2025 CFA®
Exam Prep

SchweserNotes™
Financial Statement Analysis and Equity Investments

Level I Book 2

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Book 2: Financial Statement Analysis and Equity Investments

SchweserNotes™ 2025

Level I CFA®

SCHWESERNOTES™ 2025 LEVEL I CFA® BOOK 2: FINANCIAL STATEMENT ANALYSIS AND EQUITY INVESTMENTS

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EQUITY INVESTMENTS

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e. describe information sources that analysts use in financial statement analysis besides annual and interim financial reports.

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a. describe tools and techniques used in financial analysis, including their uses and limitations.
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d. explain how to forecast industry and company sales and costs when they are subject to price inflation or deflation.
e. explain considerations in the choice of an explicit forecast horizon and an analyst's choices in developing projections beyond the short-term forecast horizon.

39. Market Organization and Structure

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a. explain the main functions of the financial system.
b. describe classifications of assets and markets.
c. describe the major types of securities, currencies, contracts, commodities, and real assets that trade in organized markets, including their distinguishing characteristics and major subtypes.
d. describe types of financial intermediaries and services that they provide.
e. compare positions an investor can take in an asset.
f. calculate and interpret the leverage ratio, the rate of return on a margin transaction, and the security price at which the investor would receive a margin call.
g. compare execution, validity, and clearing instructions.
h. compare market orders with limit orders.
i. define primary and secondary markets and explain how secondary markets support primary markets.
j. describe how securities, contracts, and currencies are traded in quote-driven, order-driven, and brokered markets.
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l. describe objectives of market regulation.

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The candidate should be able to:

a. describe a security market index.
b. calculate and interpret the value, price return, and total return of an index.
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The candidate should be able to:

a. describe characteristics of types of equity securities.
b. describe differences in voting rights and other ownership characteristics among different equity classes.
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d. describe methods for investing in non-domestic equity securities.
e. compare the risk and return characteristics of different types of equity securities.
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g. contrast the market value and book value of equity securities.
h. compare a company's cost of equity, its (accounting) return on equity, and investors' required rates of return.

43. Company Analysis: Past and Present

The candidate should be able to:

a. describe the elements that should be covered in a thorough company research report.
b. determine a company's business model.
c. evaluate a company's revenue and revenue drivers, including pricing power.
d. evaluate a company's operating profitability and working capital using key measures.
e. evaluate a company's capital investments and capital structure.

44. Industry and Competitive Analysis

The candidate should be able to:

a. describe the purposes of, and steps involved in, industry and competitive analysis.
b. describe industry classification methods and compare methods by which companies can be grouped.
c. determine an industry's size, growth characteristics, profitability, and market share trends.
d. analyze an industry's structure and external influences using Porter's Five Forces and PESTLE frameworks.
e. evaluate the competitive strategy and position of a company.

45. Company Analysis: Forecasting

The candidate should be able to:

a. explain principles and approaches to forecasting a company's financial results and position.
b. explain approaches to forecasting a company's revenues.
c. explain approaches to forecasting a company's operating expenses and working capital.
d. explain approaches to forecasting a company's capital investments and capital structure.
e. describe the use of scenario analysis in forecasting.

46. Equity Valuation: Concepts and Basic Tools

The candidate should be able to:

a. evaluate whether a security, given its current market price and a value estimate, is overvalued, fairly valued, or undervalued by the market.
b. describe major categories of equity valuation models.
c. describe regular cash dividends, extra dividends, stock dividends, stock splits, reverse stock splits, and share repurchases.
d. describe dividend payment chronology.
e. explain the rationale for using present value models to value equity and describe the dividend discount and free-cash-flow-to-equity models.
f. explain advantages and disadvantages of each category of valuation model.
g. calculate the intrinsic value of a non-callable, non-convertible preferred stock.
h. calculate and interpret the intrinsic value of an equity security based on the Gordon (constant) growth dividend discount model or a two-stage dividend discount model, as appropriate.
i. identify characteristics of companies for which the constant growth or a multistage dividend discount model is appropriate.

j. explain the rationale for using price multiples to value equity, how the price to earnings multiple relates to fundamentals, and the use of multiples based on comparables.
k. calculate and interpret the following multiples: price to earnings, price to an estimate of operating cash flow, price to sales, and price to book value.
l. describe enterprise value multiples and their use in estimating equity value.
m. describe asset-based valuation models and their use in estimating equity value.

READING 27

INTRODUCTION TO FINANCIAL STATEMENT ANALYSIS

MODULE 27.1: FINANCIAL STATEMENT ROLES

Video covering this content is available online.

LOS 27.a: Describe the steps in the financial statement analysis framework.

The **financial statement analysis framework**[1] sets out a generic set of steps for analysts to apply to a multitude of objectives when analyzing debt issues, equity securities, and corporate actions. The framework consists of six steps:

Step 1: State the objective and context. Determine what questions the analysis seeks to answer, the form in which this information needs to be presented, and what resources and how much time are available to perform the analysis.

Step 2: Gather data. Acquire the company's financial statements and other relevant data on its industry and the economy. Ask questions of the company's management, suppliers, and customers, and visit company sites.

Step 3: Process the data. Make any appropriate adjustments to the financial statements. Calculate ratios and perform statistical analysis. Prepare exhibits such as graphs and common-size balance sheets.

Step 4: Analyze and interpret the data. Use the data to answer the questions stated in the first step. Decide what conclusions or recommendations the information supports.

Step 5: Report the conclusions or recommendations. Prepare a report and communicate it to its intended audience. Be sure the report and its dissemination comply with the Code and Standards that relate to investment analysis and recommendations.

Step 6: Update the analysis. Repeat these steps periodically, and change the conclusions or recommendations when necessary.

LOS 27.b: Describe the roles of financial statement analysis.

Financial reporting refers to the way companies show their financial performance to investors, creditors, and other interested parties by preparing and presenting financial

statements.

The role of **financial statement analysis** is to use the information in a company's financial statements, along with other relevant information, to make economic decisions. Examples of such decisions include whether to invest in the company's securities or recommend them to investors, whether to extend trade or bank credit to the company, and assigning credit ratings to a company's debt. Analysts use financial statement data to evaluate a company's past performance and current financial position to form opinions about the company's ability to earn profits and generate cash flow in the future. As part of this process, analysts will identify risk factors that affect the company's future profitability and position.

PROFESSOR'S NOTE
This reading deals with financial analysis for external users. Management also performs financial analysis in making everyday decisions. However, management may rely on internal financial information that is likely maintained in a different format and unavailable to external users.

LOS 27.c: Describe the importance of regulatory filings, financial statement notes and supplementary information, management's commentary, and audit reports.

Standard-setting bodies are professional organizations of accountants and auditors that establish financial reporting standards. **Regulatory authorities** are government agencies that have the legal authority to enforce compliance with financial reporting standards.

The two primary standard-setting bodies are the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB). In the United States, the FASB sets forth the U.S. Generally Accepted Accounting Principles (U.S. GAAP). Outside the United States, the IASB establishes the International Financial Reporting Standards (IFRS). Other national standard-setting bodies exist as well. Some of the older IASB standards are referred to as the International Accounting Standards (IAS).

Regulatory authorities, such as the Securities and Exchange Commission (SEC) in the United States and the Financial Conduct Authority in the United Kingdom, are established by national governments.

Most national authorities belong to the **International Organization of Securities Commissions (IOSCO)**. Together, the members of IOSCO regulate more than 95% of the world's financial markets. IOSCO is not a regulatory body, but its members work together to improve cross-border cooperation and make national regulations and enforcement more uniform around the world. The IOSCO Objectives and Principles of Securities Regulation are based on three main objectives:

1. Protecting investors
2. Ensuring markets are fair, efficient, and transparent
3. Reducing systemic risk

IOSCO requires issuers to provide full, accurate, and timely disclosure of financial results, risk, and other information used in the decision-making process. It also requires accounting standards that are used to prepare financial statements to be of a high standard and internationally accepted.

The SEC's requirements for financial reporting by U.S. companies are shown in Figure 27.1 as an example of reporting requirements. The SEC has the responsibility of enforcing the Sarbanes-Oxley Act of 2002. The act prohibits a company's external auditor from providing certain additional paid services to the company, to avoid the conflict of interest involved, and to promote auditor independence. The act requires a company's executive management to certify that the financial statements are presented fairly and to include a statement about the effectiveness of the company's internal controls of financial reporting. Additionally, the external auditor must provide a statement confirming the effectiveness of the company's internal controls.

Proxy statements are issued to shareholders when there are matters that require a shareholder vote. These statements, which are also filed with the SEC, are a good source of information about the election of (and qualifications of) board members, compensation, management qualifications, and the issuance of stock options.

In the European Union (EU), each member state has its own securities regulations, but all countries in the EU are required to report using IFRS. The European Commission also has established the European Securities Commission, which advises the European Commission on securities regulation issues, and the European Securities and Market Authority (ESMA), which coordinates regulation within the EU.

Financial statement notes (footnotes) include disclosures that provide further details about the information summarized in the financial statements. Footnotes allow users to improve their assessments of the amount, timing, and uncertainty of the estimates reported in the financial statements. Footnotes do the following:

- They discuss the basis of presentation such as the fiscal period covered by the statements, whether IFRS or U.S. GAAP is adhered to, and the inclusion of consolidated entities.
- They provide information about accounting methods, assumptions, and estimates used by management.
- They provide additional information on information included in the primary financial statements and items such as business acquisitions or disposals, legal actions, employee benefit plans, contingencies and commitments, significant customers, related party transactions, position and performance of segments of the firm, and significant post balance sheet events.
- They are audited along with the primary financial statements.

Figure 27.1: SEC Required Filings

Form S-1. This is the registration statement filed before the sale of new securities to the public. The statement includes disclosures about the securities offered, audited financial statements (plus interim accounts, if the statement is filed more than three months after year-end), risk assessment, underwriter identification, and the estimated amount and use of the offering proceeds.

Form 10-K. This is the required annual filing that includes information about the business, risks, and its management, audited financial statements and disclosures, and disclosures about legal matters involving the firm. Information required in Form 10-K is similar to that which a firm typically provides in its annual report to shareholders. However, a firm's annual report is not a substitute for the required 10-K filing. Equivalent SEC forms for foreign issuers in the U.S. markets are Form 40-F for Canadian companies and Form 20-F for other foreign issuers.

Form 10-Q. U.S. firms are required to file this form quarterly, with updated interim financial statements (unlike Form 10-K, these statements do not have to be audited) and disclosures about certain events such as significant legal proceedings or changes in accounting policy. Non-U.S. companies are typically required to file the equivalent Form 6-K semiannually.

Form DEF-14A. When a company prepares a proxy statement for its shareholders before the annual meeting or other shareholder vote, it also files the statement with the SEC as Form DEF-14A.

Form 8-K. Companies must file this form to disclose material events including significant asset acquisitions and disposals, changes in management or corporate governance, or matters related to its accountants, its financial statements, or the markets in which its securities trade.

Form 144. A company can issue securities to certain qualified buyers without registering the securities with the SEC, but it must notify the SEC that it intends to do so.

Forms 3, 4, and 5 involve the beneficial ownership of securities by a company's officers and directors. Analysts can use these filings to learn about purchases and sales of company securities by corporate insiders.

Both U.S. GAAP and IFRS require companies to report segment data, but the required disclosure items are only a subset of the required disclosures for the company as a whole. Nonetheless, an analyst can prepare a more detailed analysis and forecast by examining the performance of business or geographic segments separately. Segment profit margins, asset utilization (turnover), and return on assets can be very useful in gaining a clear picture of a firm's overall operations. For forecasting, growth rates of segment revenues and profits can be used to estimate future sales and profits and to determine the changes in company characteristics over time.

A **business segment (operating segment)** is a portion of a larger company that accounts for more than 10% of the company's revenues, assets, or income. An operating segment should be distinguishable from the company's other lines of business in terms of the risk and return characteristics of the segment. Segments reported should account for a minimum of 75% of the firm's external sales.

The following must be disclosed for each segment within the financial statement notes:

- Revenue (external and between segments)
- A measure of profit or loss
- A measure of assets and liabilities

- Interest (revenue and expense)
- Acquisitions of PP&E and intangibles
- Depreciation and amortization
- Other noncash expenses
- Income tax expense
- Share of equity-accounted investments results

Geographic segments are also identified when they meet the size criterion given previously and the geographic unit has a business environment that is different from that of other segments or the remainder of the company's business.

For example, in its 2016 annual report, Boeing described its business segments as follows:[2]

- We are organized based on the products and services we offer. We operate in five principal segments:
  - Commercial Airplanes
  - Our Defense, Space & Security (BDS) business comprises three segments:
    - Boeing Military Aircraft (BMA)
    - Network & Space Systems (N&SS)
    - Global Services & Support (GS&S)
  - Boeing Capital (BCC)

Management commentary (also known as management report, operating and financial review, or **management discussion and analysis [MD&A]**) is one of the most useful sections of an annual report. IFRS guidance recommends that management commentary address the nature of the business, management's objectives, the company's past performance, the performance measures used, and the company's key relationships, resources, and risks. Analysts must be aware that some parts of management commentary may be unaudited.

For publicly held firms in the United States, the SEC requires management commentary to discuss trends and identify significant events and uncertainties that affect the firm's liquidity, capital resources, and results of operations. Management must also discuss the following:

- Effects of inflation and changing prices, if material
- Impact of off-balance-sheet obligations and contractual obligations, such as purchase commitments
- Accounting policies that require significant judgment by management
- Forward-looking expenditures and divestitures

An **audit** is an independent review of an entity's financial statements. Public accountants conduct audits and examine the financial reports and supporting records. The objective of an audit is to enable the auditor to provide an opinion on the fairness and reliability of the financial statements.

The independent certified public accounting firm employed by the board of directors is responsible for seeing that the financial statements conform to the applicable accounting standards. The auditor examines the company's accounting and internal control systems, confirms assets and liabilities, and generally tries to determine that there are no material errors in the financial statements. The auditor's report is an important source of information.

The **standard auditor's opinion** contains three parts and states the following:

1. Whereas the financial statements are prepared by management and are its responsibility, the auditor has performed an independent review.
2. Generally accepted auditing standards were followed, thus providing *reasonable assurance* that the financial statements contain no material errors.
3. The auditor is satisfied that the statements were prepared in accordance with accepted accounting principles and that the principles chosen and estimates made are reasonable. The auditor's report must also contain additional explanation when accounting methods have not been used consistently between periods.

An **unqualified opinion** (also known as an unmodified opinion or clean opinion) indicates that the auditor believes the statements are free from material omissions and errors. If the statements make any exceptions to the accounting principles, the auditor may issue a **qualified opinion** and explain these exceptions in the audit report. The auditor can issue an **adverse opinion** if the statements are not presented fairly or are materially nonconforming with accounting standards. If the auditor is unable to express an opinion (e.g., in the case of a scope limitation), a **disclaimer of opinion** is issued. Any opinion other than unqualified is sometimes referred to as a modified opinion.

The auditor's opinion will also contain an explanatory paragraph when a material loss is probable, but the amount cannot be reasonably estimated. These uncertainties may relate to the *going concern assumption* (the assumption that the firm will continue to operate for the foreseeable future), to the valuation or realization of asset values, or to litigation. This type of disclosure may be a signal of serious problems and may call for close examination by the analyst.

Internal controls are the processes by which the company ensures that it presents accurate financial statements. Internal controls are the responsibility of management. For publicly traded firms in the United States, the auditor must express an opinion on the firm's internal controls. The auditor can provide this opinion separately, or as the fourth element of the standard opinion.

An audit report must also contain a section communicating *key audit matters* (international reports) or *critical audit matters* (U.S.), which highlights accounting choices that are of greatest significance to users of financial statements. These would include accounting choices that require significant management judgments and estimates, how significant transactions during a period were accounted for, or choices that the auditor finds especially challenging or subjective—and which, therefore, have a significant likelihood of being misstated.

LOS 27.d: Describe implications for financial analysis of alternative financial reporting systems and the importance of monitoring developments in financial reporting standards.

While the IASB and FASB work together to harmonize changes to accounting standards, some significant differences between IFRS and U.S. GAAP still exist. Some major differences are outlined in Figure 27.2, but additional differences will be encountered in subsequent modules.

Figure 27.2: Significant Differences Between IFRS and U.S. GAAP

Basis for Comparison	U.S. GAAP	IFRS
Developed by	FASB	IASB
Based on	Rules	Principles
Inventory valuation	FIFO, LIFO, and weighted average	LIFO prohibited
Product development costs	Expensed	May be capitalized
Interest paid	CFO	CFO or CFF
Reversal of inventory write-downs	Prohibited	Allowed

The existence of differences between the two sets of standards require the analyst to exercise caution when making comparisons between firms operating in different jurisdictions.

As financial reporting standards continue to evolve, analysts need to monitor how these developments will affect the financial statements they use. An analyst should be aware of new products and innovations in the financial markets that generate new types of transactions. These might not fall neatly into the existing financial reporting standards. Analysts can use the financial reporting framework as a guide for evaluating what effect new products or transactions might have on financial statements.

To keep up to date on the evolving standards, an analyst can monitor professional journals and other sources, such as the IASB (www.ifrs.org) and FASB (www.fasb.org) websites. CFA Institute produces position papers on financial reporting issues through the CFA Institute Centre for Financial Market Integrity.

Finally, analysts must monitor company disclosures for significant accounting standards and estimates.

LOS 27.e: Describe information sources that analysts use in financial statement analysis besides annual and interim financial reports.

As well as regulated information provided by issuers in filings and financial statements, an analyst can also use additional information sources:

- Issuer sources:

- *Earnings calls*. Targeted at investors, analysts, and members of the media, earnings calls include presentations by the company's management and the opportunity for question-and-answer sessions. Firms often provide **earnings guidance** before they release their financial statements. After an earnings announcement, senior management may hold a conference call to answer questions and provide information to complement their regulatory filings.
- Ad hoc presentations and events that are similar in format to an earnings call
- Press releases focusing on major events relevant to the company
- Communications with management, investor relations, and company personnel

Analysts should note that these additional sources of information provided by issuers are unlikely to have been audited.

- Public third-party sources:
  - Free industry reports, whitepapers, and trade journals
  - Government agency-produced economic and industry statistics
  - Generalized and industry-specific media sources
  - Social media
- Proprietary third-party sources:
  - Analyst reports
  - Reports from data platforms such as Bloomberg, Wind, and FactSet
  - Reports from industry-specific agencies and consultancies
- Proprietary primary research:
  - Studies commissioned by the analyst
  - Hands-on experience with the company's products or services
  - Data and advice of technical specialists employed by the analyst

An analyst should also review pertinent information on economic conditions and the company's industry and compare the company to its competitors. The necessary information can be acquired from trade journals, statistical reporting services, and government agencies.

MODULE QUIZ 27.1

1. Which of the following statements *least accurately* describes a role of financial statement analysis?
   A. Use the information in financial statements to make economic decisions.
   B. Provide reasonable assurance that the financial statements are free of material errors.
   C. Evaluate an entity's financial position and past performance to form opinions about its future ability to earn profits and generate cash flow.
2. Information about accounting estimates, assumptions, and methods chosen for reporting is *most likely* found in:
   A. the auditor's opinion.
   B. financial statement notes.
   C. management discussion and analysis.
3. If an auditor finds that a company's financial statements have made a specific exception to applicable accounting principles, she is *most likely* to issue a:
   A. dissenting opinion.

B. cautionary note.
C. qualified opinion.

4. Information about elections of members to a company's board of directors is *most likely* found in:
   A. a 10-Q filing.
   B. a proxy statement.
   C. footnotes to the financial statements.
5. Which of these steps is *least likely* to be a part of the financial statement analysis framework?
   A. State the purpose and context of the analysis.
   B. Determine whether the company's securities are suitable for the client.
   C. Adjust the financial statement data and compare the company to its industry peers.
6. Which of the following is *least likely* to be a part of segment disclosure?
   A. Segment sales.
   B. Segment cost of goods sold.
   C. Segment earnings.
7. Which of the following sources of information is *most likely* to be classified as a proprietary third-party source?
   A. Research reports prepared by analysts.
   B. Trade journals.
   C. Statistics produced by government agencies.

