in the opening obligation (which will decrease the interest component) and the increased discount rate (which will increase the interest component). In this case, the increase in the discount rate dominated and the interest component increased. The current service costs and the opening obligation both declined because of the increase in the discount rate.

Solution to 2: The estimated final salary is [€50,000 × $[(1 + 0.0575)^4]$ = €62,530.44. Estimated annual payment for each of the 20 years = (Estimated final salary × Benefit formula) × Years of service = (€62,530.44 × 0.015) × (10 + 5) = €14,069.35. Value at the end of Year 5 (retirement date) of the estimated future payments = PV of €14,069.35 for 20 years at 6 percent = €161,374.33. Annual unit credit = Value at retirement date/Years of service = €161,374.33/15 = €10,758.29.

Year	1
Benefit attributed to:	
Prior years	€107,582.89
Current year	10,758.29
Total benefits earned	€118,341.18

(continued)

(Continued)

Year	1
Opening obligation	€80,392.19
Interest at 6 percent	4,823.53
Current service costs	8,521.57
Closing obligation	€93,737.29

A 100 basis point increase in the assumed annual compensation increase (from 4.75 percent to 5.75 percent) will *increase* the pension obligation by €93,737.29 – €90,241.67 = €3,495.62.

Example 3 illustrates that an increase in the assumed discount rate will *decrease* a company's pension obligation. In the Solution to 1, there is a slight increase in the interest component of the pension obligation and periodic pension cost (from €4,643.65 in Scenario 4 of Example 2 to €4,774.38 in Example 3). Depending on the pattern and duration of the annual benefits being projected, however, it is possible that the amount of the interest component could decrease because the decrease in the opening obligation may more than offset the effect of the increase in the discount rate.

Example 3 also illustrates that an increase in the assumed rate of annual compensation increase will *increase* a company's pension obligation when the pension formula is based on the final year's salary. In addition, a higher assumed rate of annual compensation increase will increase the service components and the interest component of a company's periodic pension cost because of an increased annual unit credit and the resulting increased obligation. An increase in life expectancy also will increase the pension obligation unless the promised pension payments are independent of life expectancy—for example, paid as a lump sum or over a fixed period.

Finally, under US GAAP, because the expected return on plan assets reduces periodic pension costs reported in P&L, a higher expected return will decrease pension cost reported in P&L (pension expense). Exhibit 3 summarizes the impact of some key estimates on the balance sheet and the periodic pension cost.

EXHIBIT 3 Impact of Key DB Pension Assumptions on Balance Sheet and Periodic Costs

Assumption	Impact of Assumption on Balance Sheet	Impact of Assumption on Periodic Cost
Higher discount rate.	Lower obligation.	Periodic pension costs will typically be lower because of lower opening obligation and lower service costs.
Higher rate of compensation increase.	Higher obligation.	Higher service costs.
Higher expected return on plan assets.	No effect, because fair value of plan assets is used on balance sheet.	Not applicable for IFRS. Lower periodic pension expense under US GAAP.

Accounting for other post-employment benefits also requires assumptions and estimates. For example, assumed trends in health care costs are an important component of estimating costs of post-employment health care plans. A higher assumed medical expense inflation rate will result in a higher post-employment medical obligation. Companies also estimate various patterns of health care cost trend rates—for example, higher in the near term but becoming lower after some point in time. For post-employment health plans, an increase in the assumed inflationary trends in health care costs or an increase in life expectancy will increase the obligation and associated periodic expense of these plans.

The sections above have explained how the amounts to be reported on the balance sheet are calculated, how the various components of periodic pension cost are reflected in income, and how changes in assumptions can affect pension-related amounts. The next section evaluates disclosures of pension and other post-employment benefits, including disclosures about key assumptions.

2.4. Disclosures of Pension and Other Post-Employment Benefits

Several aspects of the accounting for pensions and other post-employment benefits described above can affect comparative financial analysis using ratios based on financial statements.

- Differences in key assumptions can affect comparisons across companies.
- Amounts disclosed in the balance sheet are net amounts (plan liabilities minus plan assets). Adjustments to incorporate gross amounts would change certain financial ratios.
- Periodic pension costs recognised in P&L (pension expense) may not be comparable. IFRS and US GAAP differ in their provisions about costs recognised in P&L versus in OCI.
- Reporting of periodic pension costs in P&L may not be comparable. Under US GAAP, all of the components of pension costs in P&L are reported in operating expense on the income statement even though some of the components are of a financial nature (specifically, interest expense and the expected return on assets). However, under IFRS, the components of periodic pension costs in P&L can be included in various line items.
- Cash flow information may not be comparable. Under IFRS, some portion of the amount of contributions might be treated as a financing activity rather than an operating activity; under US GAAP, the contribution is treated as an operating activity.

Information related to pensions can be obtained from various portions of the financial statement note disclosures, and appropriate analytical adjustments can be made. In the following sections, we examine pension plan note disclosures and highlight analytical issues related to each of the points listed above.

2.4.1. Assumptions

Companies disclose their assumptions about discount rates, expected compensation increases, medical expense inflation, and—for US GAAP companies—expected return on plan assets. Comparing these assumptions over time and across companies provides a basis to assess any conservative or aggressive biases. Some companies also disclose the effects of a change in their assumptions.

Exhibit 4 presents the assumed discount rates (Panel A) and assumed annual compensation increases (Panel B) to estimate pension obligations for four companies operating in the

automotive and equipment manufacturing sector. Fiat S.p.A. (an Italy-based company) and the Volvo Group[9] (a Sweden-based company) use IFRS. General Motors and Ford Motor Company are US-based companies that use US GAAP. All of these companies have both US and non-US defined benefit pension plans, which facilitates comparison.

EXHIBIT 4

Panel A. Assumed discount rates used to estimate pension obligations (percent)

	2009	2008	2007	2006	2005
Fiat S.p.A. (Italy)	5.02	5.10	4.70	3.98	3.53
The Volvo Group (Sweden)	4.00	4.50	4.50	4.00	4.00
General Motors (non-US plans)	5.31	6.22	5.72	4.76	4.72
Ford Motor Company (non-US plans)	5.93	5.58	5.58	4.91	4.58
Fiat S.p.A. (US plans)	5.50	5.10	5.80	5.80	5.50
The Volvo Group (US plans)	4.00–5.75	5.75–6.25	5.75–6.25	5.50	5.75
General Motors (US plans)	5.52	6.27	6.35	5.90	5.70
Ford Motor Company (US plans)	6.50	6.25	6.25	5.86	5.61

Panel B. Assumed annual compensation increases used to estimate pension obligations (percent)

	2009	2008	2007	2006	2005
Fiat S.p.A. (Italy)	4.02	4.65	4.60	3.65	2.58
The Volvo Group (Sweden)	3.00	3.50	3.20	3.20	3.20
General Motors (non-US plans)	3.23	3.59	3.60	3.00	3.10
Ford Motor Company (non-US plans)	3.13	3.21	3.21	3.30	3.44
Fiat S.p.A. (US plans)*	na	na	na	na	na
The Volvo Group (US plans)	3.00	3.50	3.50	3.50	3.50
General Motors (US plans)	3.94	5.00	5.25	5.00	4.90
Ford Motor Company (US plans)	3.80	3.80	3.80	3.80	4.00

*In the United States, Fiat has obligations to former employees under DB pension plans but no longer offers DB plans. As a result, annual compensation increases are not applicable (na).

[9] The Volvo Group primarily manufactures trucks, buses, construction equipment, and engines and engine components for boats, industry, and aircraft. The Volvo car division was sold to Ford Motor Company in 1999, and Ford sold Volvo Car Corporation to the Zhejiang Geely Holding Group in 2010.

The assumed discount rates used to estimate pension obligations are generally based on the market interest rates of high-quality corporate fixed-income investments with a maturity profile similar to the timing of a company's future pension payments. The trend in discount rates across the companies (in both their non-US plans and US plans) is generally similar. In the non-US plans, discount rates increased from 2005 to 2008 and then decreased in 2009 except for Ford, which increased discount rates in 2009. In the US plans, discount rates increased from 2005 to 2007 and held steady or decreased in 2008. In 2009, Fiat and Ford's discount rates increased while Volvo and GM's discount rates decreased. Ford had the highest assumed discount rates for both its non-US and US plans in 2009. Recall that a higher discount rate assumption results in a lower estimated pension obligation. Therefore, the use of a higher discount rate compared with its peers may indicate a less conservative bias.

Explanations for differences in the level of the assumed discount rates, apart from bias, are differences in the regions/countries involved and differences in the timing of obligations (for example, differences in the percentage of employees covered by the DB pension plan that are at or near retirement). In this example, the difference in regions/countries might explain the difference in rates used for the non-US plans but would not explain the difference in the rates shown for the companies' US plans. The timing of obligations under the companies' DB pension plans likely varies, so the relevant market interest rates selected as the discount rate will vary accordingly. Because the timing of the pension obligations is not disclosed, differences in timing cannot be ruled out as an explanation for differences in discount rates.

An important consideration is whether the assumptions are internally consistent. For example, do the company's assumed discount rates and assumed compensation increases reflect a consistent view of inflation? For Volvo, both the assumed discount rates and the assumed annual compensation increases (for both its non-US and US plans) are lower than those of the other companies, so the assumptions appear internally consistent. The assumptions are consistent with plans located in lower-inflation regions. Recall that a lower rate of compensation increase results in a lower estimated pension obligation.

In Ford's US and non-US pension plans, the assumed discount rate is increasing and the assumed rate of compensation increase is decreasing or holding steady in 2009. Each of these will reduce the pension obligation. Therefore, holding all else equal, Ford's pension liability is decreasing because of the higher assumed discount rate and the reduced assumed rate of compensation increase.

Another relevant assumption—for US GAAP companies but not for IFRS companies—is the expected return on pension plan assets. Under US GAAP, a higher expected return on plan assets lowers the periodic pension cost. (Of course, a higher expected return on plan assets presumably reflects riskier investments, so it would not be advisable for a company to simply invest in riskier investments to reduce periodic pension expense.) Because companies are also required to disclose the target asset allocation for their pension plan assets, analysts can assess reasonableness of those assumptions by comparing companies' assumed expected return on plan assets in the context of the plans' asset allocation. For example, a higher expected return is consistent with a greater proportion of plan assets being allocated to riskier asset classes.

Companies with other post-employment benefits also disclose information about these benefits, including assumptions made to estimate the obligation and expense. For example, companies with post-employment health care plans disclose assumptions about increases in health care costs. The assumptions are typically that the inflation rate in health

care costs will taper off to some lower, constant rate at some year in the future. That future inflation rate is known as the ultimate health care trend rate. Holding all else equal, each of the following assumptions would result in a higher benefit obligation and a higher periodic cost:

- A higher assumed near-term increase in health care costs,
- A higher assumed ultimate health care trend rate, and
- A later year in which the ultimate health care trend rate is assumed to be reached.

Conversely, holding all else equal, each of the following assumptions would result in a lower benefit obligation and a lower periodic cost:

- A lower assumed near-term increase in health care costs,
- A lower assumed ultimate health care trend rate, and
- An earlier year in which the ultimate health care trend rate is assumed to be reached.

Example 4 examines two companies' assumptions about trends in US health care costs.

EXAMPLE 4 Comparison of Assumptions about Trends in US Health Care Costs

In addition to disclosing assumptions about health care costs, companies also disclose information on the sensitivity of the measurements of both the obligation and the periodic cost to changes in those assumptions. Exhibit 5 presents information obtained from the notes to the financial statements for CNH Global N.V. (a Dutch manufacturer of construction and mining equipment) and Caterpillar Inc. (a US manufacturer of construction and mining equipment, engines, and turbines). Each company has US employees for whom they provide post-employment health care benefits.

Panel A shows the companies' assumptions about health care costs and the amounts each reported for post-employment health care benefit plans. For example, CNH assumes that the initial year's (2010) increase in health care costs will be 9 percent, and this rate of increase will decline to 5 percent over the next seven years to 2017. Caterpillar assumes a lower initial-year increase of 7 percent and a decline to the ultimate health care trend rate of 5 percent in 2016.

Panel B shows the effect of a 100 basis point increase or decrease in the assumed health care cost trend rates. A 1 percentage point increase in the assumed health care cost trend rates would increase Caterpillar's 2009 service and interest cost component of the other post-employment benefit costs by $23 million and the related obligation by $220 million. A 1 percentage point increase in the assumed health care cost trend rates would increase CNH Global's 2009 service and interest cost component of the other post-employment benefit costs by $8 million and the related obligation by $106 million.

EXHIBIT 5 Post-Employment Health Care Plan Disclosures

Panel A. Assumptions and Reported Amounts for US Post-Employment Health Care Benefit Plans

	Assumptions about Health Care Costs			Amounts Reported for Other Post-Employment Benefits ($ Millions)	
	Initial Health Care Trend Rate 2010	Ultimate Health Care Trend Rate	Year Ultimate Trend Rate Attained	Accumulated Benefit Obligation Year-End 2009	Periodic Expense for Benefits for 2009
CNH Global N.V.	9.0%	5%	2017	$1,152	$65
Caterpillar Inc.	7.0%	5%	2016	$4,537	$287

Panel B. Effect of 1 Percentage Point Increase (Decrease) in Assumed Health Care Cost Trend Rates on 2009 Total Accumulated Post-Employment Benefit Obligations and Periodic Expense

	1 Percentage Point Increase	1 Percentage Point Decrease
CNH Global N.V.	+ $106 million (Obligation) + $8 million (Expense)	– $90 million (Obligation) – $6 million (Expense)
Caterpillar Inc.	+ $220 million (Obligation) + $23 million (Expense)	– $186 million (Obligation) – $20 million (Expense)

Sources: Caterpillar information is from the company's Form 10-K filed 19 February 2010, Note 14 (pages A-36 and A-42). CNH Global information is from the company's 2009 Form 20-F, Note 12 (pages F-41, F-43, and F-45).

Based on the information in Exhibit 5, answer the following questions:

1. Which company's assumptions about health care costs appear less conservative?
2. What would be the effect of adjusting the post-employment benefit obligation and the periodic post-employment benefit expense of the less conservative company for a 1 percentage point increase in health care cost trend rates? Does this make the two companies more comparable?
3. What would be the change in each company's 2009 ratio of debt to equity assuming a 1 percentage point increase in the health care cost trend rate? Assume the change would have no impact on taxes. Total liabilities and total equity at 31 December 2009 are given below.

At 31 December 2009 (US$ millions)	CNH Global N.V.	Caterpillar Inc.
Total liabilities	$16,398	$50,738
Total equity	$6,810	$8,823

Solution to 1: Caterpillar's assumptions about health care costs appear less conservative (the assumptions will result in lower health care costs) than CNH's. Caterpillar's initial assumed health care cost increase of 7 percent is significantly lower than CNH's assumed 9 percent. Further, Caterpillar assumes that the ultimate health care cost trend rate of 5 percent will be reached a year earlier than assumed by CNH.

Solution to 2: The sensitivity disclosures indicate that a 1 percentage point increase in the assumed health care cost trend rate would increase Caterpillar's post-employment benefit obligation by $220 million and its periodic cost by $23 million. However, Caterpillar's initial health care cost trend rate is 2 percentage points lower than CNH's. Therefore, the impact of a 1 percentage point change for Caterpillar multiplied by 2 provides an approximation of the adjustment required for comparability to CNH. Note, however, that the sensitivity of the pension obligation and expense to a change of more than 1 percentage point in the assumed health care cost trend rate cannot be assumed to be exactly linear, so this adjustment is only an approximation. Further, there may be justifiable differences in the assumptions based on the location of their US operations.

Solution to 3: A 1 percentage point increase in the health care cost trend rate increases CNH's ratio of debt to equity by about 2 percent, from 2.41 to 2.46. A 1 percentage point increase in the health care cost trend rate increases Caterpillar's ratio of debt to equity by about 3 percent, from 5.75 to 5.92.

CNH Global N.V. ($ millions)	Reported	Adjustment for 1 Percentage Point Increase in Health Care Cost Trend Rate	Adjusted
Total liabilities	$16,398	+ $106	$16,504
Total equity	$6,810	– $106	$6,704
Ratio of debt to equity	2.41		2.46

Caterpillar Inc. ($ millions)	Reported	Adjustment for 1 Percentage Point Increase in Health Care Cost Trend Rate	Adjusted
Total liabilities	$50,738	+ $220	$50,958
Total equity	$8,823	– $220	$8,603
Ratio of debt to equity	5.75		5.92

This section has explored the use of pension and other post-employment benefit disclosures to assess a company's assumptions and explore how the assumptions can affect comparisons across companies. The following sections describe the use of disclosures to further analyse a company's pension and other post-employment benefits.

2.4.2. Net Pension Liability (or Asset)

Under both IFRS and US GAAP standards, the amount disclosed in the balance sheet is a net amount. Analysts can use information from the notes to adjust a company's assets and liabilities for the gross amount of the benefit plan assets and the gross amount of the benefit plan liabilities. An argument for making such adjustments is that they reflect the underlying economic liabilities and assets of a company; however, it should be recognised that actual consolidation is precluded by laws protecting a pension or other benefit plan as a separate legal entity.

At a minimum, an analyst will compare the gross benefit obligation (i.e., the benefit obligation without deducting related plan assets) with the sponsoring company's total assets, including the gross amount of the benefit plan assets, shareholders' equity, and earnings. Although presumably infrequent in practice, if the gross benefit obligation is large relative to these items, a small change in the pension liability can have a significant financial impact on the sponsoring company.

2.4.3. Total Periodic Pension Costs

The total periodic cost of a company's DB pension plan is the change in the net pension liability or asset—excluding the effect of the employer's periodic contribution into the plan. To illustrate this point, assume a company has a completely new DB pension plan. At inception, the net pension liability equals \$0 (\$0 plan assets minus \$0 obligations). In the first period, the plan obligation increases by \$500 because of service costs. If the employer makes no contribution to the plan, then the net pension liability would increase to \$500 (\$0 plan assets minus \$500 obligations) and the periodic service costs would be exactly equal to that change. If, however, the employer contributes \$500 to the plan in that period, then the net pension liability would remain at \$0 (\$500 plan assets minus \$500 obligations). In this situation, although the change in net pension liability is \$0, the periodic pension cost is \$500.

Thus, the total periodic pension cost in a given period is calculated by summing the periodic components of cost or, alternatively, by adjusting the change in the net pension liability or asset for the amount of employer contributions. The relationship between the periodic pension cost and the plan's funded status can be expressed as Periodic pension cost = Ending funded status – Employer contributions – Beginning funded status.[10]

Note that, unlike employer contributions into the plan's assets, the payment of cash out of a DB plan to a retiree does not affect the net pension liability or asset. Payment of cash out of a DB plan to a retiree reduces plan assets and plan obligations in an equal amount.

2.4.4. Periodic Pension Costs Recognised in P&L vs. OCI

Each period, the components of periodic pension cost—other than any amounts that qualify for capitalisation as part of the costs of such assets as inventories—are recognised either in P&L (an expense) or in OCI. To understand the total pension cost of the period, an analyst should thus consider the amounts shown both in P&L and in OCI.

IFRS and US GAAP differ in their provisions about which periodic pension costs are recognised in P&L versus in OCI. These differences can be relevant to an analyst in comparing the reported profitability of companies that use different sets of standards. Under IFRS, P&L

[10]Note that a net pension liability is treated as a negative funded status in this relationship.

for the period includes both current and past service costs; in contrast, under US GAAP, P&L for the period includes only current service costs (and any amortisation of past service costs.) Under IFRS, P&L incorporates a return on plan assets set equal to the discount rate used in estimating the pension obligation; in contrast, under US GAAP, P&L incorporates an expected return on plan assets. Under US GAAP, P&L may show the impact of amortising actuarial gains or losses that were recognised in previous periods' OCI. Under IFRS, P&L would not show any similar impact because amortising amounts from OCI into P&L is not permitted.

An analyst comparing an IFRS-reporting company with a US GAAP–reporting company could adjust the reported amounts of P&L to achieve comparability. For example, the analyst could adjust the US GAAP company's P&L to make it similar to an IFRS company by including past service costs arising during the period, excluding amortisation of past service costs arising in previous periods, and including an amount of return on plan assets at the discount rate rather than the expected rate. Alternatively, the analyst could use comprehensive income (net income from P&L plus OCI) as the basis for comparison.

2.4.5. Classification of Periodic Pension Costs Recognised in P&L

Amounts of periodic pension costs recognised in P&L (pension expense) are generally treated as operating expenses. An issue with the reported periodic pension expense is that conceptually the components of this expense could be classified as operating and/or non-operating expenses. It can be argued that only the current service cost component is an operating expense, whereas the interest component and asset returns component are both non-operating. The interest expense component of pension expense is conceptually similar to the interest expense on any of the company's other liabilities. The pension liability is essentially equivalent to borrowing from employees, and the interest expense of that borrowing can be considered a financing cost. Similarly, the return on pension plan assets is conceptually similar to returns on any of the company's other financial assets. These classification issues apply equally to OPB costs.

To better reflect a company's operating performance, an adjustment can be made to operating income by adding back the full amount of pensions costs reported in the P& L (pension expense) and then subtracting only the service costs (or the total of service costs and settlements and curtailments). Note that this adjustment excludes from operating income the amortisation of past service costs and the amortisation of net actuarial gains and losses. This adjustment also eliminates the interest expense component and the return on plan assets component from the company's operating income. The interest expense component would be added to the company's interest expense, and the return on plan assets would be treated as non-operating income.

In addition to adjusting for the classification of different components of pension costs, an adjustment can be made to incorporate the *actual return* on plan assets. Recall that under IFRS, the net interest expense/income calculation effectively includes a return on plan assets calculated using the discount rate used to determine the present value of the pension liability and any difference from the actual return is shown as a component of OCI. Under US GAAP, the *expected* return on plan assets is included as a component of periodic pension cost in P&L and any difference between the actual and expected return is shown as a component of OCI. Under either set of standards, an adjustment can incorporate the actual return. This adjustment changes net income and potentially introduces earnings volatility. The reclassification of interest expense would not change net income. Example 5 illustrates adjustments to operating and non-operating incomes.

EXAMPLE 5 Adjusting Periodic Costs Expensed to P&L and Reclassifying Components between Operating and Non-Operating Income

SABMiller plc is a UK-based company that brews and distributes beer and other beverages. The following information was taken from the company's 2010 Annual Report. Note that in 2010, IFRS required the use of expected return on plan assets, similar to US GAAP. All amounts are in millions of US dollars.

Summary information from the Consolidated Income Statement For the year ended 31 March 2010	
Revenue	$18,020
Net operating expenses	(15,401)
Operating profit	2,619
Interest payable and similar charges*	(879)
Interest receivable and similar income*	316
Share of post-tax results of associates	873
Profit before taxation	$ 2,929

**Note:* This is the terminology used in the income statement. The solution to question 2 below uses *interest expense* and *interest and investment income*.

Excerpt from Note 31: Pensions and post-retirement benefits

	Pension	OPB	Total
Current service costs	$(8)	$(3)	$(11)
Interest costs	(29)	(10)	(39)
Expected return on plan assets	14		14
Total	$(23)	$(13)	$(36)
Actual return (loss) on plan assets	$47		

(Components of the amount recognised in net operating expenses for pension and other post-retirement benefits.)

Based on the information above,

1. Adjust pre-tax income for the actual rather than expected return on plan assets.
2. Adjust the individual line items on the company's income statement to re-classify the components of the pension and other post-retirement benefits expense as operating expense, interest expense, or interest income.

Solution to 1: The total amount of periodic pension cost reported in P&L as an expense is $23. If the actual return on plan assets of $47 is used instead of the expected return on plan assets, the total P&L expense (income) will be $(10) [(= 8 + 29 – 47) or (= 23 + 14 – 47)]. Use of the actual rather than expected return on plan assets provides an estimate of the economic expense (income) for the pension. Profit before taxation adjusted for actual rather than expected return on plan assets will be higher by $33 ($47 – $14) and will total $2,962.

Solution to 2: All adjustments are summarized below.

	Reported	Adjustments	Adjusted
Revenue	$18,020		$18,020
Net operating expenses	–15,401	+ 36 – 11[a]	–15,376
Operating profit	2,619		2,644
Interest expense	–879	– 39[b]	–918
Interest and investment income	316	+ 47[c]	363
Share of post-tax results of associates	873		873
Profit before taxation	$2,929	$33	$2,962

[a]Operating income is adjusted to include only the current service costs. The $36 total of pension and OPB expenses are excluded from operating expenses, and only the $11 current service cost component is included in operating expenses.
[b]The $39 interest cost component is reclassified as interest expense.
[c]The *actual* return on plan assets is added as investment income.

2.4.6. Cash Flow Information

For a sponsoring company, the cash flow impact of pension and other post-employment benefits is the amount of contributions that the company makes to fund the plan—or for plans without funding requirements, the amount of benefits paid. The amount of contributions a company makes to fund a pension or other post-employment benefit plan is partially determined by the regulations of the countries in which the company operates. In the United States, for example, the amount of contributions to DB pension plans is governed by ERISA (the Employee Retirement and Income Security Act) and depends on the funded status of the plan. Companies may choose to make contributions in excess of those required by regulation.

If a sponsoring company's periodic contributions to a plan exceed the total pension costs of the period, the excess can be viewed from an economic perspective as a reduction of the pension obligation. The contribution covers not only the pension obligation arising in the current period but also the pension obligations of another period. Such a contribution would be similar in concept to making a principal payment on a loan in excess of the scheduled principal payment. Conversely, a periodic contribution that is less than the total pension cost of the period can be viewed as a source of financing. Where the amounts of benefit obligations are material, an analyst may choose to adjust the cash flows that a company presents in its statement of cash flows. Example 6 describes such an adjustment.

EXAMPLE 6 Adjusting Cash Flow

Vassiliki Doukas is analysing the cash flow statement of a hypothetical company, GeoRace plc, as part of a valuation. Doukas suggests to her colleague, Dimitri Krontiras, that the difference between the company's contributions to the pension plan and the total pension costs incurred during a period is similar to a form of borrowing or a repayment of borrowing, depending on the direction of the difference; this affects the company's reported cash from operating activities and cash from financing activities. Based on information from the company's 2009 annual report (currency in £ millions), she determines that the company's total pension cost was £437; however, the company also disclosed that it made a contribution of £504. GeoRace reported cash inflow from operating activities of £6,161 and cash outflow from financing activities of £1,741. The company's effective tax rate was 28.7 percent.

Use the information provided to answer the following questions:

1. How did the company's 2009 contribution to the pension plan compare with the total pension cost for the year?
2. How would cash from operating activities and financing activities be adjusted to illustrate Doukas' interpretation of the difference between the company's contribution and the total pension cost?

Solution to 1: The company's contribution to the pension plan in 2009 was £504, which was £67 more than the total pension cost of £437. The £67 difference is approximately £48 on an after-tax basis, using the effective tax rate of 28.7 percent.

Total pension costs	£437	
Company's contribution	£504	
Amount by which the sponsoring company's contribution exceeds total pension cost (pre-tax)	£67	
Tax rate	28.7%	
After-tax amount by which the sponsoring company's contribution exceeds total pension cost	£48	[= £67 × (1 – 0.2870)]

Solution to 2: The company's contribution to the pension plan in 2009 was £67 (£48 after tax) greater than the 2009 total pension cost. Interpreting the excess contribution as similar to a repayment of borrowing (financing use of funds) rather than as an operating cash flow would increase the company's cash outflow from financing activities by £48, from £1,741 to £1,789, and increase the cash inflow from operations by £48, from £6,161 to £6,209.

3. SHARE-BASED COMPENSATION

In this section, we provide an overview of executive compensation other than pension plans and other post-retirement benefits, focusing on share-based compensation. First, we briefly discuss common components of executive compensation packages, their objectives, and advantages and disadvantages of share-based compensation. The discussion of share-based compensation then moves to accounting for and reporting of stock grants and stock options. The explanation includes a discussion of fair value accounting, the choice of valuation models, the assumptions used, common disclosures, and important dates in measuring and reporting compensation expense.

Employee compensation packages are structured to achieve varied objectives, including satisfying employees' needs for liquidity, retaining employees, and motivating employees. Common components of employee compensation packages are salary, bonuses, non-monetary benefits, and share-based compensation.[11] The salary component provides for the liquidity needs of an employee. Bonuses, generally in the form of cash, motivate and reward employees for short- or long-term performance or goal achievement by linking pay to performance. Non-monetary benefits, such as medical care, housing, and cars, may be provided to facilitate employees performing their jobs. Salary, bonuses, and non-monetary benefits are short-term employee benefits.

Share-based compensation is intended to align employees' interests with those of the shareholders and is typically a form of deferred compensation. Both IFRS and US GAAP[12] require a company to disclose in their annual report key elements of management compensation. Regulators may require additional disclosure. The disclosures enable analysts to understand the nature and extent of compensation, including the share-based payment arrangements that existed during the reporting period. Below are examples of descriptions of the components and objectives of executive compensation programs for companies that report under IFRS and under US GAAP. Exhibit 6 shows excerpts of the disclosure for the executive compensation program of SABMiller plc (London Stock Exchange: SAB); SABMiller plc reports under IFRS and includes a nine-page remuneration report as part of its annual report.

EXHIBIT 6

Excerpts from Remuneration Report of SABMiller plc

> … On balance, the committee concluded that its policy of agreeing to a total remuneration package for each executive director comprising an annual base salary, a short-term incentive in the form of an annual cash bonus, long-term incentives through participation in share incentive plans, pension contributions, other usual security and health benefits, and benefits in kind, continued to be appropriate.…
>
> The committee's policy continues to be to ensure that executive directors and members of the executive committee are rewarded for their contribution to the group's operating and financial performance at levels which take account of industry, market and country benchmarks, and that their remuneration is appropriate to their scale of responsibility and performance, and will attract, motivate and retain individuals of the necessary calibre. The committee takes account of the need to be competitive in the different parts of the world in which the company operates.…

[11] An extensive overview of different employee compensation mechanisms can be found in Lynch and Perry (2003).

[12] IAS 24 *Related Party Disclosures*, paragraph 17; FASB ASC Section 718-10-50 [Compensation-Stock Compensation-Overall-Disclosure].

EXHIBIT 6 (Continued)

The committee considers that alignment with shareholders' interests and linkage to SABMiller's long-term strategic goals is best achieved through a twin focus on earnings per share and, from 2010 onwards, additional value created for shareholders, and a blend of absolute and relative performance.

Source: SABMiller plc, Annual Report 2010.

In the United States, similar disclosures are required in a company's proxy statement that is filed with the SEC. Exhibit 7 shows the disclosure of American Eagle Outfitters, Inc.'s (NYSE: AEO) executive compensation program, including a description of the key elements and objectives.

EXHIBIT 7 Excerpts from Executive Compensation Disclosures of American Eagle Outfitters, Inc.

Compensation Program Elements

Our executive compensation program is designed to place a sizeable amount of pay at risk for all executives and this philosophy is intended to cultivate a pay-for-performance environment. Our executive compensation plan design has six key elements:

- Base Salary
- Annual Incentive Bonus
- Long-term Incentive Cash Plan—in place for the Chief Executive Officer and Vice Chairman, Executive Creative Director only
- Restricted Stock ("RS")—issued as Units ("RSUs") and Awards ("RSAs")
- Performance Shares ("PS")
- Non-Qualified Stock Options ("NSOs")

Two of the elements (Annual Incentive Bonus and LTICP) were entirely "at risk" based on the Company's performance in Fiscal 2009 and were subject to forfeiture if the Company did not achieve threshold performance goals. Performance Shares are entirely "at risk" and subject to forfeiture if the Company does not achieve threshold performance goals by the close of Fiscal 2011, as described below. At threshold performance, the CEO's total annual compensation declines by 46% relative to target performance. The NEO's total annual compensation declines by an average of 33% relative to target performance. Company performance below threshold levels results in forfeiture of all elements of direct compensation other than base salary, RSUs and NSOs. NSOs provide compensation only to the extent that vesting requirements are satisfied and our share price appreciates.

We strategically allocate compensation between short-term and long-term components and between cash and equity in order to maximize executive performance and retention. Long-term compensation and equity awards comprise an increasingly larger proportion of total compensation as position level increases. The portion of total pay attributable to long-term incentive cash and equity compensation increases at successively higher levels of management. This philosophy ensures that executive compensation closely aligns with changes in stockholder value and achievement of performance objectives while also ensuring that executives are held accountable for results relative to position level.

Source: American Eagle Outfitters, Inc. Proxy Statement (Form Def 14A) filed 26 April 2010.

Share-based compensation, in addition to theoretically aligning the interests of employees (management) with shareholders, has the advantage of potentially requiring no cash outlay.[13] Share-based compensation arrangements can take a variety of forms, including those that are equity-settled and those that are cash-settled. However, share-based compensation is treated as an expense and thus as a reduction of earnings even when no cash changes hands. In addition to decreasing earnings through compensation expense, stock options have the potential to dilute earnings per share.

Although share-based compensation is generally viewed as motivating employees and aligning managers' interests with those of the shareholders, there are several disadvantages of share-based compensation. One disadvantage is that the recipient of the share-based compensation may have limited influence over the company's market value (consider the scenario of overall market decline), so share-based compensation does not necessarily provide the desired incentives. Another disadvantage is that the increased ownership may lead managers to be risk averse. In other words, fearing a large market value decline (and loss in individual wealth), managers may seek less risky (and less profitable) projects. An opposite effect, excessive risk taking, can also occur with the awarding of options. Because options have skewed payouts that reward excessive risk taking, managers may seek more risky projects. Finally, when share-based compensation is granted to employees, existing shareholders' ownership is diluted.

For financial reporting, a company reports compensation expense during the period in which employees earn that compensation. Accounting for cash salary payments and cash bonuses is relatively straightforward. When the employee has earned the salary or bonus, an expense is recorded. Typically, compensation expense for managers is reported in sales, general, and administrative expenses on the income statement.

Share-based compensation is more varied and includes such items as stock, stock options, stock appreciation rights, and phantom shares. By granting shares or share options in addition to other compensation, companies are paying additional compensation for services rendered by employees. Under both IFRS and US GAAP, companies use the fair value of the share-based compensation granted to measure the value of the employees' services for purposes of reporting compensation expense. However, the specifics of the accounting depend on the type of share-based compensation given to the employee. Under both IFRS and US GAAP, the usual disclosures required for share-based compensation include (1) the nature and extent of share-based compensation arrangements during the period, (2) how the fair value of a share-based compensation arrangement was determined, and (3) the effect of share-based compensation on the company's income for the period and on its financial position.

Two common forms of equity-settled share-based compensation, stock grants and stock options, are discussed below.

3.1. Stock Grants

A company can grant stock to employees outright, with restrictions, or contingent on performance. For an outright stock grant, compensation expense is reported on the basis of the fair value of the stock on the grant date—generally the market value at grant date. Compensation expense is allocated over the period benefited by the employee's service, referred to as the

[13] Although issuing employee stock options requires no initial cash outlay, the company implicitly forgoes issuing new shares of stock at the then-current market price (and receiving cash) when the options are exercised.

service period. The employee service period is presumed to be the current period unless there are some specific requirements, such as three years service in the future, before the employee is vested (has the right to receive the compensation).

Another type of stock award is a restricted stock, which requires the employee to return ownership of those shares to the company if certain conditions are not met. Common restrictions include the requirements that employees remain with the company for a specified period or that certain performance goals are met. Compensation expense for restricted stock grants is measured as the fair value (usually market value) of the shares issued at the grant date. This compensation expense is allocated over the employee service period.

Shares granted contingent on meeting performance goals are called performance shares. The amount of the grant is usually determined by performance measures other than the change in stock price, such as accounting earnings or return on assets. Basing the grant on accounting performance addresses employees' potential concerns that the stock price is beyond their control and thus should not form the basis for compensation. However, performance shares can potentially have the unintended impact of providing incentives to manipulate accounting numbers. Compensation expense is equal to the fair value (usually market value) of the shares issued at the grant date. This compensation expense is allocated over the employee service period.

3.2. Stock Options

Like stock grants, compensation expense related to option grants is reported at fair value under both IFRS and US GAAP. Both require that fair value be estimated using an appropriate valuation model.

Whereas the fair value of stock grants is usually based on the market value at the date of the grant, the fair value of option grants must be estimated. Companies cannot rely on market prices of options to measure the fair value of employee stock options because features of employee stock options typically differ from traded options. To measure the fair value of employee stock options, therefore, companies must use a valuation model. The choice of valuation or option pricing model is one of the critical elements in estimating fair value. Several models are commonly used, such as the Black–Scholes option pricing model or a binomial model. Accounting standards do not prescribe a particular model. Generally, though, the valuation method should (1) be consistent with fair value measurement, (2) be based on established principles of financial economic theory, and (3) reflect all substantive characteristics of the award.

Once a valuation model is selected, a company must determine the inputs to the model, typically including exercise price, stock price volatility, estimated life of each award, estimated number of options that will be forfeited, dividend yield, and the risk-free rate of interest.[14] Some inputs, such as the exercise price, are known at the time of the grant. Other critical inputs are highly subjective—such as stock price volatility or the estimated life of stock options—and can greatly change the estimated fair value and thus compensation expense. Higher volatility, a longer estimated life, and a higher risk-free interest rate increase the estimated fair value, whereas a higher assumed dividend yield decreases the estimated fair value.

Combining different assumptions with alternative valuation models can significantly affect the fair value of employee stock options. Below is an excerpt from GlaxoSmithKline, plc explaining the assumptions and model used in valuing its stock options. (Although not discussed

[14]The estimated life of an option award incorporates such assumptions as employee turnover and is usually shorter than the expiration period.

in the disclosure, from 2007 to 2009 the trends of decreasing interest rates, lower share price, and increasing dividend yield would decrease estimated fair values and thus lower option expense. In contrast, the trend of increasing volatility would increase the estimated fair values.)

EXHIBIT 8 Assumptions Used in Stock Option Pricing Models: Excerpts from Financial Statements of GlaxoSmithKline, plc

Note 42—Employee share schemes *[excerpt]*

Option pricing

For the purposes of valuing options and awards to arrive at the share-based payment charge, the Black–Scholes option pricing model has been used. The assumptions used in the model for 2007, 2008 and 2009 are as follows:

	2009	2008	2007
Risk-free interest rate	1.4%–2.9%	1.3%–4.8%	4.7%–5.3%
Dividend yield	5.20%	4.80%	4.00%
Volatility	23%–29%	19%–24%	17%–25%
Expected lives of options granted under:			
Share option schemes	5 years	5 years	5 years
Savings-related share option and share award schemes	3–4 years	3 years	3 years
Weighted average share price for grants in the year:			
Ordinary Shares	£11.72	£11.59	£14.41
ADS*	$33.73	$45.02	$57.59

*American Depositary Shares.

Volatility is determined based on the three and five year share price history where appropriate. The fair value of performance share plan grants take into account market conditions. Expected lives of options were determined based on weighted average historic exercises of options.

Source: GlaxoSmithKline Annual Report 2009.

In accounting for stock options, there are several important dates, including the grant date, the vesting date, the exercise date, and the expiration date. The grant date is the day that options are granted to employees. The service period is usually the period between the grant date and the vesting date.

The vesting date is the date that employees can first exercise the stock options. The vesting can be immediate or over a future period. If the share-based payments vest immediately (i.e., no further period of service is required), then expense is recognised on the grant date. If the share-based awards do not vest until a specified service period is completed, compensation expense is recognised and allocated over the service period. If the share-based awards are conditional upon the achievement of a performance condition or a market condition (i.e., a target share price), then compensation expense is recognised over the estimated service period. The exercise date is the date when employees actually exercise the options and convert them

to stock. If the options go unexercised, they may expire at some pre-determined future date, commonly 5 or 10 years from the grant date.

The grant date is also usually the date that compensation expense is measured if both the number of shares and the option price are known. If facts affecting the value of options granted depend on events after the grant date, then compensation expense is measured at the exercise date. In the example below, Coca Cola, Inc. (NYSE: KO) reported, in the 2009 Form 10-K, $241 million of compensation expense from option grants.

EXAMPLE 7 Disclosure of Stock Options' Current Compensation Expense, Vesting, and Future Compensation Expense

Using information from Coca Cola, Inc.'s Note 9 to financial statements, given below, determine the following:

1. Total compensation expense relating to options already granted that will be recognised in future years as options vest.
2. Approximate compensation expense in 2010 and 2011 relating to options already granted.

Excerpts from Note 9: Stock Compensation Plans in the Notes to Financial Statements of Coca Cola, Inc.

NOTE 9: STOCK COMPENSATION PLANS

Our Company grants stock options and restricted stock awards to certain employees of the Company. Total stock-based compensation expense was approximately $241 million in 2009, $266 million in 2008 and $313 million in 2007 and was included as a component of selling, general and administrative expenses in our consolidated statements of income. The total income tax benefit recognised in our consolidated statements of income for share-based compensation arrangements was approximately $68 million, $72 million and $91 million for 2009, 2008 and 2007, respectively.

As of December 31, 2009, we had approximately $335 million of total unrecognised compensation cost related to nonvested share-based compensation arrangements granted under our plans. This cost is expected to be recognised over a weighted-average period of 1.7 years as stock-based compensation expense. This expected cost does not include the impact of any future stock-based compensation awards.

Source: Coca Cola, Inc. Form 10-K filed 26 February 2010.

Solution to 1: Coca Cola, Inc. discloses that unrecognised compensation expense relating to stock options already granted but not yet vested totals $335 million.

Solution to 2: The options already granted will vest over the next 1.7 years. Compensation expense related to stock options already granted will be $197 million ($335/1.7 years) in 2010 and $138 million in 2011 ($335 total less $197 expensed in 2010). New options granted in the future will likely raise the total reported compensation expense.

As the option expense is recognised over the relevant vesting period, the impact on the financial statements is to ultimately reduce retained earnings (as with any other expense). The offsetting entry is an increase in paid-in capital. Thus, the recognition of option expense has no net impact on total equity.

3.3. Other Types of Share-Based Compensation

Both stock grants and stock options allow the employee to obtain direct ownership in the company. Other types of share-based compensation, such as stock appreciation rights (SARs) or phantom stock, compensate an employee on the basis of changes in the value of shares without requiring the employee to hold the shares. These are referred to as cash-settled share-based compensation. With SARs, an employee's compensation is based on increases in a company's share price. Like other forms of share-based compensation, SARs serve to motivate employees and align their interests with shareholders. The following are two additional advantages of SARs:

- The potential for risk aversion is limited because employees have limited downside risk and unlimited upside potential similar to employee stock options, and
- Shareholder ownership is not diluted.

A disadvantage is that SARs require a current-period cash outflow. Similar to other share-based compensation, SARs are valued at fair value and compensation expense is allocated over the service period of the employee. While phantom share plans are similar to other types of share-based compensation, they differ somewhat because compensation is based on the performance of hypothetical stock rather than the company's actual stock. Unlike SARs, phantom shares can be used by private companies or business units within a company that are not publicly traded or by highly illiquid companies.

4. SUMMARY

This chapter discussed two different forms of employee compensation: post-employment benefits and share-based compensation. Although different, the two are similar in that they are forms of compensation outside of the standard salary arrangements. They also involve complex valuation, accounting, and reporting issues. Although IFRS and US GAAP are converging on accounting and reporting, it is important to note that differences in a country's social system, laws, and regulations can result in differences in a company's pension and share-based compensation plans that may be reflected in the company's earnings and financial reports.

Key points include the following:

- Defined contribution pension plans specify (define) only the amount of contribution to the plan; the eventual amount of the pension benefit to the employee will depend on the value of an employee's plan assets at the time of retirement.
- Balance sheet reporting is less analytically relevant for defined contribution plans because companies make contributions to defined contribution plans as the expense arises and thus no liabilities accrue for that type of plan.
- Defined benefit pension plans specify (define) the amount of the pension benefit, often determined by a plan formula, under which the eventual amount of the benefit to the employee is a function of length of service and final salary.

- Defined benefit pension plan obligations are funded by the sponsoring company contributing assets to a pension trust, a separate legal entity. Differences exist in countries' regulatory requirements for companies to fund defined benefit pension plan obligations.
- Both IFRS and US GAAP require companies to report on their balance sheet a pension liability or asset equal to the projected benefit obligation minus the fair value of plan assets. The amount of a pension asset that can be reported is subject to a ceiling.
- Under IFRS, the components of periodic pension cost are recognised as follows: Service cost is recognised in P&L, net interest income/expense is recognised in P&L, and remeasurements are recognised in OCI and are not amortised to future P&L.
- Under US GAAP, the components of periodic pension cost recognised in P&L include current service costs, interest expense on the pension obligation, and expected returns on plan assets (which reduces the cost). Other components of periodic pension cost—including past service costs, actuarial gains and losses, and differences between expected and actual returns on plan assets—are recognised in OCI and amortised to future P&L.
- Estimates of the future obligation under defined benefit pension plans and other post-employment benefits are sensitive to numerous assumptions, including discount rates, assumed annual compensation increases, expected return on plan assets, and assumed health care cost inflation.
- Employee compensation packages are structured to fulfill varied objectives, including satisfying employees' needs for liquidity, retaining employees, and providing incentives to employees.
- Common components of employee compensation packages are salary, bonuses, and share-based compensation.
- Share-based compensation serves to align employees' interests with those of the shareholders. It includes stocks and stock options.
- Share-based compensation has the advantage of requiring no current-period cash outlays.
- Share-based compensation expense is reported at fair value under IFRS and US GAAP.
- The valuation technique, or option pricing model, that a company uses is an important choice in determining fair value and is disclosed.
- Key assumptions and input into option pricing models include such items as exercise price, stock price volatility, estimated life of each award, estimated number of options that will be forfeited, dividend yield, and the risk-free rate of interest. Certain assumptions are highly subjective, such as stock price volatility or the expected life of stock options, and can greatly change the estimated fair value and thus compensation expense.

REFERENCE

Lynch, L.J., and S.E. Perry. 2003. "An Overview of Management Compensation." *Journal of Accounting Education*, vol. 21, no. 1 (1st Quarter): 43–60.

PROBLEMS

The following information relates to Questions 1–7

Kensington plc, a hypothetical company based in the United Kingdom, offers its employees a defined benefit pension plan. Kensington complies with IFRS. The assumed discount rate that

the company used in estimating the present value of its pension obligations was 5.48 percent. Information on Kensington's retirement plans is presented in Exhibit 1.

EXHIBIT 1 Kensington plc Defined Benefit Pension Plan

(in millions)	2010
Components of periodic benefit cost	
Service cost	£228
Net interest (income) expense	273
Remeasurements	–18
Periodic pension cost	£483
Change in benefit obligation	
Benefit obligations at beginning of year	£28,416
Service cost	228
Interest cost	1,557
Benefits paid	–1,322
Actuarial gain or loss	0
Benefit obligations at end of year	£28,879
Change in plan assets	
Fair value of plan assets at beginning of year	£23,432
Actual return on plan assets	1,302
Employer contributions	693
Benefits paid	–1,322
Fair value of plan assets at end of year	£24,105
Funded status at beginning of year	–£4,984
Funded status at end of year	–£4,774

1. At year-end 2010, £28,879 million represents:
   A. the funded status of the plan.
   B. the defined benefit obligation.
   C. the fair value of the plan's assets.
2. For the year 2010, the net interest expense of £273 represents the interest cost on the:
   A. ending benefit obligation.
   B. beginning benefit obligation.
   C. beginning net pension obligation.
3. For the year 2010, the remeasurement component of Kensington's periodic pension cost represents:
   A. the change in the net pension obligation.
   B. actuarial gains and losses on the pension obligation.
   C. actual return on plan assets minus the amount of return on plan assets included in the net interest expense.

4. Which of the following is *closest* to the actual rate of return on beginning plan assets and the rate of return on beginning plan assets that is included in the interest income/expense calculation?
   A. The actual rate of return was 5.56 percent, and the rate included in interest income/expense was 5.48 percent.
   B. The actual rate of return was 1.17 percent, and the rate included in interest income/expense was 5.48 percent.
   C. Both the actual rate of return and the rate included in interest income/expense were 5.48 percent.
5. Which component of Kensington's periodic pension cost would be shown in OCI rather than P&L?
   A. Service cost
   B. Net interest (income) expense
   C. Remeasurements
6. The relationship between the periodic pension cost and the plan's funded status is *best* expressed in which of the following?
   A. Periodic pension cost of –£483 = Ending funded status of –£4,774 – Employer contributions of £693 – Beginning funded status of –£4,984.
   B. Periodic pension cost of £1,322 = Benefits paid of £1,322.
   C. Periodic pension cost of £210 = Ending funded status of –£4,774 – Beginning funded status of –£4,984.
7. An adjustment to Kensington's statement of cash flows to reclassify the company's excess contribution for 2010 would *most likely* entail reclassifying £210 million (excluding income tax effects) as an outflow related to:
   A. investing activities rather than operating activities.
   B. financing activities rather than operating activities.
   C. operating activities rather than financing activities.

The following information relates to Questions 8–13

XYZ SA, a hypothetical company, offers its employees a defined benefit pension plan. Information on XYZ's retirement plans is presented in Exhibit 2. It also grants stock options to executives. Exhibit 3 contains information on the volatility assumptions used to value stock options.

EXHIBIT 2 XYZ SA Retirement Plan Information 2009

Employer contributions	1,000
Current service costs	200
Past service costs	120
Discount rate used to estimate plan liabilities	7.00%
Benefit obligation at beginning of year	42,000
Benefit obligation at end of year	41,720
Actuarial loss due to increase in plan obligation	460

(continued)

EXHIBIT 2 (Continued)

Plan assets at beginning of year	39,000
Plan assets at end of year	38,700
Actual return on plan assets	2,700
Expected rate of return on plan assets	8.00%

EXHIBIT 3 XYZ SA Volatility Assumptions Used to Value Stock Option Grants

Grant Year	Weighted Average Expected Volatility
2009 valuation assumptions	
2005–2009	21.50%
2008 valuation assumptions	
2004–2008	23.00%

8. The retirement benefits paid during the year were *closest* to:
   A. 280.
   B. 3,000.
   C. 4,000.
9. The total periodic pension cost is *closest* to:
   A. 320.
   B. 1,020.
   C. 1,320.
10. The amount of periodic pension cost that would be reported in P&L under IFRS is *closest* to:
    A. 20.
    B. 530.
    C. 1,020.
11. Assuming the company chooses not to immediately recognise the actuarial loss and assuming there is no amortisation of past service costs or actuarial gains and losses, the amount of periodic pension cost that would be reported in P&L under US GAAP is *closest* to:
    A. 20.
    B. 59.
    C. 530.
12. Under IFRS, the amount of periodic pension cost that would be reported in OCI is *closest* to:
    A. 20.
    B. 490.
    C. 1,020.

13. Compared to 2009 net income as reported, if XYZ had used the same expected volatility assumption for its 2009 option grants that it had used in 2008, its 2009 net income would have been:
    A. lower.
    B. higher.
    C. the same.

The following information relates to Questions 14–19

Stereo Warehouse is a US retailer that offers employees a defined benefit pension plan and stock options as part of its compensation package. Stereo Warehouse prepares its financial statements in accordance with US GAAP.

Peter Friedland, CFA, is an equity analyst concerned with earnings quality. He is particularly interested in whether the discretionary assumptions the company is making regarding compensation plans are contributing to the recent earnings growth at Stereo Warehouse. He gathers information from the company's regulatory filings regarding the pension plan assumptions in Exhibit 4 and the assumptions related to option valuation in Exhibit 5.

EXHIBIT 4 Assumptions Used for Stereo Warehouse Defined Benefit Plan

	2009	2008	2007
Expected long-term rate of return on plan assets	6.06%	6.14%	6.79%
Discount rate	4.85	4.94	5.38
Estimated future salary increases	4.00	4.44	4.25
Inflation	3.00	2.72	2.45

EXHIBIT 5 Option Valuation Assumptions

	2009	**2008**	**2007**
Risk-free rate	4.6%	3.8%	2.4%
Expected life	5.0 yrs	4.5 yrs	5.0 yrs
Dividend yield	1.0%	0.0%	0.0%
Expected volatility	29%	31%	35%

14. Compared to the 2009 reported financial statements, if Stereo Warehouse had used the same expected long-term rate of return on plan assets assumption in 2009 as it used in 2007, its year-end 2009 pension obligation would *most likely* have been:
    A. lower.
    B. higher.
    C. the same.

15. Compared to the reported 2009 financial statements, if Stereo Warehouse had used the same discount rate as it used in 2007, it would have *most likely* reported lower:
    A. net income.
    B. total liabilities.
    C. cash flow from operating activities.

16. Compared to the assumptions Stereo Warehouse used to compute its periodic pension cost in 2008, earnings in 2009 were *most favorably* affected by the change in the:
    A. discount rate.
    B. estimated future salary increases.
    C. expected long-term rate of return on plan assets.
17. Compared to the pension assumptions Stereo Warehouse used in 2008, which of the following pairs of assumptions used in 2009 is *most likely* internally inconsistent?
    A. Estimated future salary increases, inflation
    B. Discount rate, estimated future salary increases
    C. Expected long-term rate of return on plan assets, discount rate
18. Compared to the reported 2009 financial statements, if Stereo Warehouse had used the 2007 expected volatility assumption to value its employee stock options, it would have *most likely* reported higher:
    A. net income.
    B. compensation expense.
    C. deferred compensation liability.
19. Compared to the assumptions Stereo Warehouse used to value stock options in 2008, earnings in 2009 were most favorably affected by the change in the:
    A. expected life.
    B. risk-free rate.
    C. dividend yield.

CHAPTER 15

INTERCORPORATE INVESTMENTS

Susan Perry Williams

LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- describe the classification, measurement, and disclosure under International Financial Reporting Standards (IFRS) for 1) investments in financial assets, 2) investments in associates, 3) joint ventures, 4) business combinations, and 5) special purpose and variable interest entities;
- distinguish between IFRS and US GAAP in the classification, measurement, and disclosure of investments in financial assets, investments in associates, joint ventures, business combinations, and special purpose and variable interest entities;
- analyze how different methods used to account for intercorporate investments affect financial statements and ratios.

1. INTRODUCTION

Intercorporate investments (investments in other companies) can have a significant impact on an investing company's financial performance and position. Companies invest in the debt and equity securities of other companies to diversify their asset base, enter new markets, obtain competitive advantages, and achieve additional profitability. Debt securities include commercial paper, corporate and government bonds and notes, redeemable preferred stock, and asset-backed securities. Equity securities include common stock and non-redeemable preferred stock. The percentage of equity ownership a company acquires in an investee depends on the resources available, the ability to acquire the shares, and the desired level of influence or control.

The International Accounting Standards Board (IASB) and the US Financial Accounting Standards Board (FASB) have worked to reduce differences in accounting standards that apply

to the classification, measurement, and disclosure of intercorporate investments. The resulting standards have improved the relevance, transparency, and comparability of information provided in financial statements. This chapter includes accounting standards issued by IASB and FASB through 31 December 2012. References for US GAAP reflect the new FASB Accounting Standards Codification™ (FASB ASC).

Moving towards convergence, in December 2007, the FASB issued two new standards: SFAS 141(R), *Business Combinations*,[1] and SFAS 160, *Noncontrolling Interests in Consolidated Financial Statements*.[2] These statements introduced significant changes in the accounting for and reporting of business acquisitions and non-controlling interests in a subsidiary. In January 2008, the IASB revised IFRS 3, *Business Combinations* and amended IAS 27, *Consolidated and Separate Financial Statements*. In 2011, the IASB issued a revised IAS 27, *Separate Financial Statements*, and replaced portions of the earlier IAS 27 with IFRS 10, *Consolidated Financial Statements*. The new standards are effective for annual periods beginning on or after 1 January 2013.

Another convergence effort is the project on classification and measurement of financial assets and financial liabilities. The first phase of the project has been incorporated in IFRS 9, *Financial Instruments – Classification and Measurement*. This pronouncement initially required adoption for annual periods beginning on or after 1 January 2013. However, the effective date has been extended to annual periods beginning on or after 1 January 2015, with early adoption permitted. Phases two and three of the project will address financial instrument impairments and hedge accounting. When completed, this standard is expected to replace IAS 39, *Financial Instruments: Recognition and Measurement*. The FASB is working on a similar standard for classification and measurement but has not issued a pronouncement.

Convergence between IFRS and US GAAP makes it easier to compare financial reports because the accounting is the same or similar for many transactions. However, differences still remain. When differences exist, there is generally enough transparency in the disclosures to allow financial statement users to adjust for the differences. Understanding the appropriate accounting treatment for different intercorporate investments and the similarities and differences that exist between IFRS and US GAAP will enable analysts to make better comparisons between companies and improve investment decision making. The terminology used in this chapter is IFRS oriented. US GAAP may not use identical terminology, but in most cases the terminology is similar.

This chapter is organized as follows: Section 2 explains the basic categorization of corporate investments. Section 3 describes reporting for investments in debt and equity securities of other entities prior to IFRS 9 taking effect (hereafter referred to as current standards or reporting). Section 4 describes reporting under IFRS 9, the IASB standard for financial instruments that becomes effective in 2015 (hereafter referred to as new standard or reporting). Section 4 also illustrates the primary differences between the current and new standards. Section 5 describes equity method reporting for investments in associates where significant influence can exist including the reporting for joint ventures, a type of investment where control is shared. Section 6 describes reporting for business combinations, the parent/subsidiary relationship, and variable interest and special purpose entities. A summary and practice problems in the CFA Institute item set format complete the chapter.

[1] FASB ASC Topic 805 [Business Combinations].

[2] FASB ASC Topic 810 [Consolidations].

2. BASIC CORPORATE INVESTMENT CATEGORIES

In general, investments in marketable debt and equity securities can be categorized as 1) investments in financial assets in which the investor has no significant influence or control over the operations of the investee, 2) investments in associates in which the investor can exert significant influence (but not control) over the investee, 3) joint ventures where control is shared by two or more entities, and 4) business combinations, including investments in subsidiaries, in which the investor has control over the investee The distinction between investments in financial assets, investments in associates, and business combinations is based on the degree of influence or control rather than purely on the percent holding. However, lack of influence is generally presumed when the investor holds less than a 20% equity interest, significant influence is generally presumed between 20% and 50%, and control is presumed when the percentage of ownership exceeds 50%.

The following excerpt from Note 2 to the Financial Statements in the 2011 Annual Report of GlaxoSmithKline (London Stock Exchange: GSK), a British pharmaceutical and healthcare company, illustrates the categorization and disclosure in practice:

> Entities over which the Group has the power to govern the financial and operating policies are accounted for as subsidiaries. Where the Group has the ability to exercise joint control, the entities are accounted for as joint ventures, and where the Group has the ability to exercise significant influence, they are accounted for as associates. The results and assets and liabilities of associates and joint ventures are incorporated into the consolidated financial statements using the equity method of accounting.

A summary of the financial reporting and relevant standards for various types of corporate investment is presented in Exhibit 1 (the headings in Exhibit 1 use the terminology of IFRS; US GAAP categorizes intercorporate investments similarly but not identically). The reader should be alert to the fact that value measurement and/or the treatment of changes in value can vary depending on the classification and whether IFRS or US GAAP is used. The alternative treatments are discussed in greater depth later in this chapter.

EXHIBIT 1 Summary of Accounting Treatments for Investments

	In Financial Assets	In Associates	Business Combinations	In Joint Ventures
Influence	Not significant	Significant	Controlling	Shared control
Typical percentage interest	Usually < 20%	Usually 20% to 50%	Usually > 50% or other indications of control	
Current Financial Reporting (prior to IFRS 9 taking effect)	Classified as: • Held-to-maturity • Available for sale • Fair value through profit or loss (held for trading or designated as fair value) • Loans and receivables	Equity method	Consolidation	IFRS: Equity method or proportionate consolidation

(continued)

EXHIBIT 1 (Continued)

	In Financial Assets	In Associates	Business Combinations	In Joint Ventures
Applicable IFRS[a]	IAS 39	IAS 28	IAS 27	IAS 31 (replaced by IFRS 11)
US GAAP[b]	FASB ASC Topic 320	FASB ASC Topic 323	FASB ASC Topics 805 and 810	FASB ASC Topic 323
New Financial Reporting (post IFRS 9 taking effect)	Classified as: • Fair value through profit or loss • Fair value through other comprehensive income • Amortized cost	Equity method	Consolidation	IFRS: Equity method
Applicable IFRS[a]	IFRS 9	IAS 28	IAS 27 IFRS 3 IFRS 10	IFRS 11 IFRS 12 IAS 28
US GAAP[b]	FASB ASC Topic 320	FASB ASC Topic 323	FASB ASC Topics 805 and 810	FASB ASC Topic 323

[a] IAS 39 Financial Instruments: Recognition and Measurement; IFRS 9 Financial Instruments; IAS 28 Investments in Associates; IAS 27 Separate Financial Statements (Previously, Consolidated and Separate Financial Statements); IFRS 3 Business Combinations; IAS 31 Interests in Joint Ventures; IFRS 10 Consolidated Financial Statements; IFRS 11 Joint Arrangements; IFRS 12, Disclosure of Interests in Other Entities.
[b] FASB ASC Topic 320 [Investments–Debt and Equity Securities]; FASB ASC Topic 323 [Investments–Equity Method and Joint Ventures]; FASB ASC Topics 805 [Business Combinations] and 810 [Consolidations].

3. INVESTMENTS IN FINANCIAL ASSETS: STANDARD IAS 39 (AS OF DECEMBER 2012)

When the investor cannot exert significant influence or control over the operations of the investee, investments in financial assets (debt and equity) are considered passive. IFRS and US GAAP are similar regarding the accounting for investments in financial assets. IFRS has four basic classifications of investments in financial assets: 1) held-to-maturity, 2) fair value through profit or loss, 3) available-for-sale, and 4) loans and receivables. Under IFRS, financial assets classified as fair value through profit or loss includes both financial assets held for trading and financial assets specifically designated as through profit or loss by management. These classifications determine the reporting for the investments.

Passive investments in financial assets are initially recognized at fair value. Dividend and interest income from investments in financial assets, regardless of categorization, are reported in the income statement. The reporting of subsequent changes in fair value, however, depends on the classification of the financial asset.

3.1. Held-to-Maturity

Held-to-maturity investments are investments in financial assets with fixed or determinable payments and fixed maturities (debt securities) that the investor has the positive intent and ability to hold to maturity. Held-to-maturity investments are exceptions from the general requirement (under both IFRS and US GAAP) that investments in financial assets are subsequently recognized at fair value. Therefore, strict criteria apply before this designation can be used. Under both IFRS and US GAAP, the investor must have a positive intent and ability to hold the security to maturity.

Reclassifications and sales prior to maturity may call into question the company's intent and ability. Under IFRS, a company is not permitted to classify any financial assets as held-to-maturity if it has, during the current or two preceding financial reporting years, sold or reclassified more than an insignificant amount of held-to-maturity investments before maturity unless the sale or reclassification meets certain criteria. Similarly, under US GAAP, a sale (and by inference a reclassification) is taken as an indication that intent was not truly present and use of the held-to-maturity category may be precluded for the company in the future.

IFRS require that held-to-maturity securities be initially recognized at fair value, whereas US GAAP require held-to-maturity securities be initially recognized at initial price paid. In most cases, however, initial fair value is equal to initial price paid so the treatment is identical. At each reporting date (subsequent to initial recognition), IFRS and US GAAP require that held-to-maturity securities are reported at amortized cost using the effective interest rate method,[3] unless objective evidence of impairment exists. Any difference—discount or premium—between maturity (par) value and fair value existing at the time of purchase is amortized over the life of the security. A discount (par value exceeds fair value) occurs when the stated interest rate is less than the effective rate, and a premium (fair value exceeds par value) occurs when the stated interest rate is greater than the effective rate. Amortization impacts the carrying value of the security. Any interest payments received are adjusted for amortization and are reported as interest income. If the security is sold before maturity (with the potential consequences described above), any realized gains or losses arising from the sale are recognized in profit or loss of the period. Transaction costs are included in initial fair value for investments that are not classified as fair value through profit or loss.

3.2. Fair Value through Profit or Loss

Under IFRS, securities classified as fair value through profit or loss include securities held for trading and those designated by management as carried at fair value. US GAAP is similar; however, the classification is based on legal form and special guidance exists for some financial assets.

[3]The effective interest method is a method of calculating the carrying value of a debt security and allocating the interest income to the period in which it is earned. It is based on the effective interest rate calculated at the time of purchase. Under US GAAP, the calculation of the effective interest rate is generally based on *contractual* cash flows over the asset's *contractual* life. Under IFRS, the effective rate is based on the *estimated* cash flows over the *expected* life of the asset. Contractual cash flows over the full contractual term of the security are only used if the expected cash flows over the expected life of the security cannot be reliably estimated.

3.2.1. Held for Trading

Held for trading investments are debt or equity securities acquired with the intent to sell them in the near term. Held for trading securities are reported at fair value. At each reporting date, the held for trading investments are remeasured and recognized at fair value with any unrealized gains and losses arising from changes in fair value reported in profit or loss. Also included in profit or loss are interest received on debt securities and dividends received on equity securities.

3.2.2. Designated at Fair Value

Both IFRS and US GAAP allow entities to initially designate investments at fair value that might otherwise be classified as available-for-sale or held-to-maturity. The accounting treatment for investments designated at fair value is similar to that of held for trading investments. Initially, the investment is recognized at fair value. At each subsequent reporting date, the investments are remeasured at fair value with any unrealized gains and losses arising from changes in fair value as well as any interest and dividends received included in profit or loss.

3.3. Available-for-Sale

Available-for-sale investments are debt and equity securities not classified as held-to-maturity or fair value through profit or loss. Under both IFRS and US GAAP, investments classified as available-for-sale are initially measured at fair value. At each subsequent reporting date, the investments are remeasured and recognized at fair value. Unrealized gain or loss at the end of the reporting period is the difference between fair value and the carrying amount at that date. Other comprehensive income (in shareholder's equity) is adjusted to reflect the cumulative unrealized gain or loss. The amount reported in other comprehensive income is net of taxes. When these investments are sold, the cumulative gain or loss previously recognized in other comprehensive income is reclassified (i.e., reversed out of other comprehensive income) and reported as a reclassification adjustment on the statement of profit or loss. Interest (calculated using the effective interest method) from debt securities and dividends from equity securities are included in profit or loss.

IFRS and US GAAP differ on the treatment of foreign exchange gains and losses on available-for-sale debt securities.[4] Under IFRS, for the purpose of recognizing foreign exchange gains and losses, a debt security is treated as if it were carried at amortized cost in the foreign currency. Exchange rate differences arising from changes in amortized cost are recognized in profit or loss, and other changes in the carrying amount are recognized in other comprehensive income. In other words, the total exchange gain or loss in fair value of an available-for-sale debt security is divided into two components. The portion attributable to foreign exchange gains and losses is recognized on the income statement (in profit or loss), and the remaining portion is recognized in other comprehensive income. Under US GAAP, the total change in fair value of available-for-sale debt securities (including foreign exchange rate gains or losses) is included in other comprehensive income. For equity securities, under IFRS and US GAAP, the gain or loss that is recognized in other comprehensive income arising from changes in fair value

[4] Under IAS 21, a debt security is defined as a monetary item, because the holder (investor) has the right to receive a fixed or determinable number of units of currency in the form of contractual interest payments. An equity instrument is not considered a monetary item.

includes any related foreign exchange component. There is no separate recognition of foreign exchange gains or losses.

3.4. Loans and Receivables

Loans and receivables are broadly defined as non-derivative financial assets with fixed or determinable payments. Loans and receivables that meet the more specific IFRS definition in the current standard are carried at amortized cost unless designated as either fair value through profit or loss or available for sale. IFRS does not rely on a legal form, whereas US GAAP relies on the legal form for the classification of debt securities. Loans and receivables that meet the definition of a debt security under US GAAP are typically classified as held for trading, available-for-sale, or held-to-maturity. Held for trading and available-for-sale securities are measured at fair value.

The accounting treatment for investments in financial assets under IFRS is illustrated in Exhibit 2. This excerpt from the 2011 Annual Report of Volvo Group (OMX Nordic exchange: VOLV B),[5] a manufacturer of trucks, buses, and construction equipment, discloses how its investments are classified, measured, and reported on its financial statements.

EXHIBIT 2 Volvo 2011 Annual Report

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
RECOGNITION OF FINANCIAL ASSETS …

The fair value of assets is determined based on valid market prices, when available. If market prices are unavailable, the fair value is determined for each asset using various measurement techniques. Transaction expenses are included in the asset's fair value, except in cases in which the change in value is recognized in profit and loss. The transaction costs that arise in conjunction with the assumption of financial liabilities are amortized over the term of the loan as a financial cost.

Embedded derivatives are detached from the related main contract, if applicable. Contracts containing embedded derivatives are valued at fair value in profit and loss if the contracts' inherent risk and other characteristics indicate a close relation to the embedded derivative.

FINANCIAL ASSETS AT FAIR VALUE THROUGH PROFIT OR LOSS

All of Volvo's financial assets that are recognized at fair value in profit and loss are classified as held for trading. This includes derivatives to which Volvo has decided not to apply hedge accounting as well as derivatives that are not part of an evidently effective hedge accounting policy pursuant to IAS 39. Gains and losses on these assets are recognized in profit and loss.

FINANCIAL ASSETS CLASSIFIED AS AVAILABLE FOR SALE

This category includes assets available for sale and assets that have not been classified in any of the other categories. These assets are initially measured at fair value including transaction costs. Any change in value is recognized directly in other comprehensive income. The cumulative gain or loss recognized in other comprehensive income is reversed in profit and loss on the sale

(continued)

[5] As of this writing, the Volvo line of automobiles is not under the control and management of the Volvo Group.

EXHIBIT 2 (Continued)

of the asset. Unrealized declines in value are recognized in other comprehensive income, unless the decline is significant or prolonged. Then the impairment is recognized in profit and loss. If the event that caused the impairment no longer exists, impairment can be reversed in profit and loss if it does not involve an equity instrument.

Earned or paid interest attributable to these assets is recognized in profit and loss as part of net financial items in accordance with the effective interest method. Dividends received attributable to these assets are recognized in profit and loss as Income from other investments.

If assets available for sale are impaired, the impaired amount is the difference between the asset's cost (adjusted for any accrued interest if applicable) and its fair value. However, if equity instruments, such as shares, are involved, a completed impairment is not reversed in profit and loss. On the other hand, impairments performed on debt instruments (interest-bearing instruments) are wholly or partly reversible in profit and loss, in those instances where an event, proven to have occurred after the impairment was performed, is identified and impacts the valuation of that asset.

3.5. Reclassification of Investments

Under the current standard, both IFRS and US GAAP permit entities to reclassify their intercorporate investments. However, there are certain restrictions and criteria that must be met. Reclassification may result in changes in how the asset value is measured and how unrealized gains or losses are recognized.

IFRS generally prohibits the reclassification of securities into or out of the designated at fair value category,[6] and reclassification out of the held for trading category is severely restricted. Held-to-maturity (debt) securities can be reclassified as available-for-sale if a change in intention or a change in ability to hold the security until maturity occurs. At the time of reclassification to available-for-sale, the security is remeasured at fair value with the difference between its carrying amount (amortized cost) and fair value recognized in other comprehensive income. Recall that the reclassification has implications for the use of the held-to-maturity category for existing debt securities and new purchases. A mandatory reclassification and a prohibition from future use may result from the reclassification.

Debt securities initially designated as available-for-sale may be reclassified to held-to-maturity if a change in intention or ability has occurred. The fair value carrying amount of the security at the time of reclassification becomes its new (amortized) cost. Any previous gain or loss that had been recognized in other comprehensive income is amortized to profit or loss over the remaining life of the security using the effective interest method. Any difference between the new amortized cost of the security and its maturity value is amortized over the remaining life of the security using the effective interest method. If the definition is met, debt instruments may be reclassified from held for trading or available-for-sale to loans and receivables if the company expects to hold them for the foreseeable future.

[6]In rare circumstances, IFRS permits reclassification of a financial asset if it is no longer held for the purpose of selling it in the near term. The financial asset is reclassified at its fair value with any gain or loss recognized in profit or loss, and the fair value on the date of its reclassification becomes its new cost or amortized cost.

Financial assets classified as available-for-sale may be measured at cost, where there is no longer a reliable measure of fair value and no evidence of impairment. However, if a reliable fair value measure becomes available, the financial asset must be remeasured at fair value with changes in value recognized in other comprehensive income.

US GAAP allows reclassifications (transfers) of securities between all categories when justified. Fair value of the security is determined at the date of transfer. However, recall that the reclassification of securities from the held-to-maturity category has implications for the use of this category for other securities. The treatment of unrealized holding gains and losses on the transfer date depends on the initial classification of the security.

1. If a security initially classified as held for trading is reclassified as available-for-sale, any unrealized gains and losses (arising from the difference between its carrying value and current fair value) are recognized in profit and loss.
2. If a security is reclassified as held for trading, the unrealized gains or losses are recognized immediately in profit and loss. In the case of reclassification from available-for-sale, the cumulative amount of gains and losses previously recognized in other comprehensive income is recognized in profit and loss on the date of transfer.
3. If a debt security is reclassified as available-for-sale from held-to-maturity, the unrealized holding gain or loss at the date of the reclassification (i.e., the difference between the fair value and amortized cost) is reported in other comprehensive income.
4. If a debt security is reclassified as held-to-maturity from available-for-sale, the cumulative amount of gains or losses previously reported in other comprehensive income will be amortized over the remaining life of the security as an adjustment of yield (interest income) in the same manner as a premium or discount.

3.6. Impairments

A financial asset (in this case, debt or equity securities) becomes impaired whenever its carrying amount is expected to permanently exceed its recoverable amount. There are key differences in the approaches taken by the IFRS and US GAAP to determine if a financial asset is impaired and how the impairment loss is measured and reported.

Under IFRS, at the end of each reporting period, financial assets not carried at fair value (individually or as a group) need to be reviewed for any objective evidence that the assets are impaired. Any current impairment will be recognized in profit or loss immediately. For investments measured and reported at fair value through profit or loss (designated as fair value through profit or loss, and held for trading), any prior impairment loss will have already been recognized in profit or loss.

A debt security is impaired if one or more events (loss events) occur that have a reliably estimated impact on its future cash flows. Although it may not be possible to identify a single specific event that caused the impairment, the combined effect of several events may cause the impairment. Losses expected as a result of future (anticipated) events, no matter how likely, are not recognized. Examples of loss events causing impairment are:

- The issuer experiences significant financial difficulty;
- Default or delinquency in interest or principal payments;
- The borrower encounters financial difficulty and receives a concession from the lender as a result; and
- It becomes probable that the borrower will enter bankruptcy or other financial reorganization.

The disappearance of an active market because an entity's financial instruments are no longer publicly traded is not evidence of impairment. A downgrade of an entity's credit rating or a decline in fair value of a security below its cost or amortized cost is also not by itself evidence of impairment. However, it may be evidence of impairment when considered with other available information.

For equity securities, objective evidence of a loss event includes:

- Significant changes in the technological, market, economic, and/or legal environments that adversely affect the investee and indicate that the initial cost of the equity investment may not be recovered.
- A significant or prolonged decline in the fair value of an equity investment below its cost.

For held-to-maturity (debt) investments and loans and receivables that have become impaired, the amount of the loss is measured as the difference between the security's carrying value and the present value of its estimated future cash flows discounted at the security's original effective interest rate (the effective interest rate computed at initial recognition). The carrying amount of the investment is reduced either directly or through the use of an allowance account, and the amount of the loss is recognized in profit or loss. If, in a subsequent period, the amount of the impairment loss decreases and the decrease can be objectively related to an event occurring after the impairment was recognized (for example, the debtor's credit rating improves), the previously recognized impairment loss can be reversed either directly (by increasing the carrying value of the security) or by adjusting the allowance account. The amount of this reversal is then recognized in profit or loss.

For available-for-sale securities that have become impaired, the cumulative loss that had been recognized in other comprehensive income is reclassified from equity to profit or loss as a reclassification adjustment. The amount of the cumulative loss to be reclassified is the difference between acquisition cost (net of any principal repayment and amortization) and current fair value, less any impairment loss that has previously been recognized in profit or loss. Impairment losses on available-for-sale equity securities cannot be reversed through profit or loss. However, impairment losses on available-for-sale debt securities can be reversed if a subsequent increase in fair value can be objectively related to an event occurring after the impairment loss was recognized in profit or loss. In this case, the impairment loss is reversed with the amount of the reversal recognized in profit or loss.

Exhibit 3 contains an excerpt from the 2011 Annual Report of Deutsche Bank (Deutsche Börse: DBK) that describes how impairment losses for its financial assets are determined, measured, and recognized on its financial statements.

EXHIBIT 3 Excerpt from Deutsche Bank 2011 Annual Report

IMPAIRMENT OF FINANCIAL ASSETS

At each balance sheet date, the Group assesses whether there is objective evidence that a financial asset or a group of financial assets is impaired. A financial asset or group of financial assets is impaired and impairment losses are incurred if:

- there is objective evidence of impairment as a result of a loss event that occurred after the initial recognition of the asset and up to the balance sheet date ("a loss event");

EXHIBIT 3 (Continued)

- the loss event had an impact on the estimated future cash flows of the financial asset or the group of financial assets; and
- a reliable estimate of the amount can be made.

IMPAIRMENT OF FINANCIAL ASSETS CLASSIFIED AS AVAILABLE FOR SALE

For financial assets classified as AFS, management assesses at each balance sheet date whether there is objective evidence that an asset is impaired.

In the case of equity investments classified as AFS, objective evidence includes a significant or prolonged decline in the fair value of the investment below cost. In the case of debt securities classified as AFS, impairment is assessed based on the same criteria as for loans.

If there is evidence of impairment, any amounts previously recognized in other comprehensive income are recognized in the consolidated statement of income for the period, reported in net gains (losses) on financial assets available for sale. This amount is determined as the difference between the acquisition cost (net of any principal repayments and amortization) and current fair value of the asset less any impairment loss on that investment previously recognized in the consolidated statement of income.

When an AFS debt security is impaired, any subsequent decreases in fair value are recognized in the consolidated statement of income as it is considered further impairment. Any subsequent increases are also recognized in the consolidated statement of income until the asset is no longer considered impaired. When the fair value of the AFS debt security recovers to at least amortized cost it is no longer considered impaired and subsequent changes in fair value are reported in other comprehensive income.