KEY CONCEPTS

LOS 27.a

The framework for financial analysis has six steps:

1. State the objective of the analysis.
2. Gather data.
3. Process the data.
4. Analyze and interpret the data.
5. Report the conclusions or recommendations.
6. Update the analysis.

LOS 27.b

The role of financial reporting is to provide various users with useful information about a company's performance and financial position.

The role of financial statement analysis is to use the data from financial statements to support economic decisions.

LOS 27.c

Standard-setting bodies are private sector organizations that establish financial reporting standards. The two primary standard-setting bodies are the International Accounting Standards Board (IASB) and, in the United States, the Financial Accounting Standards Board (FASB).

Regulatory authorities are government agencies that enforce compliance with financial reporting standards. Regulatory authorities include the Securities and Exchange Commission (SEC) in the United States and the Financial Conduct Authority in the United Kingdom. Many national regulatory authorities belong to the International Organization of Securities Commissions (IOSCO).

Important information about accounting methods, estimates, and assumptions is disclosed in the footnotes to the financial statements and supplementary schedules. These disclosures also contain information about segment results, commitments and contingencies, legal proceedings, acquisitions or divestitures, issuance of stock options, and details of employee benefit plans.

Management commentary (management discussion and analysis) contains an overview of the company and important information about business trends, future capital needs, liquidity, significant events, and significant choices of accounting methods requiring management judgment.

The objective of audits of financial statements is to provide an opinion on the statements' fairness and reliability.

The auditor's opinion gives evidence of an independent review of the financial statements that verifies that appropriate accounting principles were used, that standard auditing procedures were used to establish reasonable assurance that the statements contain no material errors, and that management's report on the company's internal controls has been reviewed.

An auditor can issue an unqualified (clean) opinion if the statements are free from material omissions and errors, a qualified opinion that notes any exceptions to accounting principles, an adverse opinion if the statements are not presented fairly in the auditor's opinion, or a disclaimer of opinion if the auditor is unable to express an opinion.

A company's management is responsible for maintaining an effective internal control system to ensure the accuracy of its financial statements.

LOS 27.d

Reporting standards are designed to ensure that different firms' statements are comparable to one another and to narrow the range of reasonable estimates on which financial statements are based. This aids users of the financial statements who rely on them for information about the company's activities, profitability, and creditworthiness. An analyst needs to be aware of differences between IFRS and U.S. GAAP when comparing companies in different jurisdictions.

An analyst should be aware of evolving financial reporting standards and new products and innovations that generate new types of transactions.

LOS 27.e

Along with the annual financial statements, important information sources for an analyst include a company's quarterly and semiannual reports, proxy statements, press

releases, and earnings guidance, as well as information on the industry and peer companies from external sources.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 27.1

1. **B** This statement describes the role of an auditor, rather than the role of an analyst. The other responses describe the role of financial statement analysis. (LOS 27.b)

2. **B** Information about accounting methods and estimates is contained in the footnotes to the financial statements. (LOS 27.c)

3. **C** An auditor will issue a qualified opinion if the financial statements make any exceptions to applicable accounting standards and will explain the effect of these exceptions in the auditor's report. (LOS 27.c)

4. **B** Proxy statements contain information related to matters that come before shareholders for a vote, such as elections of board members. (LOS 27.c)

5. **B** Determining the suitability of an investment for a client is not one of the six steps in the financial statement analysis framework. The analyst would only perform this function if he also had an advisory relationship with the client. Stating the objective and processing the data are two of the six steps in the framework. The others are gathering the data, analyzing the data, updating the analysis, and reporting the conclusions. (LOS 27.a)

6. **B** Firms are not required to provide detailed financial statements for segments that would include line items such as cost of goods sold, but the following should be disclosed in the segment data:
   - Revenue (external and between segments)
   - A measure of profit or loss
   - A measure of assets and liabilities
   - Interest (revenue and expense)
   - Acquisitions of PP&E and intangibles
   - Depreciation and amortization
   - Other noncash expenses
   - Income tax expense
   - Share of equity-accounted investments results

   (LOS 27.c)

7. **A** Research reports provided by analysts are rarely in the public domain. Trade journals and government statistics are available publicly. (LOS 27.e)

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[1] Hennie van Greuning and Sonja Brajovic Bratanovic, *Analyzing and Managing Banking Risk: Framework for Assessing Corporate Governance and Financial Risk*, International Bank for Reconstruction and Development, April 2003, p. 300.

[2] Boeing, *The Boeing Company 2016 Annual Report* (USA: 2017), https://s2.q4cdn.com/661678649/files/doc_financials/annual/2016/2016-Annual-Report.pdf.

READING 28

ANALYZING INCOME STATEMENTS

MODULE 28.1: REVENUE RECOGNITION

Video covering this content is available online.

LOS 28.a: Describe general principles of revenue recognition, specific revenue recognition applications, and implications of revenue recognition choices for financial analysis.

In a sale of goods where the goods or services are exchanged for cash and returns are not allowed, the recognition of revenue is straightforward: it is recognized at the time of the exchange. The recognition of revenue is not, however, dependent on receiving cash payment. If a sale of goods is made on credit, revenue can be recognized at the time of sale—and an asset, **accounts receivable**, is created on the balance sheet. As a general rule, revenue is recognized in the period in which it is earned, which may not necessarily be the same as the period in which cash is collected from the customer. Revenue is reported net of any returns and allowances in the income statement (e.g., estimated warranty provisions and customer discounts).

If payment for the goods is received before the transfer of the goods or services, a liability, **unearned revenue**, is created when the cash is received (offsetting the increase in the asset *cash*). Revenue is recognized as the goods are transferred to the buyer. As an example, consider a magazine subscription. When the subscription is purchased, an unearned revenue liability is created, and as magazine issues are delivered, revenue is recorded and the liability is decreased.

Converged standards under IFRS and U.S. GAAP take a principles-based approach to revenue recognition issues. The central principle is that a firm should recognize revenue when it has transferred a good or service to a customer. This is consistent with the familiar accrual accounting principle that revenue should be recognized when earned.

The converged standards identify a five-step process[1] for recognizing revenue:

1. Identify the contract(s) with a customer.
2. Identify the separate or distinct performance obligations in the contract.
3. Determine the transaction price.
4. Allocate the transaction price to the performance obligations in the contract.
5. Recognize revenue when (or as) the entity satisfies a performance obligation.

The standard defines a **contract** as an agreement between two or more parties that specifies their obligations and rights. Collectability must be probable for a contract to exist, but *probable* is defined differently under IFRS and U.S. GAAP, so an identical activity could still be accounted for differently by IFRS and U.S. GAAP reporting firms.

A **performance obligation** is a promise to deliver a distinct good or service. A *distinct* good or service is one that meets the following criteria:

- The customer can benefit from the good or service on its own or combined with other resources that are readily available.
- The promise to transfer the good or service can be identified separately from any other promises.

A **transaction price** is the amount a firm expects to receive from a customer in exchange for transferring a good or service to the customer. A transaction price is usually a fixed amount, but it can also be variable (e.g., if it includes a bonus for early delivery).

A firm should recognize revenue only when it is highly probable that it will not have to reverse it. For example, a firm may need to recognize a liability for a refund obligation (and an offsetting asset for the right to returned goods) if revenue from a sale cannot be estimated reliably.

A firm recognizes revenue when the performance obligation is satisfied by transferring the control of the good or service from seller to buyer. Indicators that the customer has obtained control include physical possession by the customer, acceptance of the good or service by the customer, the customer taking on risk and benefits of ownership, the customer holding legal title, and the seller having a right of payment.

For long-term contracts, revenue is recognized based on a firm's progress toward completing a performance obligation over a period of time. Progress toward completion can be measured from the input side (e.g., using the percentage of completion costs incurred as of the statement date). Progress can also be measured from the output side, using engineering milestones or the percentage of total output delivered to date.

A performance obligation is satisfied over a period of time if any of the following three criteria are met:

1. The customer receives and benefits from the good or service over time as the supplier meets the obligations of the contract (e.g., service and maintenance contracts).
2. The supplier enhances an existing asset or creates a new asset that the customer controls over the period in which the asset is created or enhanced.
3. The asset has no alternative use for the supplier, and the supplier has the right to enforce payment for work completed to date (e.g., constructing equipment specific to the needs of a single customer).

The costs to secure a long-term contract, such as sales commissions, must be capitalized; that is, the expense for these costs is spread over the life of the contract.

The following summarizes some examples from IFRS 15 of appropriate revenue recognition under various circumstances.

EXAMPLE: Revenue recognition

1. **Performance obligation and progress toward completion (long-term contracts)**

   A contractor agrees to build a warehouse for a price of $10 million and estimates the total costs of construction at $8 million. Although there are several *identifiable components* of the building (site preparation, foundation, electrical components, roof, etc.), these components are not *separate deliverables*, and the performance obligation is the completed building.

   During the first year of construction, the builder incurs $4 million of costs, 50% of the estimated total costs of completion. Based on this expenditure and a belief that the percentage of costs incurred represents an appropriate measure of progress toward completing the performance obligation, the builder recognizes $5 million (50% of the transaction price of $10 million) as revenue for the year.

   During the second year of construction, the contractor incurred an additional $2 million in costs.

   The percentage of total costs incurred over the first two years is now ($4 million + $2 million) / $8 million = 75%. The total revenue to be recognized to date is 0.75 × $10 million = $7.5 million. Because $5 million of revenue had been recognized in Year 1, $2.5 million (= $7.5 million – $5 million) of revenue will be recognized in Year 2.

   This treatment is consistent with the percentage of completion method previously in use, although the new standards do not call it that.

2. **Acting as an agent**

   Consider a travel agent who arranges a first-class ticket for a customer flying to Singapore. The ticket price is $10,000, made by nonrefundable payment at purchase, and the travel agent receives a $1,000 commission on the sale. Because the travel agent is not responsible for providing the flight and bears no inventory or credit risk, they are *acting as an agent*. Because they are an agent, rather than a *principal*, they should report revenue equal to their commission of $1,000, the net amount of the sale. If they were a principal in the transaction, they would report revenue of $10,000, the gross amount of the sale, and an expense of $9,000 for the ticket. Note that while gross profit is the same ($1,000) regardless of selling as a principal or agent, the gross profit margin is very different. If treated as a principal, the margin would be $1,000 / $10,000 = 10%, but as an agent, the margin would be $1,000 / $1,000 = 100%.

3. **Franchising and licensing**

   Consider a fast food company that both operates restaurants and grants franchisees rights to operate restaurants using its brand name under license, and supplies franchisees with some products used in daily operations. As well as charging a license fee, the company also receives a royalty fee of 2% of the franchisee's turnover. Accounting standards require revenue to be split into

categories that have similar characteristics (nature, amounts, timings, and risk factors).

The fast food company would disaggregate revenue into these categories:

- Revenue from company-owned restaurants
- Franchise royalties and fees
- Revenue from supplies to franchises (equipment and food materials)

Franchise fees often grant the franchisee the right to operate over numerous periods and would initially be treated as deferred revenue. Subsequently, it would be amortized to revenue in the income statement over the life of the franchise contract period.

Royalty fees would be included periodically in the franchisor's accounts when they become contractually payable by the franchisee under the terms of the contract.

4. **Service versus license**

Consider a software supplier that allows customers to purchase a license and install the software on their own machines, or subscribe to a cloud-based solution with access over the internet.

If customers purchase a license and install the software on their own systems, IFRS allows for two treatments:

a. The software supplier will report revenue over the life of the contract.

Criteria:

- The software supplier will continue to update and enhance the software over the term of the license.
- Customers will be exposed to potential benefits or negative impacts from updates and enhancements.
- Updates and enhancements do not result in a transfer of goods or services.

b. The software supplier will report revenue at the outset of the contract.

Criteria:

- The license grants the customer the right to use the software as it exists at the start of the contract ("sold as is").
- A separate contract exists for enhancements and updates to the software. The revenue for support services will be recognized when provided (typically over the life of the contract).

If customers access the software without taking physical possession of the software (i.e., cloud-based access), the contract is for a service, and revenue should be recognized over the life of the contract.

5. **Bill-and-hold agreements**

Bill-and-hold agreements are a type of sales agreement that involves the customer paying for goods ahead of shipping. Typically, when a customer pays ahead of delivery, the revenue is treated as deferred, but revenue may be recorded before shipping if the supplier can demonstrate that its performance obligations are complete and the customer has control over the good. IFRS criteria include the

following: the customer asked for the arrangement, the goods are identified as belonging to the customer, the goods are complete and ready for transfer to the customer, and the goods cannot be redirected to another customer.

Required disclosures under the converged standards include the following:

- Contracts with customers by category
- Assets and liabilities related to contracts, including balances and changes
- Outstanding performance obligations and the transaction prices allocated to them
- Management judgments used to determine the amount and timing of revenue recognition, including any changes to those judgments

MODULE QUIZ 28.1

1. The first step in the revenue recognition process is to:
   A. determine the price.
   B. identify the contract.
   C. identify the obligations.
2. A contractor agrees to build a bridge for a total price of $10 million. The project is expected to take four years to complete, at a total cost of $6.5 million. After Year 1, costs of $2.5 million have been incurred, and a further $1 million in costs are incurred in Year 2. The client pays $2 million in each of the first two years. The amount of revenue the contractor should recognize in Year 2 is *closest* to:
   A. $1.54 million.
   B. $2.00 million.
   C. $5.38 million.
3. A realtor sells one of its client's houses for $1.4 million, earning a commission of 3%. The costs to the realtor associated with the sale are $15,000. What is the realtor's gross profit for this transaction?
   A. $27,000.
   B. $42,000.
   C. $1,385,000.

MODULE 28.2: EXPENSE RECOGNITION

Video covering this content is available online.

LOS 28.b: Describe general principles of expense recognition, specific expense recognition applications, implications of expense recognition choices for financial analysis and contrast costs that are capitalized versus those that are expensed in the period in which they are incurred.

Expenses are subtracted from revenue to calculate net income. According to the IASB, expenses are decreases in economic benefits during the accounting period in the form of outflows or depletions of assets, or incurrence of liabilities that result in decreases in equity other than those relating to distributions to equity participants.[2]

If the financial statements were prepared on a cash basis, neither revenue recognition nor expense recognition would be an issue. The firm would simply recognize cash

received as revenue and cash payments as expense.

Under the accrual method of accounting, expense recognition is in the period in which the economic benefits of the expenditure are consumed. Three different methods are used to achieve this: the matching principle, expensing as incurred, and capitalization.

Using the **matching principle**, expenses to generate revenue are recognized in the same period as the revenue. Inventory provides a good example. Assume that inventory is purchased during the fourth quarter of one year and sold during the first quarter of the following year. Using the matching principle, both the revenue and the expense (cost of goods sold) are recognized in the first quarter of the second year, when the inventory is sold—not the period in which the inventory was purchased. Another example are goods that are sold with a warranty period. The estimated cost of repairing or replacing faulty goods under the warranty must be estimated and deducted from revenue at the time of sale, rather than when the actual costs are incurred.

Capitalization is an application of the matching principle whereby costs are initially capitalized as assets on the balance sheet and then expensed, using depreciation or amortization, to the income statement over the asset's life as its benefits are consumed. Property, plant, and equipment (PP&E) and intangible assets with finite lives are examples of this.

Not all expenses can be directly tied to revenue generation. These costs are known as **period costs**. Period costs, such as administrative costs, are expensed in the period incurred. For example, if a firm has occupied a leased premise, one year's worth of rent should be expensed to the income statement regardless of whether the rent has been paid.

An accounting policy that recognizes expenses later rather than sooner is seen as aggressive, while a policy that recognizes expenses earlier is conservative. Expensing is, therefore, more conservative than capitalization.

> **EXAMPLE: Inventory and the matching principle**
>
> Imagine a trading company that simply buys and resells goods. If the firm had 100 units of sales during the accounting period, we would expect to see cost of goods sold reflect 100 units of cost if we apply the matching principle. If the firm had 20 units of beginning inventory at the start of the year and purchased a further 90 units, the total number of units available for sale would be 110. The matching concept, therefore, requires the company to remove 10 units that are unsold from the income statement and store them in the balance sheet as a current asset (ending inventory). These 10 units will become the next period's beginning inventory.
>
> **Matching Cost of Goods Sold to the Number of Units Sold**

	Units	Units	
Sales		100	
Beginning inventory	20		
Purchases	90		
Available for sale	110		
Ending inventory	(10)		Transfer to B/S
Cost of goods sold		100	Remains in I/S

Assume the firm had the following transactions in the period:

Purchase Made During the Period		Total
Purchase 1	20 units @ $22 each	$440
Purchase 2	30 units @ $25 each	$750
Purchase 3	30 units @ $28 each	$840
Purchase 4	10 units @ $30 each	$300
Total		$2,330
Sales Made During the Period		
Sales	100 units @ $35	$3,500

In addition, assume the beginning inventory of 20 units had an associated cost of $400.

The company has identified that of its 10 units of ending inventory, 8 units relate to Purchase 4, and 2 units relate to Purchase 3.

Ending inventory at cost	Total
2 units @ $28 each	$56
8 units @ $30 each	$240
Total	$296

Income Statement	$	$
Revenue		3,500
Beginning inventory	400	
Purchases	2,330	
Available for sale	2,730	
Ending inventory	(296)	
Cost of goods sold		2,434
Gross profit		1,066

This approach ensures that the company matches the 100 units of sales with 100 units of cost. The $296 of ending inventory will be a current asset in the company's balance sheet.

PROFESSOR'S NOTE

This example used the specific identification method to compute the cost of ending inventory. This method is typically used if a firm can identify exactly which items were sold and which items remain in inventory (e.g.,

an auto dealer records each vehicle sold or in inventory by its identification number).

If the specific cost of each item remaining in ending inventory at period-end cannot be identified, the company will rely on one of three cost flow methodologies to assign cost. The three methods are first-in, first-out (FIFO); last-in, first-out (LIFO); and the weighted average cost method. We will discuss these methods in more detail in our reading on Analysis of Inventories.

Capitalization vs. Expensing

When a firm makes an expenditure, it can either capitalize the cost as an asset on the balance sheet or expense the cost in the income statement in the period incurred. As a general rule, an expenditure that is expected to provide a future economic benefit over multiple accounting periods is capitalized; however, if the future economic benefit is unlikely or highly uncertain, the expenditure is expensed in the period incurred.

An expenditure that is capitalized is initially recorded as an asset on the balance sheet at cost, which is typically its fair value at acquisition plus any costs necessary to prepare the asset for use. Except for land and intangible assets with indefinite lives (such as acquisition goodwill), the cost is then allocated to the income statement over the life of the asset as **depreciation** expense (for tangible assets), **depletion** (for natural resources), or **amortization** expense (for intangible assets with finite lives). Depreciation, depletion, and amortization reduce the carrying value (net book value) of the asset in the balance sheet, and the expense reduces net income in the income statement. Alternatively, if an expenditure is immediately expensed, current-period pretax income is reduced by the amount of the expenditure.

Once an asset is capitalized, subsequent related expenditures that provide more future economic benefits (e.g., rebuilding the asset) are also capitalized. Subsequent expenditures that merely sustain the usefulness of the asset (e.g., regular maintenance) are expensed when incurred.

EXAMPLE: Capitalizing vs. expensing

Northwood Corp. purchased new equipment to be used in its manufacturing plant. The cost of the equipment was $250,000, including $5,000 freight and $12,000 of taxes. In addition to the equipment cost, Northwood paid $10,000 to install the equipment and $7,500 to train its employees to use the equipment. Over the asset's life, Northwood paid $35,000 for repairs and maintenance. At the end of five years, Northwood extended the life of the asset by rebuilding the equipment's motors at a cost of $85,000.