Reversals of impairment losses on equity investments classified as AFS are not reversed through the consolidated statement of income; increases in their fair value after impairment are recognized in other comprehensive income.

Under US GAAP, the determination of impairment and the calculation of the impairment loss are different than under IFRS. For securities classified as available-for-sale or held-to-maturity, the investor is required to determine at each balance sheet date whether the decline in value is other than temporary. For debt securities classified as held-to-maturity, this means that the investor will be unable to collect all amounts due according to the contractual terms existing at acquisition. If the decline in fair value is deemed to be other than temporary, the cost basis of the security is written down to its fair value, which then becomes the new cost basis of the security. The amount of the write-down is treated as a realized loss and reported on the income statement.

For available-for-sale securities (both debt and equity), if the decline in fair value is other than temporary, the cost basis of the security is written down to its fair value. This value becomes the new cost basis, and the amount of the write-down is treated as a realized loss. However, the new cost basis cannot be increased for subsequent increases in fair value. Instead, subsequent increases in fair value (and decreases, if other than temporary) are treated as unrealized gains or losses and included in other comprehensive income.

EXAMPLE 1 Accounting for Investments in Debt Securities

In this example, two fictitious companies are used. On 1 January 2011, Baxter Inc. invested £300,000 in Cartel Co. debt securities (with a 6% stated rate on par value, payable each 31 December). The par value of the securities was £275,000. On 31 December 2011, the fair value of Baxter's investment in Cartel is £350,000.

Assume that the market interest rate in effect when the bonds were purchased was 4.5%.[7] If the investment is designated as held-to-maturity, the investment is reported at amortized cost using the effective interest method. A portion of the amortization table is as follows:

End of Year	Interest Payment (£)	Interest Income (£)	Amortization (£)	Amortized Cost (£)
0				300,000
1*	16,500	13,500	3,000	297,000
2	16,500	13,365	3,135	293,865
3	16,500	13,224	3,276	290,589

* (6% × par value of £275,000 = £16,500) and (4.5% × carrying value of £300,000 = £13,500)

1. How would this investment be reported on the balance sheet, income statement, and statement of shareholders' equity at 31 December 2011, under either IFRS or US GAAP (accounting is essentially the same in this case), if Baxter designated the investment as 1) held-to-maturity, 2) held for trading, 3) available-for-sale, or 4) designated at fair value?
2. How would the gain be recognized if the debt securities were sold on 1 January 2012 for £352,000?
3. How would this investment appear on the balance sheet at 31 December 2012?
4. How would the classification and reporting differ if Baxter had invested in Cartel's equity securities instead of its debt securities?

Solution to 1: The amount received each period (£16,500) is based on the par value (£275,000) and the stated 6% rate. The interest income is calculated using the effective interest method (4.5% market rate times the beginning amortized cost each period). The difference between the amount received and the interest income is the amortization.

The initial fair value (£300,000) is reduced by amortization resulting in a £297,000 amortized cost. This represents the carrying value reported on the balance sheet if

[7] The effective interest rate method applies the market rate in effect when the bonds were purchased to the current amortized cost (book value) of the bonds to obtain interest income for the period. Assume that the debt securities' contractual cash flows are equal to estimated cash flows and that its contractual life is equal to its expected life.

the security is classified as held-to-maturity. If the security is reported at fair value, remeasurement to fair value (£350,000 at the end of Year 1) results in an unrealized gain of £53,000 (£350,000 – £297,000).

	Income Statement	Balance Sheet	Statement of Shareholders' Equity
Held-to-maturity	Interest income £13,500 (£16,500 – £3,000 or £300,000 × 4.5%)	Reported at amortized cost of £297,000	
Held for trading security	Interest income £13,500. £53,000 unrealized gain is recognized through profit	Reported at fair value £350,000	
Designated at fair value	Interest income £13,500. £53,000 unrealized gain is recognized through profit	Reported at fair value £350,000	
Available-for-sale	Interest income of £13,500	Reported at fair value £350,000	£53,000 unrealized gain (net of tax) is reported as other comprehensive income

Solution to 2: If the debt securities were sold on 1 January 2012 for £352,000, the amount of the realized gain would be as follows:

- Held-to-maturity: The selling price less the carrying value results in a gain on income statement of £55,000 (£352,000 – £297,000).
- Assets held for trading and designated fair value through profit or loss: The security is fair valued on the balance sheet at 31 December 2011 at £350,000. The appreciation was previously recognized in profit and loss. The gain on income statement (profit and loss) of £2,000 (£352,000 – £350,000) reflects the difference between the selling price and the recorded fair value.
- Available-for-sale: The security is fair valued on the balance sheet at 31 December 2011 at £350,000. Because it is designated as available-for-sale, the appreciation was reflected in other comprehensive income in the equity section of the balance sheet. Upon sale in 2012, the cumulative unrealized gain or loss is removed from other comprehensive income and the entire gain is recognized in the profit and loss statement £55,000 = (£352,000 – £350,000) + £53,000 (removed from other comprehensive income).

Solution to 3: If the investment was classified as held-to-maturity, the reported amount at amortized cost at the end of Year 2 on the balance sheet would be £293,865. If the investment was classified as either held for trading, available-for-sale, or designated at fair value, it would be measured at its fair value at the end of Year 2.

Solution to 4: If the investment had been in Cartel Co. equity securities rather than debt securities, the analysis would change in the following ways:

- There would not be a held-to-maturity option.
- Dividend income (if any) would replace interest income and there would be no amortization.

4. INVESTMENTS IN FINANCIAL ASSETS: IFRS 9 (AS OF DECEMBER 2012)

Both IASB and FASB have been working on new standards for financial investments. The IASB has issued the first phase of their project dealing with classification and measurement of financial instruments by including relevant chapters in IFRS 9, *Financial Instrument*. This updated standard initially was to take effect 1 January 2013; however, the effective date has been extended to 1 January 2015, with early adoption permitted. Phases two and three of the project will address financial instrument impairments and hedging accounting. When completed, this standard is expected to replace IAS 39. The FASB has yet to issue a pronouncement and their deliberations have yielded tentative decisions. Although requirements are not finalized, it appears there will be significant (but not total) convergence with IFRS. In this section, differences between the current standard (IAS 39) and the new standard (IFRS 9) are discussed. The new standard is based on an approach that considers the contractual characteristic of cash flows as well as the management of the financial assets. The portfolio approach of the current standard (i.e., designation of held for trading, available-for-sale, and held-to-maturity) is no longer appropriate and the terms *available-for-sale* and *held-to-maturity* no longer appear in IFRS 9.

The criteria to use amortized cost are similar to those of the current "management intent to hold-to-maturity" classification. To be measured at amortized cost, financial assets must meet two criteria:

1. A business model test: The financial assets are being held to collect contractual cash flows; and
2. A cash flow characteristic test: The contractual cash flows are solely payments of principal and interest on principal.

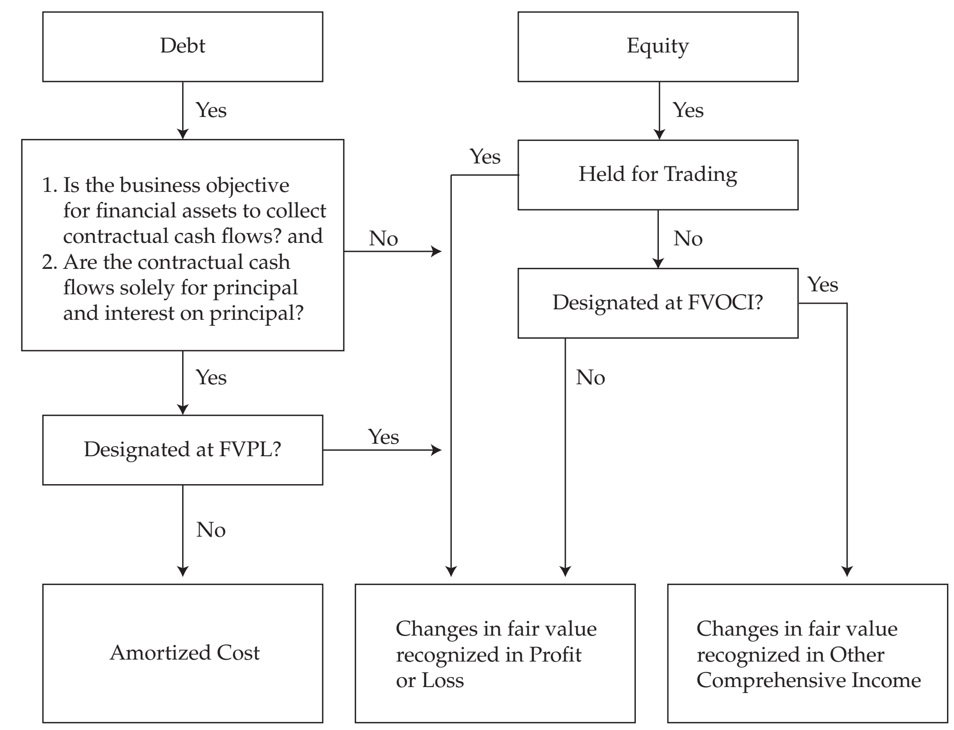
4.1. Classification and Measurement

All financial assets are measured at fair value when initially acquired. Subsequently, financial assets are measured at either fair value or amortized cost. Financial assets that meet the two criteria above are generally measured at amortized cost. However, management may choose the "fair value through profit or loss" option to avoid an accounting mismatch. An "accounting mismatch" refers to an inconsistency resulting from different measurement bases for assets and liabilities. Debt instruments are measured either at amortized cost or fair value through profit or loss.

Equity instruments are measured at fair value through profit or loss (FVPL) or at fair value through other comprehensive income (FVOCI). Equity investments held for trading must be

measured at fair value through profit or loss (FVPL). Other equity investments can be measured at FVPL or FVOCI; however, the choice is irrevocable.

EXHIBIT 4 Financial Assets Classification and Measurement Model, IFRS 9



Financial assets that are derivatives are measured at fair value through profit or loss (except for hedging instruments). Embedded derivatives are not separated from the hybrid contract if the asset falls within the scope of this standard.

Exhibit 5 contains an excerpt from a report by Nortel Inversora S.A. (NYSE: NTL) that describes how financial assets and financial liabilities are determined, measured, and recognized on its financial statements.

EXHIBIT 5 Excerpt from Nortel Inversora S.A. Notes to Unaudited Condensed Consolidated Financial Statements at 30 September 2012

FINANCIAL ASSETS

Upon acquisition, in accordance with IFRS 9, financial assets are subsequently measured at either amortized cost, or fair value, on the basis of both:

(a) the Company's business model for managing the financial assets; and

(b) the contractual cash flow characteristics of the financial asset.

(continued)

EXHIBIT 5 (Continued)

A financial asset shall be measured at amortized cost if both of the following conditions are met:

(a) the asset is held within a business model whose objective is to hold assets in order to collect contractual cash flows, and

(b) the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Additionally, for assets that meet the abovementioned conditions, IFRS provides for an option to designate, at inception, those assets as measured at fair value if doing so eliminates or significantly reduces a measurement or recognition inconsistency (sometimes referred to as an 'accounting mismatch') that would otherwise arise from measuring assets or liabilities or recognizing the gains and losses on them on different bases. A financial asset that is not measured at amortized cost according to the paragraphs above is measured at fair value. Financial liabilities other than derivatives are initially recognized at fair value and subsequently measured at amortized cost. Amortized cost represents the initial amount net of principal repayments made, adjusted by the amortization of any difference between the initial amount and the maturing amount using the effective interest method.

4.2. Reclassification of Investments

Under the new standard, the reclassification of equity instruments is not permitted because the initial classification of FVPL and FVOCI is irrevocable. Reclassification of debt instruments from FVPL to amortized cost (or vice versa) is only permitted if the business model for the financial assets (objective for holding the financial assets) has changed in a way that significantly affects operations. Changes to the business model will require judgment and are expected to be very infrequent.

When reclassification is deemed appropriate, there is no restatement of prior periods at the reclassification date. If the financial asset is reclassified from amortized cost to FVPL, the asset is measured at fair value with gain or loss recognized in profit or loss. If the financial asset is reclassified from FVPL to amortized cost, the fair value at the reclassification date becomes the carrying amount.

In summary, the major changes made by phase one of IFRS 9 are:

- A business model approach to classification of debt instruments.
- Three classifications for financial assets: Fair value through profit or loss (FVPL), fair value through other comprehensive income (FVOCI), and amortized cost.
- Reclassifications of debt instruments are permitted only when the business model changes. The choice to measure equity investments at FVOCI or FVPL is irrevocable.

The convergence between IFRS and US GAAP in the classification and reporting standards for investments in financial assets should make it easier for analysts to evaluate investment returns. Analysts typically evaluate performance separately for operating and investing activities. Analysis of operating performance should exclude items related to investing activities such as interest income, dividends, and realized and unrealized gains and losses. For comparative

purposes, analysts should exclude non-operating assets in the determination of return on net operating assets. IFRS and US GAAP[8] require disclosure of fair value of each class of investment in financial assets. Using market values and adjusting pro forma financial statements for consistency improves assessments of performance ratios across companies.

5. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES

In 2011, the IASB amended IAS 28 to include investments in associates and joint ventures. This revised standard is effective for annual periods beginning on or after 1 January 2013.

Under both IFRS and US GAAP, when a company (investor) holds 20 to 50% of the voting rights of an associate (investee), either directly or indirectly (i.e., through subsidiaries), it is presumed (unless circumstances demonstrate otherwise) that the company has (or can exercise) significant influence, but not control, over the investee's business activities.[9] Conversely, if the investor holds, directly or indirectly, less than 20% of the voting power of the associate (investee), it is presumed that the investor does not have (or cannot exercise) significant influence, unless such influence can be demonstrated. IAS 28 (IFRS) and FASB ASC Topic 323 (US GAAP) apply to most investments in which an investor has significant influence; they also provide guidance on accounting for investments in associates using the equity method.[10] These standards note that significant influence may be evidenced by

- representation on the board of directors;
- participation in the policy-making process;
- material transactions between the investor and the investee;
- interchange of managerial personnel; or
- technological dependency.

The ability to exert significant influence means that the financial and operating performance of the investee is partly influenced by management decisions and operational skills of the investor. The equity method of accounting for the investment reflects the economic reality of this relationship and provides a more objective basis for reporting investment income.

Joint ventures—ventures undertaken and controlled by two or more parties—can be a convenient way to enter foreign markets, conduct specialized activities, and engage in risky projects. They can be organized in a variety of different forms and structures. Some joint ventures are primarily contractual relationships, whereas others have common ownership of assets. They can be partnerships, limited liability companies (corporations), or other legal forms (unincorporated associations, for example). IFRS identify the following common characteristics of joint ventures: 1) A contractual arrangement exists between two or more

[8]IFRS 7 Financial Instruments: Disclosures and FASB ASC Section 320-10-50 [Investments–Debt and Equity Securities–Overall–Disclosure].

[9]The determination of significant influence under IFRS also includes currently exercisable or convertible warrants, call options, or convertible securities that the investor owns, which give it additional voting power or reduce another party's voting power over the financial and operating policies of the investee. Under US GAAP, the determination of an investor's voting stock interest is based only on the voting shares outstanding at the time of the purchase. The existence and effect of securities with potential voting rights are not considered.

[10]IAS 28 Investments in Associates and Joint Ventures and FASB ASC Topic 323 [Investments–Equity Method and Joint Ventures].

venturers, and 2) the contractual arrangement establishes joint control. Both IFRS and US GAAP require the equity method of accounting for joint ventures.[11]

Only under rare circumstances will joint ventures be allowed to use proportionate consolidation under IFRS and US GAAP. On the venturer's financial statements, proportionate consolidation requires the venturer's share of the assets, liabilities, income, and expenses of the joint venture to be combined or shown on a line-by-line basis with similar items under its sole control. In contrast, the equity method results in a single line item (equity in income of the joint venture) on the income statement and a single line item (investment in joint venture) on the balance sheet.

Because the single line item on the income statement under the equity method reflects the net effect of the sales and expenses of the joint venture, the total income recognized is identical under the two methods. In addition, because the single line item on the balance sheet item (investment in joint venture) under the equity method reflects the investors' share of the net assets of the joint venture, the total net assets of the investor is identical under both methods. There can be significant differences, however, in ratio analysis between the two methods because of the differential effects on values for total assets, liabilities, sales, expenses, etc.

5.1. Equity Method of Accounting: Basic Principles

Under the equity method of accounting, the equity investment is initially recorded on the investor's balance sheet at cost. In subsequent periods, the carrying amount of the investment is adjusted to recognize the investor's proportionate share of the investee's earnings or losses, and these earnings or losses are reported in income. Dividends or other distributions received from the investee are treated as a return of capital and reduce the carrying amount of the investment and are not reported in the investor's profit or loss. The equity method is often referred to as "one-line consolidation" because the investor's proportionate ownership interest in the assets and liabilities of the investee is disclosed as a single line item (net assets) on its balance sheet, and the investor's share of the revenues and expenses of the investee is disclosed as a single line item on its income statement. (Contrast these disclosures with the disclosures on consolidated statements in Section 6.) Equity method investments are classified as non-current assets on the balance sheet. The investor's share of the profit or loss of equity method investments, and the carrying amount of those investments, must be separately disclosed on the income statement and balance sheet.

EXAMPLE 2 Equity Method: Balance in Investment Account

Branch (a fictitious company) purchases a 20% interest in Williams (a fictitious company) for €200,000 on 1 January 2010. Williams reports income and dividends as follows:

	Income	Dividends
2010	€200,000	€50,000
2011	300,000	100,000
2012	400,000	200,000
	€900,000	€350,000

[11] IFRS 11, Joint Arrangements classifies joint arrangements as either a joint operation or a joint venture. Joint ventures are arrangements wherein parties with joint control have rights to the net assets of the arrangement. Joint ventures are required to use equity method under IAS 28.

Calculate the investment in Williams that appears on Branch's balance sheet as of the end of 2012.

Solution: Investment in Williams at 31 December 2012:

Initial cost	€200,000	
Equity income 2010	€40,000	= (20% of €200,000 Income)
Dividends received 2010	(€10,000)	= (20% of €50,000 Dividends)
Equity income 2011	€60,000	= (20% of €300,000 Income)
Dividends received 2011	(€20,000)	= (20% of €100,000 Dividends)
Equity income 2012	€80,000	= (20% of €400,000 Income)
Dividends received 2012	(€40,000)	= (20% of €200,000 Dividends)
Balance-Equity Investment	€310,000	= [€200,000 + 20% × (€900,000 – €350,000)]

This simple example implicitly assumes that the purchase price equals the purchased equity (20%) in the book value of Williams' net assets. Sections 5.2 and 5.3 will cover the more common case in which the purchase price does not equal the proportionate share of the book value of the investee's net assets.

Using the equity method, the investor includes its share of the investee's profit and losses on the income statement. The equity investment is carried at cost, plus its share of post-acquisition income, less dividends received. The recorded investment value can decline as a result of investee losses or a permanent decline in the investee's market value (see Section 5.5 for treatment of impairments). If the investment value is reduced to zero, the investor usually discontinues the equity method and does not record further losses. If the investee subsequently reports profits, the equity method is resumed after the investor's share of the profits equals the share of losses not recognized during the suspension of the equity method. Exhibit 6 contains excerpts from Deutsche Bank's 2011 annual report that describes its accounting treatment for investments in associates.

EXHIBIT 6 Excerpt from Deutsche Bank 2011 Annual Report

[From Note 01] ASSOCIATES AND JOINTLY CONTROLLED ENTITIES

An associate is an entity in which the Group has significant influence, but not a controlling interest, over the operating and financial management policy decisions of the entity. Significant influence is generally presumed when the Group holds between 20% and 50% of the voting rights. The existence and effect of potential voting rights that are currently exercisable or convertible are considered in assessing whether the Group has significant influence. Among the other factors that are considered in determining whether the Group has significant influence are representation on the board of directors (supervisory board in the case of German stock corporations) and material intercompany transactions. The existence of these factors could require the application of the equity method of accounting for a particular investment even though the Group's investment is for less than 20% of the voting stock.

(continued)

EXHIBIT 6 (Continued)

A jointly controlled entity exists when the Group has a contractual arrangement with one or more parties to undertake activities through entities which are subject to joint control.

[From Note 17] EQUITY METHOD INVESTMENTS

Investments in associates and jointly controlled entities are accounted for using the equity method of accounting. As of December 31, 2011, the following investees were significant, representing 75% of the carrying value of equity method investments.

Investment[1]	Ownership Percentage
Actavis Equity S.a r.l., Munscach[2]	0.00
BrisConnections Investment Trust, Kedron	35.59
Huamao Property Holdings, Ltd. George Town[3]	0.00
Hua Xia Bank Company Limited, Beijing	19.99
Rongde Asset Management Company Limited, Beijing	40.70
Station Holdco LLC, Wilmington	25.00

[1] All significant equity method investments are investments in associates.
[2] Equity method accounting based on subordinated financial arrangement.
[3] The Group has significant influence over the investee through board seats or other measures.

Summarized aggregated financial information of significant equity method investees follows:

In € m	Dec 31, 2011	Dec 31, 2010
Total assets	147,793	131,002
Total liabilities	137,862	128,745
Revenues	5,478	4,988
Net income/loss	696	(709)

The following are the components of the net income (loss) from all equity method investments:

In € m	2011	2010
Net income (loss) from equity method investments:		
Pro rata share of investees' net income (loss)	222	457
Net gains (losses) on disposal of equity method investments	29	14
Impairments	(515)	(2,475)
Total net income (loss) from equity method investments	**(264)**	**(2,004)**

2011 included an impairment of €457 million related to Actavis Group, a generic pharmaceutical group.

In 2010 a charge of approximately €2.3 billion attributable to the equity method investment in Deutsche Postbank AG prior to consolidation was included. On December 3, 2010, Deutsche gained a controlling majority in Postbank shares and commenced consolidation of the Postbank Group as of that date. As a consequence the Group ceased equity method

EXHIBIT 6 (Continued)

accounting for its investment in Postbank. Further detail is included in Note 4 "Acquisitions and Dispositions."

There was no unrecognized share of losses of an investee, neither for the period, or cumulatively.

Equity method investments for which there were published price quotations had a carrying value of €2.2 billion and a fair value of €2.1 billion as of December 31, 2011 and a carrying value of €280 million and a fair value of €561 million as of December 31, 2010. In 2011 Hua Xia Bank is included for the first time.

It is interesting to note the explanations for the treatment as associates when the ownership percentage is less than 20% or is greater than 50%. The equity method reflects the strength of the relationship between the investor and its associates. In the instances where the percentage ownership is less than 20%, Deutsche Bank uses the equity method because it has significant influence over these associates' operating and financial policies either through its representation on their boards of directors and/or other measures. The equity method provides a more objective basis for reporting investment income than the accounting treatment for investments in financial assets, because the investor can potentially influence the timing of dividend distributions.

5.2. Investment Costs That Exceed the Book Value of the Investee

The cost (purchase price) to acquire shares of an investee is often greater than the book value of those shares. This is because, among other things, many of the investee's assets and liabilities reflect historical cost rather than fair values. IFRS allow a company to measure its property, plant, and equipment using either historical cost or fair value (less accumulated depreciation).[12] US GAAP, however, require the use of historical cost (less accumulated depreciation) to measure property, plant, and equipment.[13]

When the cost of the investment exceeds the investor's proportionate share of the book value of the investee's (associate's) net identifiable tangible and intangible assets (e.g., inventory, property, plant and equipment, trademarks, patents), the difference is first allocated to specific assets (or categories of assets) using fair values. These differences are then amortized to the investor's proportionate share of the investee's profit or loss over the economic lives of the assets whose fair values exceeded book values. It should be noted that the allocation is not recorded formally; what appears initially in the investment account on the balance sheet of the investor is the cost. Over time, as the differences are amortized, the balance in the investment account will come closer to representing the ownership percentage of the book value of the net assets of the associate.

[12] After initial recognition, an entity can choose to use either a cost model or a revaluation model to measure its property, plant, and equipment. Under the revaluation model, property, plant, and equipment whose fair value can be measured reliably can be carried at a revalued amount. This revalued amount is its fair value at the date of the revaluation less any subsequent accumulated depreciation.

[13] Successful companies should be able to generate, through the productive use of assets, economic value in excess of the resale value of the assets themselves. Therefore, investors may be willing to pay a premium in anticipation of future benefits. These benefits could be a result of general market conditions, the investor's ability to exert significant influence on the investee, or other synergies.

IFRS and US GAAP both treat the difference between the cost of the acquisition and investor's share of the fair value of the net identifiable assets as goodwill. Therefore, any remaining difference between the acquisition cost and the fair value of net identifiable assets that cannot be allocated to specific assets is treated as goodwill and is not amortized. Instead, it is reviewed for impairment on a regular basis, and written down for any identified impairment. Goodwill, however, is included in the carrying amount of the investment, because investment is reported as a single line item on the investor's balance sheet.[14]

EXAMPLE 3 Equity Method Investment in Excess of Book Value

Assume that the hypothetical Blake Co. acquires 30% of the outstanding shares of the hypothetical Brown Co. At the acquisition date, book values and fair values of Brown's recorded assets and liabilities are as follows:

	Book Value	Fair Value
Current assets	€10,000	€10,000
Plant and equipment	190,000	220,000
Land	120,000	140,000
	€320,000	€370,000
Liabilities	100,000	100,000
Net assets	€220,000	€270,000

Blake Co. believes the value of Brown Co. is higher than the fair value of its identifiable net assets. They offer €100,000 for a 30% interest in Brown, which represents a 34,000 excess purchase price. The difference between the fair value and book value of the net identifiable assets is €50,000 (€370,000 – 320,000). Based on Blake Co.'s 30% ownership, €15,000 of the excess purchase price is attributable to the net identifiable assets, and the residual is attributable to goodwill. Calculate goodwill.

Solution:

Purchase price	€100,000
30% of book value of Brown (30% × €220,000)	66,000
Excess purchase price	€34,000
Attributable to net assets	
Plant and equipment (30% × €30,000)	€9,000
Land (30% × €20,000)	6,000
Goodwill (residual)	19,000
	€34,000

[14] If the investor's share of the fair value of the associate's net assets (identifiable assets, liabilities, and contingent liabilities) is greater than the cost of the investment, the difference is excluded from the carrying amount of the investment and instead included as income in the determination of the investor's share of the associate's profit or loss in the period in which the investment is acquired.

As illustrated above, goodwill is the residual excess not allocated to identifiable assets or liabilities. The investment is carried as a non-current asset on Blake's book as a single line item (Investment in Brown, €100,000) on the acquisition date.

5.3. Amortization of Excess Purchase Price

The excess purchase price allocated to the assets and liabilities is accounted for in a manner that is consistent with the accounting treatment for the specific asset or liability to which it is assigned. Amounts allocated to assets and liabilities that are expensed (such as inventory) or periodically depreciated or amortized (plant, property, and intangible assets) must be treated in a similar manner. These allocated amounts are not reflected on the financial statements of the investee (associate), and the investee's income statement will not reflect the necessary periodic adjustments. Therefore, the investor must directly record these adjustment effects by reducing the carrying amount of the investment on its balance sheet and by reducing the investee's profit recognized on its income statement. Amounts allocated to assets or liabilities that are not systematically amortized (e.g., land) will continue to be reported at their fair value as of the date the investment was acquired. As stated above, goodwill is included in the carrying amount of the investment instead of being separately recognized. It is not amortized because it is considered to have an indefinite life.

Using the example above and assuming a 10-year useful life for plant, property, and equipment and using straight-line depreciation, the annual amortization is as follows:

Account	Excess Price (€)	Useful Life	Amortization/Year (€)
Plant and equipment	9,000	10 years	900
Land	6,000	Indefinite	0
Goodwill	19,000	Indefinite	0

Annual amortization would reduce the investor's share of the investee's reported income (equity income) and the balance in the investment account by €900 for each year over the 10-year period.

EXAMPLE 4 Equity Method Investments with Goodwill

On 1 January 2011, Parker Company acquired 30% of Prince Inc. common shares for the cash price of €500,000 (both companies are fictitious). It is determined that Parker has the ability to exert significant influence on Prince's financial and operating decisions. The following information concerning Prince's assets and liabilities on 1 January 2011 is provided:

Prince, Inc.			
	Book Value	Fair Value	Difference
Current assets	€100,000	€100,000	€0
Plant and equipment	1,900,000	2,200,000	300,000

(continued)

(Continued)

Prince, Inc.

	Book Value	Fair Value	Difference
	€2,000,000	€2,300,000	€300,000
Liabilities	800,000	800,000	0
Net assets	€1,200,000	€1,500,000	€300,000

The plant and equipment are depreciated on a straight-line basis and have 10 years of remaining life. Prince reports net income for 2011 of €100,000 and pays dividends of €50,000. Calculate the following:

1. Goodwill included in the purchase price.
2. Investment in associate (Prince) at the end of 2011.

Solution to 1:

Purchase price	€500,000
Acquired equity in book value of Prince's net assets (30% × €1,200,000)	360,000
Excess purchase price	€140,000
Attributable to plant and equipment (30% × €300,000)	(90,000)
Goodwill (residual)	€50,000

Solution to 2: Investment in associate

Purchase price	€500,000
Parker's share of Prince's net income (30% × €100,000)	30,000
Dividends received (30% of €50,000)	(15,000)
Amortization of excess purchase price attributable to plant and equipment (€90,000 ÷ 10 years)	(9,000)
31 December 2011 balance in investment in Prince	€506,000

An alternate way to look at the balance in the investment account is that it reflects the basic valuation principle of the equity method. At any point in time, the investment account balance equals the investor's (Parker) proportionate share of the net equity (net assets at book value) of the investee (Prince) plus the unamortized balance of the original excess purchase price. Applying this principle to this example:

2011 Beginning net assets =	€1,200,000
Plus: Net income	100,000
Less: Dividends	(50,000)
2011 Ending net assets	€1,250,000
Parker's proportionate share of Prince's recorded net assets (30% × €1,250,000)	€375,000
Unamortized excess purchase price (€140,000 – 9,000)	131,000
Investment in Prince	€506,000

Note that the unamortized excess purchase price is a cost incurred by Parker, not Prince. Therefore, the total amount is included in the investment account balance.

5.4. Fair Value Option

Both IFRS and US GAAP give the investor the option to account for their equity method investment at fair value.[15] Under US GAAP, this option is available to all entities; however, under IFRS, its use is restricted to venture capital organizations, mutual funds, unit trusts, and similar entities, including investment-linked insurance funds.

Both standards require that the election to use the fair value option occur at the time of initial recognition and is irrevocable. Subsequent to initial recognition, the investment is reported at fair value with unrealized gains and losses arising from changes in fair value as well as any interest and dividends received included in the investor's profit or loss (income). Under the fair value method, the investment account on the investor's balance sheet does not reflect the investor's proportionate share of the investee's profit or loss, dividends, or other distributions. In addition, the excess of cost over the fair value of the investee's identifiable net assets is not amortized, nor is goodwill created.

5.5. Impairment

Both IFRS and US GAAP require periodic reviews of equity method investments for impairment. If the fair value of the investment is below its carrying value and this decline is deemed to be other than temporary, an impairment loss must be recognized.

Under IFRS, there must be objective evidence of impairment as a result of one or more (loss) events that occurred after the initial recognition of the investment, and that loss event has an impact on the investment's future cash flows, which can be reliably estimated. Because goodwill is included in the carrying amount of the investment and is not separately recognized, it is not separately tested for impairment. Instead, the entire carrying amount of the investment is tested for impairment by comparing its recoverable amount with its carrying amount.[16] The impairment loss is recognized on the income statement, and the carrying amount of the investment on the balance sheet is either reduced directly or through the use of an allowance account.

US GAAP takes a different approach. If the fair value of the investment declines below its carrying value *and* the decline is determined to be permanent, US GAAP[17] requires an impairment loss to be recognized on the income statement and the carrying value of the investment on the balance sheet is reduced to its fair value.

Both IFRS and US GAAP prohibit the reversal of impairment losses even if the fair value later increases.

Section 6.4.4 of this chapter discusses impairment tests for the goodwill attributed to a controlling investment (consolidated subsidiary). Note the distinction between the disaggregated goodwill impairment test for consolidated statements and the impairment test of the total fair value of for equity method investments.

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[15] IAS 39 Financial Instruments: Recognition and Measurement. FASB ASC Section 825-10-25 [Financial Instruments–Overall–Recognition].

[16] Recoverable amount is the higher of "value in use" or net selling price. Value in use is equal to the present value of estimated future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life. Net selling price is equal to fair value less cost to sell.

[17] FASB ASC Section 323-10-35 [Investments–Equity Method and Joint Ventures–Overall–Subsequent Measurement].

5.6. Transactions with Associates

Because an investor company can influence the terms and timing of transactions with its associates, profits from such transactions cannot be realized until confirmed through use or sale to third parties. Accordingly, the investor company's share of any unrealized profit must be deferred by reducing the amount recorded under the equity method. In the subsequent period(s) when this deferred profit is considered confirmed, it is added to the equity income. At that time, the equity income is again based on the recorded values in the associate's accounts.

Transactions between the two affiliates may be **upstream** (associate to investor) or **downstream** (investor to associate). In an upstream sale, the profit on the intercompany transaction is recorded on the associate's income (profit or loss) statement. The investor's share of the unrealized profit is thus included in equity income on the investor's income statement. In a downstream sale, the profit is recorded on the investor's income statement. Both IFRS and US GAAP require that the unearned profits be eliminated to the extent of the investor's interest in the associate.[18] The result is an adjustment to equity income on the investor's income statement.

EXAMPLE 5 Equity Method with Sale of Inventory: Upstream Sale

On 1 January 2011, Wicker Company acquired a 25% interest in Foxworth Company (both companies are fictitious) for €1,000,000 and used the equity method to account for its investment. The book value of Foxworth's net assets on that date was €3,800,000. An analysis of fair values revealed that all fair values of assets and liabilities were equal to book values except for a building. The building was undervalued by €40,000 and has a 20-year remaining life. The company used straight-line depreciation for the building. Foxworth paid €3,200 in dividends in 2011. During 2011, Foxworth reported net income of €20,000. During the year, Foxworth sold inventory to Wicker. At the end of the year, there was €8,000 profit from the upstream sale in Foxworth's net income. The inventory sold to Wicker by Foxworth had not been sold to an outside party.

1. Calculate the equity income to be reported as a line item on Wicker's 2011 income statement.
2. Calculate the balance in the investment in Foxworth to be reported on the 31 December 2011 balance sheet.

Purchase price	€1,000,000
Acquired equity in book value of Foxworth's net assets (25% × €3,800,000)	950,000
Excess purchase price	€50,000
Attributable to:	
Building (25% × €40,000)	€10,000
Goodwill (residual)	40,000
	€50,000

[18] IAS 28 Investments in Associates and Joint Ventures; FASB ASC Topic 323 [Investments–Equity Method and Joint Ventures].

Solution to 1: Equity Income

Wicker's share of Foxworth's reported income (25% × €20,000)	€5,000
Amortization of excess purchase price attributable to building, (€10,000 ÷ 20)	(500)
Unrealized profit (25% × €8,000)	(2,000)
Equity income 2011	€2,500

Solution to 2: Investment in Foxworth:

Purchase price	€1,000,000
Equity income 2011	2,500
Dividends received (25% × €3,200)	(800)
Investment in Foxworth, 31 Dec 2011	€1,001,700
Composition of investment account:	
Wicker's proportionate share of Foxworth's net equity (net assets at book value) [25% × (€3,800,000 + (20,000 – 8,000) – 3,200)]	€952,200
Unamortized excess purchase price (€50,000 – 500)	49,500
	€1,001,700

EXAMPLE 6 Equity Method with Sale of Inventory: Downstream Sale

Jones Company owns 25% of Jason Company (both fictitious companies) and appropriately applies the equity method of accounting. Amortization of excess purchase price, related to undervalued assets at the time of the investment, is €8,000 per year. During 2011 Jones sold €96,000 of inventory to Jason for €160,000. Jason resold €120,000 of this inventory during 2011. The remainder was sold in 2012. Jason reports income from its operations of €800,000 in 2011 and €820,000 in 2012.

1. Calculate the equity income to be reported as a line item on Jones's 2011 income statement.
2. Calculate the equity income to be reported as a line item on Jones's 2012 income statement.

Solution to 1: Equity Income 2011

Jones's share of Jason's reported income (25% × €800,000)	€200,000
Amortization of excess purchase price	(8,000)
Unrealized profit (25% × €16,000)	(4,000)
Equity income 2011	€188,000

Jones's profit on the sale to Jason = €160,000 – 96,000 = €64,000

Jason sells 75% (€120,000/160,000) of the goods purchased from Jones; 25% is unsold.

Total unrealized profit = €64,000 × 25% = €16,000

Jones's share of the unrealized profit = €16,000 × 25% = €4,000

Alternative approach:

Jones's profit margin on sale to Jason: 40% (€64,000/€160,000)

Jason's inventory of Jones's goods at 31 Dec 2011: €40,000

Jones's profit margin on this was 40% × 40,000 = €16,000

Jones's share of profit on unsold goods = €16,000 × 25% = €4,000

Solution to 2: Equity Income 2012

Jones's share of Jason's reported income (25% × €820,000)	€205,000
Amortization of excess purchase price	(8,000)
Realized profit (25% × €16,000)	4,000
Equity income 2012	€201,000

Jason sells the remaining 25% of the goods purchased from Jones.

5.7. Disclosure

The notes to the financial statements are an integral part of the information necessary for investors. Both IFRS and US GAAP require disclosure about the assets, liabilities, and results of equity method investments. For example, in their 2011 annual report, Deutsche Bank reports that:

> Investments in associates and jointly controlled entities are accounted for under the equity method of accounting. The Group's share of the results of associates and jointly controlled entities is adjusted to conform to the accounting policies of the Group and are reported in the consolidated statement of income as net income (loss) from equity method investments. The Group's share in the associate's profit and losses resulting from intercompany sales is eliminated on consolidation.
>
> Under the equity method of accounting, the Group's investments in associates and jointly controlled entities are initially recorded at cost including any directly related transaction costs incurred in acquiring the associate, and subsequently increased (or decreased) to reflect both the Group's pro-rata share of the post- acquisition net income (or loss) of the associate or jointly controlled entity and other movements included directly in the equity of the associate or jointly controlled entity. Goodwill arising on the acquisition of an associate or a jointly controlled entity is included in the carrying value of the investment (net of any accumulated impairment loss). As goodwill is not reported separately it is not specifically tested for impairment. Rather, the entire equity method investment is tested for impairment.

For practical reasons, associated companies' results are sometimes included in the investor's accounts with a certain time lag, normally not more than one quarter. Dividends from associated companies are not included in investor income because it would be a double counting. Applying the equity method recognizes the investor's full share of the associate's income. Dividends received involve exchanging a portion of equity interest for cash. In the consolidated balance sheet, the book value of shareholdings in associated companies is increased by the investor's share of the company's net income and reduced by amortization of surplus values and the amount of dividends received.

5.8. Issues for Analysts

Equity method accounting presents several challenges for analysis. First, analysts should question whether the equity method is appropriate. For example, an investor holding 19% of an associate may in fact exert significant influence but may attempt to avoid using the equity method to avoid reporting associate losses. On the other hand, an investor holding 25% of an associate may be unable to exert significant influence and may be unable to access cash flows, and yet may prefer the equity method to capture associate income.

Second, the investment account represents the investor's percentage ownership in the net assets of the investee company through "one-line consolidation." There can be significant assets and liabilities of the investee that are not reflected on the investor's balance sheet, which will significantly affect debt ratios. Net margin ratios could be overstated because income for the associate is included in investor net income but is not specifically included in sales. An investor may actually control the investee with less than 50% ownership but prefer the financial results using the equity method. Careful analysis can reveal financial performance driven by accounting structure.

Finally, the analyst must consider the quality of the equity method earnings. The equity method assumes that a percentage of each dollar earned by the investee company is earned by the investor (i.e., a fraction of the dollar equal to the fraction of the company owned), even if cash is not received. Analysts should, therefore, consider potential restrictions on dividend cash flows (the statement of cash flows).

6. BUSINESS COMBINATIONS

Business combinations (controlling interest investments) involve the combination of two or more entities into a larger economic entity. Business combinations are typically motivated by expectations of added value through synergies, including potential for increased revenues, elimination of duplicate costs, tax advantages, coordination of the production process, and efficiency gains in the management of assets.[19]

Under IFRS, there is no distinction among business combinations based on the resulting structure of the larger economic entity. For all business combinations, one of the parties to the business combination is identified as the acquirer. Under US GAAP, an acquirer is identified, but the business combinations are categorized as merger, acquisition, or consolidation based on the legal structure after the combination. Each of these types of business combinations has

[19]IAS 3, *Business Combinations*, revised in 2008 and FASB ASC Topic 805 [*Business Combinations*] provide guidance on business combinations.

distinctive characteristics that are described in Exhibit 7. Features of variable interest and special purpose entities are also described in Exhibit 7 because these are additional instances where control is exerted by another entity. Under both IFRS and US GAAP, business combinations are accounted for using the *acquisition method*.

EXHIBIT 7 Types of Business Combinations

Merger

The distinctive feature of a merger is that only one of the entities remains in existence. One hundred percent of the target is absorbed into the acquiring company. Company A may issue common stock, preferred stock, bonds, or pay cash to acquire the net assets. The net assets of Company B are transferred to Company A. Company B ceases to exist and Company A is the only entity that remains.

Company A + Company B = Company A

Acquisition

The distinctive feature of an acquisition is the legal continuity of the entities. Each entity continues operations but is connected through a parent–subsidiary relationship. Each entity is an individual that maintains separate financial records, but the parent (the acquirer) provides consolidated financial statements in each reporting period. Unlike a merger or consolidation, the acquiring company does not need to acquire 100% of the target. In fact, in some cases, it may acquire less than 50% and still exert control. If the acquiring company acquires less than 100%, non-controlling (minority) shareholders' interests are reported on the consolidated financial statements.

Company A + Company B = (Company A + Company B)

Consolidation

The distinctive feature of a consolidation is that a new legal entity is formed and none of the predecessor entities remain in existence. A new entity is created to take over the net assets of Company A and Company B. Company A and Company B cease to exist and Company C is the only entity that remains.

Company A + Company B = Company C

Special Purpose or Variable Interest Entities

The distinctive feature of a special purpose (variable interest) entity is that control is not usually based on voting control, because equity investors do not have a sufficient amount at risk for the entity to finance its activities without additional subordinated financial support. Furthermore, the equity investors may lack a controlling financial interest. The sponsoring company usually creates a special purpose entity (SPE) for a narrowly defined purpose. IFRS require consolidation if the substance of the relationship indicates control by the sponsor.

In May 2011, the IASB issued IFRS 10, *Consolidated Financial Statements*, which replaces IAS 27, *Consolidated and Separate Financial Statements* and SIC-12, *Consolidation-Special Purpose Entities*. The standard applies to annual periods beginning on or after 1 January 2013. The underlying framework is based on a new definition of control and achieves consistency in the consolidation criteria for all entities. The definition of control extends to a broad range of activities. The control concept requires judgment and evaluation of relevant factors to determine whether control exists. Control is present when 1) the investor has the ability to exert influence on the financial and operating policy of the entity; and 2) is exposed, or has rights, to variable returns from its involvement with the investee. Consolidation criteria apply to all entities that meet the definition of control.

US GAAP uses a two-component consolidation model that includes both a variable interest component and a voting interest (control) component. Under the variable interest component, US GAAP[20] requires the primary beneficiary of a variable interest entity (VIE) to consolidate the VIE regardless of its voting interests (if any) in the VIE or its decision-making authority. The primary beneficiary is defined as the party that will absorb the majority of the VIE's expected losses, receive the majority of the VIE's expected residual returns, or both.

In the past, business combinations could be accounted for either as a purchase transaction or as a uniting (or pooling) of interests. The accounting standards that currently govern business combinations are reflective of the joint project between IASB and FASB to converge on a single set of high-quality accounting standards. The first phase of the project prohibited the use of the pooling of interests (uniting of interests) method, required the use of the purchase method, and prohibited the amortization of goodwill.

Since that time, the FASB and IASB have further reduced differences between IFRS and US GAAP and ensured that the standards would be applied consistently. IFRS and US GAAP now require that all business combinations be accounted for in a similar manner. The *acquisition method* developed by the IASB and the FASB replaces the purchase method, and substantially reduces any differences between IFRS and US GAAP for business combinations.[21]

These standards are expected to improve the relevance, representational faithfulness, transparency, and comparability of information provided in financial statements about business combinations and their effects on the reporting entity. This reporting consistency should make it easier for analysts to evaluate how the operations of the acquirer and the target business (the acquiree) will combine and the effect of this transaction on the combined entity's subsequent financial performance.

6.1. Pooling of Interests and Purchase Methods

Prior to June 2001, under US GAAP, combining companies that met twelve strict criteria could use the **pooling of interests method** for the business combination. Companies not meeting these criteria used the purchase method. In a pooling of interests, the combined companies were portrayed as if they had always operated as a single economic entity. Consequently, assets and liabilities were recorded at book values, and the pre-combination retained earnings were included in the balance sheet of the combined entity. This treatment was consistent with

[20] FASB ASC Topic 810 [Consolidation].

[21] IFRS 10, Consolidated Financial Statements; IFRS 3, Business Combinations; FASB ASC Topic 805 [Business Combinations]; FASB ASC Topic 810 [Consolidations].

the view that there was a continuity of ownership and no new basis of accounting existed. Similar rules applied under IFRS, which used the term uniting of interests in reference to the same concept. IFRS permitted use of the **uniting of interests method** until March 2004. Currently, neither IFRS nor US GAAP allows use of the pooling/uniting of interests method.

In contrast, a combination accounted for as a purchase was viewed as a purchase of net assets (tangible and intangible assets minus liabilities), and those net assets were recorded at fair values. An increase in the value of depreciable assets resulted in additional depreciation expense. As a result, for the same level of revenue, the purchase method resulted in lower reported income than the pooling of interests method. For this reason, managers had a tendency to favor the pooling of interests method.

Although the pooling of interests method is no longer allowed, companies may continue to use pooling of interests accounting for business combinations that occurred prior to its disallowance as a method. We describe the method because pooling of interests accounting was commonly used and will have an impact on financial statements for the foreseeable future. Because of the ongoing effect, an understanding of pooling of interests will facilitate the analyst's assessment of the performance and financial position of the company.

6.2. Acquisition Method

IFRS and US GAAP currently require the acquisition method of accounting for business combinations, although both have a few specific exemptions.

Fair value of the consideration given by the acquiring company is the appropriate measurement for acquisitions and includes the acquisition-date fair value of contingent consideration. Direct costs of the business combination, such as professional and legal fees, valuation experts, and consultants, are expensed as incurred.

The acquisition method (which replaces the purchase method) addresses three major accounting issues that often arise in business combinations and the preparation of consolidated (combined) financial statements:

- The recognition and measurement of the assets and liabilities of the combined entity;
- The initial recognition and subsequent accounting for goodwill; and
- The recognition and measurement of any non-controlling interest.

6.2.1. Recognition and Measurement of Identifiable Assets and Liabilities

IFRS and US GAAP require that the acquirer measure the identifiable tangible and intangible assets and liabilities of the acquiree (acquired entity) at fair value as of the date of the acquisition. The acquirer must also recognize any assets and liabilities that the acquiree had not previously recognized as assets and liabilities in its financial statements. For example, identifiable intangible assets (for example, brand names, patents, technology) that the acquiree developed internally would be recognized by the acquirer.

6.2.2. Recognition and Measurement of Contingent Liabilities[22]

On the acquisition date, the acquirer must recognize any contingent liability assumed in the acquisition if 1) it is a present obligation that arises from past events, and 2) it can be measured

[22] A contingent liability must be recognized even if it is not probable that an outflow of resources or economic benefits will be used to settle the obligation.

reliably. Costs that the acquirer expects (but is not obliged) to incur, however, are not recognized as liabilities as of the acquisition date. Instead, the acquirer recognizes these costs in future periods as they are incurred. For example, expected restructuring costs arising from exiting an acquiree's business will be recognized in the period in which they are incurred.

There is a difference between IFRS and US GAAP in their inclusion of contingent liabilities. IFRS include contingent liabilities if their fair values can be reliably measured. US GAAP includes only those contingent liabilities that are probable and can be reasonably estimated.

6.2.3. Recognition and Measurement of Indemnification Assets

On the acquisition date, the acquirer must recognize an indemnification asset if the seller (acquiree) contractually indemnifies the acquirer for the outcome of a contingency or an uncertainty related to all or part of a specific asset or liability of the acquiree. The seller may also indemnify the acquirer against losses above a specified amount on a liability arising from a particular contingency. For example, the seller guarantees that an acquired contingent liability will not exceed a specified amount. In this situation, the acquirer recognizes an indemnification asset at the same time it recognizes the indemnified liability, with both measured on the same basis. If the indemnification relates to an asset or a liability that is recognized at the acquisition date and measured at its acquisition date fair value, the acquirer will also recognize the indemnification asset at the acquisition date at its acquisition date fair value.

6.2.4. Recognition and Measurement of Financial Assets and Liabilities

At the acquisition date, identifiable assets and liabilities acquired are classified in accordance with IASB (or US GAAP) standards. The acquirer reclassifies the financial assets and liabilities of the acquiree based on the contractual terms, economic conditions, and the acquirer's operating or accounting policies, as they exist at the acquisition date.

6.2.5. Recognition and Measurement of Goodwill

IFRS allows two options for recognizing goodwill at the transaction date. The goodwill option is on a transaction-by-transaction basis. "Partial goodwill" is measured as the fair value of the acquisition (fair value of consideration given) less the acquirer's share of the fair value of all identifiable tangible and intangible assets, liabilities, and contingent liabilities acquired. "Full goodwill" is measured as the fair value of the entity as a whole less the fair value of all identifiable tangible and intangible assets, liabilities, and contingent liabilities. US GAAP views the entity as a whole and requires full goodwill.[23] Because goodwill is considered to have an indefinite life, it is not amortized. Instead, it is tested for impairment annually or more frequently if events or circumstances indicate that goodwill might be impaired.

EXAMPLE 7 Recognition and Measurement of Goodwill

Acquirer contributes $800,000 for an 80% interest in Acquiree. The identifiable net assets have a fair value of $900,000. The fair value of the entire entity is determined to be $1 million.

[23] FASB ASC Topic 805 [Business Combinations].

	IFRS Partial Goodwill
Fair value of consideration	$800,000
80% of Fair value of identifiable net assets	720,000
Goodwill recognized	$80,000

	IFRS and US GAAP Full Goodwill
Fair value of entity	$1,000,000
Fair value of identifiable assets	900,000
Goodwill recognized	$100,000

6.2.6. Recognition and Measurement when Acquisition Price Is Less than Fair Value

Occasionally, a company faces adverse circumstances such that its market value drops below the fair value of its net assets. In an acquisition of such a company, where the purchase price is less than the fair value of the target's (acquiree's) net assets, the acquisition is considered to be a bargain acquisition. IFRS and US GAAP require the difference between the fair value of the acquired net assets and the purchase price to be recognized immediately as a gain in profit or loss. Any contingent consideration must be measured and recognized at fair value at the time of the business combination. Any subsequent changes in value of the contingent consideration are recognized in profit or loss.

6.3. Impact of the Acquisition Method on Financial Statements, Post-Acquisition

Example 8 shows the consolidated balance sheet of an acquiring company after the acquisition.

EXAMPLE 8 Acquisition Method Post-Combination Balance Sheet

Franklin Company, headquartered in France, acquired 100% of the outstanding shares of Jefferson, Inc. by issuing 1,000,000 shares of its €1 par common stock (€15 market value). Immediately before the transaction, the two companies compiled the following information:

	Franklin Book Value (000)	Jefferson Book Value (000)	Jefferson Fair Value (000)
Cash and receivables	€10,000	€300	€300
Inventory	12,000	1,700	3,000
PP&E (net)	27,000	2,500	4,500
	€49,000	€4,500	€7,800

(Continued)

	Franklin Book Value (000)	Jefferson Book Value (000)	Jefferson Fair Value (000)
Current payables	8,000	600	600
Long-term debt	16,000	2,000	1,800
	24,000	2,600	2,400
Net assets	€25,000	€1,900	€5,400
Shareholders' equity:			
Capital stock (€1 par)	€5,000	€400	
Additional paid in capital	6,000	700	
Retained earnings	€14,000	€800	

Jefferson has no identifiable intangible assets. Show the balances in the post-combination balance sheet using the acquisition method.

Solution: Under the acquisition method, the purchase price allocation would be as follows:

Fair value of the stock issued (1,000,000 shares at market value of €15)	€15,000,000
Book value of Jefferson's net assets	1,900,000
Excess purchase price	€13,100,000
Fair value of the stock issued	€15,000,000
Fair value allocated to identifiable net assets	5,400,000
Goodwill	€9,600,000

Allocation of excess purchase price (based on the differences between fair values and book values):

Inventory	€1,300,000
PP&E (net)	2,000,000
Long-term debt	200,000
Goodwill	9,600,000
	€13,100,000

Both IFRS and US GAAP record the fair value of the acquisition at the market value of the stock issued, or €15,000,000. In this case, the purchase price exceeds the book value of Jefferson's net assets by €13,100,000. Inventory, PP&E (net), and long-term debt are adjusted to fair values. The excess of the purchase price over the fair value of identifiable net assets results in goodwill recognition of €9,600,000.

The post-combination balance sheet of the combined entity would appear as follows:[24]

Franklin Consolidated Balance Sheet (Acquisition Method) (000)	
Cash and receivables	€10,300
Inventory	15,000
PP&E (net)	31,500
Goodwill	9,600
Total assets	€66,400
Current payables	€8,600
Long-term debt	17,800
Total liabilities	€26,400
Capital stock (€1 par)	€6,000
Additional paid in capital	20,000
Retained earnings	14,000
Total stockholders' equity	€40,000
Total liabilities and stockholders' equity	€66,400

Assets and liabilities are combined using book values of Franklin plus fair values for the assets and liabilities acquired from Jefferson. For example, the book value of Franklin's inventory (€12,000,000) is added to the fair value of inventory acquired from Jefferson (€3,000,000) for a combined inventory of €15,000,000. Long-term debt has a book value of €16,000,000 on Franklin's pre-acquisition statements, and Jefferson's fair value of debt is €1,800,000. The combined long-term debt is recorded as €17,800,000.

Franklin's post-merger financial statement reflects in stockholders' equity the stock issued by Franklin to acquire Jefferson. Franklin issues stock with a par value of €1,000,000; however, the stock is measured at fair value under both IFRS and US GAAP. Therefore, the consideration exchanged is 1,000,000 shares at market value of €15, or €15,000,000. Prior to the transaction, Franklin had 5,000,000 shares of €1 par stock outstanding (€5,000,000). The combined entity reflects the Franklin capital stock outstanding of €6,000,000 (€5,000,000 plus the additional 1,000,000 shares of €1 par stock issued to effect the transaction). Franklin's additional paid in capital of €6,000,000 is increased by the €14,000,000 additional paid in capital from the issuance of the 1,000,000 shares (€15,000,000 less par value of €1,000,000) for a total of €20,000,000. At the acquisition date, only the acquirer's retained earnings are carried to the combined entity. Earnings of the target are included on the consolidated income statement and retained earnings only in post-acquisition periods.

[24] Under the uniting (pooling) of interests method (which required an exchange of common shares), the shares issued by Franklin would be measured at their par value. In addition, the assets and liabilities of both companies would be combined at their book values resulting in no goodwill being recognized. The retained earnings of Jefferson would also be combined with that of Franklin on the consolidated balance sheet. Uniting (pooling) of interests method is not allowed for transactions initiated after 2004.

In the periods subsequent to the business combination, the financial statements continue to be affected by the acquisition method. Net income reflects the performance of the combined entity. Under the acquisition method, amortization/depreciation is based on historical cost of Franklin's assets and the fair value of Jefferson's assets. Using Example 8, as Jefferson's acquired inventory is sold, the cost of goods sold would be €1,300,000 higher and depreciation on PP&E would be €2,000,000 higher over the life of the asset than under the pooling of interests method or if the companies had not combined.[25]

6.4. The Consolidation Process

Consolidated financial statements combine the separate financial statements for distinct legal entities, the parent and its subsidiaries, as if they were one economic unit. Consolidation combines the assets, liabilities, revenues, and expenses of subsidiaries with the parent company. Transactions between the parent and subsidiary (intercompany transactions) are eliminated to avoid double counting and premature income recognition. Consolidated statements are presumed to be more meaningful in terms of representational faithfulness. It is important for the analyst to consider the differences in IFRS and US GAAP, valuation bases, and other factors that could impair the validity of comparative analyses.

6.4.1. Business Combination with Less than 100% Acquisition

The acquirer purchases 100% of the equity of the target company in a transaction structured as a merger or consolidation. For a transaction structured as an acquisition, however, the acquirer does not have to purchase 100% of the equity of the target in order to achieve control. The acquiring company may purchase less than 100% of the target because it may be constrained by resources or it may be unable to acquire all the outstanding shares. As a result, both the acquirer and the target remain separate legal entities. Both IFRS and US GAAP presume a company has control if it owns more than 50% of the voting shares of an entity. In this case, the acquiring company is viewed as the parent, and the target company is viewed as the subsidiary. Both the parent and the subsidiary typically prepare their own financial records, but the parent also prepares consolidated financial statements at each reporting period. The consolidated financial statements are the primary source of information for investors and analysts.

6.4.2. Non-controlling (Minority) Interests: Balance Sheet

A non-controlling (minority) interest is the portion of the subsidiary's equity (residual interest) that is held by third parties (i.e., not owned by the parent). Non-controlling interests are created when the parent acquires less than a 100% controlling interest in a subsidiary. IFRS and US GAAP have similar treatment for how non-controlling interests are classified.[26] Non-controlling interests in consolidated subsidiaries are presented on the consolidated

[25] Under the pooling method, cost of goods sold and depreciation expense would be lower, because both would be based on the book value of Jefferson's assets. Therefore, analysts must be aware of companies that used the uniting (pooling) of interests prior to the method being disallowed. This is because in the periods after pooling was disallowed, the assets of an entity that had used uniting of interests (pooling) may be understated and income overstated relative to companies that used the acquisition method. These differences will affect the comparability of return on investment ratios.

[26] IFRS 10, Consolidated Financial Statements and FASB ASC Topic 810 [Consolidation].

balance sheet as a separate component of stockholders' equity. IFRS and US GAAP differ, however, on the measurement of non-controlling interests. Under IFRS, the parent can measure the non-controlling interest at either its fair value (full goodwill method) or at the non-controlling interest's proportionate share of the acquiree's identifiable net assets (partial goodwill method). Under US GAAP, the parent must use the full goodwill method and measure the non-controlling interest at fair value.

Example 9 illustrates the differences in reporting requirements.

EXAMPLE 9 Non-Controlling Asset Valuation

On 1 January 2012, the hypothetical Parent Co. acquired 90% of the outstanding shares of the hypothetical Subsidiary Co. in exchange for shares of Parent Co.'s no par common stock with a fair value of €180,000. The fair market value of the subsidiary's shares on the date of the exchange was €200,000. Below is selected financial information from the two companies immediately prior to the exchange of shares (before the parent recorded the acquisition):

	Parent	Subsidiary	
	Book Value	Book Value	Fair Value
Cash and receivables	€40,000	€15,000	€15,000
Inventory	125,000	80,000	80,000
PP&E (net)	235,000	95,000	155,000
	€400,000	€190,000	€250,000
Payables	55,000	20,000	20,000
Long-term debt	120,000	70,000	70,000
	175,000	90,000	90,000
Net assets	€225,000	€100,000	€160,000
Shareholders' equity:			
Capital stock (no par)	€87,000	€34,000	
Retained earnings	€138,000	€66,000	

1. Calculate the value of PP&E (net) on the consolidated balance sheet under both IFRS and US GAAP.
2. Calculate the value of goodwill and the value of the non-controlling interest at the acquisition date under the full goodwill method.
3. Calculate the value of goodwill and the value of the non-controlling interest at the acquisition date under the partial goodwill method.

Solution to 1: Relative to fair value, the PP&E of the subsidiary is understated by €60,000. Under the acquisition method (IFRS and US GAAP), as long as the parent has control over the subsidiary (i.e., regardless of whether the parent had purchased 51% or 100% of the subsidiary's stock), it would include 100% of the subsidiary's assets

and liabilities at fair value on the consolidated balance sheet. Therefore, PP&E on the consolidated balance sheet would be valued at €390,000.

Solution to 2: Under the full goodwill method (mandatory under US GAAP and optional under IFRS), goodwill on the consolidated balance sheet would be the difference between the total fair value of the subsidiary and the fair value of the subsidiary's identifiable net assets.

Fair value of the subsidiary	€200,000
Fair value of subsidiary's identifiable net assets	160,000
Goodwill	€40,000

The value of the non-controlling interest is equal to the non-controlling interest's proportionate share of the subsidiary's fair value. The non-controlling interest's proportionate share of the subsidiary is 10% and the fair value of the subsidiary is €200,000 on the acquisition date. Under the full goodwill method, the value of the non-controlling interest would be €20,000 (10% × €200,000).

Solution to 3: Under the partial goodwill method (IFRS only), goodwill on the parent's consolidated balance sheet would be €36,000, the difference between the purchase price and the parent's proportionate share of the subsidiary's identifiable assets.

Acquisition price	€180,000
90% of fair value	144,000
Goodwill	€36,000

The value of the non-controlling interest is equal to the non-controlling interest's proportionate share of the fair value of the subsidiary's identifiable net assets. The non-controlling interest's proportionate share is 10%, and the fair value of the subsidiary's identifiable net assets on the acquisition date is €160,000. Under the partial goodwill method, the value of the non-controlling interest would be €16,000 (10% × €160,000).

Regardless of which method is used, goodwill is not amortized under either IFRS or US GAAP but it is tested for impairment at least annually.

For comparative purposes, below is the balance sheet at the acquisition date under the full goodwill and partial goodwill methods.

Comparative Consolidated Balance Sheet at Acquisition Date: Acquisition Method

	Full Goodwill	Partial Goodwill
Cash and receivables	€55,000	€55,000
Inventory	205,000	205,000
PP&E (net)	390,000	390,000
Goodwill	40,000	36,000
Total assets	€690,000	€686,000
Payables	€75,000	€75,000
Long-term debt	190,000	190,000
Total liabilities	€265,000	€265,000

(continued)

(Continued)

	Full Goodwill	Partial Goodwill
Shareholders' equity:		
Non-controlling interests	€20,000	€16,000
Capital stock (no par)	€267,000	€267,000
Retained earnings	138,000	138,000
Total equity	€425,000	€421,000
Total liabilities and shareholders' equity	€690,000	€686,000

6.4.3. Non-controlling (Minority) Interests: Income Statement

On the income statement, non-controlling (minority) interests are presented as a line item reflecting the allocation of profit or loss for the period. Intercompany transactions, if any, are eliminated in full.

Using assumed data consistent with the facts in Example 9, the amounts included for the subsidiary in the consolidated income statements under IFRS and US GAAP are presented below:

	Full Goodwill	Partial Goodwill
Sales	€250,000	€250,000
Cost of goods sold	137,500	137,500
Interest expense	10,000	10,000
Depreciation expense	39,000	39,000
Income from continuing operations	€63,500	€63,500
Non-controlling interest (10%)	(6,350)	(6,350)
Consolidated net income to parent's shareholders	€57,150	€57,150

Income to the parent's shareholders is €57,150 using either method. This is because the fair value of the PP&E is allocated to non-controlling shareholders as well as to the controlling shareholders under the full goodwill and the partial goodwill methods. Therefore, the non-controlling interests will share in the adjustment for excess depreciation resulting from the €60,000 increase in PP&E. Because depreciation expense is the same under both methods, it results in identical net income to all shareholders, whichever method is used to recognize goodwill and to measure the non-controlling interest.

Although net income to parent's shareholders is the same, the impact on ratios would be different because total assets and stockholders' equity would differ.

Impact on Ratios

	Full Goodwill (%)	Partial Goodwill (%)
Return on assets	8.28	8.33
Return on equity	13.45	13.57

Over time, the value of the subsidiary will change as a result of net income and changes in equity. As a result, the value of the non-controlling interest on the parent's consolidated balance sheet will also change.

6.4.4. Goodwill Impairment

Although goodwill is not amortized, it must be tested for impairment at least annually or more frequently if events or changes in circumstances indicate that it might be impaired. If it is probable that some or all of the goodwill will not be recovered through the profitable operations of the combined entity, it should be partially or fully written off by charging it to an expense. Once written down, goodwill cannot be later restored.

IFRS and US GAAP differ on the definition of the levels at which goodwill is assigned and how goodwill is tested for impairment.

Under IFRS, at the time of acquisition, the total amount of goodwill recognized is allocated to each of the acquirer's cash-generating units that will benefit from the expected synergies resulting from the combination with the target. A cash-generating unit represents the lowest level within the combined entity at which goodwill is monitored for impairment purposes.[27] Goodwill impairment testing is then conducted under a one-step approach. The recoverable amount of a cash-generating unit is calculated and compared with the carrying value of the cash-generating unit.[28]

An impairment loss is recognized if the recoverable amount of the cash-generating unit is less than its carrying value. The impairment loss (the difference between these two amounts) is first applied to the goodwill that has been allocated to the cash-generating unit. Once this has been reduced to zero, the remaining amount of the loss is then allocated to all of the other non-cash assets in the unit on a pro rata basis.

Under US GAAP, at the time of acquisition, the total amount of goodwill recognized is allocated to each of the acquirer's reporting units. A reporting unit is an operating segment or component of an operating segment that is one level below the operating segment as a whole. Goodwill impairment testing is then conducted under a two-step approach: identification of impairment and then measurement of the loss. First, the carrying amount of the reporting unit (including goodwill) is compared to its fair value. If the carrying value of the reporting unit exceeds its fair value, potential impairment has been identified. The second step is then performed to measure the amount of the impairment loss. The amount of the impairment loss is the difference between the implied fair value of the reporting unit's goodwill and its carrying amount. The implied fair value of goodwill is determined in the same manner as in a business combination (it is the difference between the fair value of the reporting unit and the fair value of the reporting unit's assets and liabilities). The impairment loss is applied to the goodwill that has been allocated to the reporting unit. After the goodwill of the reporting unit has been

[27] A cash-generating unit is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets.

[28] The recoverable amount of a cash-generating unit is the higher of net selling price (i.e., fair value less costs to sell) and its value in use. Value in use is the present value of the future cash flows expected to be derived from the cash-generating unit. The carrying value of a cash-generating unit is equal to the carrying value of the unit's assets and liabilities including the goodwill that has been allocated to that unit.

eliminated, no other adjustments are made automatically to the carrying values of any of the reporting unit's other assets or liabilities. However, it may be prudent to test other asset values for recoverability and possible impairment.

Under both IFRS and US GAAP, the impairment loss is recorded as a separate line item in the consolidated income statement.

EXAMPLE 10 Goodwill Impairment: IFRS

The cash-generating unit of a French company has a carrying value of €1,400,000, which includes €300,000 of allocated goodwill. The recoverable amount of the cash-generating unit is determined to be €1,300,000, and the estimated fair value of its identifiable net assets is €1,200,000. Calculate the impairment loss.

Solution:

Recoverable amount of unit	€1,300,000
Carrying amount of unit	1,400,000
Impairment loss	€100,000

The impairment loss of €100,000 is reported on the income statement, and the goodwill allocated to the cash-generating unit would be reduced by €100,000 to €200,000.

If the recoverable amount of the cash-generating unit had been €800,000 instead of €1,300,000, the impairment loss recognized would be €600,000. This would first be absorbed by the goodwill allocated to the unit (€300,000). Once this has been reduced to zero, the remaining amount of the impairment loss (€300,000) would then be allocated on a pro rata basis to the other non-cash assets within the unit.

EXAMPLE 11 Goodwill Impairment: US GAAP

A reporting unit of a US corporation (e.g., a division) has a fair value of $1,300,000 and a carrying value of $1,400,000 that includes recorded goodwill of $300,000. The estimated fair value of the identifiable net assets of the reporting unit at the impairment test date is $1,200,000. Calculate the impairment loss.

Solution:

Step 1 – Determination of an Impairment Loss
Because the fair value of the reporting unit is less than its carrying book value, a potential impairment loss has been identified.

Fair value of unit: $\$1,300,000 < \$1,400,000$

Step 2 – Measurement of the Impairment Loss

Fair value of reporting unit	$1,300,000
Less: net assets	1,200,000
Implied goodwill	$100,000
Current carrying value of goodwill	$300,000
Less: implied goodwill	100,000
Impairment loss	$200,000

The impairment loss of $200,000 is reported on the income statement, and the goodwill allocated to the reporting unit would be reduced by $200,000 to $100,000.

If the fair value of the reporting unit and its net assets were $800,000 (instead of $1,300,000), the implied goodwill would be a negative $400,000. In this case, the maximum amount of the impairment loss recognized would be $300,000, the carrying amount of goodwill.

6.5. Financial Statement Presentation Subsequent to the Business Combination

The presentation of consolidated financial statements is similar under IFRS and US GAAP. For example, selected financial statements for GlaxoSmithKline are shown in Exhibits 8 and 9. GlaxoSmithKline is a leading pharmaceutical company headquartered in the United Kingdom.

The consolidated balance sheet in Exhibit 8 combines the operations of GlaxoSmithKline and its subsidiaries. The analyst can observe that in 2011 GlaxoSmithKline had investments in financial assets (other investments of £590,000,000 and liquid investments of £184,000,000), and investments in associates and joint ventures of £560,000,000. In 2011 GlaxoSmithKline acquired 100% interests in four companies. The increase in goodwill on the balance sheet reflects the fact that GlaxoSmithKline paid an amount in excess of the fair value of the identifiable net assets in these acquisitions. The analyst can also note that GlaxoSmithKline is the parent company in a less than 100% acquisition. The minority interest of £795,000,000 in the equity section is the portion of the combined entity that accrues to non-controlling shareholders.

EXHIBIT 8 GlaxoSmithKline Consolidated Balance Sheet at 31 December 2011

	Notes	2011 £m	2010 £m
Non-current assets			
Property, plant and equipment	17	**8,748**	9,045
Goodwill	18	**3,754**	3,606
Other intangible assets	19	**7,802**	8,532
Investments in associates and joint ventures	20	**560**	1,081
Other investments	21	**590**	711
Deferred tax assets	14	**2 ,849**	2,566

(continued)

EXHIBIT 8 (Continued)

	Notes	2011 £m	2010 £m
Derivative financial instruments	41	**85**	97
Other non-current assets	22	**525**	556
Total non-current assets		**24,913**	26,194
Current assets			
Inventories	23	**3,873**	3,837
Current tax recoverable	14	**85**	56
Trade and other receivables	24	**5,576**	5,793
Derivative financial instruments	41	**70**	93
Liquid investments	32	**184**	184
Cash and cash equivalents	25	**5,714**	6,057
Assets held for sale	26	**665**	16
Total current assets		**16,167**	16,036
Total assets		**41,080**	42,230
Current liabilities			
Short-term borrowings	32	**(2,698)**	(291)
Trade and other payables	27	**(7,359)**	(6,888)
Derivative financial instruments	41	**(175)**	(188)
Current tax payable	14	**(1,643)**	(1,047)
Short-term provisions	29	**(3,135)**	(4,380)
Total current liabilities		**(15,010)**	(12,794)
Non-current liabilities			
Long-term borrowings	32	**(12,203)**	(14,809)
Deferred tax liabilities	14	**(822)**	(707)
Pensions and other post-employment benefits	28	**(3,091)**	(2,672)
Other provisions	29	**(499)**	(904)
Derivative financial instruments	41	**(2)**	(5)
Other non-current liabilities	30	**(626)**	(594)
Total non-current liabilities		**(17,243)**	(19,691)
Total liabilities		**(32,253)**	(32,485)
Net assets		**8,827**	9,745
Equity			
Share capital	33	**1,387**	1,418
Share premium account	33	**1,673**	1,428
Retained earnings	34	**3,370**	4,779
Other reserves	34	**1,602**	1,262
Shareholders' equity		**8,032**	8,887
Non-controlling interests		**795**	858
Total equity		**8,827**	9,745

The consolidated income statement for GlaxoSmithKline is presented in Exhibit 9. IFRS and US GAAP have similar formats for consolidated income statements. Each line item (e.g., turnover [sales], cost of sales, etc.) includes 100% of the parent and the subsidiary transactions after eliminating any upstream (subsidiary sells to parent) or downstream (parent sells to subsidiary) intercompany transactions. The portion of income accruing to non-controlling shareholders is presented as a separate line item on the consolidated income statement. Note that net income would be the same under IFRS and US GAAP.[29] The analyst will need to make adjustments for any analysis comparing specific line items that might differ between IFRS and US GAAP.

EXHIBIT 9 GlaxoSmithKline Consolidated Income Statement for the Year Ended 31 December 2011

	Notes	Results before Major Restructuring Business Performance £m	Major Restructuring £m	2011 Total £m	2010 £m	2009 £m
Turnover	6	27,387	—	**27,387**	28,392	28,368
Cost of sales		(7,259)	(73)	**(7,332)**	(7,592)	(7,380)
Gross profit		20,128	(73)	**20,055**	20,800	20,988
Selling, general and administration		(8,429)	(397)	**(8,826)**	(13,053)	(9,592)
Research and development		(3,912)	(97)	**(4,009)**	(4,457)	(4,106)
Other operating income	8	610	(23)	**587**	493	1,135
Operating profit	9	8,397	(590)	**7,807**	3,783	8,425
Finance income	11	90	—	**90**	116	70
Finance costs	12	(797)	(2)	**(799)**	(831)	(783)
Profit on disposal of interests in associates		585		**585**	8	115
Share of after tax profits of associates and joint ventures	13	15	—	**15**	81	64
Profit before taxation		8,290	(592)	**7,698**	3,157	7,891
Taxation	14	(2,354)	114	**(2,240)**	(1,304)	(2,222)
Profit after taxation for the year		5,936	(478)	**5,458**	1,853	5,669
Profit attributable to non-controlling interests		197	—	**197**	219	138

(continued)

[29] It is possible, however, for differences to arise through the application of different accounting rules (e.g., valuation of fixed assets).

EXHIBIT 9 (Continued)

	Notes	Results before Major Restructuring Business Performance £m	Major Restructuring £m	2011 Total £m	2010 £m	2009 £m
Profit attributable to shareholders		5,739	(478)	**5,261**	1,634	5,531
		5,936	(478)	**5,458**	1,853	5,669
Basic earnings per share (pence)	15			**104.6p**	32.1p	109.1p
Diluted earnings per share (pence)	15			**103.2p**	31.9p	108.2p

6.6. Variable Interest and Special Purpose Entities

Special purpose entities (SPEs) are enterprises that are created to accommodate specific needs of the sponsoring entity.[30] The sponsoring entity (on whose behalf the SPE is created) frequently transfers assets to the SPE, obtains the right to use assets held by the SPE, or performs services for the SPE, while other parties (capital providers) provide funding to the SPE. SPEs can be a legitimate financing mechanism for a company to segregate certain activities and thereby reduce risk. SPEs may take the form of a limited liability company (corporation), trust, partnership, or unincorporated entity. They are often created with legal arrangements that impose strict and sometimes permanent limits on the decision-making powers of their governing board or management.

Beneficial interest in an SPE may take the form of a debt instrument, an equity instrument, a participation right, or a residual interest in a lease. Some beneficial interests may simply provide the holder with a fixed or stated rate of return, while beneficial interests give the holder the rights or the access to future economic benefits of the SPE's activities. In most cases, the creator/sponsor of the entity retains a significant beneficial interest in the SPE even though it may own little or none of the SPE's voting equity.

In the past, sponsors were able to avoid consolidating SPEs on their financial statements because they did not have "control" (i.e., own a majority of the voting interest) of the SPE. SPEs were structured so that the sponsoring company had financial control over their assets or operating activities, while third parties held the majority of the voting interest in the SPE.

These outside equity participants often funded their investments in the SPE with debt that was either directly or indirectly guaranteed by the sponsoring companies. The sponsoring companies, in turn, were able to avoid the disclosure of many of these guarantees as well as their economic significance. In addition, many sponsoring companies created SPEs to facilitate the transfer of assets and liabilities from their own balance sheets. As a result, they were able to recognize large amounts of revenue and gains, because these transactions were accounted for as sales. By avoiding consolidation, sponsoring companies did not have to report the assets and the liabilities of the SPE; financial performance as measured by the unconsolidated financial statements was potentially misleading. The benefit to the sponsoring

[30] The term "special purpose entity" is used by IFRS and "variable interest entity" and "special purpose entity" is used by US GAAP.

company was improved asset turnover, lower operating and financial leverage metrics, and higher profitability.

Enron, for example, used SPEs to obtain off-balance sheet financing and artificially improve its financial performance. Its subsequent collapse was partly attributable to its guarantee of the debt of the SPEs it had created.

To address the accounting issues arising from the misuse and abuse of SPEs, the IASB and the FASB have worked to improve the consolidation models to take into account financial arrangements where parties other than the holders of the majority of the voting interests exercise financial control over another entity. IFRS 10, *Consolidated Financial Statements*, revised the definition of control to encompass many special purpose entities. This standard is effective for annual periods beginning on or after 1 January 2013, with early application permitted. Special purpose entities involved in a structured financial transaction will require an evaluation of the purpose, design, and risks.

In developing new accounting standards to address this consolidation issue, the FASB used the more general term variable interest entity (VIE) to more broadly define an entity that is financially controlled by one or more parties that do not hold a majority voting interest. Therefore, under US GAAP, a VIE includes other entities besides SPEs. FASB ASC Topic 810 [*Consolidation*] provides guidance for US GAAP, which classifies special purpose entities as variable interest entities if:

1. total equity at risk is insufficient to finance activities without financial support from other parties, or
2. equity investors lack any one of the following:
   a. the ability to make decisions;
   b. the obligation to absorb losses; or
   c. the right to receive returns.

Common examples of variable interests are entities created to lease real estate or other property, entities created for the securitization of financial assets, or entities created for R&D activity.

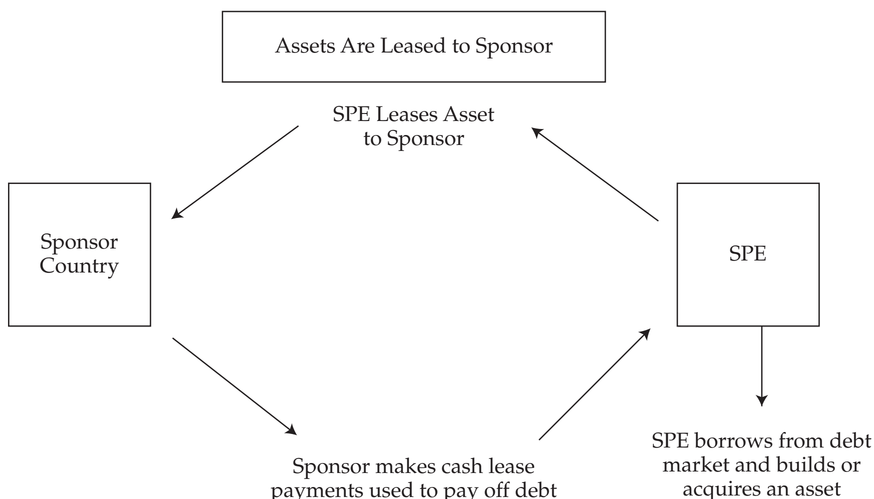
Under FASB ASC Topic 810 [*Consolidation*], the primary beneficiary of a VIE must consolidate it as its subsidiary regardless of how much of an equity investment it has in the VIE. The primary beneficiary (which is often the sponsor) is the entity that is expected to absorb the majority of the VIE's expected losses, receive the majority of the VIE's residual returns, or both. If one entity will absorb a majority of the VIE's expected losses and another unrelated entity will receive a majority of the VIE's expected residual returns, the entity absorbing a majority of the losses must consolidate the VIE. If there are non-controlling interests in the VIE, these would also be shown in the consolidated balance sheet and consolidated income statement of the primary beneficiary.

6.6.1 Illustration of an SPE for a Leased Asset

Consider the situation in which a sponsoring company creates a special purpose entity with minimal and independent third party equity. The SPE borrows from the debt market and acquires or constructs an asset. The asset may be acquired from the sponsoring company or from an outside source. The sponsoring company then leases the asset, and the cash flow from lease payments is used to repay the debt and provide a return to equity holders. Because the asset is pledged as collateral, risk is reduced and a lower interest rate may be offered by the financing organization. In addition, because equity investors are not exposed

to all the business risks of the sponsoring company but only those of the restricted SPE, they may be more willing to invest in this relatively safe investment. The sponsor retains the risk of default and receives the benefits of ownership of the leased asset through a residual value guarantee. Under these conditions, the sponsor is the primary beneficiary and consolidates the SPE.

EXHIBIT 10 Special Purpose Entity



6.6.2. Securitization of Assets

Example 12 shows the effects of securitizing assets on companies' balance sheets.

EXAMPLE 12 Receivables Securitization

Odena, a (fictional) Italian auto manufacturer, wants to raise €55M in capital by borrowing against its financial receivables. To accomplish this objective, Odena can choose between two alternatives:

- Alternative 1 Borrow directly against the receivables; or
- Alternative 2 Create a special purpose entity, invest €5M in the SPE, have the SPE borrow €55M, and then use the funds to purchase €60M of receivables from Odena.

Using the financial statement information provided below, describe the effect of each alternative on Odena, assuming that Odena meets the definition of control and will consolidate the SPE.

Odena Balance Sheet	
Cash	€30,000,000
Accounts receivable	60,000,000
Other assets	40,000,000
Total assets	€130,000,000
Current liabilities	€27,000,000
Non-current liabilities	20,000,000
Total liabilities	€47,000,000
Shareholder equity	€83,000,000
Total liabilities and equity	€130,000,000

Alternative 1: Odena's cash will increase by €55M (to €85M) and its debt will increase by €55M (to €75M). Its sales and net income will not change.

Odena: Alternative 1 Balance Sheet	
Cash	€85,000,000
Accounts receivable	60,000,000
Other assets	40,000,000
Total assets	€185,000,000
Current liabilities	€27,000,000
Non-current liabilities	75,000,000
Total liabilities	€102,000,000
Shareholder equity	€83,000,000
Total liabilities and equity	€185,000,000

Alternative 2: Odena's accounts receivable will decrease by €60M and its cash will increase by €55 (it invests €5M in cash in the SPE). However, if Odena is able to sell the receivables to the SPE for more than their carrying value (for example, €65), it would also report a gain on the sale in its profit and loss. Equally important, the SPE may be able to borrow the funds at a lower rate than Odena, since they are bankruptcy remote from Odena (i.e., out of reach of Odena's creditors), and the lenders to the SPE are the claimants on its assets (i.e., the purchased receivables).

SPE Balance Sheet	
Accounts receivable	€60,000,000
Total assets	€60,000,000
Long-term debt	€55,000,000
Equity	5,000,000
Total liabilities and equity	€60,000,000

Because Odena consolidates the SPE, its financial balance sheet would look like the following:

Odena: Alternative 2 Consolidated Balance Sheet

Cash	€85,000,000
Accounts receivable	60,000,000
Other assets	40,000,000
Total assets	€185,000,000
Current liabilities	€27,000,000
Non-current liabilities	75,000,000
Total liabilities	€102,000,000
Shareholder equity	€83,000,000
Total liabilities and equity	€185,000,000

Therefore, the consolidated balance sheet of Odena would look exactly the same as if it borrowed directly against the receivables. In addition, as a result of the consolidation, the transfer (sale) of the receivables to the SPE would be reversed along with any gain Odena recognized on the sale.

6.7. Additional Issues in Business Combinations That Impair Comparability

Accounting for business combinations is a complex topic. In addition to the basics covered so far in this chapter, we briefly mention some of the more common issues that impair comparability between IFRS and US GAAP.

6.7.1. Contingent Assets and Liabilities

Under IFRS, the cost of an acquisition is allocated to the fair value of assets, liabilities, and contingent liabilities. Contingent liabilities are recorded separately as part of the cost allocation process, provided that their fair values can be measured reliably. Subsequently, the contingent liability is measured at the higher of the amount initially recognized or the best estimate of the amount required to settle. Contingent assets are not recognized under IFRS.

Under US GAAP, contractual contingent assets and liabilities are recognized and recorded at their fair values at the time of acquisition. Non-contractual contingent assets and liabilities must also be recognized and recorded only if it is "more likely than not" they meet the definition of an asset or a liability at the acquisition date. Subsequently, a contingent liability is measured at the higher of the amount initially recognized or the best estimate of the amount of the loss. A contingent asset, however, is measured at the lower of the acquisition date fair value or the best estimate of the future settlement amount.

6.7.2. Contingent Consideration

Contingent consideration may be negotiated as part of the acquisition price. For example, the acquiring company (parent) may agree to pay additional money to the acquiree's

(subsidiary's) former shareholders if certain agreed upon events occur. These can include achieving specified sales or profit levels for the acquiree and/or the combined entity. Under both IFRS and US GAAP, contingent consideration is initially measured at fair value. IFRS and US GAAP classify contingent consideration as an asset, liability, or equity. In subsequent periods, changes in the fair value of liabilities (and assets, in the case of US GAAP) are recognized in the consolidated income statement. Both IFRS and US GAAP do not remeasure equity classified contingent consideration; instead, settlement is accounted for within equity.

6.7.3. In-Process R&D

IFRS and US GAAP recognize in-process research and development acquired in a business combination as a separate intangible asset and measure it at fair value (if it can be measured reliably). In subsequent periods, this research and development is subject to amortization if successfully completed (a marketable product results) or to impairment if no product results or if the product is not technically and/or financially viable.

6.7.4. Restructuring Costs

IFRS and US GAAP do not recognize restructuring costs that are associated with the business combination as part of the cost of the acquisition. Instead, they are recognized as an expense in the periods the restructuring costs are incurred.

7. SUMMARY

Intercompany investments play a significant role in business activities and create significant challenges for the analyst in assessing company performance. Investments in other companies can take five basic forms: investments in financial assets, investments in associates, joint ventures, business combinations, and investments in special purpose and variable interest entities. Key concepts are as follows:

- Investments in financial assets are those in which the investor has no significant influence. They can be measured and reported as
  - Fair value through profit or loss.
  - Fair value through other comprehensive income.
  - Amortized cost.

  IFRS and US GAAP treat investments in financial assets in a similar manner.
- Investments in associates and joint ventures are those in which the investor has significant influence, but not control, over the investee's business activities. Because the investor can exert significant influence over financial and operating policy decisions, IFRS and US GAAP require the equity method of accounting because it provides a more objective basis for reporting investment income.
- The equity method requires the investor to recognize income as earned rather than when dividends are received.
- The equity investment is carried at cost, plus its share of post-acquisition income (after adjustments) less dividends received.
- The equity investment is reported as a single line item on the balance sheet and on the income statement.

- Current IFRS and US GAAP accounting standards require the use of the acquisition method to account for business combinations. Fair value of the consideration given is the appropriate measurement for identifiable assets and liabilities acquired in the business combination.
- Goodwill is the difference between the acquisition value and the fair value of the target's identifiable net tangible and intangible assets. Because it is considered to have an indefinite life, it is not amortized. Instead, it is evaluated at least annually for impairment. Impairment losses are reported on the income statement. IFRS uses a one-step approach to determine and measure the impairment loss, whereas US GAAP uses a two-step approach.
- If the acquiring company acquires less than 100%, non-controlling (minority) shareholders' interests are reported on the consolidated financial statements. IFRS allows the non-controlling interest to be measured at either its fair value (full goodwill) or at the non-controlling interest's proportionate share of the acquiree's identifiable net assets (partial goodwill). US GAAP requires the non-controlling interest to be measured at fair value (full goodwill).
- Consolidated financial statements are prepared in each reporting period.
- Special purpose (SPEs) and variable interest entities (VIEs) are required to be consolidated by the entity which is expected to absorb the majority of the expected losses or receive the majority of expected residual benefits.

PROBLEMS

The following information relates to Questions 1–6

Cinnamon, Inc. is a diversified manufacturing company headquartered in the United Kingdom. It complies with IFRS. In 2009, Cinnamon held a 19 percent passive equity ownership interest in Cambridge Processing that was classified as available-for-sale. During the year, the value of this investment rose by £2 million. In December 2009, Cinnamon announced that it would be increasing its ownership interest to 50 percent effective 1 January 2010 through a cash purchase. Cinnamon and Cambridge have no intercompany transactions.

Peter Lubbock, an analyst following both Cinnamon and Cambridge, is curious how the increased stake will affect Cinnamon's consolidated financial statements. He asks Cinnamon's CFO how the company will account for the investment, and is told that the decision has not yet been made. Lubbock decides to use his existing forecasts for both companies' financial statements to compare the outcomes of alternative accounting treatments.

Lubbock assembles abbreviated financial statement data for Cinnamon (Exhibit 1) and Cambridge (Exhibit 2) for this purpose.

EXHIBIT 1 Selected Financial Statement Information for Cinnamon, Inc. (£ Millions)

Year ending 31 December	2009	2010*
Revenue	1,400	1,575
Operating income	126	142
Net income	62	69
31 December	**2009**	**2010***
Total assets	1,170	1,317
Shareholders' equity	616	685

*Estimates made prior to announcement of increased stake in Cambridge.

EXHIBIT 2 Selected Financial Statement Information for Cambridge Processing (£ Millions)

Year ending 31 December	2009	2010*
Revenue	1,000	1,100
Operating income	80	88
Net income	40	44
Dividends paid	20	22
31 December	**2009**	**2010***
Total assets	800	836
Shareholders' equity	440	462

*Estimates made prior to announcement of increased stake by Cinnamon.

1. In 2009, Cinnamon's earnings before taxes includes a contribution (in £ millions) from its investment in Cambridge Processing that is *closest* to:
   A. £3.8.
   B. £5.8.
   C. £7.6.
2. In 2010, if Cinnamon is deemed to have control over Cambridge, it will *most likely* account for its investment in Cambridge using:
   A. the equity method.
   B. the acquisition method.
   C. proportionate consolidation.
3. At 31 December 2010, Cinnamon's shareholders' equity on its balance sheet would *most likely* be:
   A. highest if Cinnamon is deemed to have control of Cambridge.
   B. independent of the accounting method used for the investment in Cambridge.
   C. highest if Cinnamon is deemed to have significant influence over Cambridge.
4. In 2010, Cinnamon's net profit margin would be *highest* if:
   A. it is deemed to have control of Cambridge.
   B. it had not increased its stake in Cambridge.
   C. it is deemed to have significant influence over Cambridge.
5. At 31 December 2010, assuming control and recognition of goodwill, Cinnamon's reported debt to equity ratio will *most likely* be highest if it accounts for its investment in Cambridge using the:
   A. equity method.
   B. full goodwill method.
   C. partial goodwill method.
6. Compared to Cinnamon's operating margin in 2009, if it is deemed to have control of Cambridge, its operating margin in 2010 will *most likely* be:
   A. lower.
   B. higher.
   C. the same.

The following information relates to Questions 7–12

Zimt, AG is a consumer products manufacturer headquartered in Austria. It complies with IFRS. In 2009, Zimt held a 10 percent passive stake in Oxbow Limited that was classified as held for trading securities. During the year, the value of this stake declined by €3 million. In December 2009, Zimt announced that it would be increasing its ownership to 50 percent effective 1 January 2010.

Franz Gelblum, an analyst following both Zimt and Oxbow, is curious how the increased stake will affect Zimt's consolidated financial statements. Because Gelblum is uncertain how the company will account for the increased stake, he uses his existing forecasts for both companies' financial statements to compare various alternative outcomes.

Gelblum gathers abbreviated financial statement data for Zimt (Exhibit 1) and Oxbow (Exhibit 2) for this purpose.

EXHIBIT 1 Selected Financial Statement Estimates for Zimt AG (€ Millions)

Year ending 31 December	2009	2010*
Revenue	1,500	1,700
Operating income	135	153
Net income	66	75
31 December	2009	2010*
Total assets	1,254	1,421
Shareholders' equity	660	735

*Estimates made prior to announcement of increased stake in Oxbow.

EXHIBIT 2 Selected Financial Statement Estimates for Oxbow Limited (€ Millions)

Year ending 31 December	2009	2010*
Revenue	1,200	1,350
Operating income	120	135
Net income	60	68
Dividends paid	20	22
31 December	2009	2010*
Total assets	1,200	1,283
Shareholders' equity	660	706

*Estimates made prior to announcement of increased stake by Zimt.

7. In 2009, Zimt's earnings before taxes includes a contribution (in € millions) from its investment in Oxbow Limited *closest* to:
   A. (€0.6) million.
   B. (€1.0) million.
   C. €2.0 million.

8. At 31 December 2010, Zimt's total assets balance would *most likely* be:
   A. highest if Zimt is deemed to have control of Oxbow.
   B. highest if Zimt is deemed to have significant influence over Oxbow.
   C. unaffected by the accounting method used for the investment in Oxbow.

9. Based on Gelblum's estimates, if Zimt is deemed to have significant influence over Oxbow, its 2010 net income (in € millions) would be *closest* to:
   A. €75.
   B. €109.
   C. €143.

10. Based on Gelblum's estimates, if Zimt is deemed to have joint control of Oxbow, and Zimt uses the proportionate consolidation method, its 31 December 2010 total liabilities (in € millions) will *most likely* be *closest* to:
    A. €686.
    B. €975.
    C. €1,263.

11. Based on Gelblum's estimates, if Zimt is deemed to have control over Oxbow, its 2010 consolidated sales (in € millions) will be *closest* to:
    A. €1,700.
    B. €2,375.
    C. €3,050.

12. Based on Gelblum's estimates, Zimt's net income in 2010 will *most likely* be:
    A. highest if Zimt is deemed to have control of Oxbow.
    B. highest if Zimt is deemed to have significant influence over Oxbow.
    C. independent of the accounting method used for the investment in Oxbow.

The following information relates to Questions 13–18

Burton Howard, CFA, is an equity analyst with Maplewood Securities. Howard is preparing a research report on Confabulated Materials, SA, a publicly traded company based in France that complies with IFRS. As part of his analysis, Howard has assembled data gathered from the financial statement footnotes of Confabulated's 2009 Annual Report and from discussions with company management. Howard is concerned about the effect of this information on Confabulated's future earnings.

Information about Confabulated's investment portfolio for the years ended 31 December 2008 and 2009 is presented in Exhibit 1. As part of his research, Howard is considering the possible effect on reported income of Confabulated's accounting classification for fixed income investments.

EXHIBIT 1 Confabulated's Investment Portfolio (€ Thousands)

Characteristic	Bugle AG	Cathay Corp	Dumas SA
Classification	Available-for-sale	Held-to-maturity	Held-to-maturity
Cost*	€25,000	€40,000	€50,000
Market value, 31 December 2008	29,000	38,000	54,000
Market value, 31 December 2009	28,000	37,000	55,000

*All securities were acquired at par value.

In addition, Confabulated's annual report discusses a transaction under which receivables were securitized through a special purpose entity (SPE) for Confabulated's benefit.

13. The balance sheet carrying value of Confabulated's investment portfolio (in € thousands) at 31 December 2009 is *closest* to:
    A. 112,000.
    B. 115,000.
    C. 118,000.

14. The balance sheet carrying value of Confabulated's investment portfolio at 31 December 2009 would have been higher if which of the securities had been reclassified as a held for trading security?
    A. Bugle.
    B. Cathay.
    C. Dumas.

15. Compared to Confabulated's reported interest income in 2009, if Dumas had been classified as available-for-sale, the interest income would have been:
    A. lower.
    B. the same.
    C. higher.

16. Compared to Confabulated's reported earnings before taxes in 2009, if Bugle had been classified as a held for trading security, the earnings before taxes (in € thousands) would have been:
    A. the same.
    B. €1,000 lower.
    C. €3,000 higher.

17. Confabulated's reported interest income would be lower if the cost was the same but the par value (in € thousands) of:
    A. Bugle was €28,000.
    B. Cathay was €37,000.
    C. Dumas was €55,000.

18. Confabulated's special purpose entity is *most likely* to be:
    A. held off-balance sheet.
    B. consolidated on Confabulated's financial statements.
    C. consolidated on Confabulated's financial statements only if it is a "qualifying SPE."

The following information relates to Questions 19–24

BetterCare Hospitals, Inc. operates a chain of hospitals throughout the United States. The company has been expanding by acquiring local hospitals. Its largest acquisition, that of Statewide Medical, was made in 2001 under the pooling of interests method. BetterCare complies with US GAAP.

BetterCare is currently forming a 50/50 joint venture with Supreme Healthcare under which the companies will share control of several hospitals. BetterCare plans to use the equity method to account for the joint venture. Supreme Healthcare complies with IFRS and will use the proportionate consolidation method to account for the joint venture.

Erik Ohalin is an equity analyst who covers both companies. He has estimated the joint venture's financial information for 2010 in order to prepare his estimates of each company's earnings and financial performance. This information is presented in Exhibit 1.

EXHIBIT 1 Selected Financial Statement Forecasts for Joint Venture ($ Millions)

Year ending 31 December	2010
Revenue	1,430
Operating income	128
Net income	62
31 December	**2010**
Total assets	1,500
Shareholders' equity	740

Supreme Healthcare recently announced it had formed a special purpose entity through which it plans to sell up to $100 million of its accounts receivable. Supreme Healthcare has no voting interest in the SPE, but it is expected to absorb any losses that it may incur. Ohalin wants to estimate the impact this will have on Supreme Healthcare's consolidated financial statements.

19. Compared to accounting principles currently in use, the pooling method BetterCare used for its Statewide Medical acquisition has *most likely* caused its reported:
    A. revenue to be higher.
    B. total equity to be lower.
    C. total assets to be higher.

20. Based on Ohalin's estimates, the amount of joint venture revenue (in $ millions) included on BetterCare's consolidated 2010 financial statements should be *closest* to:
    A. $0.
    B. $715.
    C. $1,430.

21. Based on Ohalin's estimates, the amount of joint venture net income included on the consolidated financial statements of each venturer will *most likely* be:
    A. higher for BetterCare.
    B. higher for Supreme Healthcare.
    C. the same for both BetterCare and Supreme Healthcare.

22. Based on Ohalin's estimates, the amount of the joint venture's 31 December 2010 total assets (in $ millions) that will be included on Supreme Healthcare's consolidated financial statements will be *closest* to:
    A. $0.
    B. $750.
    C. $1,500.

23. Based on Ohalin's estimates, the amount of joint venture shareholders' equity at 31 December 2010 included on the consolidated financial statements of each venturer will *most likely* be:
    A. higher for BetterCare.
    B. higher for Supreme Healthcare.
    C. the same for both BetterCare and Supreme Healthcare.

24. If Supreme Healthcare sells its receivables to the SPE, its consolidated financial results will *most likely* show:
    A. a higher revenue for 2010.
    B. the same cash balance at 31 December 2010.
    C. the same accounts receivable balance at 31 December 2010.

The following information relates to Questions 25–30

Percy Byron, CFA, is an equity analyst with a UK-based investment firm. One firm Byron follows is NinMount PLC, a UK-based company. On 31 December 2008, NinMount paid £320 million to purchase a 50 percent stake in Boswell Company. The excess of the purchase price over the fair value of Boswell's net assets was attributable to previously unrecorded licenses. These licenses were estimated to have an economic life of six years. The fair value of Boswell's assets and liabilities other than licenses was equal to their recorded book values. NinMount and Boswell both use the pound sterling as their reporting currency and prepare their financial statements in accordance with IFRS.

Byron is concerned whether the investment should affect his "buy" rating on NinMount common stock. He knows NinMount could choose one of several accounting methods to report the results of its investment, but NinMount has not announced which method it will use. Byron forecasts that both companies' 2009 financial results (excluding any merger accounting adjustments) will be identical to those of 2008.

NinMount's and Boswell's condensed income statements for the year ended 31 December 2008, and condensed balance sheets at 31 December 2008, are presented in Exhibits 1 and 2, respectively.

EXHIBIT 1 NinMount PLC and Boswell Company Income Statements for the Year Ended 31 December 2008 (£ millions)

	NinMount	Boswell
Net sales	950	510
Cost of goods sold	(495)	(305)
Selling expenses	(50)	(15)
Administrative expenses	(136)	(49)
Depreciation & amortization expense	(102)	(92)
Interest expense	(42)	(32)
Income before taxes	125	17
Income tax expense	(50)	(7)
Net income	75	10

EXHIBIT 2 NinMount PLC and Boswell Company Balance Sheets at 31 December 2008 (£ millions)

	NinMount	Boswell
Cash	50	20
Receivables—net	70	45
Inventory	130	75
Total current assets	250	140

EXHIBIT 2 (Continued)

	NinMount	Boswell
Property, plant, & equipment—net	1,570	930
Investment in Boswell	320	—
Total assets	2,140	1,070
Current liabilities	110	90
Long-term debt	600	400
Total liabilities	710	490
Common stock	850	535
Retained earnings	580	45
Total equity	1,430	580
Total liabilities and equity	2,140	1,070

Note: Balance sheets reflect the purchase price paid by NinMount, but do not yet consider the impact of the accounting method choice.

25. NinMount's current ratio on 31 December 2008 *most likely* will be highest if the results of the acquisition are reported using:
    A. the equity method.
    B. consolidation with full goodwill.
    C. consolidation with partial goodwill.

26. NinMount's long-term debt to equity ratio on 31 December 2008 *most likely* will be lowest if the results of the acquisition are reported using:
    A. the equity method.
    B. consolidation with full goodwill.
    C. consolidation with partial goodwill.

27. Based on Byron's forecast, if NinMount deems it has acquired control of Boswell, NinMount's consolidated 2009 depreciation and amortization expense (in £ millions) will be *closest* to:
    A. 102.
    B. 148.
    C. 204.

28. Based on Byron's forecast, NinMount's net profit margin for 2009 *most likely* will be highest if the results of the acquisition are reported using:
    A. the equity method.
    B. consolidation with full goodwill.
    C. consolidation with partial goodwill.

29. Based on Byron's forecast, NinMount's 2009 return on beginning equity *most likely* will be the same under:
    A. either of the consolidations, but different under the equity method.
    B. the equity method, consolidation with full goodwill, and consolidation with partial goodwill.

C. none of the equity method, consolidation with full goodwill, or consolidation with partial goodwill.

30. Based on Byron's forecast, NinMount's 2009 total asset turnover ratio on beginning assets under the equity method is *most likely*:
   A. lower than if the results are reported using consolidation.
   B. the same as if the results are reported using consolidation.
   C. higher than if the results are reported using consolidation.

CHAPTER 16

MULTINATIONAL OPERATIONS

Timothy S. Doupnik, PhD
Elaine Henry, CFA

LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- distinguish among presentation (reporting) currency, functional currency, and local currency;
- describe foreign currency transaction exposure, including accounting for and disclosures about foreign currency transaction gains and losses;
- analyze how changes in exchange rates affect the translated sales of the subsidiary and parent company;
- compare the current rate method and the temporal method, evaluate how each affects the parent company's balance sheet and income statement, and determine which method is appropriate in various scenarios;
- calculate the translation effects and evaluate the translation of a subsidiary's balance sheet and income statement into the parent company's presentation currency;
- analyze how the current rate method and the temporal method affect financial statements and ratios;
- analyze how alternative translation methods for subsidiaries operating in hyperinflationary economies affect financial statements and ratios;
- describe how multinational operations affect a company's effective tax rate;
- explain how changes in the components of sales affect earnings sustainability;
- analyze how currency fluctuations potentially affect financial results, given a company's countries of operation.

1. INTRODUCTION

According to the World Trade Organization, merchandise exports worldwide were nearly US$15 trillion in 2010.[1] The amount of worldwide merchandise exports in 2010 was more than twice the amount in 2003 (US$7.4 trillion) and more than four times the amount in 1993 (US$3.7 trillion). The top five exporting countries in 2010, in order, were China, the United States, Germany, Japan, and the Netherlands. In the United States alone, 293,131 companies were identified as exporters in 2010, but only 2.2% of those companies were large (more than 500 employees).[2] The vast majority of US companies with export activity were small or medium-sized entities.

The point illustrated by these statistics is that many companies engage in transactions that cross national borders. The parties to these transactions must agree on the currency in which to settle the transaction. Generally, this will be the currency of either the buyer or the seller. Exporters that receive payment in foreign currency and allow the purchaser time to pay must carry a foreign currency receivable on their books. Conversely, importers that agree to pay in foreign currency will have a foreign currency account payable. To be able to include them in the total amount of accounts receivable (payable) reported on the balance sheet, these foreign currency denominated accounts receivable (payable) must be translated into the currency in which the exporter (importer) keeps its books and presents financial statements.

The prices at which foreign currencies can be purchased or sold are called foreign exchange rates. Because foreign exchange rates fluctuate over time, the value of foreign currency payables and receivables also fluctuates. The major accounting issue related to foreign currency transactions is how to reflect the changes in value for foreign currency payables and receivables in the financial statements.

Many companies have operations located in foreign countries. For example, the Swiss food products company Nestlé SA reports that it has factories in 83 countries and a presence in almost every country in the world. US-based Procter & Gamble's annual filing discloses more than 400 subsidiaries located in more than 80 countries around the world. Foreign subsidiaries are generally required to keep accounting records in the currency of the country in which they are located. To prepare consolidated financial statements, the parent company must translate the foreign currency financial statements of its foreign subsidiaries into its own currency. Nestlé, for example, must translate the assets and liabilities its various foreign subsidiaries carry in foreign currency into Swiss francs to be able to consolidate those amounts with the Swiss franc assets and liabilities located in Switzerland.

A multinational company like Nestlé is likely to have two types of foreign currency activities that require special accounting treatment. Most multinationals (1) engage in transactions that are denominated in a foreign currency and (2) invest in foreign subsidiaries that keep their books in a foreign currency. To prepare consolidated financial statements, a multinational company must translate the foreign currency amounts related to both types of international activities into the currency in which the company presents its financial statements.

This chapter presents the accounting for foreign currency transactions and the translation of foreign currency financial statements. The conceptual issues related to these

[1] World Trade Organization, *International Trade Statistics 2011*, Table I4, page 21.

[2] US Census Bureau, Department of Commerce. *A Profile of US Importing and Exporting Companies, 2009–2010.* Released 12 April 2012.

accounting topics are discussed, and the specific rules embodied in International Financial Reporting Standards (IFRS) and US GAAP are demonstrated through examples. Fortunately, differences between IFRS and US GAAP with respect to foreign currency translation issues are minimal.

Analysts need to understand the effects of foreign exchange rate fluctuations on the financial statements of a multinational company and how a company's financial statements reflect foreign currency gains and losses, whether realized or not.

2. FOREIGN CURRENCY TRANSACTIONS

When companies from different countries agree to conduct business with one another, they must decide which currency will be used. For example, if a Mexican electronic components manufacturer agrees to sell goods to a customer in Finland, the two parties must agree whether the Finnish company will pay for the goods in Mexican pesos, euro, or perhaps even a third currency such as the US dollar. If the transaction is denominated in Mexican pesos, the Finnish company has a foreign currency transaction but the Mexican company does not. To account for the inventory being purchased and the account payable in Mexican pesos, the Finnish company must translate the Mexican peso amounts into euro using appropriate exchange rates. Although the Mexican company also has entered into an international transaction (an export sale), it does not have a foreign currency transaction and no translation is necessary. It simply records the sales revenue and account receivable in Mexican pesos, which is the currency in which it keeps its books and prepares financial statements.

The currency in which financial statement amounts are presented is known as the **presentation currency**. In most cases, a company's presentation currency will be the currency of the country where the company is located. Finnish companies are required to keep accounting records and present financial results in euro, US companies in US dollars, Chinese companies in Chinese yuan, and so on.

Another important concept in accounting for foreign currency activities is the **functional currency**, which is the currency of the primary economic environment in which an entity operates. Normally, the functional currency is the currency in which an entity primarily generates and expends cash. In most cases, an organization's functional currency will be the same as its presentation currency. And, because most companies primarily generate and expend cash in the currency of the country where they are located, the functional and presentation currencies are most often the same as the **local currency** where the company operates.

Because the local currency generally is an entity's functional currency, a multinational corporation with subsidiaries in a variety of different countries is likely to have a variety of different functional currencies. The Thai subsidiary of a Japanese parent company, for example, is likely to have the Thai baht as its functional currency, whereas the Japanese parent's functional currency is the Japanese yen. But in some cases, the foreign subsidiary could have the parent's functional currency as its own. For example, prior to its 2011 acquisition of McAfee, Intel Corporation had determined that the US dollar was the functional currency for all of its significant foreign subsidiaries. However, subsequent to the acquisition of McAfee, as stated in Intel Corporation's 2011 Annual Report, Note 1: Basis of Presentation, "Certain of the operations acquired from McAfee have a functional currency other than the US dollar."

By definition, a foreign currency is any currency other than a company's functional currency, and **foreign currency transactions** are those denominated in a currency other than

the company's functional currency. Foreign currency transactions occur when a company (1) makes an import purchase or an export sale that is denominated in a foreign currency or (2) borrows or lends funds where the amount to be repaid or received is denominated in a foreign currency. In each of these cases, the company has an asset or a liability denominated in a foreign currency.

2.1. Foreign Currency Transaction Exposure to Foreign Exchange Risk

Assume that FinnCo, a Finland-based company, imports goods from Mexico in January under 45-day credit terms, and the purchase is denominated in Mexican pesos. By deferring payment until April, FinnCo runs the risk that from the date the purchase is made until the date of payment, the value of the Mexican peso might increase relative to the euro. FinnCo would then need to spend more euro to settle its Mexican peso account payable. In this case, FinnCo is said to have an **exposure to foreign exchange risk**. Specifically, FinnCo has a foreign currency **transaction exposure**. Transaction exposure related to imports and exports can be summarized as follows:

- *Import purchase*. A transaction exposure arises when the importer is obligated to pay in foreign currency and is allowed to defer payment until sometime after the purchase date. The importer is exposed to the risk that from the purchase date until the payment date the foreign currency might increase in value, thereby increasing the amount of functional currency that must be spent to acquire enough foreign currency to settle the account payable.
- *Export sale*. A transaction exposure arises when the exporter agrees to be paid in foreign currency and allows payment to be made sometime after the purchase date. The exporter is exposed to the risk that from the purchase date until the payment date, the foreign currency might decrease in value, thereby decreasing the amount of functional currency into which the foreign currency can be converted when it is received.

The major issue in accounting for foreign currency transactions is how to account for the foreign currency risk—that is, how to reflect in the financial statements the change in value of the foreign currency asset or liability. Both IFRS and US GAAP require the change in the value of the foreign currency asset or liability resulting from a foreign currency transaction to be treated as a gain or loss reported on the income statement.[3]

2.1.1. Accounting for Foreign Currency Transactions with Settlement before Balance Sheet Date

Example 1 demonstrates FinnCo's accounting, assuming that it purchased goods on account from a Mexican supplier that required payment in Mexican pesos, and that it made payment before the balance sheet date. The basic principle is that all transactions are recorded at the spot rate on the date of the transaction. The foreign currency risk on *transactions*, therefore, arises only when the transaction date and the payment date are different.

[3] International standards are presented in International Accounting Standard (IAS) 21, "The Effects of Changes in Foreign Exchange Rates," and US GAAP standards are presented in FASB ASC Topic 830, "Foreign Currency Matters."

EXAMPLE 1 Accounting for Foreign Currency Transactions with Settlement before the Balance Sheet Date

FinnCo purchases goods from its Mexican supplier on 1 November 20X1; the purchase price is 100,000 Mexican pesos. Credit terms allow payment in 45 days, and FinnCo makes payment of 100,000 pesos on 15 December 20X1. FinnCo's functional and presentation currency is the euro. Spot exchange rates between the euro (EUR) and Mexican peso (MXN) are as follows:

1 November 20X1	MXN1 = EUR0.0684
15 December 20X1	MXN1 = EUR0.0703

FinnCo's fiscal year end is 31 December. How will FinnCo account for this foreign currency transaction, and what effect will it have on the 20X1 financial statements?

Solution: The euro value of the Mexican peso account payable on 1 November 20X1 was EUR6,840 (MXN100,000 × EUR0.0684). FinnCo could have paid for its inventory on 1 November by converting 6,840 euro into 100,000 Mexican pesos. Instead, the company purchases 100,000 Mexican pesos on 15 December 20X1, when the value of the peso has increased to EUR0.0703. Thus, FinnCo pays 7,030 euro to purchase 100,000 Mexican pesos. The net result is a loss of 190 euro (EUR7,030 – EUR6,840).

Although the cash outflow to acquire the inventory is EUR7,030, the cost included in the inventory account is only EUR6,840. This cost represents the amount that FinnCo could have paid if it had not waited 45 days to settle its account. By deferring payment, and because the Mexican peso increased in value between the transaction date and settlement date, FinnCo has to pay an additional 190 euro. The company will report a foreign exchange loss of EUR190 in its net income in 20X1. This is a realized loss because FinnCo actually spent an additional 190 euro to purchase its inventory. The net effect on the financial statements, in EUR, can be seen as follows:

Balance Sheet					Income Statement		
Assets		= Liabilities +	Stockholders' Equity		Revenues and Gains	Expenses and Losses	
Cash	–7,030						
Inventory	+6,840		Retained earnings	–190		Foreign exchange loss	–190
	–190						

2.1.2. Accounting for Foreign Currency Transactions with Intervening Balance Sheet Dates

Another important issue related to the accounting for foreign currency transactions is what, if anything, should be done if a balance sheet date falls between the initial transaction date and the settlement date. For foreign currency transactions whose settlement dates fall in subsequent accounting periods, both IFRS and US GAAP require adjustments to reflect intervening changes in currency exchange rates. Foreign currency transaction gains and losses are reported on the income statement, creating one of the few situations in which accounting rules allow,

indeed require, companies to include (recognize) a gain or loss in income before it has been realized.

Subsequent foreign currency transaction gains and losses are recognized from the balance sheet date through the date the transaction is settled. Adding together foreign currency transaction gains and losses for both accounting periods (transaction initiation to balance sheet date and balance sheet date to transaction settlement) produces an amount equal to the actual realized gain or loss on the foreign currency transaction.

EXAMPLE 2 Accounting for Foreign Currency Transaction with Intervening Balance Sheet Date

FinnCo sells goods to a customer in the United Kingdom for £10,000 on 15 November 20X1, with payment to be received in British pounds on 15 January 20X2. FinnCo's functional and presentation currency is the euro. Spot exchange rates between the euro (€) and British pound (£) are as follows:

15 November 20X1	£1 = €1.460
31 December 20X1	£1 = €1.480
15 January 20X2	£1 = €1.475

FinnCo's fiscal year end is 31 December. How will FinnCo account for this foreign currency transaction, and what effect will it have on the 20X1 and 20X2 financial statements?

Solution: The euro value of the British pound account receivable at each of the three relevant dates is determined as follows:

		Account Receivable (£10,000)	
Date	€/£ Exchange Rate	Euro Value	Change in Euro Value
15 Nov 20X1	€1.460	14,600	N/A
31 Dec 20X1	€1.480	14,800	+ 200
15 Jan 20X2	€1.475	14,750	– 50

A change in the euro value of the British pound receivable from 15 November to 31 December would be recognized as a foreign currency transaction gain or loss on FinnCo's 20X1 income statement. In this case, the increase in the value of the British pound results in a transaction gain of €200 [£10,000 × (€1.48 – €1.46)]. Note that the gain recognized in 20X1 income is unrealized, and remember that this is one of few situations in which companies include an unrealized gain in income.

Any change in the exchange rate between the euro and British pound that occurs from the balance sheet date (31 December 20X1) to the transaction settlement date (15 January 20X2) will also result in a foreign currency transaction gain or loss. In our example, the British pound weakened slightly against the euro during this period, resulting in an exchange rate of €1.475/ £1 on 15 January 20X2. The £10,000 account receivable now has a value of €14,750, which is a decrease of €50 from 31 December

20X1. FinnCo will recognize a foreign currency transaction loss on 15 January 20X2 of €50 that will be included in the company's calculation of net income for the first quarter of 20X2.

From the transaction date to the settlement date, the British pound has increased in value by €0.015 (€1.475 – €1.460), which generates a realized foreign currency transaction gain of €150. A gain of €200 was recognized in 20X1 and a loss of €50 is recognized in 20X2. Over the two-month period, the net gain recognized in the financial statements is equal to the actual realized gain on the foreign currency transaction.

In Example 2, FinnCo's British pound account receivable resulted in a net foreign currency transaction gain because the British pound strengthened (increased) in value between the transaction date and the settlement date. In this case, FinnCo has an asset exposure to foreign exchange risk. This asset exposure benefited the company because the foreign currency strengthened. If FinnCo instead had a British pound account payable, a liability exposure would have existed. The euro value of the British pound account payable would have increased as the British pound strengthened, and FinnCo would have recognized a foreign currency transaction loss as a result.

Whether a change in exchange rate results in a foreign currency transaction gain or loss (measured in local currency) depends on (1) the nature of the exposure to foreign exchange risk (asset or liability) and (2) the direction of change in the value of the foreign currency (strengthens or weakens).

		Foreign Currency	
Transaction	Type of Exposure	Strengthens	Weakens
Export sale	Asset (account receivable)	Gain	Loss
Import purchase	Liability (account payable)	Loss	Gain

A foreign currency receivable arising from an export sale creates an asset exposure to foreign exchange risk. If the foreign currency strengthens, the receivable increases in value in terms of the company's functional currency and a foreign currency transaction gain arises. The company will be able to convert the foreign currency when received into more units of functional currency because the foreign currency has strengthened. Conversely, if the foreign currency weakens, the foreign currency receivable loses value in terms of the functional currency and a loss results.

A foreign currency payable resulting from an import purchase creates a liability exposure to foreign exchange risk. If the foreign currency strengthens, the payable increases in value in terms of the company's functional currency and a foreign currency transaction loss arises. The company must spend more units of functional currency to be able to settle the foreign currency liability because the foreign currency has strengthened. Conversely, if the foreign currency weakens, the foreign currency payable loses value in terms of the functional currency and a gain exists.

2.2. Analytical Issues

Both IFRS and US GAAP require foreign currency transaction gains and losses to be reported in net income (even if the gains and losses have not yet been realized), but neither standard

indicates where on the income statement these gains and losses should be placed. The two most common treatments are either (1) as a component of other operating income/expense or (2) as a component of non-operating income/expense, in some cases as a part of net financing cost. The calculation of operating profit margin is affected by where foreign currency transaction gains or losses are placed on the income statement.

EXAMPLE 3 Placement of Foreign Currency Transaction Gains/Losses on the Income Statement—Effect on Operating Profit

Assume that FinnCo had the following income statement information in both 20X1 and 20X2, excluding a foreign currency transaction gain of €200 in 20X1 and a transaction loss of €50 in 20X2.

	20X1	20X2
Revenues	€20,000	€20,000
Cost of goods sold	12,000	12,000
Other operating expenses, net	5,000	5,000
Non-operating expenses, net	1,200	1,200

FinnCo is deciding between two alternatives for the treatment of foreign currency transaction gains and losses. Alternative 1 calls for the reporting of foreign currency transaction gains/losses as part of "Other operating expenses, net." Under Alternative 2, the company would report this information as part of "Non-operating expenses, net."

FinnCo's fiscal year end is 31 December. How will Alternatives 1 and 2 affect the company's gross profit margin, operating profit margin, and net profit margin for 20X1? For 20X2?

Solution: Remember that a gain would serve to reduce expenses, whereas a loss would increase expenses.

20X1—Transaction Gain of €200				
	Alternative 1		Alternative 2	
Revenues	€20,000		€20,000	
Cost of goods sold	(12,000)		(12,000)	
Gross profit	8,000		8,000	
Other operating expenses, net	(4,800)	incl. gain	(5,000)	
Operating profit	3,200		3,000	
Non-operating expenses, net	(1,200)		(1,000)	incl. gain
Net profit	€2,000		€2,000	

Profit margins in 20X1 under the two alternatives can be calculated as follows:

	Alternative 1	Alternative 2
Gross profit margin	€8,000/€20,000 = 40.0%	€8,000/€20,000 = 40.0%
Operating profit margin	3,200/20,000 = 16.0%	3,000/20,000 = 15.0%
Net profit margin	2,000/20,000 = 10.0%	2,000/20,000 = 10.0%

20X2—Transaction Loss of €50				
	Alternative 1		Alternative 2	
Revenues	€20,000		€20,000	
Cost of goods sold	(12,000)		(12,000)	
Gross profit	8,000		8,000	
Other operating expenses, net	(5,050)	incl. loss	(5,000)	
Operating profit	2,950		3,000	
Non-operating expenses, net	(1,200)		(1,250)	incl. loss
Net profit	€1,750		€1,750	

Profit margins in 20X2 under the two alternatives can be calculated as follows:

	Alternative 1	Alternative 2
Gross profit margin	€8,000/€20,000 = 40.0%	€8,000/€20,000 = 40.0%
Operating profit margin	2,950/20,000 = 14.75%	3,000/20,000 = 15.0%
Net profit margin	1,750/20,000 = 8.75%	1,750/20,000 = 8.75%

Gross profit and net profit are unaffected, but operating profit differs under the two alternatives. In 20X1, the operating profit margin is larger under Alternative 1, which includes the transaction gain as part of "Other operating expenses, net." In 20X2, Alternative 1 results in a smaller operating profit margin than Alternative 2. Alternative 2 has the same operating profit margin in both periods. Because exchange rates do not fluctuate by the same amount or in the same direction from one accounting period to the next, Alternative 1 will cause greater volatility in operating profit and operating profit margin over time.

Because accounting standards do not provide guidance on the placement of foreign currency transaction gains and losses on the income statement, companies are free to choose among the alternatives. Two companies in the same industry could choose different alternatives, which would distort the direct comparison of operating profit and operating profit margins between those companies.

A second issue that should be of interest to analysts relates to the fact that unrealized foreign currency transaction gains and losses are included in net income when the balance sheet date falls between the transaction and settlement dates. The implicit assumption underlying this accounting requirement is that the unrealized gain or loss as of the balance sheet date

reflects the company's ultimate net gain or loss. In reality, though, the ultimate net gain or loss may vary dramatically because of the possibility for changes in trend and volatility of currency prices.

This effect was seen in the previous hypothetical Example 2 with FinnCo. Using given currency exchange rate data shows that the real-world effect can also be quite dramatic. Assume that a French company purchased goods from a Canadian supplier on 1 December 20X1, with payment of 100,000 Canadian dollars (C$) to be made on 15 May 20X2. Actual exchange rates between the Canadian dollar and euro (€) during the period 1 December 20X1 and 15 May 20X2, the euro value of the Canadian dollar account payable, and the foreign currency transaction gain or loss are shown below:

		Account Payable (C$100,000)	
	€/C$	€ Value	Change in € Value (Gain/Loss)
1 Dec X1	0.7285	72,850	N/A
31 Dec X1	0.7571	75,710	2,860 loss
31 Mar X2	0.7517	75,170	540 gain
15 May X2	0.7753	77,530	2,360 loss

As the Canadian dollar strengthened against the euro in late 20X1, the French company would have recorded a foreign currency transaction loss of €2,860 in the fourth quarter of 20X1. The Canadian dollar reversed course by weakening over the first three months of 20X2, resulting in a transaction gain of €540 in the first quarter, and then strengthened against the euro in the second quarter of 20X2, resulting in a transaction loss of €2,360. At the time payment is made on 15 May 20X2, the French company realizes a net foreign currency transaction loss of €4,680 (€77,530 – €72,850).

2.3. Disclosures Related to Foreign Currency Transaction Gains and Losses

Because accounting rules allow companies to choose where they present foreign currency transaction gains and losses on the income statement, it is useful for companies to disclose both the amount of transaction gain or loss that is included in income and the presentation alternative they have selected. IFRS requires disclosure of "the amount of exchange differences recognized in profit or loss," and US GAAP requires disclosure of "the aggregate transaction gain or loss included in determining net income for the period," but neither standard specifically requires disclosure of the line item in which these gains and losses are located.

Exhibit 1 provides disclosures from BASF AG's 2011 annual report that the German company made related to foreign currency transaction gains and losses. Exhibit 2 presents similar disclosures found in the Netherlands-based Heineken NV's 2011 Annual Report. Both companies use IFRS to prepare their consolidated financial statements.

BASF's income statement in Exhibit 1 does not include a separate line item for foreign currency gains and losses. From Note 6 in Exhibit 1, an analyst can determine that BASF has chosen to include "Income from foreign currency and hedging transactions" in "Other operating income." Of the total amount of €2,008 million reported as "Other operating income" in 2011, €170 million is attributable to foreign currency and hedging transaction income. It is not possible to determine from BASF's financial statements whether or not these gains were realized in 2011, and any unrealized gain reported in 2011 income might or might not be realized in 2012.

Note 7 in Exhibit 1 indicates that "Expenses from foreign currency and hedging transactions as well as market valuation" in 2011 were €399 million, making up 15% of Other operating expenses. Combining foreign currency transaction gains and losses results in a net loss of €229 million, which is equal to 2.55% of BASF's "Income before taxes and minority interests."

EXHIBIT 1 Excerpts from BASF AG's 2011 Annual Report Related to Foreign Currency Transactions

Consolidated Statements of Income Million €	Explanation in Notes	2011	2010
Sales	(4)	73,497	63,873
Cost of sales		(53,986)	(45,310)
Gross profit on sales		**19,511**	**18,563**
Selling expenses		(7,323)	(6,700)
General and administrative expenses		(1,315)	(1,138)
Research and development expenses		(1,605)	(1,492)
Other operating income	(6)	2,008	1,140
Other operating expenses	(7)	(2,690)	(2,612)
Income from operations	(4)	**8,586**	**7,761**
(detail omitted)			
Financial result	(8)	**384**	**(388)**
Income before taxes and minority interests		**8,970**	**7,373**
Income taxes	(9)	(2,367)	(2,299)
Income before minority interests		**6,603**	**5,074**
Minority interests	(10)	(415)	(517)
Net income		**6,188**	**4,557**

Notes:

1. Summary of Accounting Policies
   Foreign currency transactions: The cost of assets acquired in foreign currencies and revenues from sales in foreign currencies are recorded at the exchange rate on the date of the transaction. Foreign currency receivables and liabilities are valued at the exchange rates on the balance sheet date.
6. Other Operating Income

Million €	**2011**	**2010**
Reversal and adjustment of provisions	170	244
Revenue from miscellaneous revenue-generating activities	207	142
Income from foreign currency and hedging transactions	170	136
Income from the translation of financial statements in foreign currencies	42	76
Gains on the disposal of property, plant and equipment and divestitures	666	101
Reversals of impairments of property, plant and equipment	—	40
Gains on the reversal of allowance for doubtful business-related receivables	77	36
Other	676	365
	2,008	1,140

(continued)

EXHIBIT 1 (Continued)

Income from foreign currency and hedging transactions concerned foreign currency transactions, the measurement at fair value of receivables and payables in foreign currencies, as well as currency derivatives and other hedging transactions.

7. Other Operating Expenses

Million €	**2011**	**2010**
Restructuring measures	233	276
Environmental protection and safety measures, costs of demolition and removal, and planning expenses related to capital expenditures that are not subject to mandatory capitalization	203	98
Valuation adjustments on tangible and intangible assets	366	247
Costs from miscellaneous revenue-generating activities	220	180
Expenses from foreign currency and hedging transactions as well as market valuation	399	601
Losses from the translation of the financial statements in foreign currencies	56	63
Losses from the disposal of property, plant and equipment and divestitures	40	24
Oil and gas exploration expenses	184	190
Expenses from additions to allowances for business-related receivables	124	107
Expenses from the use of inventories measured at market value and the derecognition of obsolete inventory	233	188
Other	632	638
	2,690	2,612

Expenses from foreign currency and hedging transactions as well as market valuation concern foreign currency translations of receivables and payables as well as changes in the fair value of currency derivatives and other hedging transactions.

In Exhibit 2, Heineken's Note 2, Basis of Preparation, part (c) explicitly states that the euro is the company's functional currency. Note 3(b)*(i)* indicates that monetary assets and liabilities denominated in foreign currencies at the balance sheet date are translated to the functional currency and that foreign currency differences arising on the translation (i.e., translation gains and losses) are recognized on the income statement. Note 3(r) discloses that foreign currency gains and losses are included on a net basis in the other net finance income and expenses. Note 12, "Net finance income and expense," shows that a net foreign exchange loss of €107 million existed in 2011 and a net gain of €61 million arose in 2010. The net foreign currency transaction gain in 2010 amounted to 3.1% of Heineken's profit before income tax that year, and the net translation loss in 2011 represented 5.3% of the company's profit before income tax in that year. Note 12 also shows gains and losses related to changes in the fair value of derivatives, some of which related to foreign currency derivatives.

EXHIBIT 2 Excerpts from Heineken NV's 2011 Annual Report Related to Foreign Currency Transactions

Consolidated Income Statement for the Year Ended 31 December in Millions of EUR	Note	2011	2010
Revenue	5	**17,123**	**16,133**
Other income	8	**64**	**239**
Raw materials, consumables, and services	9	(10,966)	(10,291)
Personnel expenses	10	(2,838)	(2,665)
Amortization, depreciation, and impairments	11	(1,168)	(1,118)
Total expenses		**(14,972)**	**(14,074)**
Results from operating activities		**2,215**	**2,298**
Interest income	12	70	100
Interest expenses	12	(494)	(590)
Other net finance income/(expenses)	12	(6)	(19)
Net finance expenses		**(430)**	**(509)**
Share of profit of associates and joint ventures and impairments thereof (net of income tax)	16	240	193
Profit before income tax		**2,025**	**1,982**
Income tax expenses	13	(465)	(403)
Profit		**1,560**	**1,579**
Attributable to:			
Equity holders of the Company (net profit)		1,430	1,447
Minority interest		130	132
Profit		**1,560**	**1,579**

Notes:

2. Basis of preparation
   c. Functional and presentation currency
      These consolidated financial statements are presented in euro, which is the Company's functional currency. All financial information presented in euro has been rounded to the nearest million unless stated otherwise.
3. Significant accounting policies
   b. Foreign currency
      i. Foreign currency transactions
         Transactions in foreign currencies are translated to the respective functional currencies of Heineken entities at the exchange rates at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies at the reporting date are retranslated to the functional currency at the exchange rate at that date. . . . Foreign currency differences arising on retranslation are recognised in profit or loss, except for differences arising on the retranslation of available-for-sale (equity) investments and foreign currency differences arising on the retranslation of a financial liability designated as a hedge of a net investment, which are recognised in other comprehensive income.[4]

(continued)

[4] Note that this excerpt uses "retranslation" in the same way that "translation" is used throughout the rest of this chapter. The translation of currency for foreign subsidiaries will be covered in the next section.

EXHIBIT 2 (Continued)

r. Interest income, interest expenses and other net finance income and expenses

…Foreign currency gains and losses are reported on a net basis in the other net finance income and expenses.

12. Net finance income and expense

Recognised in profit or loss

In millions of EUR	**2011**	**2010**
Interest income	**70**	**100**
Interest expenses	**(494)**	**(590)**
Dividend income on available-for-sale investments	2	1
Dividend income on investments held for trading	11	7
Net gain/(loss) on disposal of available-for-sale investments	1	—
Net change in fair value of derivatives	96	(75)
Net foreign exchange gain/(loss)	(107)	61
Impairment losses on available-for-sale investments	—	(3)
Unwinding discount on provisions	(7)	(7)
Other net financial income/(expenses)	(2)	(3)
Other net finance income/(expenses)	**(6)**	**(19)**
Net finance income/(expenses)	**(430)**	**(509)**

Disclosures related to foreign currency are commonly found both in the Management Discussion & Analysis (MD&A) and the Notes to Financial Statements sections of an annual report. In applying US GAAP to account for its foreign currency transactions, Yahoo! Inc. reported the following in the Quantitative and Qualitative Disclosures about Market Risk section of its 2011 annual report:

> Our exposure to foreign currency transaction gains and losses is the result of assets and liabilities, (including inter-company transactions) that are denominated in currencies other than the relevant entity's functional currency. . . . We may enter into derivative instruments, such as foreign currency forward contracts or other instruments to minimize the short-term foreign currency fluctuations on such assets and liabilities. The gains and losses on the forward contracts may not offset any or more than a portion of the transaction gains and losses on certain foreign currency receivables, investments and payables recognized in earnings. Transaction gains and losses on these foreign exchange contracts are recognized each period in other income, net included on the consolidated statements of income. During the years ended December 31, 2011, 2010, and 2009, we recorded net realized and unrealized foreign currency transaction gains of $9 million and $13 million, and a transaction loss of $1 million, respectively.

Yahoo!'s disclosure clearly explains that both realized and unrealized foreign currency transaction gains and losses are reflected in income, specifically as a part of non-operating activities. The net foreign currency transaction gain in 2011 of $9 million represented only 1.1% of the company's pretax income ($827.5 million) for the year.

Some companies may choose not to disclose either the location or the amount of their foreign currency transaction gains and losses, presumably because the amounts involved are immaterial. There are several reasons why the amount of transaction gains and losses can be immaterial for a company:

1. The company engages in a limited number of foreign currency transactions that involve relatively small amounts of foreign currency.
2. The exchange rates between the company's functional currency and the foreign currencies in which it has transactions tend to be relatively stable.
3. Gains on some foreign currency transactions are naturally offset by losses on other transactions, such that the net gain or loss is immaterial. For example, if a US company sells goods to a customer in Canada with payment in Canadian dollars to be received in 90 days and at the same time purchases goods from a supplier in Canada with payment to be made in Canadian dollars in 90 days, any loss that arises on the Canadian dollar receivable due to a weakening in the value of the Canadian dollar will be exactly offset by a gain of equal amount on the Canadian dollar payable.
4. The company engages in foreign currency hedging activities to offset the foreign exchange gains and losses that arise from foreign currency transactions. Hedging foreign exchange risk is a common practice for many companies engaged in foreign currency transactions.

The two most common types of hedging instruments used to minimize foreign exchange transaction risk are foreign currency forward contracts and foreign currency options. Nokia Corporation describes its foreign exchange risk management approach in its 2011 Form 20-F annual report in Note 34, Risk Management. An excerpt from that note follows:

> Nokia operates globally and is thus exposed to foreign exchange risk arising from various currencies. Foreign currency denominated assets and liabilities together with foreign currency denominated cash flows from highly probable or probable purchases and sales contribute to foreign exchange exposure. These transaction exposures are managed against various local currencies because of Nokia's substantial production and sales outside the Euro zone.
>
> According to the foreign exchange policy guidelines of the Group, which remains the same as in the previous year, material transaction foreign exchange exposures are hedged unless hedging would be uneconomical due to market liquidity and/or hedging cost. Exposures are defined using nominal values of the transactions. Exposures are mainly hedged with derivative financial instruments such as forward foreign exchange contracts and foreign exchange options. The majority of financial instruments hedging foreign exchange risk have duration of less than a year. The Group does not hedge forecasted foreign currency cash flows beyond two years.

Elsewhere in its annual report, Nokia provides additional disclosures about the currencies to which it has exposure and the accounting for different types of hedges. The company also summarizes the effect of material exchange rate movements. For example, the 4.2% appreciation of the US dollar in 2011 had a positive effect on net sales expressed in euro (40% of Nokia's net sales are in US dollars or currencies closely following the US dollar) and a negative effect on product cost (60% of Nokia's components are sourced in US dollars); this resulted in a slightly negative effect on operating profit.

3. TRANSLATION OF FOREIGN CURRENCY FINANCIAL STATEMENTS

Many companies have operations in foreign countries. Most operations located in foreign countries keep their accounting records and prepare financial statements in the local currency. For example, the US subsidiary of German automaker BMW AG keeps its books in US dollars. IFRS and US GAAP require parent companies to prepare consolidated financial statements in which the assets, liabilities, revenues, and expenses of both domestic and foreign subsidiaries are added to those of the parent company. To prepare worldwide consolidated statements, parent companies must translate the foreign currency financial statements of their foreign subsidiaries into the parent company's presentation currency. BMW AG, for example, must translate both the US dollar financial statements of its US subsidiary and the South African rand financial statements of its South African subsidiary into euro to consolidate these foreign operations. If, for example, the US dollar and South African rand appreciate against the euro over the course of a given year, the amount of sales translated into euro will be greater than if the subsidiary's currencies weaken against the euro.

IFRS and US GAAP have similar rules for the translation of foreign currency financial statements. To fully understand the results from applying these rules, however, several conceptual issues must first be examined.

3.1. Translation Conceptual Issues

In translating foreign currency financial statements into the parent company's presentation currency, two questions must be addressed:

1. What is the appropriate exchange rate to use in translating each financial statement item?
2. How should the translation adjustment that inherently arises from the translation process be reflected in the consolidated financial statements? In other words, how is the balance sheet brought back into balance?

These issues and the basic concepts underlying the translation of financial statements are demonstrated through the following example.

Spanco is a hypothetical Spain-based company that uses the euro as its presentation currency. Spanco establishes a wholly owned subsidiary, Amerco, in the United States on 31 December 20X1 by investing €10,000 when the exchange rate between the euro and the US dollar is €1 = US$1. The equity investment of €10,000 is physically converted into US$10,000 to begin operations. In addition, Amerco borrows US$5,000 from local banks on 31 December 20X1. Amerco purchases inventory that costs US$12,000 on 31 December 20X1 and retains US$3,000 in cash. Amerco's balance sheet at 31 December 20X1 thus appears as follows:

Amerco Balance Sheet, 31 December 20X1 (in US Dollars)			
Cash	$3,000	Notes payable	$5,000
Inventory	12,000	Common stock	10,000
Total	$15,000	Total	$15,000

To prepare a consolidated balance sheet in euro as of 31 December 20X1, Spanco must translate all of the US dollar balances on Amerco's balance sheet at the €1 = US$1 exchange rate. The translation worksheet as of 31 December 20X1 is as follows:

Translation Worksheet for Amerco, 31 December 20X1			
	USD	Exchange Rate (€)	EUR
Cash	$3,000	1.00	€3,000
Inventory	12,000	1.00	12,000
Total	$15,000		€15,000
Notes payable	5,000	1.00	5,000
Common stock	10,000	1.00	10,000
Total	$15,000		€15,000

By translating each US dollar balance at the same exchange rate (€1.00), Amerco's translated balance sheet in euro reflects an equal amount of total assets and total liabilities plus equity and remains in balance.

During the first quarter of 20X2, Amerco engages in no transactions. During that period, however, the US dollar weakens against the euro such that the exchange rate on 31 March 20X2 is €0.80 = US$1.

To prepare a consolidated balance sheet at the end of the first quarter of 20X2, Spanco now must choose between the current exchange rate of €0.80 and the historical exchange rate of €1.00 to translate Amerco's balance sheet amounts into euro. The original investment made by Spanco of €10,000 is a historical fact, so the company wants to translate Amerco's common stock in such a way that it continues to reflect this amount. This goal is achieved by translating common stock of US$10,000 into euro using the historical exchange rate of €1 = US$1.

Two approaches for translating the foreign subsidiary's assets and liabilities are as follows:

1. All assets and liabilities are translated at the **current exchange rate** (the spot exchange rate on the balance sheet date).
2. Only **monetary assets and liabilities** are translated at the current exchange rate; **non-monetary assets and liabilities** are translated at **historical exchange rates** (the exchange rates that existed when the assets and liabilities were acquired). Monetary items are cash and receivables (payables) that are to be received (paid) in a fixed number of currency units. Non-monetary assets include inventory, fixed assets, and intangibles, and non-monetary liabilities include deferred revenue.

These two different approaches are demonstrated and the results analyzed in turn.

3.1.1. All Assets and Liabilities Are Translated at the Current Exchange Rate

The translation worksheet on 31 March 20X2, in which all assets and liabilities are translated at the current exchange rate (€0.80), is as follows:

Translation Worksheet for Amerco, 31 March 20X2

	US Dollar	Exchange Rate (€)	Euro	Change in Euro Value since 31 Dec 20X1
Cash	$3,000	0.80 C	€2,400	–€600
Inventory	12,000	0.80 C	9,600	–2,400
Total	$15,000		€12,000	–€3,000
Notes payable	5,000	0.80 C	4,000	–1,000
Common stock	10,000	1.00 H	10,000	0
Subtotal	$15,000		14,000	–1,000
Translation adjustment			(2,000)	–2,000
Total			€12,000	–€3,000

Note: C = current exchange rate; H = historical exchange rate

By translating all assets at the lower current exchange rate, total assets are written down from 31 December 20X1 to 31 March 20X2 in terms of their euro value by €3,000. Liabilities are written down by €1,000. To keep the euro translated balance sheet in balance, a *negative* translation adjustment of €2,000 is created and included in stockholders' equity on the consolidated balance sheet.

Those foreign currency balance sheet accounts that are translated using the current exchange rate are revalued in terms of the parent's functional currency. This process is very similar to the revaluation of foreign currency receivables and payables related to foreign currency transactions. The net translation adjustment that results from translating individual assets and liabilities at the current exchange rate can be viewed as the *net* foreign currency translation gain or loss caused by a change in the exchange rate:

(€600)	loss on cash
(€2,400)	loss on inventory
€1,000	gain on notes payable
(€2,000)	net translation loss

The negative translation adjustment (net translation loss) does not result in a cash outflow of €2,000 for Spanco and thus is unrealized. The loss could be realized, however, if Spanco were to sell Amerco at its book value of US$10,000. The proceeds from the sale would be converted into euro at €0.80 per US$1, resulting in a cash inflow of €8,000. Because Spanco originally invested €10,000 in its US operation, a *realized* loss of €2,000 would result.

The second conceptual issue related to the translation of foreign currency financial statements is whether the unrealized net translation loss should be included in the determination of consolidated net income currently or deferred in the stockholders' equity section of the consolidated balance sheet until the loss is realized through sale of the foreign subsidiary. There is some debate as to which of these two treatments is most appropriate. This issue is discussed in more detail after considering the second approach for translating assets and liabilities.

3.1.2. Only Monetary Assets and Monetary Liabilities Are Translated at the Current Exchange Rate

Now assume only monetary assets and monetary liabilities are translated at the current exchange rate. The worksheet at 31 March 20X2, in which only monetary assets and liabilities are translated at the current exchange rate (€0.80), is as follows:

Translation Worksheet for Amerco, 31 March 20X2

	US Dollar	Exchange Rate (€)	Euro	Change in Euro Value since 31 Dec 20X1
Cash	$3,000	0.80 C	€2,400	–€600
Inventory	12,000	1.00 H	12,000	0
Total	$15,000		€14,400	–€600
Notes payable	5,000	0.80 C	4,000	–1,000
Common stock	10,000	1.00 H	10,000	0
Subtotal	$15,000		14,000	–1,000
Translation adjustment			400	400
Total			€14,400	–€600

Note: C = current exchange rate; H = historical exchange rate

Using this approach, cash is written down by €600 but inventory continues to be carried at its euro historical cost of €12,000. Notes payable is written down by €1,000. To keep the balance sheet in balance, a positive translation adjustment of €400 must be included in stockholders' equity. The translation adjustment reflects the *net* translation gain or loss related to monetary items only:

(€600)	loss on cash
€1,000	gain on notes payable
€400	net translation gain

The positive translation adjustment (net translation gain) also is *unrealized*. The gain could be *realized*, however, if:

1. The subsidiary uses its cash (US$3,000) to pay as much of its liabilities as possible, and
2. The parent sends enough euro to the subsidiary to pay its remaining liabilities (US$5,000 – US$3,000 = US$2,000). As of 31 December 20X1, at the €1.00 per US$1 exchange rate, Spanco will have sent €2,000 to Amerco to pay liabilities of US$2,000. On 31 March 20X2, given the €0.80 per US$1 exchange rate, the parent needs to send only €1,600 to pay US$2,000 of liabilities. As a result, Spanco would enjoy a foreign exchange gain of €400.

The second conceptual issue again arises under this approach. Should the unrealized foreign exchange gain be recognized in current period net income or deferred on the balance sheet as a separate component of stockholders' equity? The answer to this question, as provided by IFRS and US GAAP, is described in Section 3.2, Translation Methods.

3.1.3. Balance Sheet Exposure

Those assets and liabilities translated at the *current* exchange rate are revalued from balance sheet to balance sheet in terms of the parent company's presentation currency. These items are said to be *exposed* to translation adjustment. Balance sheet items translated at *historical* exchange rates do not change in parent currency value and therefore are not exposed to translation adjustment. Exposure to translation adjustment is referred to as balance sheet translation exposure, or accounting exposure.

A foreign operation will have a **net asset balance sheet exposure** when assets translated at the current exchange rate are greater than liabilities translated at the current exchange rate. A **net liability balance sheet exposure** exists when liabilities translated at the current exchange rate are greater than assets translated at the current exchange rate. Another way to think about the issue is to realize that there is a net asset balance sheet exposure when exposed assets are greater than exposed liabilities and a net liability balance sheet exposure when exposed liabilities are greater than exposed assets. The sign (positive or negative) of the current period's translation adjustment is a function of two factors: (1) the nature of the balance sheet exposure (asset or liability) and (2) the direction of change in the exchange rate (strengthens or weakens). The relationship between exchange rate fluctuations, balance sheet exposure, and the current period's translation adjustment can be summarized as follows:

Balance Sheet	Foreign Currency (FC)	
Exposure	Strengthens	Weakens
Net asset	Positive translation adjustment	Negative translation adjustment
Net liability	Negative translation adjustment	Positive translation adjustment

These relationships are the same as those summarized in Section 2.2 with respect to foreign currency transaction gains and losses. In reference to the example in Section 3.1.2, for instance, the amount of exposed assets (the US$3,000 cash) was less than the amount of exposed liabilities (US$5,000 of notes payable), implying a net liability exposure. Further, in the example the foreign currency (US$) weakened, resulting in a positive translation adjustment.

The combination of balance sheet exposure and direction of exchange rate change determines whether the current period's translation adjustment will be positive or negative. After the initial period of operations, a cumulative translation adjustment is required to keep the translated balance sheet in balance. The cumulative translation adjustment will be the sum of the translation adjustments that arise over successive accounting periods. For example, assume that Spanco translates all of Amerco's assets and liabilities using the current exchange rate (a net asset balance sheet exposure exists), which, because of a weakening US dollar in the first quarter of 20X2, resulted in a negative translation adjustment of €2,000 on 31 March 20X2 (as shown in Section 3.1.1). Assume further that in the second quarter of 20X2, the US dollar strengthens against the euro and there still is a net asset balance sheet exposure, which results in a *positive* translation adjustment of €500 for that quarter. Although the current period translation adjustment for the second quarter of 2009 is positive, the cumulative translation adjustment as of 30 June 20X2 still will be negative, but the amount now will be only €1,500.

3.2. Translation Methods

The two approaches to translating foreign currency financial statements described in the previous section are known as (1) the **current rate method** (all assets and liabilities are translated at the current exchange rate), and (2) the **monetary/non-monetary method** (only monetary assets and liabilities are translated at the current exchange rate). A variation of the monetary/non-monetary method requires not only monetary assets and liabilities but also non-monetary assets and liabilities that are measured at their current value on the balance sheet date to be translated at the current exchange rate. This variation of the monetary/non-monetary method sometimes is referred to as the **temporal method**.

The basic idea underlying the temporal method is that assets and liabilities should be translated in such a way that the measurement basis (either current value or historical cost) in the foreign currency is preserved after translating to the parent's presentation currency. To achieve this objective, assets and liabilities carried on the foreign currency balance sheet at a current value should be translated at the current exchange rate, and assets and liabilities carried on the foreign currency balance sheet at historical costs should be translated at historical exchange rates. Although neither the IASB nor the FASB specifically refer to translation methods by name, the procedures specified by IFRS and US GAAP for translating foreign currency financial statements essentially require the use of either the current rate or the temporal method.

Which method is appropriate for an individual foreign entity depends on that entity's functional currency. As noted earlier, the functional currency is the currency of the primary economic environment in which an entity operates. A foreign entity's functional currency can be either the parent's presentation currency or another currency, typically the currency of the country in which the foreign entity is located. Exhibit 3 lists the factors that IFRS indicate should be considered in determining a foreign entity's functional currency. Although not identical, US GAAP provide similar indicators for determining a foreign entity's functional currency.

When the functional currency indicators listed in Exhibit 3 are mixed and the functional currency is not obvious, IFRS indicate that management should use its best judgment in determining the functional currency. In this case, however, indicators 1 and 2 should be given priority over indicators 3 through 9.

EXHIBIT 3 Factors Considered in Determining the Functional Currency

In accordance with IFRS, the following factors should be considered in determining an entity's functional currency:

1. The currency that mainly influences sales prices for goods and services.
2. The currency of the country whose competitive forces and regulations mainly determine the sales price of its goods and services.
3. The currency that mainly influences labour, material, and other costs of providing goods and services.
4. The currency in which funds from financing activities are generated.
5. The currency in which receipts from operating activities are usually retained.

(continued)

EXHIBIT 3 (Continued)

Additional factors to consider in determining whether the foreign entity's functional currency is the same as the parent's functional currency are

6. Whether the activities of the foreign operation are an extension of the parent's or are carried out with a significant amount of autonomy.
7. Whether transactions with the parent are a large or a small proportion of the foreign entity's activities.
8. Whether cash flows generated by the foreign operation directly affect the cash flow of the parent and are available to be remitted to the parent.
9. Whether operating cash flows generated by the foreign operation are sufficient to service existing and normally expected debt or whether the foreign entity will need funds from the parent to service its debt.

The following three steps outline the functional currency approach required by accounting standards in translating foreign currency financial statements into the parent company's presentation currency:

1. Identify the functional currency of the foreign entity.
2. Translate foreign currency balances into the foreign entity's functional currency.
3. Use the current exchange rate to translate the foreign entity's functional currency balances into the parent's presentation currency, if they are different.

To illustrate how this approach is applied, consider a US parent company with a Mexican subsidiary that keeps its accounting records in Mexican pesos. Assume that the vast majority of the subsidiary's transactions are carried out in Mexican pesos, but it also has an account payable in Guatemalan quetzals. In applying the three steps, the US parent company first determines that the Mexican peso is the functional currency of the Mexican subsidiary. Second, the Mexican subsidiary translates its foreign currency balances (i.e., the Guatemalan quetzal account payable), into Mexican pesos using the current exchange rate. In step 3, the Mexican peso financial statements (including the translated account payable) are translated into US dollars using the current rate method.

Now assume, alternatively, that the primary operating currency of the Mexican subsidiary is the US dollar, which thus is identified as the Mexican subsidiary's functional currency. In that case, in addition to the Guatemalan quetzal account payable, all of the subsidiary's accounts that are denominated in Mexican pesos also are considered to be foreign currency balances (because they are not denominated in the subsidiary's functional currency, which is the US dollar). Along with the Guatemalan quetzal balance, each of the Mexican peso balances must be translated into US dollars as if the subsidiary kept its books in US dollars. Assets and liabilities carried at current value in Mexican pesos are translated into US dollars using the current exchange rate, and assets and liabilities carried at historical cost in Mexican pesos are translated into US dollars using historical exchange rates. After completing this step, the Mexican subsidiary's financial statements are stated in terms of US dollars, which is both the subsidiary's functional currency and the parent's presentation currency. As a result, there is no need to apply step 3.

The following two sections describe the procedures to be followed in applying the functional currency approach in more detail.

3.2.1. Foreign Currency Is the Functional Currency

In most cases, a foreign entity will operate primarily in the currency of the country where it is located, which will differ from the currency in which the parent company presents its financial statements. For example, the Japanese subsidiary of a French parent company is likely to have the Japanese yen as its functional currency, whereas the French parent company must prepare consolidated financial statements in euro. When a foreign entity has a functional currency that differs from the parent's presentation currency, the foreign entity's foreign currency financial statements are translated into the parent's presentation currency using the following procedures:

1. All assets and liabilities are translated at the current exchange rate at the balance sheet date.
2. Stockholders' equity accounts are translated at historical exchange rates.
3. Revenues and expenses are translated at the exchange rate that existed when the transactions took place. For practical reasons, a rate that approximates the exchange rates at the dates of the transactions, such as an average exchange rate, may be used.

These procedures essentially describe the *current rate method*.

When the current rate method is used, the cumulative translation adjustment needed to keep the translated balance sheet in balance is reported as a separate component of stockholders' equity.

The basic concept underlying the current rate method is that the entire investment in a foreign entity is exposed to translation gain or loss. Therefore, all assets and all liabilities must be revalued at each successive balance sheet date. The net translation gain or loss that results from this procedure is unrealized, however, and will be realized only when the entity is sold. In the meantime, the unrealized translation gain or loss that accumulates over time is deferred on the balance sheet as a separate component of stockholders' equity. When a specific foreign entity is sold, the cumulative translation adjustment related to that entity is reported as a realized gain or loss in net income.

The current rate method results in a net asset balance sheet exposure (except in the rare case in which an entity has negative stockholders' equity):

Items Translated at Current Exchange Rate

Total assets > Total liabilities → Net asset balance sheet exposure

When the foreign currency increases in value (i.e., strengthens), application of the current rate method results in an increase in the positive cumulative translation adjustment (or a decrease in the negative cumulative translation adjustment) reflected in stockholders' equity. When the foreign currency decreases in value (i.e., weakens), the current rate method results in a decrease in the positive cumulative translation adjustment (or an increase in the negative cumulative translation adjustment) in stockholders' equity.

3.2.2. Parent's Presentation Currency Is the Functional Currency

In some cases, a foreign entity might have the parent's presentation currency as its functional currency. For example, a Germany-based manufacturer might have a 100%-owned distribution subsidiary in Switzerland that primarily uses the euro in its day-to-day operations and thus has the euro as its functional currency. As a Swiss company, however, the subsidiary is

required to record its transactions and keep its books in Swiss francs. In that situation, the subsidiary's Swiss franc financial statements must be translated into euro as if the subsidiary's transactions had originally been recorded in euro. US GAAP refer to this process as *remeasurement*. IFRS do not refer to this process as remeasurement but instead describe this situation as "reporting foreign currency transactions in the functional currency." To achieve the objective of translating to the parent's presentation currency as if the subsidiary's transactions had been recorded in that currency, the following procedures are used:

1. a. Monetary assets and liabilities are translated at the current exchange rate.
   b. Non-monetary assets and liabilities measured at historical cost are translated at historical exchange rates.
   c. Non-monetary assets and liabilities measured at current value are translated at the exchange rate at the date when the current value was determined.
2. Stockholders' equity accounts are translated at historical exchange rates.
3. a. Revenues and expenses, other than those expenses related to non-monetary assets (as explained in 3.b. below), are translated at the exchange rate that existed when the transactions took place (for practical reasons, average rates may be used).
   b. Expenses related to non-monetary assets, such as cost of goods sold (inventory), depreciation (fixed assets), and amortization (intangible assets), are translated at the exchange rates used to translate the related assets.

These procedures essentially describe the *temporal method*.

Under the temporal method, companies must keep record of the exchange rates that exist when non-monetary assets (inventory, prepaid expenses, fixed assets, and intangible assets) are acquired, because these assets (normally measured at historical cost) are translated at historical exchange rates. Keeping track of the historical exchange rates for these assets is not necessary under the current rate method. Translating these assets (and their related expenses) at historical exchange rates complicates application of the temporal method.

The historical exchange rates used to translate inventory (and cost of goods sold) under the temporal method will differ depending on the cost flow assumption—first in, first out (FIFO); last in, first out (LIFO); or average cost—used to account for inventory. Ending inventory reported on the balance sheet is translated at the exchange rate that existed when the inventory's acquisition is assumed to have occurred. If FIFO is used, ending inventory is assumed to be composed of the most recently acquired items and thus inventory will be translated at relatively recent exchange rates. If LIFO is used, ending inventory is assumed to consist of older items and thus inventory will be translated at older exchange rates. The weighted-average exchange rate for the year is used when inventory is carried at weighted-average cost. Similarly, cost of goods sold is translated using the exchange rates that existed when the inventory items assumed to have been sold during the year (using FIFO or LIFO) were acquired. If weighted-average cost is used to account for inventory, cost of goods sold will be translated at the weighted-average exchange rate for the year.