What amounts should be capitalized on Northwood's balance sheet, and what amounts should be expensed in the period incurred?

Answer:

Northwood should capitalize all costs that provide future economic benefits, including the costs that are necessary to get the asset ready for use. Rebuilding the equipment's motors extended its life; thus, it increased its future benefits.

Capitalized Costs		
Purchase price	$250,000	(including freight and taxes)
Installation costs	10,000	
Rebuilt motors	85,000	
	$345,000	

Costs that do not provide future economic benefits are expensed in the period incurred. The initial training costs are not necessary to get the asset ready for use. Rather, the training costs are necessary to get the employees ready to use the asset. Thus, the training costs are immediately expensed. Repair and maintenance costs are operating expenditures that do not extend the life of the equipment.

Costs Expensed When Incurred	
Initial training costs	$7,500
Repairs and maintenance	35,000
	$42,500

EXAMPLE: Impact of capitalization on financial statements

Chair Ltd. was incorporated at the start of the year with the issuance of £40,000 of shares paid in full. The company immediately purchased new equipment to be used in the production process. The machinery cost £12,000 with an estimated useful economic life of four years and no salvage value. The equipment is depreciated using straight-line methodology in the accounts, and we will assume the accounting depreciation is tax deductible. Chair has no other assets and liabilities except cash and PP&E. Assume Chair has revenue of £30,000 per year and an operating profit margin of 40% before considering the impact of the equipment purchase. Chair is subject to a tax rate of 30% and pays no dividends.

Compare and contrast the impact on the financial statement if the cost of equipment is capitalized versus expensed.

Answer:

$$\text{straight-line depreciation of equipment} = \frac{£12{,}000 - 0}{4 \text{ years}} = £3{,}000 \text{ p.a.}$$

Income Statement: Capitalization of Equipment Cost

Year	1	2	3	4
	£	£	£	£
Revenue	30,000	30,000	30,000	30,000
Operating profit @ 40%	12,000	12,000	12,000	12,000
Depreciation	(3,000)	(3,000)	(3,000)	(3,000)
Income before tax	9,000	9,000	9,000	9,000
Tax @ 30%	(2,700)	(2,700)	(2,700)	(2,700)
Net income	6,300	6,300	6,300	6,300

Income Statement: Expensing of Equipment Cost

Year	1	2	3	4
	£	£	£	£
Revenue	30,000	30,000	30,000	30,000
Operating profit @ 40%	12,000	12,000	12,000	12,000
Equipment expense	(12,000)	0	0	0
Income before tax	0	12,000	12,000	12,000
Tax @ 30%	0	(3,600)	(3,600)	(3,600)
Net income	0	8,400	8,400	8,400

Capitalization spreads the expense of the equipment in the income statement over the life of the asset. Expensing results in the full cost of the equipment passing through the income statement in the first year, but none in subsequent years; in turn, this causes net income to be lower in the first year, but higher in the subsequent years. Capitalization results in less volatility of earnings when compared to expensing.

Balance Sheet: Capitalization of Equipment Cost

End of year	1	2	3	4
	£	£	£	£
Cash	37,300	46,600	55,900	65,200
PP&E (net)	9,000	6,000	3,000	0
Total assets	46,300	52,600	58,900	65,200
Share capital & additional paid-in capital (APIC)	40,000	40,000	40,000	40,000
Retained earnings	6,300	12,600	18,900	25,200
Total equity	46,300	52,600	58,900	65,200

Balance Sheet: Expensing of Equipment Cost

End of year	1	2	3	4
	£	£	£	£
Cash	40,000	48,400	56,800	65,200
PP&E (net)	0	0	0	0
Total assets	40,000	48,400	56,800	65,200
Share capital & APIC	40,000	40,000	40,000	40,000
Retained earnings	0	8,400	16,800	25,200
Total equity	40,000	48,400	56,800	65,200

In the earlier years, total assets and equity are higher if the firm capitalizes costs. This results from including the carrying value of the asset (its cost less accumulated depreciation) in the balance sheet. Equity is higher in Year 1 under capitalization due to higher net income, and therefore, higher retained earnings.

These differences narrow over the asset's life until they are identical at the end. This convergence is caused by two factors:

1. The carrying value of the asset decreases as it is depreciated under the capitalization approach.
2. Although net income is lower in Year 1 if the cost is expensed, it is higher in all the subsequent years.

Cash Flow Statement: Capitalization of Equipment Cost

Year	1	2	3	4
	£	£	£	£
Operating cash flow	9,300	9,300	9,300	9,300
Investing cash flow	(12,000)	0	0	0
Financing cash flow	40,000	0	0	0
Change in cash	37,300	9,300	9,300	9,300

We can state operating cash flow as net income plus noncash charges less working capital investment. The only noncash charge in this example is depreciation. Working capital investment is assumed to be zero in this example.

Opening cash	0	37,300	46,600	55,900
Change in cash	37,300	9,300	9,300	9,300
Closing cash	37,300	46,600	55,900	65,200

Cash Flow Statement: Expensing of Equipment Cost

Year	1	2	3	4
	£	£	£	£
Operating cash flow	0	8,400	8,400	8,400
Investing cash flow	0	0	0	0
Financing cash flow	40,000	0	0	0
Change in cash	40,000	8,400	8,400	8,400
Opening cash	0	40,000	48,400	56,800
Change in cash	40,000	8,400	8,400	8,400
Closing cash	40,000	48,400	56,800	65,200

Capitalization requires the investment in equipment to be treated as a cash outflow from investing activities, while expensing treats the cost of equipment as a cash outflow from operating activities. The reason total cash flow differs under the two approaches is that the full tax benefit of the cost is recognized in Year 1 with expensing, while it is spread over the life of the asset under capitalization. At the end of the asset's life, total cash is identical for both approaches.

Financial statement ratios: Capitalization vs. expensing

Ratio	Year 1	Year 2	Year 3	Year 4
Total asset turnover: capitalization	0.7	0.6	0.5	0.5
Total asset turnover: expensing	0.8	0.7	0.6	0.5
Net profit margin: capitalization	21%	21%	21%	21%
Net profit margin: expensing	0%	28%	28%	28%
Return on equity: capitalization	14%	13%	11%	10%
Return on equity: expensing	0%	19%	16%	14%

Total asset turnover (sales / average total assets) is lower if costs are capitalized due to higher balance sheet assets. As the asset's carrying value declines over time and retained earnings converge under the two approaches, the difference in total asset turnover between the two approaches declines.

Net profit margin (net income / sales) is higher in Year 1 if the costs are capitalized because the income statement contains depreciation of £3,000 compared to the full cost of £12,000 if costs are expensed. In subsequent years, expensing will give higher margins as depreciation continues to pass through the income statement when using capitalization, while no cost passes through the income statement after Year 1 if the cost was expensed.

Return on equity (net income / average stockholders' equity) is higher in Year 1 if the cost is capitalized, but lower in subsequent years when compared to expensing. Again, this is due to the impact on net income of depreciation under capitalization versus the one-off charge to the income statement when expensing.

The preceding example demonstrates how the decision to capitalize or expense a cost reduces comparability among companies. Capitalization increases net income, ROE, and CFO in Year 1 at the expense of decreased values in subsequent years. Analysts

should take care to identify different accounting treatments of significant expenditures when comparing companies or industries. Figure 28.1 summarizes the impacts of capitalizing versus expensing.

Figure 28.1: Financial Statement Effects

	Capitalizing	Expensing
Assets & equity	Higher	Lower
Net income (first year)	Higher	Lower
Net income (other years)	Lower	Higher
Income variability	Lower	Higher
ROA & ROE (first year)	Higher	Lower
ROA & ROE (other years)	Lower	Higher
Debt ratio & debt-to-equity	Lower	Higher
CFO	Higher	Lower
CFI	Lower	Higher

The example considered a one-off decision to capitalize or expense. If a company continues to capitalize rather than expense cost in future periods, the profit-enhancing effects of capitalization will continue, provided the capitalized costs in each period exceed depreciation expense.

Capitalized Interest

When a firm constructs an asset for its own use or, in limited circumstances, for resale, the interest that accrues during the construction period is capitalized as a part of the asset's cost. The reasons for capitalizing interest are to accurately measure the cost of the asset and to better match the cost with the revenues generated by the constructed asset. The treatment of construction interest is similar under U.S. GAAP and IFRS.

Capitalized interest is not reported in the income statement as interest expense. Once construction interest is capitalized, the interest cost is allocated to the income statement through depreciation expense (if the asset is held for use) or COGS (if the asset is held for sale).

Capitalizing interest results in it being reported in the cash flow statement as an outflow from investing activities. This contrasts with the usual treatment of interest paid, which is reported as an outflow from operating activities under U.S. GAAP and can be an operating or financing outflow under IFRS.

For an analyst, both capitalized and expensed interest should be used when calculating interest coverage ratios to get a clearer picture of the company's solvency. Analysts should also adjust income by adding back any depreciation of capitalized interest.

> **EXAMPLE: Capitalization of interest**
>
> Willock AG is a German company specializing in large infrastructure projects. Due to the highly specialized nature of some equipment, Willock constructs equipment that it will use in projects. In the current period, Willock reports EBIT of €160 million

and an interest expense of €80 million. Footnote disclosures reveal €20 million of interest has been capitalized in assets in the course of construction in the year, and that depreciation resulting from interest capitalized on assets constructed in prior years that are now in use was €10 million.

Calculate the interest coverage ratio before and after adjusting for capitalized interest.

Answer:

$$\text{interest coverage} = \frac{\text{EBIT}}{\text{interest expense}}$$

$$\text{before adjustment} = \frac{\text{€160 million}}{\text{€80 million}} = 2.0$$

$$\text{after adjustment} = \frac{\text{€160 million} + \text{€10 million}}{\text{€80 million} + \text{€20 million}} = 1.7$$

Additional depreciation in the income statement due to the capitalization of financing costs during the construction phase is reversed for assets that are now in use, increasing EBIT. Interest capitalized in the current period for equipment in the course of construction is added to interest expense.

EXAMPLE: Cash flow treatment of capitalized interest

Continuing the previous example, Willock reported CFO of €70 million and CFI of –€50 million. Willock includes interest paid within its computation of CFO, with the exception of capitalized interest on the construction of equipment. Assuming all interest has been paid by year-end and ignoring any tax implications, what was the impact of interest capitalization on CFO and CFI?

Answer:

€20 million interest was capitalized. Had this been expensed instead, CFI would have been €20 million higher, or –€30 million, and CFO would have been €20 million lower, or €50 million. No adjustment for depreciation is required as it is a noncash charge.

Research and Development Costs

With some exceptions, costs to create intangible assets are expensed as incurred. Important exceptions are research and development costs (under IFRS) and software development costs.

Under IFRS, **research costs**, which are costs aimed at the discovery of new scientific or technical knowledge and understanding, are expensed as incurred. However, **development costs** may be capitalized. Development costs are incurred to translate research findings into a plan or design of a new product or process. To recognize an intangible asset in development, a firm must show that it can complete the asset and intends to use or sell the completed asset, among other criteria.

Under U.S. GAAP, both research and development costs are generally expensed as incurred. However, the costs of creating software for sale to others are treated in a manner similar to the treatment of research and development costs under IFRS. Costs incurred to develop software for sale to others are expensed as incurred until the product's technological feasibility has been established, after which the costs of developing a salable product are capitalized.

To make the financial statements comparable for a company that capitalizes development costs with one that expenses such costs, the income statement should be adjusted to include development costs as an expense, and any current amortization of development cost capitalized in the past should be removed. In the balance sheet, capitalized development costs should be removed, resulting in lower assets and equity. Adjusting the cash flow statement will require capitalized costs to be removed from CFI and included in CFO, which will decrease CFO.

Bad Debt Expense and Warranty Expense Recognition

If a firm sells goods or services on credit or provides a warranty to the customer, the matching principle requires the firm to estimate bad debt expense or warranty expense. To do so, the firm recognizes the expense in the period of the sale, rather than a later period.

Implications for Financial Analysis

Like revenue recognition, expense recognition requires numerous estimates. Because estimates are involved, it is possible for firms to delay or accelerate the recognition of expenses. Delayed expense recognition increases current net income and is, therefore, more aggressive.

Analysts must consider the underlying reasons for a change in an expense estimate. If a firm decreases its bad debt expense, was it because its collection experience improved, or was it to manipulate net income?

Analysts should also compare a firm's estimates to those of other firms in its industry. If a firm's warranty expense is significantly less than that of a peer firm, is that a result of higher quality products, or is the firm's expense recognition more aggressive than that of the peer firm?

Firms disclose their accounting policies and significant estimates in the financial statement footnotes and in the management discussion and analysis (MD&A) section of the annual report.

MODULE QUIZ 28.2

1. If a company purchases an asset with future economic benefits that are highly uncertain, the company should:
   A. expense the purchase.
   B. use straight-line depreciation.
   C. use an accelerated depreciation method.
2. Red Company immediately expenses its development costs, while Black Company capitalizes its development costs. All else equal, Red Company will:

A. show smoother reported earnings than Black Company.
B. report higher operating cash flow than Black Company.
C. report higher asset turnover than Black Company.

MODULE 28.3: NONRECURRING ITEMS

Video covering this content is available online.

LOS 28.c: Describe the financial reporting treatment and analysis of non-recurring items (including discontinued operations, unusual or infrequent items) and changes in accounting policies.

The definition of **unusual or infrequent items** is obvious—these events are either unusual in nature or infrequent in occurrence and are material (significant enough to affect the opinions of financial statement users). Examples of items that could be considered unusual or infrequent include the following:

- Gains or losses from the sale of assets or part of a business, if these activities are not a firm's ordinary operations
- Impairments, write-offs, and write-downs
- Restructuring costs

Unusual or infrequent items are included in income from continuing operations and are reported before tax.

Analysts should review unusual or infrequent items to determine whether they truly should be excluded when forecasting a firm's earnings. Some companies appear to be accident-prone and have "unusual or infrequent" losses every year or every few years.

A **discontinued operation** is one that management has decided to dispose of, but either has not yet done so, or has disposed of in the current year after the operation had generated income or losses. To be accounted for as a discontinued operation, the business must be physically and operationally distinct from the rest of the firm, in terms of assets, operations, and investing and financing activities.

The date when the company develops a formal plan for disposing of an operation is referred to as the *measurement date*, and the time between the measurement period and the actual disposal date is referred to as the *phaseout period*. Any income or loss from discontinued operations is reported separately in the income statement, net of tax, after income from continuing operations. Any past income statements presented must be restated, separating the income or loss from the discontinued operations. On the measurement date, the company will accrue any estimated loss during the phaseout period, and any estimated loss on the sale of the business. Any expected gain on the disposal cannot be reported until after the sale is completed.

Analysis of discontinued operations is straightforward: They do not affect net income from continuing operations. For this reason, analysts should exclude discontinued operations when forecasting future earnings. However, the actual event of discontinuing a business segment or selling assets may provide information about the future cash flows of the firm.

Changes in Accounting Policies and Estimates

Accounting changes include changes in accounting policies, changes in accounting estimates, and prior-period adjustments. Such changes may require either **retrospective application** or **prospective application**. With retrospective application, any prior-period financial statements presented in a firm's current financial statements must be restated, applying the new policy to those statements as well as future statements. Retrospective application enhances the comparability of the financial statements over time. With prospective application, prior statements are not restated, and the new policies are applied only to future financial statements.

Standard-setting bodies, at times, issue a **change in accounting policy**. Sometimes, a firm may change which accounting policy it applies, for example, by changing its inventory costing method or capitalizing rather than expensing specific purchases. Unless it is impractical, changes in accounting policies require retrospective application.

In the recent change to revenue recognition standards, firms were given the option of *modified retrospective application*. This application does not require restatement of prior-period statements; however, beginning values of affected accounts are adjusted for the cumulative effects of the change.

Generally, a **change in accounting estimate** is the result of a change in management's judgment, usually due to new information. For example, management may change the estimated useful life of an asset because new information indicates that the asset has a longer or shorter life than originally expected. Changes in accounting estimates are applied prospectively and do not require the restatement of prior financial statements.

Accounting estimate changes typically do not affect cash flow. An analyst should review changes in accounting estimates to determine their impact on future operating results.

Sometimes, a change from an incorrect accounting method to one that is acceptable under GAAP or IFRS is required. A correction of an accounting error made in previous financial statements is reported as a **prior-period adjustment** and requires retrospective application. Prior-period results are restated. Disclosure of the nature of any significant prior-period adjustment and its effect on net income is also required.

Prior-period adjustments usually involve errors or new accounting standards and do not typically affect cash flow. Analysts should review adjustments carefully because errors may indicate weaknesses in the firm's internal controls.

Changes in Scope and Exchange Rates

Accounting standards do not require firms to disclose the impact on their financial statements of changes in scope or exchange rates, but analysts must be alert to their effects. In this context, "changes in scope" refer to how acquiring another company affects the size of the combined entity. Mergers and acquisitions can dramatically reduce comparability of company financial statements before and after the acquisition date. If a company conducts overseas trade or owns overseas subsidiaries, fluctuating

exchange rates can affect its financial statements because overseas sales and purchases and the income statements of overseas subsidiaries need to be converted to the company's reporting currency.

PROFESSOR'S NOTE
The Level II CFA curriculum addresses accounting and analysis of business combinations and foreign currency translation.

MODULE QUIZ 28.3

1. Changing an accounting estimate:
   A. is reported prospectively.
   B. requires restatement of all prior-period statements presented in the current financial statements.
   C. is reported by adjusting the beginning balance of retained earnings for the cumulative effect of the change.
2. Which of the following transactions would *most likely* be reported below income from continuing operations, net of tax?
   A. Gain or loss from the sale of equipment used in a firm's manufacturing operation.
   B. A change from the accelerated method of depreciation to the straight-line method.
   C. The operating income of a physically and operationally distinct division that is currently for sale, but not yet sold.
3. Which of the following statements about nonrecurring items is *least accurate*?
   A. Discontinued operations are reported net of taxes, at the bottom of the income statement before net income.
   B. Unusual or infrequent items are reported before taxes, above net income from continuing operations.
   C. A change in accounting principle is reported in the income statement net of taxes, before net income.

MODULE 28.4: EARNINGS PER SHARE

Video covering this content is available online.

LOS 28.d: Describe how earnings per share is calculated and calculate and interpret a company's basic and diluted earnings per share for companies with simple and complex capital structures including those with antidilutive securities.

Earnings per share (EPS) is one of the most commonly used corporate profitability performance measures for publicly traded firms (nonpublic companies are not required to report EPS data). EPS is reported only for shares of common stock (also known as ordinary stock).

A company may have either a simple or complex capital structure:

- A **simple capital structure** is one that contains *no* potentially dilutive securities. A simple capital structure contains only common stock, nonconvertible debt, and nonconvertible preferred stock.
- A **complex capital structure** contains *potentially dilutive securities* such as employee stock options, warrants, or convertible securities.

All firms with complex capital structures must report both *basic* and *diluted* EPS. Firms with simple capital structures report only basic EPS.

Basic EPS

The basic EPS calculation does not consider the effects of any dilutive securities in the computation of EPS:

$$\text{basic EPS} = \frac{\text{net income} - \text{preferred dividends}}{\text{weighted average number of common shares outstanding}}$$

The current year's preferred dividends are subtracted from net income because EPS refers to the per-share earnings *available to common shareholders*. Net income minus preferred dividends is the income available to common stockholders. Common stock dividends are *not* subtracted from net income because they are a part of the net income available to common shareholders.

The **weighted average number of common shares** is the number of shares outstanding during the year, weighted by the portion of the year they were outstanding.