Under both international and US accounting standards, when the temporal method is used, the translation adjustment needed to keep the translated balance sheet in balance is reported as a gain or loss in net income. US GAAP refer to these as *remeasurement* gains and losses. The basic assumption underlying the recognition of a translation gain or loss in income relates to timing. Specifically, if the foreign entity primarily uses the parent company's currency in its day-to-day operations, then the foreign entity's monetary items that are denominated in

a foreign currency generate translation gains and losses that will be realized in the near future and thus should be reflected in current net income.

The temporal method generates either a net asset or a net liability balance sheet exposure, depending on whether assets translated at the current exchange rate—that is, monetary assets and non-monetary assets measured on the balance sheet date at current value (exposed assets)—are greater than or less than liabilities translated at the current exchange rate—that is, monetary liabilities and non-monetary liabilities measured on the balance sheet date at current value (exposed liabilities):

Items Translated at Current Exchange Rate

Exposed assets > Exposed liabilities → Net asset balance sheet exposure

Exposed assets < Exposed liabilities → Net liability balance sheet exposure

Most liabilities are monetary liabilities. Only cash and receivables are monetary assets, and non-monetary assets generally are measured at their historical cost. As a result, liabilities translated at the current exchange rate (exposed liabilities) often exceed assets translated at the current exchange rate (exposed assets), which results in a net liability balance sheet exposure when the temporal method is applied.

3.2.3. Translation of Retained Earnings

Stockholders' equity accounts are translated at historical exchange rates under both the current rate and the temporal methods. This approach creates somewhat of a problem in translating retained earnings (R/E), which are the accumulation of previous years' income less dividends over the life of the company. At the end of the first year of operations, foreign currency (FC) retained earnings are translated into the parent's currency (PC) as follows:

Net income in FC	[Translated according to the method used to translate the income statement]	=	Net income in PC
– Dividends in FC			– Dividends in PC
R/E in FC	× Exchange rate when dividends declared	=	R/E in PC

Retained earnings in parent currency at the end of the first year become the beginning retained earnings in parent currency for the second year, and the translated retained earnings in the second year (and subsequent years) are then calculated in the following manner:

Beginning R/E in FC	[From last year's translation]	→	Beginning R/E in PC
+ Net income in FC	[Translated according to method used to translate the income statement]	=	+ Net income in PC
– Dividends in FC			– Dividends in PC
Ending R/E in FC	× Exchange rate when dividends declared	=	Ending R/E in PC

Exhibit 4 summarizes the translation rules as discussed in Sections 3.2.1, 3.2.2, and 3.2.3.

EXHIBIT 4 Rules for the Translation of a Foreign Subsidiary's Foreign Currency Financial Statements into the Parent's Presentation Currency under IFRS and US GAAP

	Foreign Subsidiary's Functional Currency	
	Foreign Currency	Parent's Presentation Currency
Translation method:	Current Rate Method	Temporal Method
Exchange rate at which financial statement items are translated from the foreign subsidiary's bookkeeping currency to the parent's presentation currency:		
Assets		
Monetary, such as cash and receivables	Current rate	Current rate
Non-monetary		
• measured at current value (e.g., marketable securities and inventory measured at market value under the lower of cost or market rule)	Current rate	Current rate
• measured at historical costs, (e.g., inventory measured at cost under the lower of cost or market rule; property, plant & equipment; and intangible assets)	Current rate	Historical rates
Liabilities		
Monetary, such as accounts payable, accrued expenses, long-term debt, and deferred income taxes	Current rate	Current rate
Non-monetary		
• measured at current value	Current rate	Current rate
• not measured at current value, such as deferred revenue	Current rate	Historical rates
Equity		
Other than retained earnings	Historical rates	Historical rates
Retained earnings	Beginning balance plus translated net income less dividends translated at historical rate	Beginning balance plus translated net income less dividends translated at historical rate
Revenues	Average rate	Average rate
Expenses		
Most expenses	Average rate	Average rate
Expenses related to assets translated at historical exchange rate, such as cost of goods sold, depreciation, and amortization	Average rate	Historical rates
Treatment of the translation adjustment in the parent's consolidated financial statements	Accumulated as a separate component of equity	Included as gain or loss in net income

3.2.4. Highly Inflationary Economies

When a foreign entity is located in a highly inflationary economy, the entity's functional currency is irrelevant in determining how to translate its foreign currency financial statements into the parent's presentation currency. IFRS require that the foreign entity's financial statements first be restated for local inflation using the procedures outlined in IAS 29, "Financial Reporting in Hyperinflationary Economies." Then, the inflation-restated foreign currency financial statements are translated into the parent's presentation currency using the current exchange rate.

US GAAP require a very different approach for translating the foreign currency financial statements of foreign entities located in highly inflationary economies. US GAAP do not allow restatement for inflation but instead require the foreign entity's financial statements to be remeasured as if the functional currency were the reporting currency (i.e., the temporal method).

US GAAP define a highly inflationary economy as one in which the cumulative three-year inflation rate exceeds 100% (but note that the definition should be applied with judgment, particularly because the trend of inflation can be as important as the absolute rate). A cumulative three-year inflation rate of 100% equates to an average of approximately 26% per year. IAS 21 does not provide a specific definition of high inflation, but IAS 29 indicates that a cumulative inflation rate approaching or exceeding 100% over three years would be an indicator of hyperinflation. If a country in which a foreign entity is located ceases to be classified as highly inflationary, the functional currency of that entity must be identified to determine the appropriate method for translating the entity's financial statements.

The FASB initially proposed that companies restate for inflation and then translate the financial statements, but this approach met with stiff resistance from US multinational corporations. Requiring the temporal method ensures that companies avoid a "disappearing plant problem" that exists when the current rate method is used in a country with high inflation. In a highly inflationary economy, as the local currency loses purchasing power within the country, it also tends to weaken in value in relation to other currencies. Translating the historical cost of assets such as land and buildings at progressively weaker exchange rates causes these assets to slowly disappear from the parent company's consolidated financial statements. Example 4 demonstrates the effect of three different translation approaches when books are kept in the currency of a highly inflationary economy. Example 4 pertains to Turkey in the period 2000 to 2002, when it was recognized as one of the few highly inflationary countries. Turkey is no longer viewed as having a highly inflationary economy. (In 2010, the International Practices Task Force of the Center for Audit Quality SEC Regulations Committee indicated that Venezuela had met the thresholds for being considered highly inflationary.)

EXAMPLE 4 Foreign Currency Translation in a Highly Inflationary Economy

Turkey was one of the few remaining highly inflationary countries at the beginning of the 21st century. Annual inflation rates and selected exchange rates between the Turkish lira (TL) and US dollar during the 2000–2002 period were as follows:

Date	Exchange Rates	Year	Inflation Rate (%)
01 Jan 2000	TL542,700 = US$1		
31 Dec 2000	TL670,800 = US$1	2000	38
31 Dec 2001	TL1,474,525 = US$1	2001	69
31 Dec 2002	TL1,669,000 = US$1	2002	45

Assume that a US-based company established a subsidiary in Turkey on 1 January 2000. The US parent sent the subsidiary US$1,000 on 1 January 2000 to purchase a piece of land at a cost of TL542,700,000 (TL542,700/US$ × US$1,000 = TL542,700,000). Assuming no other assets or liabilities, what are the annual and cumulative translation gains or losses that would be reported under each of three possible translation approaches?

Solution:

Approach 1: Translate Using the Current Rate Method
The historical cost of the land is translated at the current exchange rate, which results in a new translated amount at each balance sheet date.

Date	Carrying Value	Current Exchange Rate	Translated Amount in US$	Annual Translation Gain (Loss)	Cumulative Translation Gain (Loss)
01 Jan 2000	TL542,700,000	542,700	$1,000	N/A	N/A
31 Dec 2000	542,700,000	670,800	809	($191)	($191)
31 Dec 2001	542,700,000	1,474,525	368	(441)	(632)
31 Dec 2002	542,700,000	1,669,000	325	(43)	(675)

At the end of three years, land that was originally purchased with US$1,000 would be reflected on the parent's consolidated balance sheet at US$325 (and remember that land is not a depreciable asset). A cumulative translation loss of US$675 would be reported as a separate component of stockholders' equity on 31 December 2002. Because this method accounts for adjustments in exchange rates but does not account for likely changes in the local currency values of assets, it does a poor job of accurately reflecting the economic reality of situations such as the one in our example. That is the major reason this approach is not acceptable under either IFRS or US GAAP.

Approach 2: Translate Using the Temporal Method (US GAAP ASC 830)
The historical cost of land is translated using the historical exchange rate, which results in the same translated amount at each balance sheet date.

Date	Carrying Value	Historical Exchange Rate	Translated Amount in US$	Annual Translation Gain (Loss)	Cumulative Translation Gain (Loss)
01 Jan 2000	TL542,700,000	542,700	$1,000	N/A	N/A
31 Dec 2000	542,700,000	542,700	1,000	N/A	N/A
31 Dec 2001	542,700,000	542,700	1,000	N/A	N/A
31 Dec 2002	542,700,000	542,700	1,000	N/A	N/A

Under this approach, land continues to be reported on the parent's consolidated balance sheet at its original cost of US$1,000 each year. There is no translation gain or loss related to balance sheet items translated at historical exchange rates. This approach is required by US GAAP and ensures that non-monetary assets do not disappear from the translated balance sheet.

Approach 3: Restate for Inflation/Translate Using Current Exchange Rate (IAS 21)
The historical cost of the land is restated for inflation, and then the inflation-adjusted historical cost is translated using the current exchange rate.

Date	Inflation Rate (%)	Restated Carrying Value	Current Exchange Rate	Translated Amount in US$	Annual Translation Gain (Loss)	Cumulative Translation Gain (Loss)
01 Jan 00		TL542,700,000	542,700	$1,000	N/A	N/A
31 Dec 00	38	748,926,000	670,800	1,116	$116	$116
31 Dec 01	69	1,265,684,940	1,474,525	858	(258)	(142)
31 Dec 02	45	1,835,243,163	1,669,000	1,100	242	100

Under this approach, land is reported on the parent's 31 December 2002 consolidated balance sheet at US$1,100 with a cumulative, unrealized gain of US$100. Although the cumulative translation gain on 31 December 2002 is unrealized, it could have been realized if (1) the land had appreciated in TL value by the rate of local inflation, (2) the Turkish subsidiary sold the land for TL1,835,243,163, and (3) the sale proceeds were converted into US$1,100 at the current exchange rate on 31 December 2002.

This approach is required by IAS 21. It is the approach that, apart from doing an appraisal, perhaps best represents economic reality, in the sense that it reflects both the likely change in the local currency value of the land as well as the actual change in the exchange rate.

3.3. Illustration of Translation Methods (Excluding Hyperinflationary Economies)

To demonstrate the procedures required in translating foreign currency financial statements (excluding hyperinflationary economies), assume that Interco is a Europe-based company that has the euro as its presentation currency. On 1 January 20X1, Interco establishes a wholly owned subsidiary in Canada, Canadaco. In addition to Interco making an equity investment in Canadaco, a long-term note payable to a Canadian bank was negotiated to purchase property and equipment. The subsidiary begins operations with the following balance sheet in Canadian dollars (C$):

Canadaco Balance Sheet, 1 January 20X1

Assets	
Cash	C$1,500,000
Property and equipment	3,000,000
	C$4,500,000
Liabilities and Equity	
Long-term note payable	C$3,000,000
Capital stock	1,500,000
	C$4,500,000

Canadaco purchases and sells inventory in 20X1, generating net income of C$1,180,000, out of which C$350,000 in dividends are paid. The company's income statement and statement of retained earnings for 20X1 and balance sheet at 31 December 20X1 follow:

Canadaco Income Statement and Statement of Retained Earnings, 20X1

Sales	C$12,000,000
Cost of sales	(9,000,000)
Selling expenses	(750,000)
Depreciation expense	(300,000)
Interest expense	(270,000)
Income tax	(500,000)
Net income	C$1,180,000
Less: Dividends, 1 Dec 20X1	(350,000)
Retained earnings, 31 Dec 20X1	C$830,000

Canadaco Balance Sheet, 31 December 20X1

Assets		Liabilities and Equity	
Cash	C$980,000	Accounts payable	C$450,000
Accounts receivable	900,000	Total current liabilities	450,000
Inventory	1,200,000	Long-term notes payable	3,000,000
Total current assets	C$3,080,000	Total liabilities	C$3,450,000
Property and equipment	3,000,000	Capital stock	1,500,000
Less: accumulated depreciation	(300,000)	Retained earnings	830,000
Total	C$5,780,000	Total	C$5,780,000

Inventory is measured at historical cost on a FIFO basis.

To translate Canadaco's Canadian dollar financial statements into euro for consolidation purposes, the following exchange rate information was gathered:

Date	€ per C$
1 January 20X1	0.70
Average, 20X1	0.75
Weighted-average rate when inventory was acquired	0.74
1 December 20X1 when dividends were declared	0.78
31 December 20X1	0.80

During 20X1, the Canadian dollar strengthened steadily against the euro from an exchange rate of €0.70 at the beginning of the year to €0.80 at year-end.

The translation worksheet that follows shows Canadaco's translated financial statements under each of the two translation methods. Assume first that Canadaco's functional currency is the Canadian dollar, and thus the current rate method must be used. The Canadian dollar income statement and statement of retained earnings are translated first. Income statement items for 20X1 are translated at the average exchange rate for 20X1 (€0.75), and dividends

are translated at the exchange rate that existed when they were declared (€0.78). The ending balance in retained earnings as of 31 December 20X1 of €612,000 is transferred to the Canadian dollar balance sheet. The remaining balance sheet accounts are then translated. Assets and liabilities are translated at the current exchange rate on the balance sheet date of 31 December 20X1 (€0.80), and the capital stock account is translated at the historical exchange rate (€0.70) that existed on the date that Interco made the capital contribution. A positive translation adjustment of €202,000 is needed as a balancing amount, which is reported in the stockholders' equity section of the balance sheet.

If instead Interco determines that Canadaco's functional currency is the euro (the parent's presentation currency), the temporal method must be applied as shown in the far right columns of the table. The differences in procedure from the current rate method are that inventory, property, and equipment (and accumulated depreciation), as well as their related expenses (cost of goods sold and depreciation), are translated at the historical exchange rates that existed when the assets were acquired: €0.70 in the case of property and equipment, and €0.74 for inventory. The balance sheet is translated first, with €472,000 determined as the amount of retained earnings needed to keep the balance sheet in balance. This amount is transferred to the income statement and statement of retained earnings as the ending balance in retained earnings as of 31 December 20X1. Income statement items then are translated, with cost of goods sold and depreciation expense being translated at historical exchange rates. A negative translation adjustment of €245,000 is determined as the amount needed to arrive at the ending balance in retained earnings of €472,000, and this adjustment is reported as a translation loss on the income statement.

The positive translation adjustment under the current rate method can be explained by the facts that Canadaco has a net asset balance sheet exposure (total assets exceed total liabilities) during 20X1 and the Canadian dollar strengthened against the euro. The negative translation adjustment (translation loss) under the temporal method is explained by the fact that Canadaco has a net liability balance sheet exposure under this method (because the amount of exposed liabilities [accounts payable plus notes payable] exceeds the amount of exposed assets [cash plus receivables]) during 20X1 when the Canadian dollar strengthened against the euro.

Canadaco Income Statement and Statement of Retained Earnings, 20X1

Canadaco's Functional Currency Is:		*Local Currency (C$)*		*Parent's Currency (€)*	
		Current Rate		Temporal	
	C$	Exch. Rate	€	Exch. Rate	€
Sales	12,000,000	0.75 A	9,000,000	0.75 A	9,000,000
Cost of goods sold	(9,000,000)	0.75 A	(6,750,000)	0.74 H	(6,660,000)
Selling expenses	(750,000)	0.75 A	(562,500)	0.75 A	(562,500)
Depreciation expense	(300,000)	0.75 A	(225,000)	0.70 H	(210,000)
Interest expense	(270,000)	0.75 A	(202,500)	0.75 A	(202,500)
Income tax	(500,000)	0.75 A	(375,000)	0.75 A	(375,000)
Income before trans. gain (loss)	1,180,000		885,000		990,000
Translation gain (loss)	N/A		N/A	to balance	(245,000)
Net income	1,180,000		885,000		745,000
Less: Dividends, 12/1/20X1	(350,000)	0.78 H	(273,000)	0.78 H	(273,000)
Retained earnings, 12/31/20X1	830,000		612,000	from B/S	472,000

Note: C = current exchange rate; A = average-for-the-year exchange rate; H = historical exchange rate.

Canadaco Balance Sheet, 31 December 20X1

Canadaco's Functional Currency Is:		*Local Currency (C$)*		*Parent's Currency (€)*	
		Current Rate		Temporal	
	C$	Exch. Rate	€	Exch. Rate	€
Assets					
Cash	980,000	0.80 C	784,000	0.80 C	784,000
Accounts receivable	900,000	0.80 C	720,000	0.80 C	720,000
Inventory	1,200,000	0.80 C	960,000	0.74 H	888,000
Total current assets	3,080,000		2,464,000		2,392,000
Property and equipment	3,000,000	0.80 C	2,400,000	0.70 H	2,100,000
Less: accumulated depreciation	(300,000)	0.80 C	(240,000)	0.70 H	(210,000)
Total assets	5,780,000		4,624,000		4,282,000
Liabilities and Equity					
Accounts payable	450,000	0.80 C	360,000	0.80 C	360,000
Total current liabilities	450,000		360,000		360,000
Long-term notes payable	3,000,000	0.80 C	2,400,000	0.80 C	2,400,000
Total liabilities	3,450,000		2,760,000		2,760,000
Capital stock	1,500,000	0.70 H	1,050,000	0.70 H	1,050,000
Retained earnings	830,000	from I/S	612,000	to balance	472,000
Translation adjustment	N/A	to balance	202,000		N/A
Total	5,780,000		4,624,000		4,282,000

Note: C = current exchange rate; A = average-for-the-year exchange rate; H = historical exchange rate.

3.4. Translation Analytical Issues

The two different translation methods used to translate Canadaco's Canadian dollar financial statements into euro result in very different amounts to be included in Interco's consolidated financial statements. The chart below summarizes some of these differences:

Canadaco's Functional Currency Is:	*Local Currency (C$)*	*Parent's Currency (€)*	
	Translation Method		
Item	Current Rate (€)	Temporal (€)	Difference (%)
Sales	900,000	900,000	0.0
Net income	885,000	745,000	+18.8
Income before translation gain (loss)	885,000	990,000	–10.6
Total assets	4,624,000	4,282,000	+8.0
Total equity	1,864,000	1,522,000	+22.5

In this particular case, the current rate method results in a significantly larger net income than the temporal method. This result occurs because under the current rate method, the translation adjustment is not included in the calculation of income. If the translation loss were excluded from net income, the temporal method would result in a significantly larger amount

of net income. The combination of smaller net income under the temporal method and a positive translation adjustment reported on the balance sheet under the current rate method results in a much larger amount of total equity under the current rate method. Total assets also are larger under the current rate method because all assets are translated at the current exchange rate, which is higher than the historical exchange rates at which inventory and fixed assets are translated under the temporal method.

To examine the effects of translation on the underlying relationships that exist in Canadaco's Canadian dollar financial statements, several significant ratios are calculated from the original Canadian dollar financial statements and the translated (euro) financial statements and presented in the table below.

				Local Currency (C$)		*Parent's Currency (€)*
Canadaco's Functional Currency Is:		C$		Current Rate (€)		Temporal (€)
Current ratio		6.84		6.84		6.64
Current assets		3,080,000		2,464,000		2,392,000
Current liabilities	=	450,000	=	360,000	=	360,000
Debt-to-assets ratio		0.52		0.52		0.56
Total debt		3,000,000		2,400,000		2,400,000
Total assets	=	5,780,000	=	4,624,000	=	4,282,000
Debt-to-equity ratio		1.29		1.29		1.58
Total debt		3,000,000		2,400,000		2,400,000
Total equity	=	2,330,000	=	1,864,000	=	1,522,000
Interest coverage		7.22		7.22		7.74
EBIT		1,950,000		1,462,500		1,567,500
Interest payments	=	270,000	=	202,500	=	202,500
Gross profit margin		0.25		0.25		0.26
Gross profit		3,000,000		2,250,000		2,340,000
Sales	=	12,000,000	=	9,000,000	=	9,000,000
Operating profit margin		0.16		0.16		0.17
Operating profit		1,950,000		1,462,500		1,567,500
Sales	=	12,000,000	=	9,000,000	=	9,000,000
Net profit margin		0.10		0.10		0.08
Net income		1,180,000		885,000		745,000
Sales	=	12,000,000	=	9,000,000	=	9,000,000
Receivables turnover		13.33		12.50		12.50
Sales		12,000,000		9,000,000		9,000,000
Accounts receivable	=	900,000	=	720,000	=	720,000
Inventory turnover		7.50		7.03		7.50
Cost of goods sold		9,000,000		6,750,000		6,660,000
Inventory	=	1,200,000	=	960,000	=	888,000
Fixed asset turnover		4.44		4.17		4.76

(continued)

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Canadaco's Functional Currency Is:		C$		Local Currency (C$) Current Rate (€)		Parent's Currency (€) Temporal (€)
Sales		12,000,000		9,000,000		9,000,000
Property & equipment (net)	=	2,700,000	=	2,160,000	=	1,890,000
Return on assets		0.20		0.19		0.17
Net income		1,180,000		885,000		745,000
Total assets	=	5,780,000	=	4,624,000	=	4,282,000
Return on equity		0.51		0.47		0.49
Net income		1,180,000		885,000		745,000
Total equity	=	2,330,000	=	1,864,000	=	1,522,000

Comparing the current rate method (€) and temporal method (€) columns in the above table shows that financial ratios calculated from Canadaco's translated financial statements (in €) differ significantly depending on which method of translation is used. Of the ratios presented, only receivables turnover is the same under both translation methods. This is the only ratio presented in which there is no difference in the type of exchange rate used to translate the items that comprise the numerator and the denominator. Sales are translated at the average exchange rate and receivables are translated at the current exchange rate under both methods. For each of the other ratios, at least one of the items included in either the numerator or the denominator is translated at a different type of rate (current, average, or historical) under the temporal method than under the current rate method. For example, the current ratio has a different value under the two translation methods because inventory is translated at the current exchange rate under the current rate method and at the historical exchange rate under the temporal method. In this case, because the euro/Canadian dollar exchange rate on 31 December 20X1 (€0.80) is higher than the historical exchange rate when the inventory was acquired (€0.74), the current ratio is larger under the current rate method of translation.

Comparing the ratios in the Canadian dollar and current rate method (euro) columns of the above table shows that many of the underlying relationships that exist in Canadaco's Canadian dollar financial statements are preserved when the current rate method of translation is used (i.e., the ratio calculated from the Canadian dollar and euro translated amounts is the same). The current ratio, the leverage ratios (debt-to-assets and debt-to-equity ratios), the interest coverage ratio, and the profit margins (gross profit margin, operating profit margin, and net profit margin) are the same in the Canadian dollar and current rate method (euro) columns of the above table. This result occurs because each of the ratios is calculated using information from either the balance sheet or the income statement, but not both. Those ratios that compare amounts from the balance sheet with amounts from the income statement (e.g., turnover and return ratios) are different. In this particular case, each of the turnover and return ratios is larger when calculated from the Canadian dollar amounts than when calculated using the current rate (euro) amounts. The underlying Canadian dollar relationships are distorted when translated using the current rate method because the balance sheet amounts are translated using the current exchange rate while revenues and expenses are translated using the average exchange rate. (These distortions would not occur if revenues and expenses also were translated at the current exchange rate.)

Comparing the ratios in the Canadian dollar and temporal method (euro) columns of the table shows that translation using the temporal method distorts all of the underlying relationships that exist in the Canadian dollar financial statements, except inventory turnover. Moreover, it is not possible to generalize the direction of the distortion across ratios. In Canadaco's case, using the temporal method results in a larger gross profit margin and operating profit margin but a smaller net profit margin as compared with the values of these ratios calculated from the original Canadian dollar amounts. Similarly, receivables turnover is smaller, inventory turnover is the same, and fixed asset turnover is larger when calculated from the translated amounts.

In translating Canadaco's Canadian dollar financial statements into euro, the temporal method results in a smaller amount of net income than the current rate method only because IFRS and US GAAP require the resulting translation loss to be included in net income when the temporal method is used. The translation loss arises because the Canadian dollar strengthened against the euro and Canadaco has a larger amount of liabilities translated at the current exchange rate (monetary liabilities) than it has assets translated at the current exchange rate (monetary assets). If Canadaco had a net monetary asset exposure (i.e., if monetary assets exceeded monetary liabilities), a translation gain would arise and net income under the temporal method (including the translation gain) would be greater than under the current rate method. Example 5 demonstrates how different types of balance sheet exposure under the temporal method can affect translated net income.

EXAMPLE 5 Effects of Different Balance Sheet Exposures under the Temporal Method *(Canadaco's functional currency is the parent's functional currency)*

Canadaco begins operations on 1 January 20X1, with cash of C$1,500,000 and property and equipment of C$3,000,000. In Case A, Canadaco finances the acquisition of property and equipment with a long-term note payable and begins operations with net monetary liabilities of C$1,500,000 (C$3,000,000 long-term note payable less C$1,500,000 cash). In Case B, Canadaco finances the acquisition of property and equipment with capital stock and begins operations with net monetary assets of C$1,500,000. To isolate the effect that balance sheet exposure has on net income under the temporal method, assume that Canadaco continues to have C$270,000 in interest expense in Case B, even though there is no debt financing. This assumption is inconsistent with reality, but it allows us to more clearly see the effect of balance sheet exposure on net income. The only difference between Case A and Case B is the net monetary asset/liability position of the company, as shown in the following table:

Canadaco Balance Sheet, 1 January 20X1

	Case A	Case B
Assets		
Cash	C$1,500,000	C$1,500,000
Property and equipment	3,000,000	3,000,000
	C$4,500,000	C$4,500,000

(continued)

(Continued)

	Case A	Case B
Liabilities and Equity		
Long-term note payable	C$3,000,000	C$ 0
Capital stock	1,500,000	4,500,000
	C$4,500,000	C$4,500,000

Canadaco purchases and sells inventory in 20X1, generating net income of C$1,180,000, out of which dividends of C$350,000 are paid. The company has total assets of C$5,780,000 as of 31 December 20X1. Canadaco's functional currency is determined to be the euro (the parent's presentation currency), and the company's Canadian dollar financial statements are translated into euro using the temporal method. Relevant exchange rates are as follows:

Date	€ per C$
1 January 20X1	0.70
Average, 20X1	0.75
Weighted-average rate when inventory was acquired	0.74
1 December 20X1 when dividends were declared	0.78
31 December 20X1	0.80

What effect does the nature of Canadaco's net monetary asset or liability position have on the euro translated amounts?

Solution: Translation of Canadaco's 31 December 20X1 balance sheet under the temporal method in Case A and Case B is shown in the following table:

Canadaco Balance Sheet on 31 December 20X1 under the Temporal Method

	Case A: Net Monetary Liabilities			Case B: Net Monetary Assets		
	C$	Exch. Rate	€	C$	Exch. Rate	€
Assets						
Cash	980,000	0.80 C	784,000	980,000	0.80 C	784,000
Accounts receivable	900,000	0.80 C	720,000	900,000	0.80 C	720,000
Inventory	1,200,000	0.74 H	888,000	1,200,000	0.74 H	888,000
Total current assets	3,080,000		2,392,000	3,080,000		2,392,000
Property and equipment	3,000,000	0.70 H	2,100,000	3,000,000	0.70 H	2,100,000
Less: accum. deprec.	(300,000)	0.70 H	(210,000)	(300,000)	0.70 H	(210,000)
Total assets	5,780,000		4,282,000	5,780,000		4,282,000
Liabilities and Equity						
Accounts payable	450,000	0.80 C	360,000	450,000	0.80 C	360,000
Total current liabilities	450,000		360,000	450,000		360,000
Long-term notes payable	3,000,000	0.80 C	2,400,000	0		0
Total liabilities	3,450,000		2.760,000	450,000		360,000

(Continued)

	Case A: Net Monetary Liabilities			Case B: Net Monetary Assets		
	C$	Exch. Rate	€	C$	Exch. Rate	€
Capital stock	1,500,000	0.70 H	1,050,000	4,500,000	0.70 H	3,150,000
Retained earnings	830,000		472,000	830,000		772,000
Total	5,780,000		4,282,000	5,780,000		4,282,000

Note: C = current exchange rate; A = average-for-the-year exchange rate; H = historical exchange rate.

To keep the balance sheet in balance, retained earnings must be €472,000 in Case A (net monetary liability exposure) and €772,000 in Case B (net monetary asset exposure). The difference in retained earnings of €300,000 is equal to the translation loss that results from holding a Canadian dollar–denominated note payable during a period in which the Canadian dollar strengthens against the euro. This difference is determined by multiplying the amount of long-term note payable in Case A by the change in exchange rate during the year [C$3,000,000 × (€0.80 – €0.70) = €300,000]. Notes payable are exposed to foreign exchange risk under the temporal method, whereas capital stock is not. Canadaco could avoid the €300,000 translation loss related to long-term debt by financing the acquisition of property and equipment with equity rather than debt.

Translation of Canadaco's 20X1 income statement and statement of retained earnings under the temporal method for Case A and Case B is shown in the following table:

Canadaco Income Statement and Statement of Retained Earnings for 20X1 under the Temporal Method

	Case A: Net Monetary Liabilities			Case B: Net Monetary Assets		
	C$	Exch. Rate	€	C$	Exch. Rate	€
Sales	12,000,000	0.75 A	9,000,000	12,000,000	0.75 A	9,000,000
Cost of goods sold	(9,000,000)	0.74 H	(6,660,000)	(9,000,000)	0.74 H	(6,660,000)
Selling expenses	(750,000)	0.75 A	(562,500)	(750,000)	0.75 A	(562,500)
Depreciation expense	(300,000)	0.70 H	(210,000)	(300,000)	0.70 H	(210,000)
Interest expense	(270,000)	0.75 A	(202,500)	(270,000)	0.75 A	(202,500)
Income tax	(500,000)	0.75 A	(375,000)	(500,000)	0.75 A	(375,000)
Income before translation gain (loss)	1,180,000		990,000	1,180,000		990,000
Translation gain (loss)	N/A		(245,000)	N/A		55,000
Net income	1,180,000		745,000	1,180,000		1,045,000
Less: Dividends on 1 December 20X1	(350,000)	0.78 H	(273,000)	(350,000)	0.78 H	(273,000)
Retained earnings on 31 December 20X1	830,000		472,000	830,000		772,000

Note: C = current exchange rate; A = average-for-the-year exchange rate; H = historical exchange rate.

Income before translation gain (loss) is the same in both cases. To obtain the amount of retained earnings needed to keep the balance sheet in balance, a

translation loss of €245,000 must be subtracted from net income in Case A (net monetary liabilities), whereas a translation gain of €55,000 must be added to net income in Case B (net monetary assets). The difference in net income between the two cases is €300,000, which equals the translation loss related to the long-term note payable.

When using the temporal method, companies can manage their exposure to translation gain (loss) more easily than when using the current rate method. If a company can manage the balance sheet of a foreign subsidiary such that monetary assets equal monetary liabilities, no balance sheet exposure exists. Elimination of balance sheet exposure under the current rate method occurs only when total assets equal total liabilities. This equality is difficult to achieve because it requires the foreign subsidiary to have no stockholders' equity.

For Canadaco, in 20X1, applying the current rate method results in larger euro amounts of total assets and total equity being reported in the consolidated financial statements than would result from applying the temporal method. The direction of these differences between the two translation methods is determined by the direction of change in the exchange rate between the Canadian dollar and the euro. For example, total exposed assets are greater under the current rate method because all assets are translated at the current exchange rate. The current exchange rate at 31 December 20X1 is greater than the exchange rates that existed when the non-monetary assets were acquired, which is the translation rate for these assets under the temporal method. Therefore, the current rate method results in a larger amount of total assets because the Canadian dollar strengthened against the euro. The current rate method would result in a smaller amount of total assets than the temporal method if the Canadian dollar had weakened against the euro.

Applying the current rate method also results in a much larger amount of stockholders' equity than the temporal method. A positive translation adjustment arises under the current rate method, which is included in equity, whereas a translation loss reduces total equity (through retained earnings) under the temporal method.

Example 6 shows the effect that the direction of change in the exchange rate has on the translated amounts. Canadaco's Canadian dollar financial statements are translated into euro, first assuming no change in the exchange rate during 20X1, and then assuming the Canadian dollar strengthens and weakens against the euro. Using the current rate method to translate the foreign currency financial statements into the parent's presentation currency, the foreign currency strengthening increases the revenues, income, assets, liabilities, and total equity reported on the parent company's consolidated financial statements. Likewise, smaller amounts of revenues, income, assets, liabilities, and total equity will be reported if the foreign currency weakens against the parent's presentation currency.

When the temporal method is used to translate foreign currency financial statements, foreign currency strengthening still increases revenues, assets, and liabilities reported in the parent's consolidated financial statements. Net income and stockholders' equity, however, translate into smaller amounts (assuming that the foreign subsidiary has a net monetary liability position) because of the translation loss. The opposite results are obtained when the foreign currency weakens against the parent's presentation currency.

EXAMPLE 6 Effect of Direction of Change in the Exchange Rate on Translated Amounts

Canadaco's Canadian dollar (C$) financial statements are translated into euro (€) under three scenarios: (1) the Canadian dollar remains stable against the euro, (2) the Canadian dollar strengthens against the euro, and (3) the Canadian dollar weakens against the euro. Relevant exchange rates are as follows:

	€ per C$		
Date	Stable	Strengthens	Weakens
1 January 20X1	0.70	0.70	0.70
Average, 20X1	0.70	0.75	0.65
Weighted-average rate when inventory was acquired	0.70	0.74	0.66
Rate when dividends were declared	0.70	0.78	0.62
31 December 20X1	0.70	0.80	0.60

What amounts will be reported on the parent's consolidated financial statements under the three different exchange rate assumptions if Canadaco's Canadian dollar financial statements are translated using the:

1. current rate method?
2. temporal method?

Solution to 1: Current Rate Method: Using the current rate method, Canadaco's Canadian dollar financial statements would be translated into euro as follows under the three different exchange rate assumptions:

Canadaco Income Statement and Statement of Retained Earnings for 20X1 under the Current Rate Method

		C$ Stable		C$ Strengthens		C$ Weakens	
	C$	Exch. Rate	€	Exch. Rate	€	Exch. Rate	€
Sales	12,000,000	0.70	8,400,000	0.75 A	9,000,000	0.65 A	7,800,000
Cost of goods sold	(9,000,000)	0.70	(6,300,000)	0.75 A	(6,750,000)	0.65 A	(5,850,000)
Selling expenses	(750,000)	0.70	(525,000)	0.75 A	(562,500)	0.65 A	(487,500)
Deprec. expense	(300,000)	0.70	(210,000)	0.75 A	(225,000)	0.65 A	(195,000)
Interest expense	(270,000)	0.70	(189,000)	0.75 A	(202,500)	0.65 A	(175,500)
Income tax	(500,000)	0.70	(350,000)	0.75 A	(375,000)	0.65 A	(325,000)

(continued)

(Continued)

	C$	C$ Stable		C$ Strengthens		C$ Weakens	
		Exch. Rate	€	Exch. Rate	€	Exch. Rate	€
Net income	1,180,000		826,000		885,000		767,000
Less: Dividends	(350,000)	0.70	(245,000)	0.78 H	(273,000)	0.62 H	(217,000)
Retained earnings	830,000		581,000		612,000		550,000

Note: C = current (period-end) exchange rate; A = average-for-the-year exchange rate; H = historical exchange rate.

Compared with the translated amount of sales and net income under a stable Canadian dollar, a stronger Canadian dollar results in a larger amount of sales and net income being reported in the consolidated income statement. A weaker Canadian dollar results in a smaller amount of sales and net income being reported in consolidated net income.

Canadaco Balance Sheet on 31 December 20X1 under the Current Rate Method

	C$	C$ Stable		C$ Strengthens		C$ Weakens	
		Exch. Rate	€	Exch. Rate	€	Exch. Rate	€
Assets							
Cash	980,000	0.70	686,000	0.80 C	784,000	0.60 C	588,000
Accounts receivable	900,000	0.70	630,000	0.80 C	720,000	0.60 C	540,000
Inventory	1,200,000	0.70	840,000	0.80 C	960,000	0.60 C	720,000
Total current assets	3,080,000		2,156,000		2,464,000		1,848,000
Property and equipment	3,000,000	0.70	2,100,000	0.80 C	2,400,000	0.60 C	1,800,000
Less: accum. deprec.	(300,000)	0.70	(210,000)	0.80 C	(240,000)	0.60 C	(180,000)
Total assets	5,780,000		4,046,000		4,624,000		3,468,000
Liabilities and Equity							
Accounts payable	450,000	0.70	315,000	0.80 C	360,000	0.60 C	270,000
Total current liabilities	450,000		315,000		360,000		270,000
Long-term notes payable	3,000,000	0.70	2,100,000	0.80 C	2,400,000	0.60 C	1,800,000
Total liabilities	3,450,000		2,415,000		2,760,000		2,070,000

(Continued)

	C$	C$ Stable		C$ Strengthens		C$ Weakens	
		Exch. Rate	€	Exch. Rate	€	Exch. Rate	€
Capital stock	1,500,000	0.70	1,050,000	0.70 H	1,050,000	0.70 H	1,050,000
Retained earnings	830,000		581,000		612,000		550,000
Translation adjustment	N/A		0		202,000		(202,000)
Total equity	2,330,000		1,631,000		1,864,000		1,398,000
Total	5,780,000		4,046,000		4,624,000		3,468,000

Note: C = current (period-end) exchange rate; A = average-for-the-year exchange rate; H = historical exchange rate.

The translation adjustment is zero when the Canadian dollar remains stable for the year; it is positive when the Canadian dollar strengthens and negative when the Canadian dollar weakens. Compared with the amounts that would appear in the euro consolidated balance sheet under a stable Canadian dollar assumption, a stronger Canadian dollar results in a larger amount of assets, liabilities, and equity being reported on the consolidated balance sheet, and a weaker Canadian dollar results in a smaller amount of assets, liabilities, and equity being reported on the consolidated balance sheet.

Solution to 2: Temporal Method: Using the temporal method, Canadaco's financial statements would be translated into euro as follows under the three different exchange rate scenarios:

Canadaco Balance Sheet on 31 December 20X1

		Temporal Method					
		C$ Stable		C$ Strengthens		C$ Weakens	
	C$	Exch. Rate	€	Exch. Rate	€	Exch. Rate	€
Assets							
Cash	980,000	0.70	686,000	0.80 C	784,000	0.60 C	588,000
Accounts receivable	900,000	0.70	630,000	0.80 C	720,000	0.60 C	540,000
Inventory	1,200,000	0.70	840,000	0.74 H	888,000	0.66 H	792,000
Total current assets	3,080,000		2,156,000		2,392,000		1,920,000
Property and equipment	3,000,000	0.70	2,100,000	0.70 H	2,100,000	0.70 H	2,100,000
Less: accum. deprec.	(300,000)	0.70	(210,000)	0.70 H	(210,000)	0.70 H	(210,000)
Total assets	5,780,000		4,046,000		4,282,000		3,810,000

(continued)

(Continued)

		Temporal Method					
		C$ Stable		C$ Strengthens		C$ Weakens	
	C$	Exch. Rate	€	Exch. Rate	€	Exch. Rate	€
Liabilities and Equity							
Accounts payable	450,000	0.70	315,000	0.80 C	360,000	0.60 C	270,000
Total current liabilities	450,000		315,000		360,000		270,000
Long-term notes payable	3,000,000	0.70	2,100,000	0.80 C	2,400,000	0.60 C	1,800,000
Total liabilities	3,450,000		2,415,000		2,760,000		2,070,000
Capital stock	1,500,000	0.70	1,050,000	0.70 H	1,050,000	0.70 H	1,050,000
Retained earnings	830,000		581,000		472,000		690,000
Total equity	2,330,000		1,631,000		1,522,000		1,740,000
Total	5,780,000		4,046,000		4,282,000		3,810,000

Note: C = current (period-end) exchange rate; A = average-for-the-year exchange rate; H = historical exchange rate.

Compared with the stable Canadian dollar scenario, a stronger Canadian dollar results in a larger amount of assets and liabilities but a smaller amount of equity reported on the consolidated balance sheet. A weaker Canadian dollar results in a smaller amount of assets and liabilities but a larger amount of equity reported on the consolidated balance sheet.

Canadaco Income Statement and Statement of Retained Earnings for 2008 under the Temporal Method

		C$ Stable		C$ Strengthens		C$ Weakens	
	C$	Exch. Rate	€	Exch. Rate	€	Exch. Rate	€
Sales	12,000,000	0.70	8,400,000	0.75 A	9,000,000	0.65 A	7,800,000
Cost of sales	(9,000,000)	0.70	(6,300,000)	0.74 H	(6,660,000)	0.66 H	(5,940,000)
Selling expenses	(750,000)	0.70	(525,000)	0.75 A	(562,500)	0.65 A	(487,500)
Depreciation expense	(300,000)	0.70	(210,000)	0.70 H	(210,000)	0.70 H	(210,000)

(Continued)

		C$ Stable		C$ Strengthens		C$ Weakens	
	C$	Exch. Rate	€	Exch. Rate	€	Exch. Rate	€
Interest expense	(270,000)	0.70	(189,000)	0.75 A	(202,500)	0.65 A	(175,500)
Income tax	(500,000)	0.70	(350,000)	0.75 A	(375,000)	0.65 A	(325,000)
Income before translation gain (loss)	1,180,000		826,000		990,000		662,000
Translation gain (loss)	N/A		0		(245,000)		245,000
Net income	1,180,000		826,000		745,000		907,000
Less: Dividends	(350,000)	0.70	(245,000)	0.78 H	(273,000)	0.62 H	(217,000)
Retained earnings	830,000		581,000		472,000		690,000

Note: C = current (period-end) exchange rate; A = average-for-the-year exchange rate; H = historical exchange rate.

No translation gain or loss exists when the Canadian dollar remains stable during the year. Because the subsidiary has a net monetary liability exposure to changes in the exchange rate, a stronger Canadian dollar results in a translation loss and a weaker Canadian dollar results in a translation gain. Compared with a stable Canadian dollar, a stronger Canadian dollar results in a larger amount of sales and a smaller amount of net income reported on the consolidated income statement. This difference in direction results from the translation loss that is included in net income. (As demonstrated in Example 5, a translation gain would have resulted if the subsidiary had a net monetary asset exposure.) A weaker Canadian dollar results in a smaller amount of sales but a larger amount of net income than if the Canadian dollar had remained stable.

Exhibit 5 summarizes the relationships illustrated in Examples 5 and 6, focusing on the typical effect that a strengthening or weakening of the foreign currency has on financial statement amounts compared with what the amounts would be if the foreign currency were to remain stable.

EXHIBIT 5 Effect of Currency Exchange Rate Movement on Financial Statements

	Temporal Method, Net Monetary Liability Exposure	Temporal Method, Net Monetary Asset Exposure	Current Rate Method
Foreign currency strengthens relative to parent's presentation currency	↑ Revenues ↑ Assets ↑ Liabilities ↓ Net income ↓ Shareholders' equity Translation loss	↑ Revenues ↑ Assets ↑ Liabilities ↑ Net income ↑ Shareholders' equity Translation gain	↑ Revenues ↑ Assets ↑ Liabilities ↑ Net income ↑ Shareholders' equity Positive translation adjustment
Foreign currency weakens relative to parent's presentation currency	↓ Revenues ↓ Assets ↓ Liabilities ↑ Net income ↑ Shareholders' equity Translation gain	↓ Revenues ↓ Assets ↓ Liabilities ↓ Net income ↓ Shareholders' equity Translation loss	↓ Revenues ↓ Assets ↓ Liabilities ↓ Net income ↓ Shareholders' equity Negative translation adjustment

3.5. Translation when a Foreign Subsidiary Operates in a Hyperinflationary Economy

As noted earlier, IFRS and US GAAP differ substantially in their approach to translating the foreign currency financial statements of foreign entities operating in the currency of a hyperinflationary economy. US GAAP simply require the foreign currency financial statements of such an entity to be translated as if the parent's currency is the functional currency (i.e., the temporal method must be used with the resulting translation gain or loss reported in net income). IFRS require the foreign currency financial statements first to be restated for inflation using the procedures of IAS 29, and then the inflation-adjusted financial statements are translated using the current exchange rate.

IAS 29 requires the following procedures in adjusting financial statements for inflation:

Balance Sheet

- Monetary assets and monetary liabilities are not restated because they are already expressed in terms of the monetary unit current at the balance sheet date. Monetary items consist of cash, receivables, and payables.
- Non-monetary assets and non-monetary liabilities are restated for changes in the general purchasing power of the monetary unit. Most non-monetary items are carried at historical cost. In these cases, the restated cost is determined by applying to the historical cost the change in the general price index from the date of acquisition to the balance sheet date. Some non-monetary items are carried at revalued amounts; for example, property, plant, and equipment are revalued according to the allowed alternative treatment in IAS 16, "Property, Plant and Equipment." These items are restated from the date of revaluation.
- All components of stockholders' equity are restated by applying the change in the general price level from the beginning of the period or, if later, from the date of contribution to the balance sheet date.

Income Statement

- All income statement items are restated by applying the change in the general price index from the dates when the items were originally recorded to the balance sheet date.
- The net gain or loss in purchasing power that arises from holding monetary assets and monetary liabilities during a period of inflation is included in net income.

The procedures for adjusting financial statements for inflation are similar in concept to the procedures followed when using the temporal method for translation. By restating non-monetary assets and liabilities along with stockholders' equity in terms of the general price level at the balance sheet date, these items are carried at their historical amount of purchasing power. Only the monetary items, which are not restated for inflation, are exposed to inflation risk. The effect of that exposure is reflected through the purchasing power gain or loss on the net monetary asset or liability position.

Holding cash and receivables during a period of inflation results in a **purchasing power loss**, whereas holding payables during inflation results in a **purchasing power gain**. This relationship can be demonstrated through the following examples.

Assume that the general price index (GPI) on 1 January 20X1 is 100; that is, a representative basket of goods and services can be purchased on that date for $100. At the end of 20X1, the same basket of goods and services costs $120; thus, the country has experienced an inflation rate of 20% [($120 – $100) ÷ $100]. Cash of $100 can be used to acquire one basket of goods on 1 January 20X1. One year later, however, when the GPI stands at 120, the same $100 in cash can now purchase only 83.3% of a basket of goods and services. At the end of 20X1, it now takes $120 to purchase the same amount as $100 could purchase at the beginning of the year. The difference between the amount of cash needed to purchase one market basket at year end ($120) and the amount actually held ($100) results in a purchasing power loss of $20 from holding cash of $100 during the year.

Borrowing money during a period of inflation increases purchasing power. Assume that a company expects to receive $120 in cash at the end of 20X1. If it waits until the cash is received, the company will be able to purchase exactly 1.0 basket of goods and services when the GPI stands at 120. If instead, the company borrows $120 on 1 January 20X1 when the GPI is 100, it can acquire 1.2 baskets of goods and services. This transaction results in a purchasing power gain of $20. Of course, there is an interest cost associated with the borrowing that offsets a portion of this gain.

A net purchasing power gain will arise when a company holds a greater amount of monetary liabilities than monetary assets, and a net purchasing power loss will result when the opposite situation exists. As such, purchasing power gains and losses are analogous to the translation gains and losses that arise when the currency is weakening in value and the temporal method of translation is applied.

Although the procedures required by IFRS and US GAAP for translating the foreign currency financial statements in high-inflation countries are fundamentally different, the results, in a rare occurrence, can be very similar. Indeed, if the exchange rate between two currencies changes by exactly the same percentage as the change in the general price index in the highly inflationary country, then the two methodologies produce the same results. Example 7 demonstrates this scenario.

EXAMPLE 7 Translation of Foreign Currency Financial Statements of a Foreign Entity Operating in a High Inflation Country

ABC Company formed a subsidiary in a foreign country on 1 January 20X1, through a combination of debt and equity financing. The foreign subsidiary acquired land on 1 January 20X1, which it rents to a local farmer. The foreign subsidiary's financial statements for its first year of operations, in foreign currency units (FC), are as follows:

Foreign Subsidiary Income Statement

(in FC)	20X1
Rent revenue	1,000
Interest expense	(250)
Net income	750

Foreign Subsidiary Balance Sheets

(in FC)	1 Jan 20X1	31 Dec 20X1
Cash	1,000	1,750
Land	9,000	9,000
Total	10,000	10,750
Note payable (5%)	5,000	5,000
Capital stock	5,000	5,000
Retained earnings	0	750
Total	10,000	10,750

The foreign country experienced significant inflation in 20X1, especially in the second half of the year. The general price index during the year was as follows:

1 January 20X1	100
Average, 20X1	125
31 December 20X1	200

The inflation rate in 20X1 was 100%, and the foreign country clearly meets the definition of a highly inflationary economy.

As a result of the high inflation rate in the foreign country, the FC weakened substantially during the year relative to other currencies. Relevant exchange rates between ABC's presentation currency (US dollars) and the FC during 20X1 were as follows:

	US$ per FC
1 January 20X1	1.00
Average, 20X1	0.80
31 December 20X1	0.50

What amounts will ABC Company include in its consolidated financial statements for the year ended 31 December 20X1 related to this foreign subsidiary?

Solution: Assuming that ABC Company wishes to prepare its consolidated financial statements in accordance with IFRS, the foreign subsidiary's 20X1 financial statements will be restated for local inflation and then translated into ABC's presentation currency using the current exchange rate as follows:

	FC	Restatement Factor	Inflation-Adjusted FC	Exch. Rate	US$
Cash	1,750	200/200	1,750	0.50	875
Land	9,000	200/100	18,000	0.50	9,000
Total	10,750		19,750		9,875
Note payable	5,000	200/200	5,000	0.50	2,500
Capital stock	5,000	200/100	10,000	0.50	5,000
Retained earnings	750		4,750	0.50	2,375
Total	10,750		19,750		9,875
Revenues	1,000	200/125	1,600	0.50	800
Interest expense	(250)	200/125	(400)	0.50	(200)
Subtotal	750		1,200		600
Purchasing power gain/loss			3,550	0.50	1,775
Net income			4,750		2,375

All financial statement items are restated to the GPI at 31 December 20X1. The net purchasing power gain of FC3,550 can be explained as follows:

Gain from holding note payable	FC5,000 × (200 – 100)/100 =	FC5,000
Loss from holding beginning balance in cash	–1,000 × (200 – 100)/100 =	(1,000)
Loss from increase in cash during the year	–750 × (200 – 125)/125 =	(450)
Net purchasing power gain (loss)		FC3,550

Note that all inflation-adjusted FC amounts are translated at the current exchange rate, and thus no translation adjustment is needed.

Now assume alternatively that ABC Company wishes to comply with US GAAP in preparing its consolidated financial statements. In that case, the foreign subsidiary's FC financial statements are translated into US dollars using the temporal method, with the resulting translation gain/loss reported in net income, as follows:

	FC	Exch. Rate	US$
Cash	1,750	0.50 C	875
Land	9,000	1.00 H	9,000
Total	10,750		9,875

(continued)

(Continued)

	FC	Exch. Rate	US$
Note payable	5,000	0.50 C	2,500
Capital stock	5,000	1.00 H	5,000
Retained earnings	750		2,375
Total	10,750		9,875
Revenues	1,000	0.80 A	800
Interest expense	(250)	0.80 A	(200)
Subtotal	750		600
Translation gain*			1,775
Net income			2,375

*The dividend is US$0 and the increase in retained earnings is US$2,375 (from the balance sheet); so, net income is US$2,375, and thus the translation gain is US$1,775.

Note: C = current (period-end) exchange rate; A = average-for-the-year exchange rate; H = historical exchange rate.

Application of the temporal method as required by US GAAP in this situation results in exactly the same US dollar amounts as were obtained under the restate/translate approach required by IFRS. The equivalence of results under the two approaches exists because of the exact one-to-one inverse relationship between the change in the foreign country's GPI and the change in the dollar value of the FC, as predicted by the theory of purchasing power parity. The GPI doubled and the FC lost half its purchasing power, which caused the FC to lose half its value in dollar terms. To the extent that this relationship does not hold, and it rarely ever does, the two different methodologies will generate different translated amounts. For example, if the 31 December 20X1 exchange rate had adjusted to only US$0.60 per FC1 (rather than US$0.50 per FC1), then translated net income would have been US$2,050 under US GAAP and US$2,850 under IFRS.

3.6. Companies Use Both Translation Methods at the Same Time

Under both IFRS and US GAAP, a multinational corporation may need to use both the current rate and the temporal methods of translation at a single point in time. This situation will apply when some foreign subsidiaries have a foreign currency as their functional currency (and therefore are translated using the current rate method) and other foreign subsidiaries have the parent's currency as their functional currency (and therefore are translated using the temporal method). As a result, a multinational corporation's consolidated financial statements can reflect simultaneously both a net translation gain or loss that is included in the determination of net income (from foreign subsidiaries translated using the temporal method) and a separate cumulative translation adjustment reported on the balance sheet in stockholders' equity (from foreign subsidiaries translated using the current rate method).

Exxon Mobil Corporation is an example of a company that has a mixture of foreign currency and parent currency functional currency subsidiaries, as evidenced by the following excerpt from its 2011 annual report, Note 1 Summary of Accounting Policies:

> **Foreign Currency Translation.** The Corporation selects the functional reporting currency for its international subsidiaries based on the currency of the primary economic environment in which each subsidiary operates. Downstream and Chemical operations primarily use the local currency. However, the US dollar is used in countries with a history of high inflation (primarily in Latin America) and Singapore, which predominantly sells into the US dollar export market. Upstream operations which are relatively self-contained and integrated within a particular country, such as Canada, the United Kingdom, Norway and continental Europe, use the local currency. Some upstream operations, primarily in Asia and Africa, use the US dollar because they predominantly sell crude and natural gas production into US dollar–denominated markets. For all operations, gains or losses from remeasuring foreign currency transactions into the functional currency are included in income.

Because of the judgment involved in determining the functional currency of foreign operations, two companies operating in the same industry might apply this judgment differently. For example, although Exxon Mobil has identified the local currency as the functional currency for many of its international subsidiaries, Chevron Corporation has designated the US dollar as the functional currency for substantially all of its overseas operations, as indicated in its 2011 annual report, Note 1 Summary of Significant Accounting Policies:

> **Currency Translation**. The US dollar is the functional currency for substantially all of the company's consolidated operations and those of its equity affiliates. For those operations, all gains and losses from currency remeasurement are included in current period income. The cumulative translation effects for those few entities, both consolidated and affiliated, using functional currencies other than the US dollar are included in "Currency translation adjustment" on the Consolidated Statement of Equity.

Evaluating net income reported by Exxon Mobil against net income reported by Chevron presents a comparability problem. This problem can be partially resolved by adding the translation adjustments reported in stockholders' equity to net income for both companies. The feasibility of this solution depends on the level of detail disclosed by multinational corporations with respect to the translation of foreign currency financial statements.

3.7. Disclosures Related to Translation Methods

Both IFRS and US GAAP require two types of disclosures related to foreign currency translation:

1. the amount of exchange differences recognized in net income, and
2. the amount of cumulative translation adjustment classified in a separate component of equity, along with a reconciliation of the amount of cumulative translation adjustment at the beginning and end of the period.

US GAAP also specifically require disclosure of the amount of translation adjustment transferred from stockholders' equity and included in current net income as a result of the disposal of a foreign entity.

The amount of exchange differences recognized in net income consists of

- foreign currency *transaction* gains and losses, and
- *translation* gains and losses resulting from application of the temporal method.

Neither IFRS nor US GAAP require disclosure of the two separate amounts that constitute the total exchange difference recognized in net income, and most companies do not provide disclosure at that level of detail. However, BASF AG (shown earlier in Exhibit 1) is an exception. Note 6 in BASF's annual report separately discloses gains from foreign currency and hedging transactions and gains from translation of financial statements, both of which are included in the line item "Other Operating Income" on the income statement, as shown below:

6. Other Operating Income

Million €	2011	2010
Reversal and adjustment of provisions	170	244
Revenue from miscellaneous revenue-generating activities	207	142
Income from foreign currency and hedging transactions	170	136
Income from the translation of financial statements in foreign currencies	42	76
Gains on the disposal of property, plant and equipment and divestitures	666	101
Reversals of impairments of property, plant and equipment	—	40
Gains on the reversal of allowance for doubtful business-related receivables	77	36
Other	676	365
	2,008	1,140

The company provides a similar level of detail in Note 7 related to "Other Operating Expenses."

Disclosures related to foreign currency translation are commonly found in both the MD&A and the Notes to Financial Statements sections of an annual report. Example 8 uses the foreign currency translation–related disclosures made in 2011 by Yahoo! Inc.

EXAMPLE 8 Disclosures Related to Foreign Currency Translation: Yahoo! Inc. 2011 Annual Report

Yahoo! Inc. is a US-based digital media company that reports in US dollars and prepares financial statements in accordance with US GAAP.

The stockholders' equity section of Yahoo!'s consolidated balance sheets includes the following line items:

	31 December	
(in thousands)	2010	2011
Common stock	$1,306	$1,242
Additional paid-in capital	10,109,913	9,825,899
Treasury stock	—	(416,237)
Retained earnings	1,942,656	2,432,294
Accumulated other comprehensive income (loss)	504,254	697,869
Total Yahoo! Inc. stockholders' equity	12,558,129	12,541,067

The consolidated statement of stockholders' equity provides detail on the components comprising "Accumulated other comprehensive income." The relevant portion of that statement appears below:

	Years Ended 31 December		
	2009	2010	2011
Accumulated other comprehensive income			
Balance, beginning of year	120,276	369,236	504,254
Net change in unrealized gains/losses on available-for-sale securities, net of tax	(1,936)	3,813	(16,272)
Foreign currency translation adjustments, net of tax	250,896	131,205	209,887
Balance, end of year	369,236	504,254	697,869

Yahoo! reported the following net income in 2010 and 2011, as shown on the consolidated statement of income:

	2010	2011	% Change
Net income	$1,244,628	$1,062,699	–14.6%

Yahoo!'s disclosures for its three geographic segments are disclosed in a note to the financial statements. Revenue (excluding total acquisition costs) and direct segment operating costs are shown below:

	2009	2010	2011
Revenue ex-TAC by segment:			
Americas	3,656,752	3,467,850	3,142,879
EMEA	390,456	368,884	407,467
Asia Pacific	635,281	751,495	830,482
Total revenue ex-TAC	4,682,489	4,588,229	4,380,828
Direct costs by segment:			
Americas	620,690	568,017	560,016
EMEA	115,778	118,954	135,266
Asia Pacific	138,739	146,657	194,394

In the MD&A section of the 2011 annual report, Yahoo! describes the source of its translation exposure:

Translation Exposure

We are also exposed to foreign exchange rate fluctuations as we convert the financial statements of our foreign subsidiaries and our investments in equity interests into US dollars in consolidation. If there is a change in foreign currency exchange rates, the conversion of the foreign subsidiaries' financial statements into US dollars results in a gain or loss which is recorded as a component of accumulated other comprehensive income which is part of stockholders' equity.

Revenue ex-TAC (total acquisition costs) and related expenses generated from our international subsidiaries are generally denominated in the currencies of the local countries. Primary currencies include Australian dollars, British pounds, Euros, Japanese Yen, Korean won, and Taiwan dollars. The statements of income of our international operations are translated into US dollars at exchange rates indicative of market rates during each applicable period. To the extent the US dollar strengthens against foreign currencies, the translation of these foreign currency-denominated transactions results in reduced consolidated revenue and operating expenses. Conversely, our consolidated revenue and operating expenses will increase if the US dollar weakens against foreign currencies. Using the foreign currency exchange rates from the year ended December 31, 2010, revenue ex-TAC for the Americas segment for the year ended December 31, 2011 would have been lower than we reported by $6 million, revenue ex-TAC for the EMEA segment would have been lower than we reported by $16 million, and revenue ex-TAC for the Asia Pacific segment would have been lower than we reported by $59 million. Using the foreign currency exchange rates from the year ended December 31, 2010, direct costs for the Americas segment for the year ended December 31, 2011 would have been lower than we reported by $2 million, direct costs for the EMEA segment would have been lower than we reported by $5 million, and direct costs for the Asia Pacific segment would have been lower than we reported by $15 million.

Using the information above, address the following questions:

1. By how much did accumulated other comprehensive income change during the year ended 31 December 2011? Where can this information be found?
2. How much foreign currency translation adjustment was included in other comprehensive income for the year ended 31 December 2011? How does such an adjustment arise?
3. If foreign currency translation adjustment had been included in net income (rather than in other comprehensive income), how would the 2010/2011 change in income have been affected?
4. From what perspective does Yahoo! describe its foreign currency risk?
5. What percentage of total revenue ex-TAC was generated by the Asia-Pacific segment for the year ended 31 December 2011? What would this percentage have been if there had been no change in foreign currency exchange rates during the year?

Solutions:

1. Accumulated other comprehensive income increased by $193,615 thousand (from $504,254 thousand beginning balance to $697,869 thousand at the end of the year). This information can be found in two places: the stockholders' equity section of the balance sheet and the consolidated statement of stockholders' equity.
2. The amount of foreign currency translation adjustment included in other comprehensive income for 2011 was $209,887 thousand. The foreign currency translation adjustment arises from applying the current rate method to translate the foreign currency functional currency financial statements of foreign subsidiaries. Assuming that Yahoo!'s foreign subsidiaries have positive net assets, the positive translation

adjustment in 2011 results from a strengthening in foreign currencies (weakening in the US dollar).

3. If foreign currency translation adjustment had been included in net income (rather than other comprehensive income), the percentage decrease in reported net income from 2010 to 2011 of 14.6% would have been smaller (7.5%).

	2010	2011	% Change
Net income	$1,244,628	$1,062,699	–14.6%
Foreign currency translation adjustment	131,205	209,887	
	$1,375,833	$1,272,586	–7.5%

4. Yahoo! describes its foreign currency risk from the perspective of how the US dollar fluctuates against foreign currencies because the dollar is the reporting currency. If the US dollar strengthens, then foreign currencies must weaken, which will result in reduced revenues, expenses, and income from foreign operations.
5. The Asia-Pacific segment represented 19.0% of total revenue ex-TAC. Information from the MD&A disclosure can be used to determine that if there had been no change in foreign currency exchange rates during the year, the segment would have represented a slightly lower percentage of total revenue (17.9%).

	2011, as Reported			2011, If No Change in Exchange Rates	
Revenue ex-TAC by segment:					
Americas	3,142,879	71.7%	6,000	3,136,879	73.0%
EMEA	407,467	9.3%	16,000	391,467	9.1%
Asia Pacific	830,482	19.0%	59,000	771,482	17.9%
Total revenue ex-TAC	4,380,828	100.0%		4,299,828	100.0%

As noted in the previous section, because of the judgment involved in determining the functional currency of foreign operations, two companies operating in the same industry might use different predominant translation methods. As a result, income reported by these companies may not be directly comparable. Exxon Mobil Corporation and Chevron Corporation, both operating in the petroleum industry, are an example of two companies for which this is the case. Whereas Chevron has identified the US dollar as the functional currency for substantially all of its foreign subsidiaries, Exxon Mobil indicates that its downstream and chemical operations, as well as some of its upstream operations, primarily use the local currency as the functional currency. As a result, Chevron primarily uses the temporal method with translation gains and losses included in income, while Exxon Mobil uses the current rate method to a much greater extent, with the resulting translation adjustments excluded from income. To make the income of these two companies more comparable, an analyst can use the disclosures related to translation adjustments to include these as gains and losses in determining an adjusted amount of income. Example 9 demonstrates this process for Exxon Mobil and Chevron.

EXAMPLE 9 Comparing Net Income for Exxon Mobil Corporation and Chevron Corporation

Exxon Mobil Corporation uses the current rate method to translate the foreign currency financial statements of a substantial number of its foreign subsidiaries and includes the resulting translation adjustments in the "Accumulated other non-owner changes in equity" line item in the stockholders' equity section of the consolidated balance sheet. Detail on the items composing "Accumulated other non-owner changes in equity," including "Foreign exchange translation adjustment," is provided in the consolidated statement of shareholders' equity.

Chevron Corporation uses the temporal method to translate the foreign currency financial statements of substantially all of its foreign subsidiaries. For those few entities using functional currencies other than the US dollar, however, the current rate method is used and the resulting translation adjustments are included in the "Accumulated other comprehensive loss" component of stockholders' equity. The consolidated statement of stockholders' equity provides detail on the changes in the component of stockholders' equity, including a "Currency translation adjustment."

Combining net income from the income statement and the change in the cumulative translation adjustment account from the statement of stockholders' equity, an adjusted net income in which translation adjustments are treated as gains and losses can be calculated for each company, as shown in the following table (amounts in millions of US dollars):

Exxon Mobil	2011	2010	2009
Reported net income	42,206	31,398	19,658
Translation adjustment	(867)	1,034	3,629
Adjusted net income	41,339	32,432	23,287

Chevron	2011	2010	2009
Reported net income	27,008	19,136	10,563
Translation adjustment	17	6	60
Adjusted net income	27,025	19,142	10,623

The direction, positive or negative, of the translation adjustment is the same for both companies in 2009 and 2010 but not in 2011. Overall, Exxon Mobil has significantly larger translation adjustments than Chevron because Exxon Mobil designates the local currency as functional currency for a substantially larger portion of its foreign operations.

A comparison of the relative amounts of net income generated by the two companies is different depending on whether reported net income or adjusted net income is used. Exxon Mobil's reported net income in 2009 is 1.90 times larger than Chevron's, whereas its adjusted net income is 2.2 times larger, as shown in the following table.

	2011	2010	2009
Exxon Mobil reported net income/ Chevron reported net income	1.6	1.6	1.9
Exxon Mobil adjusted net income/ Chevron adjusted net income	1.5	1.7	2.2

Including translation adjustments as gains and losses in the measurement of an adjusted net income provides a more comparable basis for evaluating the profitability of two companies that use different predominant translation methods. Bringing the translation adjustments into the calculation of adjusted net income still might not provide truly comparable measures, however, because of the varying effect that the different translation methods have on reported net income.

Some analysts believe that all non-owner changes in stockholders' equity, such as translation adjustments, should be included in the determination of net income. This approach is referred to as clean-surplus accounting, as opposed to dirty-surplus accounting, in which some income items are reported as part of stockholders' equity rather than as gains and losses on the income statement. One of the dirty-surplus items found in both IFRS and US GAAP financial statements is the translation adjustment that arises when a foreign currency is determined to be the functional currency of a foreign subsidiary. Disclosures made in accordance with IFRS and US GAAP provide analysts with the detail needed to calculate net income on a clean-surplus basis. In fact, both sets of standards now require companies to prepare a statement of comprehensive income in which unrealized gains and losses that have been deferred in stockholders' equity are included in a measure of comprehensive income.

4. MULTINATIONAL OPERATIONS AND A COMPANY'S EFFECTIVE TAX RATE

In general, multinational companies incur income taxes in the country in which the profit is earned. Transfer prices, the prices that related companies charge on intercompany transactions, affect the allocation of profit between the companies. An entity with operations in multiple countries with different tax rates could aim to set transfer prices such that a higher portion of its profit is allocated to lower tax rate jurisdictions. Countries have established various laws and practices to prevent aggressive transfer pricing practices. Transfer pricing has been defined as "the system of laws and practices used by countries to ensure that goods, services, and intellectual property transferred between related companies are appropriately priced, based on market conditions, such that profits are correctly reflected in each jurisdiction."[5] Also, most countries are party to tax treaties that prevent double-taxation of corporate profits by granting a credit for taxes paid to another country.

Whether and when a company also pays income taxes in its home country depends on the specific tax regime. In the United States, for example, multinational companies are liable only for a residual tax on foreign income, after applying a credit for foreign taxes paid on that same income. The effect of the tax credit is that the multinational company owes taxes on the

[5]TP Analytics. http://www.tpanalytics.com.

foreign income only to the extent that the US corporate tax rate exceeds the foreign rate of tax on that income. In addition, much of the foreign income earned by US multinationals is not taxed until it is repatriated.[6]

An analyst can obtain information about the effect of multinational operations from companies' disclosure on effective tax rates. Accounting standards require companies to provide an explanation of the relationship between tax expense and accounting profit. The explanation is presented as a reconciliation between the average effective tax rate (tax expense divided by pretax accounting profits) and the relevant statutory rate. The purpose of this disclosure is to enable users of financial statements to understand whether the relationship between tax expense and accounting profit in a particular fiscal period is unusual and to understand the significant factors—including the effect of foreign taxes—that could affect that relationship in the future.[7] Changes in the effective tax rate impact of foreign taxes could be caused by changes in the applicable tax rates and/or changes in the mix of profits earned in different jurisdictions.

EXAMPLE 10

Below are excerpts from the effective tax rate reconciliation disclosures by two companies: Heineken N.V., a Dutch brewer, and Colgate Palmolive, a US consumer products company. Use the disclosures to answer the following questions:

1. Which company's home country has a lower statutory tax rate?
2. What was the impact of multinational operations on each company's 2011 effective tax rate?
3. Changes in the tax rate impact of multinational operations can often be explained by changes of profit mix between countries with higher or lower marginal tax rates. What do Heineken's disclosures suggest about the geographic mix of its 2011 profit?

Heineken N.V. Annual Report 2011
Notes to the consolidated financial statements
13. Income tax expense (excerpt)

Reconciliation of the effective tax rate

In millions of EUR	2011	2010
Profit before income tax	2,025	1,982
Share of net profit of associates and joint ventures and impairments thereof	(240)	(193)
Profit before income tax excluding share of profit of associates and joint ventures (inclusive impairments thereof)	**1,785**	1,789

[6] United States Government Accountability Office (GAO) Report GAO-08-950. *US Multinational Corporations: Effective Tax Rates Are Correlated with Where Income Is Reported*. August 2008.
[7] International Accounting Standard 12 *Income Taxes*, ¶84.

(Continued)

	%	2011	%	2010
Income tax using the Company's domestic tax rate	25.0	446	25.5	456
Effect of tax rates in foreign jurisdictions	3.5	62	1.9	34
Effect of non-deductible expenses	3.2	58	4	72
Effect of tax incentives and exempt income	(6.0)	−107	−8.2	−146
Recognition of previously unrecognised temporary differences	(0.5)	−9	−0.1	−2
Utilisation or recognition of previously unrecognised tax losses	(0.3)	−5	−1.2	−21
Unrecognised current year tax losses	1.0	18	0.8	15
Effect of changes in tax rate	0.1	1	0.2	3
Withholding taxes	1.5	26	1.4	25
Under/(over) provided in prior years	(1.5)	−27	−2.3	−42
Other reconciling items	0.1	2	0.5	9
	26.1	**465**	22.5	403

COLGATE-PALMOLIVE COMPANY Annual Report 2011
Notes to Consolidated Financial Statements
10. Income Taxes (excerpt)

The difference between the statutory US federal income tax rate and the Company's global effective tax rate as reflected in the Consolidated Statements of Income is as follows:

Percentage of Income before income taxes	2011	2010	2009
Tax at United States statutory rate	35.0%	35.0%	35.0%
State income taxes, net of federal benefit	0.4	1.1	0.5
Earnings taxed at other than United States statutory rate	(1.7)	(4.6)	(2.5)
Venezuela hyperinflationary transition charge	—	2.8	—
Other, net	(1.1)	(1.7)	(0.8)
Effective tax rate	32.6%	32.6%	32.2%

Solution to 1: Heineken's home country tax rate (25.0% in 2011) is lower than Colgate Palmolive's home country tax rate (35.0%).

Solution to 2: The line item labeled "Effect of tax rates in foreign jurisdictions" indicates that multinational operations increased Heineken's effective tax rate by 3.5 percentage points. The line item labeled "Earnings taxed at other than United States statutory rate" indicates that multinational operations lowered Colgate Palmolive's effective tax rate by 1.7 percentage points in 2011.

Solution to 3: Multinational operations increased Heineken's effective tax rate by 3.5 percentage points in 2011 but only 1.9 percentage points in 2010. This greater impact in 2011 could indicate that Heineken's profit mix in 2011 shifted to countries with higher marginal tax rates. (The change could also indicate that the marginal tax rates increased in the countries in which Heineken earns profits.)

5. ADDITIONAL DISCLOSURES ON THE EFFECTS OF FOREIGN CURRENCY

We turn now to the question of how an analyst can use multinational companies' disclosures to better understand the effects of foreign currency.

5.1. Disclosures Related to Sales Growth

Companies often make important disclosures about foreign currency effect on sales growth in the MD&A. Additional disclosures are also often made in financial presentations to the analyst community.

For a multinational company, sales growth is driven not only by changes in volume and price but also by changes in the exchange rates between the reporting currency and the currency in which sales are made. Arguably, growth in sales that comes from changes in volume or price is more sustainable than growth in sales that comes from changes in exchange rates. Further, management arguably has greater control over growth in sales resulting from greater volume or higher price than from changes in exchange rates. Thus, an analyst will consider the foreign currency effect on sales growth both for forecasting future performance and for evaluating a management team's historical performance.

Companies often include disclosures about the effect of exchange rates on sales growth in the MD&A. Such disclosures may also appear in other financial reports, such as company presentations to investors or earnings announcements. Exhibit 6 provides an example of disclosure from the MD&A, and Example 11 illustrates even more detailed disclosure from a company's report to analysts.

EXHIBIT 6

General Mills' 2011 annual report includes the following disclosures about the components of net sales growth in its international segment. The first excerpt is from the MD&A, and the second is from a supplementary schedule reconciling non-GAAP measures. Although the overall effect on international net sales growth was minimal "flat," the geographic detail provided in the supplementary schedule shows that the effects varied widely by region.

Excerpt from MD&A

Components of International Net Sales Growth

	Fiscal 2011 vs. 2010	Fiscal 2010 vs. 2009
Contributions from volume growth[a]	6 pts	Flat
Net price realization and mix	1 pt	3 pts
Foreign currency exchange	Flat	1 pt
Net sales growth	7 pts	4 pts

[a]Measured in tons based on the stated weight of our product shipments.

Excerpt from Supplementary Schedule on Non-GAAP Measures

International Segment and Region Sales Growth Rates Excluding Impact of Foreign Exchange

	Fiscal Year 2011		
	Percentage Change in Net Sales as Reported	Impact of Foreign Currency Exchange	Percentage change in Net Sales on Constant Currency Basis
Europe	5%	–2%	7%
Canada	8	5	3
Asia/Pacific	14	5	9
Latin America	–5	–16	11
Total International segment	7%	Flat	7%

EXAMPLE 11

Use the information disclosed in Procter & Gamble Company's CAGNY [Consumer Analyst Group of New York] conference slides to answer the following questions:

1. Why does the company present "organic sales growth"?
2. On average, for the four quarters beginning October 2008 and ending September 2009, how did changes in foreign exchange rates affect P&G's reported sales growth?

The Procter & Gamble Company
2012 CAGNY CONFERENCE SLIDES

Reg G Reconciliation of Non-GAAP measures

In accordance with the SEC's Regulation G, the following provides definitions of the non-GAAP measures used in the earnings call and slides with the reconciliation to the most closely related GAAP measure.

1. *Organic Sales Growth:*
   Organic sales growth is a non-GAAP measure of sales growth excluding the impacts of acquisitions, divestitures and foreign exchange from year-over-year comparisons. We believe this provides investors with a more complete understanding of underlying sales trends by providing sales growth on a consistent basis. "Organic sales" is also one of the measures used to evaluate senior management and is a factor in determining their at-risk compensation. The reconciliation of reported sales growth to organic sales is as follows:

Total P&G	Net Sales Growth	Foreign Exchange Impact	Acquisition/ Divestiture Impact	Organic Sales Growth
JAS 06	27%	–1%	–20%	6%
OND 06	8%	–3%	0%	5%
JFM07	8%	–2%	0%	6%
AMJ07	8%	–3%	0%	5%
JAS07	8%	–3%	0%	5%
OND07	9%	–5%	1%	5%
JFM08	9%	–5%	1%	5%
AMJ08	10%	–6%	1%	5%
JAS08	9%	–5%	1%	5%
Average–JAS 06–JAS 08	11%	–4%	–2%	5%
OND08	–3%	5%	0%	2%
JFM09	–8%	9%	0%	1%
AMJ09	–11%	9%	1%	–1%
JAS09	–6%	7%	1%	2%
Average–OND 08–JAS 09	–7%	8%	0%	1%
OND09	6%	–2%	1%	5%
JFM010	7%	–3%	0%	4%
AMJ010	5%	–1%	0%	4%
JAS010	2%	3%	–1%	4%
OND010	2%	2%	–1%	3%
JFM011	5%	–1%	0%	4%
AMJ011	10%	–5%	0%	5%
JAS011	9%	–5%	0%	4%
OND011	4%	0%	0%	4%
Average–OND 09–OND 11	5%	–1%	0%	4%
JFM 12 (Estimate)	0% to 2%	3%	0%	3% to 5%
AMJ 12(Estimate)	–1% to 2%	5% to 4%	0%	4% to 6%

Solution to 1: According to its disclosures, Procter & Gamble presents "organic sales growth" because the company believes it provides investors with a better understanding of underlying sales trends and because it is one of the measures used for management evaluation and compensation.

Solution to 2: The average effect of foreign exchange changes during the period was negative: Although organic sales grew by 1%, the company reported net sales growth of –7% as a result of a negative 8% foreign exchange effect In other words, if no foreign exchange effect had occurred, reported sales growth and organic sales growth would have been equal, both at 1%.

5.2. Disclosures Related to Major Sources of Foreign Exchange Risk

Disclosures about the effects of currency fluctuations often include sensitivity analyses. For example, a company might describe the major sources of foreign exchange risk given its countries of operations and then disclose the profit impact of a given change in exchange rates.

Exhibit 7 includes two excerpts from the 2011 BMW AG annual report. The first excerpt, from the management report, describes the source of the company's currency risks and its approach to measuring and managing those risks. The second excerpt, from the additional disclosures section of the notes, presents the results of the company's sensitivity analysis.

EXHIBIT 7

Excerpts from 2011 BMW AG Annual Report

Excerpt from the management report describing the source of the company's currency risks and its approach to measuring and managing those risks:

"The sale of vehicles outside the euro zone gives rise to exchange risks. Three currencies (the Chinese renminbi, the US dollar and the British pound) accounted for approximately two-thirds of the BMW Group's foreign currency exposures in 2011. We employ cash-flow-at-risk models and scenario analyses to measure exchange rate risks. These tools provide information which serves as the basis for decision-making in the area of currency management.

"We manage currency risks both at a strategic (medium and long term) and at an operating level (short and medium term). In the medium and long term, foreign exchange risks are managed by "natural hedging", in other words by increasing the volume of purchases denominated in foreign currency or increasing the volume of local production. In this context, the expansion of the plant in Spartanburg, USA, and the new plant under construction in Tiexi* at the Shenyang site in China are helping to reduce foreign exchange risks in two major sales markets. For operating purposes (short and medium term), currency risks are hedged on the financial markets. Hedging transactions are entered into only with financial partners of good credit standing. Counterparty risk management procedures are carried out continuously to monitor the creditworthiness of those partners."

Excerpt, from the additional disclosures section of the notes, presenting the results of the company's sensitivity analysis risks:

"The BMW Group measures currency risk using a cash-flow-at-risk model. The starting point for analysing currency risk with this model is the identification of forecast foreign currency transactions or "exposures." At the end of the reporting period, the principal exposures for the coming year were as follows:

in € million	31.12.2011	31.12.2010
Euro/Chinese Renminbi	7,114	6,256
Euro/US Dollar	4,281	3,888
Euro/British Pound	3,266	3,056
Euro/Japanese Yen	1,334	1,086

"In the next stage, these exposures are compared to all hedges that are in place. The net cash flow surplus represents an uncovered risk position. The cash-flow-at-risk approach involves allocating the impact of potential exchange rate fluctuations to operating cash flows on the basis of probability distributions. Volatilities and correlations serve as input factors to assess the relevant probability distributions.

(continued)

EXHIBIT 7 (Continued)

"The potential negative impact on earnings for the current period is computed on the basis of current market prices and exposures to a confidence level of 95% and a holding period of up to one year for each currency. Aggregation of these results creates a risk reduction effect due to correlations between the various portfolios.

"The following table shows the potential negative impact for the BMW Group—measured on the basis of the cash-flow-at-risk approach—attributable at the balance sheet date to unfavourable changes in exchange rates for the principal currencies."

in € million	31.12.2011	31.12.2010
Euro/Chinese Renminbi	180	265
Euro/US Dollar	121	103
Euro/British Pound	182	184
Euro/Japanese Yen	23	30

The level of detail varies in companies' disclosures about sensitivity of earnings to foreign currency fluctuations, with some companies providing information on the range of possible values of foreign exchange rates. An analyst can use sensitivity analysis disclosures in conjunction with his or her own forecast of exchange rates when developing forecasts of profit and cash flow. When detailed disclosures are provided, the analyst can explicitly incorporate foreign exchange impact. Alternatively, in the absence of detailed disclosures, the analyst can incorporate the sensitivity analysis when calibrating the downside risks to base-case profit and cash flow forecasts.

6. SUMMARY

The translation of foreign currency amounts is an important accounting issue for companies with multinational operations. Foreign exchange rate fluctuations cause the functional currency values of foreign currency assets and liabilities resulting from foreign currency transactions as well as from foreign subsidiaries to change over time. These changes in value give rise to foreign exchange differences that companies' financial statements must reflect. Determining how to measure these foreign exchange differences and whether to include them in the calculation of net income are the major issues in accounting for multinational operations.

- The local currency is the national currency of the country where an entity is located. The functional currency is the currency of the primary economic environment in which an entity operates. Normally, the local currency is an entity's functional currency. For accounting purposes, any currency other than an entity's functional currency is a foreign currency for that entity. The currency in which financial statement amounts are presented is known as the presentation currency. In most cases, the presentation currency will be the same as the local currency.
- When an export sale (import purchase) on an account is denominated in a foreign currency, the sales revenue (inventory) and foreign currency account receivable (account payable) are translated into the seller's (buyer's) functional currency using the exchange rate on the transaction date. Any change in the functional currency value of the foreign currency account receivable (account payable) that occurs between the transaction date and the settlement date is recognized as a foreign currency transaction gain or loss in net income.

- If a balance sheet date falls between the transaction date and the settlement date, the foreign currency account receivable (account payable) is translated at the exchange rate at the balance sheet date. The change in the functional currency value of the foreign currency account receivable (account payable) is recognized as a foreign currency transaction gain or loss in income. Analysts should understand that these gains and losses are unrealized at the time they are recognized and might or might not be realized when the transactions are settled.
- A foreign currency transaction gain arises when an entity has a foreign currency receivable and the foreign currency strengthens or it has a foreign currency payable and the foreign currency weakens. A foreign currency transaction loss arises when an entity has a foreign currency receivable and the foreign currency weakens or it has a foreign currency payable and the foreign currency strengthens.
- Companies must disclose the net foreign currency gain or loss included in income. They may choose to report foreign currency transaction gains and losses as a component of operating income or as a component of non-operating income. If two companies choose to report foreign currency transaction gains and losses differently, operating profit and operating profit margin might not be directly comparable between the two companies.
- To prepare consolidated financial statements, foreign currency financial statements of foreign operations must be translated into the parent company's presentation currency. The major conceptual issues related to this translation process are, What is the appropriate exchange rate for translating each financial statement item, and how should the resulting translation adjustment be reflected in the consolidated financial statements? Two different translation methods are used worldwide.
- Under the current rate method, assets and liabilities are translated at the current exchange rate, equity items are translated at historical exchange rates, and revenues and expenses are translated at the exchange rate that existed when the underlying transaction occurred. For practical reasons, an average exchange rate is often used to translate income items.
- Under the temporal method, monetary assets (and non-monetary assets measured at current value) and monetary liabilities (and non-monetary liabilities measured at current value) are translated at the current exchange rate. Non-monetary assets and liabilities not measured at current value and equity items are translated at historical exchange rates. Revenues and expenses, other than those expenses related to non-monetary assets, are translated at the exchange rate that existed when the underlying transaction occurred. Expenses related to non-monetary assets are translated at the exchange rates used for the related assets.
- Under both IFRS and US GAAP, the functional currency of a foreign operation determines the method to be used in translating its foreign currency financial statements into the parent's presentation currency and whether the resulting translation adjustment is recognized in income or as a separate component of equity.
- The foreign currency financial statements of a foreign operation that has a foreign currency as its functional currency are translated using the current rate method, and the translation adjustment is accumulated as a separate component of equity. The cumulative translation adjustment related to a specific foreign entity is transferred to net income when that entity is sold or otherwise disposed of. The balance sheet risk exposure associated with the current rate method is equal to the foreign subsidiary's net asset position.
- The foreign currency financial statements of a foreign operation that has the parent's presentation currency as its functional currency are translated using the temporal method, and the translation adjustment is included as a gain or loss in income. US GAAP refer to this process

as remeasurement. The balance sheet exposure associated with the temporal method is equal to the foreign subsidiary's net monetary asset/liability position (adjusted for non-monetary items measured at current value).
- IFRS and US GAAP differ with respect to the translation of foreign currency financial statements of foreign operations located in a highly inflationary country. Under IFRS, the foreign currency statements are first restated for local inflation and then translated using the current exchange rate. Under US GAAP, the foreign currency financial statements are translated using the temporal method, with no restatement for inflation.
- Applying different translation methods for a given foreign operation can result in very different amounts reported in the parent's consolidated financial statements.
- Companies must disclose the total amount of translation gain or loss reported in income and the amount of translation adjustment included in a separate component of stockholders' equity. Companies are not required to separately disclose the component of translation gain or loss arising from foreign currency transactions and the component arising from application of the temporal method.
- Disclosures related to translation adjustments reported in equity can be used to include these as gains and losses in determining an adjusted amount of income following a clean-surplus approach to income measurement.
- Foreign currency translation rules are well established in both IFRS and US GAAP. Fortunately, except for the treatment of foreign operations located in highly inflationary countries, the two sets of standards have no major differences in this area. The ability to understand the impact of foreign currency translation on the financial results of a company using IFRS should apply equally well in the analysis of financial statements prepared in accordance with US GAAP.
- An analyst can obtain information about the tax impact of multinational operations from companies' disclosure on effective tax rates.
- For a multinational company, sales growth is driven not only by changes in volume and price but also by changes in the exchange rates between the reporting currency and the currency in which sales are made. Arguably, growth in sales that comes from changes in volume or price is more sustainable than growth in sales that comes from changes in exchange rates.

PROBLEMS

The following information relates to Questions 1–6

Pedro Ruiz is an analyst for a credit rating agency. One of the companies he follows, Eurexim SA, is based in France and complies with International Financial Reporting Standards (IFRS). Ruiz has learned that Eurexim used EUR220 million of its own cash and borrowed an equal amount to open a subsidiary in Ukraine. The funds were converted into hryvnia (UAH) on 31 December 20X1 at an exchange rate of EUR1.00 = UAH6.70 and used to purchase UAH1,500 million in fixed assets and UAH300 of inventories.

Ruiz is concerned about the effect that the subsidiary's results might have on Eurexim's consolidated financial statements. He calls Eurexim's Chief Financial Officer, but learns little. Eurexim is not willing to share sales forecasts and has not even made a determination as to the subsidiary's functional currency.

Absent more useful information, Ruiz decides to explore various scenarios to determine the potential impact on Eurexim's consolidated financial statements. Ukraine is not currently in a hyperinflationary environment, but Ruiz is concerned that this situation could change. Ruiz also believes the euro will appreciate against the hryvnia for the foreseeable future.

1. If Ukraine's economy becomes highly inflationary, Eurexim will *most likely* translate inventory by:
   A. restating for inflation and using the temporal method.
   B. restating for inflation and using the current exchange rate.
   C. using the temporal method with no restatement for inflation.
2. Given Ruiz's belief about the direction of exchange rates, Eurexim's gross profit margin would be *highest* if it accounts for the Ukraine subsidiary's inventory using:
   A. FIFO and the temporal method.
   B. FIFO and the current rate method.
   C. weighted-average cost and the temporal method.
3. If the euro is chosen as the Ukraine subsidiary's functional currency, Eurexim will translate its fixed assets using the:
   A. average rate for the reporting period.
   B. rate in effect when the assets were purchased.
   C. rate in effect at the end of the reporting period.
4. If the euro is chosen as the Ukraine subsidiary's functional currency, Eurexim will translate its accounts receivable using the:
   A. rate in effect at the transaction date.
   B. average rate for the reporting period.
   C. rate in effect at the end of the reporting period.
5. If the hryvnia is chosen as the Ukraine subsidiary's functional currency, Eurexim will translate its inventory using the:
   A. average rate for the reporting period.
   B. rate in effect at the end of the reporting period.
   C. rate in effect at the time the inventory was purchased.
6. Based on the information available and Ruiz's expectations regarding exchange rates, if the hryvnia is chosen as the Ukraine subsidiary's functional currency, Eurexim will *most likely* report:
   A. an addition to the cumulative translation adjustment.
   B. a translation gain or loss as a component of net income.
   C. a subtraction from the cumulative translation adjustment.

The following information relates to Questions 7–12

Consolidated Motors is a US-based corporation that sells mechanical engines and components used by electric utilities. Its Canadian subsidiary, Consol-Can, operates solely in Canada. It was created on 31 December 20X1, and Consolidated Motors determined at that time that it should use the US dollar as its functional currency.

Chief Financial Officer Monica Templeton was asked to explain to the board of directors how exchange rates affect the financial statements of both Consol-Can and the consolidated

financial statements of Consolidated Motors. For the presentation, Templeton collects Consol-Can's balance sheets for the years ended 20X1 and 20X2 (Exhibit 1), as well as relevant exchange rate information (Exhibit 2).

EXHIBIT 1 Consol-Can Condensed Balance Sheet for Fiscal Years Ending 31 December (C$ millions)

Account	20X2	20X1
Cash	135	167
Accounts receivable	98	—
Inventory	77	30
Fixed assets	100	100
Accumulated depreciation	(10)	—
Total assets	400	297
Accounts payable	77	22
Long-term debt	175	175
Common stock	100	100
Retained earnings	48	—
Total liabilities and shareholders' equity	400	297

EXHIBIT 2 Exchange Rate Information

	US$/C$
Rate on 31 December 20X1	0.86
Average rate in 20X2	0.92
Weighted-average rate for inventory purchases	0.92
Rate on 31 December 20X2	0.95

Templeton explains that Consol-Can uses the FIFO inventory accounting method and that purchases of C$300 million and the sell-through of that inventory occurred evenly throughout 20X2. Her presentation includes reporting the translated amounts in US dollars for each item, as well as associated translation-related gains and losses. The board responds with several questions.

- Would there be a reason to change the functional currency to the Canadian dollar?
- Would there be any translation effects for Consolidated Motors if the functional currency for Consol-Can were changed to the Canadian dollar?
- Would a change in the functional currency have any impact on financial statement ratios for the parent company?
- What would be the balance sheet exposure to translation effects if the functional currency were changed?

7. After translating Consol-Can's inventory and long-term debt into the parent company's currency (US$), the amounts reported on Consolidated Motor's financial statements on 31 December 20X2 would be *closest* to (in millions):
   A. $71 for inventory and $161 for long-term debt.
   B. $71 for inventory and $166 for long-term debt.
   C. $73 for inventory and $166 for long-term debt.
8. After translating Consol-Can's 31 December 20X2 balance sheet into the parent company's currency (US$), the translated value of retained earnings will be *closest* to:
   A. $41 million.
   B. $44 million.
   C. $46 million.
9. In response to the board's first question, Templeton would *most likely* reply that such a change would be justified if:
   A. the inflation rate in the United States became hyperinflationary.
   B. management wanted to flow more of the gains through net income.
   C. Consol-Can were making autonomous decisions about operations, investing, and financing.
10. In response to the board's second question, Templeton should reply that if the change is made, the consolidated financial statements for Consolidated Motors would begin to recognize:
    A. realized gains and losses on monetary assets and liabilities.
    B. realized gains and losses on non-monetary assets and liabilities.
    C. unrealized gains and losses on non-monetary assets and liabilities.
11. In response to the board's third question, Templeton should note that the change will *most likely* affect:
    A. the cash ratio.
    B. fixed asset turnover.
    C. receivables turnover.
12. In response to the board's fourth question, the balance sheet exposure (in C$ millions) would be *closest* to:
    A. –19.
    B. 148.
    C. 400.

The following information relates to Questions 13–18

Romulus Corp. is a US-based company that prepares its financial statements in accordance with US GAAP. Romulus Corp. has two European subsidiaries: Julius and Augustus. Anthony Marks, CFA, is an analyst trying to forecast Romulus's 20X2 results. Marks has prepared separate forecasts for both Julius and Augustus, as well as for Romulus's other operations (prior to consolidating the results.) He is now considering the impact of currency translation on the results of both the subsidiaries and the parent company's consolidated financials. His research has provided the following insights:

- The results for Julius will be translated into US dollars using the current rate method.
- The results for Augustus will be translated into US dollars using the temporal method.
- Both Julius and Augustus use the FIFO method to account for inventory.

- Julius had year-end 20X1 inventory of €340 million. Marks believes Julius will report €2,300 in sales and €1,400 in cost of sales in 20X2.

Marks also forecasts the 20X2 year-end balance sheet for Julius (Exhibit 1). Data and forecasts related to euro/dollar exchange rates are presented in Exhibit 2.

EXHIBIT 1 Forecasted Balance Sheet Data for Julius, 31 December 20X2 (€ millions)

Cash	50
Accounts receivable	100
Inventory	700
Fixed assets	1,450
Total assets	2,300
Liabilities	700
Common stock	1,500
Retained earnings	100
Total liabilities and shareholder equity	2,300

EXHIBIT 2 Exchange Rates ($/€)

31 December 20X1	1.47
31 December 20X2	1.61
20X2 average	1.54
Rate when fixed assets were acquired	1.25
Rate when 20X1 inventory was acquired	1.39
Rate when 20X2 inventory was acquired	1.49

13. Based on the translation method being used for Julius, the subsidiary is *most likely:*
    A. a sales outlet for Romulus's products.
    B. a self-contained, independent operating entity.
    C. using the US dollar as its functional currency.

14. To account for its foreign operations, Romulus has *most likely* designated the euro as the functional currency for:
    A. Julius only.
    B. Augustus only.
    C. both Julius and Augustus.

15. When Romulus consolidates the results of Julius, any unrealized exchange rate holding gains on monetary assets should be:
    A. reported as part of operating income.
    B. reported as a non-operating item on the income statement.
    C. reported directly to equity as part of the cumulative translation adjustment.

16. When Marks translates his forecasted balance sheet for Julius into US dollars, total assets as of 31 December 20X2 (dollars in millions) will be *closest* to:

A. $1,429.
B. $2,392.
C. $3,703.

17. When Marks converts his forecasted income statement data for Julius into US dollars, the 20X2 gross profit margin will be *closest* to:
A. 39.1%.
B. 40.9%.
C. 44.6%.

18. Relative to the gross margins the subsidiaries report in local currency, Romulus's consolidated gross margin *most likely*:
A. will not be distorted by currency translations.
B. would be distorted if Augustus were using the same translation method as Julius.
C. will be distorted because of the translation and inventory accounting methods Augustus is using.

The following information relates to Questions 19–24

Redline Products, Inc. is a US-based multinational with subsidiaries around the world. One such subsidiary, Acceletron, operates in Singapore, which has seen mild but not excessive rates of inflation. Acceletron was acquired in 2000 and has never paid a dividend. It records inventory using the FIFO method.

Chief Financial Officer Margot Villiers was asked by Redline's board of directors to explain how the functional currency selection and other accounting choices affect Redline's consolidated financial statements. Villiers gathers Acceletron's financial statements denominated in Singapore dollars (SGD) in Exhibit 1 and the US dollar/Singapore dollar exchange rates in Exhibit 2. She does not intend to identify the functional currency actually in use but rather to use Acceletron as an example of how the choice of functional currency affects the consolidated statements.

EXHIBIT 1 Selected Financial Data for Acceletron, 31 December 2007 (SGD millions)

Cash	SGD125
Accounts receivable	230
Inventory	500
Fixed assets	1,640
Accumulated depreciation	(205)
Total assets	SGD2,290
Accounts payable	185
Long-term debt	200
Common stock	620
Retained earnings	1,285
Total liabilities and equity	2,290
Total revenues	SGD4,800
Net income	SGD450

EXHIBIT 2 Exchange Rates Applicable to Acceletron

Exchange Rate in Effect at Specific Times	USD per SGD
Rate when first SGD1 billion of fixed assets were acquired	0.568
Rate when remaining SGD640 million of fixed assets were acquired	0.606
Rate when long-term debt was issued	0.588
31 December 2006	0.649
Weighted-average rate when inventory was acquired	0.654
Average rate in 2007	0.662
31 December 2007	0.671

19. Compared with using the Singapore dollar as Acceletron's functional currency for 2007, if the US dollar were the functional currency, it is *most likely* that Redline's consolidated:
    A. inventories will be higher.
    B. receivable turnover will be lower.
    C. fixed asset turnover will be higher.
20. If the US dollar were chosen as the functional currency for Acceletron in 2007, Redline could reduce its balance sheet exposure to exchange rates by:
    A. selling SGD30 million of fixed assets for cash.
    B. issuing SGD30 million of long-term debt to buy fixed assets.
    C. issuing SGD30 million in short-term debt to purchase marketable securities.
21. Redline's consolidated gross profit margin for 2007 would be *highest* if Acceletron accounted for inventory using:
    A. FIFO, and its functional currency were the US dollar.
    B. LIFO, and its functional currency were the US dollar.
    C. FIFO, and its functional currency were the Singapore dollar.
22. If the current rate method is used to translate Acceletron's financial statements into US dollars, Redline's consolidated financial statements will *most likely* include Acceletron's:
    A. USD3,178 million in revenues.
    B. USD118 million in long-term debt.
    C. negative translation adjustment to shareholder equity.
23. If Acceletron's financial statements are translated into US dollars using the temporal method, Redline's consolidated financial statements will *most likely* include Acceletron's:
    A. USD336 million in inventory.
    B. USD956 million in fixed assets.
    C. USD152 million in accounts receivable.
24. When translating Acceletron's financial statements into US dollars, Redline is *least likely* to use an exchange rate of USD per SGD:
    A. 0.671.
    B. 0.588.
    C. 0.654.

CHAPTER 17

EVALUATING QUALITY OF FINANCIAL REPORTS

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LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- demonstrate the use of a conceptual framework for assessing the quality of a company's financial reports;
- explain potential problems that affect the quality of financial reports;
- describe how to evaluate the quality of a company's financial reports;
- evaluate the quality of a company's financial reports;
- describe the concept of sustainable (persistent) earnings;
- describe indicators of earnings quality;
- explain mean reversion in earnings and how the accruals component of earnings affects the speed of mean reversion;
- evaluate the earnings quality of a company;
- describe indicators of cash flow quality;
- evaluate the cash flow quality of a company;
- describe indicators of balance sheet quality;
- evaluate the balance sheet quality of a company;
- describe sources of information about risk.

1. INTRODUCTION

The ability to assess the quality of reported financial information can be a valuable skill. An analyst or investor who can recognize high-quality financial reporting can have greater confidence in analysis based on those financial reports and the resulting investment decisions. Similarly,

an analyst or investor who can recognize poor financial reporting quality early—before deficiencies become widely known—is more likely to make profitable investment decisions or to reduce or even avoid losses.

An example of early recognition of an ultimate financial disaster is James Chanos's short position in Enron in November 2000 (Chanos 2002)—more than a year before Enron filed for bankruptcy protection (in December 2001). Despite Enron's high profile and reputation,[1] Chanos had a negative view of Enron based on both quantitative and qualitative factors. Chanos noted that Enron's return on capital was both lower than comparable companies' return on capital and lower than the company's own cost of capital. Qualitative factors contributing to Chanos's view included the company's aggressive revenue recognition policy, its complex and difficult-to-understand disclosures on related-party transactions, and one-time earnings-boosting gains. Later events that substantiated Chanos's perspective included sales of the company's stock by insiders and the resignation of senior executives.

Another example of early recognition of eventual financial troubles is June 2001 reports by analyst Enitan Adebonojo. These reports highlighted questionable accounting by Royal Ahold, a European food retailer. The questionable accounting included "claiming profits of acquired firms as 'organic growth,' booking capital gains from sale-and-leaseback deals as profit, and keeping billions in debt off its balance sheet."[2] In 2003, Royal Ahold announced that it had significantly overstated its profits in the prior two years. The CEO and CFO resigned, various regulators announced investigations, and Royal Ahold's market value dropped significantly.

This chapter focuses on reporting quality and the interrelated attribute of results quality. *Reporting quality* pertains to the information disclosed in financial reports. High-quality reporting provides decision-useful information—information that is relevant and faithfully represents the economic reality of the company's activities during the reporting period and the company's financial condition at the end of the period. A separate, but interrelated, attribute of quality is *results* or *earnings quality*, which pertains to the earnings and cash generated by the company's actual economic activities and the resulting financial condition relative to expectations of current and future financial performance. Note that the term "earnings quality" is more commonly used in practice than "results quality," so throughout this chapter, earnings quality is used broadly to encompass the quality of earnings, cash flow, and/or balance sheet items.

High-quality earnings reflect an adequate level of return on investment and are derived from activities that a company will likely be able to sustain in the future. Thus, high-quality earnings increase the value of a company more than low-quality earnings. When reported earnings are described as being high quality, it means that the company's underlying economic performance was good (i.e., value enhancing), and it also implies that the company had high reporting quality (i.e., that the information that the company calculated and disclosed was a good reflection of the economic reality).

Earnings can be termed "low quality" either because the reported information properly represents genuinely bad performance or because the reported information misrepresents economic reality. In theory, a company could have low-quality earnings while simultaneously having high reporting quality. Consider a company with low-quality earnings—for example, one whose only source of earnings in a period is a one-off settlement of a lawsuit without

[1]In October 2000, Enron was named in the top 25 on *Fortune* magazine's list of the World's Most Admired Companies.

[2]"Ahold: Europe's Enron," *The Economist*, (27 February 2003).

which the company would have reported huge losses. The company could nonetheless have high reporting quality if it calculated its results properly and provided decision-useful information. Although it is theoretically possible that a company could have low-quality earnings while simultaneously having high reporting quality, experiencing poor financial performance can motivate the company's management to misreport.

This chapter begins in Section 2 with a description of a conceptual framework for and potential problems with financial reporting quality. This is followed in Section 3 with a discussion of how to evaluate financial reporting quality. Sections 4, 5, and 6 focus on the quality of reported earnings, cash flows, and balance sheets, respectively. Section 7 covers sources of information about risk. A summary and practice problems in the CFA Institute item set format complete the chapter.

2. QUALITY OF FINANCIAL REPORTS

This section reviews a conceptual framework for assessing the quality of financial reports and then outlines potential problems that affect the quality of financial reports.

2.1. Conceptual Framework for Assessing the Quality of Financial Reports

As indicated in the introduction, financial reporting quality and results or earnings quality are related attributes of quality. Exhibit 1 illustrates this relationship and its implications. Low financial reporting quality can make it difficult or impossible to assess a company's results, and as a result, it is difficult to make investment and other decisions, such as lending and extending credit to the company.

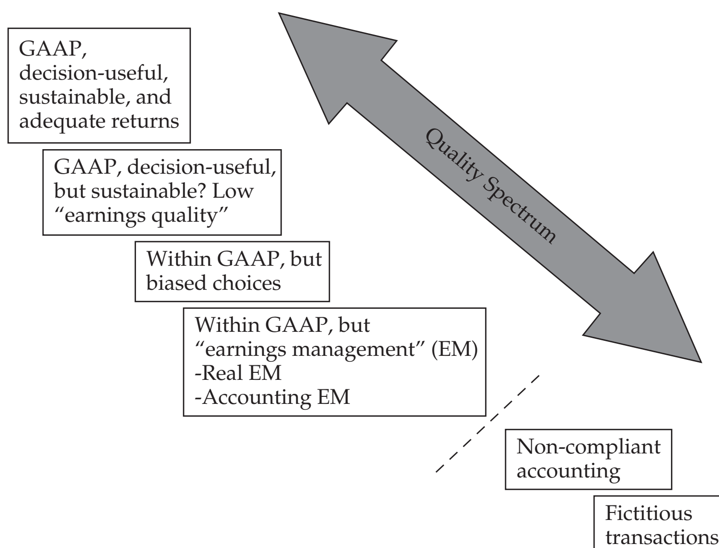
EXHIBIT 1 Relationships between Financial Reporting Quality and Earnings Quality

		Financial Reporting Quality	
		Low	High
Earnings (Results) Quality	High	LOW financial reporting quality impedes assessment of earnings quality and impedes valuation.	HIGH financial reporting quality enables assessment. HIGH earnings quality increases company value.
	Low		HIGH financial reporting quality enables assessment. LOW earnings quality decreases company value.

Financial reporting quality varies across companies. Financial reports can range from those that contain relevant and faithfully representational information to those that contain information that is pure fabrication. Earnings (results) quality can range from high and sustainable to low and unsustainable. The presence of high-quality financial reporting is a necessary condition for enabling investors to evaluate results quality. High-quality financial reporting alone is an insufficient condition to ensure the presence of high-quality results, but the existence of high-quality financial reporting allows the investor to make such an assessment.

Combining the two aspects of quality—financial reporting and earnings—the overall quality of financial reports from a user perspective can be thought of as spanning a continuum from the highest to the lowest. Exhibit 2 presents a spectrum that provides a basis for evaluating better versus poorer quality reports.

EXHIBIT 2 Quality Spectrum of Financial Reports



Essentially, the analyst needs to consider two basic questions:

1. Are the financial reports GAAP-compliant and decision-useful?
2. Are the results (earnings) of high quality? In other words, do they provide an adequate level of return, and are they sustainable?

These two questions provide a basic conceptual framework to assess the quality of a company's financial reports and to locate the company's financial reports along the quality spectrum. At the top of the spectrum, labeled in Exhibit 2 as "GAAP, decision-useful, sustainable, and adequate returns" are high-quality reports that provide decision-useful information about high-quality earnings. "GAAP" refers generically to the generally accepted accounting principles or the accepted accounting standards of the jurisdiction under which the company reports. Examples of GAAP are International Financial Reporting Standards (IFRS), US GAAP, and other home-country accounting standards. *Decision-useful* information embodies the characteristics of relevance and faithful representation.[3] High-quality earnings provide an *adequate level of return* on investment (i.e., a return equal to or in excess of the cost of capital) and are sustainable. *Sustainable* indicates that the earnings are derived from activities that a company will likely be able to sustain in the future. Sustainable earnings that provide a high return on investment contribute to a higher valuation of a company and its securities.

[3] These characteristics are from the *Conceptual Framework for Financial Reporting* (IASB 2010). The characteristics of decision-useful information are identical under IFRS and US GAAP. Relevant information is defined as information that can affect a decision and encompasses the notion of materiality. Faithful representation of economic events is complete, neutral, and free from error. The *Framework* also identifies enhancing characteristics of useful information: comparability, verifiability, timeliness, and understandability. High-quality information results when necessary trade-offs among these characteristics are made in an unbiased, skillful manner.

Any deviation from the highest point on the quality spectrum can be assessed in terms of the two-question conceptual framework. For example, a company that provides GAAP-compliant, decision-useful information about low-quality earnings (they can be of low quality because they do not provide an adequate level of return and/or they are not sustainable) would appear lower on the quality spectrum. Even lower on the spectrum would be companies that provide GAAP-compliant information, which is less decision-useful because of biased choices.

Biased accounting choices result in financial reports that do not faithfully represent economic phenomena. Biased choices can be made not only in the context of reported amounts but also in the context of how information is presented. For example, companies can disclose information transparently and in a manner that facilitates analysis, or they can disclose information in a manner that aims to obscure unfavorable information and/or to emphasize favorable information.

The problem with bias in accounting choices, as with other deficiencies in financial reporting quality, is that it impedes an investor's ability to correctly assess a company's past performance, to accurately forecast future performance, and thus to appropriately value the company. Choices are deemed to be "aggressive" if they increase the company's reported performance and financial position in the current period. Aggressive choices may decrease the company's reported performance and financial position in later periods. In contrast, choices are deemed to be "conservative" if they decrease the company's reported performance and financial position in the current period. Conservative choices may increase the company's reported performance and financial position in later periods.

Another type of bias is "earnings management." An example of this bias is earnings "smoothing" to understate earnings volatility relative to the volatility if earnings were faithfully represented. Earnings volatility is decreased by understating earnings in periods when a company's operations are performing well and overstating in periods when the company's operations are struggling.

The next levels down on the spectrum mark a departure from GAAP. Financial reports that depart from GAAP can generally be considered low quality; they are of poor financial reporting quality and cannot be relied on to assess earnings quality. The lowest-quality financial reports portray fictitious transactions or omit actual transactions; such financial reports are fabrications.

2.2. Potential Problems That Affect the Quality of Financial Reports

The basic choices that give rise to potential problems with quality of financial reports include reported amounts and timing of recognition and classification. Remember that even GAAP-compliant financial reports can diverge from economic reality if GAAP allows for biased choices. In addition to GAAP-compliant choices, a financial statement preparer may choose to present fraudulent reports. This choice represents a divergence from GAAP and economic reality.

2.2.1. Reported Amounts and Timing of Recognition

The choice of the reported amount and timing of recognition may focus on a single financial statement element (assets, liabilities, owners' equity, revenue and gains [income], or expenses and losses). However, this choice may affect other elements and more than one financial statement because financial statements are interrelated.[4] It is useful to think of the impact of

[4]Depending on management's motivation, poor-quality financial reports may either over-state or under-state results. Fraudulent financial reports almost always overstate results.

accounting choices in terms of the basic accounting equation (Assets = Liabilities + Equity). This equation can be restated as Assets – Liabilities = Equity, which is also equivalent to Net Assets = Equity. Choices related to income statement elements will affect the balance sheet through equity, and if equity is affected, then another balance sheet element(s) has to be affected or the balance sheet will not balance.

Following are some examples of choices—accounting choices that comply with GAAP, accounting choices that depart from GAAP, and operating choices—and their effects in the current period:

- Aggressive, premature, and fictitious revenue recognition results in overstated income and thus overstated equity. Assets, usually accounts receivable, are also overstated.
- Conservative revenue recognition, such as deferred recognition of revenue, results in understated net income, understated equity, and understated assets.
- Omission and delayed recognition of expenses results in understated expenses and overstated income, overstated equity, overstated assets, and/or understated liabilities. An understatement of bad debt expense results in overstated accounts receivable. Understated depreciation or amortization expense results in the overstatement of the related long-lived asset. Understated interest, taxes, or other expenses result in the understatement of the related liability: accrued interest payable, taxes payable, or other payable.
- Understatement of contingent liabilities is associated with overstated equity resulting from understated expenses and overstated income or overstated other comprehensive income.
- Overstatement of financial assets and understatement of financial liabilities, reported at fair value, are associated with overstated equity resulting from overstated unrealized gains or understated unrealized losses.
- Cash flow from operations may be increased by deferring payments on payables, accelerating payments from customers, deferring purchases of inventory, and deferring other expenditures related to operations, such as maintenance and research.

Example 1 describes events and choices at Satyam Computer Services Limited, which resulted in the issuance of fraudulent reports.

EXAMPLE 1 Fictitious Reports

Satyam Computer Services Limited

Satyam Computer Services Limited, an Indian information technology company, was founded in 1987 and grew rapidly by providing business process outsourcing (BPO) on a global basis. In 2007, its CEO, Ramalinga Raju, was named "Entrepreneur of the Year" by Ernst & Young, and in 2008, the World Council for Corporate Governance recognized the company for "global excellence in corporate accountability." In 2009, the CEO submitted a letter of resignation that outlined a massive financial fraud at the company. The company's decline was so rapid and significant that it came to be referred to as "India's Enron."

In late 2008, the World Bank terminated its relationship with the company after finding that Satyam gave kickbacks to bank staff and billed for services that were not

provided. These initial revelations of wrongdoing had the effect of putting the company under increased scrutiny. Among other misconduct, the CEO eventually admitted that he created fictitious bank statements to inflate cash and to show interest income. The CEO also created fake salary accounts and took the money paid to those "employees." The company's head of internal auditing created fictitious customer accounts and invoices to inflate revenues.[5]

The external auditors did not independently verify much of the information provided by the company. Even when bank confirmations, which were sent to them directly as opposed to indirectly through Satyam, contained significantly different balances than those reported by Satyam, they did not follow up.

1. Based on the information provided, characterize Satyam's financial reports, with reference to the quality spectrum of financial reports.
2. Explain each of the following misconducts with reference to the basic accounting equation:
   A. Transactions with World Bank
   B. Fictitious interest income
   C. CEO's embezzlement
   D. Fictitious revenue
3. Based on the information provided, what documents were falsified to support the misconducts listed in Question 2?

Solution to 1: Based on the information provided, Satyam's financial reports were of the lowest quality. They clearly are at the bottom of the quality spectrum of financial reports: reports based on fictitious information.

Solution to 2: The effects on the basic accounting equation of the different acts of misconduct are as follows:

A. Upon billing for fictitious services, the company would increase an asset, such as accounts receivable, and a revenue account, such as service revenues. The kickbacks to the customer's staff, if recorded, would increase an expense account, such as commissions paid, and increase a liability, such as commissions payable, or decrease an asset, such as cash. The net effect of this misconduct is the overstatement of income, net assets, and equity.
B. Fictitious interest income would result in overstated income; overstated assets, such as cash and interest receivable; and overstated equity. These overstatements were hidden by falsifying revenue and cash balances.
C. The embezzlement by creating fictitious employees would increase an expense account, such as wages and salaries, and decrease the asset, cash. The resulting understatement of income and equity was offset by a real but fraudulent decrease in cash, which was hidden by falsifying revenue and cash balances.
D. Fictitious revenues would result in overstated revenues and income; overstated assets, such as cash and accounts receivable; and overstated equity.

[5] See Bhasin (2012) for more information.

Solution to 3: Based on the information provided, the documents that were falsified include

- invoices to the World Bank for services that were not provided,
- bank statements,
- employee records, and
- customer accounts and invoices.

The falsified documents were intended to mislead the external auditors.

An astute reader of financial statements may have identified a potential problem at Satyam by comparing the growth in revenue with the growth in assets on its balance sheet, such as short-term and long-term trade receivables and unbilled revenue. Long-term trade receivables and unbilled revenue accounts may have raised questions. Also, there was an account separate from cash, investments in bank deposits, which may have raised questions. However, fraudulent reports that are well constructed can be very challenging to identify.

2.2.2. Classification

Choices with respect to reported amounts and timing of recognition typically affect more than one financial element, financial statement, and financial period. Classification choices typically affect one financial statement and relate to how an item is classified within a particular financial statement. The balance sheet, the statement of comprehensive income, or the cash flow statement may be the primary focus of the choice.

With respect to the balance sheet, the concern may be to make the balance sheet ratios more attractive or to hide an issue. For example, a company may focus on accounts receivable because it wants to hide liquidity or revenue collection issues. Choices include removing the accounts receivable from the balance sheet by selling them externally or transferring them to a controlled entity, converting them to notes receivable, or reclassifying them within the balance sheet, such as by reporting them as long-term receivables. Although these amounts remain on the balance sheet as receivables of some sort, a result of their reclassification is a lower accounts receivable balance. This could imply to investors that a collection has taken place and also might favorably skew receivables measures, such as days' sales outstanding and receivables turnover.

In the 2003 Merck Annual Report, Merck & Co. reclassified a portion of its inventory to "Other assets," a long-term asset. This reclassification affects the balance sheet and financial ratios as demonstrated in Example 2.

EXAMPLE 2 Balance Sheet Reclassifications

Merck & Co., Inc. and Subsidiaries

In the 2002 Annual Report, inventory was reported at $3,411.8 million. In the 2003 Annual Report, the 2002 inventory value was reported at $2,964.3 million and $447.5 million of inventory was included in other assets. This information was contained in Note 6 to the financial statements, reproduced in Exhibit 3.

EXHIBIT 3 Note 6 to Consolidated Financial Statements

6. Inventories

Inventories at December 31 consisted of:

($ in millions)	2003	2002
Finished goods	$552.5	$1,262.3
Raw materials and work in process	2,309.8	2,073.8
Supplies	90.5	75.7
Total (approximate current cost)	$2,952.8	$3,411.8
Reduction to LIFO cost	—	—
	$2,952.8	$3,411.8
Recognized as:		
Inventories	$2,554.7	$2,964.3
Other assets	398.1	447.5

Inventories valued under the LIFO method comprised approximately 51% and 39% of inventories at December 31, 2003 and 2002, respectively. Amounts recognized as Other assets consist of inventories held in preparation for product launches and not expected to be sold within one year. The reduction in finished goods is primarily attributable to the spin-off of Medco Health in 2003.

1. The reclassification of a portion of inventory to other assets will *most likely* result in the days of inventory on hand:
   A. decreasing.
   B. staying the same.
   C. increasing.
2. As a result of the reclassification of a portion of inventory to other assets, the current ratio will *most likely*:
   A. decrease.
   B. stay the same.
   C. increase.

Solution to 1: A is correct. The number of days of inventory on hand calculated using the reported inventory number will most likely decrease because the amount of inventory relative to cost of goods sold will decrease.

Solution to 2: A is correct. The current ratio will decrease because current assets will decrease and current liabilities will stay the same.

From Exhibit 3, notice that the reclassification is described in the sentence, "Amounts recognized as Other assets consist of inventories held in preparation for product launches and not expected to be sold within one year." The reasoning behind the reclassification's explanation is logical: Current assets include assets to be consumed or converted into cash in a company's operating cycle, which is usually one year. The inventory items associated with product launches beyond one year are more appropriately classified as "other assets." Yet, the change in classification poses analytical problems. Inventory turnover is a key indicator of

efficiency in managing inventory levels and is calculated as cost of sales divided by average inventory. Although the inventory turnover can be calculated for 2003, it cannot be calculated on a consistent basis for 2002, or any year before then, because the amount of inventory that would have been classified as "other assets" in those periods is not disclosed. An investor has to recognize that a time-series comparison of Merck's inventory turnover is going to produce an inconsistent history because of the lack of consistent information.

The classification of revenues as being derived from core, continuing operations could mislead financial statement users into considering inflated amounts of income as being sustainable. Similarly, the classification of expenses as non-operating could mislead financial statement users into considering inflated amounts of income as being sustainable. In non-GAAP metrics reported outside of the financial statements, the classification of income-reducing items as non-recurring could also mislead financial statement users into considering inflated amounts of income as being sustainable.

Classifications that result in an item being reported in other comprehensive income rather than on the income statement can affect analysis and comparison. For example, if two otherwise identical companies classify investments differently, net income may differ because the change in value of the investments may flow through net income for one company and through other comprehensive income for the other company.

Classification issues also arise specifically with the statement of cash flows for which management may have incentives to maximize the amount of cash flows that are classified as "operating." Management may be motivated to classify activities, such as the sale of long-term assets, as operating activities rather than investing activities. Operating activities are part of the day-to-day functioning of a company, such as selling inventory or providing services. For most companies, the sale of property or other long-term assets are not operating activities, and including them in operating activities overstates the company's ability to generate cash from its operations. Management may capitalize rather than expense operating expenditures. As a result, the outflow may be classified as an investing activity rather than an operating activity.

Exhibit 4 presents a selection of potential issues, possible actions, and warning signs of possible deviations from high-quality financial reports, some of which will be specifically discussed in later sections of this chapter. The warning signs may be visible in the financial statements themselves, in the notes to the financial statements, or in ratios calculated by the analyst that are assessed over time or compared with those of peer companies. Frequently, the chosen actions bias net income upward. However, a new management or management of a company in financial difficulty may be motivated to bias current income downward to enhance future periods.

EXHIBIT 4 Accounting Warning Signs

Potential Issues	Possible Actions/Choices	Warning Signs

• Overstatement or non-sustainability of operating income and/or net income
  • Overstated or accelerated revenue recognition
  • Understated expenses
  • Misclassification of revenue, gains, expenses, or losses
	• Contingent sales with right of return, "channel stuffing" (the practice of inducing customers to order products they would otherwise not order or order at a later date through generous terms), "bill and hold" sales (encouraging customers to order goods and retain them on seller's premises)	• Growth in revenue higher than that of industry or peers
		• Increases in discounts to and returns from customers
		• Higher growth rate in receivables than revenue
		• Large proportion of revenue in final quarter of year for a non-seasonal business

EXHIBIT 4 (Continued)

Potential Issues	Possible Actions/Choices	Warning Signs
	• Lessor use of finance (capital) leases • Fictitious (fraudulent) revenue • Capitalizing expenditures as assets • Lessee use of operating leases • Classifying non-operating income or gains as part of operations • Classifying ordinary expenses as non-recurring or non-operating • Reporting gains through net income and losses through other comprehensive income	• Cash flow from operations is much lower than operating income • Inconsistency over time in the items included in operating revenues and operating expenses • Increases in operating margin • Aggressive accounting assumptions, such as long, depreciable lives • Losses in non-operating income or other comprehensive income and gains in operating income or net income • Compensation largely tied to financial results

• Misstatement of balance sheet items (may affect income statement)
  • Over- or understatement of assets
  • Over- or understatement of liabilities
  • Misclassification of assets and/or liabilities
	• Choice of models and model inputs to measure fair value
	• Classification from current to non-current
	• Over- or understating reserves and allowances
	• Understating identifiable assets and overstating goodwill
		• Models and model inputs that bias fair value measures
		• Inconsistency in model inputs when measuring fair value of assets compared with that of liabilities
		• Typical current assets, such as accounts receivable and inventory, included in non-current assets
		• Allowances and reserves that fluctuate over time or are not comparable with peers
		• High goodwill value relative to total assets
		• Use of special purpose vehicles
		• Large changes in deferred tax assets and liabilities
		• Significant off-balance-sheet liabilities

• Overstatement of cash flow from operations	• Managing activities to affect cash flow from operations • Misclassifying cash flows to positively affect cash flow from operations	• Increase in accounts payable and decrease in accounts receivable and inventory • Capitalized expenditures in investing activities • Sales and leaseback • Increases in bank overdrafts

2.2.3. Quality Issues and Mergers and Acquisitions

Quality issues with respect to financial reports often arise in connection with mergers and acquisitions. Mergers and acquisitions provide opportunities and motivations to manage financial results. For accounting purposes, the business combination is accounted for using the acquisition method, and one company is identified as the acquirer. The financial results of the combined companies are reported on a consolidated basis.

Companies with faltering cash-generating ability may be motivated to acquire other companies to increase cash flow from operations. The acquisition will be reported in the investing cash flows if paid in cash, or not even appear on the cash flow statement if paid for with equity. The consolidated cash flow from operations will include the cash flow of the acquired company, effectively concealing the acquirer's own cash flow problems. Such an acquisition can provide a one-time boost to cash from operations that may or may not be sustainable. There are no required post-acquisition "with and without acquisitions" disclosures, making it impossible for investors to reliably assess whether or not the acquirer's cash flow problems are worsening.

A potential acquisition may create an incentive for a company to report using aggressive choices or even misreport. For example, an acquirer's managers may be motivated to make choices to increase earnings to make an acquisition on more favorable terms. Evidence indicates that acquirers making an acquisition for stock may manipulate their reported earnings prior to the acquisition to inflate the value of shares being used to pay for the acquisition (Erickson and Wang 1999). Similarly, the target company's managers may be motivated to make choices to increase earnings to secure a more favorable price for their company. As another example, the acquiring managers may try to manipulate earnings upward after an acquisition if they want to positively influence investors' opinion of the acquisition.[6]

In other cases, misreporting can be an incentive to make an acquisition. Acquisitions complicate a company's financial statements and thus can conceal previous accounting misstatements. Some evidence indicates that companies engaged in intentional misreporting (specifically, companies that were subsequently accused of accounting fraud by the US SEC) are more likely than non-misreporting companies to make an acquisition. They are also more likely to acquire a company that would reduce the comparability and consistency of their financial statements, such as by targeting companies that have less public information and less similar operations (Erickson, Heitzman, and Zhang 2012).

There are also opportunities to make choices that affect the initial consolidated balance sheet and consolidated income statements in the future. When a business combination occurs, the acquirer must measure and recognize identifiable assets acquired and liabilities assumed at their fair values as of the acquisition date. These may include assets and liabilities that the acquired company had not previously recognized as assets and liabilities in its financial statements. For example, identifiable intangible assets that the acquired company developed internally and some contingent liabilities would be recognized by the acquirer. The excess of the purchase price over the recognized value of the identified assets acquired and liabilities assumed is reported as goodwill. Unlike other long-lived assets, goodwill is not amortized; however, it is subject to impairment testing. Because goodwill is not amortized, unless appropriate impairment charges are recorded, the capitalized goodwill amount continues indefinitely.

The default accounting treatment for goodwill—no future amortization expense—provides an incentive to acquirers to understate the value of amortizable intangibles when recording an acquisition. Being a residual amount, more of the value of an acquisition will thus be classified as goodwill, with its future earnings-friendly accounting treatment. That bias may result in postponement of the recognition of an uneconomic acquisition until impairment charges on the goodwill are recorded, which may be long after the acquisition. Managements may be willing to take this chance because they may be able to convince analysts and investors that a goodwill impairment charge is a non-recurring, non-cash charge—something that many will overlook. Nevertheless, the presence of goodwill should make an investor more inquisitive

[6]Findings consistent with this possibility are presented in Bens, Goodman, and Neamtiu (2012).

about a company's record in recognizing impairments and should also motivate an investor to evaluate a company's impairment testing process for goodwill. Fair value measurement, except in the case of assets and liabilities with quoted prices in active markets for identical assets or liabilities, presents an opportunity for the acquirer's management to exercise judgment and affect reported values. For example, they could understate fair value of assets to avoid future charges to expense. Understating the fair value of assets will result in a higher goodwill amount. In the absence of impairment of goodwill, there will be no charges associated with the goodwill. Many analysts question whether reported goodwill reflects economic reality.

2.2.4. Financial Reporting that Diverges from Economic Reality Despite Compliance with Accounting Rules

Certain accounting standards may give rise to financial reporting that an analyst may find less useful because he or she does not view it as reflective of economic reality. Examples 3 and 4 illustrate these types of situations. When possible, an analyst should adjust the reported information to better reflect his or her view of economic reality. If an adjustment is not possible because the relevant data are not disclosed, an analyst can instead make a qualitative assessment of the effect.

Example 3 describes one of the earlier cases of creative consolidation accounting that raised the need for an in-depth consideration of consolidation accounting and the related issue of control. Many entities are governed by the votes of shareholders under which the majority rules. However, exceptions may exist and both US GAAP and IFRS have endeavored to create regimes under which consolidation is required when it is appropriate to depict economic substance.

EXAMPLE 3 Treatment of Variable Interest (Special Purpose) Entities

SEC enforcement action regarding the financial statements of Digilog, Inc.

In order to develop and introduce a new product, Digilog created a separate business entity, DBS, that was capitalized with $10 million of convertible debt issued to Digilog. Upon conversion, Digilog would end up owning nearly 100% of DBS. Initially, owners' equity of DBS consisted of a few thousand dollars of common stock issued to DBS's manager.

During the first two years of DBS's operations, Digilog did not consolidate DBS; it argued that DBS was controlled by its manager, who owned 100% of the outstanding common shares. Even though DBS generated substantial losses over its first two years of existence, Digilog reported interest income on its investment in the convertible debt. After two years, when DBS started to generate profits, Digilog exercised its conversion option and consolidated from that point forward.

Although DBS had been set up as an "independent" corporation, the SEC took the position that the contractual and operating relationships between the two companies were such that they should have been viewed as constituting a single enterprise for financial reporting purposes. The defendants in the enforcement action, Digilog's auditors, consented to a settlement. The settlement included the opinion by the SEC that consolidation would have provided a user of the financial statements with the most

meaningful presentation in accordance with GAAP—even though no specific GAAP at that time directly addressed Digilog's "creative" accounting solution.

Eventually, after many more years of debate, and in the wake of the Enron scandal, which also involved abuse of subsequent consolidation rules, the concept of a "variable interest entity" (VIE) was created. A key aspect is control for consolidation purposes; even in the absence of voting control, consolidation is necessary if the investor has the ability to exert influence on the financial and operating policy of the entity and is exposed, or has rights, to variable returns from its investment in the entity. Although the term VIE is not employed by IFRS, its provisions are similar.

Given the facts above and the consolidation rules for a variable interest entity, Digilog is *most likely* to try to argue that it does not need to consolidate DBS because:

A. Digilog does not have voting control.
B. Digilog's interest income from DBS is not variable.
C. DBS's manager has operational and financial control.

Solution: C is correct. Digilog is most likely to assert that operational and financial control rest with DBS's manager. However, the assertion is not likely to be accepted because the manager's investment is a few thousand dollars compared with $10 million by Digilog. Simply not having voting control is not sufficient to avoid consolidation. Digilog is exposed to variable returns because of possible losses and the convertibility option.

Example 4 considers asset impairments and restructuring charges and their implications.

EXAMPLE 4 Asset Impairments and Restructuring Charges

Two related topics that almost always require special consideration on the part of analysts are asset impairments and restructuring charges. Asset impairments are write-downs of assets required when circumstances indicate that the carrying amount of an asset is excessive compared with the expected future benefits.

The term "restructuring charge" is used under IFRS to indicate a sale or termination of a line of business, closure of business locations, changes in management structure, and/or a fundamental reorganization. All of these events could also give rise to the recognition of a liability (e.g., a commitment to make employee severance payments or to make a payment to settle a lease).

On 25 April 2013, Fuji Electric Co., Ltd, a Japanese company reporting under the GAAP of its home country, announced an impairment loss on land, buildings, structures, and leased assets employed in its "solar cell and module business" in the amount of ¥6.5 billion (Fuji Electric 2013). The entire loss was recorded in its 2012 fiscal year (ending 31 March). Assets and net income were reduced by ¥6.5 billion.

Elan Corporation, plc, a biotechnology company headquartered in Ireland, reported US$42.4 million in restructuring and other costs incurred during fiscal year 2012 related to its decision to close a research facility in San Francisco, with the loss of around 200 jobs, and to shift much of its operations back to Ireland because of changing

business conditions. Some of these costs were associated with the obligation to make current and deferred employee severance payments (Leuty 2012).[7]

Recognizing an impairment loss and restructuring charges in a single period, although consistent with most GAAP, is *most likely* to overstate:

A. prior periods' net incomes.
B. current period's net income.
C. future periods' net incomes.

Solution: A is correct. The impairment and the restructuring were likely the result of past activities and should be taken into account when evaluating past net incomes. The current period's net income, unless the impairment or restructuring is expected to be repeated, is understated. Future period net income may be overstated if reversals occur, but such behavior is not likely. Charging the entire impairment loss and restructuring charge in the current period are examples of conservative accounting principles.

An analyst would likely consider it probable that the events giving rise to Fuji Electric's impairment loss (evidently, declining activity and future prospects for its solar business) had actually occurred over a longer period than that single year. Similarly, an analyst might view the restructuring charge at Elan as relating to previous periods.

When faced with a restructuring charge, an impairment charge, or a combination of the two, an analyst should consider whether similar events occur regularly enough such that they should be factored into estimates of permanent earnings, or whether they should be regarded as one-off items that provide little information about the future earnings of the remaining activities of the company. If it is the former, then the analyst should attempt to "normalize" earnings by essentially spreading the current restructuring/impairment charge(s) over past periods as well as the current period. If an item is truly one-off—say, the financial effects of a natural disaster—then the analyst is justified in "normalizing" earnings by excluding the item from earnings. This process will require a significant amount of judgment, best informed by knowledge of the underlying facts and circumstances.

Items that are commonly encountered by analysts include the following:

- Revisions to ongoing estimates, such as the remaining economic lives of assets, may lead an analyst to question whether an earlier change in estimate would have been more appropriate.
- Sudden increases to allowances and reserves could call into question whether the prior estimates resulted in overstatement of prior periods' earnings instead of an unbiased picture of economic reality.
- Large accruals for losses (e.g., environmental or litigation-related liabilities) suggest that prior periods' earnings may have been overstated because of the failure to accrue losses earlier.

Management may use items such as reserves and allowances to manage or smooth earnings. The application of accounting standards illustrated in Examples 3 and 4 results in financial statements that may not reflect economic reality. Accounting standards may result in some economic assets and liabilities not being reflected in the financial statements. For example, a

[7] See also Elan Corporation, plc, Form 20-F, filed 12 February 2013.

company may lease production equipment on an operating lease basis. The equipment will not appear on the company's balance sheet, and only the lease payments will appear on the income statement. Yet, the assets exist, are controlled by the company, and produce returns that are reflected on the income statement. The lease payments alone do not capture all of these economic effects. Another example is research and development (R&D) expense. Accounting standards do not permit the capitalization of expenditures for R&D expense, yet R&D produces assets that, in turn, produce future benefits. Accounting standards prohibit R&D's capitalization because of the difficulty in assessing which expenditures will actually produce future benefits and which expenditures will produce nothing. Accounting standards may also result in some information being reported in other comprehensive income rather than through net income. For example, classifying marketable securities as "available for sale" will result in their changes in fair value being reported in other comprehensive income. Contrast that reporting result against that for marketable securities classified as "trading": Their changes in fair value are reported in net income.

No basis of accounting can be expected to recognize all of the economic assets and liabilities for an entity. Consequently, figuring out what *is not* reported can be challenging. One frequently encountered example of an unrecognized asset is a company's sales order backlog. Under most GAAP, revenue is not recognized (and an asset is not created) until services have been performed and other criteria have been met. However, in certain industries, particularly large-scale manufacturing, such as airplane manufacturing, the order backlog can be a significant unrecognized asset. When the amount of backlog is significant, it is typically discussed in the management commentary, and an analyst can use this information to adjust reported amounts and to prepare forecasts.

Another dilemma for analysts is judging whether an item presented in other comprehensive income (OCI) should be included in their analysis as net income. Examples of items presented in OCI include the following:

- unrealized holding gains and losses on certain investments in equity securities,
- unrealized holding gains (and subsequent losses) on items of property and equipment for which the "revaluation option" is elected (IFRS only),
- effects on owners' equity resulting from the translation of the foreign currency-denominated financial statements of a foreign operation to the reporting currency of the consolidated entity,
- certain changes to net pension liability or asset, and
- gains and losses on derivative financial instruments (and certain foreign currency-denominated non-derivative financial instruments) accounted for as a hedge of future cash flows.

When an analyst decides that a significant item presented in OCI should be included in net income, the analyst can adjust reported and forecasted amounts accordingly.

3. EVALUATING THE QUALITY OF FINANCIAL REPORTS

Prior to beginning any financial analysis, an analyst should clarify the purpose and context and clearly understand the following:

- What is the purpose of the analysis? What questions will this analysis answer?
- What level of detail will be needed to accomplish this purpose?

- What data are available for the analysis?
- What are the factors or relationships that will influence the analysis?
- What are the analytical limitations, and will these limitations potentially impair the analysis?

In the context of evaluating the quality of financial reports, an analyst is attempting to answer two basic questions:

1. Are the financial reports GAAP-compliant and decision-useful?
2. Are the results (earnings) of high quality? Do they provide an adequate level of return, and are they sustainable?

General steps, which fit within the general framework just mentioned, are discussed first. Following these steps may help an analyst evaluate the quality of financial reports (answering the two basic questions). Then, quantitative tools for evaluating the quality of financial reports are discussed.

3.1. General Steps to Evaluate the Quality of Financial Reports

It is important to note that the steps presented here are meant to serve as a general guideline only. An analyst may choose to add steps, emphasize or deemphasize steps, or alter the order of the steps. Companies are unique, and variation in specific analytical projects will require specific approaches.

1. Develop an understanding of the company and its industry. Understanding the economic activities of a company provides a basis for understanding why particular accounting principles may be appropriate and why particular financial metrics matter. Understanding the accounting principles used by a company *and* its competitors provides a basis for understanding what constitutes the norm—and to assess whether a company's treatment is appropriate.
2. Learn about management. Evaluate whether the company's management has any particular incentives to misreport. Review disclosures about compensation and insider transactions, especially insiders' sales of the company's stock. Review the disclosures concerning related-party transactions.
3. Identify significant accounting areas, especially those in which management judgment or an unusual accounting rule is a significant determinant of reported financial performance.
4. Make comparisons:
   A. Compare the company's financial statements and significant disclosures in the current year's report with the financial statements and significant disclosures in the prior year's report. Are there major differences in line items or in key disclosures, such as risk disclosures, segment disclosures, classification of specific expense, or revenue items? Are the reasons for the changes apparent?
   B. Compare the company's accounting policies with those of its closest competitors. Are there significant differences? If so, what is the directional effect of the differences?
   C. Using ratio analysis, compare the company's performance with that of its closest competitors.
5. Check for warnings signs of possible issues with the quality of the financial reports. For example,
   - declining receivables turnover could suggest that some revenues are fictitious or recorded prematurely or that the allowance for doubtful accounts is insufficient;

- declining inventory turnover could suggest obsolescence problems that should be recognized; and
- net income greater than cash provided by operations could suggest that aggressive accrual accounting policies have shifted current expenses to later periods.

6. For firms operating in multiple segments by geography or product—particularly multinational firms—consider whether inventory, sales, and expenses have been shifted to make it appear that a company is positively exposed to a geographic region or product segment that the investment community considers to be a desirable growth area. An analyst may suspect that this shift is occurring if the segment is showing strong performance while the consolidated results remain static or worsen.
7. Use appropriate quantitative tools to assess the likelihood of misreporting.

The first six steps listed describe a qualitative approach to evaluating the quality of financial reports. In addition to the qualitative approach, quantitative tools have been developed to help in evaluating financial reports.

3.2. Quantitative Tools to Assess the Likelihood of Misreporting

This section describes some tools for assessing the likelihood of misreporting (Step 7 above). If the likelihood of misreporting appears high, an analyst should take special care in analyzing, including qualitatively analyzing, the financial reports of the company.

3.2.1. Beneish Model

Messod D. Beneish and colleagues conducted studies to identify quantitative indicators of earnings manipulation and to develop a model to assess the likelihood of misreporting (Beneish 1999; Beneish, Lee, and Nichols 2013). The following is the Beneish model and its variables. After the description of each variable, an intuitive explanation of why it is included is given.

The probability of manipulation (M-score) is estimated using a probit model:[8]

$$M\text{-score} = -4.84 + 0.920\ (\text{DSR}) + 0.528\ (\text{GMI}) + 0.404\ (\text{AQI}) + 0.892\ (\text{SGI}) + 0.115\ (\text{DEPI}) - 0.172\ (\text{SGAI}) + 4.670\ (\text{Accruals}) - 0.327\ (\text{LEVI})$$

where

M-score = Score indicating probability of earnings manipulation

DSR (days sales receivable index) = $(\text{Receivables}_t/\text{Sales}_t)/(\text{Receivables}_{t-1}/\text{Sales}_{t-1})$.

Changes in the relationship between receivables and sales could indicate inappropriate revenue recognition.

GMI (gross margin index) = $\text{Gross margin}_{t-1}/\text{Gross margin}_t$.

Deterioration in margins could predispose companies to manipulate earnings.

[8] Variables that are statistically significant in the empirical results of Beneish (1999) include the days sales receivable index, gross margin index, asset quality index, sales growth index, and accruals.

AQI (asset quality index) = $[1 - (PPE_t + CA_t)/TA_t]/[1 - (PPE_{t-1} + CA_{t-1})/TA_{t-1}]$, where PPE is property, plant, and equipment; CA is current assets; and TA is total assets.

Change in the percentage of assets other than in PPE and CA could indicate excessive expenditure capitalization.

SGI (sales growth index) = $Sales_t/Sales_{t-1}$.

Managing the perception of continuing growth and capital needs from actual growth could predispose companies to manipulate sales and earnings.

DEPI (depreciation index) = Depreciation $rate_{t-1}$/Depreciation $rate_t$, where Depreciation rate = Depreciation/(Depreciation + PPE).

Declining depreciation rates could indicate understated depreciation as a means of manipulating earnings.

SGAI (sales, general, and administrative expenses index) = $(SGA_t /Sales_t)/(SGA_{t-1}/Sales_{t-1})$.

An increase in fixed SGA expenses suggests decreasing administrative and marketing efficiency, which could predispose companies to manipulate earnings.

Accruals = (Income before extraordinary items – Cash from operations)/Total assets.

Higher accruals can indicate earnings manipulation.

LEVI (leverage index) = $Leverage_t/Leverage_{t-1}$, where Leverage is calculated as the ratio of debt to assets.

Increasing leverage could predispose companies to manipulate earnings.

The *M*-score in the Beneish model is a normally distributed random variable with a mean of 0 and a standard deviation of 1.0. Consequently, the probability of earnings manipulation indicated by the model can be calculated by using the cumulative probabilities for a standard normal distribution or the NORMSDIST function in Excel. For example, *M*-scores of –1.49 and –1.78 indicate that the probability of earnings manipulation is 6.8% and 3.8%, respectively. Higher *M*-scores (i.e., less negative numbers) indicate an increased probability of earnings manipulation. The probability is given by the amount in the left side of the distribution.

The use of the *M*-score to classify companies as potential manipulators depends on the relative cost of Type I errors (incorrectly classifying a manipulator company as a non-manipulator) and Type II errors (incorrectly classifying a non-manipulator as a manipulator). The cutoff value for classification minimizes the cost of misclassification. Beneish considered that the likely relevant cutoff for investors is a probability of earnings manipulation of 2.9% (an *M*-score exceeding –1.78).[9] Example 5 shows an application of the Beneish model.

[9] See Beneish (1999) for an explanation and derivation of the cutoff values. Beneish et al. (2013) use an *M*-score exceeding –1.78 as the cutoff value.

EXAMPLE 5 Application of the Beneish Model

Exhibit 5 presents the variables and Beneish's *M*-Score for XYZ Corporation (a hypothetical company).

EXHIBIT 5 XYZ Corporation *M*-Score

	Value of Variable	Coefficient from Beneish Model	Calculations
DSR	1.300	0.920	1.196
GMI	1.100	0.528	0.581
AQI	0.800	0.404	0.323
SGI	1.100	0.892	0.981
DEPI	1.100	0.115	0.127
SGAI	0.600	–0.172	–0.103
Accruals	0.150	4.670	0.701
LEVI	0.600	–0.327	–0.196
Intercept			–4.840
M-score			–1.231
Probability of manipulation			10.91%

1. Would the results of the Beneish model lead an analyst, using a –1.78 *M*-score as the cutoff, to flag XYZ as a likely manipulator?
2. The values of DSR, GMI, SGI, and DEPI are all greater than one. In the Beneish model, what does this indicate for each variable?

Solution to 1: Yes, the model could be expected to lead an analyst to flag XYZ as a likely manipulator. The *M*-score is higher than the cutoff of –1.78, indicating a higher-than-acceptable probability of manipulation. For XYZ Corporation, the model estimates the probability of manipulation as 10.91%. Although the classification of companies as manipulators depends on the relative cost of Type I errors and Type II errors, the value of 10.91% greatly exceeds the cutoff of 2.9% that Beneish identified as the relevant cutoff.

Solution to 2: Indications are as follows:

A. The value greater than one for DSR indicates that receivables as a percentage of sales have increased; this change may be an indicator of inappropriate revenue recognition. XYZ may have shipped goods prematurely and recognized revenues belonging in later periods. Alternatively, it may be caused by customers with deteriorating credit-paying ability—still a problem for the analyst of XYZ.
B. The value greater than one for GMI indicates that gross margins were higher last year; deteriorating margins could predispose companies to manipulate earnings.

C. The value greater than one for SGI indicates positive sales growth relative to the previous year. Companies could be predisposed to manipulate earnings to manage perceptions of continuing growth and also to obtain capital needed to support growth.
D. The value greater than one for DEPI indicates that the depreciation rate was higher in the prior year; a declining depreciation rate can indicate manipulated earnings.

3.2.2. Other Quantitative Models

Researchers have examined numerous factors that contribute to assessing the probability that a company is engaged in accounting manipulation. Variables that have been found useful for detecting misstatement include accruals quality; deferred taxes; auditor change; market-to-book value; whether the company is publicly listed and traded; growth rate differences between financial and non-financial variables, such as number of patents, employees, and products; accrual quality; and aspects of corporate governance and incentive compensation.[10]

3.2.3. Limitations of Quantitative Models

Accounting is a partial representation of economic reality. Consequently, financial models based on accounting numbers are only capable of establishing associations between variables. The underlying cause and effect can only be determined by a deeper analysis of actions themselves—perhaps through interviews, surveys, or investigations by financial regulators with enforcement powers.

An additional concern is that earnings manipulators are just as aware as analysts of the power of quantitative models to screen for possible cases of earnings manipulation. It is not surprising to learn, therefore, that Beneish et al.'s 2013 study found that the predictive power of the Beneish model is declining over time. Undoubtedly, many managers have learned to test the detectability of earnings manipulation tactics by using the model to anticipate analysts' perceptions. Thus, as useful as the Beneish model may be, the search for more powerful analytical tools continues. It is necessary for analysts to use qualitative, not just quantitative, means to assess quality.

4. EARNINGS QUALITY

This section first discusses indicators of earnings quality and then describes how to evaluate the earnings quality of a company. Analytical tools related to identifying very poor earnings/results quality, such as quantitative approaches to assessing the probability of bankruptcy, are also discussed.

4.1. Indicators of Earnings Quality

In general, the term "earnings quality" can be used to encompass earnings, cash flow, and balance sheet quality. This section, however, focuses specifically on earnings quality. High earnings

[10]A summary of research on predicting accounting misstatement is provided in Dechow, Ge, Larson, and Sloan (2011).

quality is often considered to be evidenced by earnings that are sustainable and represent returns equal to or in excess of the company's cost of capital.[11] High-quality earnings increase the value of the company more than low-quality earnings, and the term "high-quality earnings" assumes that reporting quality is high. In contrast, low-quality earnings are insufficient to cover the company's cost of capital and/or are derived from non-recurring, one-off activities. In addition, the term "low-quality earnings" can also be used when the reported information does not provide a useful indication of the company's performance.

A variety of alternatives have been used as indicators of earnings quality: recurring earnings, earnings persistence and related measures of accruals, beating benchmarks, and after-the-fact confirmations of poor-quality earnings, such as enforcement actions and restatements.

4.1.1. Recurring Earnings

When using a company's current and prior earnings as an input to forecast future earnings (for example, for use in an earnings-based valuation), an analyst focuses on the earnings that are expected to recur in the future. For example, earnings from subsidiaries that have been selected for disposal, which must be separately identified as "discontinued operations," are typically excluded from forecasting models. A wide range of other types of items may be non-recurring—for example, one-off asset sales, one-off litigation settlements, or one-off tax settlements. Reported earnings that contain a high proportion of non-recurring items are less likely to be sustainable and are thus considered lower quality.

Enron, an energy distribution company and a company famous for misreporting, presented non-recurring items, among other reporting issues, in such a way that they created an illusion of a solidly performing company. Example 6 shows aspects of Enron's reporting.

EXAMPLE 6 Non-Recurring Items

Enron Corp.

EXHIBIT 6 Excerpts from Enron and Subsidiaries Consolidated Income Statement, Year-Ended 31 December

(In millions, except per share amounts)	2000	1999	1998
Total revenues	$100,789	$40,112	$31,260
Total costs and expenses	98,836	39,310	29,882
Operating income	$1,953	$802	$1,378
Other income and deductions			
Equity in earnings of unconsolidated equity affiliates	$87	$309	$97
Gains on sales of non-merchant assets	146	541	56
Gain on the issuance of stock by TNPC, Inc.	121	0	0
Interest income	212	162	88
Other income, net	−37	181	−37
Income before interest, minority interests, and income taxes	$2,482	$1,995	$1,582

[11] The residual income model of valuation is most closely linked to this concept of high earnings quality.

1. How does the trend in Enron's operating income compare with the trend in its income after other income and deductions (i.e., Income before interest, minority interests, and income taxes)?
2. What items appear to be non-recurring as opposed to being a result of routine operations? How significant are these items?
3. The Enron testimony of short seller James Chanos before US Congress referred to "a number of one-time gains that boosted Enron's earnings" as one of the items that "strengthened our conviction that the market was mispricing Enron's stock" (Chanos 2002). What does Chanos's statement indicate about how Enron's earnings information was being used in valuation?

Solution to 1: Enron's operating income varied dramatically from year to year, declining from 1998 to 1999 and then more than doubling in 2000. In contrast, Enron's income before interest, minority interests, and income taxes shows a smooth, upward trend with significant increases each year. The increases were 24% and 26% for 2000 and 1999 relative to 1999 and 1998, respectively.

Solution to 2: Items that appear to be non-recurring are gains on sales of non-merchant assets and the gain on the issuance of stock by TNPC. Although gains from sales of non-merchant assets do recur in each year, this type of activity is not a part of Enron's energy distribution operations. In addition, two other non-operating items—the amount of equity in earnings from unconsolidated subsidiaries and the amount of other income—are highly variable. Two aspects of these items are significant. First, the smooth, upward trend in Enron's income is the direct result of these items. Second, these items collectively represent a significant percentage of the company's income before interest, minority interests, and income taxes, particularly in 1999 when these items represent 52% of the total: ($309 + $541+ $181)/ $1,995 = $1,031/$1,995.

Solution to 3: Chanos's statement suggests that at least some market participants were mistakenly using Enron's reported income as an input to earnings-based valuation, without adjusting for non-recurring items.

Although evaluating non-recurring items for inclusion in operating metrics is important for making appropriate historical comparisons and for developing appropriate inputs in valuation, another aspect of non-recurring items merits mention. Because classification of items as non-recurring is a subjective decision, classification decisions can provide an opportunity to inflate the amount potentially identified by a user of the income statement as repeatable earnings—those earnings expected from the company's business operations, which investors label as "recurring" or "core" earnings. In the absence of special or one-time items (such as restructuring charges, employee separation costs, goodwill impairment charges, or gains on disposals of assets), operating income is representative of these kinds of earnings. So-called classification shifting, which does not affect total net income, can inflate the amount reported as recurring or core earnings. This could be accomplished by reclassifying normal expenses

to special items or by shifting operating expenses to income-decreasing discontinued operations. Anecdotal evidence of classification shifting exists (see Exhibit 7), but the evidence only emerges after the fact.[12] From an analyst's perspective, after-the-fact evidence of earnings management is not particularly useful for anticipating issues with earnings quality. Although it may not be possible to identify whether a company might be engaging in classification shifting, an analyst should nonetheless give special attention to income-decreasing special items, particularly if the company is reporting unusually high operating earnings for the period or if the classification of the item enabled the company to meet or beat forecasts for operating earnings.

EXHIBIT 7 Anecdotal Evidence of Classification Shifting

- Borden, a food and chemicals company: The SEC determined that the company had classified $146 million of operating expenses as part of a special item (restructuring charges) when the expenses should have been included in selling, general, and administrative expenses (Hwang 1994).
- AmeriServe Food Distribution Inc., which declared bankruptcy only four months after completing a $200 million junk bond issuance: A bankruptcy court–appointed examiner found that the company's financial statements "classified substantial operating expenses… as restructuring charges," which "masked the company's serious financial underperformance and delayed recognition by all parties of the severity of the problems faced by the company" (Sherer 2000).
- Waste Management, which, in 1998, issued the then-largest restatement in SEC history: The enforcement documentation indicates that the company had improperly inflated operating income by netting non-operating gains from the sale of investments and discontinued operations against unrelated operating expenses (SEC 2001b).
- IBM: Revised disclosures, prompted by SEC scrutiny and analysts' requests, showed that the company had classified intellectual property income as an offset to selling, general, and administrative expenses. This classification resulted in an understatement of operating expenses and thus an overstatement of core earnings by $1.5 billion and $1.7 billion in 2001 and 2000, respectively (Bulkeley 2002).

Companies understand that investors differentiate between recurring and non-recurring items. Therefore, in addition to presenting components of income on the face of the income statement, many companies voluntarily disclose additional information to facilitate the differentiation between recurring and non-recurring items. Specifically, companies may disclose both total income and so-called *pro forma* income (or adjusted income, also referred to as

[12] Archival evidence of classification shifting is presented in McVay (2006). McVay first models "expected core earnings" and then documents a relationship between reported-minus-expected core earnings and the number of special items. But in any given year, a company's management could attribute the unexpectedly high core earnings to economic improvements related to the special items; therefore, only the *ex post* evidence that unexpectedly high core earnings tend to reverse in the following year is suggestive of earnings management through classification shifting.

non-GAAP measures, or non-IFRS measures if IFRS is applicable) that has been adjusted to exclude non-recurring items. Disclosures of *pro forma* income must be accompanied by a reconciliation between *pro forma* income and reported income. It is important to be aware, however, that determination of whether an item is non-recurring involves judgment, and some companies' managers may be motivated to consider an item non-recurring if it improves a performance metric relevant to investors. For example, Groupon, an online discount provider, included in its original initial public offering (IPO) filing a *pro forma* (i.e., non-GAAP) measure of operating income that excluded online marketing costs. The SEC determined that the measure was misleading and subsequently required the company to eliminate that measure as reported. Overall, although voluntarily disclosed adjustments to reported income can be informative, an analyst should review the information to ensure that excluded items are truly non-recurring.

4.1.2. Earnings Persistence and Related Measures of Accruals

One property of high earnings quality is earnings persistence—that is, sustainability of earnings excluding items that are obviously non-recurring and persistence of growth in those earnings. The assumption is that, for equity valuation models involving earnings forecasts, more persistent earnings are more useful inputs. Persistence can be expressed as the coefficient on current earnings in a simple model: [13]

$$\text{Earnings}_{t+1} = \alpha + \beta_1 \text{Earnings}_t + \varepsilon$$

A higher coefficient (β_1) represents more persistent earnings.

Earnings can be viewed as being composed of a cash component and an accruals component. The accrual component arises from accounting rules that reflect revenue in the period earned and expenses in the period incurred—not at the time of cash movement. For example, a sale of goods on account results in accounting income in the period the sale is made. If the cash collection occurs in a subsequent period, the difference between reported net income and cash collected constitutes an accrual. When earnings are decomposed into a cash component and an accruals component, research has shown that the cash component is more persistent (Sloan 1996). In the following model, the coefficient on cash flow (β_1) has been shown to be higher than the coefficient on accruals (β_2), indicating that the cash flow component of earnings is more persistent:

$$\text{Earnings}_{t+1} = \alpha + \beta_1 \text{Cash flow}_t + \beta_2 \text{Accruals}_t + \varepsilon$$

Because of the greater persistence of the cash component, indicators of earnings quality evolved to measure the relative size of the accruals component of earnings. Earnings with a larger component of accruals would be less persistent and thus of lower quality.

An important distinction is between accruals that arise from normal transactions in the period (called "non-discretionary") and accruals that result from transactions or accounting choices outside the normal, which are possibly made with the intent to distort reported earnings (called "discretionary accruals"). Outlier discretionary accruals are an indicator of possibly

[13] Descriptions of certain indicators in this section follow Dechow, Ge, and Schrand (2010).

manipulated—and thus low-quality—earnings. One common approach to identifying abnormal accruals is first to model companies' normal accruals and then to determine outliers. A company's normal accruals are modeled as a function of economic factors, such as growth in credit sales and the amount of depreciable assets. Growth in credit sales would be expected to result in accounts receivable growth, and depreciable assets would be associated with the amount of depreciation. To apply this approach, total accruals are regressed on the factors expected to give rise to normal accruals, and the residual of the regression would be considered a proxy for abnormal accruals.

This approach was pioneered by academics and subsequently adopted in practice.[14] The SEC describes its approach to modeling abnormal accruals:

> Our Accounting Quality Model extends the traditional approach [often based on the popular Jones Model or the Modified Jones Model] by allowing discretionary accrual factors to be a part of the estimation. Specifically, we take filings information across all registrants and estimate total accruals as a function of a large set of factors that are proxies for discretionary and non-discretionary components . . . . Discretionary accruals are calculated from the model estimates and then used to screen firms that appear to be managing earnings most aggressively. (Lewis 2012)

One simplified approach to screening for abnormal accruals is to compare the magnitude of total accruals across companies. To make a relevant comparison, the accruals would be scaled—for example, by average assets or by average net operating income. Under this approach, high amounts of accruals are an indicator of possibly manipulated and thus low-quality earnings.