Effect of Stock Dividends and Stock Splits

A **stock dividend** is the distribution of additional shares to each shareholder in an amount proportional to their current number of shares. If a 10% stock dividend is paid, the holder of 100 shares of stock would receive 10 additional shares.

A **stock split** refers to the division of each "old" share into a specific number of "new" (post-split) shares. The holder of 100 shares will have 200 shares after a 2-for-1 split, or 150 shares after a 3-for-2 split.

The important thing to remember is that each shareholder's proportional ownership in the company is unchanged by either of these events. Each shareholder has more shares but the same percentage of the total shares outstanding. For calculating EPS, we apply stock dividends and splits retroactively to the beginning of the year, to all shares before the date of the corporate event. Prior years' weighted average number of common shares is also adjusted as if the stock split or stock dividend had occurred in the prior period, to prevent EPS from appearing to decline when these actions are largely cosmetic.

PROFESSOR'S NOTE

For our purposes here, a stock dividend and a stock split are two ways of doing the same thing. For example, a 50% stock dividend and a 3-for-2 stock split both result in three "new" shares for every two "old" shares.

The following are key things to know about calculating weighted average shares outstanding:

- The weighting system is days outstanding divided by the number of days in a year, but on the exam, the monthly approximation method will probably be used.
- Shares issued enter into the computation from the date of issuance.
- Reacquired shares are excluded from the computation from the date of reacquisition.

- Shares sold or issued in a purchase of assets are included from the date of issuance.
- A stock split or stock dividend is applied to all shares outstanding before the split or dividend and to the beginning-of-period weighted average shares. A stock split or stock dividend adjustment is not applied to any shares issued or repurchased after the split or dividend date.

EXAMPLE: Weighted average shares outstanding

Johnson Company has 10,000 shares outstanding at the beginning of the year. On April 1, Johnson issues 4,000 new shares. On July 1, Johnson distributes a 10% stock dividend. On September 1, Johnson repurchases 3,000 shares. Calculate Johnson's weighted average number of shares outstanding for the year, for its reporting of basic earnings per share.

Answer:

Shares outstanding are weighted by the portion of the year that the shares were outstanding. Any shares that were outstanding before the 10% stock dividend must be adjusted for it. Transactions that occur after the stock dividend do not need to be adjusted.

PROFESSOR'S NOTE
Think of the shares before the stock dividend as "old" shares and shares after the stock dividend as "new" shares that each represent ownership of a smaller portion of the company (in this example, 10/11ths of that of an old [pre-stock dividend] share). The weighted average number of shares for the year will be in new shares.

Shares outstanding on January 1: $10{,}000 \times 1.10 \times 12/12$ of the year	= 11,000
Shares issued April 1: $4{,}000 \times 1.10 \times 9/12$ of the year	= 3,300
Shares repurchased September 1: $-3{,}000 \times 4/12$ of the year	= −1,000
Weighted average shares outstanding	= 13,300

EXAMPLE: Basic earnings per share

Johnson Company has net income of $10,000, paid $1,000 cash dividends to its preferred shareholders, and paid $1,750 cash dividends to its common shareholders. Calculate Johnson's basic EPS using the weighted average number of shares from the previous example.

Answer:

$$\text{basic EPS} = \frac{\text{net income} - \text{preferred dividends}}{\text{weighted average shares of common}}$$

$$= \frac{\$10{,}000 - \$1{,}000}{13{,}300} = \$0.68$$

PROFESSOR'S NOTE

> Remember, the payment of a cash dividend on common shares is not considered in the calculation of EPS.

Diluted EPS

Before calculating diluted EPS, it is necessary to understand the following terms:

- **Dilutive securities** are stock options, warrants, convertible debt, or convertible preferred stock that would *decrease* EPS if exercised or converted to common stock.
- **Antidilutive securities** are stock options, warrants, convertible debt, or convertible preferred stock that would *increase* EPS if exercised or converted to common stock.

We apply the "if converted" method to examine the impact of potentially dilutive securities. This looks at what EPS would have been if the securities were converted at the start of the accounting period, regardless of whether they can actually be converted during the period.

The numerator of the basic EPS equation contains income available to common shareholders (net income less preferred dividends). In the case of diluted EPS, if there are dilutive securities, the numerator must be adjusted as follows:

- If convertible preferred stock is dilutive (meaning EPS will decrease if it is converted to common stock), the convertible preferred dividends must be added to earnings available to common shareholders.
- If convertible bonds are dilutive, then the bonds' after-tax interest expense is not considered an interest expense for diluted EPS. Hence, interest expense multiplied by (1 – the tax rate) must be added back to the numerator.

PROFESSOR'S NOTE

Interest paid on bonds is typically tax deductible for the firm. If convertible bonds are converted to stock, the firm saves the interest cost but loses the tax deduction. Thus, only the after-tax interest savings are added back to income available to common shareholders.

The basic EPS denominator is the weighted average number of shares. When the firm has dilutive securities outstanding, the denominator is adjusted for the equivalent number of common shares that would be created by the conversion of all dilutive securities outstanding (convertible bonds, convertible preferred shares, warrants, and options), with each one considered separately to determine if it is dilutive.

If a dilutive security was issued during the year, the increase in the weighted average number of shares for diluted EPS is based on only the portion of the year the dilutive security was outstanding.

Dilutive stock options or warrants increase the number of common shares outstanding in the denominator for diluted EPS. There is no adjustment to the numerator.

The **diluted EPS equation** is:

$$\text{diluted EPS} = \frac{\text{adjusted income available for common shares}}{\text{weighted-average common and potential common shares outstanding}}$$

where:

$$\begin{aligned}\text{adjusted income available for common shares} = {} & \text{net income} - \text{preferred dividends} \\ & + \text{dividends on convertible preferred stock} \\ & + \text{after-tax interest on convertible debt}\end{aligned}$$

Therefore, diluted EPS is:

$$\text{diluted EPS} = \frac{\left[\text{net income} - \begin{matrix}\text{preferred}\\ \text{dividends}\end{matrix}\right] + \left[\begin{matrix}\text{convertible}\\ \text{preferred}\\ \text{dividends}\end{matrix}\right] + \left(\begin{matrix}\text{convertible}\\ \text{debt}\\ \text{interest}\end{matrix}\right)(1-t)}{\left(\begin{matrix}\text{weighted}\\ \text{average}\\ \text{shares}\end{matrix}\right) + \left(\begin{matrix}\text{shares from}\\ \text{conversion of}\\ \text{conv. pfd. shares}\end{matrix}\right) + \left(\begin{matrix}\text{shares from}\\ \text{conversion of}\\ \text{conv. debt}\end{matrix}\right) + \left(\begin{matrix}\text{shares}\\ \text{issuable from}\\ \text{stock options}\end{matrix}\right)}$$

The effect of conversion to common shares is included in the calculation of diluted EPS for a given security only if it is, in fact, dilutive. If a firm has more than one potentially dilutive security outstanding, each potentially dilutive security must be examined separately to determine if it is actually dilutive (i.e., would reduce EPS if converted to common stock).

EXAMPLE: EPS with convertible preferred stock

During 20X6, ZZZ Corp. reported net income of $4.35 million and had 2 million shares of common stock outstanding for the entire year. ZZZ's 7%, $5 million par value preferred stock is convertible into common stock at a conversion rate of 1.1 shares for every $10 of par value. Calculate basic and diluted EPS.

Answer:

Step 1: Calculate 20X6 basic EPS:

$$\text{basic EPS} = \frac{\$4{,}350{,}000 - (0.07)\,(\$5{,}000{,}000)}{2{,}000{,}000} = \$2.00$$

Step 2: Calculate diluted EPS:

- Compute the increase in common stock outstanding if the preferred stock is converted to common stock at the beginning of 20X6: ($5,000,000 / $10) × 1.1 = 550,000 shares.
- If the convertible preferred shares were converted to common stock, there would be no preferred dividends paid. Therefore, you should add back the convertible preferred dividends that had previously been subtracted from net income in the numerator.
- Compute diluted EPS as if the convertible preferred stock were converted into common stock:

$$\text{diluted EPS} = \frac{\text{net. inc.} - \text{pref. div.} + \text{convert. pref. dividends}}{\text{wt. avg. shares} + \text{convert. pref. common shares}}$$

$$\text{diluted EPS} = \frac{\$4{,}350{,}000}{2{,}000{,}000 + 550{,}000} = \$1.71$$

- Check to see if diluted EPS is less than basic EPS ($1.71 < $2.00). If the answer is yes, the preferred stock is dilutive and must be included in diluted EPS as computed previously. If the answer is no, the preferred stock is antidilutive, and conversion effects are not included in diluted EPS.

A quick way to check whether convertible preferred stock is dilutive is to divide the preferred dividend by the number of shares that will be created if the preferred stock is converted. For ZZZ:

$$\frac{\$5{,}000{,}000 \times 0.07}{550{,}000} = \$0.64$$

Because this is less than basic EPS, the convertible preferred is dilutive.

EXAMPLE: EPS with convertible debt

During 20X6, YYY Corp. had earnings available to common shareholders of $2.5 million and had 1 million shares of common stock outstanding for the entire year, for basic EPS of $2.50. During 20X5, YYY issued 2,000, $1,000 par, 5% bonds for $2 million (issued at par). Each of these bonds is convertible to 120 shares of common stock. The tax rate is 30%. Calculate the 20X6 diluted EPS.

Answer:

Compute the increase in common stock outstanding if the convertible debt is converted to common stock at the beginning of 20X6:

$$\text{shares issuable for debt conversion} = (2{,}000)(120) = 240{,}000 \text{ shares}$$

If the convertible debt is considered converted to common stock at the beginning of 20X6, then there would be no interest expense related to the convertible debt. Therefore, it is necessary to increase YYY's after-tax net income for the after-tax effect of the decrease in interest expense:

$$\text{increase in income} = [(2{,}000)(\$1{,}000)(0.05)]\ (1 - 0.30) = \$70{,}000$$

Compute diluted EPS as if the convertible debt were common stock:

$$\text{diluted EPS} = \frac{\text{net. inc.} - \text{pref. div.} + \text{convert. int.}\ (1 - t)}{\text{wt. avg. shares} + \text{convertible debt shares}}$$

$$\text{diluted EPS} = \frac{\$2{,}500{,}000 + \$70{,}000}{1{,}000{,}000 + 240{,}000} = \$2.07$$

Check to make sure that *diluted EPS is less than basic EPS* ($2.07 < $2.50). If diluted EPS is more than the basic EPS, the convertible bonds are *antidilutive* and should not be treated as common stock in computing diluted EPS.

A quick way to determine whether the convertible debt is dilutive is to calculate its per share impact:

$$\frac{\text{convertible debt interest}\ (1 - t)}{\text{convertible debt shares}}$$

If this per share amount is greater than basic EPS, the convertible debt is antidilutive, and the effects of conversion should not be included when calculating diluted EPS.

If this per share amount is less than basic EPS, the convertible debt is dilutive, and the effects of conversion should be included in the calculation of diluted EPS.

For YYY:

$$\frac{\$70,000}{240,000} = \$0.29$$

The company's basic EPS is $2.50, so the convertible debt is dilutive, and the effects of conversion should be included in the calculation of diluted EPS.

Stock options and warrants are dilutive only when their exercise prices are less than the average market price of the stock over the year. If the options or warrants are dilutive, use the **treasury stock method** to calculate the number of shares used in the denominator:

- The treasury stock method assumes that the funds received by the company from the exercise of the options would be used to hypothetically purchase shares of the company's common stock in the market at the average market price.
- The net increase in the number of shares outstanding (the adjustment to the denominator) is the number of shares created by exercising the options less the number of shares hypothetically repurchased with the proceeds of exercise.

EXAMPLE: EPS with stock options

During 20X6, XXX Corp. reported earnings available to common shareholders of $1.2 million and had 500,000 shares of common stock outstanding for the entire year, for basic EPS of $2.40. XXX has 100,000 stock options (or warrants) outstanding the entire year. Each option allows its holder to purchase one share of common stock at $15 per share. The average market price of XXX's common stock during 20X6 is $20 per share. Calculate diluted EPS.

Answer:

Number of common shares created if the options are exercised = 100,000

Cash inflow if the options are exercised = $15 per share × 100,000 shares = $1,500,000

Number of shares that can be purchased with these funds = $1,500,000 / $20 = 75,000 shares

Net increase in common shares outstanding from the exercise of the stock options = 100,000 − 75,000 = 25,000 shares

$$\text{diluted EPS} = \frac{\$1,200,000}{500,000 + 25,000} = \$2.29$$

A quick way to calculate the net increase in common shares from the potential exercise of stock options or warrants when the exercise price is less than the average market price is:

$$\left[\frac{\text{AMP} - \text{EP}}{\text{AMP}}\right] \times \text{N}$$

where:

AMP = average market price over the year

EP = exercise price of the options or warrants

N = number of common shares that the options and warrants can be converted into

For XXX:

$$\frac{\$20 - \$15}{\$20} \times 100{,}000 \text{ shares} = 25{,}000 \text{ shares}$$

MODULE QUIZ 28.4

1. Hall Corp. had 100,000 shares of common stock outstanding at the beginning of the year. Hall issued 30,000 shares of common stock on May 1. On July 1, the company issued a 10% stock dividend. On September 1, Hall issued 1,000, 10% bonds, each convertible into 21 shares of common stock. What is the weighted average number of shares to be used in computing diluted EPS, assuming the convertible bonds are dilutive?

   A. 132,000.
   B. 139,000.
   C. 146,000.

2. An analyst has gathered the following information about a company:

   - 300,000 shares outstanding
   - 100,000 warrants exercisable at $50 per share
   - Average share price: $55
   - Year-end share price: $60

   How many shares should be used in computing diluted EPS?

   A. 9,091.
   B. 90,909.
   C. 309,091.

3. An analyst has gathered the following information about a company:

   - 100,000 common shares outstanding from the beginning of the year
   - Earnings: $125,000
   - 1,000, 7%, $1,000 par bonds convertible into 25 shares each, outstanding as of the beginning of the year
   - Tax rate: 40%

   The company's diluted EPS is *closest* to:

   A. $1.22.
   B. $1.25.
   C. $1.34.

4. An analyst has gathered the following information about a company:

- 50,000 common shares outstanding from the beginning of the year
- Warrants outstanding all year on 50,000 shares, exercisable at $20 per share
- Stock is selling at year-end for $25
- Average price of the company's stock for the year was $15

How many shares should be used in calculating the company's diluted EPS?

A. 16,667.
B. 50,000.
C. 66,667.

MODULE 28.5: RATIOS AND COMMON-SIZE INCOME STATEMENTS

Video covering this content is available online.

LOS 28.e: Evaluate a company's financial performance using common-size income statements and financial ratios based on the income statement.

Common-Size Income Statements

A vertical **common-size income statement** expresses each category of the income statement as a percentage of revenue. The common-size format standardizes the income statement by eliminating the effects of size. This allows for comparison of income statement items over time (time-series analysis) and across firms (cross-sectional analysis). For example, the following are year-end income statements of industry competitors North Company and South Company:

	North Co.	South Co.
Revenue	$75,000,000	$3,500,000
Cost of goods sold	52,500,000	700,000
Gross profit	$22,500,000	$2,800,000
Administrative expense	11,250,000	525,000
Research expense	3,750,000	700,000
Operating profit	$7,500,000	$1,575,000

Notice that North is significantly larger and more profitable than South when measured in absolute dollars. North's gross profit is $22,500,000, as compared to South's gross profit of $2,800,000. Similarly, North's operating profit of $7,500,000 is significantly greater than South's operating profit of $1,575,000.

Once we convert the income statements to common-size format, we can see that South is the more profitable firm on a relative basis. South's gross profit of 80% and operating profit of 45% are significantly greater than North's gross profit of 30% and operating profit of 10%.

	North Co.	South Co.
Revenue	100%	100%
Cost of goods sold	70%	20%
Gross profit	30%	80%
Administrative expense	15%	15%
Research expense	5%	20%
Operating profit	10%	45%

Common-size analysis can also be used to examine a firm's strategy. South's higher gross profit margin may be the result of technologically superior products. Notice that South spends more on research than North on a relative basis. This may allow South to charge a higher price for its products.

In most cases, expressing expenses as a percentage of revenue is appropriate. One exception is income tax expense. Tax expense is more meaningful when expressed as a percentage of pretax income. The result is known as the **effective tax rate**.

Income Statement Ratios

Margin ratios can be used to measure a firm's profitability quickly. **Gross profit margin** is the ratio of gross profit (revenue minus cost of goods sold) to revenue (sales):

$$\text{gross profit margin} = \frac{\text{gross profit}}{\text{revenue}}$$

Gross profit margin can be increased by raising prices or reducing production costs. A firm might be able to increase prices if its products can be differentiated from other firms' products as a result of factors such as brand names, quality, technology, or patent protection. This was illustrated in the previous example whereby South's gross profit margin was higher than North's.

Another popular margin ratio is **net profit margin**. Net profit margin is the ratio of net income to revenue:

$$\text{net profit margin} = \frac{\text{net income}}{\text{revenue}}$$

Net profit margin measures the profit generated after considering all expenses. Like gross profit margin, net profit margin should be compared over time and with the firm's industry peers.

Any subtotal found in the income statement can be expressed as a percentage of revenue. For example, operating profit divided by revenue is known as **operating profit margin**. Pretax accounting profit divided by revenue is known as **pretax margin**.

MODULE QUIZ 28.5

1. A vertical common-size income statement expresses each category of the income statement as a percentage of:
   A. assets.
   B. gross profit.

C. revenue.

2. Which of the following would *most likely* result in higher gross profit margin, assuming no fixed costs?

   A. A 10% increase in the number of units sold.
   B. A 5% decrease in production cost per unit.
   C. A 7% decrease in administrative expenses.

KEY CONCEPTS

LOS 28.a

Revenue is recognized when earned, and expenses are recognized when incurred.

Accounting standards identify a five-step process for recognizing revenue:

1. Identify the contract(s) with a customer.
2. Identify the performance obligations in the contract.
3. Determine the transaction price.
4. Allocate the transaction price to the performance obligations in the contract.
5. Recognize revenue when (or as) the entity satisfies a performance obligation.

Information that can influence the choice of revenue recognition method includes progress toward completion of a performance obligation, variable considerations and their likelihood of being earned, revisions to contracts, and whether the firm is acting as a principal or an agent in a transaction.

LOS 28.b

The matching principle requires that firms match revenues recognized in a period with the expenses required to generate them. One application of the matching principle is seen in accounting for inventory, with cost of goods sold as the cost of units sold from inventory that are included in current-period revenue. Other costs, such as depreciation of fixed assets or administrative overhead, are period costs, and they are taken without regard to revenues generated during the period.

With capitalization, the asset value is put on the balance sheet, and the cost is expensed through the income statement over the asset's useful life through either depreciation or amortization. Compared to expensing, capitalization results in the following:

- Lower expense and higher net income in period of acquisition, and higher expense (depreciation or amortization) and lower net income in each of the remaining years of the asset's life
- Higher assets and equity
- Lower CFI and higher CFO because the cost of a capitalized asset is classified as an investing cash outflow
- Higher ROE and ROA in the initial period, and lower ROE and ROA in subsequent periods because net income is lower and both assets and equity are higher
- Lower debt-to-assets and debt-to-equity ratios because assets and equity are higher

Users of financial data should analyze the reasons for any changes in estimates of expenses and compare these estimates with those of peer companies.

LOS 28.c

Results of discontinued operations are reported below income from continuing operations, net of tax, from the date the decision to dispose of the operations is made. These results are segregated because they likely are nonrecurring and do not affect future net income.

Unusual or infrequent items are reported before tax and above income from continuing operations. An analyst should determine how "unusual" or "infrequent" these items really are for the company when estimating future earnings or firm value.