A more dramatic signal of questionable earnings quality is when a company reports positive net income but negative operating cash flows. This situation is illustrated in Example 7.

EXAMPLE 7 Discrepancy between Net Income and Operating Cash Flows

Allou Health & Beauty Care, Inc.

Allou Health & Beauty Care, Inc. was a manufacturer and distributor of hair and skin care products. Exhibit 8 presents excerpts from the company's financial statements from 2000 to 2002. Following the periods reported in these statements, Allou's warehouses were destroyed by fire, for which the management was found to be responsible. Allou was subsequently shown to have fraudulently inflated the amount of its sales and inventories in those years.

[14] See Jones (1991) and Dechow, Sloan, and Sweeney (1995). These seminal academic papers produced the Jones Model and the Modified Jones Model.

EXHIBIT 8 Illustration of Fraudulent Reporting in which Reported Net Income Significantly Exceeded Reported Operating Cash Flow, Annual Data 10-K for Allou Health & Beauty Care, Inc., and Subsidiaries

Years ended 31 March	2002	2001	2000
Excerpt from Income Statement			
Revenues, net	$564,151,260	$548,146,953	$421,046,773
Costs of revenue	500,890,588	482,590,356	367,963,675
Gross profit	$63,260,672	$65,556,597	$53,083,098
	⋮	⋮	⋮
Income from operations	27,276,779	28,490,063	22,256,558
	⋮	⋮	⋮
Income from continuing operations*	$6,589,658	$2,458,367	$7,043,548
Excerpt from Statement of Cash Flows			
Cash flows from operating activities:			
Net income from continuing operations	$6,589,658	$2,458,367	$7,043,548
Adjustments to reconcile net income to net cash used in operating activities:			
[Portions omitted]	⋮	⋮	⋮
Decrease (increase) in operating assets:			
Accounts receivable	(24,076,150)	(9,725,776)	(25,691,508)
Inventories	(9,074,118)	(12,644,519)	(40,834,355)
Net cash used in operating activities	$(17,397,230)	$(34,195,838)	$(27,137,652)

*The difference between income from operations and income from continuing operations included deductions for interest expense and provision for income taxes in each year and for a $5,642,678 loss on impairment of investments in 2001.

Referring to Exhibit 8, answer the following questions:

1. Based on the income statement data, evaluate Allou's performance over the period shown.
2. Compare Allou's income from continuing operations and cash flows from operating activities.
3. Interpret the amounts shown as adjustments to reconcile income from continuing operations to net cash used in operating activities.

Solution to 1: Based on the income statement, the following aspects of Allou's performance are notable. Revenues grew in each of the past three years, albeit more slowly in the latest year shown. The company's gross margin declined somewhat over the past three years but has been fairly stable. Similarly, the company's operating margin declined somewhat over the past three years but has been fairly stable at around 5%. The company's income from continuing operations was sharply lower in 2001 as a result of an

impairment loss. The company showed positive net income in each year. Overall, the company showed positive net income in each year, and its performance appears to be reasonably stable based on the income statement data.

Note: Gross margin is gross profit divided by revenues. For example, for 2002, \$63,260,672 divided by \$564,151,260 is 11.2%. The ratios for 2001 and 2000 are 12.0% and 12.6%, respectively.

Operating margin is income from operations divided by revenues. For example, for 2002, \$27,276,779 divided by \$564,151,260 is 4.8%. The ratios for 2001 and 2000 are 5.2% and 5.3%, respectively.

Solution to 2: Allou reported positive income from continuing operations but negative cash from operating activities in each of the three years shown. Persistent negative cash from operating activities is not sustainable for a going concern.

Solution to 3: The excerpt from Allou's Statement of Cash Flows shows that accounts receivable and inventories increased each year. This increase can account for most of the difference between the company's income from continuing operations and net cash used in operating activities. The company seems to be accumulating inventory and not collecting on its receivables.

Note: The statement of cash flows, prepared using the indirect method, adjusts net income to derive cash from operating activities. An increase in current assets is subtracted from the net income number to derive the cash from operating activities.

Similar to Allou, the quarterly data for Enron shown in Exhibit 9 shows positive net income but negative cash from operating activities in quarters that were subsequently shown to have been misreported.

EXHIBIT 9 Quarterly Data 10-Q: Enron and Subsidiaries

Three months ended 31 March (\$ millions)	2001	2000
Net income	425	338
Net cash used in operating activities	(464)	(457)

Annual Data 10-K: Enron and Subsidiaries

Year ended 31 December (\$ millions)	2000	1999	1998
Net income	9,779	893	703
Net cash provided by operating activities	4,779	1,228	1,640

An analyst might also question why net cash provided by operating activities was more than double that of net income in 1998, almost 50% greater than net income in 1999, and about half of net income in 2000.

Although sizable accruals (roughly, net income minus operating cash flow) can indicate possibly manipulated and thus low-quality earnings, it is not necessarily the case that fraudulently reporting companies will have such a profile. For example, as shown in Exhibit 9,

Enron's annual operating cash flows exceeded net income in two of the years during which fraudulent financial reporting was subsequently revealed. Some of the fraudulent transactions undertaken by Enron were specifically aimed at generating operating cash flow. It is advisable for investors to explore and understand why the differences exist. The company's ability to generate cash from operations ultimately affects investment and financing within the company.

Similarly, as shown in Exhibit 10, WorldCom showed cash from operating activities in excess of net income in each of the three years shown, although the company was subsequently found to have issued fraudulent reports. WorldCom's most significant fraudulent reporting was improperly capitalizing (instead of expensing) certain costs. Because capital expenditures are shown as investing cash outflows rather than operating cash outflows, the company's fraudulent reporting had the impact of inflating operating cash flows.

EXHIBIT 10 Example of Fraudulent Reporting in which Reported Net Income Did Not Significantly Exceed Reported Operating Cash Flow, WorldCom Inc. and Subsidiaries ($ millions)

For the years ended 31 December	1999	2000	2001
Net income (loss)	$4,013	$4,153	$1,501
Net cash provided by operating activities	4,182	11,005	7,666

In summary, although accrual measures (i.e., differences between net income and operating cash flows) can serve as indicators of earnings quality, they cannot be used in isolation or applied mechanically. WorldCom shows how comparing cash-basis measures, such as cash provided by operating activities, with net income may provide a false sense of confidence about net income. Net income is calculated using subjective estimates, such as expected life of long-term assets, that can be easily manipulated. In each year shown in Exhibit 10, the cash provided by operations exceeded net income (earnings), suggesting that the earnings were of high quality; an analyst looking at this without considering the investing activities would have felt a false sense of security in the reported net income.

4.1.3. Mean Reversion in Earnings

A key analyst responsibility is to forecast earnings for the purpose of valuation in making investment decisions. The accuracy and credibility of earnings forecasts should increase when a company's earnings stream possesses a high degree of persistence. As already discussed, earnings can be viewed as being composed of a cash flow element plus an accruals element. Sustainable, persistent earnings are driven by the cash flow element of earnings, whereas the accruals element adds information about the company's performance. At the same time, the accruals component can detract from the stability and persistence of earnings because of the estimation process involved in calculating them.

Academic research has shown empirically what we already know intuitively: Nothing lasts forever. Extreme levels of earnings, both high and low, tend to revert to normal levels over time. This phenomenon is known as "mean reversion in earnings" and is a natural attribute of competitive markets. A company experiencing poor earnings performance will shut down or minimize its losing operations and replace inferior managers with ones capable of executing an improved strategy, resulting in improved earnings. At the other extreme, a company experiencing abnormally high profits will attract competition unless the barriers to entry are insurmountable. New competitors may reduce their prices to gain a foothold in an existing company's markets, thereby reducing the existing company's profits over time. Whether

a company is experiencing abnormally high or low earnings, the net effect over time is that a return to the mean should be anticipated.

Nissim and Penman (2001) demonstrated that the mean reversion principle exists across a wide variety of accounting-based measures. In a time-series study encompassing companies listed on the New York Stock Exchange and the American Stock Exchange between 1963 and 1999, they tracked such measures as residual income, residual operating income, return on common equity, return on net operating assets, growth in common equity, core sales profit margins, and others. Beginning with data from 1964, they sorted the companies into 10 equal portfolios based on their ranking for a given measure and tracked the median values in each portfolio in each of the next five-year periods. At the end of each fifth year, the portfolios were re-sorted. The process was extended through 1994, yielding means of portfolio medians over seven rankings. The findings were similar across the metrics, showing a clear reversion to the mean over time.

For example, looking at the pattern for return on net operating assets (RNOA),[15] they found that the range of observed RNOAs was between 35% and −5% at the start of the observations but had compressed to a range of 22% to 7% by the end of the study. Their work illustrates the point that extremely strong or weak performance cannot be sustained forever. They also found that the RNOAs of the portfolios that were not outliers in either direction in Year 1—outperformance or underperformance—did not stray over time, staying constant or nearly so over the entire observation period.

The lesson for analysts is clear: One cannot simply extrapolate either very high or very low earnings into the future and expect to construct useful forecasts. In order to be useful, analysts' forecasts need to take into account normalized earnings over the relevant valuation time frame. As discussed, earnings are the sum of cash flows and accruals, and they will be more sustainable and persistent when the cash flow component dominates earnings. If earnings have a significant accruals component, it may hasten the earnings' reversion to the mean, even more so when the accrual elements are outliers relative to the normal amount of accruals in a company's earnings. In constructing their forecasts of future earnings, analysts need to develop a realistic cash flow model and realistic estimates of accruals as well.

4.1.4. Beating Benchmarks

Announcements of earnings that meet or exceed benchmarks, such as analysts' consensus forecasts, typically result in share price increases. However, meeting or beating benchmarks is not necessarily an indicator of high-quality earnings. In fact, exactly meeting or only narrowly beating benchmarks has been proposed as an indicator of earnings manipulation and thus low-quality earnings. Academic research has documented a statistically large clustering slightly above zero of actual benchmark differences, and this clustering has been interpreted by some as evidence of earnings management.[16] There is, however, disagreement about whether exactly meeting or only narrowly beating is an indicator of earnings manipulation.[17] Nonetheless, a company that consistently reports earnings that exactly meet or only narrowly beat benchmarks can raise questions about its earnings quality.

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[15] Nissim and Penman define return on net operating assets as Operating income$_t$/Net operating assets$_{t-1}$. Net operating assets are operating assets (those assets used in operations) net of operating liabilities (those generated by operations).

[16] See Brown and Caylor (2005); Burgstahler and Dichev (1997); and Degeorge, Patel, and Zeckhauser (1999).

[17] See Dechow, Richardson, and Tuna (2003).

4.1.5. External Indicators of Poor-Quality Earnings

Two external indicators of poor-quality earnings are enforcement actions by regulatory authorities and restatements of previously issued financial statements. From an analyst's perspective, recognizing poor earnings quality is generally more valuable if it can be done before deficiencies become widely known and confirmed. Therefore, the external indicators of poor earnings quality are relatively less useful to an analyst. Nonetheless, even though it might be better to recognize poor earnings quality early, an analyst should be alert to external indicators and be prepared to re-evaluate decisions.

4.2. Evaluating the Earnings Quality of a Company (Cases)

The aim of analyzing earnings is to understand the persistence and sustainability of earnings. If earnings do not represent the financial realities faced by a company, then any forecast of earnings based on flawed reporting will also be flawed. Choices and estimates abound in financial reporting; and with those choices and estimates, the temptations for managers to improve their companies' performance by creative accounting are enormous. All too often, companies that appear to be extraordinary performers turn out to be quite ordinary or worse once their choice of accounting methods, including fraudulent choices, is uncovered by a regulator.

To avoid repeating the mistakes of the past, it may be helpful for analysts to learn how managers have used accounting techniques to enhance their companies' reported performance. Some cases provide useful lessons. In a study of 227 enforcement cases brought between 1997 and 2002, the SEC found that the most common accounting misrepresentation occurred in the area of revenue recognition (SEC 2003). Revenue is the largest single figure on the income statement and arguably the most important. Its sheer size and its effect on earnings, along with discretion in revenue recognition policies, have made it the most likely account to be intentionally misstated. For those reasons, investors should always thoroughly and skeptically analyze revenues. Too often, however, the chief concerns of analysts center on the quantitative aspects of revenues. They may ponder the growth of revenues and whether growth came from acquisitions or organically, but they rarely focus on the quality of revenues in the same way. A focus on the quality of revenues, including specifically on how it was generated, will serve analysts well. For example, was it generated by offering discounts or through bill-and-hold sales?

4.2.1. Revenue Recognition Case: Sunbeam Corporation

Premature/Fraudulent Revenue Recognition Sunbeam Corporation was a consumer goods company focused on the production and sale of household appliances and outdoor products. In the mid- to late 1990s, it appeared that its new CEO, "Chainsaw Al" Dunlap, had engineered a turnaround at Sunbeam. He claimed to have done this through cutting costs and increasing revenues. The reality was different. Had more analysts performed basic but rigorous analysis of the financial statements in the earlier phases of Sunbeam's misreporting, they might have been more skeptical of the results produced by Chainsaw Al. Sunbeam engaged in numerous sales transactions that inflated revenues. Among them were the following:

- Sunbeam included one-time disposals of product lines in sales for the first quarter of 1997 without indicating that such non-recurring sales were included in revenues.
- At the end of the first quarter of 1997 (March), Sunbeam booked revenue and income from a sale of barbecue grills to a wholesaler. The wholesaler held the merchandise over the quarter's end without accepting ownership risks. The wholesaler could return the goods if it desired, and Sunbeam would pick up the cost of shipment both ways. All of the grills were returned to Sunbeam in the third quarter of 1997.

- Sunbeam induced customers to order more goods than they would normally through offers of discounts and other incentives. Often, the customers also had return rights on their purchases. This induced ordering had the effect of inflating current results by pulling future sales into the present. This practice is sometimes referred to as "channel stuffing." This policy was not disclosed by Sunbeam, which routinely made use of channel-stuffing practices at the end of 1997 and the beginning of 1998.
- Sunbeam engaged in bill-and-hold revenue practices. In a bill-and-hold transaction, revenue is recognized when the invoice is issued while the goods remain on the premises of the seller. These are unusual transactions, and the accounting requirements for them are very strict: The buyer must request such treatment, have a genuine business purpose for the request, and must accept ownership risks. Other criteria for justifying the use of this revenue recognition practice include the seller's past experience with bill-and-hold transactions, in which buyers took possession of the goods and the transactions were not reversed.

There was no real business purpose to the channel stuffing and bill-and-hold transactions at Sunbeam other than for the seller to accelerate revenue and for the buyers to take advantage of such eagerness without any risks on their part. In the words of the SEC, "these transactions were little more than projected orders disguised as sales" (SEC 2001a). Sunbeam did not make such transactions clear to analysts, and many of its disclosures from the fourth quarter of 1996 to the middle of 1998 were inadequate. Still, its methods of inflating revenue left indicators in the financial statements that should have alerted analysts to the low quality of its earnings and revenue reporting.

If customers are induced into buying goods they do not yet need through favorable payment terms or given substantial leeway in returning such goods to the seller, days' sales outstanding (DSO) may increase and returns may also increase. Furthermore, increases in revenue may exceed past increases and the increases of the industry and/or peers. Problems with and changes in collection, expressed through accounts receivable metrics, can give an analyst clues about the aggressiveness of the seller in making sales targets. Exhibit 11 contains relevant annual data on Sunbeam's sales and receivables from 1995 (before the misreporting occurred) through 1997 (when earnings management reached its peak level in the fourth quarter).

EXHIBIT 11 Information on Sunbeam's Sales and Receivables, 1995–1997

($ millions)	1995	1996	1997
Total revenue	$1,016.9	$984.2	$1,168.2
Change from prior year	—	–3.2%	18.7%
Gross accounts receivable	$216.2	$213.4	$295.6
Change from prior year	—	–1.3%	38.5%
Receivables/revenue	21.3%	21.7%	25.3%
Change in receivables/revenue	0.7%	0.4%	3.6%
Days' sales outstanding	77.6	79.1	92.4
Accounts receivable turnover	4.7	4.6	4.0

Source: Based on information in original company 10-K filings.

What can an analyst learn from the information in Exhibit 11?

- Although revenues dipped 3.2% in 1996, the year the misreporting began, they increased significantly in 1997 as Sunbeam's various revenue "enhancement" programs were implemented. The important factor to notice—the one that should have given an analyst insight into the quality of the revenues—is the simultaneous, and much greater, increase in the accounts receivable balance. Receivables increasing faster than revenues suggests that a company may be pulling future sales into current periods by offering favorable discounts or generous return policies. As it turned out, Sunbeam offered all of these inducements.
- The percentage relationship of receivables to revenue is another way of looking at the relationship between sales and the time it takes a company to collect cash from its customers. An increasing percentage of receivables to revenues means that a lesser percentage of sales has been collected. The decrease in collection on sales may indicate that customers' abilities to repay have deteriorated. It may also indicate that the seller created period-end sales by shipping goods that were not wanted by customers; the shipment would produce documentation, which serves as evidence of a sale. Receivables and revenue would increase by the same absolute amount, which would increase the percentage of receivables to revenue. Customers would return the goods to the seller in the following accounting period. The same thing would happen in the event of totally fictitious revenues. Revenues from a non-existent customer would simultaneously increase receivables by the same amount. An increase in the relationship between revenue and receivables provides analysts with a clue that collections on sales have declined or that there is a possible issue with revenue recognition.
- The number of days sales outstanding [Accounts receivable/(Revenues/365)] increased each year, indicating that the receivables were not being paid on a timely basis—or even that the revenues may not have been genuine in the first place. DSO figures increasing over time indicate that there are problems, either with collection or revenue recognition. The accounts receivable turnover (365/DSO) tells the same story in a different way: It is the number of times the receivables converted into cash each year, and the figure decreased each year. A trend of slower cash collections, as exhibited by Sunbeam, shows increasingly inefficient cash collections at best and should alert an analyst to the possibility of questionable sales or revenue recognition practices.
- The accounts receivable showed poor quality. In 1997, it increased 38.5% over the previous year, while revenues gained 18.7%. The simple fact that receivables growth greatly outstripped the revenue growth suggests receivables collection problems. Furthermore, analysts who paid attention to the notes might have found even more tiles to fit into the mosaic of accounting manipulations. According to a note in the 10-K titled "Accounts Receivable Securitization Facility," in December 1997 Sunbeam had entered into an arrangement for the sale of accounts receivable. The note said that "At December 28, 1997, the Company had received approximately $59 million from the sale of trade accounts receivable." Those receivables were not included in the year-end accounts receivable balance. As the *pro forma* column in Exhibit 12 shows, the accounts receivable would have shown an increase of 66.1% instead of 38.5%; the percentage of receivables to sales would have ballooned to 30.4%, and the days' sales outstanding would have been an attention-getting 110.8 days. Had this receivables sale not occurred, and the receivables been that large, perhaps analysts would have noticed a problem sooner. Careful attention to the notes might have alerted them to how this transaction improved the appearance of the financial statements and ratios.

EXHIBIT 12 Information on Sunbeam's Sales and Receivables, 1995–1997, and Pro Forma Information, 1997

($ millions)	1995	1996	1997	1997 *Pro Forma*
Total revenue	$1,016.9	$984.2	$1,168.2	*$1,168.2*
Change from prior year	—	–3.2%	18.7%	*18.7%*
Gross accounts receivable	$216.2	$213.4	$295.6	*$354.6*
Change from prior year	—	–1.3%	38.5%	*66.1%*
Receivables/revenue	21.3%	21.7%	25.3%	*30.4%*
Change in receivables/revenue	0.7%	0.4%	3.6%	*8.7%*
Days' sales outstanding	77.7	79.2	92.3	*110.8*
Accounts receivable turnover	4.7	4.6	4.0	*3.2*

Source: Based on information in original company 10-K filings.

Analysts observing the trend in days' sales outstanding would have been rightly suspicious of Sunbeam's revenue recognition practices, even if they were observing the days' sales outstanding simply in terms of Sunbeam's own history. If they took the analysis slightly further, they would have been even more suspicious. Exhibit 13 compares Sunbeam's DSO and accounts receivable turnover with those of an industry median based on the numbers from a group of other consumer products companies—Harman International, Jarden, Leggett & Platt, Mohawk Industries, Newell Rubbermaid, and Tupperware Brands.

EXHIBIT 13 Comparison of Sunbeam and Industry Median, 1995–1997

Sunbeam	1995	1996	1997
Days sales outstanding	77.7	79.2	92.3
Accounts receivable turnover	4.7	4.6	4.0
Industry median			
Days sales outstanding	44.6	46.7	50.4
Accounts receivable turnover	8.2	7.8	7.3
Sunbeam's underperformance relative to median			
Days sales outstanding	33.0	32.5	41.9
Accounts receivable turnover	(3.5)	(3.2)	(3.3)

Source: Based on information in company 10-K filings.

There was yet another clue that should have aroused suspicion in the analyst community. In the December 1997 annual report, the revenue recognition note had been expanded from the previous year's note:

> The Company recognizes revenues from product sales principally at the time of shipment to customers. *In limited circumstances, at the customer's request the Company may sell seasonal product on a bill and hold basis provided that the goods are completed, packaged and ready for shipment, such goods are segregated and the risks of ownership and legal title have passed to the customer.* ***The amount of such bill and hold sales at December 29, 1997 was approximately 3% of consolidated revenues.*** [Italics and emphasis added.]

Not only did Sunbeam hint at the fact that its revenue recognition policies included a method that was of questionable quality, a clue was dropped as to the degree to which it affected operations. That 3% figure may seem small, but the disclosure should have aroused suspicion in the mind of a thorough analyst. As shown in Exhibit 14, working through the numbers with some reasonable assumptions about the gross profit on the sales (28.3%) and the applicable tax rate (35%), an analyst would have seen that the bill-and-hold sales were significant to the bottom line.

EXHIBIT 14 Effect of Sunbeam's Bill-and-Hold Sales on Net Income ($ millions)

1997 revenue	$1,168.18
Bill-and-hold sales from note	3.0%
Bill-and-hold sales in 1997	$35.05
Gross profit margin	28.3%
Gross profit contribution	$9.92
After-tax earnings contribution	$6.45
Total earnings from continuing operations	$109.42
Earnings attributable to bill-and-hold sales	5.9%

An analyst questioning the genuineness of bill-and-hold sales and performing a simple test of the degree of exposure to their effects might have been disturbed to estimate that nearly 6% of net income depended on such transactions. This knowledge might have dissuaded an analyst from a favorable view of Sunbeam.

4.2.2. Revenue Recognition Case: MicroStrategy, Inc.

Multiple-Element Contracts MicroStrategy, Inc. was a fast-growing software and information services company that went public in 1998. After going public, the company engaged in more complex revenue transactions than it had previously. Its revenue stream increasingly involved less outright sales of software and began tilting more to transactions containing multiple deliverables, including obligations to provide services.

Product revenue is usually recognized immediately, depending on the delivery terms and acceptance by customers, whereas service revenue is recognized as the services are provided.

The relevant accounting standards for multiple-deliverable arrangements at the time permitted recognition of revenue on a software delivery only if the software sale could be separated from the service portion of the contract and only if the service revenues were in fact accounted for separately.

Analysts studying MicroStrategy's financial statements should have understood the effects of such accounting conventions on the company's revenues. MicroStrategy's revenue recognition policy in the accounting policies note of its 1998 10-K stated that the standards' requirements were, in fact, its practice:

> Revenue from product licensing arrangements is generally recognized after execution of a licensing agreement and shipment of the product, provided that no significant Company obligations remain and the resulting receivable is deemed collectible by management. . . . Services revenue, which includes training and consulting, is recognized at the time the service is performed. The Company defers and recognizes maintenance revenue ratably over the terms of the contract period, ranging from 12 to 36 months. (p. 49)

MicroStrategy took advantage of the ambiguity present in such arrangements, however, to mischaracterize service revenues and recognize them earlier than they should have as part of the software sale. For example, in the fourth quarter of 1998, MicroStrategy entered into a $4.5 million transaction with a customer for software licenses and a broad array of consulting services. Most of the software licenses acquired by the customer were intended to be used in applications that MicroStrategy would develop in the future, yet the company recognized all of the $4.5 million as software revenue (SEC 2000).

Similarly, in the fourth quarter of 1999, MicroStrategy entered into a multiple-deliverable arrangement with another customer that included the provision for extensive services. Again, the company improperly allocated the elements of the contract, skewing them toward an earlier-recognized software element and improperly recognizing $14.1 million of product revenue in the quarter, which was material.

How could analysts have recognized this pattern of behavior? Without in-depth knowledge of the contracts, it is not possible to approve or disapprove of the revenue allocation with certainty. The company still left a trail that could have aroused the suspicion of analysts, had they been familiar with MicroStrategy's stated revenue recognition policy.

Exhibit 15 shows the mix of revenues for 1996, 1997, and 1998 based on the income statement in MicroStrategy's 1998 10-K:

EXHIBIT 15 MicroStrategy's Mix of Licenses and Support Revenues, 1996–1998 ($ millions)

	1996	1997	1998
Licenses	$15,873	$36,601	$72,721
Support	6,730	16,956	33,709
Total	$22,603	$53,557	$106,430
Licenses	70.2%	68.3%	68.3%
Support	29.8	31.7	31.7
Total	100.0%	100.0%	100.0%

Between 1996 and 1997, the proportion of support revenues to total revenues increased slightly. It flattened out in 1998, which was the first year known to have mischaracterization between the support revenues and the software revenues. With perfect hindsight, had the $4.5 million of consulting services not been recognized at all, overall revenues would have been $101.930 million and support revenues would have been 33.1% of the total revenues. What could have alerted analysts that something was amiss, if they could not examine actual contracts?

Looking at the quarterly mix of revenues might have aroused analyst suspicions. Exhibit 16 shows the peculiar ebb and flow of revenues attributable to support services revenues.

EXHIBIT 16 MicroStrategy's Revenue Mix by Quarters, 1Q1998–4Q1999

Quarter	Licenses	Support
1Q98	71.8%	28.2%
2Q98	68.3	31.7
3Q98	62.7	37.3
4Q98	70.7	29.3
1Q99	64.6	35.4
2Q99	68.1	31.9
3Q99	70.1	29.9
4Q99	73.2	26.8

The support services revenue climbed in the first three quarters of 1998 and dropped sharply in the fourth quarter—the one in which the company characterized the $4.5 million of revenues that should have been deferred as software license revenue. Subsequently, the proportion rose again and then continued a downward trend, most sharply in the fourth quarter of 1999 when the company again mischaracterized $14.1 million of revenue as software license revenue.

There is no logical reason that the proportion of revenues from licensing and support services should vary significantly from quarter to quarter. The changes should arouse suspicions and generate questions to ask management. Management's answers, and the soundness of the logic embedded in them, might have made investors more comfortable or more skeptical.

If an analyst knows that a company has a policy of recognizing revenues for contracts with elements of multiple-deliverable arrangements—something apparent from a study of the accounting policy note—then the analyst should consider the risk that misallocation of revenue can occur. Observing trends and investigating deviations from observed trends become important habits for an analyst to practice in order to isolate exceptions. Although a study of revenue trends may not pinpoint a manipulated revenue transaction, it should be sufficient to raise doubts about the propriety of the accounting for transactions.

Enhancing the recognition of revenue is a way for managers to increase earnings, yet it can leave indicators that can be detected by analysts vigilant enough to look for them. Exhibit 17 provides a summary of how to assess the quality of revenues.

EXHIBIT 17 Summary: Looking for Quality in Revenues

Start with the basics

The first step should be to fully understand the revenue recognition policies as stated in the most recent annual report. Without context for the way revenue is recognized, an analyst will not understand the risks involved in the proper reporting of revenue. For instance, analysts should determine the following:

- What are the shipping terms?
- What rights of return does a customer have: limited or extensive?
- Do rebates affect revenues, and if so, how are they accounted for? What estimates are involved?
- Are there multiple deliverables to customers for one arrangement? If so, is revenue deferred until some elements are delivered late in the contract? If there are multiple deliverables, do deferred revenues appear on the balance sheet?

Age matters

A study of DSO can reveal much about their quality. Receivables do not improve with age. Analysts should seek reasons for exceptions appearing when they

- Compare the trend in DSOs or receivables turnover over a relevant time frame.
- Compare the DSO of one company with the DSOs of similar competitors over similar time frames.

Is it cash or accrual?

A high percentage of accounts receivable to revenues might mean nothing, but it might also mean that channel-stuffing has taken place, portending high future returns of inventory or decreased demand for product in the future. Analysts should

- Compare the percentage of accounts receivable to revenues over a relevant time frame.
- Compare the company's percentage of accounts receivable to revenues with that of competitors or industry measures over similar time frames.

Compare with the real world when possible

If a company reports non-financial data on a routine basis, try relating revenues to those data to determine whether trends in the revenue make sense. Examples include

- Airlines reporting extensive information about miles flown and capacity, enabling an analyst to relate increases in revenues to an increase in miles flown or capacity.
- Retailers reporting square footage used and number of stores open.
- Companies across all industries reporting employee head counts.

As always, analysts should compare any relevant revenue-per-unit measure with that of relevant competitors or industry measures.

Revenue trends and composition

Trend analysis, over time and in comparison with competitors, can prompt analysts to ask questions of managers, or it can simply evoke discomfort with the overall revenue quality. Some relationships to examine include

- The relationships between the kinds of revenue recognized. For example, how much is attributable to product sales or licenses, and how much is attributable to services? Have the relationships changed over time, and if so, why?

EXHIBIT 17 (Continued)

- The relationship between overall revenue and accounts receivable. Do changes in overall revenues make sense when compared with changes in accounts receivable?

Relationships

Does the company transact business with entities owned by senior officers or shareholders? This is a particularly sensitive area if the manager/shareholder-owned entities are private and there are revenues recognized from the private entity by a publicly owned company; it could be a dumping ground for obsolete or damaged inventory while inflating revenues.

Overstating revenues is not the only way to enhance earnings; according to the SEC study of enforcement cases brought between 1997 and 2002, the next most common financial misreporting was improper expense recognition (SEC 2003). Improper expense recognition typically involves understating expenses and has the same overstating effects on earnings as improper revenue recognition. Understating expenses also leaves indicators in the financial statements for the vigilant analyst to find and assess.

4.2.3. Cost Capitalization Case: WorldCom Corp.

Property/Capital Expenditures Analysis WorldCom was a major global communications company, providing phone and internet services to both the business and consumer markets. It became a major player in the 1990s, largely through acquisitions. To keep delivering the earnings expected by analysts, the company engaged in the improper capitalization of operating expenses known as "line costs." These costs were fees paid by WorldCom to third-party telecommunications network providers for the right to use their networks, and the proper accounting treatment for them is to classify them as an operating expense. This improper treatment began in 1999 and continued through the first quarter of 2002. The company declared bankruptcy in July 2002; restatements of financial reports ensued.

The company was audited by Arthur Andersen, who had access to the company's records. According to the findings of the special committee that headed the investigation of the failure (Beresford, Katzenbach, and Rogers 2003), Arthur Andersen failed to identify the misclassification of line costs, among other things, because

> Andersen concluded—mistakenly in this case—that, year after year, the risk of fraud was minimal and thus it never devised sufficient auditing procedures to address this risk. Although it conducted a controls-based audit—relying on WorldCom's internal controls—it failed to recognize the nature and extent of senior management's top-side adjustments through reserve reversals with little or no support, highly questionable revenue items, and entries capitalizing line costs. Andersen did not conduct tests to corroborate the information it received in many areas. It assumed incorrectly that the absence of variances in the financial statements and schedules—in a highly volatile business environment—indicated there was no cause for heightened scrutiny. Andersen conducted only very limited auditing procedures in many areas where we found accounting irregularities. Even so, Andersen still had several chances to uncover problems we identify in this Report. (p. 230–231)

If auditors failed to detect fraud, could analysts really be expected to do better? Analysts may not have been able to pinpoint what was going on at WorldCom, all the way down to the under-reported line costs, but if they had focused on the company's balance sheet, they certainly could have been suspicious that all was not right. If they were looking for out-of-line relationships between accounts—something that the auditors would be expected to do—they might have uncovered questionable relationships that, if unsatisfactorily explained, should have led them to shun securities issued by WorldCom.

For an operating expense to be under-reported, an offsetting increase in the balance of another account must exist. A simple scan of an annual time-series common-size balance sheet, such as is shown in Exhibit 18, might identify the possibility that capitalization is being used to avoid expense recognition. An analyst might not have known that line costs were being under-reported, but simply looking at the time series in Exhibit 18 would have shown that something unusual was going on in gross property, plant, and equipment. The fraud began in 1999, and gross property, plant, and equipment had been 30% and 31% of total assets, respectively, in the two prior years. In 1999, property, plant, and equipment became a much more significant 37% of total assets and increased to 45% in 2000 and 47% in 2001. The company had not changed strategy or anything else to justify such an increase.

EXHIBIT 18 Common Size Asset Portion of Balance Sheet for WorldCom, 1997–2001

	1997	1998	1999	2000	2001
Cash and equivalents	0%	2%	1%	1%	1%
Net receivables	5	6	6	7	5
Inventories	0	0	0	0	0
Other current assets	2	4	4	2	2
Total current assets	7%	12%	11%	10%	8%
Gross property, plant, and equipment	***30%***	***31%***	***37%***	***45%***	***47%***
Accumulated depreciation	3%	2%	5%	7%	9%
Net property, plant, and equipment	27%	29%	32%	38%	38%
Equity investments	NA	NA	NA	NA	1
Other investments	0	0	0	2	1
Intangibles	61	54	52	47	49
Other assets	5	5	5	3	3
Total Assets	100%	100%	100%	100%	100%

Note: NA is not available.
Source: Based on information from Standard & Poor's Research Insight database.

A curious analyst in 1999 might not have *specifically* determined that line costs were being understated, but the buildup of costs in property, plant, and equipment should have at least made the analyst suspicious that expenses were under-reported somewhere in the income statement.

Capitalizing costs is not the only possible way of understating expenses. Exhibit 19 provides a summary of how to assess the quality of expense recognition, including some things to consider.

EXHIBIT 19 Summary: Looking for Quality in Expense Recognition

Start with the basics

The first step should be to fully understand the cost capitalization policies as stated in the most recent annual report. Without context for the costs stored on the balance sheet, analysts will not be able to comprehend practice exceptions they may encounter. Examples of policies that should be understood include the following:

- What costs are capitalized in inventory? How is obsolescence accounted for? Are there reserves established for obsolescence that might be artificially raised or lowered?
- What are the depreciation policies, including depreciable lives? How do they compare with competitors' policies? Have they changed from prior years?

Trend analysis

Trend analysis, over time and in comparison with competitors, can lead to questions the analyst can ask managers, or it can simply evoke discomfort with overall earnings quality because of issues with expenses. Some relationships to examine include the following:

- Each quarter, non-current asset accounts should be examined for quarter-to-quarter and year-to-year changes to see whether there are any unusual increases in costs. If present, they might indicate that improper capitalization of costs has occurred.
- Profit margins—gross and operating—are often observed by analysts in the examination of quarterly earnings. They are not often related to changes in the balance sheet, but they should be. If unusual buildups of non-current assets have occurred and the profit margins are improving or staying constant, it could mean that improper cost capitalization is taking place. Recall WorldCom and its improper capitalization of "line costs": Profitability was maintained by capitalizing costs that should have been expensed. Also, the overall industry environment should be considered: Are margins stable while balance sheet accounts are growing and the industry is slumping?
- Turnover ratio for total assets; property, plant, and equipment; and other assets should be computed (with revenues divided by the asset classification). Does a trend in the ratios indicate a slowing in turnover? Decreasing revenues might mean that the assets are used to make a product with declining demand and portend future asset write-downs. Steady or rising revenues and decreasing turnover might indicate improper cost capitalization.
- Compute the depreciation (or amortization) expense compared to the relevant asset base. Is it decreasing or increasing over time without a good reason? How does it compare with that of competitors?
- Compare the relationship of capital expenditures with gross property, plant, and equipment over time. Is the proportion of capital expenditures relative to total property, plant, and equipment increasing significantly over time? If so, it may indicate that the company is capitalizing costs more aggressively to prevent their recognition as current expenses.

Relationships

Does the company transact business with entities owned by senior officers or shareholders? This is a particularly sensitive area if the manager/shareholder-owned entities are private. Dealings between a public company and the manager-owned entity might take place at prices that are unfavorable for the public company in order to transfer wealth from the public company to the manager-owned entity. Such inappropriate transfers of wealth can

(continued)

EXHIBIT 19 (Continued)

also occur through excessive compensation, direct loans, or guarantees. These practices are often referred to as "tunneling" (Johnson, LaPorta, Shleifer, and Lopez-de-Silanes 2000).

In some cases, sham dealings between the manager-owned entity and the public company might be falsely reported to improve reported profits of the public company and thus enrich the managers whose compensation is performance based. In a different type of transaction, the manager-owned entity could transfer resources to the public company to ensure its economic viability and thus preserve the option to misappropriate or to participate in profits in the future. These practices are often referred to as "propping" (Friedman, Johnson, and Mitton 2003).

Assessing earnings quality should be an established practice for all analysts. Earnings quality should not automatically be accepted as "high quality" until accounting problems emerge and it is too late. Analysts should consider the quality of earnings before assigning value to the growth in earnings. In many cases, high reported earnings growth, which turned out to be fraudulent, preceded bankruptcy.

4.3. Bankruptcy Prediction Models

Bankruptcy prediction models address more than just the quality of a company's earnings and include aspects of cash flow and the balance sheet as well.[18] Various approaches have been used to quantify the likelihood that a company will default on its debt and/or declare bankruptcy.

4.3.1. Altman Model

A well-known and early model to assess the probability of bankruptcy is the Altman model (Altman 1968). The model is built on research that used ratio analysis to identify likely failures. An important contribution of the Altman model is that it provided a way to incorporate numerous financial ratios into a single model to predict bankruptcy. The model overcame a limitation of viewing ratios independently (e.g., viewing a company with poor profitability and/or solvency position as potentially bankrupt without considering the company's strong liquidity position).

Using discriminant analysis, Altman developed a model to discriminate between two groups: bankrupt and non-bankrupt companies. Altman's *Z*-score is calculated as follows:

$$\begin{aligned} Z\text{-score} = {} & 1.2\ (\text{Net working capital/Total assets}) + 1.4\ (\text{Retained earnings/Total assets}) \\ & + 3.3\ (\text{EBIT/Total assets}) + 0.6\ (\text{Market value of equity/Book value of liabilities}) \\ & + 1.0\ (\text{Sales/Total assets}) \end{aligned}$$

The ratios in the model reflect liquidity, profitability, leverage, and activity. The first ratio—net working capital/total assets—is a measure of short-term liquidity risk. The second ratio—retained earnings/total assets—reflects accumulated profitability and relative age because retained earnings accumulate over time. The third ratio—EBIT (earnings before interest

[18] Recall that the term "earnings quality" is used broadly to encompass the quality of earnings, cash flow, and/or balance sheet items.

and taxes)/total assets, which is a variant of return on assets (ROA)—measures profitability. The fourth ratio—market value of equity/book value of liabilities—is a form of leverage ratio; it is expressed as equity/debt, so a higher number indicates greater solvency. The fifth ratio—sales/total assets—indicates the company's ability to generate sales and is an activity ratio.

Note that Altman's discriminant function shown in his original article (1968) was

$$Z\text{-score} = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$$

with each of the X variables corresponding to the ratios just described. Altman (2000) explains that "due to the original computer format arrangement, variables X_1 through X_4 must be calculated as absolute percentage values. For instance, the company whose net working capital to total assets (X_1) is 10% should be included as 10.0% and not 0.10. Only variable X_5 (sales to total assets) should be expressed in a different manner: that is, a S/TA [sales/total assets] ratio of 200 percent should be included as 2.0" (p. 14). For this reason, the Z-score model is often expressed as shown in the first equation of this section.

The interpretation of the score is that a higher Z-score is better. In Altman's application of the model to a sample of manufacturing companies that had experienced losses, scores of less than 1.81 indicated a high probability of bankruptcy, scores greater than 3.00 indicated a low probability of bankruptcy, and scores between 1.81 and 3.00 were not clear indicators.

4.3.2. Developments in Bankruptcy Prediction Models

Subsequent research addressed various shortcomings in the Altman prediction model. One shortcoming is the single-period, static nature of the Altman model; it uses only one set of financial measures, taken at a single point in time. Shumway (2001) addressed this shortcoming by using a hazard model, which incorporates all available years of data to calculate each company's bankruptcy risk at each point in time.

Another shortcoming of the Altman model (and other accounting-based bankruptcy prediction models) is that financial statements measure past performance and incorporate the going-concern assumption. The reported values on a company's balance sheet assume that the company is a going concern rather than one that might be failing. An alternative is to use market-based bankruptcy prediction models. For example, market-based prediction models building on Merton's concept of equity as a call option on the company's assets infer the default probability from the company's equity value, amount of debt, equity returns, and equity volatility (Kealhofer 2003). Credit default swap data and corporate bond data can also be used to derive default probabilities. Other research indicates that the most effective bankruptcy prediction models include both accounting-based data and market-based data as predictor variables. For example, Bharath and Shumway (2008) model default probability based on market value of equity, face value of debt, equity volatility, stock returns relative to market returns over the previous year, and the ratio of net income to total assets to identify companies likely to default.

5. CASH FLOW QUALITY

Cash flow statements are free of some of the discretion embedded in the financial statements based on accrual accounting. As a result, analysts may place a great deal of importance and reliance on the cash flow statement. However, there are opportunities for management to affect the cash flow statement.

5.1. Indicators of Cash Flow Quality

Operating cash flow (OCF) is the cash flow component that is generally most important for assessing a company's performance and valuing a company or its securities. Therefore, discussions of cash flow quality typically focus on OCF.

Similar to the term "earnings quality," when reported cash flows are described as being of high quality, it means that the company's underlying economic performance was good (i.e., value enhancing) and it also implies that the company had high reporting quality (i.e., that the information calculated and disclosed by the company was a reasonable reflection of economic reality). Cash flow can be described as "low quality" either because the reported information correctly represents bad economic performance (poor results quality) or because the reported information misrepresents economic reality (poor reporting quality).

From an economic perspective, the corporate life cycle and industry profile affect cash flow and must be considered when analyzing the statement of cash flows. For example, a start-up company might be expected to have negative operating and investing cash flows, which would be funded from borrowing or from equity issuance (i.e., financing cash flows). In contrast, an established company would typically have positive operating cash flow from which it would fund necessary investments and returns to providers of capital (i.e., dividends, share repurchases, or debt repayments—all of which are investing cash flows).

In general, for established companies, high-quality cash flow would typically have most or all of the following characteristics:

- Positive OCF
- OCF derived from sustainable sources
- OCF adequate to cover capital expenditures, dividends, and debt repayments
- OCF with relatively low volatility (relative to industry participants)

As always, high quality requires not only high results quality, as in the previous list, but also high reporting quality. The reported cash flows should be relevant and faithfully represent the economic reality of the company's activities. For example, classifying a financing inflow as an operating inflow would misrepresent the economic reality.

From the perspective of cash flow reporting quality, OCF is generally viewed as being less easily manipulated than operating or net income. Large differences between earnings and OCF or increases in such differences can be an indication of earnings manipulation. The statement of cash flows can be used to highlight areas of potential earnings manipulation.

Even though OCF is viewed as being less subject to manipulation than earnings, the importance of OCF may create incentives for managers to manipulate the amounts reported. Therefore, quality issues with cash flow reporting can exist. One issue that arises with regard to cash flow reporting quality is timing. For example, by selling receivables to a third party and/or by delaying paying its payables, a company can boost OCF. An increase in such activities would be reflected as a decrease in the company's days' sales outstanding and an increase in the company's days of payables. Thus, an analyst can potentially detect management choices to decrease current assets or increase current liabilities, choices that will increase OCF, by looking at asset utilization (activity) ratios, changes in balance sheet accounts, and disclosures in notes to the financial statements. Another issue that arises with regard to cash flow reporting quality is related to classification of cash flows: Management may try to shift positive cash flow items from investing or financing activities to operating activities to inflate operating cash flows.

5.2. Evaluating Cash Flow Quality

Because OCF is viewed as being less subject to manipulation than earnings, the statement of cash flows can be used to identify areas of potential earnings manipulation. The financial fraud at Satyam Computer Services, an Indian information technology company, was described earlier in this chapter. In that case, the use of a computer model based on accruals may have failed to detect the fraud. A *New York Times* article (Kahn 2009) provides anecdotal evidence:

> In September, [an analyst] used a computer model to examine India's 500 largest public companies for signs of accounting manipulation. He found that more than 20 percent of them were potentially engaged in aggressive accounting, but Satyam was not on the list. This is because the automated screens that analysts . . . use to pick up signs of fraud begin by searching for large discrepancies between reported earnings and cash flow. In Satyam's case, the cash seemed to keep pace with profits.

In other words, a computer model that screened for companies with operating cash flow persistently lower than earnings would not have identified Satyam as a potential problem because its reported operating cash flow was relatively close to reported profits.

It may be helpful to examine pertinent indicators using a more qualitative approach. Exhibit 20 presents an excerpt from the statement of cash flows for Satyam for the quarter ended 30 June 2008.

EXHIBIT 20 Excerpt from Satyam's IFRS Consolidated Interim Cash Flow Statement (All amounts $ millions except per share data and as otherwise stated.)

	Quarter ended 30 June 2008 (unaudited)	Quarter ended 30 June 2007 (unaudited)	Year ended 31 March 2008 (audited)
Profit before income tax	**143.1**	**107.1**	**474.3**
Adjustments for			
Share-based payment expense	4.3	5.9	23.0
Financial costs	1.3	0.8	7.0
Finance income	(16.2)	(16.4)	(67.4)
Depreciation and amortisation	11.5	9.3	40.3
(Gain)/loss on sale of premises and equipment	0.1	0.1	0.6
Changes in value of preference shares designated at fair value through profit or loss	0.0	0.0	(1.6)
Gain/(loss) on foreign exchange forward and option contracts	53.0	(21.1)	(7.4)
Share of (profits)/losses of joint ventures, net of taxes	(0.1)	0.0	(0.1)
	197.0	**85.7**	**468.7**

(continued)

EXHIBIT 20 (Continued)

	Quarter ended 30 June 2008 (unaudited)	Quarter ended 30 June 2007 (unaudited)	Year ended 31 March 2008 (audited)
Movements in working capital			
— Trade and other receivables	(81.4)	(64.9)	(184.3)
— Unbilled revenue	(23.5)	(6.0)	(39.9)
— Trade and other payables	34.1	2.2	48.8
— Unearned revenue	5.8	2.4	11.4
— Other liabilities	(6.3)	30.3	61.2
— Retirement benefit obligations	3.7	1.3	17.8
Cash generated from operations	**129.4**	**51.0**	**383.7**
Income taxes paid	–3.8	–9.8	–49.4
Net cash provided by operating activities	**125.6**	**41.2**	**334.3**

Source: Based on information from Satyam's Form 6-K, filed 25 July 2008.

One item of note on this statement of cash flows is the $53 million non-cash item labeled "Gain/(loss) on foreign exchange forward and options contracts" (i.e., derivative instruments) in the quarter ended 30 June 2008. The item appears to be shown as a gain based on the labeling; however, it would not be correct to add back a gain in this calculation of operating cash flow because it is already included in profit before tax. When the company was asked about this item in the quarterly conference call with analysts, no answer was readily available. Instead, the company's manager said that he would "get back to" the questioner. The fact that the company's senior executives could not explain the reason for an item that represented almost 40% of the total pre-tax profit for the quarter ($53/$143.1 = 37%) is clearly a signal of potential problems. Refer to Exhibit 21 for an excerpt from the conference call.

EXHIBIT 21 Excerpt from Conference Call regarding Quarterly Results of Satyam, 18 July 2008

George Price, analyst at Stifel Nicolaus:	One question which is on the cash flow statement. You had a—you had $53 million in unrealized gain on derivative financial instruments in the quarter and it's a line item that just, on quick check, I don't think we've seen in past quarters. Can you comment on exactly what that is? … On the comparison periods, there were more modest losses. What drove that large benefit? How should we think about timing of cash flow maybe over the next couple quarters? Any one-time issues like that?
Srinivas Vadlamani:	I—can you repeat that, please?
George Price:	Srinivas, there's was a $53 million unrealized gain in the cash flow statement, and I'm just wondering if you could explain that in a little bit more detail…. The magnitude is a little surprising.
Srinivas Vadlamani:	No, let me—let me check on that. I'll get back to you.

Another item of note on the statement of cash flows is the steady growth in receivables. Analysts examine a company's ratios, such as days' sales outstanding. Exhibit 22 presents selected annual data for Satyam. The large jump in days' sales outstanding from 2006 to 2007 could cause concern. Furthermore, the management commentary in the company's Form 20-F indicated that "Net accounts receivable . . . increased . . . primarily as a result of an increase in our revenues and increase in collection period." An increase in the collection period of receivables raises questions about the creditworthiness of the company's customers, about the efficiency of the company's collection efforts, and about the quality of the revenue recognized. In addition, the allowance for doubtful debts consistently rises faster than sales.

EXHIBIT 22 Selected Annual Data on Accounts Receivable for Satyam, 2005–2008

($ millions)	2008	2007	2006	2005
Total revenue	$2,138.1	$1,461.4	$1,096.3	$793.6
% Change from previous year	*46.3%*	*33.3%*	*38.1%*	
Gross accounts receivable	$539.1	$386.9	$238.1	$178.3
% Change from previous year	*39.3%*	*62.5%*	*33.5%*	
Allowance for doubtful debts	$31.0	$22.8	$19.1	$17.5
% Change from previous year	*36.0%*	*19.4%*	*9.1%*	
Gross receivables/revenue	25.21%	26.47%	21.72%	22.47%
Change in receivables/revenue	*–4.8%*	*21.9%*	*–3.3%*	
Days' sales outstanding	92.0	96.6	79.3	82.0
Accounts receivable turnover	4.0	3.8	4.6	4.5

Source: Based on data from Satyam's 20-F filings.

A signal of problems related to cash, which would not have appeared on the statement of cash flows, was the purported use of the company's cash. Satyam reported increasing amounts invested in current accounts. On a conference call excerpted in Exhibit 23, an analyst asked for a specific reason why such large amounts would be held in non-interest-bearing accounts. Instead of providing a reason, the company officer instead stated that the amounts would be transferred to higher-earning accounts soon.

EXHIBIT 23 Excerpt from Conference Call regarding Quarterly Results for Satyam, 17 October 2008

Kawaljeet Saluja, analyst at Kotak Institutional Equities:	Hi, my questions are for Srinivas. Srinivas, any specific reason why you have $500m parked in current accounts which are not [gaining] any interest?
Srinivas Vadlamani:	No, that is basically—as on the quarter ending, but there is a statement to that [inaudible] to the deposit accounts. We have [inaudible] deposits now.

(continued)

EXHIBIT 23 (Continued)

Kawaljeet Saluja:	But, Srinivas, if I look at the deposit accounts for the last four quarters, that number has remained absolutely flat. And most of the incremental cash that is parked in current accounts and this is not something which is this quarter changed. Would you highlight some of the reasons for it?
Srinivas Vadlamani:	No, basically, what will happen is these amounts will be basically in different countries. And then we will be bringing them to India based on the need. So we will be—basically, some of them are in overnight deposits and all that. So, now we have placing them into normal current deposits. So, next quarter onwards, we will see that as part of the deposits.

In Satyam CEO's January 2009 letter of resignation, he confessed that "the Balance Sheet carries as of September 30, 2008 [i]nflated (non-existent) cash and bank balances of Rs. 5,040 crore[19] (as against Rs. 5,361 crore reflected in the books)…."[20] In other words, of the amount shown as cash on the company's balance sheet, more than 90% was non-existent. It is suggested that some of the cash balances had existed but had been "siphoned off to a web of companies controlled by Mr. Raju and his family." (Kahn 2009)

Overall, the Satyam example illustrates how the statement of cash flows can suggest potential areas of misreporting. In Satyam's case, two items that raised questions were a large non-cash gain on derivatives and an increase in days' sales outstanding. Potential areas of misreporting can then be investigated by reference to the company's other financial reports. The following example illustrates how the statement of cash flows can highlight earnings manipulation and also illustrates how the cash flow information corresponds to information gleaned from analysis of the company's earnings.

Example 8 covers the application of cash flow evaluation to determine quality of earnings.

EXAMPLE 8 Sunbeam Statement of Cash Flows

As noted in the previous section, Sunbeam engaged in various improper accounting practices. Refer to the excerpt from Sunbeam's statement of cash flows in Exhibit 24 to answer the following questions:

1. One of the ways that Sunbeam misreported its financial statements was improperly inflating and subsequently reversing restructuring charges. How do these items appear on the statement of cash flows?
2. Another aspect of Sunbeam's misreporting was improper revenue recognition. What items on the statement of cash flow would primarily be affected by that practice?

[19] Crore is used in India to denote 10,000,000.

[20] From Mr. B. Ramalinga Raju's resignation letter attached to Form 6-K that was filed with the SEC on 7 January 2009.

EXHIBIT 24 Excerpt from Sunbeam's Consolidated Statement of Cash Flows, 1995–1997 ($ thousands)

Fiscal Years Ended	28 Dec. 1997	29 Dec. 1996	31 Dec. 1995
Operating Activities:			
Net earnings (loss)	109,415	(228,262)	50,511
Adjustments to reconcile net earnings (loss) to net cash provided by (used in) operating activities:			
Depreciation and amortization	38,577	47,429	44,174
Restructuring, impairment, and other costs	—	154,869	—
Other non-cash special charges	—	128,800	—
Loss on sale of discontinued operations, net of taxes	13,713	32,430	—
Deferred income taxes	57,783	(77,828)	25,146
Increase (decrease) in cash from changes in working capital:			
Receivables, net	(84,576)	(13,829)	(4,499)
Inventories	(100,810)	(11,651)	(4,874)
Account payable	(1,585)	14,735	9,245
Restructuring accrual	(43,378)	—	—
Prepaid expenses and other current assets and liabilities	(9,004)	2,737	(8,821)
Income taxes payable	52,844	(21,942)	(18,452)
Payment of other long-term and non-operating liabilities	(14,682)	(27,089)	(21,719)
Other, net	(26,546)	13,764	10,805
Net cash provided by (used in) operating activities	(8,249)	14,163	81,516

Note: The reason that an increase in sales is shown as a negative number on the statement of cash flows prepared using the indirect method is to reverse any sales reported in income for which cash has not yet been received.

Solution to 1: Sunbeam's statement of cash flows is prepared using the indirect method (i.e., the operating section shows a reconciliation between reported net income and operating cash flow). This reconciliation highlights that the amount of non-cash charges recorded in 1996 for restructuring, impairment, and other costs totaled about \$284 million (\$154.869 million + \$128.8 million). In the following year, the reversal of the restructuring accrual was \$43 million. By inflating and subsequently reversing restructuring charges, the company's income would misleadingly portray significant improvements in performance following the arrival of its new CEO in mid-1996.

EXHIBIT 24 (Continued)

Solution to 2: The items on the statement of cash flows that would primarily be affected by improper revenue recognition include net income, receivables, and inventories. Net income and receivables would be overstated. The statement of cash flows, in which an increase in receivables is shown as a negative number, highlights the continued growth of receivables. In addition, Sunbeam's practice of recording sales that lacked economic substance—because the purchaser held the goods over the end of an accounting period but subsequently returned all the goods—is highlighted in the substantial increase in inventory in 1997.

An issue that arises with regard to cash flow reporting quality is classification shifting: shifting positive cash flow items from investing or financing to inflate operating cash flows. A shift in classification does not change the total amount of cash flow, but it can affect investors' evaluation of a company's cash flows and investors' expectations for future cash flows.

Flexibility in classification exists within accounting standards. For example, IFRS permits companies to classify interest paid either as operating or as financing. IFRS also permits companies to classify interest and dividends received as operating or as investing. In contrast, US GAAP requires that interest paid, interest received, and dividends received all be classified as operating cash flows. Thus, an analyst comparing an IFRS-reporting company to a US GAAP-reporting company would want to ensure comparable classification of interest and dividends and would adjust the reported amounts, if necessary. In addition, an analyst examining an IFRS-reporting company should be alert to any year-to-year changes in classification of interest and dividends. For example, consider an IFRS-reporting company that changed its classification of interest paid from operating to financing. All else equal, the company's operating cash flow would appear higher than the prior period even if no other activities occurred in the period.

As another example of the flexibility permitted by accounting standards, cash flows from non-trading securities are classified as investing cash flows, whereas cash flows from trading securities are typically classified as operating cash flows. However, each company decides what constitutes trading and non-trading activities, depending on how it manages its securities holdings. This discretion creates an opportunity for managers to shift cash flows from one classification to another.

Example 9 illustrates a shift of cash flows from investing to operating.

EXAMPLE 9 Classification of Cash Flows

Nautica Enterprises[21]

An excerpt from the statement of cash flows from the fiscal 2000 annual report of Nautica Enterprises, an apparel manufacturer, is shown as Exhibit 25. An excerpt from the statement of cash flows from the company's fiscal 2001 annual report is shown in Exhibit 26. Use these two excerpts to answer the questions below.

[21] Example adapted from Mulford and Comiskey (2005).

EXHIBIT 25 Excerpt from Nautica Enterprises' Consolidated Statement of Cash Flow from Annual Report, filed 27 May 2000 (amounts in thousands)

	Year ended 4 March 2000
Cash flows from operating activities	
Net earnings	$46,163
Adjustments to reconcile net earnings to net cash provided by operating activities, net of assets and liabilities acquired	
Minority interest in net loss of consolidated subsidiary	—
Deferred income taxes	(1,035)
Depreciation and amortization	17,072
Provision for bad debts	1,424
Changes in operating assets and liabilities	
Accounts receivable	(6,562)
Inventories	(3,667)
Prepaid expenses and other current assets	(20)
Other assets	(2,686)
Accounts payable: trade	(548)
Accrued expenses and other current liabilities	9,086
Income taxes payable	3,458
Net cash provided by operating activities	62,685
Cash flows from investing activities	
Purchase of property, plant, and equipment	(33,289)
Acquisitions, net of cash acquired	—
Sale (purchase) of short-term investments	21,116
Payments to register trademark	(277)
Net cash used in investing activities	(12,450)

EXHIBIT 26 Excerpt from Nautica Enterprises' Consolidated Statements of Cash Flows from Annual Report, filed 29 May 2001 (amounts in thousands)

	Year Ended 3 March 2001	Year Ended 4 March 2000
Cash flows from operating activities		
Net earnings	46,103	46,163
Adjustments to reconcile net earnings to net cash provided by operating activities, net of assets and liabilities acquired		
Minority interest in net loss of consolidated subsidiary	—	—

(continued)

EXHIBIT 26 (Continued)

	Year Ended 3 March 2001	Year Ended 4 March 2000
Deferred income taxes	(2,478)	(1,035)
Depreciation and amortization	22,968	17,072
Provision for bad debts	1,451	1,424
Changes in operating assets and liabilities		
Short-term investments	28,445	21,116
Accounts receivable	(17,935)	(768)
Inventories	(24,142)	(3,667)
Prepaid expenses and other current assets	(2,024)	(20)
Other assets	(36)	(2,686)
Accounts payable: trade	14,833	(548)
Accrued expenses and other current liabilities	7,054	3,292
Income taxes payable	3,779	3,458
Net cash provided by operating activities	78,018	83,801
Cash flows from investing activities		
Purchase of property, plant, and equipment	(41,712)	(33,289)
Acquisitions, net of cash acquired	—	—
Purchase of short-term investments	—	—
Payments to register trademark	(199)	(277)
Net cash used in investing activities	(41,911)	(33,566)

1. What amount does Nautica report as operating cash flow for the year ended 4 March 2000 in Exhibit 25? What amount does Nautica report as operating cash flow for the same year in Exhibit 26?
2. Exhibit 25 shows that the company had investing cash flows of $21,116 thousand from the sale of short-term investments for the year ended 4 March 2000. Where does this amount appear in Exhibit 26?
3. As actually reported (Exhibit 26), how did the company's operating cash flow for fiscal year 2001 compare with that for 2000? If Nautica had not changed the classification of its short-term investing activities, how would the company's operating cash flows for fiscal year 2001 have compared with that for 2000?

Solution to 1: In Exhibit 25, Nautica reports operating cash flow for the year ended 4 March 2000 of $62,685 thousand. In Exhibit 26, Nautica reports operating cash flow for the same year of $83,801 thousand.

Solution to 2: The $21,116 thousand (i.e., the difference between the amounts of operating cash flow reported in Exhibits 25 and 26) that appears in Exhibit 25 as investing

cash flows from the sale of short-term investments for the year ended 4 March 2000 has been reclassified. In Exhibit 26, this amount appears under changes in operating assets and liabilities (i.e., as a component of operating cash flow).

Solution to 3: As reported in Exhibit 26, the company's cash flows declined by 7% from fiscal year 2000 to fiscal year 2001 (= 78,018/83,801 – 1 = –7%). If Nautica had not changed the classification of its short-term investing activities, the company's operating cash flows for fiscal year 2001 would have been $49,573 thousand (=78,018 – 28,445), and would have shown a decline of 21% from fiscal year 2000 to fiscal year 2001 (= 49,573/62,685 – 1 = –21%).

An analyst could have identified Nautica's classification shift by comparing the statement of cash flows for 2000 in the fiscal year 2000 annual report with the statement in the fiscal year 2001 annual report. In general, comparisons of period-to-period reports issued by a company can be useful in assessing financial reporting quality. If a company restates prior years' financial statements (because of an error), recasts prior years' financial statements (because of a change in accounting policy), omits some information that was previously voluntarily disclosed, or adds some item, such as a new risk disclosure that was not previously disclosed, an analyst should aim to understand the reasons for the changes.

6. BALANCE SHEET QUALITY

With regard to the balance sheet, high financial *reporting* quality is indicated by completeness, unbiased measurement, and clear presentation. High financial *results* quality (i.e., a strong balance sheet) is indicated by an optimal amount of leverage, adequate liquidity, and economically successful asset allocation. Balance sheet strength is assessed using ratio analysis, including common-size financial statements, which is covered by the financial statement analysis chapters. There are no absolute values for ratio analysis that indicate adequate financial strength; such analysis must be undertaken in the context of a firm's earnings and cash flow outlook, coupled with an understanding of the environment in which the firm operates. In this section, the focus is on high financial reporting quality.

An important aspect of financial reporting quality for the balance sheet is *completeness*. Significant amounts of off-balance-sheet obligations could be a concern for an analyst because exclusion of these obligations could understate the company's leverage. One common source of off-balance-sheet obligation is the use of operating leases (i.e., lease obligations that are not required to be shown on the balance sheet but are instead reflected in the financial statements only to the extent of the associated periodic rent expenses). Another type of off-balance-sheet obligation is purchase contracts, which may be structured as take-or-pay contracts. Analysts typically adjust reported financial statement information by constructively capitalizing operating lease obligations and, where material, purchase obligations. Constructive capitalization means that the analyst estimates the amount of the obligation as the present value of future lease (or purchase obligation) payments and then adds the amount of the obligation to the company's reported assets and liabilities.

The use of unconsolidated joint ventures or equity-method investees may reflect off-balance-sheet liabilities. In addition, certain profitability ratios (return on sales, also called "net profit margin") may be overstated because the parent company's consolidated financial statements include its share of the investee's profits but not its share of the investee's sales. If disclosures are adequate, an analyst can adjust the reported amounts to better reflect the combined amounts of sales, assets, and liabilities. A company operating with numerous or material unconsolidated subsidiaries for which ownership levels approach 50% could be a warning sign of accounting issues. Understanding why a company structures its operations in such a manner—industry practice or need for strategic alliances in certain businesses or geographies—can allay concerns.

Another important aspect of financial reporting quality for the balance sheet is *unbiased measurement*. Unbiased measurement is particularly important for assets and liabilities for which valuation is subjective. The following list presents several examples:

- As previously discussed, understatement of impairment charges for inventory; plant, property, and equipment; or other assets not only results in overstated profits on the income statement but also results in overstatement of the assets on the balance sheet. A company with substantial amounts of reported goodwill but with a market value of equity less than the book value of shareholders' equity may indicate that appropriate goodwill impairments have not been taken.
- Similarly, understatement of valuation allowance for deferred tax assets would understate tax expenses and overstate the value of the assets on the balance sheet. (Overstatement would have the opposite effect.) Significant, unexplainable variations in the valuation account can signal biased measurement.
- A company's investments in the debt or equity securities of another company would ideally be based on observable market data. For some investments, no observable market data exist and the valuation must be based solely on management estimates. The balance sheet of a company with a substantial portion of its assets valued using non-observable inputs likely warrants closer scrutiny.
- A company's pension liabilities require various estimates, such as the discount rate at which future obligations are present valued. If pension obligations exist, the level and changes for the discount rate should be examined.

Example 10 shows a company with overstated goodwill.

EXAMPLE 10 Goodwill

Sealed Air Corporation

In August 2012, a *Wall Street Journal* article listed six companies that were carrying more goodwill on their balance sheets than the companies' market values (Thurm 2012). At the top of the list was Sealed Air Corporation (NYSE: SEE), a company operating in the packaging and containers industry. Exhibit 27 presents an excerpt from the company's income statement for the following year, and Exhibit 28 presents an excerpt from the company's balance sheet.

EXHIBIT 27 Sealed Air Corporation and Subsidiaries Consolidated Statements of Operations ($ millions, except per share amounts)

Year ended 31 December	2012	2011	2010
Net sales	$7,648.1	$5,550.9	$4,490.1
Cost of sales	5,103.8	3,950.6	3,237.3
Gross profit	2,544.3	1,600.3	1,252.8
Marketing, administrative, and development expenses	1,785.2	1,014.4	699.0
Amortization expense of intangible assets acquired	134.0	39.5	11.2
Impairment of goodwill and other intangible assets	1,892.3	—	—
Costs related to the acquisition and integration of Diversey	7.4	64.8	—
Restructuring and other charges	142.5	52.2	7.6
Operating (loss) profit	(1,417.1)	429.4	535.0
Interest expense	(384.7)	(216.6)	(161.6)
Loss on debt redemption	(36.9)	—	(38.5)
Impairment of equity method investment	(23.5)	—	—
Foreign currency exchange (losses) gains related to Venezuelan subsidiaries	(0.4)	(0.3)	5.5
Net gains on sale (other-than-temporary impairment) of available-for-sale securities	—	—	5.9
Other expense, net	(9.4)	(14.5)	(2.9)
(Loss) earnings from continuing operations before income tax provision	(1,872.0)	198.0	343.4
Income tax (benefit) provision	(261.9)	59.5	87.5
Net (loss) earnings from continuing operations	(1,610.1)	138.5	255.9
Net earnings from discontinued operations	20.9	10.6	—
Net gain on sale of discontinued operations	178.9	—	—
Net (loss) earnings available to common stockholders	$(1,410.3)	$149.1	$255.9

EXHIBIT 28 Excerpt from Sealed Air Corporation and Subsidiaries Consolidated Balance Sheets ($ millions, except share data)

Year Ended 31 December	2012	2011
ASSETS		
Current assets		
Cash and cash equivalents	$679.6	$703.6
Receivables, net of allowance for doubtful accounts of $25.9 in 2012 and $16.2 in 2011	1,326.0	1,314.2
Inventories	736.4	777.5
Deferred tax assets	393.0	156.2
Assets held for sale	—	279.0

(continued)

EXHIBIT 28 (Continued)

Year Ended 31 December	2012	2011
ASSETS		
Prepaid expenses and other current assets	87.4	119.7
Total current assets	$3,222.4	$3,350.2
Property and equipment, net	$1,212.8	$1,269.2
Goodwill	3,191.4	4,209.6
Intangible assets, net	1,139.7	2,035.7
Non-current deferred tax assets	255.8	112.3
Other assets, net	415.1	455.0
Total assets	$9,437.2	$11,432.0

1. SEE's financial statements indicate that the number of common shares issued and outstanding in 2011 was 192,062,185. The price per share of SEE's common stock was around $18 per share in December 2011 and around $14 in August 2012; the *Wall Street Journal* article (Thurm 2012) was written in 2012. What was the company's market value?
2. How did the amount of goodwill as of 31 December 2011 compare with the company's market value?
3. Why did the *Wall Street Journal* article state that goodwill in excess of the company's market value is "a potential clue to future write-offs"?
4. Based on the information in Exhibit 28, does the *Wall Street Journal* article statement appear to be correct?

Solution to 1: SEE's market cap was about $3,457 million (= 192,062,185 shares × $18 per share) in December 2011 and around $2,689 million (= 192,062,185 shares × $14 per share) when the *Wall Street Journal* article was written in August 2012.

Solution to 2: The amount of goodwill on SEE's balance sheet as of 31 December 2011 was $4,209.6 million. The amount of goodwill exceeded the company's market value. (Also note that goodwill and other intangible assets represented about 55% of SEE's total assets as of 31 December 2011.)

Solution to 3: If the market capitalization exactly equaled the reported amount of goodwill, the value implicitly assigned to all the company's other assets would equal zero. In this case, because the market capitalization is less than the reported amount of goodwill, the value implicitly attributed to all the company's other assets is less than zero. This suggests that the amount of goodwill on the balance sheet is overvalued, so a future write-off is likely.

Solution to 4: Yes, based on the information in Exhibit 28, the *Wall Street Journal* article statement appears correct. In the fiscal year ending 31 December 2012 after the article, SEE recorded impairment of goodwill and other intangible assets of $1,892.3 million.

Finally, *clear presentation* is also important for financial reporting quality for the balance sheet. Although accounting standards specify many aspects of what appears on the balance sheet, companies have discretion, for example, in determining which line items should be shown separately and which should be aggregated into a single total. For items shown as a single total, an analyst can usually consult the notes for information about the components. For example, in consulting the inventory note, an analyst may learn that inventory is carried on a last-in, first-out basis and that, consequently, in an inflationary environment, the inventory is carried on the balance sheet at a cost that is significantly lower than its current cost. This information would provide the analyst with comfort that the inventory is unlikely to be overstated.

7. SOURCES OF INFORMATION ABOUT RISK

A company's financial statements can provide useful indicators of financial, operating, or other risk. For example, high leverage ratios (or, similarly, low coverage ratios) derived from financial statement data can signal financial risk. As described in a previous section, analytical models that incorporate various financial data can signal bankruptcy risk, and others can predict reporting risks (i.e., the risk of a company misreporting). Operating risks can be indicated by financial data, such as highly variable operating cash flows or negative trends in profit margins. Additional information about risk can be obtained from sources other than the financial statements.

An audit opinion(s) covering financial statements (and internal controls over financial reporting, where required) can provide some information about reporting risk. However, the content of an audit opinion is unlikely to be a timely source of information about risk. A related item that is potentially a signal of problems (and thus potentially represents information about risk) is a discretionary change in auditor. For example, Allou Health & Beauty Care, discussed in Example 7, had a different auditor for 2000, 2001, and 2002.

The notes are an integral part of the financial statements. They typically contain information that is useful in understanding a company's risk. Beyond the information about risk that can be derived from a company's financial statements and notes, various other disclosures can provide information about financial, operating, reporting, or other risks. An important source of information is the management commentary, which provides management's assessment of the important risks faced by the company. Although risk-related disclosures in the management commentary sometimes overlap with disclosures contained in the financial statement notes or elsewhere in regulatory filings, the commentary should reveal the management perspective, and its content often differs from the note disclosures.

Other required disclosures that are specific to an event, such as capital raising, non-timely filing of financial reports, management changes, or mergers and acquisitions, can provide important information relevant to assessing risk. Finally, the financial press, including online media, if used judiciously, can be a useful source of information about risk.

7.1. Limited Usefulness of Auditor's Opinion as a Source of Information about Risk

An auditor's opinion is unlikely to be an analyst's first source of information about a company's risk. For financial statements, a clean audit opinion states that the financial statements present the information fairly and in conformity with the relevant accounting principles. For

internal controls, a clean audit opinion states that the company maintained effective internal controls over financial reporting. A negative or going-concern audit opinion on financial statements or a report indicating an internal control weakness would clearly be a warning sign for an analyst. However, an audit opinion relates to historical information and would, therefore, typically not provide information on a timely enough basis to be a useful source of information about risk.

For example, Eastman Kodak Company filed for bankruptcy on 19 January 2012. The audit opinion for fiscal 2011 (dated 28 February 2012) is shown in Exhibit 29. The opinion is identical to the company's audit opinion for the prior fiscal year except for two differences: (1) the years have been updated, and (2) the paragraph highlighted in bold has been added. The added paragraph states that the financial statements were prepared under the "going-concern" assumption; the company has subsequently declared bankruptcy, which raises doubt about the company's ability to continue as a going concern; and the financial statements have not been adjusted to reflect the bankruptcy. An analyst would have learned about Eastman Kodak's bankruptcy on 19 January, so the audit opinion is not useful as a source of that information. In addition, the audit opinion addresses financial statements that had not been adjusted to reflect the bankruptcy, which would limit usefulness to an analyst.

EXHIBIT 29 Post-Bankruptcy Audit Opinion for Eastman Kodak

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Eastman Kodak Company:

In our opinion, the consolidated financial statements listed in the index appearing under Item 15(a)(1) present fairly, in all material respects, the financial position of Eastman Kodak Company and its subsidiaries at December 31, 2011 and 2010, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2011 in conformity with accounting principles generally accepted in the United States of America. In addition, in our opinion, the financial statement schedule listed in the index appearing under Item 15(a)(2) presents fairly, in all material respects, the information set forth therein when read in conjunction with the related consolidated financial statements. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2011, based on criteria established in *Internal Control - Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company's management is responsible for these financial statements and financial statement schedule, for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on these financial statements, on the financial statement schedule, and on the Company's internal control over financial reporting based on our integrated audits. We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made

EXHIBIT 29 (Continued)

by management, and evaluating the overall financial statement presentation. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As more fully discussed in Note 1 to the financial statements, on January 19, 2012, the Company and its US subsidiaries filed voluntary petitions for relief under chapter 11 of the United States Bankruptcy Code. Uncertainties inherent in the bankruptcy process raise substantial doubt about the Company's ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 1. The accompanying financial statements do not include any adjustments that might result from the outcome of this uncertainty.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ PricewaterhouseCoopers LLP

PricewaterhouseCoopers LLP
Rochester, New York
February 28, 2012

Note: Bold-face type is added for emphasis.

In the case of Kodak, an analyst would not have obtained very useful information about risk from the auditor's report. Other sources of information—financial and market data—would have provided clear and timely indications of the company's financial difficulty.

Groupon provides another example of the timing of availability of information about risk in external auditors' reports. Exhibit 30 presents a timeline of events related to the company's material weakness in internal controls. Note that no negative external auditor opinion appeared before or during the time frame in which the weakness existed. No external opinion was required for the first annual filing, and the weakness had been remedied by the second annual filing.

EXHIBIT 30 Material Weaknesses in Internal Controls at Groupon

November 2011:	The company goes public (initial public offering)
March 2012:	The company revises financial results and discloses that management concluded there was a "material weakness" in internal controls over financial reporting, as of 31 December. Shares fall 17%. (Because of an exemption for newly public companies, no external auditor opinion on the effectiveness of internal controls was required.)
May 2012:	In its first-quarter filing, the company discloses that it is "taking steps" to correct the weaknesses but cannot provide assurance that internal controls will be considered effective by the end of the year.
August 2012:	Second-quarter filing includes a disclosure similar to that in first-quarter filing.
November 2012:	Third-quarter filing includes a disclosure similar to that in first-quarter filing.
February 2013:	Full-year filing indicates that the company "concluded that we have remediated the previously identified material weakness as of December 31, 2012." (As required for public companies, the filing includes Groupon's first external auditor opinion on the effectiveness of internal controls. The company received a clean opinion.)

In the case of Groupon, an analyst would not have obtained any useful information from the auditor's report. Other data would have given more useful indicators of the company's reporting difficulties. For example, the company was required to change its revenue recognition policy and to restate the amount of revenue reported in its IPO filing—clearly a sign of reporting difficulties. Another item of information providing a signal of likely reporting difficulties was the company's extensive number of acquisitions and explosive growth. Groupon's reported revenues for 2009 were more than 300 times the amount of 2008 reported revenues, and 2010 reported revenues were 23 times larger than 2009 revenues. As described in an August 2011 accounting blog (Catanach and Ketz 2011):

> It is absolutely ludicrous to think that Groupon is anywhere close to having an effective set of internal controls over financial reporting having done 17 acquisitions in a little over a year. When a company expands to 45 countries, grows merchants from 212 to 78,466, and expands its employee base from 37 to 9,625 in only two years, there is little doubt that internal controls are not working somewhere.

The growth data, particularly coupled with disclosures in the IPO filing about management inexperience, are a warning sign of potential reporting risks. These reporting risks were observable many months before the company disclosed its internal control weakness, and the control weaknesses did not appear in an audit opinion.

Although the content of an audit opinion is unlikely to provide timely information about risk, a change in the auditor—and especially multiple changes in the auditor—can signal possible reporting problems. For example, one of the largest feeder funds for Bernie Madoff (the perpetrator of a multi-billion-dollar Ponzi scheme) had three different auditors for the three years from 2004 to 2006, a fact highlighted in testimony as a huge warning sign indicating "auditor shopping."[22] Similarly, the use of an auditor whose capabilities seem inadequate for the complexity of the company can indicate risk. For example, the accounting/auditing firm

[22] From the testimony of Harry Markopolos, CFA, given before the US House of Representatives Committee on Financial Services, 4 February 2009.

that audited Madoff's $50 billion operation consisted of three people (two principals and a secretary). The small size of the auditing firm relative to the size of Madoff's operations should have caused serious concern for any potential investor. In general, it is important to understand the relationship between the auditor and the firm. Any questions about the auditor's independence would be a cause for concern—for example, if the auditor and company management are particularly close or if the company represents a substantial portion of the auditing firm's revenue.

7.2. Risk-Related Disclosures in the Notes

The notes, an integral part of the financial statements, typically contain information that is useful in understanding a company's risk. For example, both IFRS and US GAAP require specific disclosures about risks related to contingent obligations, pension and post-employment benefits, and financial instrument risks.

Disclosures about contingent obligations include a description of the obligation, estimated amounts, timing of required payments, and related uncertainties.[23] Exhibit 31 shows excerpts from two of Royal Dutch Shell's financial statement notes disclosing information about provisions and contingencies. The year-to-year changes in management's estimated costs for items such as future decommissioning and restoration could have implications for risk evaluation. The disclosure also emphasizes the uncertain timing and amounts.

EXHIBIT 31 Disclosures about Contingent Obligations, Excerpt from Royal Dutch Shell's Note 19 and Note 25

19. Decommissioning and Other Provisions

	Current		Non-Current		Total	
	31 Dec 2012	31 Dec 2011	31 Dec 2012	31 Dec 2011	31 Dec 2012	31 Dec 2011
Decommissioning and restoration	1,356	894	14,715	13,072	16,071	13,966
Environmental	366	357	1,032	1,078	1,398	1,435
Redundancy	228	406	275	297	503	703
Litigation	390	256	307	330	697	586
Other	881	1,195	1,106	854	1,987	2,049
Total	3,221	3,108	17,435	15,631	20,656	18,739

The timing and amounts settled in respect of these provisions are uncertain and dependent on various factors that are not always within management's control. Additional provisions are stated net of reversals of provisions recognized in previous periods.

(continued)

[23] Contingent losses are recognized (i.e., reported on the financial statements) when it is probable the loss will occur and the amount can be reasonably estimated. Contingencies are disclosed (but not recognized) when the occurrence of a loss is less than probable but greater than remote and/or the amount cannot be reliably estimated. The concepts are similar under IFRS and US GAAP despite differences in terminology. IFRS makes a distinction between "provisions," which are recognized as liabilities because they meet the definition of a liability, and "contingent liabilities," which are disclosed but not recognized.

EXHIBIT 31 (Continued)

Of the decommissioning and restoration provision at December 31, 2012, an estimated $4,666 million is expected to be utilised within one to five years, $3,483 million within six to ten years, and the remainder in later periods.

Reviews of estimated decommissioning and restoration costs are carried out annually, which in 2012 resulted in an increase of $1,586 million . . .

25. Legal Proceedings and Other Contingencies

Groundwater contamination

Shell Oil Company (including subsidiaries and affiliates, referred to collectively as SOC), along with numerous other defendants, has been sued by public and quasi-public water purveyors, as well as governmental entities. The plaintiffs allege responsibility for groundwater contamination caused by releases of gasoline containing oxygenate additives. Most of these suits assert various theories of liability, including product liability, and seek to recover actual damages, including clean-up costs. Some assert claims for punitive damages. Fewer than 10 of these cases remain. On the basis of court rulings in SOC's favour in certain cases claiming damages from threats of contamination, the claims asserted in remaining matters, and Shell's track record with regard to amounts paid to resolve varying claims, the management of Shell currently does not believe that the outcome of the remaining oxygenate-related litigation pending, as at December 31, 2012, will have a material impact on Shell.

Nigerian claims

Shell subsidiaries and associates operating in Nigeria are parties to various environmental and contractual disputes. These disputes are at different stages in litigation, including at the appellate stage, where judgments have been rendered against Shell. If taken at face value, the aggregate amount of these judgments could be seen as material. The management of Shell, however, believes that these matters will ultimately be resolved in a manner favourable to Shell. While no assurance can be provided as to the ultimate outcome of any litigation, these matters are not expected to have a material effect on Shell.

Other

In the ordinary course of business, Shell subsidiaries are subject to a number of other loss contingencies arising from litigation and claims brought by governmental and private parties. The operations and earnings of Shell subsidiaries continue, from time to time, to be affected to varying degrees by political, legislative, fiscal and regulatory developments, including those relating to the protection of the environment and indigenous groups, in the countries in which they operate. The industries in which Shell subsidiaries are engaged are also subject to physical risks of various types. The nature and frequency of these developments and events, as well as their effect on future operations and earnings, are unpredictable.

Disclosures about pensions and post-employment benefits include information relevant to actuarial risks that could result in actual benefits differing from the reported obligations based on estimated benefits or investment risks that could result in actual assets differing from reported amounts based on estimates.

Disclosures about financial instruments include information about risks, such as credit risk, liquidity risk, and market risks that arise from the company's financial instruments, and how they have been managed.

EXAMPLE 11 Use of Disclosures

Use the excerpts from Royal Dutch Shell's note disclosing information about financial instruments in Exhibit 32 to answer the following questions:

1. Does Shell appear to take a centralized or decentralized approach to managing interest rate risk?
2. For the year ended 31 December 2012, Shell reported pre-tax income of $50,289 million. How significant is Shell's exposure to a 1% increase in interest rates?
3. For the year ended 31 December 2012, what would be the impact on Shell's pre-tax income of a 10% appreciation of the Australian dollar against the US dollar?

EXHIBIT 32 Disclosures about Financial Instruments, Excerpt from Royal Dutch Shell's Note 21

21 Financial Instruments and Other Derivative Contracts
A – Risks

In the normal course of business, financial instruments of various kinds are used for the purposes of managing exposure to interest rate, currency and commodity price movements.

. . . .

Interest rate risk

Most debt is raised from central borrowing programmes. Interest rate swaps and currency swaps have been entered into to effectively convert most centrally issued debt to floating rate linked to dollar Libor (London Inter-Bank Offer Rate), reflecting Shell's policy to have debt principally denominated in dollars and to maintain a largely floating interest rate exposure profile. Consequently, Shell is exposed predominantly to dollar Libor interest rate movements. The financing of most subsidiaries is also structured on a floating-rate basis and, except in special cases, further interest rate risk management is discouraged.

On the basis of the floating rate net debt position at December 31, 2012, and assuming other factors (principally foreign exchange rates and commodity prices) remained constant and that no further interest rate management action were taken, an increase in interest rates of 1% would decrease pre-tax income by $27 million (2011: $146 million).

Foreign exchange risk

Many of the markets in which Shell operates are priced, directly or indirectly, in dollars. As a result, the functional currency of most Upstream companies and those with significant cross-border business is the dollar. For Downstream companies, the local currency is typically the functional currency. Consequently, Shell is exposed to varying levels of foreign exchange risk when it enters into transactions that are not denominated in the companies' functional currencies, when foreign currency monetary assets and liabilities are translated at the reporting date and as a result of holding net investments

in operations that are not dollar-functional. The main currencies to which Shell is exposed are sterling, the Canadian dollar, euro and Australian dollar. Each company has treasury policies in place that are designed to measure and manage its foreign exchange exposures by reference to its functional currency.

Exchange rate gains and losses arise in the normal course of business from the recognition of receivables and payables and other monetary items in currencies other than individual companies' functional currency. Currency exchange risk may also arise in connection with capital expenditure. For major projects, an assessment is made at the final investment decision stage whether to hedge any resulting exposure.

Hedging of net investments in foreign operations or of income that arises in foreign operations that are non-dollar functional is not undertaken.

Assuming other factors (principally interest rates and commodity prices) remained constant and that no further foreign exchange risk management action were taken, a 10% appreciation against the dollar at December 31 of the main currencies to which Shell is exposed would have the following pre-tax effects:

	Increase (decrease) in Income		Increase in Net Assets	
$ millions	2012	2011	2012	2011
10% appreciation against the dollar of:				
Sterling	(185)	(58)	1,214	1,042
Canadian dollar	131	(360)	1,384	1,364
Euro	30	458	1,883	1,768
Australian dollar	246	153	142	120

The above sensitivity information is calculated by reference to carrying amounts of assets and liabilities at December 31 only. The pre-tax effect on income arises in connection with monetary balances denominated in currencies other than the relevant entity's functional currency; the pre-tax effect on net assets arises principally from the translation of assets and liabilities of entities that are not dollar-functional.

Solution to 1: Shell appears to take a centralized approach to managing interest rate risk based on its statements that most debt is raised centrally and that interest rate swaps and currency swaps have been used to convert most interest rate exposure to dollar Libor. In addition, Shell states that apart from structuring subsidiary financing on a floating-rate basis, it discourages subsidiary's further interest rate risk management.

Solution to 2: For the year ended 31 December 2012, Shell's exposure to a 1% increase in interest rates is relatively insignificant. An increase in interest rates of 1% would decrease pre-tax income by $27 million, which is less than 0.1% of Shell's 2012 reported pre-tax income of $50,289 million.

Solution to 3: The impact on Shell's pre-tax income of a 10% appreciation of the Australian dollar against the US dollar would be an increase of $246 million, which is about 0.5% of Shell's 2012 reported pre-tax income of $50,289 million.

These disclosures, along with expectations about future market conditions, can help an analyst assess whether the company's exposures to interest rate risk and foreign exchange risks pose a significant threat to the company's future performance.

7.3. Management Commentary (Management Discussion and Analysis, or MD&A)

The IFRS Practice Statement, *Management Commentary*, issued in December 2010, is a non-binding framework for commentary related to financial statements prepared in accordance with IFRS. One purpose of the commentary is to help users of the financial reports in understanding the company's risk exposures, approach to managing risks, and effectiveness of risk management. The practice statement includes five elements that should be contained in the commentary: (1) nature of the business; (2) objectives and strategies; (3) resources, risks, and relationships; (4) results and prospects; and (5) performance measures and indicators. The section on risks can be particularly useful (IFRS 2010).

> Management should disclose its principal strategic, commercial, operational, and financial risks, which are those that may significantly affect the entity's strategies and progress of the entity's value. The description of the principal risks facing the entity should cover both exposures to negative consequences and potential opportunities…. The principal risks and uncertainties can constitute either a significant external or internal risk to the entity. (p. 13)

Public US companies are required to include an MD&A as Item 7 of Form 10-K. The MD&A disclosures include information about (1) liquidity, (2) capital resources, (3) results of operations, (4) off-balance-sheet arrangements, and (5) contractual arrangements. Information about off-balance-sheet arrangements and contractual arrangements can enable an analyst to anticipate future impact on cash flow. Companies are required to present quantitative and qualitative information about the company's exposure to market risks as Item 7A of the 10-K. This disclosure should enable analysts to understand the impact of fluctuations in interest rates, foreign exchange, and commodity prices.[24]

The IFRS Practice Statement states specifically that companies should present only the principal risks and not list all possible risks and uncertainties. Similarly, the SEC Division of Corporation Finance's internal reference document, *Financial Reporting Manual*, states, "MD&A should not consist of generic or boilerplate disclosure. Rather, it should reflect the facts and circumstances specific to each individual registrant" (p. 296). In practice, disclosures do not always reflect the intent. One challenge faced by analysts is identifying important risks and distinguishing between risks that are generic and thus relevant to all companies and risks that are more specific to an individual company.

[24] Although not part of the MD&A, disclosures about risk factors relevant to the company's securities are also required as Item 1A of Form 10-K.

This challenge is illustrated by an excerpt from the "Key Risks and Uncertainties" section of Autonomy Corporation's 2010 Annual Report, its last annual report before it was acquired by Hewlett-Packard Company (HP) for $11.1 billion in 2011.[25] As shown in Exhibit 33, Autonomy's risk disclosures contain many items that are arguably generic, such as the inability to maintain the competitive value of its technology, loss of key executives, and continued unfavorable economic conditions. These types of risks would be faced by any technology company. This significant amount of generic commentary (two pages) could potentially distract a reader whose aim was to identify the specific and important risks faced by the company.

EXHIBIT 33 Autonomy Corporation, Key Risks and Uncertainties

Risk	Description	Impact/Sensitivity	Mitigation/Comment
Technology	Business depends on our core technology, and our strategy concentrates on developing and marketing software based on our proprietary technology.	Since substantially all of revenues derive from licensing our core technology, if unable to maintain and enhance the competitive value of our core technology, our business will be adversely affected.	Continue to invest heavily in research and development to maintain competitive advantage. Monitor market to maintain competitiveness. Apply core technology to new and additional vertical market applications.
Competition	Technology which significantly competes with our technology.	Could render our products out of date and could result in rapid loss of market share.	Invest heavily in new product development to ensure that we have products at various stages of the product life cycle.
Variability and visibility	There may be fluctuations in results due to quarterly reporting, and variability in results due to late-in-the-quarter purchasing cycles common in the software industry.	Although quarter-to-quarter results may not be meaningful due to the short periods, negative sentiment may arise based on interpretation of results. Due to late purchasing cycles common in the software industry, variability in closure rates could become exaggerated resulting in a negative effect on operations.	Close management of sales pipelines on a quarterly basis to improve visibility in results expectations. Close monitoring of macro and micro economic conditions to understand variability in closure rates. Annual and quarterly target setting to enable results achievement.

[25] HP subsequently took a multi-billion-dollar write-down on its investment, which it attributed to misreporting by Autonomy Corporation, stating that "the majority of this impairment charge is linked to serious accounting improprieties, disclosure failures and outright misrepresentations at Autonomy Corporation plc that occurred prior to HP's acquisition of Autonomy and the associated impact of those improprieties, failures and misrepresentations on the expected future financial performance of the Autonomy business over the long-term" (HP earnings announcement, 20 November 2012). Of course, HP's due diligence prior to purchasing the company would have gone far beyond the published financial reports; HP would have had access to all of the company's internal reporting as well.

EXHIBIT 33 (Continued)

Risk	Description	Impact/Sensitivity	Mitigation/Comment
Margins	Expenditures increasing without a commensurate increase in revenues, and rapid changes in market conditions.	If increased expenses are not accompanied by increased revenues, we could experience decreased margins or operating losses.	Close monitoring by management of revenue and cost forecasts. Adjustment to expenditures in the event of anticipated revenue shortfalls.
Average selling prices	The average selling prices of our products could decrease rapidly.	May negatively impact revenues and gross margins.	Monitor market prices on an ongoing basis. Pricing responsibility at a senior level of management for deviations from standard.
Market conditions	The continuation of unfavourable economic and market conditions.	Could result in a rapid deterioration of operating results.	Regular monitoring of economic conditions. Adjustments to costs and product offerings to anticipate and match market conditions.
Resellers	Our ability to expand sales through indirect sellers and our general reliance on sales of our products by third parties.	Inability to recruit and retain resellers who can successfully penetrate their markets could adversely affect our business.	Invest in training resources for resellers. Close monitoring of reseller sales cycles. Investment in direct sales channel.
Management	The continued service of our executive directors.	The loss of any key member of management may affect the leadership of the company.	Establish succession plan. Maintain effective management training programme. Attract and retain senior personnel.
Hiring	The hiring and retention of qualified personnel.	Without the appropriate quality and quantity of skills throughout the organisation, it would be difficult to execute the business plans and grow.	Use of external recruiters and internal bonuses. Rigorous talent management plans and reviews. Provide competitive compensation packages. Ensure that work is challenging and rewarding.
Product errors	Errors or defects in our products.	Could negatively affect our revenues and the market acceptance of our products and increase our costs.	Invest in quality control programmes. Monitor integrity and effectiveness of software. Solicit and act on customer feedback.
Acquisitions	Problems encountered in connection with potential acquisitions.	We may not successfully overcome problems in connection with potential acquisitions, which could lead to a deterioration in our results.	Carefully evaluate transactions. Conduct thorough due diligence on all targets. Carefully plan for post-acquisition integration.

(continued)

EXHIBIT 33 (Continued)

Risk	Description	Impact/Sensitivity	Mitigation/Comment
IP infringement	Claims by others that we infringe on their intellectual property rights.	If our technology infringed on other parties' intellectual property rights, we could be exposed to costs and injunctive relief.	Monitor market developments closely to identify potential violations of our patents, and by the company, and take action where necessary. Maintain a significant number of patents to support our business and protect competitive advantage.
Growth	Our ability to effectively manage our growth.	Expansion places demands on management, engineering, support, operations, legal, accounting, sales and marketing personnel, and other resources. Failure to manage effectively will impact business and financial results	Recruitment and retention of key personnel. Investment in corporate infrastructure, including support, operations, legal, and accounting personnel. Focus on internal controls.
International risks	Additional operational and financial risks as we continue to expand our international operations.	Exposure to movements in exchange rates and lack of familiarity with local laws could lead to infractions.	Pricing of contracts in US dollars to the extent possible to minimise exchange risk. Retention of local staff and local advisors, reporting to headquarters, to manage risk.
Security breaches	Any breach of our security measures and unauthorised access to a customer's or our data.	Could result in significant legal liability and negative publicity.	Establish and maintain strict security standards. Test security standards on a regular basis.

Source: Section from Autonomy Corporation's 2010 Annual Report.

7.4. Other Required Disclosures

Other required disclosures that are specific to an event, such as capital raising, non-timely filing of financial reports, management changes, or mergers and acquisitions, can provide important information relevant to assessing risk. In the United States, public companies would report such events to the SEC in a Form 8-K (and NT—"notification of inability to timely file"—when appropriate). Delays in filing are often the result of accounting difficulties. Such accounting difficulties could be internal disagreement on an accounting principle or estimate, the lack of adequate financial staff, or the discovery of an accounting fraud that requires further examination. In general, an NT filing is highly likely to signal problems with financial reporting quality.

For public companies in Europe, the Committee of European Securities Regulators (CESR) has published guidance concerning the types of inside information that must be disclosed on an ad hoc basis to the market. Examples of such information include changes in control; changes in management and supervisory boards; mergers, splits, and spinoffs; legal disputes; and new licenses, patents, and registered trademarks. Companies use the disclosure

mechanisms specified by their relevant national authorities to make such disclosures. For example, in the United Kingdom, a company would release an announcement to the market via an approved regulatory information service.

In these cases, an examination of the information announced would be necessary to determine whether reporting quality would be affected. For example, an announcement of the sudden resignation of a company's most senior financial officer or external auditor would clearly be a warning sign of potential problems with financial reporting quality. As another example, an announcement of a legal dispute related to one of the company's important assets or products would warrant attention because it could negatively affect the company's future earnings. Announcements of mergers and acquisitions, although they might indicate future positive developments for the company, could also indicate changes in the company's risk profile, particularly during the transaction.

7.5. Financial Press as a Source of Information about Risk

The financial press can be a useful source of information about risk when, for example, a financial reporter uncovers financial reporting issues that had not previously been recognized. For example, a *Wall Street Journal* financial reporter, Jonathan Weil (2000), was one of the first people to identify problems with the accounting at Enron (and other companies that were using "gain-on-sale" accounting, an aggressive policy allowing immediate revenue recognition on long-term contracts). Indeed, the well-known investor James (Jim) Chanos cites an article by Weil as the catalyst of his investigation of Enron (Chanos 2002).

It is important to emphasize that even if an initial idea comes from a news article, further investigation is essential—first, by using definitive sources (i.e., regulatory filings) to confirm any accounting and financial disclosures and, second, by seeking supporting information from other sources, where available. For example, although a financial press article was the initial source of information for Chanos, the first step in his research was to analyze Enron's annual SEC filings (Form 10-K and 10-Q). In addition, Chanos obtained information about insider stock sales, the company's business strategy and tactics, and stock analysts' perspectives.

It is also important—and likely will become increasingly important as electronic media via the internet expands—to consider the source of any particular news article. Information reported by a well-known financial news provider is more likely to be factual than information from less-established sources. Similarly, stories or blogs written by financial journalists are more likely to be unbiased than those written by individuals with a related service or product to sell.

8. SUMMARY

Assessing the quality of financial reports—both reporting quality and results quality—is an important analytical skill.

- The quality of financial reporting can be thought of as spanning a continuum from the highest quality to the lowest.
- Potential problems that affect the quality of financial reporting broadly include revenue and expense recognition on the income statement; classification on the statement of cash flows; and the recognition, classification, and measurement of assets and liabilities on the balance sheet.
- Typical steps involved in evaluating financial reporting quality include an understanding of the company's business and industry in which the company is operating; comparison of the

financial statements in the current period and the previous period to identify any significant differences in line items; an evaluation of the company's accounting policies, especially any unusual revenue and expense recognition compared with those of other companies in the same industry; financial ratio analysis; examination of the statement of cash flows with particular focus on differences between net income and operating cash flows; perusal of risk disclosures; and review of management compensation and insider transactions.
- High-quality earnings increase the value of the company more than low-quality earnings, and the term "high-quality earnings" assumes that reporting quality is high.
- Low-quality earnings are insufficient to cover the company's cost of capital and/or are derived from non-recurring, one-off activities. In addition, the term "low-quality earnings" can be used when the reported information does not provide a useful indication of the company's performance.
- Various alternatives have been used as indicators of earnings quality: recurring earnings, earnings persistence and related measures of accruals, beating benchmarks, and after-the-fact confirmations of poor-quality earnings, such as enforcement actions and restatements.
- Earnings that have a significant accrual component are less persistent and thus may revert to the mean more quickly.
- A company that consistently reports earnings that exactly meet or only narrowly beat benchmarks can raise questions about its earnings quality.
- Cases of accounting malfeasance have commonly involved issues with revenue recognition, such as premature recognition of revenues or the recognition of fraudulent revenues.
- Cases of accounting malfeasance have involved misrepresentation of expenditures as assets rather than as expenses or misrepresentation of the timing or amount of expenses.
- Bankruptcy prediction models, used in assessing financial results quality, quantify the likelihood that a company will default on its debt and/or declare bankruptcy.
- Similar to the term "earnings quality," when reported cash flows are described as being high quality, it means that the company's underlying economic performance was satisfactory in terms of increasing the value of the firm, and it also implies that the company had high reporting quality (i.e., that the information calculated and disclosed by the company was a good reflection of economic reality). Cash flow can be described as "low quality" either because the reported information properly represents genuinely bad economic performance or because the reported information misrepresents economic reality.
- For the balance sheet, high financial *reporting* quality is indicated by completeness, unbiased measurement, and clear presentation.
- A balance sheet with significant amounts of off-balance-sheet debt would lack the completeness aspect of financial reporting quality.
- Unbiased measurement is a particularly important aspect of financial reporting quality for assets and liabilities for which valuation is subjective.
- A company's financial statements can provide useful indicators of financial or operating risk.
- The management commentary (also referred to as the management discussion and analysis, or MD&A) can give users of the financial statements information that is helpful in assessing the company's risk exposures and approaches to managing risk.
- Required disclosures regarding, for example, changes in senior management or inability to make a timely filing of required financial reports can be a warning sign of problems with financial reporting quality.
- The financial press can be a useful source of information about risk when, for example, a financial reporter uncovers financial reporting issues that had not previously been recognized. An analyst should undertake additional investigation of any issue identified.

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PROBLEMS

This question set was developed by Mark Bhasin, CFA (New York, NY, USA).

The following information relates to Questions 1 through 4

Mike Martinez is an equity analyst who has been asked to analyze Stellar, Inc. by his supervisor, Dominic Anderson. Stellar exhibited strong earnings growth last year; however, Anderson is skeptical about the sustainability of the company's earnings. He wants Martinez to focus on Stellar's financial reporting quality and earnings quality.

After conducting a thorough review of the company's financial statements, Martinez concludes the following:

Conclusion 1	Although Stellar's financial statements adhere to generally accepted accounting principles (GAAP), Stellar understates earnings in periods when the company is performing well and overstates earnings in periods when the company is struggling.
Conclusion 2	Stellar most likely understated the value of amortizable intangibles when recording the acquisition of Solar, Inc. last year. No goodwill impairment charges have been taken since the acquisition.
Conclusion 3	Over time, the accruals component of Stellar's earnings is large relative to the cash component.
Conclusion 4	Stellar reported an unusually sharp decline in accounts receivable in the current year, and an increase in long-term trade receivables.

1. Based on Martinez's conclusions, Stellar's financial statements are *best* categorized as:
   A. non-GAAP compliant.
   B. GAAP compliant, but with earnings management.
   C. GAAP compliant and decision useful, with sustainable and adequate returns.
2. Based on Conclusion 2, after the acquisition of Solar, Stellar's earnings are *most likely*:
   A. understated.
   B. fairly stated.
   C. overstated.
3. In his follow-up analysis relating to Conclusion 3, Martinez should focus on Stellar's:
   A. total accruals.
   B. discretionary accruals.
   C. non-discretionary accruals.
4. What will be the impact on Stellar in the current year if Martinez's belief in Conclusion 4 is correct? Compared with the previous year, Stellar's:
   A. current ratio will increase.
   B. days sales outstanding (DSO) will decrease.
   C. accounts receivable turnover will decrease.

CHAPTER 18

INTEGRATION OF FINANCIAL STATEMENT ANALYSIS TECHNIQUES

Jack T. Ciesielski, Jr., CFA

LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- demonstrate the use of a framework for the analysis of financial statements, given a particular problem, question, or purpose (e.g., valuing equity based on comparables, critiquing a credit rating, obtaining a comprehensive picture of financial leverage, evaluating the perspectives given in management's discussion of financial results);
- identify financial reporting choices and biases that affect the quality and comparability of companies' financial statements, and explain how such biases may affect financial decisions;
- evaluate the quality of a company's financial data, and recommend appropriate adjustments to improve quality and comparability with similar companies, including adjustments for differences in accounting standards, methods, and assumptions;
- evaluate how a given change in accounting standards, methods, or assumptions affects financial statements and ratios;
- analyze and interpret how balance sheet modifications, earnings normalization, and cash flow statement related modifications affect a company's financial statements, financial ratios, and overall financial condition.

1. INTRODUCTION

It is important to keep in mind that financial analysis is the means to the end, and not the end itself. Rather than try to apply every possible technique and tool to every situation, it is more important for the investor to understand the proper type of analysis to apply in a given situation.

The primary reason for performing financial analysis is to facilitate an economic decision. Before making such decisions as whether to lend to a particular long-term borrower or to invest a large sum in a common stock, venture capital vehicle, or private equity candidate, an investor wants to put the odds of a successful outcome on his or her side. Rather than leaving outcomes to chance, financial analysis should identify potential losses and make the potential favorable outcomes more visible.

The purpose of this chapter is to provide examples of the effective use of financial analysis in decision making. The framework for the analysis is shown in Exhibit 1. Each of the three case studies is set in a different type of company and has a different focus/purpose and context for the analysis. However, each case study follows the basic framework.

EXHIBIT 1 A Financial Statement Analysis Framework

Phase	Sources of Information	Examples of Output
1. Define the purpose and context of the analysis.	• The nature of the analyst's function, such as evaluating an equity or debt investment or issuing a credit rating • Communication with client or supervisor on needs and concerns • Institutional guidelines related to developing specific work product	• Statement of the purpose or objective of analysis • A list (written or unwritten) of specific questions to be answered by the analysis • Nature and content of report to be provided • Timetable and budgeted resources for completion
2. Collect input data.	• Financial statements, other financial data, questionnaires, and industry/economic data • Discussions with management, suppliers, customers, and competitors • Company site visits (e.g., to production facilities or retail stores)	• Organized financial statements • Financial data tables • Completed questionnaires, if applicable
3. Process input data, as required, into analytically useful data.	• Data from the previous phase	• Adjusted financial statements • Common-size statements • Ratios and graphs • Forecasts
4. Analyze/interpret the data.	• Input data and processed data	• Analytical results
5. Develop and communicate conclusions and recommendations (e.g., with an analysis report).	• Analytical results and previous reports • Institutional guidelines for published reports	• Analytical report answering questions posed in Phase 1 • Recommendation regarding the purpose of the analysis, such as whether to make an investment or grant credit
6. Follow-up.	• Information gathered by periodically repeating above steps as necessary to determine whether changes to holdings or recommendations are necessary	• Updated reports and recommendations

2. CASE STUDY 1: LONG-TERM EQUITY INVESTMENT

The portfolio manager for the food sector of a large public employee pension fund wants to take a long-term equity stake in a publicly traded food company, and has become interested in Nestlé S.A. (SWX Swiss Exchange: NESN and OTC [NY ADR]: NSRGY), a truly global company. In its 2007 management report, Nestlé's management outlined its long-term objectives for organic growth, continuous margin improvement, and improvement in return on invested capital. The management report indicated the following general strategic direction: "We continue to believe that our greatest opportunity to create value for our shareholders is through further transforming our Food and Beverages business into a Nutrition, Health, and Wellness offering and by improving its performance further." Those stated objectives captured the portfolio manager's attention, and the manager has become intrigued with Nestlé as an investment possibility. He commissions an analyst to evaluate Nestlé for consideration as a core holding. Before investing in the company, the portfolio manager has several concerns that he has conveyed to the analyst:

- What are Nestlé's sources of earnings growth? How sustainable is Nestlé's performance? In other words, do the company's reported earnings represent economic reality? And if their performance is indeed robustly reported, will it be repeatable for, say, five to ten years while the pension fund treats the common stock as a core holding?
- In determining the quality of earnings over a long-term time frame, the portfolio manager wants to understand the relationship of earnings to cash flow.
- Having started out in the investment business as a lending officer, the portfolio manager wants to know how well Nestlé's balance sheet takes into account the company's full rights and obligations. Can the capital structure of the company support future operations and strategic plans? Even if the investor is primarily concerned with the earnings power of a possible investee, the balance sheet matters. For example, if asset write-downs or new legal liabilities cripple a company's financial standing, it is difficult for a company to sustain profitability if it has to repair its balance sheet. Worse still for an investor: If "repairing the balance sheet" means the issuance of dilutive stock, it can be even more costly to existing investors.

The analyst develops a plan of analysis to address the portfolio manager's concerns by following the framework in Exhibit 1. Phases 3 and 4 will be the focus of most of the work.

2.1. Phase 1: Define a Purpose for the Analysis

The analyst articulates the purpose and context of the analysis as isolating the factors that have driven the company's financial success and assessing their sustainability, while delineating and understanding the risks that may upset the sustainability of returns.

2.2. Phase 2: Collect Input Data

The analyst finds that Nestlé has an extensive library of financial statements on its website. After gathering several years of annual reports, he is ready to begin processing the data.

2.3. Phase 3: Process Data/Phase 4: Analyze/Interpret the Processed Data

The analyst intends to accomplish his purpose stated in Phase 1 through a series of financial analyses, including:

- A DuPont analysis;[1]
- An analysis of the composition of Nestlé's asset base;
- An analysis of Nestlé's capital structure;
- A study of the company's segments and the allocation of capital among them;
- An examination of the company's accruals in reporting as they affect earnings quality;
- A study of the company's cash flows and their adequacy for the company's continued operations and strategies; and
- Decomposition and analysis of the company's valuation.

While processing the input data consistent with the needs of the analyses above, the analyst plans to simultaneously interpret and analyze the resulting data. In his view, Phases 3 and 4 of the framework are best considered jointly.

2.3.1. DuPont Analysis

For several reasons, the analyst decides that the best way to first investigate Nestlé is through the lens of a DuPont analysis. The investment is expected to be in the company's common stock, and ultimately, the DuPont analysis isolates the components affecting the return on common equity. Furthermore, the disaggregation of ROE components leads to more threads to follow in assessing the drivers of Nestlé's performance. The analyst also intends to investigate the quality of the earnings and the underlying cash flows, as well as investigating the common shareholders' standing in the Nestlé capital structure.

One basic premise underlying all research and analysis is to constantly look beneath the level of information presented—to constantly strive for disaggregation within information presented, whether it is a single line on a financial statement or within segments of an entire entity. This search for granularity can reveal the sources of a company's earnings drivers; it can also highlight weaker operations being masked by stronger ones in the aggregate. That premise of "seeking granularity" underlies DuPont analysis: By isolating the different components of return on equity, it helps the analyst find potential operational flaws and provides a springboard for dialogue with management about possible problems.

The analyst begins to process the data gathered in Phase 2 to assemble the information required for the DuPont analysis. Exhibit 2 shows the last three years of income statements for Nestlé; Exhibit 3 shows the last four years of Nestlé balance sheets. From his study of the income statement, the analyst notes that Nestlé has a significant amount of income from associates. In 2007, this amounted to CHF 1,280 million, or 11.2 percent, of Nestlé's net

[1] A reminder to the reader: This case study is an example, and starting financial statement analysis with a DuPont analysis is not a mandate. Alternatively, another analyst might have preferred starting with a time-series common-size income statement. This analyst might be more interested in the trends of various income and expense categories as a financial statement analysis starting point than in the sources of returns on shareholder equity. It depends on the perspective of the individual analyst.

income (referred to by Nestlé as "profit for the period"). The income from associates[2] is a pure net income figure, after taxes and with no related revenue in the income statement. Much of the income relates to Nestlé's 30 percent stock ownership of L'Oreal, a cosmetics company.

The analyst's interest is to evaluate the company on a decomposed basis as much as possible in order to isolate any problem operations or to find misunderstood or unidentified opportunities. Including the net investments and returns of associates with full reported value of Nestlé's own assets and income would introduce noise into the analytical signals produced by the DuPont analysis. The returns earned by affiliates are not under the direct control of Nestlé's management as are the "pure Nestlé" operations and resources. To avoid making incorrect inferences about the profitability of Nestlé's operations, the analyst wants to remove the effects of the investments in associates from the balance sheet and income statement. Otherwise, DuPont analysis components such as net profit margin and total asset turnover will combine the impact of pure Nestlé operations with operations of associated companies. Conclusions drawn about Nestlé-only business would be based on flawed information.

The analyst restated the 2004 balance sheet from the published version to take into account several accounting changes Nestlé made as of 1 January 2005. Those adjustments would have affected 31 December 2004 balances if the financial statements had been restated for that year. In order to keep the DuPont analysis as logically consistent as possible throughout all the periods of study, he restated the 2004 balance sheet for those adjustments by isolating the 1 January 2005 adjustments from the 2005 financial statements, and restating the 31 December 2004 year end balances for them. They included changes for employee benefits plan accounting (IAS 19 adoption), lease classification (IFRIC 4 adoption), a reclassification of a warrants premium, and the cumulative effect on their investment of L'Oreal's first-time adoption of International Financial Reporting Standards. The revisions made by the analyst to the as-reported 2004 balance sheet are shown in Exhibit 4.

EXHIBIT 2 Nestlé S.A. Income Statements 2007–2005 (in Millions of CHF)

	2007	2006	2005
Sales	107,552	98,458	91,115
Cost of goods sold	(45,037)	(40,713)	(37,917)
Distribution expenses	(9,104)	(8,244)	(7,402)
Marketing and administration expenses	(36,512)	(34,465)	(32,421)
Research and development costs	(1,875)	(1,734)	(1,499)
EBIT before restructuring and impairments[a]	**15,024**	**13,302**	**11,876**
Net other income/(expenses)[b]	(590)	(516)	(920)
Profit before interest and taxes	14,434	12,786	10,956
Net financing cost			
Financial income	576	537	605
Financial expense	(1,492)	(1,218)	(1,192)

(continued)

[2]Associates are companies in which Nestlé has the power to exercise a significant influence but does not exercise control. They are accounted for by the equity method.

EXHIBIT 2 (Continued)

	2007	2006	2005
Profit before taxes and associates (EBT)	**13,518**	**12,105**	**10,369**
Taxes	(3,416)	(3,293)	(2,647)
Share of results of associates	1,280	963	896
Profit from continuing operations	**11,382**	**9,775**	**8,618**
Net profit/(loss) on discontinued operations	0	74	(14)
Profit for the period	**11,382**	**9,849**	**8,604**
of which attributable to minority interests	733	652	523
of which attributable to shareholders of the parent (Net profit)	10,649	9,197	8,081
Earnings per share from continuing operations			
Basic earnings per share	CHF 27.81	CHF 23.71	CHF 20.82
Diluted earnings per share	CHF 27.61	CHF 23.56	CHF 20.63

[a]Expenses include depreciation and amortization of 3,211; 3,061; and 2,728 for 2007, 2006, and 2005, respectively.
[b]Includes impairments of 482, 134, and 608 for 2007, 2006, and 2005, respectively.

EXHIBIT 3 Nestlé S.A. Balance Sheets 2007–2004 (in Millions of CHF)

	2007	2006	2005	2004 (Revised)
Assets				
Liquid assets				
Cash and cash equivalents	6,594	5,278	4,658	4,902
Short-term investments	2,902	6,197	12,735	10,380
	9,496	11,475	17,393	15,282
Trade and other receivables	15,421	14,577	14,291	11,809
Assets held for sale	22	74	633	0
Inventories	9,272	8,029	8,162	7,025
Derivative assets	754	556	645	585
Prepayments and accrued income	805	594	641	584
Total current assets	35,770	35,305	41,765	35,285
Non-current assets				
Net property, plant and equipment	22,065	20,230	18,990	17,208
Investments in associates	8,936	8,430	7,073	5,197
Deferred tax assets	2,224	2,433	2,466	2,173
Financial assets	4,213	2,778	2,513	2,410
Employee benefits assets	811	343	69	32
Goodwill	33,423	28,513	26,990	23,854
Intangible assets	7,217	3,773	2,852	2,028

EXHIBIT 3 (Continued)

	2007	2006	2005	2004 (Revised)
Total non-current assets	78,889	66,500	60,953	52,902
Total assets	114,659	101,805	102,718	88,187
Liabilities and equity				
Current liabilities				
Trade and other payables	14,179	12,572	11,117	9,074
Liabilities directly associated with assets held for sale	7	0	38	0
Financial liabilities	24,541	15,494	18,841	14,722
Tax liabilities	856	884	705	584
Derivative liabilities	477	470	922	856
Accruals and deferred income	3,266	3,059	4,231	3,892
Total current liabilities	43,326	32,479	35,854	29,128
Non-current liabilities				
Financial liabilities	6,129	6,952	8,277	10,891
Employee benefits liabilities	5,165	5,415	5,747	5,704
Deferred tax liabilities	1,398	706	240	16
Other payables	1,091	366	185	327
Provisions	3,316	3,039	3,347	3,004
Total non-current liabilities	17,099	16,478	17,796	19,942
Total liabilities	60,425	48,957	53,650	49,070
Total equity attributable to shareholders of the parent	52,085	50,991	47,498	38,068
Minority interests	2,149	1,857	1,570	1,049
Total equity	54,234	52,848	49,068	39,117
Total liabilities and equity	114,659	101,805	102,718	88,187

EXHIBIT 4 Modifications to 2004 Balance Sheets (in Millions of CHF)

	As Reported	IAS 19 Effect (1)	IFRIC 4 Effect (2)	IAS 39 Warrant Premium Classification (3)	L'Oreal IFRS Adoption (4)	Revised
Assets						
Cash and cash equivalents	4,902					4,902
Short-term investments	10,380					10,380
Liquid assets	15,282					15,282
Trade and other receivables	11,809					11,809

(continued)

EXHIBIT 4 (Continued)

	As Reported	IAS 19 Effect (1)	IFRIC 4 Effect (2)	IAS 39 Warrant Premium Classification (3)	L'Oreal IFRS Adoption (4)	Revised
Inventories	7,025					7,025
Derivative assets	585					585
Prepayments and accrued income	584					584
Total current assets	35,285					35,285
Non-current assets						
Net property, plant and equipment	17,052		156			17,208
Investments in associates	4,091				1,106	5,197
Deferred tax assets	1,469	702	2			2,173
Financial assets	2,410					2,410
Employee benefits assets	928	(896)				32
Goodwill	23,854					23,854
Intangible assets	2,028					2,028
Total non-current assets	51,832	(194)	158		1,106	52,902
Total assets	87,117	(194)	158		1,106	88,187
Liabilities and equity						
Current liabilities						
Trade and other payables	9,074					9,074
Financial liabilities	14,722					14,722
Tax liabilities	584					584
Derivative liabilities	856					856
Accruals and deferred income	3,839			53		3,892
Total current liabilities	29,075					29,128
Non-current liabilities						
Financial liabilities	10,731		160			10,891
Employee benefits liabilities	3,234	2,470				5,704
Deferred tax liabilities	447	(431)				16
Other payables	327					327
Provisions	3,004					3,004
Total non-current liabilities	17,743					19,942
Total liabilities	46,818	2,039	160	53		49,070

EXHIBIT 4 (Continued)

	As Reported	IAS 19 Effect (1)	IFRIC 4 Effect (2)	IAS 39 Warrant Premium Classification (3)	L'Oreal IFRS Adoption (4)	Revised
Equity						
Total equity attributable to parent shareholders	39,236	(2,219)	(2)	(53)	1,106	38,068
Minority interests	1,063	(14)				1,049
Total equity	40,299	(2,233)				39,117
Total liabilities and equity	87,117	(194)	158	0	1,106	88,187

(1) IAS 19 was implemented in 2006, with comparative restatement made to January 1, 2005. The 1/1/05 adjustments were imposed on the 12/31/04 balance sheet by the analyst, taken from the Accounting Policies footnote of 2006 Annual Report, p. 21.
(2) IFRIC 4 required the company to recognize additional finance lease assets and obligations that were not previously considered to be lease arrangements. The 2005 adjustments were carried back to the end of 2004. The amounts were found in the Accounting Policies footnote of 2006 Annual Report, p. 21.
(3) IAS 39 changed the classification of premiums associated with Nestlé warrants included in a bond issue. The 1/1/05 adjustments were imposed on the 12/31/04 balance sheet by the analyst, taken from the Accounting Policies footnote of 2005 Annual Report, p. 23.
(4) L'Oreal adopted International Financial Reporting Standards as of 1/1/05. The cumulative effect was carried back to 12/31/04, as found in footnote d) to the 2005 Consolidated Statement of Changes in Equity, page 11.

The analyst draws the data shown in Exhibit 5 from Exhibits 2, 3 and 4 for the preparation of DuPont analysis:

EXHIBIT 5 Data Needed for DuPont Analysis (in Millions of CHF)

	2007	2006	2005	2004
Income Statement Data:				
Revenue	107,552	98,458	91,115	—
EBIT	14,434	12,786	10,956	—
EBT	13,518	12,105	10,369	—
Profit from continuing operations	11,382	9,775	8,618	—
Share of results of associates	1,280	963	896	—
Profit ex-associates	10,102	8,812	7,722	—
Balance Sheet Data:				
Total assets	114,659	101,805	102,718	88,187
Investments in associates	8,936	8,430	7,073	5,197
Total assets, ex-associates	105,723	93,375	95,645	82,990
Shareholders' equity	54,234	52,848	49,068	39,117

The five-way decomposition of ROE needs to be expanded to account for the presence of the investment in associates and the share of income they provide to Nestlé. Subtracting the investment from total assets results in a figure that more closely represents Nestlé's own asset base; subtracting the share of results of associates from the net income allows for the analysis of exclusively Nestlé profitability resulting from that exclusively Nestlé asset base. Exhibit 6 shows the results of expanding the DuPont analysis.

The net profit margin component and the asset turnover component require adjustments to remove the impact of the associates on the return on assets. To adjust the net profit margin component, the analyst subtracts the associates' income from the net income, and divides it by earnings before taxes. Recall that the number referred to as EBT is profit before taxes and associates (Exhibit 2). In 2007 terms, this was represented by (CHF 11,382 net income – 1,280 income from associates)/CHF 13,518 earnings before taxes = 74.73 percent. Interest burden and EBIT or operating profit margin are calculated as usual. Interest burden is calculated by dividing the profit before taxes and associates by the profit before interest and taxes: CHF 13,518/14,434 = 93.65 percent for 2007. The EBIT margin is simply the earnings before interest and taxes (operating profit or income) divided by sales: CHF 14,434/107,552 = 13.42 percent.

Multiplying the three components together produces the net profit margin of Nestlé—9.39 percent in 2007—excluding the associates' earnings. Calculating the net profit margin in the usual fashion—*with* the net income figure including the associates' earnings—yields 10.58 percent (CHF 11,382/107,552). That profit margin is not representative of the Nestlé-only operations. Dividing the net profit margin by the net profit margin *without* associates income (10.58%/9.39% = 112.67%) quantifies the magnifying effect of the associates' income on Nestlé's own margins. Where the "Nestlé-only" entity really earned 9.39 percent on every sales dollar, inclusion of the associates' income in net profit inflates the net profit margins by 12.67 percent (112.67% × 9.39% = 10.58%); a level that is not representative of what the Nestlé-only entity is capable of producing.

EXHIBIT 6 Expanded DuPont Analysis

	2007	2006	2005
Tax burden (ex-associates)	74.73%	72.80%	74.47%
× Interest burden	93.65%	94.67%	94.64%
× EBIT margin	13.42%	12.99%	12.02%
= Net profit margin (ex-associates)	9.39%	8.95%	8.47%
× Associates' effect on net profit margin	112.67%	111.78%	111.43%
= Net Profit Margin	**10.58%**	**10.00%**	**9.44%**
Total asset turnover (ex-associates)	1.080	1.042	1.020
Effect of associates investments on turnover	(0.086)	(0.079)	(0.065)
× **Total Asset Turnover**	**0.994**	**0.963**	**0.955**
= Return on assets	10.52%	9.63%	9.02%
× **Leverage**	**2.02**	**2.01**	**2.16**
= Return on Equity	**21.25%**	**19.36%**	**19.48%**
Traditional ROE Calculation:			
Net income /	11,382	9,849	8,604
Average stockholders' equity	53,541	50,958	44,093
= Return on Equity	**21.26%**	**19.33%**	**19.51%**
(Differences in ROE calculations due to rounding)			

A similar picture of the net profit margin over time emerges from the DuPont analysis after neutralizing the effect of the associates' earnings. The margin would be greater in each year if the associates' earnings were included in net profit, as compared to looking at Nestlé alone. While Nestlé showed a consistent upward trend in the three years, the analysis excluding associates' earnings shows that the company's profit margins are not necessarily as large without the boost from associates' earnings.

To calculate a "Nestlé-only" total asset turnover, the asset base also needs to be neutralized for the amount of the investment in associates. In 2007, the adjusted total assets were CHF 105,723 (CHF 114,659 – 8,936 = 105,723); for 2006, the adjusted total assets were CHF 93,375 (CHF 101,805 – 8,430 = 93,375). Dividing the average of the two figures into 2007's sales yields a "Nestlé-only" total asset turnover rate of 1.080 (CHF 107,552/[(CHF 105,723 + 93,375)/2] = 1.080). Calculating the total asset turnover from the consolidated financial statements with amounts unadjusted for investments in associates yields a measure of 0.994 (CHF 107,552/[(CHF 114,659 + 101,805)/2] = 0.994). The difference between the asset turnover based on unadjusted financial statement amounts and the "Nestlé-only" asset turnover reveals the effect on total asset turnover of the investment in associates: a decrease of 0.087 in 2007.

The adjustments thus far have isolated the operational aspects of Nestlé performance and the assets that produced them from non-Nestlé operations. The resulting return on asset signal from the DuPont analysis is free from bias introduced by the affiliates' results, and the contribution to the overall return on assets from the non-Nestlé components is clearly identified.

The financial leverage ratio has not been adjusted by the analyst in similar fashion to profit margins and asset turnover. The DuPont components, profit margins and asset turnover, function fairly discretely: Nestlé assets produce a certain pretax return, as do the non-Nestlé assets. In the DuPont analysis, the assets are isolated from each other and it is possible to see the contributions of each to the aggregate performance. It might be tempting to likewise adjust the financial leverage ratio by subtracting the investment in associates from total assets and equity, but it would not improve the DuPont analysis. Without knowledge of how the investment in associates was financed—all debt, all from internally generated cash flow, or a blend—it would be arbitrary to erase the investment amount from the asset base and equity base to arrive at an adjusted financial leverage figure. If such information was available, the analyst might calculate separate financial leverage components as well. In Nestlé's case, such information is unavailable, and the analyst simply considers the investment to be part of the total assets supported by common equity. The inherent assumption is that a similar capital structure finances the associates' assets and the Nestlé-only assets.

From Exhibit 6, multiplying the three conventionally calculated (including the effect of the associates) ROE components yields the return on equity shown in the top row of Exhibit 7. The return on equity exhibits a smooth, steadily increasing trend when examined without adjusting for investment in associates; however, the analyst wants to see the ROE for Nestlé alone and compare it to the aggregate ROE. Calculating the ROE on a "Nestlé-only" basis is done by multiplying the net profit margin ex-associates' investment by the total asset turnover ex-associates' investment by the financial leverage. For 2007, the Nestlé-only ROE was 20.48 percent (9.39% × 1.080 × 2.02 = 20.48%). Exhibit 7 shows the ROE prepared on the two bases and the contribution of the associates' investment to ROE. The trend is similar for the two ROE calculations, but the magnitudes of the ROE based on Nestlé only are lower.

EXHIBIT 7 ROE Performance Due to Investment in Associates

	2007 (%)	2006 (%)	2005 (%)
Return on equity	21.25	19.36	19.48
Nestlé-only ROE	20.48	18.75	18.66
Associates' contribution to ROE	0.77	0.61	0.82

Although the analyst is satisfied with the trend and magnitude of the Nestlé return on equity, he is now aware that a significant amount of Nestlé's profitability is attributable to the investments in associates. He is convinced that in order to completely understand Nestlé's earnings drivers, he needs to understand these investments as well. He is somewhat concerned that the spread between "Nestlé-only" profit margins and the aggregate profit margins has widened over the past three years: Referring to Exhibit 6, the spread was 1.19 percent in 2007, higher than the 1.05 percent in 2006, which was higher than the 0.97 percent spread in 2005. In fact, the associate income for the past two years has made all the difference between double-digit net profit margins and single-digit profit margins. The analyst makes note to investigate the valuation aspects of the investment holdings later. For now, he is interested in learning more about the drivers of Nestlé's growth and revenues.

2.3.2. Asset Base Composition

The analyst examines the composition of the balance sheet over time, as shown in Exhibit 8.

EXHIBIT 8 Asset Composition as a Percentage of Total Assets

	2007	2006	2005	2004
Cash and equivalents	5.8	5.2	4.5	5.6
Short-term investments	2.5	6.1	12.4	11.8
Trade and other receivables	13.4	14.3	13.9	13.4
Inventory	8.1	7.9	7.9	8.0
Other current	1.4	1.2	1.9	1.3
Total Current	**31.2**	**34.7**	**40.6**	**40.1**
PP&E, net	19.2	19.9	18.5	19.5
Intangibles	35.4	31.7	29.1	29.3
Other non-current	14.1	13.7	11.8	11.1
Total	**99.9***	**100.0**	**100.0**	**100.0**

*Does not add to 100 percent due to rounding.

While he expected significant investments in current assets, inventory, and physical plant assets—given that Nestlé is a food manufacturer and marketer—he is surprised to see so much investment in intangible assets, indicating that Nestlé's success may be due in part to successful acquisitions. The increasing proportion of the asset mix in intangibles and the reduction in short-term investments are consistent with growth through acquisition. The investing section of the statement of cash flows, Exhibit 9, supports this fact:

EXHIBIT 9 Nestlé Investing Activity, 2004–2007 (in Millions of CHF)

Investing Activities	Total	2007	2006	2005	2004
Capital expenditure	(15,841)	(4,971)	(4,200)	(3,375)	(3,295)
Expenditure on intangible assets	(2,802)	(619)	(689)	(758)	(736)
Sale of property, plant and equipment	887	323	98	220	246
Acquisition of businesses	(19,329)	(11,232)	(6,469)	(995)	(633)
Disposal of businesses	1,362	456	447	193	266
Cash flows with associates	1,047	264	323	259	201
Other investing cash flows	(229)	26	(30)	(202)	(23)
Total investing cash flow	(34,905)	(15,753)	(10,520)	(4,658)	(3,974)
Acquisitions % of total investing activities	55.4%	71.3%	61.5%	21.4%	15.9%

For the four-year period, the acquisition of businesses was a significant part of the total resources dedicated to investment activities—over half for the entire time frame. In the largest acquisition year, 2007, Nestlé acquired Gerber and Novartis Medical Nutrition; the two purchases accounted for 85 percent (CHF 9,535/11,232) of the total cash invested in 2007 for business acquisitions.

2.3.3. Capital Structure Analysis

The analyst then examined Nestlé's long-term capital structure by constructing a chart on a common-size basis, displayed in Exhibit 10 below.

Although the DuPont analysis indicated that the company had de-leveraged somewhat over the last three years—financial leverage decreased from 2.16 in 2005 to 2.02 in 2007—the leverage ratio alone does not show much about the *nature* of the leverage. For example, the financial burden imposed by bond debt is more onerous and bears more consequences in the event of default than does restructuring provisions or employee benefit plan obligations. A look at Exhibit 10 reveals that Nestlé has been making its capital structure substantially less financially risky over the last five years. Not only is the proportion of the less risky equity financing rising—from 66.2 percent in 2004 to 76.0 percent in 2007—the more risky long-term financial liabilities have become a significantly smaller part of the capital mix, dropping to 8.6 percent in 2007 from 18.4 percent in 2004. Meanwhile, the "other long-term liabilities" (primarily employee benefit plan obligations and provisions) have remained at nearly the same proportion of the financing mix over the period.

EXHIBIT 10 Percent of Long-Term Capital Structure

	2007	2006	2005	2004
Long-term financial liabilities	8.6	10.0	12.4	18.4
Other long-term liabilities	15.4	13.7	14.2	15.3
Total equity	76.0	76.2	73.4	66.2
Total long-term capital	**100.0**	**99.9***	**100.0**	**99.9***

*Does not add to 100 percent due to rounding.

Given the de-leveraging occurring in the long-term capital structure, the analyst wonders if there has been any offsetting change in the company's working capital accounts. He decides to examine Nestlé's liquidity situation; and from the financial statements in Exhibits 2 and 3, he constructs the table shown in Exhibit 11.

EXHIBIT 11 Nestlé Working Capital Accounts and Ratios, 2004–2007

	2007	2006	2005	2004
Current ratio	0.83	1.09	1.16	1.21
Quick ratio	0.58	0.80	0.88	0.93
Defensive interval ratio*	100.7	114.4	149.4	
Days' sales outstanding (DSO)	50.9	53.5	52.3	
Days on hand of inventory (DOH)	70.1	72.6	73.1	
Number of days payables	–105.5	–106.5	–94.4	
Cash conversion cycle	15.5	19.6	31.0	

*For 2007, the daily cash expenditure = [45,037 + 9,104 + 36,512 + 1,875 – 3,211 + (590 – 482) + (1492 – 576)]/365 = 247.5. The defensive interval ratio is 24,917/247.5 = 100.7.

A significant increase in the current portion of the financial liabilities is responsible for the current ratio's deterioration between 2006 and 2007. He notes that the company's quick ratio and defensive interval ratio have also deteriorated in the last few years. The company seems to be responding by more aggressively managing its receivables and inventories; both receivables DSOs and inventory DOHs have improved in 2007 over 2006. While the decline in the actual working capital ratios is a concern, it is mitigated by the improvement in the management of receivables, inventory, and payables. Those improvements provide evidence that the company's managers are moving in the right direction on the management of working capital.

2.3.4. Segment Analysis/Capital Allocation

To understand any geopolitical investment risks, as well as the economies in which Nestlé operates, the analyst wants to know which geographic areas are of the greatest importance to the company. One issue the analyst confronts is the fact that Nestlé reports segment information by management responsibility and geographical area (hereafter referred to as "segment"), not by segments based exclusively on geographic areas. From the segment information in Exhibit 12, he notes that the European business, while still growing, is a lesser part of the revenue stream than two years ago; Nestlé Americas and Asia, Oceania, and Africa sectors show a similar decline as a percentage of revenues. All of the geographic sectors are growing in terms of absolute amount of revenues and EBIT, but they appear proportionally smaller each year because of the way Nestlé displays its Waters, Nutrition, and Other Food and Beverage segments: Their operations are not segmented geographically, but are shown on a global basis. Not only are they not included in the geographic information, they have also grown significantly in the last several years through acquisition: As pointed out earlier, the company acquired Gerber and Novartis Medical Nutrition in 2007. Those acquisitions, included into the non-geographic categories, make the three geographic categories look less material in the aggregate, from year to year. Nevertheless,

the Americas sector appears to be the single most significant segment in terms of size and growth of both sales and EBIT.

Because of a realignment of segments in 2006 and the lack of complete restated data, the analyst cannot make meaningful comparisons to years before 2005.

The analyst is curious about the company's capital allocation decisions based on the geographic segments. Exhibit 13 shows the segment information regarding Nestlé's capital expenditures and assets.

EXHIBIT 12 Sales and EBIT by Segment (in Millions of CHF)

							Year-to-Year % Change	
Sales	2007	% total	2006	% total	2005	% total	2007	2006
Europe	28,464	26.5	26,652	27.1	25,599	28.1	6.8	4.1
Americas	32,917	30.6	31,287	31.8	28,956	31.8	5.2	8.1
Asia, Oceania, and Africa	16,556	15.4	15,504	15.7	14,296	15.7	6.8	8.4
Nestlé Waters	10,404	9.7	9,636	9.8	8,787	9.6	8.0	9.7
Nestlé Nutrition	8,434	7.8	5,964	6.1	5,270	5.8	41.4	13.2
Other Food and Beverage	3,458	3.2	2,728	2.8	2,245	2.5	26.8	21.5
Pharma	7,319	6.8	6,687	6.7	5,962	6.5	9.5	12.2
	107,552		98,458		91,115			
EBIT								
Europe	3,412	22.7	3,109	23.4	3,082	26.0	9.7	0.9
Americas	5,359	35.7	4,946	37.2	4,364	36.7	8.4	13.3
Asia, Oceania, and Africa	2,697	18.0	2,571	19.3	2,334	19.7	4.9	10.2
Nestlé Waters	851	5.7	834	6.3	709	6.0	2.0	17.6
Nestlé Nutrition	1,447	9.6	1,009	7.6	932	7.8	43.4	8.3
Other Food and Beverage	548	3.6	371	2.8	273	2.3	47.4	35.9
Pharma	2,435	16.2	2,136	16.0	1,833	15.4	14.0	16.5
Unallocated Items	(1,725)	−11.5	(1,674)	−12.6	(1,651)	−13.9		
	15,024		13,302		11,876			

Using the information from Exhibit 12 to calculate EBIT margins, and using the information about the asset and capital expenditure distribution from Exhibit 13, the analyst constructs the table in Exhibit 14, ranked by descending order of EBIT profitability.

Although the segmentation is not purely geographical, the analyst can still make some judgments about the allocation of capital. On the premise that the largest investments in assets will require a similar proportion of capital expenditures, he calculates a ratio of capital expenditures proportion to total asset proportion for the last three years, and compares them to the current EBIT profitability ranking. The resulting table is shown in Exhibit 15.

EXHIBIT 13 Asset and Capital Expenditure Segment Information (in Millions of CHF)

	Assets*			Capital Expenditures		
	2007	2006	2005	2007	2006	2005
Europe	15,794	15,566	14,387	932	812	797
Americas	19,503	19,191	19,228	1,371	1,125	908
Asia, Oceania, and Africa	9,153	8,741	8,153	675	588	546
Nestlé Waters	9,298	8,884	8,468	1,043	923	601
Nestlé Nutrition	13,990	3,774	2,577	271	194	134
Other Food and Beverage	1,792	1,473	1,011	269	141	86
Pharma	7,120	6,028	4,978	276	286	209
	76,650	63,657	58,802	4,837	4,069	3,281

*Assets do not equal total assets on the balance sheet due to unallocated and non-segment assets.

EXHIBIT 14 EBIT Margins, Asset, and Capital Expenditure Proportions by Segment

	EBIT Margins			% of Total Assets			% of Total Cap Ex		
	2007	2006	2005	2007	2006	2005	2007	2006	2005
Pharma	33.27	31.94	30.74	9.3	9.5	8.5	5.7	7.0	6.4
Nestlé Nutrition	17.16	16.92	17.69	18.3	5.9	4.4	5.6	4.8	4.1
Asia, Oceania, and Africa	16.29	16.58	16.33	11.9	13.7	13.9	14.0	14.5	16.6
Americas	16.28	15.81	15.07	25.4	30.1	32.7	28.3	27.6	27.7
Other Food and Beverage	15.85	13.60	12.16	2.3	2.3	1.7	5.6	3.5	2.6
Europe	11.99	11.67	12.04	20.6	24.5	24.5	19.3	20.0	24.3
Nestlé Waters	8.18	8.66	8.07	12.1	14.0	14.4	21.6	22.7	18.3
				100.0	100.0	100.0	100.0	100.0	100.0

EXHIBIT 15 Ratio of Capital Expenditures Percent to Total Asset Percent Ranked by EBIT Margin

	2007 EBIT	2007	2006	2005
Pharma	33.27	0.61	0.74	0.75
Nestlé Nutrition	17.16	0.31	0.81	0.93
Asia, Oceania, and Africa	16.29	1.18	1.06	1.19
Americas	16.28	1.11	0.92	0.85
Other Food and Beverage	15.85	2.43	1.52	1.53
Europe	11.99	0.94	0.82	0.99
Nestlé Waters	8.18	1.79	1.62	1.27

A ratio of 1 indicates that the segment's proportion of capital expenditures is the same as its proportion of total assets. A ratio *below* 1 indicates that the segment is being allocated a lesser proportion of capital expenditures than its proportion of total assets; if a trend develops, the segment will become less significant over time. A ratio *above* 1 indicates the company is

growing the segment. Comparing the ratio to the EBIT margin percentage gives the analyst an idea of whether the company is investing its capital in the most profitable segments.

Pharma, by the nature of the business, has significant research and development expenses and yet has the highest margins. It requires little in the way of invested assets and maintenance capital expenditures. Nutrition has similar characteristics, but to a lesser degree. The two are the highest EBIT margin segments, yet Nestlé has invested in both of them at a less aggressive rate, judging by the ratio of capital expenditures proportions to total assets proportions. The Nutrition segment, however, received significant investment in 2007 through the acquisition of Novartis Medical Nutrition and Gerber. The Pharma segment, consisting largely of US eye care company Alcon, is extremely profitable but is an outlier in terms of Nestlé's current portfolio. Given the differences in the food and pharmaceutical businesses, it would seem unlikely that the world's largest food company would elect to seriously grow the pharmaceutical segment. However, investment in Pharma is consistent with the objective stated in the management report to be recognized as a leader in Nutrition, Health, and Wellness. It was the strategy of transformation that initially appealed to the portfolio manager.

Investments in the Asia, Oceania, and Africa and the Americas segments have typically been in "growth" mode over the last three years; the proportion of capital expenditures to the proportion of total assets in each of these two segments is typically slightly above 1 annually. Given that these are large and well-margined segments, the capital allocation decisions appear reasonable.

The Other Food and Beverage segment appears problematic: While its EBIT margin is on almost the same level as the Asia, Oceania, and Africa and Americas segments, it is still the third lowest segment in terms of profitability. Yet the capital expenditures devoted to it over the last three years are in a rapid growth mode. It may be that the segment is a catch-all, or it may be the development of another line of business that will become more visible in the future; for now, the analyst notes that while it could be a problem or a promise, it is a small part of Nestlé's asset base, revenues, and EBIT and thus not of great concern at this time.

The Nestlé Waters segment is a much greater concern to the analyst. Its EBIT margin is about two-thirds of the next highest-ranked segment; and at 8.18 percent, it is well below the 13.42 percent company-wide EBIT margin (see Exhibit 6). Even after allowing for the fact that the Waters segment was charged with a CHF 210 million goodwill write-down in 2007, the segment's EBIT margin was only 10.20 percent—still well below the other segments. The fact that the Waters segment was the source of a goodwill write-down is also a sign that operating weaknesses might be present; otherwise, the cash flow assumptions used in the goodwill testing might have been high enough to prevent the write-down. Nestlé Waters is a significant part of the asset base at 12.1 percent in 2007, and it appears to be a high-maintenance operation. In each of the last three years, the ratio of capital expenditures proportion to total assets proportion shows the segment to be in a growth mode, with a ratio of 1.79, 1.62, and 1.27 in 2007, 2006, and 2005, respectively. In 2007 and 2006, the only segment to have greater absolute dollar capital expenditures was the more highly profitable Americas segment; in 2005, Nestlé Waters was outranked in terms of capital expenditures only by the Americas and Europe segments. In a worst-case scenario, if the company were to continue to allocate capital towards the lowest-margined businesses, the overall Nestlé-only returns might be impacted negatively. As a result, Nestlé might become more dependent on its investment in associates to sustain performance.

The analyst decides to look at Nestlé from a product group standpoint as well. The sales and EBIT information are shown in Exhibit 16.

To further examine capital allocation decisions, the analyst garners the asset and capital expenditure information by product group from the financial statements, as shown in Exhibit 17. The total assets and capital expenditures differ between the presentations by

segment and product group. Nestlé presents its assets for the product groups on an *average* basis rather than on a year-end basis as it does for the segment reporting. Further, a significant amount of assets is unallocated to segments, but there is no unallocated amount by product groups. Capital expenditures by segment and product group represent additional investments in PP&E during the year, but the unallocated amount of capital expenditures is far greater by product group.

EXHIBIT 16 Sales and EBIT Segment Information by Product Group (in Millions of CHF)

							Year to Year % Change	
Sales	2007	% of Total	2006	% of Total	2005	% of Total	2007	2006
Beverages	28,245	26.3	25,882	26.3	23,842	26.2	9.1	8.6
Milk Products, Nutrition, and Ice cream	29,106	27.1	25,435	25.8	23,275	25.5	14.4	9.3
Prepared Dishes and Cooking Aids	18,504	17.2	17,635	17.9	16,673	18.3	4.9	5.8
Confectionery	12,248	11.4	11,399	11.6	10,794	11.8	7.4	5.6
Pet Care	12,130	11.3	11,420	11.6	10,569	11.6	6.2	8.1
Pharmaceutical Products	7,319	6.8	6,687	6.8	5,962	6.5	9.5	12.2
	107,552	100.0	98,458	100.0	91,115	100.0	9.2	8.1
EBIT								
Beverages	4,854	32.3	4,475	33.6	4,131	34.8	8.5	8.3
Milk Products, Nutrition, and Ice cream	3,744	24.9	3,003	22.6	2,598	21.9	24.7	15.6
Prepared Dishes and Cooking Aids	2,414	16.1	2,323	17.5	2,176	18.3	3.9	6.8
Confectionery	1,426	9.5	1,309	9.8	1,257	10.6	8.9	4.1
Pet Care	1,876	12.5	1,730	13.0	1,532	12.9	8.4	12.9
Pharmaceutical Products	2,435	16.2	2,136	16.1	1,833	15.4	14.0	16.5
	16,749	111.5	14,976	112.6	13,527	113.9	11.8	10.7
Unallocated Items	(1,725)	−11.5	(1,674)	−12.6	(1,651)	−13.9		
	15,024	100.0	13,302	100.0	11,876	100.0		

EXHIBIT 17 Asset and Capital Expenditure Segment Information by Product Group (in Millions of CHF)

	Assets			Capital Expenditures		
	2007	2006	2005	2007	2006	2005
Beverages	17,937	16,640	15,105	1,409	1,105	752
Milk Products, Nutrition, and Ice cream	23,047	17,970	15,516	933	702	689
Prepared Dishes and Cooking Aids	10,959	10,553	9,386	305	272	261

EXHIBIT 17 (Continued)

	Assets			Capital Expenditures		
	2007	2006	2005	2007	2006	2005
Confectionery	6,663	6,319	5,745	316	258	194
Pet Care	15,652	15,763	15,030	402	345	274
Pharmaceutical Products	6,704	5,492	4,538	155	122	97
	80,962	72,737	65,320	3,520	2,804	2,267

Using the information from Exhibit 16 to calculate EBIT margins and the information about the asset and capital expenditure distribution from Exhibit 17, the analyst constructs the table in Exhibit 18, ranked by descending order of EBIT profitability in 2007.

EXHIBIT 18 EBIT Margins, Assets, and Capital Expenditures Proportions by Product Group

	EBIT Margins			% of Total Assets			% of Cap Ex		
	2007	2006	2005	2007	2006	2005	2007	2006	2005
Pharmaceutical Products	33.27	31.94	30.74	8.3	7.6	6.9	4.4	4.4	4.3
Beverages	17.19	17.29	17.33	22.2	22.9	23.1	40.0	39.4	33.2
Pet Care	15.47	15.15	14.50	19.3	21.7	23.0	11.4	12.3	12.1
Prepared Dishes and Cooking Aids	13.05	13.17	13.05	13.5	14.5	14.4	8.7	9.7	11.5
Milk Products, Nutrition, and Ice cream	12.86	11.81	11.16	28.5	24.7	23.8	26.5	25.0	30.4
Confectionery	11.64	11.48	11.65	8.2	8.7	8.8	9.0	9.2	8.6
				100.0	100.0	100.0	100.0	100.0	100.0

He again prepares a schedule of the proportions of capital expenditures and the proportion of total assets for each of the product groups, and calculates the ratio of capital expenditure proportions to total asset proportions, ranked by the 2007 EBIT margin. The resulting table is shown in Exhibit 19.

EXHIBIT 19 Ratio of Capital Expenditures Percent to Total Asset Percent Ranked by EBIT Margin

	2007 EBIT Margin	2007	2006	2005
Pharmaceutical Products	33.27	0.53	0.58	0.62
Beverages	17.19	1.80	1.72	1.44
Pet Care	15.47	0.59	0.57	0.53
Prepared Dishes and Cooking Aids	13.05	0.64	0.67	0.80
Milk Products, Nutrition, and Ice cream	12.86	0.93	1.01	1.28
Confectionery	11.64	1.10	1.06	0.98

EXHIBIT 20 EBIT Margin of Beverages with and without Waters (Millions of CHF)

	Beverages	Waters	Beverages ex-Waters
Total Beverage Sales	28,245	10,404	17,841
EBIT	4,854	851	4,003
EBIT %	17.19%	8.18%	22.44%

EXHIBIT 21 Ratio of Capital Expenditures Percent to Total Asset Percent Ex-Nestlé Waters, Ranked by EBIT Margin

	2007 EBIT Margin	2007	2006	2005
Pharmaceutical Products	33.27	0.67	0.76	0.73
Beverages	22.44	1.22	0.81	0.78
Pet Care	15.47	0.74	0.74	0.62
Prepared Dishes and Cooking Aids	13.05	0.80	0.88	0.95
Milk Products, Nutrition, and Ice cream	12.86	1.17	1.33	1.52
Confectionery	11.64	1.38	1.38	1.15

The analyst uses this information to make some important observations:

- The Beverages product group has a significantly higher EBIT margin than Nestlé Waters EBIT margin of 8.18 percent. Because Nestlé Waters is contained within the Beverages product group, the EBIT margins of the other products within the product group category—primarily soluble coffee, according to Nestlé's 2007 Management Report—must be much greater. The analyst removes the Waters sales and EBIT from the total product group (Exhibit 20) and finds that the remaining business is by far the most profitable segment after pharmaceuticals.
- The analyst reworks the ratios presented in Exhibit 19 excluding the assets and capital expenditures for the Nestlé Waters segment. The result in Exhibit 21 shows that management is allocating its capital expenditures to the Beverages business on a growth basis the last year but at a lower rate than for Beverages with Waters. Given the margins of the product group without Waters, this is a favorable discovery, but the amount allocated to Waters is problematic.
- Less favorable to note under either the original or revised exhibits: The two lowest-ranked product groups—Milk Products, Nutrition, and Ice cream and Confectionery—have been allocated capital expenditures at a "growth mode" rate for each of the last three years. If the trend continues and margins in these segments do not grow, Nestlé's company-wide margins could suffer. Further, the allocation to Pharmaceutical Products, the most profitable segment, is cause for concern.

2.3.5. Accruals and Earnings Quality

The consistent profitability exhibited by Nestlé is a desirable attribute, as hoped for and expected of a company operating primarily in the food industry where the demand for the product is

typically not cyclical. However, the analyst wants to understand how important a role accruals may play in the company's performance; he is concerned in case the consistency is a result of earnings management. He decides to examine the balance-sheet-based accruals and cash-flow-based accruals over the last few years. From the Nestlé financial statements, he assembles the information and intermediate calculations shown in Exhibit 22.

EXHIBIT 22 Selected Balance Sheet and Statement of Cash Flows Information (in Millions of CHF)

	2007	2006	2005	2004	2003
Balance Sheet Accrual Info:					
Total assets	114,659	101,805	102,718	88,187	89,561
Cash and short-term investments	9,496	11,475	17,393	15,282	15,128
Operating assets (A)	105,163	90,330	85,325	72,905	74,433
Total liabilities	60,425	48,957	53,650	49,070	51,738
Long-term debt	6,129	6,952	8,277	10,891	15,419
Debt in current liabilities	24,541	15,494	18,841	14,722	14,064
Operating liabilities (B)	29,755	26,511	26,532	23,457	22,255
Net Operating Assets (A) – (B)	75,408	63,819	58,793	49,448	52,178
Balance-sheet-based aggregate accruals (YTY Δ in NOA)	11,589	5,026	9,345	(2,730)	1,587
Average net operating assets	69,614	61,306	54,121	50,813	51,385
Statement of Cash Flows Accrual Info:					
Profit from continuing operations	11,382	9,775	8,618	7,031	6,593
Operating cash flow	(13,439)	(11,676)	(10,205)	(10,412)	(10,125)
Investing cash flow	15,753	10,520	4,658	3,974	4,728
Cash-flow-based aggregate accruals	13,696	8,619	3,071	593	1,196

The accruals ratios for the last five years are shown in Exhibit 23.

EXHIBIT 23 Accruals Ratios (in Millions of CHF)

	2007	2006	2005	2004	2003
B/S aggregate accruals (YTY Δ in NOA)	11,589	5,026	9,345	(2,730)	1,587
Divided by: Average net operating assets	69,614	61,306	54,121	50,813	51,385
Balance-sheet-based accruals ratio	**16.6%**	**8.20%**	**17.3%**	**–5.4%**	**3.1%**
Cash-flow-based aggregate accruals	13,696	8,619	3,071	593	1,196
Divided by: Average net operating assets	69,614	61,306	54,632	51,324	51,385
CF accruals ratio	**19.7%**	**14.1%**	**5.6%**	**1.2%**	**2.3%**

The analyst notes that the absolute level of accruals present in the balance sheet is not extremely high, but it is much higher in the most recent year than in the earlier years. Furthermore, the balance-sheet-based accruals ratio has fluctuated significantly. The analyst's concern with the accruals ratio fluctuations is that they could indicate the use of accruals to "time" earnings.

A slightly different, but no less concerning, trend exists for the cash-flow-based accrual ratio. The accruals ratio is low in the early years of the analysis and increases steadily over time. In 2007 and 2006, they are significantly higher than in the earlier years, indicating a higher degree of accruals present in the company's earnings.

2.3.6. Cash Flow Relationships

Given his concerns about the possible use of accruals to manage earnings, the analyst decides to study the company's cash flow and its relationship to net income. He begins his analysis with the compilation of Nestlé's statements of cash flows shown in Exhibit 24.

EXHIBIT 24 Nestlé Statements of Cash Flows, 2003–2007 (in Millions of CHF)

	2007	2006	2005	2004	2003
Operating activities:					
Profit from continuing operations	11,382	9,775	8,618	7,031	6,593
Less share of results of associates	(1,280)	(963)	(896)	(1,588)	(593)
Depreciation of property, plant, and equipment	2,620	2,581	2,382	2,506	2,408
Impairment of property, plant, and equipment	225	96	360	130	148
Amortisation of goodwill	NA	NA	NA	1,599	1,571
Impairment of goodwill	251	38	218	0	0
Depreciation of intangible assets	591	480	346	278	255
Impairment of intangible assets	6	0	30	0	74
Increase/(decrease) in provisions and deferred taxes	162	(338)	(526)	55	312
Decrease/(increase) in working capital	82	348	(315)	227	(688)
Other operating cash flows	(600)	(341)	(12)	174	45
Operating cash flow	13,439	11,676	10,205	10,412	10,125
Investing activities:					
Capital expenditure	(4,971)	(4,200)	(3,375)	(3,295)	(3,337)
Expenditure on intangible assets	(619)	(689)	(758)	(736)	(682)
Sale of property, plant and equipment	323	98	220	246	244
Acquisition of businesses	(11,232)	(6,469)	(995)	(633)	(1,950)
Disposal of businesses	456	447	193	266	725
Cash flows with associates	264	323	259	201	208
Other investing cash flows	26	(30)	(202)	(23)	64
Investing cash flow	(15,753)	(10,520)	(4,658)	(3,974)	(4,728)

EXHIBIT 24 (Continued)

	2007	2006	2005	2004	2003
Financing activities:					
Dividend paid to shareholders of the parent	(4,004)	(3,471)	(3,114)	(2,800)	(2,705)
Purchase of treasury shares	(5,455)	(2,788)	(1,553)	(715)	(318)
Sale of treasury shares	980	906	1,295	573	660
Cash flows with minority interests	(205)	(191)	5	(189)	(197)
Bonds issued	2,023	1,625	1,617	558	2,305
Bonds repaid	(2,780)	(2,331)	(2,443)	(903)	(693)
Increase in other non-current financial liabilities	348	134	279	162	0
Decrease in other non-current financial liabilities	(99)	(289)	(207)	(845)	(134)
Increase/(decrease) in current financial liabilities	9,851	(14)	(492)	(1,204)	(2,930)
Decrease/(increase) in short-term investments	3,238	6,393	(1,910)	(2,564)	(2)
Other financing cash flows	0	(4)	2	0	0
Financing cash flow	3,897	(30)	(6,521)	(7,927)	(4,014)
Translation differences on flows	(64)	(360)	336	(494)	(457)
Increase/(decrease) in cash and cash equivalents	1,519	766	(638)	(1,983)	926
Cash and cash equivalents at beginning of year	5,278	4,658	4,902	7,074	6,338
Effects of exchange rate changes on opening balance	(203)	(146)	394	(189)	(190)
Cash and cash equivalents retranslated at beginning of year	5,075	4,512	5,296	6,885	6,148
Cash and cash equivalents at end of period	6,594	5,278	4,658	4,902	7,074
Cash interest paid	788	599	437	578	532
Cash taxes paid	3,072	2,811	2,540	2,523	2,267

The analyst's most pressing concern: Are Nestlé's operating earnings backed by cash flow, or does the pattern presented by the accrual measures above indicate that the operating earnings may be more of an accounting result? To convince himself of the genuineness of the Nestlé earnings, he first compares the operating cash flow before interest and taxes to the operating income, adjusted for accounting changes as shown in Exhibit 25.