Changes in accounting standards, changes in accounting methods applied, and corrections of accounting errors require retrospective restatement of all prior-period financial statements included in the current statement. A change in an accounting estimate, however, is applied prospectively (to subsequent periods) with no restatement of prior-period results.

LOS 28.d

$$\text{basic EPS} = \frac{\text{net income} - \text{preferred dividends}}{\text{weighted average number of common shares outstanding}}$$

When a company has potentially dilutive securities, it must report diluted EPS. For any convertible preferred stock, convertible debt, warrants, or stock options that are dilutive, the calculation of diluted EPS is as follows:

$$\text{diluted EPS} = \frac{\left[\text{net income} - \begin{matrix}\text{preferred}\\ \text{dividends}\end{matrix}\right] + \left[\begin{matrix}\text{convertible}\\ \text{preferred}\\ \text{dividends}\end{matrix}\right] + \left(\begin{matrix}\text{convertible}\\ \text{debt}\\ \text{interest}\end{matrix}\right)(1-t)}{\left(\begin{matrix}\text{weighted}\\ \text{average}\\ \text{shares}\end{matrix}\right) + \left(\begin{matrix}\text{shares from}\\ \text{conversion of}\\ \text{conv. pfd. shares}\end{matrix}\right) + \left(\begin{matrix}\text{shares from}\\ \text{conversion of}\\ \text{conv. debt}\end{matrix}\right) + \left(\begin{matrix}\text{shares}\\ \text{issuable from}\\ \text{stock options}\end{matrix}\right)}$$

A dilutive security is one that, if converted to its common stock equivalent, would decrease EPS. An antidilutive security is one that would not reduce EPS if converted to its common stock equivalent.

LOS 28.e

A vertical common-size income statement expresses each item as a percentage of revenue. The common-size format standardizes the income statement by eliminating the effects of size. Common-size income statements are useful for trend analysis and for comparisons with peer firms.

Two popular profitability ratios are gross profit margin (gross profit / revenue) and net profit margin (net income / revenue). A firm can often achieve higher profit margins by differentiating its products from the competition.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 28.1

1. **B** The five steps in revenue recognition are as follows:

   Step 1: Identify the contract or contracts with the customer.

   Step 2: Identify the performance obligations in the contract(s).

   Step 3: Determine a transaction price.

   Step 4: Allocate the transaction price to the performance obligations.

   Step 5: Recognize revenue when (or as) the performance obligations have been satisfied.

   (LOS 28.a)

2. **A** In Year 1, the contractor has incurred 38.5% ($2.5 million / $6.5 million) of expected total costs and should recognize 38.5% of total revenue ($10 million × 38.5% = $3.85 million). By the end of Year 2, a total of $3.5 million costs have been incurred, 53.8% of expected total costs. Cumulatively, by the end of Year 2, total revenue of 53.8% × $10 million = $5.38 million should have been recognized, leaving $1.53 million ($5.38 million − $3.85 million) to be recognized in Year 2. The amount paid by the client does not affect revenue. (LOS 28.a)

3. **A** The realtor is acting as an agent, and so should recognize only the commission as revenue. Revenue should therefore be: ($1.4 million × 3%) = $42,000. Gross profit will be $42,000 − $15,000 = $27,000. (LOS 28.a)

Module Quiz 28.2

1. **A** If the future economic benefits of a purchase are highly uncertain, a company should expense the purchase in the period it is incurred. (LOS 28.b)

2. **C** As compared to a firm that capitalizes its expenditures, a firm that immediately expenses expenditures will report lower assets. Thus, asset turnover (revenue / average assets) will be higher for the expensing firm (lower denominator). (LOS 28.b)

Module Quiz 28.3

1. **A** A change in an accounting estimate is reported prospectively. No restatement of prior-period statements is necessary. (LOS 28.c)

2. **C** A physically and operationally distinct division that is currently for sale is treated as a discontinued operation. The income from the division is reported net of tax below income from continuing operations. Gains and losses on sales of operating assets, as well as depreciation expense, are reported pretax, above income from continuing operations. (LOS 28.c)

3. **C** A change in accounting principle requires retrospective application; that is, all prior-period financial statements currently presented are restated to reflect the change. (LOS 28.c)

Module Quiz 28.4

1. **B** The new stock is weighted by 8 / 12. The bonds are weighted by 4 / 12 and are not affected by the stock dividend.

$$\text{basic shares} = \{[100{,}000 \times (12 / 12)] + [30{,}000 \times (8 / 12)]\} \times 1.10 = 132{,}000$$

$$\text{diluted shares} = 132{,}000 + [21{,}000 \times (4 / 12)] = 139{,}000$$

(LOS 28.d)

2. **C** Because the exercise price of the warrants is less than the average share price, the warrants are dilutive. Use the Treasury stock method to determine the denominator impact:

$$\frac{\$55 - \$50}{\$55} \times 100{,}000 \text{ shares} = 9{,}091 \text{ shares}$$

Thus, the denominator will increase by 9,091 shares to 309,091 shares. The question asks for the total, not just the impact of the warrants. (LOS 28.d)

3. **B** First, calculate basic EPS:

$$\frac{\$125{,}000}{100{,}000} = \$1.25$$

Next, check if the convertible bonds are dilutive:

$$\text{numerator impact} = (1{,}000 \times 1{,}000 \times 0.07) \times (1 - 0.4) = \$42{,}000$$

$$\text{denominator impact} = (1{,}000 \times 25) = 25{,}000 \text{ shares}$$

$$\text{per share impact} = \frac{\$42{,}000}{25{,}000 \text{ shares}} = \$1.68$$

Because $1.68 is greater than the basic EPS of $1.25, the bonds are antidilutive. Thus, diluted EPS = basic EPS = $1.25. (LOS 28.d)

4. **B** The warrants, in this case, are antidilutive. The average price per share of $15 is less than the exercise price of $20. The year-end price per share is not relevant. The denominator consists of only the common stock for basic EPS. (LOS 28.d)

Module Quiz 28.5

1. **C** Each category of the income statement is expressed as a percentage of revenue (sales). (LOS 28.e)

2. **B** A 5% decrease in per unit production cost will increase gross profit by reducing the cost of goods sold. Assuming no fixed costs, gross profit margin will remain the same if sale quantities increase. Administrative expenses are not included in gross profit margin. (LOS 28.e)

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[1] IFRS 15, *Revenue From Contracts With Customers*.

[2] IASB *Framework for the Preparation and Presentation of Financial Statements*, paragraph 4.25(b).

READING 29

ANALYZING BALANCE SHEETS

MODULE 29.1: INTANGIBLE ASSETS AND MARKETABLE SECURITIES

Video covering this content is available online.

LOS 29.a: Explain the financial reporting and disclosures related to intangible assets.

Intangible assets are nonmonetary assets that lack physical substance. Securities are not considered intangible assets. Intangible assets are either identifiable or unidentifiable. **Identifiable intangible assets** can be acquired separately or are the result of rights or privileges conveyed to their owner. Examples of identifiable intangibles are patents, trademarks, and copyrights. **Unidentifiable intangible assets** cannot be acquired separately and may have an unlimited life. The best example of an unidentifiable intangible asset is goodwill.

Under International Financial Reporting Standards (IFRS), identifiable intangibles that are *purchased* can be reported on the balance sheet using the cost model or the revaluation model, although the revaluation model can only be used if an active market for the intangible asset exists. Both models are basically the same as the measurement models used for property, plant, and equipment. Under U.S. GAAP, only the cost model is allowed.

Except for certain legal costs, intangible assets that are *created internally*, such as research and development costs, are expensed as incurred under U.S. GAAP. Under IFRS, a firm must identify the research stage (discovery of new scientific or technical knowledge) and the development stage (using research results to plan or design products). The firm must expense costs incurred during the research stage but can capitalize costs incurred during the development stage. Criteria a project must meet for the firm to capitalize development costs include the following: the project is technically feasible, the resources exist to complete the project, a market exists for the product, and the company has the intention and resources to complete the project and sell the product.

Finite-lived intangible assets are amortized over their useful lives and tested for impairment in the same way as PP&E. The firm must review its amortization method and useful life estimates at least annually. Intangible assets with indefinite lives are not amortized, but they are tested for impairment at least annually.

Under IFRS and U.S. GAAP, all of the following should be expensed as incurred:

- Start-up and training costs
- Administrative overhead
- Advertising and promotion costs
- Relocation and reorganization costs
- Termination costs

Some analysts choose to eliminate intangible assets when they evaluate balance sheets. However, analysts should consider the value to the firm of each intangible asset before making any adjustments.

EXAMPLE: Measuring intangible assets

The R&D department of Lowe S.A. worked on two projects during the year:

- Project 1 aims to develop hydrogen fuel cells for motor vehicles. The company has not yet developed a working prototype propulsion unit, but it believes if successful, in the long run it could revolutionize the motor industry by producing environmentally clean vehicles.
- Project 2 is to develop a new type of catalytic converter, which would remove more particulates from exhaust fumes than those currently available. The company has developed a working prototype and is now working on a commercial version of the product. Lowe believes the demand from auto manufacturers would be high and has the resources to develop and launch the product.

R&D Department Period Costs

	Project 1	Project 2
	€m	€m
Materials	150	120
Direct labor	80	60
Production overhead	40	30
Administrative overhead	30	30

What costs will be capitalized, and what costs should be expensed, if Lowe reports under IFRS?

Answer:

Project 1: This project is not yet technically feasible, so is still in the research phase. Under IFRS and U.S. GAAP, Lowe should expense all costs.

Project 2: The existence of a working prototype suggests the project is technically feasible and that the project is in the development phase. The company has the resources and intention to complete the project and believes there would be high customer demand when launched. Under IFRS, the development costs should be capitalized while U.S. GAAP would require expensing.

Costs to be capitalized = materials + direct labor + production overhead (120 + 60 + 30) = €210 million.

Administrative costs are expensed as incurred.

LOS 29.b: Explain the financial reporting and disclosures related to goodwill.

Balance sheet **goodwill** results from acquiring another business. Goodwill is the amount by which the purchase price is greater than the fair value of the acquired company's identifiable net assets (assets minus liabilities).

Acquirers are often willing to pay more than the fair value of a target's identifiable net assets because the target may have assets that are not reported on its balance sheet. For example, the target's reputation and customer loyalty certainly have value, but that value is not quantifiable. Also, the target may have research and development assets that remain off the balance sheet because of accounting standards. Finally, part of the acquisition price may reflect perceived synergies from the business combination. For example, the acquirer may be able to eliminate duplicate facilities and reduce payroll after the acquisition.

PROFESSOR'S NOTE

Occasionally, the purchase price of an acquisition is less than fair value of the identifiable net assets. In this case, the difference is immediately recognized as a gain in the acquirer's income statement.

Goodwill is only created in a purchase acquisition. Internally generated goodwill is expensed as incurred.

Because it is an intangible asset with indefinite life, goodwill is not amortized but must be tested for impairment at least annually. If goodwill is impaired, the company decreases its value and recognizes a loss in the income statement. The impairment loss does not affect cash flow. Goodwill impairment suggests an acquired business is now worth less than the price the company paid to acquire it, because the company has reduced its estimate of the future excess returns the acquired business is expected to generate.

Acquiring firms might try to take advantage of the fact that goodwill is not amortized, manipulating net income upward by allocating more of an acquisition price to goodwill and less to the identifiable assets, especially when fair value is subjective. Lower-valued identifiable assets result in less future depreciation and amortization expense, and therefore higher net income.

Accounting goodwill should not be confused with **economic goodwill**. Economic goodwill derives from the expected future performance of the firm, while accounting goodwill is the result of past acquisitions.

Some analysts believe goodwill represents the present value of excess returns that the acquired company is expected to contribute, and so it is a legitimate asset. Other analysts believe goodwill is not a genuine asset because it cannot be sold separately

and might result from simply overpaying for an acquired company. Examining impairments of goodwill can be a way to judge how successful companies' past acquisitions have been.

To improve comparability when computing ratios, analysts should eliminate goodwill from balance sheets and goodwill impairment charges from income statements. Also, analysts should evaluate future acquisitions in terms of the price paid relative to the earning power of the acquired assets.

LOS 29.c: Explain the financial reporting and disclosures related to financial instruments.

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.[1] Financial instruments can be found on the asset side and the liability side of the balance sheet. Financial instruments held as assets include investment securities (stocks and bonds), derivatives, loans, and receivables.

Accounting standards require some financial instruments to be measured at historical cost, some at amortized cost, and some at fair value. Financial assets measured at cost include unquoted equity investments (for which fair value cannot be reliably measured) and loans to and notes receivable from other entities.

Under U.S. GAAP, debt securities acquired with the intent to hold them until they mature are classified as **held-to-maturity securities** and measured at amortized cost. Amortized cost is equal to the original issue price minus any principal payments, plus any amortized discount or minus any amortized premium, minus any impairment losses. Subsequent changes in market value are ignored.

Financial assets measured at fair value, also known as **mark-to-market accounting**, include trading securities, available-for-sale securities, and derivatives.

Trading securities (also known as held-for-trading securities) are debt securities acquired with the intent to sell them in the near term. Trading securities are reported on the balance sheet at fair value, with unrealized gains and losses (changes in market value before the securities are sold) recognized in the income statement. All equity securities holdings with quoted market prices (except those that give a company significant influence over a firm) are treated this way. Unrealized gains and losses are also known as holding period gains and losses. **Derivative instruments** are treated the same as trading securities.

PROFESSOR'S NOTE
Accounting for equity investments when the share owner has significant influence or control over a firm is addressed at Level II.

Available-for-sale securities are debt securities that are not expected to be held to maturity or traded in the near term. Like trading securities, available-for-sale securities are reported on the balance sheet at fair value. However, any unrealized gains and

losses are not recognized in the income statement, but are reported in other comprehensive income as a part of shareholders' equity.

For all financial securities, dividend and interest income and realized gains and losses (actual gains or losses when the securities are sold) are recognized in the income statement.

Figure 29.1 summarizes the different classifications and measurement bases of financial assets under U.S. GAAP.

Figure 29.1: Financial Asset Measurement Bases—U.S. GAAP

Historical Cost	Amortized Cost	Fair Value
Unlisted equity investments	Held-to-maturity securities	Trading securities
Loans and notes receivable		Available-for-sale securities
		Derivatives

EXAMPLE: Classification of investment securities

Triple D Corporation, a U.S. GAAP reporting firm, purchased a 6% bond, at par, for $1 million at the beginning of the year. Interest rates have recently increased, and the market value of the bond declined $20,000. Determine the bond's effect on Triple D's financial statements under each classification of securities.

Answer:

If the bond is classified as a *held-to-maturity* security, the bond is reported on the balance sheet at $1,000,000. Interest income of $60,000 [$1,000,000 × 6%] is reported in the income statement.

If the bond is classified as a *trading* security, the bond is reported on the balance sheet at $980,000. The $20,000 unrealized loss and $60,000 of interest income are both recognized in the income statement.

If the bond is classified as an *available-for-sale* security, the bond is reported on the balance sheet at $980,000. Interest income of $60,000 is recognized in the income statement. The $20,000 unrealized loss is reported as part of other comprehensive income.

IFRS Treatment of Marketable Securities

Under IFRS, the three classifications of investment securities are as follows:

1. *Securities measured at amortized cost* (corresponds to the treatment of held-to-maturity securities under U.S. GAAP): IFRS requires that cash flows are solely interest and principal and that the business model is to hold the security to maturity.
2. *Securities measured at fair value through other comprehensive income* (corresponds to the treatment of available-for-sale securities under U.S. GAAP)

3. *Securities measured at fair value through profit and loss* (corresponds to the treatment of trading securities under U.S. GAAP)

While the three different treatments are essentially the same as those used under U.S. GAAP, there are significant differences in how securities are classified under IFRS and U.S. GAAP. Similarities and differences are as follows:

- Under both IFRS and U.S. GAAP, loans, notes receivable, debt securities that a firm intends to hold until maturity, and unlisted securities for which fair value cannot be reliably determined, are all *measured at (amortized) historical cost*.
- Under IFRS, debt securities for which a firm intends to collect interest payments but also to sell the securities are *measured at fair value through other comprehensive income*. This is similar to the treatment of available-for-sale securities under U.S. GAAP.
- Under IFRS, firms may make an irrevocable choice at the time of purchase to account for equity securities as *measured at fair value through other comprehensive income*. Equity securities cannot be classified as available-for-sale under U.S. GAAP.
- Under IFRS, financial assets that do not fit either of the other two classifications are *measured at fair value through profit and loss* (unrealized gains and losses reported on the income statement).
- Under IFRS, firms can make an irrevocable choice to carry any financial asset at *fair value through profit and loss*. This choice is not available under U.S. GAAP.

Figure 29.2 summarizes the different classifications of financial assets under IFRS.

Figure 29.2: Financial Asset Classifications—IFRS

Measured at Amortized Cost	Measured at Fair Value Through Other Comprehensive Income	Measured at Fair Value Through Profit and Loss
■ Debt securities acquired with the intent to hold them to maturity ■ Loans receivable ■ Notes receivable ■ Unlisted equity securities if fair value cannot be determined reliably	■ Debt securities acquired with intent to collect interest payments but sell before maturity ■ Equity securities only if this treatment is chosen at time of purchase	■ Debt securities acquired with intent to sell in near term ■ Equity securities (unless fair value through OCI is chosen at time of purchase) ■ Derivatives ■ Any security not assigned to the other two categories ■ Any security for which this treatment is chosen at time of purchase

LOS 29.d: Explain the financial reporting and disclosures related to non-current liabilities.

Long-term financial liabilities include bank loans, notes payable, bonds payable, and some derivatives. If the financial liabilities are not issued at face value, the liabilities are usually reported on the balance sheet at amortized cost. If the issuance value differs from face value, any premium or discount is amortized through interest expense over the life of the liability. Amortized cost at any point in the liability's life is equal to the issue price minus any principal payments, plus any amortized discount or minus any amortized premium. Amortizing premiums and discounts causes the balance sheet liability to move toward face value at maturity of the liability.

In some cases, financial liabilities are reported at fair value. Examples include held-for-trading liabilities such as a short position in a stock (which may be classified as a short-term liability), derivative liabilities, and nonderivative liabilities with exposures hedged by derivatives.

Deferred tax liabilities are income taxes payable in future periods as a result of timing differences between financial accounting and tax accounting. Deferred tax liabilities are created when the amount of income tax expense recognized in the income statement is greater than taxes payable using tax accounting. This can occur when expenses or losses are tax deductible before they are recognized in the income statement. A common example is when a firm uses an accelerated depreciation method for tax purposes and the straight-line method for financial reporting. Deferred tax liabilities are also created when revenues or gains are recognized in the income statement before they are taxable. For example, a firm often recognizes the earnings of a subsidiary before any distributions (dividends) are made. Eventually, deferred tax liabilities will reverse when the taxes are paid.

PROFESSOR'S NOTE

We explain deferred tax items in more detail in our reading on Analysis of Income Taxes.

MODULE QUIZ 29.1

1. For a company reporting under IFRS, product development costs:
   A. must always be capitalized.
   B. may be capitalized.
   C. must be expensed.
2. The SF Corporation has created employee goodwill by reorganizing its retirement benefit package. An independent management consultant estimated the value of the goodwill at $2 million. In addition, SF recently purchased a patent that was developed by a competitor. The patent has an estimated useful life of five years. Should SF report the goodwill and patent on its balance sheet?

	Goodwill	Patent
A.	Yes	No
B.	No	Yes
C.	No	No

3. At the beginning of the year, the Parent Company purchased all 500,000 shares of Sub, Inc. for $15 per share. Just before the acquisition date, Sub's balance sheet reported net assets of $6 million. Parent determined the fair value of Sub's property and equipment was $1 million higher than reported by Sub. What amount of goodwill should Parent report as a result of its acquisition of Sub?
   A. $0.
   B. $500,000.
   C. $1,500,000.
4. At the beginning of the year, Company P purchased $80,000 face value of Company S corporate bonds for $77,000. Company P intends to hold these bonds for several years but sell them before they mature. At the end of the year, the market value of the bonds was $75,000. What amount should Company P report on its balance sheet at year-end for the investment in Company S bonds?
   A. $75,000.
   B. $77,000.
   C. $80,000.
5. Which of the following comments is *most accurate* for a company that has issued bonds at a discount?
   A. The liability value will increase with the passage of time.
   B. The bond will be recorded at fair value in the balance sheet.
   C. Amortized cost may not be used if the company intends to repurchase the bond before maturity.

MODULE 29.2: COMMON-SIZE BALANCE SHEETS

Video covering this content is available online.

LOS 29.e: Calculate and interpret common-size balance sheets and related financial ratios.

A vertical **common-size balance sheet** expresses each item of the balance sheet as a percentage of total assets. The common-size format standardizes the balance sheet by eliminating the effects of size. This allows for comparison over time (time-series analysis) and across firms (cross-sectional analysis).

EXAMPLE: Common-size balance sheets

The following are the balance sheets of industry competitors East Company (East) and West Company (West).

	East	West
Cash	$2,300	$1,500
Accounts receivable	3,700	1,100
Inventory	5,500	900
Current assets	11,500	3,500
Plant and equipment	32,500	11,750
Goodwill	1,750	0
Total assets	$45,750	$15,250
Current liabilities	$10,100	$1,000
Long-term debt	26,500	5,100
Total liabilities	36,600	6,100
Equity	9,150	9,150
Total liabilities and equity	$45,750	$15,250

Convert each balance sheet to a vertical common-size balance sheet and interpret the results.

Answer:

East is obviously the larger company. By converting the balance sheets to common-size format, we can eliminate the size effect.

	East	West
Cash	5%	10%
Accounts receivable	8%	7%
Inventory	12%	6%
Current assets	25%	23%
Plant and equipment	71%	77%
Goodwill	4%	0%
Total assets	100%	100%
Current liabilities	22%	7%
Long-term debt	58%	33%
Total liabilities	80%	40%
Equity	20%	60%
Total liabilities and equity	100%	100%

East's investment in current assets of 25% of total assets is slightly higher than West's current assets of 23%. However, East's current liabilities of 22% of total assets are significantly higher than West's current liabilities of 7%. Thus, East is less liquid and may have more difficulty paying its current obligations when due. However, West's superior working capital position may not be an efficient use of resources. The investment returns on working capital are usually lower than the returns on long-term assets.

A closer look at current assets reveals that East reports less cash as a percentage of assets than West. In fact, East does not have enough cash to satisfy its current liabilities without selling more inventory and collecting receivables. East's inventories of 12% of total assets are higher than West's inventories of 6%. Carrying higher inventories may be an indication of inventory obsolescence. Further analysis of inventory is necessary.

Not only are East's current liabilities higher than West's, but East's long-term debt of 58% of total assets is much greater than West's long-term debt of 33%. Thus, East may have trouble satisfying its long-term obligations because its capital structure consists of more debt.

Common-size analysis can also be used to examine a firm's strategies. East appears to be growing through acquisitions because it is reporting goodwill. West is growing internally because no goodwill is reported. It could be that East is financing the acquisitions with debt.

The percentages on a common-size balance sheet are examples of **balance sheet ratios**, which compare one balance sheet item to another balance sheet item (total assets in this case). Balance sheet ratios, along with common-size analysis, can be used to evaluate a firm's liquidity and solvency. The results can be compared over time and across firms.

Liquidity ratios measure the firm's ability to satisfy its short-term obligations as they come due. Liquidity ratios include the current ratio, the quick ratio, and the cash ratio:

$$\text{current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

$$\text{quick ratio} = \frac{\text{cash} + \text{marketable securities} + \text{receivables}}{\text{current liabilities}}$$

$$\text{cash ratio} = \frac{\text{cash} + \text{marketable securities}}{\text{current liabilities}}$$

Although all three ratios measure a firm's ability to pay current liabilities, they should be considered collectively. For example, assume Firm A has a higher current ratio but a lower quick ratio than Firm B. This must result from Firm A having higher inventory than Firm B, because the quick ratio (also known as the acid-test ratio) excludes inventory from current assets. Similar analysis can be performed by comparing the quick ratio to the cash ratio, which excludes inventory and receivables.

Solvency ratios measure a firm's ability to satisfy its long-term obligations. Solvency ratios include the long-term debt-to-equity ratio, the total debt-to-equity ratio, the debt ratio, and the financial leverage ratio:

$$\text{long-term debt-to-equity ratio} = \frac{\text{long-term debt}}{\text{total equity}}$$

$$\text{total debt-to-equity ratio} = \frac{\text{total debt}}{\text{total equity}}$$

$$\text{debt ratio} = \frac{\text{total debt}}{\text{total assets}}$$

$$\text{financial leverage ratio} = \frac{\text{total assets}}{\text{total equity}}$$

All four ratios measure solvency, but they should be considered collectively. For example, Firm A might have a higher long-term debt-to-equity ratio but a lower total debt-to-equity ratio as compared to Firm B. This would indicate that Firm B is using more short-term debt to finance itself.

When calculating solvency ratios, debt is typically considered to be any interest-bearing obligation. The financial leverage ratio captures the impact of all interest-bearing and non-interest-bearing obligations.

Analysts must understand the limitations of balance sheet ratio analysis:

- Comparisons with peer firms are limited by differences in accounting standards and estimates.
- Ratios might not be comparable for firms that operate in different industries.
- Interpretation of ratios requires significant judgment.
- Balance sheet data are only measured at a single point in time.

MODULE QUIZ 29.2

1. A vertical common-size balance sheet expresses each category of the balance sheet as a percentage of:

   A. assets.
   B. equity.
   C. revenue.

2. Which of the following ratios are used to measure a firm's liquidity and solvency?

	Liquidity	Solvency
A.	Current ratio	Quick ratio
B.	Debt-to-equity ratio	Financial leverage ratio
C.	Cash ratio	Total debt ratio

KEY CONCEPTS

LOS 29.a

Intangible assets created internally are expensed as incurred. Purchased intangibles with finite lives are treated in a way similar to tangible assets. Purchased intangibles with indefinite lives are not amortized but must be tested for impairment periodically.

Under IFRS, research costs are expensed as incurred and development costs are capitalized if certain criteria are satisfied. Both research and development costs are expensed under U.S. GAAP.

LOS 29.b

Goodwill is the excess of purchase price over the fair value of identifiable net assets in a business acquisition. Goodwill is not amortized, but must be tested for impairment at least annually.

LOS 29.c

Under IFRS, debt securities acquired with the intent to hold them to maturity are measured at amortized cost. Debt securities acquired with the intent to collect interest

payments but sell before maturity are measured at fair value through other comprehensive income. Debt securities acquired with the intent to sell them in the near term, as well as equity securities and derivatives, are measured at fair value through profit and loss.

IFRS permits firms to elect, irrevocably at the time of purchase, to measure equity securities at fair value through other comprehensive income, or any security at fair value through profit and loss.

Under U.S. GAAP, held-to-maturity securities are reported at amortized cost. Trading securities, available-for-sale securities, and derivatives are reported at fair value. For trading securities and derivatives, unrealized gains and losses are recognized in the income statement. Unrealized gains and losses for available-for-sale securities are reported in equity (other comprehensive income). Equity securities cannot be classified as available-for-sale.

LOS 29.d

Financial liabilities that are not issued at face value are reported at amortized cost. The liability will move toward par value at maturity as the premium or discount (relative to par) is amortized. Held-for-trading liabilities and derivative liabilities are reported at fair value.

Deferred tax liabilities result from temporary timing differences between a firm's tax reporting and its financial reporting.

LOS 29.e

A vertical common-size balance sheet expresses each item of the balance sheet as a percentage of total assets. The common-size format standardizes the balance sheet by eliminating the effects of size. This allows for comparison over time (time-series analysis) and across firms (cross-sectional analysis).

Balance sheet ratios, along with common-size analysis, can be used to evaluate a firm's liquidity and solvency. Liquidity ratios measure the firm's ability to satisfy its short-term obligations as they come due. Liquidity ratios include the current ratio, the quick ratio, and the cash ratio.

Solvency ratios measure the firm's ability to satisfy its long-term obligations. Solvency ratios include the long-term debt-to-equity ratio, the total debt-to-equity ratio, the debt ratio, and the financial leverage ratio.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 29.1

1. **B** Product development costs may be capitalized under IFRS if certain criteria are met (e.g., the company has identified a customer base, has sufficient resources to complete the product, and intends to sell the product). U.S. GAAP requires all product development expenditure to be expensed. (LOS 29.a)

2. **B** Goodwill developed internally is expensed as incurred. The purchased patent is reported on the balance sheet. (LOS 29.a)

3. **B** The purchase price of $7,500,000 ($15 per share × 500,000 shares) − fair value of net assets of $7,000,000 ($6,000,000 book value + $1,000,000 increase in property and equipment) = goodwill of $500,000. (LOS 29.a)

4. **A** Debt securities acquired with the intent to sell before maturity are reported on the balance sheet at their fair values. (LOS 29.b)

5. **A** Financial liabilities are typically recognized at amortized cost. Amortization of a discount will increase the liability over time so that it equals par at the bond's maturity (the opposite is true of bonds issued at a premium). (LOS 29.c)

Module Quiz 29.2

1. **A** Each category of the balance sheet is expressed as a percentage of total assets. (LOS 29.e)

2. **C** The current ratio, quick ratio, and cash ratio measure liquidity. The debt-to-equity, the total debt ratio, and the financial leverage ratio measure solvency. (LOS 29.e)

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[1] IAS 32, *Financial Instruments: Presentation*, 32,11.

READING 30

ANALYZING STATEMENTS OF CASH FLOWS I

MODULE 30.1: CASH FLOW INTRODUCTION AND DIRECT METHOD CFO

Video covering this content is available online.

LOS 30.a: Describe how the cash flow statement is linked to the income statement and the balance sheet.

The **cash flow statement** provides information for a reporting period beyond that available from the income statement, which is based on accrual, rather than cash, accounting. Analysts use cash flow statements to understand:

- A company's cash receipts and cash payments during an accounting period
- A company's operating, investing, and financing activities
- The impact of accrual accounting events on cash flows
- A company's quality of earnings

An analyst can use the statement of cash flows to assess a firm's liquidity, solvency, and financial flexibility, including:

- Whether regular operations generate enough cash to sustain the business
- Whether the firm generates enough cash to pay off existing debts as they mature
- Whether the firm is likely to need additional financing
- Whether the firm can meet unexpected obligations
- Whether the firm can take advantage of new business opportunities as they arise

The cash flow statement reconciles the beginning and ending balances of cash in the balance sheet over an accounting period. The change in cash is a result of the firm's operating, investing, and financing activities, as follows:

	Operating cash flow
+/−	Investing cash flow
+/−	Financing cash flow
=	Change in cash balance
+	Beginning cash balance
=	Ending cash balance

Earnings are considered to be of high quality when operating cash flows, which can also be called cash flow from operations (CFO), are close to or higher than reported earnings. If earnings are consistently higher than CFO, their quality is lower because the accruals-based earnings are not backed by cash creation from operating activities.

Like the statement of cash flows, the income statement is a "flow" statement (sometimes referred to as a dynamic statement), as it shows the company's performance between two balance sheet dates. However, due to the accruals concept, net income is not the same as cash generated by the company. In addition, many financing and investing cash flows do not affect the income statement at the time of the transactions.

With respect to the balance sheet, operating activities relate (with a few exceptions) to the firm's current assets and current liabilities. Investing activities typically relate to the firm's noncurrent assets, and financing activities typically relate to the firm's noncurrent liabilities and equity.

Transactions for which the timing of revenue or expense recognition differs from the receipt or payment of cash are reflected in changes in balance sheet accounts. For example, when revenues (sales) exceed cash collections, the firm has sold items on credit, and accounts receivable (an asset) increase. The opposite occurs if customers repay more on their outstanding accounts than the firm extends in new credit: cash collections exceed revenues, and accounts receivable decrease. Similarly, when purchases from suppliers exceed cash payments, accounts payable (a liability) increase. When cash payments exceed purchases, accounts payable decrease.

It is helpful to understand how transactions affect each balance sheet account. For example, accounts receivable are increased by sales on credit and decreased by cash collections. We can summarize this relationship as follows:

	Beginning accounts receivable	Opening balance sheet
+	Sales	Income statement
−	Cash collections	Cash flow statement
=	Ending accounts receivable	Closing balance sheet

Knowing three of the four variables, we can solve for the fourth. For example, if beginning accounts receivable are €10,000, ending accounts receivable are €15,000, and sales are €68,000, then cash collections must equal €63,000.

By rearranging this relationship, we can say that cash = sales − ending accounts receivable + beginning accounts receivable, or cash = sales − change in accounts receivable. Cash = €68,000 − (€15,000 − €10,000) = €63,000.

Revenue recognition standards affect when a sale is recorded in the income statement, but not the timing of cash flows from the customer. If a firm receives cash from a customer in advance of the sale being recorded in the income statement (unearned revenue), the cash received will appear in the cash flow statement at the time of payment, not when the sale is recorded. For example, if a company provided a service agreement to a customer, the cash received is reflected in the cash flow statement when the customer pays for the contract (normally in advance), but revenue recognized in the income statement is spread over the life of the contract.

EXAMPLE: Balance sheet and income statement impacts on cash flow

Loftus Communications Limited provides equipment sales and installation of telecommunication equipment. Loftus also provides maintenance for systems installed under service contracts. Revenue from maintenance contracts is deferred and recognized over the life of the contract.

Selected Financial Statement Data: Loftus Communications Limited

Financial year	20X2	20X1
	£m	£m
Income statement extract		
Revenues	2,000,000	1,800,000
Balance sheet extract		
Accounts receivable	900,000	500,000
Unearned revenue (deferred)	1,000,000	300,000

Calculate the cash received from customers in 20X2.

Answer:

	20X2
	£m
Revenue	2,000,000
Increase in accounts receivable	(400,000)
Increase in unearned revenue	700,000
Cash received from customers	2,300,000

The increase in accounts receivable represents credit extended to customers, which is a use of cash from the firm's perspective. The increase in unearned revenue represents services that customers have paid for in advance, a source of cash.

Understanding these interrelationships is not only useful in preparing the cash flow statement, but is also helpful in uncovering accounting shenanigans, as we will see in our reading on Financial Reporting Quality.

LOS 30.b: 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.

PROFESSOR'S NOTE

Throughout the discussion of the direct and indirect methods, remember the following points:

- The terms *cash flow from operations (CFO), cash flow from operating activities*, and *operating cash flows (OCF)* are used interchangeably in the Level I CFA curriculum.
- Two methods can be used in the accounts to present CFO. CFO is presented differently under the direct and indirect methods, but the result is the same under both methods.
- Cash flow from investing (CFI) and cash flow from financing (CFF) are each presented the same way regardless of which method a firm chooses to present CFO.
- An increase in an asset account is a use of cash, and a decrease in an asset account is a source of cash.
- An increase in a liability account is a source of cash, and a decrease in a liability is a use of cash.
- Sources of cash are positive numbers (cash inflows), and uses of cash are negative numbers (cash outflows).

The Direct Method for Cash Flow From Operating Activities

The direct method of presenting a firm's statement of cash flows shows only cash payments and cash receipts over the period. The sum of these inflows and outflows is CFO. The direct method gives an analyst more information than the indirect method (which we will explain later in this reading). The analyst can see the actual amounts that went to each use of cash and that were received from each source of cash. This information can help the analyst to better understand the firm's performance over time and to forecast future cash flows.

The following are common components that appear on a statement of cash flows presented using the direct method:

- Cash collected from customers (typically the main component of CFO)
- Cash used in the production of goods and services (cash inputs)
- Cash operating expenses, such as salaries
- Cash paid for interest
- Cash paid for taxes

These are steps for the direct method:

Step 1: Start at the top of the income statement with revenue.

Step 2: Examine the balance sheet for any assets or liabilities (typically current) relating to the income statement item.

Step 3: Compute the change in the balance sheet asset or liability.

Step 4: Adjust the income statement for the change in the balance sheet amount using the following rules:

- Subtract an increase in an asset (a use of cash), or add a decrease in an asset (a source of cash).
- Add an increase in a liability (a source of cash), or subtract a decrease in a liability (a use of cash).

For these rules to work consistently, we must *treat expense items as negative numbers* (e.g., cost of goods sold, wages and salaries) before we adjust them.

Step 5: After adjusting the income statement item for the change in the balance sheet asset or liability, move to the next item in the income statement.

Step 6: Ignore any noncash charges (e.g., depreciation, gains and losses on asset disposal). A noncash charge is any amount in the income statement that is due to accounting treatment rather than actual cash flows.

Step 7: Once all income statement items have been adjusted for accruals, total the amount to get CFO.

EXAMPLE: CFO using the direct method

Use the following balance sheet and income statement to prepare operating cash flows using the direct method. The company produces its financial statements under U.S. GAAP.

Income Statement for 20X7

	$
Sales	104,000
Expenses	
Cost of goods sold	40,000
Wages	5,000
Depreciation	7,000
Interest	1,000
Total expenses	53,000
Income from continuing operations	51,000
Gain from sale of land	10,000
Loss on disposals of PP&E	2,000
Pretax income	59,000
Provision for income taxes	20,000
Net income	39,000
Common dividends declared	8,500

Balance Sheets for 20X7 and 20X6

Assets	20X7 $	20X6 $
Current assets		
Cash	53,000	11,500
Accounts receivable	10,000	9,000
Inventory	5,000	7,000
Total current assets	68,000	27,500
Noncurrent assets		
Land	35,000	40,000
Gross plant and equipment	69,000	60,000
Less: accumulated depreciation	(12,000)	(9,000)
Net plant and equipment	57,000	51,000
Goodwill	10,000	10,000
Total assets	170,000	128,500
Liabilities		
Current liabilities		
Accounts payable	9,000	5,000
Wages payable	4,500	8,000
Interest payable	3,500	3,000
Unearned revenue	6,000	2,000
Taxes payable	5,000	4,000
Dividends payable	6,000	1,000
Total current liabilities	34,000	23,000
Noncurrent liabilities		
Bonds payable	15,000	10,000
Deferred tax liability	20,000	15,000
Total liabilities	69,000	48,000
Stockholders' equity		
Common stock	15,000	20,000
Additional paid in capital	25,000	30,000
Contributed capital	40,000	50,000
Retained earnings	61,000	30,500
Total equity	101,000	80,500
Total liabilities and stockholders' equity	170,000	128,500

Answer:

Start at the top of the income statement and adjust each line for the change in balance sheet asset and liabilities that arise due to the accruals process.

Cash collected from customers	$
Sales	104,000
Increase in accounts receivable	(1,000)
Increase in unearned revenue liability	4,000
Cash collected	107,000

To calculate cash paid to suppliers, adjust cost of goods sold for the change in inventory (the result is purchases for the period) and for the change in accounts payable.

Cash paid to suppliers	$
Cost of goods sold	(40,000)
Decrease in inventory	2,000
Purchases	(38,000)
Increase in accounts payable	4,000
Cash paid to suppliers	(34,000)

All expenses, including cost of goods sold, must be treated as negative values if we wish to apply the rules for sources and uses of cash. Expenses in the income statement may be shown as either negative or positive values in the financial statements at the company's discretion. Users of the accounts are expected to know that revenue and gains increase net income, and that expenses and losses decrease it.

Wages paid	$
Wage expense	(5,000)
Decrease in wages payable	(3,500)
Cash paid to employees	(8,500)

The next line in the income statement is depreciation. When using the direct method we ignore depreciation because it is not a cash flow.