EXHIBIT 25 Operating Cash Flow to Operating Income, 2003–2007 (in Millions of CHF)

	2007	2006	2005	2004	2003
Operating cash flow	13,439	11,676	10,205	10,412	10,125
Cash interest paid	788	599	437	578	532
Cash taxes paid	3,072	2,811	2,540	2,523	2,267
Operating cash flow before interest and taxes	17,299	15,086	13,182	13,513	12,924

(continued)

EXHIBIT 25 (Continued)

	2007	2006	2005	2004	2003
Operating income, equalized:					
Profit before interest and taxes	14,434	12,786	10,956	8,487	8,901
Amortisation of goodwill	—	—	—	1,599	1,571
Operating income, adjusted for accounting changes	14,434	12,786	10,956	10,086	10,472
Operating cash flow before interest and taxes/Operating income	**1.20**	**1.18**	**1.20**	**1.34**	**1.23**

To keep the comparisons between cash flow and earnings symmetrical, the analyst added the cash paid for interest and taxes to the operating cash flow. The resulting operating cash flow before interest and taxes is the relevant operating cash flow for comparison to the operating income. This revision makes the cash from operations more directly comparable to accrual basis operating income; it is effectively the operating income (profit before interest and taxes or EBIT) on a cash basis. In another adjustment to make all comparisons analogous, the analyst added goodwill amortisation to the 2003 and 2004 operating income amounts. International Financial Reporting Standard 3, "Business Combinations," suspended the amortisation of goodwill after 31 March 2004; to subtract the amortisation in just two years of operating earnings would result in a misleading trend in the ratio of the relevant operating cash flow to operating earnings.

The analyst is encouraged by the fact that the operating cash flow before interest and taxes substantially exceeded the operating earnings in 2007, and in fact, for each of the last five years. With the exception of 2004, the ratio of the relevant operating cash flow to operating earnings has consistently been around 1.20.

Knowing that Nestlé has made a number of acquisitions, the analyst decides to examine the relationship between operating cash flow and total assets. The total assets reflect the sum total of management's resource allocations. The relationship is shown in Exhibit 26.

EXHIBIT 26 Operating Cash Flow to Total Assets, 2003–2007 (in Millions of CHF)

	2007	2006	2005	2004	2003
Operating cash flow	13,439	11,676	10,205	10,412	10,125
Average total assets	108,232	102,262	95,453	88,874	88,457
Cash return on total assets	12.4%	11.4%	10.7%	11.7%	11.4%

The 2007 cash return on total assets is the highest in the five-year span and fairly consistent during the entire period. A similar pattern of returns, albeit of a higher magnitude, results if operating cash flow before interest and taxes is used. Nevertheless, the analyst is encouraged to do more cash flow analysis due to the results of the accruals analysis, coupled with the slight volatility in the relationship between operating cash flow and operating income. He decides to compare cash flow to reinvestment, debt, and debt-servicing capacity, as shown in Exhibit 27.

The current cash flow measures for each metric are strong: Reinvestment needs have been covered by cash flow by a factor of 2.40 in 2007 and 2.39 in 2006, indicating ample resources

for the company's reinvestment program. Those two measures are only slightly lower than the cash flow reinvestment coverage of the prior three years. The decrease is the result of higher amounts of capital expenditures in the recent years compared to the earlier years.

The 2007 cash flow to total debt ratio of 55.5 percent indicates that the company is not highly leveraged. The ratio is high enough to indicate additional borrowing could be arranged should an investment opportunity arise. Further, the analyst notes that Nestlé has the capacity to pay off its debt in approximately four years even while maintaining its current reinvestment policy [31,147/(13,439 – 5,590)].

EXHIBIT 27 Operating Cash Flow to Reinvestment, Debt, and Debt-Servicing Capacity, 2003–2007 (in Millions of CHF)

	2007	2006	2005	2004	2003
Cash flow to reinvestment:					
Operating cash flow	13,439	11,676	10,205	10,412	10,125
Capital expenditures	4,971	4,200	3,375	3,295	3,337
Expenditures on intangible assets	619	689	758	736	682
	5,590	4,889	4,133	4,031	4,019
Cash flow to reinvestment	**2.40**	**2.39**	**2.47**	**2.58**	**2.52**
Cash flow to total debt:					
Operating cash flow before interest and taxes	17,299	15,086	13,182	13,513	12,924
Current debt (Short-term financial liabilities)	24,541	15,494	18,841	14,722	15,419
Current derivative liabilities	477	470	922	856	846
Long-term debt (Long-term financial liabilities)	6,129	6,952	8,277	10,891	14,064
	31,147	22,916	28,040	26,469	30,329
Cash flow to total debt	**55.5%**	**65.8%**	**47.0%**	**51.1%**	**42.6%**
Cash flow interest coverage:					
Operating cash flow before interest and taxes	17,299	15,086	13,182	13,513	12,924
Interest paid	788	599	437	578	532
Cash flow interest coverage	**22.0**	**25.2**	**30.2**	**23.4**	**24.3**

Finally, the cash flow interest coverage ratio indicates more than satisfactory financial strength in the current year, with cash flow 22.0 times the interest paid. Like the cash flow to total debt ratio, it indicates that the company actually has plenty of financial capacity to add more debt if there is an investment reason. However, the current cash flow to interest is much lower than it was only two years ago at 30.2 times. The analyst is not overly concerned given the recent acquisitions by Nestlé.

2.3.7. Decomposition and Analysis of the Company's Valuation

At this point, the analyst believes he has obtained sufficient information about the company's sources of earnings and returns on shareholder equity, its capital structure, the results of its capital allocation decisions, and its earnings quality. Before he makes his report to the portfolio manager, he wants to study the company's market valuation. During his reading of the annual report, he noted that Nestlé owns significant equity stakes in Alcon (NYSE:ACL), a US ophthalmic products company (77.4 percent), and L'Oreal (Paris exchange: OR), a French cosmetics company (30.0 percent). By virtue of majority ownership in Alcon, Nestlé consolidates the company in its own financial statements, while L'Oreal is handled in the financial statements as an investment, because Nestlé's ownership stake does not give it control. While these companies contribute to the earnings of Nestlé as a whole, they also are valued in the public markets separately and their discrete valuations may be very different from a pure Nestlé valuation. To determine the value that the market is placing solely on Nestlé operations, the analyst first removes the value of the Alcon and L'Oreal holdings from the Nestlé market value, as shown in Exhibit 28.

EXHIBIT 28 Nestlé Market Value without Alcon and L'Oreal as of 31 December 2007 (Currency in Millions, except Share Prices)

L'Oreal Value:	
12/31/2007 share price	€97.98
Shares held by Nestlé (millions)	178.381
L'Oreal holding value	€17,478
12/31 euro: CHF rate	1.657
L'Oreal holding value in Swiss francs	CHF 28,961
Alcon Value:	
12/31/2007 share price	$140.78
Shares held by Nestlé (millions)	230.250
Alcon holding value	$32,415
12/31 USD: CHF rate	1.126
Alcon holding value in Swiss francs	CHF 36,499
Nestlé Market Value, with and without holdings	
Nestlé 12/31/2007 share price	CHF 497.77
Shares outstanding (millions)	393.073
Nestlé market capitalization	CHF 195,661
Value of L'Oreal holding	(28,961)
Value of Alcon holding	(36,499)
Implied value of Nestlé operations	CHF 130,201
Pro rata market value:	
L'Oreal	14.8%
Alcon	18.7%
Nestlé	66.5%
	100.0%

The value of the L'Oreal and Alcon holdings is approximately one-third of the value of Nestlé's market capitalization. The analyst now wants to remove their earnings from the earnings of the combined entity (Exhibit 29) so as to make price/earnings comparison for Nestlé earnings alone. For L'Oreal, this is simple: L'Oreal and Nestlé both report on an IFRS basis and Nestlé discloses in its annual report that L'Oreal has contributed CHF 1,302 to the current year earnings.

It is a more complicated, and less precise, exercise to remove the Alcon earnings from the consolidated whole. Alcon's financial statements are filed in the United States and are prepared on a US GAAP basis. Although Alcon is responsible for providing Nestlé with information on an IFRS basis, there is no publicly available reconciliation showing differences in reported earnings. The analyst can only estimate the amount of Alcon net earnings embedded in Nestlé's earnings on an IFRS basis. In reading the 2007 Management Review of Nestlé, he noted a mention of Alcon's sales and EBIT for 2007: CHF 6,700 and 2,300, respectively. Referencing the 2007 consolidated statement of earnings found in the US 20-F filing, he retrieves the other post-EBIT items and converts them into Swiss franc amounts using the average rate for 2007, found in the Nestlé 2007 financial statements. Those amounts are then combined with the EBIT; the resulting pretax figure is taxed at the Nestlé effective rate.

The estimate is crude, because it implicitly assumes the four non-EBIT item amounts, pulled from the US financial statements, would be the same under IFRS. The analyst does note, however, that the revenues on an IFRS basis were nearly the same amount as on a US basis, when converted into Swiss francs at the average 2007 exchange rate. The Management Review mentioned that Alcon had 2007 revenues of CHF 6,700 million; converted into US dollars at an average rate of 1.196, the dollar equivalent revenues are $5,602 million compared to the $5,599 million presented in the Alcon 20-F. Apparently, no significant difference exists between the revenues on an IFRS basis or US GAAP basis. Applying the same exercise to the IFRS-based EBIT of CHF 2,300 million mentioned in the Management Review, the US dollar equivalent is $1,923 million, compared to the 20-F amount of $1,892 million. The analyst excludes the US GAAP charge for in-process R&D from the 20-F EBIT amount; in-process R&D is capitalized under IFRS. The difference in the EBIT figures is minor, only about 2 percent, giving the analyst some comfort that the two bases of accounting produce much the same results for a large part of the reported Alcon earnings.

After isolating the different earnings sources, the analyst prepares the table shown in Exhibit 30, which compares the different market values and price/earnings ratios.

EXHIBIT 29 Calculation of Nestlé Earnings without Alcon and L'Oreal as of 12/31/2007 (All Currency in Millions)

	In US $	In CHF
Calculation of Alcon estimated IFRS earnings:		
EBIT		2,300.0
Gain from foreign currency, net	$11.2	13.4
Interest income	69.3	82.9
Interest expense	(50.0)	(59.8)
Other, net	15.4	18.4
Total after-EBIT items		54.9
Earnings before income taxes		2,354.9

(continued)

EXHIBIT 29 (Continued)

	In US $	In CHF
Income taxes at 25.3% (Nestlé's effective tax rate)		595.8
Estimated Alcon contribution to net income		1,759.1
Minority interest percentage: (1–77.4%)		22.6%
Portion allocable to minority interest		397.6
Portion allocable to Nestlé group shareholders		1,361.5
Calculation of non-Alcon minority interest:		
Reported profit attributable to minority interests		733.0
Less: Alcon-related portion		(397.6)
Non-Alcon minority interest		335.4
Calculation of Nestlé stand-alone earnings:		
Nestlé consolidated earnings		11,382.0
Less: L'Oreal earnings		(1,302.0)
Less: Estimated Alcon contribution to net income		(1,759.1)
Nestlé stand-alone earnings		8,320.9
Non-Alcon minority interest		(335.4)
Nestlé stand-alone earnings to shareholders		7,985.5

From Alcon 20-F, Restated into CHF at Average 2007 CHF/USD Exchange Rate of 1.196

At the time of the analysis (early 2008), Nestlé's common stock traded at a price/earnings multiple of 18.4 based on its year-end stock price and trailing earnings: a discount of 17 percent to the price/earnings multiple of 22.2 for the S&P 500 at year end 2007. Yet once earnings and available market value of the non-Nestlé holdings are taken out of the price/earnings valuation, the shares of the "Nestlé-only" company are selling on an even more discounted basis: at 16.3 times earnings, the discount to the overall market's price/earnings multiple was a steeper 27 percent. The analyst believes the discount is inappropriate for a company with the demonstrated cash flow and low financial leverage of Nestlé; it also seems severe in terms of the company's returns on equity. The analyst concludes that Nestlé shares may be undervalued relative to the market.

At this time, the analyst believes that he has processed and analyzed the data sufficiently to pull together his findings and make his report to the portfolio manager.

EXHIBIT 30 Comparison of Decomposed Nestlé Earnings and Price/Earnings Ratios (CHF in Millions)

	Market Values	Earnings (Group Shareholder Level)	Respective P/Es:
Alcon	36,499	1,361.5	26.8
L'Oreal	28,961	1,302.0	22.2
Implied Nestlé-only	130,201	7,985.5	16.3
Actual	195,661	10,649.0	18.4

Recap in %:	Market Value (%)	Earnings (%)
L'Oreal	14.8	12.8
Alcon	18.7	12.2
Nestlé	66.5	75.0
	100.0	100.0

2.4. Phase 5: Develop and Communicate Conclusions and Recommendations (e.g., with an Analysis Report)

As a result of the analyses performed, the analyst has gathered sufficient evidence regarding many of the operational and financial characteristics of Nestlé and believes he is able to address the concerns initially expressed by the portfolio manager. Summary points he will cover in his report are divided into two classes: support for an investment in Nestlé shares and causes for concern.

2.4.1. Support for an Investment in Nestlé Shares

- Nestlé's earnings growth and returns have come from its own operations, acquisitions, and investments in associates. Nestlé has the financial stability to fund growth in its existing operations and carry out its growth-by-acquisition strategy. The company's current liquidity and cash flows are more than adequate for future operating and investment purposes. The company has low leverage, and the capital structure is capable of supporting future operations and strategic plans.
- The company's margins and ROE have been consistently positive and generally have exhibited an upward trend. The disaggregation of the effects of income from associates on margins and ROE indicates that the investment in associates has improved ROE and margins but has not been the primary driver of ROE or margins. Nestlé's performance appears sustainable.
- The operating cash flows have consistently exceeded the operating earnings. The ratio of operating cash to operating income has been fairly consistent, approximately 1.20, and gives confidence in the quality of the earnings. Measures comparing cash flows to reinvestment, debt, and debt-servicing capacity indicate strength in financial capacity.
- Nestlé has been increasing its size by acquisitions, evidenced by the growth of goodwill in its asset mix, and its cash return on assets has been increasing over the last three years. The current cash return on total assets is the highest in the five-year span. The acquisitions appear to be generating the required cash to justify the acquisitions.
- Decomposing the earnings into Nestlé-only, L'Oreal, and Alcon and considering the respective P/Es, it appears that the implied Nestlé-only portion is undervalued. The implied Nestlé-only portion has a far lower P/E than Alcon, L'Oreal, or the market. This should be considered an opportunity, given Nestlé's demonstrated cash flows and low financial leverage.

2.4.2. Causes for Concern

- The increases in balance-sheet-based and cash flow accrual ratios raised the possible issue of earnings management. However, this concern was alleviated by the comparison of operating cash flows with various measures as noted above.

- The company has some unusual priorities in the allocation of capital expenditures. The low-margined Waters business seems to be taking in an inordinate amount of the company's capital expenditures. This will be an area of constant monitoring if the company makes an investment in Nestlé common stock.
- The research department's monitoring cost, in terms of time and effort, for an investment in Nestlé common stock may require an analyst to follow two additional companies. While Nestlé is viewed by the market as just one company, the presence of Alcon and L'Oreal are important separable components that reflect considerably on the aggregate Nestlé performance. If an investment in Nestlé stock requires an analyst to follow two additional companies, there is less analytical capacity available for other investments to be evaluated or to be monitored on a continuing basis.

The analyst concludes that Nestlé represents a good investment opportunity and recommends it as such.

2.5. Phase 6: Follow-up

Because of the discounted value of Nestlé shares and the financial strength and stability of the company, the portfolio manager decides to commit the pension fund to a core investment holding of Nestlé common stock. The portfolio manager is somewhat troubled with the resource allocation within the company, and wants to continually re-evaluate the holding. Unproductive capital spending may be a trigger for eliminating the holding. The analyst is charged with updating his findings in the initial research report at each reporting period, with a particular emphasis on the company's progress and continued investment in the Waters segment; the quality measures expressed by the accruals tests; and the cash flow support of earnings, with particular regard to returns on assets.

3. CASE STUDY 2: OFF-BALANCE SHEET LEVERAGE FROM OPERATING LEASES

The quantitative analyst for a large equity mutual fund has become concerned that the fund's research analysts may not be looking for off-balance sheet financing as much as they should. While the fund's investment philosophy has always been rooted in understanding the fundamentals of an investee company, the accounting scandals of the early 2000s and the more recent credit crisis in the United States has convinced the quantitative analyst the fund should be focusing more efforts on determining the unseen financial leverage that companies may be employing. Due to the nature of the fund's investments in service industries, there has been little concern with unseen financial leverage.

The fund's investment philosophy has always led them to invest in service industries, with little operating leverage or inventory risk, and to avoid industries with high financial and operating leverage, such as the airline and retail industries. The companies in the latter industries are capital-intensive and typically have highly leveraged balance sheets, and also employ off-balance sheet leverage in the form of operating leases. Investors in those industries, as a result, are inclined to look for off-balance sheet financing. However, because the fund invests in service industries, off-balance sheet financing is assumed to be a nonissue. The quantitative analyst wonders if this is in fact true.

3.1. Phase 1: Define a Purpose for the Analysis

As a result of this concern, the quantitative analyst decides to look for companies in the fund's holdings where off-balance sheet financing may be an issue. He decides to focus on identifying companies with potentially unrecorded capital leases. The objective is not to come up with a point estimate of unrecorded leases or other sources of off-balance sheet financing, but rather to discover any companies in the fund's portfolio that might have hidden leverage and, if in fact such leverage exists, to analyze the impact of the leverage.

3.2. Phase 2: Collect Input Data

To identify companies with potentially unrecorded leases, the quantitative analyst filters the fund's holdings using a financial database. He compares the ratio of 7.4 times the current rent (operating lease) expense to total assets with a threshold percentage of 5 percent. 7.4 is the present value factor on a ten-year constant payment discounted at 6 percent; multiplying 7.4 times the rental expense generates an estimate of the incremental assets and debt under a ten-year capital lease discounted at 6 percent. While there is no way of knowing the actual terms of all the leases held by companies in the fund's holdings, the analyst assumes a ten-year lease is representative of current-lease terms.

The ratio of the estimated incremental assets and liabilities to total assets is compared to 5 percent. The quantitative analyst is only concerned with major understatements of assets and liabilities due to off-balance sheet treatment of operating leases and selects a 5 percent understatement threshold for further investigation of portfolio companies. If the ratio of "hidden" assets to total assets exceeds 5 percent for any of the companies in the fund's holdings, that company's information will be subjected to further analysis to see if in fact there are significant assets and liabilities that could be justifiably capitalized on the balance sheet.

3.3. Phase 3: Process Data/Phase 4: Analyze/Interpret the Processed Data

The screening process, shown in Exhibit 31, identifies a company that surprises the quantitative analyst: French advertising company Publicis Groupe (Euronext Paris: PUB).

EXHIBIT 31 Publicis Groupe: Operating Lease Expense Capitalized at 7.4 Times

2007 lease expense	€189.0
Lease multiplier	7.40
Estimated incremental assets and debt	€ 1,398.6
2007 total assets	€12,244.0
Estimated incremental assets to total reported assets	11%

The quantitative analyst is puzzled: Not only does the company lack heavy machinery or retail outlets to finance invisibly through operating leases, but even for a service company it is highly people-intensive. According to the Publicis Groupe annual report, there were 43,808 employees at the end of 2007; it has large office space needs to accommodate those employees. Publicis Groupe does business in virtually every country in the world and owns few offices, primarily leasing.

At 11 percent of total reported assets, the situation demands closer investigation by the analyst responsible for covering Publicis Groupe (the PG analyst). The PG analyst consults the

2007 annual report and finds that Publicis Groupe has significant long-term lease obligations through 2012, with another €455 million beyond that. He assumes that the post-2012 lease payments will be the same amount as in 2012, extinguishing the entire amount of the €455 million by 2016. From a scan of the company's debt schedule, he sees that the company has issued a Eurobond due in 2012 with an effective interest rate of 4.3 percent. He then assumes that the lease borrowing rate that Publicis Groupe would bear on the operating leases if they were capitalized might approximate 4.5 percent. From the payment schedule, he constructs the estimated present value of discounted lease payments shown in Exhibit 32.

EXHIBIT 32 Publicis Groupe: Operating Lease Payments and Present Value (in Millions)

Operating Lease Payments	At 12/31/2007	PMT PV
2008	€215	€206
2009	186	170
2010	160	140
2011	141	118
2012	136	109
2013	136	104
2014	136	100
2015	136	96
2016	47	32
	€1,293	€1,075

With the refined estimate of incremental asset basis and debt, the PG analyst revises balance sheet amounts and ratios with the new information on a pro forma basis, as shown in Exhibit 33.

Regardless of the leverage measure under scrutiny, Publicis Groupe becomes significantly more leveraged in the capitalization of the operating lease pro forma scenario than under the present operating lease reporting. In Exhibit 34, the analyst examines the impact on interest coverage if the operating leases are capitalized.

While Publicis Groupe still has ample interest coverage, the ratio presents a far different picture of financial strength than the as-reported figures. The PG analyst consults with the mutual fund's internal strategist, who is forecasting an economic slowdown. The PG analyst concludes that this will reduce advertising spending, which will adversely affect Publicis Groupe.

EXHIBIT 33 Publicis Groupe: 2007 Leverage Ratios after Capitalizing Operating Leases

	As Reported	Pro Forma
Financial leverage:		
Total assets	€12,244	
Total assets including estimated incremental assets based on capitalizing operating leases		€13,319
Total equity	€2,225	€2,225
Financial leverage	**5.50**	**5.99**

EXHIBIT 33 (Continued)

	As Reported	Pro Forma
Debt to equity:		
Estimated incremental liability based on capitalizing operating leases	—	€1,075
Long-term financial debt	1,293	1,293
Total long-term financial debt	€1,293	€2,368
Long-term financial debt to equity:	**58.1%**	**106.4%**
Debt to long-term capital:		
Long-term financial debt	€1,293	€2,368
Total equity	2,225	2,225
Long-term capital (L-T financial debt + equity)	€3,518	€4,593
Long-term financial debt to long-term capital	**36.8%**	**51.6%**

EXHIBIT 34 Publicis Groupe: 2007 Interest Coverage Ratio without and with Capitalizing Operating Leases

	As Reported	Pro Forma
Earnings before interest and taxes	€746	€746
Average rent expense (2007 and 2006)		191
Estimated depreciation expense on newly recognized assets (€1,075.3M/9 years, the estimated lease term)		(119)
Revised EBIT		**€818**
Average interest rate on debt		4.5%
Interest expense as reported	€73.0	€73.0
Assumed interest expense on leases (4.5% × 1075.3)		48.4
Adjusted interest expense		**€121.4**
Interest coverage	**10.2**	**6.7**

3.4. Phase 5: Develop and Communicate Conclusions and Recommendations (e.g., with an Analysis Report)

The financial strength of the company, as evidenced by the debt and interest coverage ratios, does not appear as great when the operating leases are capitalized. Further, the PG analyst is concerned with the possible market response to a change in accounting for operating leases. In the most recent update of their Memorandum of Understanding for achieving accounting standard convergence, completed 11 September 2008, the FASB and the IASB agreed to develop a new lease standard by 2011. One likely reform is that all leases, including those currently defined as operating leases, might be required to be capitalized.

If Publicis Groupe was required to capitalize its lease obligations, then the balance sheet of Publicis Groupe would show far less available capacity for adding debt than currently. The ratios would deteriorate as shown by the pro forma information. While it is possible that

bankers, bond investors, and shareholders make such adjustments in their lending decisions and in valuing the equity, the PG analyst is not convinced of the market's efficiency and is concerned with a decline in value when the hidden leverage is shown on the balance sheet. Given the significant hidden leverage within Publicis Groupe and a negative macroeconomic outlook, the PG analyst recommends that the fund decrease its holding in Publicis Groupe.

3.5. Phase 6: Follow-up

The quantitative analyst and PG analyst will continue to observe the value of Publicis Groupe to get feedback on the decision. Accounting pronouncements and changes will be monitored for potential impact on financial statements. They are both watching for and ready to assess the impact of a change in the accounting treatment of operating leases, should it occur, on the value of companies with significant hidden leverage.

4. CASE STUDY 3: ANTICIPATING EFFECTS OF CHANGES IN ACCOUNTING STANDARDS

The quantitative analyst of the large equity mutual fund, consistent with his mandate to monitor accounting pronouncements and changes, decides to look further at the technical plans on the websites of the International Accounting Standards Board and the Financial Accounting Standards Board.[3] In looking at the websites, he becomes aware of some very near-term efforts at the FASB in the United States to change the accounting for securitizations.

Currently under Statement 140, a company can remove financial assets from its balance sheet by placing them into a qualified special purpose entity, which then issues securities representing interests in those assets. If carried out in accordance with Statement 140 accounting, this transaction results in the recognition of a sale of the assets and their elimination from the balance sheet. The qualified special purpose entity, and the securities issued by it, does not appear on the seller's balance sheet. The combination of asset removal and non-recognition of liabilities may have a powerfully beneficial effect on financial leverage presented in the balance sheet.

The FASB has considered eliminating the concept of a "qualified" special purpose entity from the securitization accounting contained in Statement 140, and requiring consideration of such vehicles under the accounting requirements of FASB Interpretation 46, Revised (FIN 46(R)). The revised accounting standards would make a sale treatment of financial instruments—such as mortgage loans, accounts receivable, or credit card receivables—through a securitization much less likely. Companies could still securitize financial assets, but they would not be as easily removed from the balance sheet as under Statement 140. Liabilities issued in connection with the securitizations would also be likely to be shown on the company's balance sheet.

If the FASB's plans come to pass, then the United States accounting for securitizations would be closer to the accounting contained in International Accounting Standard 39, Financial Instruments: Recognition and Measurement. If the proposed accounting changes are to be applied to *existing* securitization transactions, it will probably cause companies to reconsolidate assets onto their balance sheets, along with associated liabilities, that had previously been accounted for as being sold. That could cause drastic changes in the leverage of companies that had been securitizing financial assets.

[3] www.iasb.org/Current+Projects/IASB+Projects/IASB+Work+Plan.htm and www.fasb.org/project/, respectively.

Knowing that the mutual fund has holdings in several financial institutions that frequently securitize assets, the quantitative analyst contacted the financial analyst responsible for the financial institutions and advised him to look into the potential changes.

4.1. Phase 1: Define a Purpose for the Analysis

The financial analyst's objective is to identify financial institutions with securitizations that might be susceptible to the potential new accounting treatment, to analyze the effect this would have on reported leverage, and to consider the consequences of the reported leverage.

The financial analyst realized that the mutual fund's large holding in Discover Financial Services (NYSE: DFS) could be at risk from the possible accounting changes. She knows that the SEC requires companies to disclose the anticipated effects of new accounting pronouncements in the Management's Discussion and Analysis (MD&A) section of the 10-K filing. However, this disclosure does not occur until after a standard had been issued, and occurs with varying degrees of diligence by companies affected by a particular accounting pronouncement. Rather than waiting for the FASB to issue the pronouncement, and perhaps finding adequate disclosure of the effects of it in the 2008 10-K issued in early 2009, she decides to use existing disclosures to estimate the impact of the FASB's intended changes in securitization accounting. She considers it far more important to estimate the direction of changes in balance sheet leverage now, rather than wait for an exact amount.

4.2. Phase 2: Collect Input Data

She obtains the current 2008 10-Q filings and the 2007 10-K filing for Discover Financial Services (Discover Financial), and notices that the MD&A section and the segment information footnote presents certain financial data on a "managed basis." On this basis, the information is presented as if Discover Financial's sale treatment of credit card receivables had never occurred; instead the financial data is shown as if the securitization had been treated as a secured borrowing, with the assets remaining on the balance sheet and also including the securitization liabilities on the balance sheet.

4.3. Phase 3: Process Data/Phase 4: Analyze/Interpret the Processed Data

Using the balance sheets and the "managed basis" data related to securitization adjustments, she revises the reported balance sheet as of year end 30 November 2007 to a managed basis as shown in Exhibit 35.

EXHIBIT 35 Discover Financial Services: Removing Effects of "Sale" Treatment Securitizations ($ in Thousands)

Assets	Reported	Securitization Adjustments	Managed Basis
Cash and cash equivalents	$8,787,095		$8,787,095
Available-for-sale securities	420,837		420,837
Held-to-maturity securities	104,602		104,602

(continued)

EXHIBIT 35 (Continued)

Assets	Reported	Securitization Adjustments	Managed Basis
Loans receivable:			
Loan portfolio:			
Credit card	23,468,965	$28,599,309	52,068,274
Commercial loans	234,136		234,136
Other consumer loans	251,194		251,194
Total loan portfolio	23,954,295		52,553,604
Total loan receivables	23,954,295	$28,599,309	52,553,604
Allowance for loan losses	(916,844)		(916,844)
Net loan receivables	23,037,451		51,636,760
Accrued interest receivable	139,414		139,414
Amounts due from asset securitization	3,093,472		3,093,472
Premises and equipment, net	658,492		658,492
Goodwill	255,421		255,421
Intangible assets, net	98,043		98,043
Other assets	781,278		781,278
Assets of discontinued operations	0		0
Total assets	$37,376,105	$28,599,309	$65,975,414
Liabilities and Stockholders' Equity			
Total liabilities	$31,776,683	$28,599,309	$60,375,992
Total stockholders' equity	5,599,422		5,599,422
Total liabilities and equity	$37,376,105	$28,599,309	$65,975,414

The managed basis information indicates that loan receivables and total assets have increased by $28.6 billion; the analyst assumes that the increase relates solely to the credit card loan portfolio. No additional information is provided that describes how the short-term and long-term liabilities would be affected by the inclusion of the securities resulting from the application of the managed basis. Therefore, the analyst adjusts for the impact under the heading of "total liabilities," implicitly assuming that the liabilities recognized would be the same as the assets recognized.

The adjustments have a significant impact on the balance sheet. Total assets increase 77 percent; total liabilities increase 90 percent. She then applies the same adjustment to the balance sheets as of 29 February 2008 and 31 May 2008 using information from the respective MD&A sections of the filings, and produces the schedule shown in Exhibit 36. The presentation shows 30 November 2007 on the left and 31 May 2008 on the right.

On an as-reported basis, the company appears to have become less leveraged over the last six months. Financial leverage (total assets divided by total equity) was 6.67 at 30 November 2007 and decreased to 5.85 by 31 May 2008. Discover Financial's application of Statement 140 treated its securitizations of receivables as if they were asset sales instead of secured borrowings. This has the effect of decreasing overall leverage. When calculating the financial leverage ratio on a pro forma managed basis—as if the securitized receivables were still the assets of the

EXHIBIT 36 Discover Financial Services: Revised Balance Sheets and Leverage Ratios ($ in Thousands)

	30 Nov 2007		29 Feb 2008		31 May 2008	
Discover Financial Assets	Reported	Managed Basis	Reported	Managed Basis	Reported	Managed Basis
Cash and cash equivalents	$8,787,095	$8,787,095	$8,286,290	$8,286,290	$8,765,384	$8,765,384
Available-for-sale securities	420,837	420,837	792,979	792,979	958,784	958,784
Held-to-maturity securities	104,602	104,602	99,527	99,527	96,371	96,371
Loans receivable:						
Loans held for sale	0	0	349,072	349,072	714,632	714,632
Loan portfolio:						
Credit card	23,468,965	52,068,274	19,895,527	46,353,256	18,683,242	46,022,670
Commercial loans	234,136	234,136	312,211	312,211	387,540	387,540
Other consumer loans	251,194	251,194	485,871	485,871	716,649	716,649
Total loan portfolio	23,954,295	52,553,604	20,693,609	47,151,338	19,787,431	47,126,859
Total loan receivables	23,954,295	52,553,604	21,042,681	47,500,410	20,502,063	47,841,491
Allowance for loan losses	(916,844)	(916,844)	(860,378)	(860,378)	(846,775)	(846,775)
Net loan receivables	23,037,451	51,636,760	20,182,303	46,640,032	19,655,288	46,994,716
Accrued interest receivable	139,414	139,414	122,765	122,765	131,388	131,388
Amounts due from asset securitization	3,093,472	3,093,472	2,935,494	4,192,534	2,705,638	2,705,638
Premises and equipment, net	658,492	658,492	567,475	567,475	556,030	556,030
Goodwill	255,421	255,421	255,421	255,421	255,421	255,421
Intangible assets, net	98,043	98,043	57,900	57,900	56,030	56,030
Other assets	781,278	781,278	922,578	922,578	839,911	839,911
Assets of discontinued operations	0	0	3,105,327	3,105,327	213,297	213,297
Total Assets	$37,376,105	$65,975,414	$37,328,059	$65,042,828	$34,233,542	$61,572,970
Liabilities and stockholders' equity						
Total liabilities	$31,776,683	$60,375,992	$31,673,718	$59,388,487	$28,383,851	$55,723,279
Total stockholders' equity	5,599,422	5,599,422	5,654,341	5,654,341	5,849,691	5,849,691
Total liabilities and equity	$37,376,105	$65,975,414	$37,328,059	$65,042,828	$34,233,542	$61,572,970
Financial leverage	6.67	11.78	6.60	11.50	5.85	10.53
Incremental leverage	5.11		4.90		4.67	
Understatement of leverage	–43%		–43%		–44%	
Liabilities as percent of capital	85.0%	91.5%	84.9%	91.3%	82.9%	90.5%

company—Discover Financial shows higher leverage but similar improvement over the same period. On a managed basis, the financial leverage was 11.78 at 30 November 2007 and decreased to 10.53 by 31 May 2008. The Statement 140 sale treatment understated leverage by 43 percent (11/30/07), 43 percent (2/29/08), and 44 percent (5/31/08) in the three respective periods.

Another measure of financial leverage, liabilities as a percentage of total assets, shows the as-reported liabilities would be 82.9 percent of total capital at 31 May 2008. That proportion is 90.5 percent in a calculation based on managed basis figures. While financial leverage on either basis (as-reported or managed) shows a lessening of leverage over the six-month period, that decline is less on a managed basis. Further, the absolute level of leverage would be significantly increased in a standard change like the one contemplated by the FASB.

The financial analyst then looks to the MD&A for information on the effects the managed basis would have on the income statement. While net interest income, provision for loan losses, and other income would change, the net income would be unaffected. It appears that the balance sheet impacts are those of concern.

4.4. Phase 5: Develop and Communicate Conclusions and Recommendations (e.g., with an Analysis Report)

The balance sheet effects concern the financial analyst on several levels. First, she is concerned that the current accounting treatment for securitizations masks the company's true leverage. Second, she is concerned that expected changes by standard setters will force Discover Financial to present a balance sheet that is more highly leveraged than investors have come to expect. That may raise concerns among other market participants about the company's financial standing, possibly weakening the company's valuation. Third, she is concerned that the company may try to offset the effects of the anticipated accounting change by raising equity, which would dilute the company's ownership and also possibly weaken the company's valuation.

She believes it is highly probable that the FASB will act on the project to change Statement 140 accounting and that it can only portend negative effects for the company's holding in Discover Financial Services. She recommends that the company reduce its holdings in Discover Financial Services.

4.5. Phase 6: Follow-up

Specifically, the quantitative analyst and financial analyst will continue to observe the value of Discover Financial Services to get feedback on the decision. Generally, accounting pronouncements and changes will be monitored for potential impact on financial statements and on company valuation.

5. SUMMARY

The three case studies demonstrate the use of financial analysis in decision making. Each case is set in a different type of industry: manufacturing, service, and financial service. The different focus, purpose, and context for each analysis result in different techniques and tools being applied to the analysis. However, each case demonstrates the use of a common financial statement analysis framework. In each case, an economic decision is arrived at; this is consistent with the primary reason for performing financial analysis: to facilitate an economic decision.

PROBLEMS

The following information relates to Questions 1–8

Sergei Leenid, CFA, is a long-only fixed income portfolio manager for the Parliament Funds. He has developed a quantitative model, based on financial statement data, to predict changes in the credit ratings assigned to corporate bond issues. Before applying the model, Leenid first performs a screening process to exclude bonds that fail to meet certain criteria relative to their credit rating. Existing holdings that fail to pass the initial screen are individually reviewed for potential disposition. Bonds that pass the screening process are evaluated using the quantitative model to identify potential rating changes.

Leenid is concerned that a pending change in accounting rules could affect the results of the initial screening process. One current screen excludes bonds when the financial leverage ratio (equity multiplier) exceeds a given level and/or the interest coverage ratio falls below a given level for a given bond rating. For example, any "A" rated bond of a company with a financial leverage ratio exceeding 2.0 or an interest coverage ratio below 6.0 would fail the initial screening. The failing bonds are eliminated from further analysis using the quantitative model.

The new accounting rule would require substantially all leases to be capitalized on a company's balance sheets. To test whether the change in accounting rules will affect the output of the screening process, Leenid collects a random sample of "A" rated bonds issued by companies in the retail industry, which he believes will be among the industries most affected by the change.

Two of the companies, Silk Road Stores and Colorful Concepts, recently issued bonds with similar terms and interest rates. Leenid decides to thoroughly analyze the potential effects of the change on these two companies and begins by gathering information from their most recent annual financial statements (Exhibit 1).

After examining lease disclosures, Leenid estimates the average lease term for each company at 8 years with a fairly consistent lease expense over that time. He believes the leases should be capitalized using 6.5 percent, the rate at which both companies recently issued bonds.

EXHIBIT 1 Selected Financial Data for Silk Road Stores and Colorful Concepts

	Silk Road	Colorful Concepts
Revenue	3,945	7,049
EBIT	318	865
Interest expense	21	35
Income taxes	121	302
Net income	176	528
Average total assets	2,075	3,844
Average total equity	1,156	2,562
Lease expense	213	406

While examining the balance sheet for Colorful Concepts, Leenid also discovers that the company has a 204 ending asset balance (188 beginning) for investments in associates, primarily due to its 20 percent interest in the equity of Exotic Imports. Exotic Imports is a

specialty retail chain and in the most recent year reported 1,230 in sales, 105 in net income, and had average total assets of 620.

1. If the accounting rules were to change, Silk Road's assets would increase by approximately:
   A. 1,297.
   B. 1,576.
   C. 1,704.
2. If the accounting rules were to change, Silk Road's interest coverage ratio would be *closest* to:
   A. 3.03.
   B. 3.50.
   C. 5.04.
3. If the accounting rules were to change, Silk Road's financial leverage ratio would be *closest* to:
   A. 1.37.
   B. 1.79.
   C. 2.92.
4. Will the change in accounting rules impact the result of the initial screening process for Colorful Concepts?
   A. It passes the screens now, but will not pass if the accounting rules change.
   B. It passes the screens now and will continue to pass if the accounting rules change.
   C. It fails the screens now and will continue to fail if the accounting rules change.
5. Based on Leenid's analysis of the results of the initial screening, relative to Colorful Concepts the bond rating of Silk Road should be:
   A. lower.
   B. higher.
   C. the same.
6. Ignoring the potential impact of any accounting change and excluding the investment in associates, the net profit margin for Colorful Concepts would be *closest* to:
   A. 6.0%.
   B. 7.2%.
   C. 7.5%.
7. Ignoring the impact of any accounting change, the asset turnover ratio for Colorful Concepts excluding the investments in associates would:
   A. stay the same.
   B. increase by 0.10.
   C. decrease by 0.10.
8. Excluding the investments in associates would result in the interest coverage ratio for Colorful Concepts being:
   A. lower.
   B. higher.
   C. the same.

The following information relates to Questions 9–15

Quentin Abay, CFA, is an analyst for a private equity firm interested in purchasing Bickchip Enterprises, a conglomerate. His first task is to determine the trends in ROE and the main drivers of the trends using DuPont analysis. To do so he gathers the data in Exhibit 1.

EXHIBIT 1 Selected Financial Data for Bickchip Enterprises (€ Thousands)

	2009	2008	2007
Revenue	72,448	66,487	55,781
Earnings before interest and tax	6,270	4,710	3,609
Earnings before tax	5,101	4,114	3,168
Net income	4,038	3,345	2,576
Asset turnover	0.79	0.76	0.68
Assets/Equity	3.09	3.38	3.43

After conducting the DuPont analysis, Abay believes that his firm could increase the ROE without operational changes. Further, Abay thinks that ROE could improve if the company divested segments that were generating the lowest returns on capital employed (total assets less non-interest-bearing liabilities). Segment EBIT margins in 2009 were 11 percent for Automation Equipment, 5 percent for Power and Industrial, and 8 percent for Medical Equipment. Other relevant segment information is presented in Exhibit 2.

EXHIBIT 2 Segment Data for Bickchip Enterprises (€ Thousands)

	Capital Employed			Capital Expenditures (Excluding Acquisitions)		
Operating Segments	2009	2008	2007	2009	2008	2007
Automation Equipment	10,705	6,384	5,647	700	743	616
Power and Industrial	15,805	13,195	12,100	900	849	634
Medical Equipment	22,870	22,985	22,587	908	824	749
	49,380	42,564	40,334	2,508	2,416	1,999

Abay is also concerned with earnings quality, so he intends to calculate Bickchip's cash-flow-based accruals ratio and the ratio of operating cash flow before interest and taxes to operating income. To do so, he prepares the information in Exhibit 3.

EXHIBIT 3 Earnings Quality Data for Bickchip Enterprises (€ Thousands)

	2009	2008	2007
Net income	4,038	3,345	2,576
Net cash flow provided by (used in) operating activity[a]	9,822	5,003	3,198
Net cash flow provided by (used in) investing activity	(10,068)	(4,315)	(5,052)

(continued)

EXHIBIT 3 (Continued)

	2009	2008	2007
Net cash flow provided by (used in) financing activity[b]	(5,792)	1,540	(2,241)
Average net operating assets	43,192	45,373	40,421
[a] includes cash paid for taxes of:	(1,930)	(1,191)	(1,093)
[b] includes cash paid for interest of:	(1,169)	(596)	(441)

9. Over the three-year period presented in Exhibit 1, Bickchip's return on equity is *best* described as:
   A. stable.
   B. trending lower.
   C. trending higher.

10. Based on the DuPont analysis, Abay's belief regarding ROE is *most likely* based on:
    A. leverage.
    B. profit margins.
    C. asset turnover.

11. Based on Abay's criteria, the business segment *best* suited for divestiture is:
    A. medical equipment.
    B. power and industrial.
    C. automation equipment.

12. Bickchip's cash-flow-based accruals ratio in 2009 is *closest* to:
    A. 9.9%.
    B. 13.4%.
    C. 23.3%.

13. The cash-flow-based accruals ratios from 2007 to 2009 indicate:
    A. improving earnings quality.
    B. deteriorating earnings quality.
    C. no change in earnings quality.

14. The ratio of operating cash flow before interest and taxes to operating income for Bickchip for 2009 is *closest* to:
    A. 1.6.
    B. 1.9.
    C. 2.1.

15. Based on the ratios for operating cash flow before interest and taxes to operating income, Abay should conclude that:
    A. Bickchip's earnings are backed by cash flow.
    B. Bickchip's earnings are not backed by cash flow.
    C. Abay can draw no conclusion due to the changes in the ratios over time.

The following information relates to Questions 16–21

Michael Wetstone is an equity analyst covering the software industry for a public pension fund. Prior to comparing the financial results of Software Services Inc. and PDQ GmbH, Wetstone discovers the need to make adjustments to their respective financial statements. The

issues preventing comparability, using the financial statements as reported, are the sale of receivables and the impact of minority interests.

Software Services sold $267.5 million of finance receivables to a special purpose entity. PDQ does not securitize finance receivables. An abbreviated balance sheet for Software Services is presented in Exhibit 1.

EXHIBIT 1 Abbreviated Balance Sheet for Software Services ($ 000)

Year Ending:	31 December 2009
Total current assets	1,412,900
Total assets	3,610,600
Total current liabilities	1,276,300
Total liabilities	2,634,100
Total equity	976,500

A significant portion of PDQ's net income is explained by its 20 percent minority interest in Astana Systems. Wetstone collects certain data (Exhibit 2) related to both PDQ and Astana in order to estimate the financials of PDQ on a stand-alone basis.

EXHIBIT 2 Selected Financial Data Related to PDQ and Astana Systems

	PDQ (€ in 000)	Astana ($ in 000)
Earnings before tax (2009)	41,730	15,300
Income taxes (2009)	13,562	5,355
Net income (2009)	28,168	9,945
Market capitalization (recent)	563,355	298,350
Average $/€ exchange rate in 2009	1.55	
Current $/€ exchange rate	1.62	

16. Compared to holding securitized finance receivables on the balance sheet, treating them as sold had the effect of reducing Software Services' reported financial leverage by:
    A. 6.8%.
    B. 7.4%.
    C. 9.2%.
17. Had the securitized finance receivables been held on the balance sheet, Software Services' ratio of liabilities to total capital would have been *closest* to:
    A. 73.0%.
    B. 74.8%.
    C. 80.4%.
18. How much of PDQ's value can be explained by its equity stake in Astana?
    A. 6.5%.
    B. 10.6%.
    C. 20.0%.

19. On a "solo" basis, PDQ's P/E ratio is *closest* to:
    A. 19.6.
    B. 21.0.
    C. 24.5.

20. The adjusted financial statements were created during which phase of the financial analysis process?
    A. Data collection.
    B. Data processing.
    C. Data interpretation.

21. The estimate of PDQ's solo value is crude because of:
    A. the potential differences in accounting standards used by PDQ and Astana.
    B. the differing risk characteristics of PDQ and Astana.
    C. differences in liquidity and market efficiency where PDQ and Astana trade.

GLOSSARY

Accelerated methods Depreciation methods that allocate a relatively large proportion of the cost of an asset to the early years of the asset's useful life.

Account With the accounting systems, a formal record of increases and decreases in a specific asset, liability, component of owners' equity, revenue, or expense.

Accounting profit Income as reported on the income statement, in accordance with prevailing accounting standards, before the provisions for income tax expense. Also called *income before taxes* or *pretax income*.

Accounts payable Amounts that a business owes to its vendors for goods and services that were purchased from them but which have not yet been paid.

Accounts receivable Amounts customers owe the company for products that have been sold as well as amounts that may be due from suppliers (such as for returns of merchandise). Also called *commercial receivables* or *trade receivables*.

Accrued expenses Liabilities related to expenses that have been incurred but not yet paid as of the end of an accounting period—an example of an accrued expense is rent that has been incurred but not yet paid, resulting in a liability "rent payable." Also called *accrued liabilities*.

Accrued revenue Revenue that has been earned but not yet billed to customers as of the end of an accounting period.

Accumulated benefit obligation (from Chapter 14 page 701)

Accumulated depreciation An offset to property, plant, and equipment (PPE) reflecting the amount of the cost of PPE that has been allocated to current and previous accounting periods.

Acquisition method (from Chapter 9 page 428)

Activity ratios Ratios that measure how efficiently a company performs day-to-day tasks, such as the collection of receivables and management of inventory. Also called *asset utilization ratios* or *operating efficiency ratios*.

Allowance for bad debts An offset to accounts receivable for the amount of accounts receivable that are estimated to be uncollectible.

Amortisation The process of allocating the cost of intangible long-term assets having a finite useful life to accounting periods; the allocation of the amount of a bond premium or discount to the periods remaining until bond maturity.

Amortised cost The historical cost (initially recognised cost) of an asset, adjusted for amortisation and impairment.

Antidilutive With reference to a transaction or a security, one that would increase earnings per share (EPS) or result in EPS higher than the company's basic EPS—antidilutive securities are not included in the calculation of diluted EPS.

Assets Resources controlled by an enterprise as a result of past events and from which future economic benefits to the enterprise are expected to flow.

Asset utilization ratios Ratios that measure how efficiently a company performs day-to-day tasks, such as the collection of receivables and management of inventory.

Available-for-sale Debt and equity securities not classified as either held-to-maturity or held-for-trading securities. The investor is willing to sell but not actively planning to sell. In general, available-for-sale securities are reported at fair value on the balance sheet.

Available-for-sale investments Debt and equity securities not classified as either held-to-maturity or fair value through profit or loss securities. The investor is willing to sell but not actively planning to sell. In general, available-for-sale securities are reported at fair value on the balance sheet.

Back-testing With reference to portfolio strategies, the application of a strategy's portfolio selection rules to historical data to assess what would have been the strategy's historical performance.

Balance sheet The financial statement that presents an entity's current financial position by disclosing resources the entity controls (its assets) and the claims on those resources (its liabilities and equity claims), as of a particular point in time (the date of the balance sheet). Also called *statement of financial position* or *statement of financial condition*.

Balance sheet ratios Financial ratios involving balance sheet items only.

Basic EPS Net earnings available to common shareholders (i.e., net income minus preferred dividends) divided by the weighted average number of common shares outstanding.

Bottom-up analysis With reference to investment selection processes, an approach that involves selection from all securities within a specified investment universe, i.e., without prior narrowing of the universe on the basis of macroeconomic or overall market considerations.

Capital lease See *finance lease*.

Capital structure The mix of debt and equity that a company uses to finance its business; a company's specific mixture of long-term financing.

Carrying amount The amount at which an asset or liability is valued according to accounting principles.

Cash In accounting contexts, cash on hand (e.g., petty cash and cash not yet deposited to the bank) and demand deposits held in banks and similar accounts that can be used in payment of obligations.

Cash conversion cycle A financial metric that measures the length of time required for a company to convert cash invested in its operations to cash received as a result of its operations; equal to days of inventory on hand + days of sales outstanding – number of days of payables. Also called *net operating cycle*.

Cash equivalents Very liquid short-term investments, usually maturing in 90 days or less.

Cash flow from operations The net amount of cash provided from operating activities.

Cash flow from operating activities The net amount of cash provided from operating activities.

Chart of accounts A list of accounts used in an entity's accounting system.

Classified balance sheet A balance sheet organized so as to group together the various assets and liabilities into subcategories (e.g., current and noncurrent).

Commercial receivables Amounts customers owe the company for products that have been sold as well as amounts that may be due from suppliers (such as for returns of merchandise). Also called *trade receivables* or *accounts receivable*.

Common shares A type of security that represent an ownership interest in a company.

Common-size analysis The restatement of financial statement items using a common denominator or reference item that allows one to identify trends and major differences; an example is an income statement in which all items are expressed as a percent of revenue.

Common stock See *common shares*.

Completed contract A method of revenue recognition in which the company does not recognize any revenue until the contract is completed; used particularly in long-term construction contracts.

Comprehensive income The change in equity of a business enterprise during a period from nonowner sources; includes all changes in equity during a period except those resulting from investments by owners and distributions to owners; comprehensive income equals net income plus other comprehensive income.

Contra account An account that offsets another account.

Cost of goods sold For a given period, equal to beginning inventory minus ending inventory plus the cost of goods acquired or produced during the period.

Cost recovery method A method of revenue recognition in which the seller does not report any profit until the cash amounts paid by the buyer—including principal and interest on any financing from the seller—are greater than all the seller's costs for the merchandise sold.

Coupon rate The interest rate promised in a contract; this is the rate used to calculate the periodic interest payments.

Credit With respect to double-entry accounting, a credit records increases in liability, owners' equity, and revenue accounts or decreases in asset accounts; with respect to borrowing, the willingness and ability of the borrower to make promised payments on the borrowing.

Credit analysis The evaluation of credit risk; the evaluation of the creditworthiness of a borrower or counterparty.

Credit risk The risk of loss caused by a counterparty's or debtor's failure to make a promised payment. Also called *default risk*.

Cross-sectional analysis Analysis that involves comparisons across individuals in a group over a given time period or at a given point in time.

Current assets Assets that are expected to be consumed or converted into cash in the near future, typically one year or less. Also called *liquid assets*.

Current cost With reference to assets, the amount of cash or cash equivalents that would have to be paid to buy the same or an equivalent asset today; with reference to liabilities, the undiscounted amount of cash or cash equivalents that would be required to settle the obligation today.

Current exchange rate For accounting purposes, the spot exchange rate on the balance sheet date.

Current liabilities Short-term obligations, such as accounts payable, wages payable, or accrued liabilities, that are expected to be settled in the near future, typically one year or less.

Current rate method Approach to translating foreign currency financial statements for consolidation in which all assets and liabilities are translated at the current exchange rate. The current rate method is the prevalent method of translation.

Days of inventory on hand (from Chapter 8, page 394)

Days of sales outstanding (from Chapter 7, page 314)

Dealing securities Securities held by banks or other financial intermediaries for trading purposes.

Debit With respect to double-entry accounting, a debit records increases of asset and expense accounts or decreases in liability and owners' equity accounts.

Debt-to-assets ratio A solvency ratio calculated as total debt divided by total assets.

Debt-to-capital ratio A solvency ratio calculated as total debt divided by total debt plus total shareholders' equity.

Debt-to-equity ratio A solvency ratio calculated as total debt divided by total shareholders' equity.

Defensive interval ratio A liquidity ratio that estimates the number of days that an entity could meet cash needs from liquid assets; calculated as (cash + short-term marketable investments + receivables) divided by daily cash expenditures.

Deferred income A liability account for money that has been collected for goods or services that have not yet been delivered; payment received in advance of providing a good or service.

Deferred revenue A liability account for money that has been collected for goods or services that have not yet been delivered; payment received in advance of providing a good or service.

Deferred tax assets A balance sheet asset that arises when an excess amount is paid for income taxes relative to accounting profit. The taxable income is higher than accounting profit and income tax payable exceeds tax expense. The company expects to recover the difference during the course of future operations when tax expense exceeds income tax payable.

Deferred tax liabilities A balance sheet liability that arises when a deficit amount is paid for income taxes relative to accounting profit. The taxable income is less than the accounting profit and income tax payable is less than tax expense. The company expects to eliminate the liability over the course of future operations when income tax payable exceeds tax expense.

Defined-benefit plan A pension plan that specifies the plan sponsor's obligations in terms of the benefit to plan participants.

Defined-contribution plan A pension plan that specifies the sponsor's obligations in terms of contributions to the pension fund rather than benefits to plan participants.

Depreciation The process of systematically allocating the cost of long-lived (tangible) assets to the periods during which the assets are expected to provide economic benefits.

Derivatives A financial instrument whose value depends on the value of some underlying asset or factor (e.g., a stock price, an interest rate, or exchange rate).

Diluted EPS The EPS that would result if all dilutive securities were converted into common shares.

Diluted shares The number of shares that would be outstanding if all potentially dilutive claims on common shares (e.g., convertible debt, convertible preferred stock, and employee stock options) were exercised.

Diminishing balance method An accelerated depreciation method, i.e., one that allocates a relatively large proportion of the cost of an asset to the early years of the asset's useful life.

Direct financing leases A type of finance lease, from a lessor perspective, where the present value of the lease payments (less receivable) equals the carrying value of the leased asset. The revenues earned by the lessor are financing in nature.

Direct format With reference to the cash flow statement, a format for the presentation of the statement in which cash flow from operating activities is shown as operating cash receipts less operating cash disbursements. Also called *direct method*.

Direct method See *direct format*.

Direct write-off method An approach to recognizing credit losses on customer receivables in which the company waits until such time as a customer has defaulted and only then recognizes the loss.

Dividend payout ratio The ratio of cash dividends paid to earnings for a period.

Double declining balance depreciation An accelerated depreciation method that involves depreciating the asset at double the straight-line rate. This rate is multiplied by the book value of the asset at the beginning of the period (a declining balance) to calculate depreciation expense.

Double-entry accounting The accounting system of recording transactions in which every recorded transaction affects at least two accounts so as to keep the basic accounting equation (assets = liabilities + owners' equity) in balance.

Downstream A transaction between two related companies, an investor company (or a parent company) and an associate company (or a subsidiary) such that the investor company records a profit on its income statement. An example is a sale of inventory by the investor company to the associate or by a parent to a subsidiary company.

DuPont analysis An approach to decomposing return on investment, e.g., return on equity, as the product of other financial ratios.

Earnings per share The amount of income earned during a period per share of common stock.

Effective interest rate The borrowing rate or market rate that a company incurs at the time of issuance of a bond.

Equity Assets less liabilities; the residual interest in the assets after subtracting the liabilities.

Exercise date (from Chapter 14, page 730)

Expenses Outflows of economic resources or increases in liabilities that result in decreases in equity (other than decreases because of distributions to owners); reductions in net assets associated with the creation of revenues.

Exposure to foreign exchange risk The risk of a change in value of an asset or liability denominated in a foreign currency due to a change in exchange rates.

Face value The amount of cash payable by a company to the bondholders when the bonds mature; the promised payment at maturity separate from any coupon payment.

Fair value The amount at which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's-length transaction; the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants.

FIFO method The first in, first out, method of accounting for inventory, which matches sales against the costs of items of inventory in the order in which they were placed in inventory.

Finance lease Essentially, the purchase of some asset by the buyer (lessee) that is directly financed by the seller (lessor). Also called *capital lease*.

Financial flexibility The ability to react and adapt to financial adversities and opportunities.

Financial leverage The extent to which a company can effect, through the use of debt, a proportional change in the return on common equity that is greater than a given proportional change in operating income; also, short for the financial leverage ratio.

Financial leverage ratio A measure of financial leverage calculated as average total assets divided by average total equity.

Financing activities Activities related to obtaining or repaying capital to be used in the business (e.g., equity and long-term debt).

Fixed asset turnover (from Chapter 7, page 315)

Fixed charge coverage A solvency ratio measuring the number of times interest and lease payments are covered by operating income, calculated as (EBIT + lease payments) divided by (interest payments + lease payments).

Fixed costs Costs that remain at the same level regardless of a company's level of production and sales.

Foreign currency transactions Transactions that are denominated in a currency other than a company's functional currency.

Free cash flow The actual cash that would be available to the company's investors after making all investments necessary to maintain the company as an ongoing enterprise (also referred to as free cash flow to the firm); the internally generated funds that can be distributed to the company's investors (e.g., shareholders and bondholders) without impairing the value of the company.

Functional currency The currency of the primary economic environment in which an entity operates.

Gains Asset inflows not directly related to the ordinary activities of the business.

Goodwill An intangible asset that represents the excess of the purchase price of an acquired company over the value of the net assets acquired.

Grant date (from Chapter 14, p. 730)

Gross margin Sales minus the cost of sales (i.e., the cost of goods sold for a manufacturing company).

Gross profit Sales minus the cost of sales (i.e., the cost of goods sold for a manufacturing company).

Gross profit margin The ratio of gross profit to revenues.

Grouping by function With reference to the presentation of expenses in an income statement, the grouping together of expenses serving the same function, e.g., all items that are costs of goods sold.

Grouping by nature With reference to the presentation of expenses in an income statement, the grouping together of expenses by similar nature, e.g., all depreciation expenses.

Growth investors With reference to equity investors, investors who seek to invest in high-earnings-growth companies.

Held for trading Debt or equity financial assets bought with the intention to sell them in the near term, usually less than three months; securities that a company intends to trade. Also called *trading securities*.

Held for trading investments Debt or equity securities acquired with the intent to sell them in the near term.

Held-to-maturity Debt (fixed-income) securities that a company intends to hold to maturity; these are presented at their original cost, updated for any amortization of discounts or premiums.

Held-to-maturity investments Debt (fixed-income) securities that a company intends to hold to maturity; these are presented at their original cost, updated for any amortization of discounts or premiums.

Historical cost In reference to assets, the amount paid to purchase an asset, including any costs of acquisition and/or preparation; with reference to liabilities, the amount of proceeds received in exchange for issuing the liability.

Historical exchange rates For accounting purposes, the exchange rates that existed when the assets and liabilities were initially recorded.

Horizontal analysis Common-size analysis that involves comparing a specific financial statement with that statement in prior or future time periods; also, cross-sectional analysis of one company with another.

If-converted method A method for accounting for the effect of convertible securities on earnings per share (EPS) that specifies what EPS would have been if the convertible securities had been converted at the beginning of the period, taking account of the effects of conversion on net income and the weighted average number of shares outstanding.

Income Increases in economic benefits in the form of inflows or enhancements of assets, or decreases of liabilities that result in an increase in equity (other than increases resulting from contributions by owners).

Income statement A financial statement that provides information about a company's profitability over a stated period of time. Also called *statement of operations* or *profit and loss statement*.

Income tax paid The actual amount paid for income taxes in the period; not a provision, but the actual cash outflow.

Income tax payable The income tax owed by the company on the basis of taxable income.

Indirect format With reference to cash flow statements, a format for the presentation of the statement which, in the operating cash flow section, begins with net income then shows additions and subtractions to arrive at operating cash flow. Also called *indirect method*.

Indirect method See *indirect format*.

Installment method With respect to revenue recognition, a method that specifies that the portion of the total profit of the sale that is recognized in each period is determined by the percentage of the total sales price for which the seller has received cash.

Installment sales With respect to revenue recognition, a method that specifies that the portion of the total profit of the sale that is recognized in each period is determined by the percentage of the total sales price for which the seller has received cash.

Intangible assets Assets lacking physical substance, such as patents and trademarks.

Interest coverage A solvency ratio calculated as EBIT divided by interest payments.

Inventory The unsold units of product on hand.

Inventory turnover (from Chapter 8, page 394)

Investing activities Activities which are associated with the acquisition and disposal of property, plant, and equipment; intangible assets; other long-term assets; and both long-term and short-term investments in the equity and debt (bonds and loans) issued by other companies.

Investment property Property used to earn rental income or capital appreciation (or both).

Lessee The party obtaining the use of an asset through a lease.

Lessor The owner of an asset that grants the right to use the asset to another party.

Liabilities Present obligations of an enterprise arising from past events, the settlement of which is expected to result in an outflow of resources embodying economic benefits; creditors' claims on the resources of a company.

LIFO layer liquidation With respect to the application of the LIFO inventory method, the liquidation of old, relatively low-priced inventory; happens when the volume of sales rises above the volume of recent purchases so that some sales are made from relatively old, low-priced inventory. Also called *LIFO liquidation*.

LIFO method The last in, first out, method of accounting for inventory, which matches sales against the costs of items of inventory in the reverse order the items were placed in inventory (i.e., inventory produced or acquired last are assumed to be sold first).

LIFO reserve (from Chapter 8, page 375-376)

Liquidity The ability to purchase or sell an asset quickly and easily at a price close to fair market value. The ability to meet short-term obligations using assets that are the most readily converted into cash.

Liquidity ratios Financial ratios measuring the company's ability to meet its short-term obligations.

Local currency The currency of the country where a company is located.

Long-lived assets Assets that are expected to provide economic benefits over a future period of time, typically greater than one year. Also called *long-term assets*.

Long-term contract A contract that spans a number of accounting periods.

Losses Asset outflows not directly related to the ordinary activities of the business.

Mark to market The revaluation of a financial asset or liability to its current market value or fair value.

Market-oriented investors With reference to equity investors, investors whose investment disciplines cannot be clearly categorized as value or growth.

Market rate of interest The rate demanded by purchases of bonds, given the risks associated with future cash payment obligations of the particular bond issue.

Matching principle The accounting principle that expenses should be recognized when the associated revenue is recognized.

Monetary assets and liabilities Assets and liabilities with value equal to the amount of currency contracted for, a fixed amount of currency. Examples are cash, accounts receivable, accounts payable, bonds payable, and mortgages payable. Inventory is not a monetary asset. Most liabilities are monetary.

Monetary/non-monetary method Approach to translating foreign currency financial statements for consolidation in which monetary assets and liabilities are translated at the current exchange rate. Non-monetary assets and liabilities are translated at historical exchange rates (the exchange rates that existed when the assets and liabilities were acquired).

Multi-step format With respect to the format of the income statement, a format that presents a subtotal for gross profit (revenue minus cost of goods sold).

Net asset balance sheet exposure When assets translated at the current exchange rate are greater in amount than liabilities translated at the current exchange rate. Assets exposed to translation gains or losses exceed the exposed liabilities.

Net book value The remaining (undepreciated) balance of an asset's purchase cost. For liabilities, the face value of a bond minus any unamortized discount, or plus any unamortized premium.

Net income The difference between revenue and expenses; what remains after subtracting all expenses (including depreciation, interest, and taxes) from revenue.

Net liability balance sheet exposure When liabilities translated at the current exchange rate are greater than assets translated at the current exchange rate. Liabilities exposed to translation gains or losses exceed the exposed assets.

Net profit margin An indicator of profitability, calculated as net income divided by revenue; indicates how much of each dollar of revenues is left after all costs and expenses. Also called *profit margin* or *return on sales*.

Net realizable value (from Chapter 8, page 387)

Net revenue Revenue after adjustments (e.g., for estimated returns or for amounts unlikely to be collected).

Non-current assets Assets that are expected to benefit the company over an extended period of time (usually more than one year).

Non-current liabilities Obligations that broadly represent a probable sacrifice of economic benefits in periods generally greater than one year in the future.

Non-monetary assets and liabilities Assets and liabilities that are not monetary assets and liabilities. Non-monetary assets include inventory, fixed assets, and intangibles, and non-monetary liabilities include deferred revenue.

Notes payable Amounts owed by a business to creditors as a result of borrowings that are evidenced by (short-term) loan agreements.

Number of days of payables (from Chapter 7, page 314)

Operating activities Activities that are part of the day-to-day business functioning of an entity, such as selling inventory and providing services.

Operating cash flow The net amount of cash provided from operating activities.

Operating efficiency ratios Ratios that measure how efficiently a company performs day-to-day tasks, such as the collection of receivables and management of inventory.

Operating lease An agreement allowing the lessee to use some asset for a period of time; essentially a rental.

Operating leverage The use of fixed costs in operations.

Operating profit A company's profits on its usual business activities before deducting taxes. Also called *operating income*.

Operating profit margin A profitability ratio calculated as operating income (i.e., income before interest and taxes) divided by revenue. Also called *operating margin*.

Ordinary shares Equity shares that are subordinate to all other types of equity (e.g., preferred equity). Also called *common stock* or *common shares*.

Other comprehensive income Items of comprehensive income that are not reported on the income statement; comprehensive income minus net income.

Other post-employment benefits (from Chapter 14, page 700):

Other receivables Amounts owed to the company from parties other than customers.

Owners' equity The excess of assets over liabilities; the residual interest of shareholders in the assets of an entity after deducting the entity's liabilities. Also called *shareholders' equity*.

Payables turnover (from Chapter 7, page 314)

Pension obligation (from Chapter 14, page 701)

Percentage-of-completion A method of revenue recognition in which, in each accounting period, the company estimates what percentage of the contract is complete and then reports that percentage of the total contract revenue in its income statement.

Period costs Costs (e.g., executives' salaries) that cannot be directly matched with the timing of revenues and which are thus expensed immediately.

Permanent differences Differences between tax and financial reporting of revenue (expenses) that will not be reversed at some future date. These result in a difference between the company's effective tax rate and statutory tax rate and do not result in a deferred tax item.

Pooling of interests method A method of accounting in which combined companies were portrayed as if they had always operated as a single economic entity. Called pooling of interests under US GAAP and uniting of interests under IFRS. (No longer allowed under US GAAP or IFRS.)

Prepaid expense A normal operating expense that has been paid in advance of when it is due.

Present value (PV) The present discounted value of future cash flows: For assets, the present discounted value of the future net cash inflows that the asset is expected to generate; for liabilities, the present discounted value of the future net cash outflows that are expected to be required to settle the liabilities.

Presentation currency The currency in which financial statement amounts are presented.

Pretax margin A profitability ratio calculated as earnings before taxes divided by revenue.

Price to book value A valuation ratio calculated as price per share divided by book value per share.

Price to cash flow A valuation ratio calculated as price per share divided by cash flow per share.

Price to earnings ratio (P/E ratio or P/E) The ratio of share price to earnings per share.

Price to sales A valuation ratio calculated as price per share divided by sales per share.

Profit and loss (P&L) statement A financial statement that provides information about a company's profitability over a stated period of time.

Profitability ratios Ratios that measure a company's ability to generate profitable sales from its resources (assets).

Profit margin An indicator of profitability, calculated as net income divided by revenue; indicates how much of each dollar of revenues is left after all costs and expenses.

Property, plant, and equipment Tangible assets that are expected to be used for more than one period in either the production or supply of goods or services, or for administrative purposes.

Purchasing power gain A gain in value caused by changes in price levels. Monetary liabilities experience purchasing power gains during periods of inflation.

Purchasing power loss A loss in value caused by changes in price levels. Monetary assets experience purchasing power loss during periods of inflation.

Realizable (settlement) value With reference to assets, the amount of cash or cash equivalents that could currently be obtained by selling the asset in an orderly disposal; with reference to liabilities, the undiscounted amount of cash or cash equivalents expected to be paid to satisfy the liabilities in the normal course of business.

Receivables turnover (from Chapter 7, page 314)

Residual claim The owners' remaining claim on the company's assets after the liabilities are deducted.

Retail method An inventory accounting method in which the sales value of an item is reduced by the gross margin to calculate the item's cost.

Return on assets (ROA) A profitability ratio calculated as net income divided by average total assets; indicates a company's net profit generated per dollar invested in total assets.

Return on equity (ROE) A profitability ratio calculated as net income divided by average shareholders' equity.

Return on sales An indicator of profitability, calculated as net income divided by revenue; indicates how much of each dollar of revenues is left after all costs and expenses.

Return on total capital A profitability ratio calculated as EBIT divided by the sum of short- and long-term debt and equity.

Revaluation model (from Chapter 9, page 441)

Revenue The amount charged for the delivery of goods or services in the ordinary activities of a business over a stated period; the inflows of economic resources to a company over a stated period.

Sales returns and allowances An offset to revenue reflecting any cash refunds, credits on account, and discounts from sales prices given to customers who purchased defective or unsatisfactory items.

Sales-type leases A type of finance lease, from a lessor perspective, where the present value of the lease payments (less receivable) exceeds the carrying value of the leased asset. The revenues earned by the lessor are operating (the profit on the sale) and financing (interest) in nature.

Sales Generally, a synonym for revenue; "sales" is generally understood to refer to the sale of goods, whereas "revenue" is understood to include the sale of goods or services.

Salvage value The amount the company estimates that it can sell the asset for at the end of its useful life. Also called *residual value*.

Scenario analysis Analysis that shows the changes in key financial quantities that result from given (economic) events, such as the loss of customers, the loss of a supply source, or a catastrophic event; a risk management technique involving examination of the performance of a portfolio under specified situations. Closely related to stress testing.

Screening The application of a set of criteria to reduce a set of potential investments to a smaller set having certain desired characteristics.

Sensitivity analysis Analysis that shows the range of possible outcomes as specific assumptions are changed.

Service period (Chapter 14, p. 730)

Shareholders' equity Assets less liabilities; the residual interest in the assets after subtracting the liabilities.

Simulation Computer-generated sensitivity or scenario analysis that is based on probability models for the factors that drive outcomes.

Single-step format With respect to the format of the income statement, a format that does not subtotal for gross profit (revenue minus cost of goods sold).

Solvency With respect to financial statement analysis, the ability of a company to fulfill its long-term obligations.

Solvency ratios Ratios that measure a company's ability to meet its long-term obligations.

Specific identification method An inventory accounting method that identifies which specific inventory items were sold and which remained in inventory to be carried over to later periods.

Standard cost With respect to inventory accounting, the planned or target unit cost of inventory items or services.

Statement of cash flows A financial statement that reconciles beginning-of-period and end-of-period balance sheet values of cash; provides information about an entity's cash inflows and cash outflows as they pertain to operating, investing, and financing activities. Also called *cash flow statement*.

Statement of changes in equity (statement of owners' equity) A financial statement that reconciles the beginning-of-period and end-of-period balance sheet values of shareholders' equity; provides information about all factors affecting shareholders' equity. Also called *statement of owners' equity*.

Statement of financial condition The financial statement that presents an entity's current financial position by disclosing resources the entity controls (its assets) and the claims on those resources (its liabilities and equity claims), as of a particular point in time (the date of the balance sheet).

Statement of financial position The financial statement that presents an entity's current financial position by disclosing resources the entity controls (its assets) and the claims on those resources (its liabilities and equity claims), as of a particular point in time (the date of the balance sheet).

Statement of operations A financial statement that provides information about a company's profitability over a stated period of time.

Statement of owners' equity A financial statement that reconciles the beginning-of-period and end-of-period balance sheet values of shareholders' equity; provides information about all factors affecting shareholders' equity. Also called *statement of changes in shareholders' equity*.

Statement of retained earnings A financial statement that reconciles beginning-of-period and end-of-period balance sheet values of retained income; shows the linkage between the balance sheet and income statement.

Straight-line method A depreciation method that allocates evenly the cost of a long-lived asset less its estimated residual value over the estimated useful life of the asset.

Sustainable growth rate The rate of dividend (and earnings) growth that can be sustained over time for a given level of return on equity, keeping the capital structure constant and without issuing additional common stock.

Synthetic lease (from Chapter 9, page 472)

Taxable income The portion of an entity's income that is subject to income taxes under the tax laws of its jurisdiction.

Taxable temporary differences Temporary differences that result in a taxable amount in a future period when determining the taxable profit as the balance sheet item is recovered or settled.

Tax base The amount at which an asset or liability is valued for tax purposes.

Tax expense An aggregate of an entity's income tax payable (or recoverable in the case of a tax benefit) and any changes in deferred tax assets and liabilities. It is essentially the income tax payable or recoverable if these had been determined based on accounting profit rather than taxable income.

Tax loss carry forward A taxable loss in the current period that may be used to reduce future taxable income.

Temporal method A variation of the monetary/non-monetary translation method that requires not only monetary assets and liabilities, but also non-monetary assets and liabilities that are measured at their current value on the balance sheet date to be translated at the current exchange rate. Assets and liabilities are translated at rates consistent with the timing of their measurement value. This method is typically used when the functional currency is other than the local currency.

Top-down analysis With reference to investment selection processes, an approach that starts with macro selection (i.e., identifying attractive geographic segments and/or industry segments) and then addresses selection of the most attractive investments within those segments.

Total asset turnover (from Chapter 7, page 315)

Total comprehensive income The change in equity during a period resulting from transaction and other events, other than those changes resulting from transactions with owners in their capacity as owners.

Total invested capital The sum of market value of common equity, book value of preferred equity, and face value of debt.

Trade payables Amounts that a business owes to its vendors for goods and services that were purchased from them but which have not yet been paid.

Trade receivables Amounts customers owe the company for products that have been sold as well as amounts that may be due from suppliers (such as for returns of merchandise). Also called *commercial receivables* or *accounts receivable*.

Trading securities Securities held by a company with the intent to trade them. Also called *held-for-trading securities*.

Transaction exposure The risk of a change in value between the transaction date and the settlement date of an asset or liability denominated in a foreign currency.

Treasury stock method A method for accounting for the effect of options (and warrants) on earnings per share (EPS) that specifies what EPS would have been if the options and warrants had been exercised and the company had used the proceeds to repurchase common stock.

Unbilled revenue Revenue that has been earned but not yet billed to customers as of the end of an accounting period. Also called *accrued revenue*.

Unclassified balance sheet A balance sheet that does not show subtotals for current assets and current liabilities.

Unearned fees Unearned fees are recognized when a company receives cash payment for fees prior to earning them.

Unearned revenue A liability account for money that has been collected for goods or services that have not yet been delivered; payment received in advance of providing a good or service. Also called *deferred revenue* or *deferred income*.

Uniting of interests method A method of accounting in which combined companies were portrayed as if they had always operated as a single economic entity. Called pooling of interests under US GAAP and uniting of interests under IFRS. (No longer allowed under US GAAP or IFRS.)

Units-of-production method (from Chapter 9, page 441)

Upstream A transaction between two related companies, an investor company (or a parent company) and an associate company (or a subsidiary company) such that the associate company records a profit on its income statement. An example is a sale of inventory by the associate to the investor company or by a subsidiary to a parent company.

Valuation allowance A reserve created against deferred tax assets, based on the likelihood of realizing the deferred tax assets in future accounting periods.

Valuation ratios Ratios that measure the quantity of an asset or flow (e.g., earnings) in relation to the price associated with a specified claim (e.g., a share or ownership of the enterprise).

Value investors With reference to equity investors, investors who are focused on paying a relatively low share price in relation to earnings or assets per share.

Variable costs Costs that fluctuate with the level of production and sales.

Vertical analysis Common-size analysis using only one reporting period or one base financial statement; for example, an income statement in which all items are stated as percentages of sales.

Vested benefit obligation (from Chapter 14, page 701)

Vesting date (from Chapter 14, p. 730)

Weighted average cost method An inventory accounting method that averages the total cost of available inventory items over the total units available for sale.

Working capital The difference between current assets and current liabilities.

Working capital turnover (from Chapter 7, page 315)

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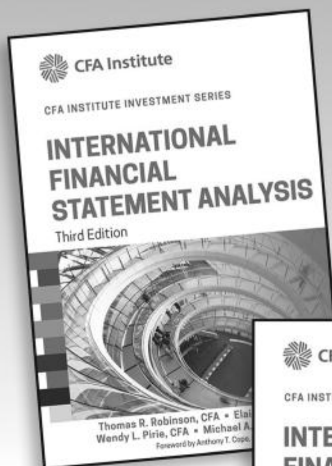

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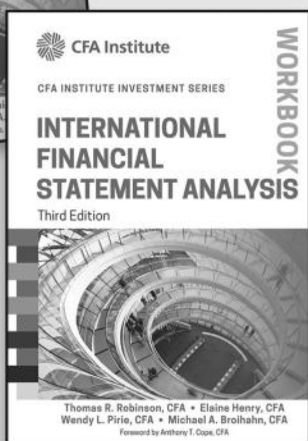

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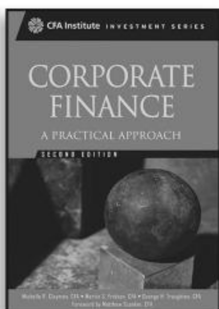

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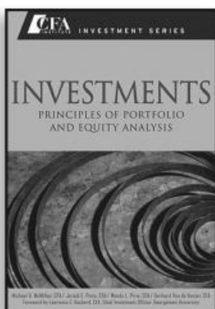

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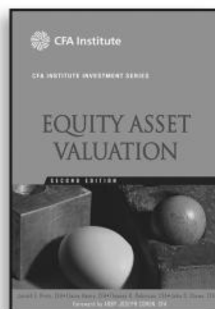

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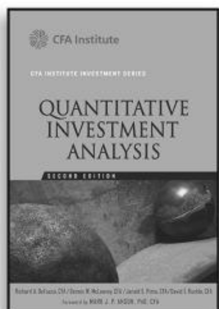

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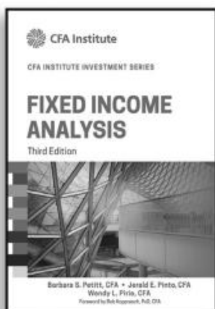

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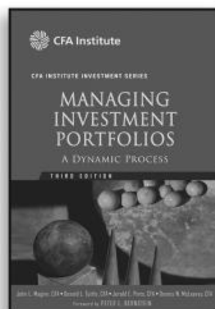

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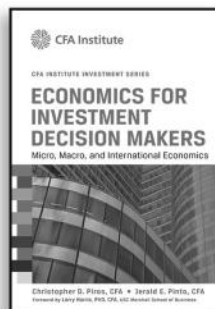

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