Interest paid	$
Interest expense	(1,000)
Increase in interest payable	500
Cash interest paid	(500)

We also ignore the gain from sale of land and the loss on disposal of PP&E because these items relate to investing activities (CFI) and not operating activities (CFO). Later in this reading we will explain how to determine the related cash flows when we calculate CFI.

The last item in the income statement before net income is the tax expense. Here we must adjust not only for changes in the current liability for taxes payable, but also for any changes in deferred tax assets and deferred tax liabilities, which are typically noncurrent items. We will explain these further in our reading on Analysis of Income Taxes.

Cash paid to tax authorities	$
Tax expense (provision for income taxes)	(20,000)
Increase in taxes payable liability	1,000
Increase in deferred tax liability	5,000
Cash paid for taxes	(14,000)

Having arrived at the bottom of the income statement, we can sum the cash flows to compute CFO:

20X7 CFO

	$	$
Cash collected from customers		107,000
Cash paid to suppliers	34,000	
Wages paid to employees	8,500	
Cash interest paid	500	
Cash paid to tax authorities	14,000	
Total cash operating expenses		(57,000)
Operating cash flows		50,000

MODULE 30.2: INDIRECT METHOD CFO

Video covering this content is available online.

Using the indirect method of presenting CFO, we begin with net income and adjust it for differences between accounting items and actual cash inflows and outflows.

Non-cash-based items in the income statement can be described as either noncash charges or working capital investment. For example, depreciation is a noncash charge as it is deducted in calculating net income, but it requires no cash outlay. Therefore, we must add depreciation (and amortization) back to net income for the period.

Another adjustment to net income on an indirect statement of cash flows is to subtract gains and add back losses on the disposal of assets. Proceeds from the sale of fixed assets are an investing cash flow. Because gains and losses relate to CFI activities, we need to remove them from net income to calculate CFO under the indirect method.

PROFESSOR'S NOTE

Candidates are often confused by why noncash charges and gains and losses are ignored when using the direct method, but adjusted for under the indirect method. The key to understanding this is to realize that these items have been included in arriving at net income, which is the starting point of our computation when we use the indirect method. That is, net income includes some non-cash and non-operating items that we have to unwind to arrive at CFO.

Under the indirect method, we also need to adjust net income for any change in balance sheet accounts, just as we do with the direct method. If, for example, accounts receivable went up during the period, we know that sales during the period were greater than the cash collected from customers. We need to reduce net income to reflect the fact that sales, rather than cash collected, were used in calculating net income.

The net change in a company's total operating assets and liabilities is known as its **investment in working capital**. We can think of CFO as net income adjusted for noncash charges and the investment in working capital:

$$CFO = NI + NCC - WC_{INV}$$

Noncash charges are gains and losses that have passed through the income statement but are not cash flows. While we call them "charges," in practice they can either increase or decrease net income. Gains and losses on asset disposals are classic examples. Figure 30.1 lists some of the typical noncash charges in company income statements.

Figure 30.1: Typical Noncash Charges, Gains, and Losses

Add Back	Depreciation, depletion, and amortization
	Loss on asset disposal
	Asset impairments and write-downs
	Losses on early retirement of debt
	Amortization of bond discounts (under the amortized cost method)
	Increases in deferred tax liabilities, decreases of deferred tax assets
	Losses of equity accounted associates
Subtract	Gains on asset disposals
	Gains on early retirement of debt
	Reversals of impairment and write-downs
	Amortization of bond premiums (under the amortized cost method)
	Decreases in deferred tax liabilities, increases in deferred tax assets

Working capital investment represents the investment in noncash working capital. This means we need to look at the change in current assets and liabilities that relate to the operating revenues and expenses and ignore any assets or liabilities that do not relate to operating items.

PROFESSOR'S NOTE

The definition of *working capital* is not the same in all parts of the Level I CFA curriculum. In our module covering ratios, we will see it defined as total current assets minus total current liabilities. Here and in Corporate Issuers, it is defined as operating assets minus operating liabilities; this is often referred to as noncash working capital.

In practice, when looking at the current assets, we ignore cash and any short-term investments (except trading securities, for which cash flows are treated as CFO). Dividends payable and any short-term interest-bearing debt instruments are also excluded, as they affect cash flow from financing (CFF), not CFO.

Adjust for changes in working capital accounts as follows:

Add back	Decreases in current operating assets
	Increases in current operating liabilities
Subtract	Increases in current operating assets
	Decreases in current operating liabilities

The steps in calculating CFO under the indirect method can be summarized as follows:

Step 1: Begin with net income.

Step 2: Add back all noncash charges to income (such as depreciation and amortization) and subtract all noncash components of revenue. Subtract gains or add losses that resulted from financing or investing cash flows (such as gains from sale of land).

Step 3: Adjust for working capital by adding or subtracting changes to balance sheet operating accounts as follows:

- Subtract increases in operating asset accounts (uses of cash), and add decreases (sources of cash).
- Add increases in operating liability accounts (sources of cash), and subtract decreases (uses of cash).

EXAMPLE: Statement of cash flows using the indirect method

Use the balance sheet and income statement presented in the previous direct method example to prepare operating cash flows under the indirect method.

Answer:

Step 1: Start with net income of $39,000.

Step 2: Add back noncash charges:

Depreciation = $7,000

Change in deferred tax liability = $5,000

Loss on disposal of PP&E = $2,000

Deduct noncash gains:

Gain from sale of land = $10,000

Step 3: Subtract increases in receivables and inventories and add increases in payables.

	$
Net income	39,000
Noncash charges	
Depreciation	7,000
Increase in deferred tax liability	5,000
Loss on disposal of PP&E	2,000
Gain from sale of land	(10,000)
Subtotal	43,000
Investment in working capital	
Increase in receivables	(1,000)
Decrease in inventories	2,000
Increase in accounts payable	4,000
Decrease in wages payable	(3,500)
Increase in interest payable	500
Increase in unearned revenue liability	4,000
Increase in taxes payable	1,000
Operating cash flows	**50,000**

Alternatively, we can look at noncash working capital in aggregate rather than line by line.

	20X7	20X6
	$	$
Total current assets	68,000	27,500
Less cash	(53,000)	(11,500)
Operating assets	15,000	16,000
Total current liabilities	34,000	23,000
Less dividends payable	(6,000)	(1,000)
Operating liabilities	28,000	22,000
Non-cash working capital	(13,000)	(6,000)
Investment in working capital	($7,000)	

We can then calculate CFO as NI + NCC − WC_{INV}:

$$CFO = 39{,}000 + 4{,}000 - (-7{,}000) = \$50{,}000$$

Our examples demonstrate that whether CFO is calculated using the direct or indirect method, we arrive at the same figure.

Both IFRS and U.S. GAAP encourage the use of a statement of cash flows in the direct format. Under U.S. GAAP, a statement of cash flows under the direct method must include footnote disclosure of the indirect method. Most companies, however, report cash flows using the indirect method, which requires no additional disclosure. Later in this reading we will illustrate the method an analyst can use to create a statement of

cash flows in the direct method format when the company reports using the indirect method.

MODULE QUIZ 30.1, 30.2

1. The Continental Corporation reported sales revenue of $150,000 for the current year. If accounts receivable decreased $10,000 during the year and accounts payable increased $4,000 during the year, cash collections were:

   A. $154,000.
   B. $160,000.
   C. $164,000.

Use the following data, prepared under U.S. GAAP, to answer Questions 2 through 4.

Income statement selected data:

	20X7 $
Revenues	2,000,000
Cost of goods sold	1,400,000
Tax expense	200,000

Balance sheet selected data:

	20X7 $	20X6 $
Long-lived assets		
Deferred tax	30,000	20,000
Current assets		
Accounts receivable	200,000	150,000
Inventory	260,000	280,000
Current liabilities		
Accounts payable	120,000	150,000
Unearned revenue	220,000	150,000
Tax payable	150,000	240,000
Long-term liabilities		
Deferred tax	150,000	100,000

2. What was cash collected from customers in 20X7?

   A. $1,950,000.
   B. $1,980,000.
   C. $2,020,000.

3. What was cash tax paid in 20X7?

   A. $160,000.
   B. $250,000.
   C. $290,000.

4. What was cash paid to suppliers in 20X7?

   A. $1,350,000.
   B. $1,410,000.
   C. $1,450,000.

5. Using the following information, what is the firm's cash flow from operations?

Net income	$120
Decrease in accounts receivable	20
Depreciation	25
Increase in inventory	10
Increase in accounts payable	7
Decrease in wages payable	5
Increase in deferred tax liabilities	15
Profit from the sale of land	2

A. $158.
B. $170.
C. $174.

6. Net income for Monique, Inc., for the year ended December 31, 20X7 was $78,000. Its accounts receivable balance at December 31, 20X7, was $121,000, and this balance was $69,000 at December 31, 20X6. The accounts payable balance at December 31, 20X7, was $72,000, and it was $43,000 at December 31, 20X6. Depreciation for 20X7 was $12,000, and there was an unrealized gain of $15,000 included in 20X7 income from the change in value of trading securities. Which of the following amounts represents Monique's cash flow from operations for 20X7?

   A. $52,000.
   B. $67,000.
   C. $82,000.

7. From an analyst's perspective, an advantage of the indirect method for presenting operating cash flow is that the indirect method:

   A. shows operating cash received and paid.
   B. provides more information than the direct method.
   C. shows the difference between net income and operating cash flow.

MODULE 30.3: INVESTING AND FINANCING CASH FLOWS AND IFRS/U.S. GAAP DIFFERENCES

Video covering this content is available online.

Cash flow from investing activities (CFI) consists of the cash inflows and outflows that result from acquiring or disposing of long-term assets and certain investments.

Cash flow from financing activities (CFF) consists of the cash inflows and outflows that result from transactions affecting a firm's capital structure, such as borrowing, repaying debt, and issuing or redeeming equity securities.

Examples of each cash flow classification, in accordance with U.S. GAAP, are presented in Figure 30.2.

Figure 30.2: U.S. GAAP Cash Flow Classifications

Operating Activities	
Inflows	*Outflows*
Cash collected from customers	Cash paid to employees and suppliers
Interest and dividends received	Cash paid for other expenses
Sale proceeds from trading securities	Acquisition of trading securities
	Interest paid on debt or leases
	Taxes paid
Investing Activities	
Inflows	*Outflows*
Sale proceeds from PP&E and intangibles	Acquisition of PP&E and intangibles
Sale proceeds from debt and equity investments	Acquisition of debt and equity investments
Principal received from loans made to others	Loans made to others
Financing Activities	
Inflows	*Outflows*
Principal amounts of debt issued	Principal paid on debt or leases
Proceeds from issuing stock	Payments to reacquire stock
	Dividends paid to shareholders

Debt and equity investments (other than trading securities) and loans made to others are reported as investing cash outflows. However, under U.S. GAAP the income from these investments (interest and dividends received) is reported as operating cash inflows. Principal amounts borrowed are reported as financing cash inflows, but interest paid is reported as an operating cash outflow. Finally, dividends paid to the firm's shareholders are financing cash outflows. Later in this reading we will see that IFRS offers companies more discretion than U.S. GAAP with regard to how they may classify these cash flows.

PROFESSOR'S NOTE
Don't confuse dividends received and dividends paid. Under U.S. GAAP, dividends received are operating cash flows, and dividends paid are financing cash flows.

EXAMPLE: Computing CFI

Returning to the financial statements we used in our CFO examples, we will use the following information to compute CFI:

Balance sheet extract	20X7 $	20X6 $
Land	35,000	40,000
Gross PP&E	69,000	60,000
Accumulated depreciation	(12,000)	(9,000)
Net PP&E	57,000	51,000

Income statement extract	
Depreciation	7,000
Gain on sale of land	10,000
Loss on disposal of PP&E	2,000

A footnote disclosure reveals that the company purchased PP&E for $25,000 during 20X7.

Answer:

CFI will comprise additions to PP&E and the disposal proceeds from the sale of PP&E and land.

The footnote disclosure shows acquisitions of PP&E were $25,000; however, gross PP&E has only increased by $9,000. This, coupled with the disposal loss in the income statement, indicates that the company must have disposed of PP&E during 20X7.

Step 1: Compute cost of disposed PP&E	$
Beginning gross PP&E	60,000
Acquisitions gross cost	25,000
Disposals gross cost	(X)
Ending gross PP&E	69,000

The value (X) we need to calculate is the cost of the assets that have been disposed of; that is, the gross book value the company recorded when it first acquired these assets. By rearranging the reconciliation, the gross cost of the disposed asset is computed as follows:

$$\text{beginning PP\&E} + \text{acquisitions} - \text{ending gross PP\&E} = \text{disposals gross cost}$$

$$\text{disposals gross cost} = \$60{,}000 + \$25{,}000 - \$69{,}000 = \$16{,}000$$

Next, we can see that accumulated depreciation has increased by $3,000 when the 20X7 depreciation expense is $7,000. The difference is also due to the asset disposal, because when a company disposes of an asset, it removes the accumulated depreciation on that asset from the total.

Step 2: Compute accumulated depreciation on disposed PP&E	$
Beginning accumulated depreciation	9,000
Depreciation expense	7,000
Accumulated depreciation on disposed PP&E	(X)
Ending accumulated depreciation	12,000

Accumulated depreciation on disposed PP&E = beginning accumulated depreciation + depreciation expense − ending accumulated depreciation

$$= \$9{,}000 + \$7{,}000 - \$12{,}000 = \$4{,}000.$$

Step 3: Compute carrying value of PP&E disposal	$
Gross cost	16,000
Accumulated depreciation	(4,000)
Carrying value before disposal	12,000

PROFESSOR'S NOTE

Steps 1–3 can be combined for a quicker result:

Shortcut approach	$
Beginning carrying value	51,000
Depreciation expense	(7,000)
Additions to PP&E	25,000
Carrying value of assets disposed	(X)
Ending carrying value	57,000

Carrying value of assets disposed = beginning carrying value − depreciation expense + additions to PP&E − ending carrying value

= $51,000 − $7,000 + $25,000 − $57,000 = $12,000

When an asset is disposed of, the carrying value is removed from the balance sheet and netted against proceeds received from the sale, and any difference is reported as an accounting gain or loss in the income statement. A gain results if the proceeds from the sale exceed the carrying value, and a loss results if the proceeds are less than the carrying value. The only elements of the disposal that are cash flows are the disposal proceeds.

Step 4: Compute disposal proceeds	$
Disposal proceeds	X
Carrying value removed from balance sheet	(12,000)
Disposal gain/(loss) in income statement	(2,000)

The disposal proceeds on the sale of PP&E must have been $10,000.

We carry out similar calculations for the disposal of land. This will be simpler because land is not depreciated, so the carrying value is its gross cost. Because the

footnotes do not mention any acquisitions of land, the carrying value of the land disposed of is the change in carrying value reported on the balance sheet.

Carrying value of disposed land = $40,000 – $35,000 = $5,000.

Compute disposal proceeds	$
Disposal proceeds	X
Carrying value removed from balance sheet	(5,000)
Disposal gain/(loss) in income statement	10,000

The disposal proceeds on the sale of land must have been $15,000.

Finally we can combine these results to determine cash flow from investing:

$$\text{CFI} = -\text{cash paid for PP\&E acquisitions} + \text{disposal proceeds}$$

$$\text{CFI} = -\$25{,}000 + \$10{,}000 + \$15{,}000 = \$0$$

The cost of new assets acquired was, by coincidence, perfectly matched by the proceeds from asset disposals.

EXAMPLE: Computing cash flow from financing (CFF)

Returning to the financial statements from our CFO examples, we will need the following information to compute CFF:

	20X7	20X6
Balance sheet extract	**$**	**$**
Current liabilities		
Dividends payable	6,000	1,000
Noncurrent liabilities		
Bonds payable	15,000	10,000
Stockholders' equity		
Common stock	15,000	20,000
Additional paid-in capital	25,000	30,000
Contributed capital	40,000	50,000
Retained earnings	61,000	30,500
Other financial statement data		
Net income	39,000	
Dividend declared	8,500	

A footnote disclosure reveals that the bonds outstanding had been issued at face value (par).

Answer:

We can begin by determining cash flows from issuing or repaying bonds:

	$
Beginning bonds payable	10,000
Net principal flows	X/(X)
Ending bonds payable	15,000

net principal flow = ending bonds payable − beginning bonds payable = $15,000 − $10,000 = $5,000 (inflow)

Next we can determine cash flows from issuing or redeeming equity shares. **Contributed capital** is the sum of common stock at par and additional paid-in capital, and reflects the price at which the company issued shares.

Reconciliation of equity contributed capital	$
Beginning contributed capital	50,000
Net proceeds from repurchases and issuance	X/(X)
Ending contributed capital	40,000

net proceeds from buyback and issuance = ending contributed capital − beginning contributed capital = $50,000 − $40,000 = −$10,000 (use of cash, or a net share repurchase of $10,000)

Next we determine cash dividends paid, which can be a two-step process:

Step 1: Calculate dividend declared if it is not given.

In this example, the dividend declared of $8,500 was given. If it had not been, we could compute it based on the change in retained earnings:

Reconciliation of retained earnings	$
Beginning retained earnings	30,500
Net income	39,000
Dividend declared	(X)
Ending retained earnings	61,000

dividends declared = beginning retained earnings + net income − ending retained earnings

= $30,500 + $39,000 − $61,000 = $8,500

Step 2: Adjust the dividend declared for changes in the dividends payable liability. Simply because it is declared does not mean it has been paid. While the dividend declared does not pass through the income statement, it does reduce retained earnings; therefore, we treat it as a negative value. We then apply the increase/decrease rules for balance sheet liabilities:

Dividends paid	$
Dividend declared	(8,500)
Increase in dividend payable liability	5,000
Cash dividend paid	(3,500)

Computation of CFF

	$
Net principal on bonds	5,000
Net proceeds from share repurchase and issuance	(10,000)
Cash dividends	(3,500)
Cash flow from financing	(8,500)

Having computed CFO, CFI, and CFF, we can complete the cash flow statement.

Total cash flow

	$
Cash flow from operations	50,000
Cash flow from investing	0
Cash flow from financing	(8,500)
Total cash flow	41,500
20X6 balance sheet cash	11,500
20X7 balance sheet cash	53,000

The total cash flow of $41,500 is equal to the increase in cash. The difference between beginning cash and ending cash should be used as a check figure to ensure that the total cash flow calculation is correct.

PROFESSOR'S NOTE

The Level I CFA curriculum makes a few simplifications in the calculation of CFF.

For bonds issued at a premiums or discounts, the difference relative to par is amortized over the life of the bond. Amortization of premiums and discounts are not cash flows:

coupon + amortized discount − amortized premium = interest expense

With *amortization of a discount bond*, amortization will increase the interest expense and carrying value.

With *amortization of a premium bond*, amortization will decrease the interest expense and carrying value.

The curriculum mentions the noncash element affecting interest expense (see Figure 30.1), but does not mention the impact on the balance sheet carrying value.

The Level I curriculum sidesteps such complications by assuming that bonds are issued at par value in computations of CFF, which means there are no premiums or discounts to amortize.

A second simplification in the Level I curriculum is to assume that stock buybacks are transacted at the same price that the shares were initially

issued for. In practice, this is unlikely, and if the buyback price differs from issue price, adjustments to retained earnings are made.

LOS 30.c: Demonstrate the conversion of cash flows from the indirect to direct method.

The only difference between the indirect and direct methods of presentation is in the cash flow from operations (CFO) section. CFO under the direct method can be computed using a combination of the income statement and a statement of cash flows prepared under the indirect method.

PROFESSOR'S NOTE

The Level I CFA curriculum describes a three-step method for converting from indirect cash flow statements to direct cash flow statements. Provided that you understood the direct and indirect methods presented earlier, you will find little that you do not already know (although it is presented slightly differently).

Here is the three-step process:

Step 1: Aggregate all revenues and gains and all expenses and losses.

Step 2: Remove all noncash charges and disaggregate the remaining items.

Step 3: Convert from accruals to cash flows by adjusting for the change in working capital.

EXAMPLE: Conversion from indirect to direct CFO

Using the same data as the direct and indirect examples, the three stages are as follows:

		$
Step 1:	Total revenues and gains	114,000
	Total expenses and losses	75,000
	Net income	39,000

Step 2:	Revenues less noncash charges	104,000
	($114,000 – $10,000)	
	$10,000 = gain on asset disposal	
	Expenses less noncash charges	61,000
	($75,000 – $7,000 – $2,000 – $5,000)	
	$7,000 = depreciation	
	$2,000 = loss on disposal of PP&E	
	$5,000 = change in deferred tax liability	
	Cost of goods sold	40,000
	Wages	5,000
	Interest	1,000
	Tax payable	15,000
	(Tax provision – increase in DTL)	
	Total	61,000
Step 3:	Cash collected from customers	107,000
	$104,000 – $1,000 + $4,000	
	Cash paid to suppliers	(34,000)
	–$40,000 + $2,000 + $4,000	
	Cash paid to employees	(8,500)
	–$5,000 – $3,500	
	Cash interest paid	(500)
	–$1,000 + $500	
	Cash paid to tax authorities*	(14,000)
	–$15,000 + $1,000	
	Net cash flow from operating activities	50,000

* Note that the computation of cash paid looks slightly different from the direct method example. This is because the change in deferred tax is treated as a noncash charge and adjusted for in Step 2.

LOS 30.d: Contrast cash flow statements prepared under International Financial Reporting Standards (IFRS) and US generally accepted accounting principles (US GAAP).

Recall that under U.S. GAAP, dividends paid to the firm's shareholders are reported as financing activities, while interest paid is reported in operating activities. Interest received and dividends received from investments are also reported as operating activities.

International Financial Reporting Standards (IFRS) allow more flexibility in the classification of cash flows. Under IFRS, interest and dividends received may be classified as either operating *or* investing cash inflows. Dividends paid to the company's

shareholders and interest paid on the company's debt may be classified as either operating *or* financing cash outflows.

Another important difference relates to income taxes paid. Under U.S. GAAP, all taxes paid are reported as operating cash outflows—even taxes related to investing and financing transactions. Under IFRS, income taxes are reported as operating cash outflows unless they are associated with an investing or financing transaction.

For example, consider a company that sells land that was held for investment for $1 million. Income taxes on the sale total $160,000. Under U.S. GAAP, the firm reports an inflow of cash from investing activities of $1 million and an outflow of cash from operating activities of $160,000. Under IFRS, the firm can report a net inflow of $840,000 from investing activities.

The differences between U.S. GAAP and IFRS are summarized in Figure 30.3.

Figure 30.3: Differences Between U.S. GAAP and IFRS

	U.S. GAAP	IFRS
Interest received	CFO	CFO or CFI
Interest paid	CFO	CFO or CFF
Dividends received	CFO	CFO or CFI
Dividends paid	CFF	CFO or CFF
Bank overdraft	Treated as balance sheet debt	Treated as balance sheet cash
Taxes	CFO	May be split between CFO, CFI, and CFF according to the nature of the transaction that caused tax to become payable
Presentation of CFO	Direct preferred, but indirect allowed; a reconciliation of net income to CFO must be disclosed if using direct method	Direct preferred, but indirect allowed

MODULE QUIZ 30.3

Assuming U.S. GAAP, use the following data to answer Questions 1 and 2.

Net income	$45
Depreciation	75
Taxes paid	25
Interest paid	5
Dividends paid	10
Cash received from sale of company building	40
Issuance of preferred stock	35
Repurchase of common stock	30
Purchase of machinery	20
Issuance of bonds	50
Debt retired through issuance of common stock	45
Paid off long-term bank borrowings	15
Profit on sale of building	20

1. Cash flow from investing activities is:
   A. −$30.
   B. $20.
   C. $50.
2. Cash flow from financing activities is:
   A. $30.
   B. $55.
   C. $75.
3. Which of the following items is *least likely* considered a cash flow from financing activity under U.S. GAAP?
   A. Receipt of cash from the sale of bonds.
   B. Payment of cash for dividends.
   C. Payment of interest on debt.
4. Which of the following would be *least likely* to cause a change in investing cash flow?
   A. The sale of a division of the company.
   B. The purchase of new machinery.
   C. An increase in depreciation expense.
5. Issuing bonds is classified as:
   A. an investing activity.
   B. a financing activity.
   C. having no cash flow impact.
6. The sale of land is classified as a(n):
   A. operating activity.
   B. investing activity.
   C. financing activity.
7. Which balance sheet items are *most likely* to be linked to cash flows from financing?
   A. Long-lived assets.
   B. Current assets and liabilities.
   C. Long-term liabilities and equity.
8. Under IFRS, interest expense may be classified as:

A. either operating cash flow or financing cash flow.
B. operating cash flow only.
C. financing cash flow only.

9. Under U.S. GAAP, dividends received from investments are classified as:

A. operating cash flow.
B. investing cash flow.
C. financing cash flow.

KEY CONCEPTS

LOS 30.a

Cash flow from operations is not the same as earnings because of the accruals process. To calculate CFO, balance sheet operating assets and liabilities are used to adjust income statement revenues and expenses to cash flows.

Cash flows can be computed as the income statement figure − increase in related operating assets + decreases in related operating assets + increases in related operating liabilities − decrease in related operating liabilities.

Operating activities typically relate to the firm's current assets and current liabilities. Investing activities typically relate to noncurrent assets. Financing activities typically relate to noncurrent liabilities and equity.

LOS 30.b

Under the direct method of presenting CFO, each line item of the accruals-based income statement is adjusted to get cash receipts or cash payments. The main advantage of the direct method is that it presents clearly the firm's operating cash receipts and payments.

Under the indirect method of presenting CFO, net income is adjusted for transactions that affect net income but do not affect operating cash flow, such as depreciation and gains or losses on asset sales, and for changes in balance sheet items. The main advantage of the indirect method is that it focuses on the differences between net income and operating cash flow and gives the user of the accounts an indication of earnings quality.

CFI is calculated by determining the changes in asset accounts that result from investing activities. The cash flow from selling an asset is its book value plus any gain on the sale (or minus any loss on the sale).

CFF is the sum of net cash flows from creditors (new borrowings minus principal repaid) and net cash flows from shareholders (new equity issued minus share repurchases minus cash dividends paid).

LOS 30.c

An indirect cash flow statement can be converted to a direct cash flow statement by adjusting each income statement account for changes in associated balance sheet accounts and by eliminating noncash and nonoperating items (i.e., applying the direct method).

LOS 30.d

Differences in cash flow classifications between U.S. GAAP and IFRS:

	U.S. GAAP	IFRS
Interest received	CFO	CFO or CFI
Interest paid	CFO	CFO or CFF
Dividends received	CFO	CFO or CFI
Dividends paid	CFF	CFO or CFF
Bank overdraft	Treated as balance sheet debt	Treated as balance sheet cash
Taxes	CFO	May be split between CFO, CFI, and CFF according to the nature of the transaction that caused tax to become payable
Presentation of CFO	Direct preferred but indirect allowed	Direct preferred but indirect allowed; a reconciliation of net income to CFO must be disclosed if using the direct method

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 30.1, 30.2

1. **B** $150,000 sales + $10,000 decrease in accounts receivable = $160,000 cash collections. The change in accounts payable does not affect cash collections. Accounts payable result from a firm's purchases from its suppliers. (Module 30.1, LOS 30.a, LOS 30.b)

2. **C** Revenue must be adjusted for the change in accounts receivable asset and unearned revenue liability:

	$
Revenue	2,000,000
Increase in accounts receivable	(50,000)
Increase in unearned revenue	70,000
Cash from customers	2,020,000

(Module 30.1, LOS 30.a, LOS 30.b)

3. **B** The income statement tax expense must first be adjusted to remove the impact of any changes to deferred tax assets and liabilities to arrive at tax payable. Tax payable represents the tax owed to the tax authorities on this period's earnings. The tax-payable figure then must be adjusted for changes in tax-payable liabilities to arrive at the cash tax paid.

	$
Tax expense	(200,000)
Increase in deferred tax liability	50,000
Increase in deferred tax asset	(10,000)
Tax payable	(160,000)
Decrease in tax payable liability	(90,000)
Cash taxes paid	(250,000)

(Module 30.1, LOS 30.a, LOS 30.b)

4. **B** The cost of goods sold needs to be adjusted for both change in inventory and change in accounts payable.

	$
Cost of goods sold	(1,400,000)
Decrease in inventory	20,000
Purchases	(1,380,000)
Decrease in accounts payable	(30,000)
Cash paid to suppliers	(1,410,000)

(Module 30.1, LOS 30.a, LOS 30.b)

5. **B** Net income − profits from sale of land + depreciation + decrease in receivables − increase in inventories + increase in accounts payable − decrease in wages payable + increase in deferred tax liabilities = 120 − 2 + 25 + 20 − 10 + 7 − 5 + 15 = $170. Note that the profit on the sale of land should be subtracted from net income because this transaction is classified as investing, not operating. (Module 30.2, LOS 30.b)

6. **A**

Net income	$78,000
Depreciation	12,000
Unrealized gain	(15,000)
Increase in accounts receivable	(52,000)
Increase in accounts payable	29,000
Cash flow from operations	$52,000

(Module 30.2, LOS 30.b)

7. **C** The indirect method reconciles the difference between net income and CFO. The direct method shows operating cash received and paid—and, therefore, provides more information on its face than the indirect method. (Module 30.2, LOS 30.b)

Module Quiz 30.3

1. **B** Cash from sale of building − purchase of machinery = 40 − 20 = $20. (Module 30.3, LOS 30.b)

2. **A** Sale of preferred stock + issuance of bonds − principal payments on bank borrowings − repurchase of common stock − dividends paid = 35 + 50 − 15 − 30 − 10 = $30. Note that we did not include $45 of debt retired through issuance of

common stock because this was a noncash transaction. Knowing how to handle noncash transactions is important. (Module 30.1, LOS 30.b)

3. **C** The payment of interest on debt is an *operating* cash flow under U.S. GAAP. (Module 30.3, LOS 30.d)

4. **C** Depreciation does not represent a cash flow. To the extent that it affects the firm's taxes, an increase in depreciation changes operating cash flows, but not investing cash flows. (Module 30.3, LOS 30.b)

5. **B** Issuing bonds is classified as a financing activity. (Module 30.3, LOS 30.b)

6. **B** The sale of land is classified as an investing activity. (Module 30.3, LOS 30.b)

7. **C** Financing cash flows are linked primarily to changes in long-term liabilities and equity. Changes in current assets and liabilities tend to be linked to operating cash flows. Changes in long-lived assets are typically linked to investing cash flows. (Module 30.3, LOS 30.b)

8. **A** Under IFRS, interest expense can be classified as either an operating cash flow or financing cash flow. (Module 30.3, LOS 30.d)

9. **A** Dividends received from investments are classified as operating cash flow under U.S. GAAP. (Module 30.3, LOS 30.d)

READING 31

ANALYZING STATEMENTS OF CASH FLOWS II

MODULE 31.1: ANALYZING STATEMENTS OF CASH FLOWS II

Video covering this content is available online.

LOS 31.a: Analyze and interpret both reported and common-size cash flow statements.

The cash flow statement provides information to assess the firm's liquidity, solvency, and financial flexibility. An analyst can use the statement of cash flows to determine the following:

- Whether regular operations generate enough cash to sustain the business
- Whether enough cash is generated to pay off existing debts as they mature
- Whether the firm is likely to need additional financing
- Whether unexpected obligations can be met
- Whether the firm can take advantage of new business opportunities as they arise

Cash flow analysis begins with evaluating the firm's sources and uses of cash from operating, investing, and financing activities. Sources and uses of cash change as the firm moves through its life cycle. For example, when a firm is in the early stages of growth, it may experience negative operating cash flow as it uses cash to increase inventory and receivables. Early-stage firms usually finance this negative operating cash flow externally by issuing debt or equity securities. These sources of financing are not sustainable. Eventually, the firm must begin generating positive operating cash flow or external investors will stop providing capital. Over the long term, successful firms must generate operating cash flows that exceed capital expenditures and provide a return to debt and equity holders.

An analyst should identify how a firm is generating its operating cash flow. The firm's earnings-related activities should provide its operating cash flow. However, a firm can also generate positive operating cash flow in the near term by decreasing noncash working capital, such as by liquidating inventory and receivables or increasing payables. Decreasing noncash working capital is not sustainable because inventories and receivables cannot fall below zero and creditors will not extend credit indefinitely unless payments are made when due.

Operating cash flow provides a check on the quality of a firm's earnings. A stable relationship of operating cash flow and net income is an indication of quality earnings. Earnings that significantly exceed operating cash flow may be an indication of aggressive (or even improper) accounting choices such as recognizing revenues too soon or delaying the recognition of expenses. An analyst should also evaluate the variability of net income and operating cash flow as an indicator of a firm's risk.

An analyst should also examine a firm's sources and uses of cash from investing activities. Increasing capital expenditures, a use of cash, is usually an indication of growth. Conversely, a firm may reduce capital expenditures or even sell capital assets to save or generate cash. An analyst should inquire into the reasons for this because it may result in higher cash outflows in the future when the firm needs to replace older fixed assets. Investing cash flows may also result from acquisitions or investments in securities.

The financing activities section of the cash flow statement reveals information about whether the firm is generating cash flow by issuing debt or equity. It also indicates whether the firm is using cash to repay debt, reacquire stock, or pay dividends. For example, an analyst would certainly want to know if a firm issued debt and used the proceeds to reacquire stock or pay dividends to shareholders.

Common-Size Cash Flow Statements

As with the income statement and balance sheet, an analyst can use common-size analysis to interpret a cash flow statement.

The cash flow statement can be converted to common-size format by expressing each line item as a percentage of revenue. Alternatively, each inflow of cash can be expressed as a percentage of total cash inflows, and each outflow of cash can be expressed as a percentage of total cash outflows.

A revenue-based common-size cash flow statement is useful for identifying trends and forecasting future cash flow. Because each line item of the cash flow statement is stated in terms of revenue, once future revenue is forecast, cash flows can be estimated for those items that are tied to revenue.

> **EXAMPLE: Common-size cash flow statement analysis**
>
> Triple Y Corporation's common-size cash flow statement is shown in the following table. Each item has been stated as a percentage of revenue. Explain the decrease in Triple Y's total cash flow as a percentage of revenues.
>
> **Triple Y Corporation**

Cash Flow Statement (Percentage of Revenues)			
Year	**20X9**	**20X8**	**20X7**
Net income	13.4%	13.4%	13.5%
Depreciation	4.0%	3.9%	3.9%
Accounts receivable	−0.6%	−0.6%	−0.5%
Inventory	−10.3%	−9.2%	−8.8%
Prepaid expenses	0.2%	−0.2%	0.1%
Accrued liabilities	5.5%	5.5%	5.6%
Operating cash flow	**12.2%**	**12.8%**	**13.8%**
Cash from sale of fixed assets	0.7%	0.7%	0.7%
Purchase of plant and equipment	−12.3%	−12.0%	−11.7%
Investing cash flow	**−11.6%**	**−11.3%**	**−11.0%**
Sale of bonds	2.6%	2.5%	2.6%
Cash dividends	−2.1%	−2.1%	−2.1%
Financing cash flow	**0.5%**	**0.4%**	**0.5%**
Total cash flow	**1.1%**	**1.9%**	**3.3%**

Answer:

Operating cash flow has decreased as a percentage of revenues. This appears to be due largely to accumulating inventories. Investing activities, specifically purchases of plant and equipment, have also required an increasing percentage of the firm's cash flow. These observations are consistent with a growing firm, but an analyst should inquire whether the increase in inventories was intended or unintended.

LOS 31.b: Calculate and interpret free cash flow to the firm, free cash flow to equity, and performance and coverage cash flow ratios.

Free cash flow is a measure of cash available for discretionary use, after a firm has covered its capital expenditures. This fundamental cash flow measure is often used for valuation. Analysts have several ways to measure free cash flow. Two of the more common measures are free cash flow to the firm and free cash flow to equity.

Free Cash Flow to the Firm

Free cash flow to the firm (FCFF) is cash available to all investors, both equity owners and debtholders. FCFF can be calculated by starting with either net income or operating cash flow. FCFF is calculated from net income as follows:

$$\text{FCFF} = \text{NI} + \text{NCC} + [\text{Int} \times (1 - \text{tax rate})] - \text{FC}_{\text{INV}} - \text{WC}_{\text{INV}}$$

where:
NI = net income
NCC = noncash charges (depreciation and amortization)
Int = cash interest paid
FC_{INV} = fixed capital investment (net capital expenditures)
WC_{INV} = working capital investment

PROFESSOR'S NOTE
Fixed capital investment is cash spent on fixed assets minus cash received from selling fixed assets. We cannot assume it is the same as CFI, which may also include cash flows from investments in securities and repaid principal from loans made.

Cash interest paid, net of tax, is added back to net income. This is because FCFF is the cash flow available to stockholders and debtholders. Because interest is paid to (and therefore "available to") the debtholders, it must be included in FCFF.

Notice that three components of the equation are just computing operating cash flows under the indirect method:

$$\text{CFO} = \text{NI} + \text{NCC} - \text{WC}_{\text{INV}}$$

For this reason, FCFF can also be calculated from operating cash flow as follows:

$$\text{FCFF} = \text{CFO} + [\text{Int} \times (1 - \text{tax rate})] - \text{FC}_{\text{INV}}$$

where:
CFO = cash flow from operations
Int = cash interest paid
FC_{INV} = fixed capital investment (net capital expenditures)

For firms that follow IFRS, it is not necessary to adjust for interest that is included as a part of financing activities. Additionally, firms that follow IFRS can report dividends paid as operating activities. In this case, the dividends paid would be added back to CFO. Again, the goal is to calculate the cash flow that is available to the shareholders and debtholders. It is not necessary to adjust dividends for taxes because dividends paid are not tax deductible.

Free Cash Flow to Equity

Free cash flow to equity (FCFE) is the cash flow available for distribution to common shareholders. FCFE can be calculated as follows:

$$\text{FCFE} = \text{CFO} - \text{FC}_{\text{INV}} + \text{net borrowing}$$

where:
CFO = cash flow from operations
FC_{INV} = fixed capital investment (net capital expenditures)
net borrowing = debt issued − debt repaid

PROFESSOR'S NOTE
If net borrowing is negative (debt repaid exceeds debt issued), we would subtract net borrowing in calculating FCFE.

If a firm that follows IFRS has subtracted dividends paid in calculating CFO, dividends must be added back when calculating FCFE.

EXAMPLE: Free cash flow

Using the financial statement extracts presented next, calculate the company's FCFF and FCFE. Assume a tax rate of 40%.

	$
Net income	39,000
Noncash charges	
Depreciation	7,000
Increase in deferred tax liability	5,000
Loss on disposal of PP&E	2,000
Gain from sale of land	(10,000)
Subtotal	43,000
Investment in working capital	
Increase in receivables	(1,000)
Decrease in inventories	2,000
Increase in accounts payable	4,000
Decrease in wages payable	(3,500)
Increase in interest payable	500
Increase in unearned revenue liability	4,000
Increase in taxes payable	1,000
Operating cash flows	50,000

Interest paid	$
Interest expense	(1,000)
Increase in interest payable	500
Cash interest paid	(500)

Cash flow from investing (CFI)	$
Cash paid for PP&E	(25,000)
Disposal proceeds	25,000
Cash flow from investing	0

Cash flow from financing (CFF)	$
Net principal on bonds	5,000
Net proceeds from share repurchase and issuance	(10,000)
Cash dividends	(3,500)
Cash flow from financing	(8,500)

Answer:

In this example, CFI is equal to FC_{INV} due to the absence of cash flows related to financial investments.