2024 CFA®
Exam Prep

SchweserNotes™
Financial Statement Analysis and Corporate Issuers

LEVEL II BOOK 2

KAPLAN SCHWESER

Book 2: Financial Statement Analysis and Corporate Issuers

SchweserNotes™ 2024

Level II CFA®

SCHWESERNOTES™ 2024 LEVEL II CFA® BOOK 2: FINANCIAL STATEMENT ANALYSIS AND CORPORATE ISSUERS

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b. compare and contrast IFRS and US GAAP in their classification, measurement, and disclosure of investments in financial assets, investments in associates, joint ventures, business combinations, and special purpose and variable interest entities.
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l. describe indicators of cash flow quality.
m. describe sources of information about risk.

13. Integration of Financial Statement Analysis Techniques

The candidate should be able to:

a. demonstrate the use of a framework for the analysis of financial statements, given a particular problem, question, or purpose (e.g., valuing equity based on comparables, critiquing a credit rating, obtaining a comprehensive picture of financial leverage, evaluating the perspectives given in management's discussion of financial results).
b. identify financial reporting choices and biases that affect the quality and comparability of companies' financial statements and explain how such biases may affect financial decisions.
c. evaluate the quality of a company's financial data and recommend appropriate adjustments to improve quality and comparability with similar companies, including adjustments for differences in accounting standards, methods, and assumptions.
d. evaluate how a given change in accounting standards, methods, or assumptions affects financial statements and ratios.
e. analyze and interpret how balance sheet modifications, earnings normalization, and cash flow statement related modifications affect a company's financial statements, financial ratios, and overall financial condition.

14. Financial Statement Modeling

The candidate should be able to:

a. compare top-down, bottom-up, and hybrid approaches for developing inputs to equity valuation models.
b. compare "growth relative to GDP growth" and "market growth and market share" approaches to forecasting revenue.
c. evaluate whether economies of scale are present in an industry by analyzing operating margins and sales levels.
d. demonstrate methods to forecast cost of goods sold and operating expenses.
e. demonstrate methods to forecast non-operating items, financing costs, and income taxes.
f. describe approaches to balance sheet modeling.
g. demonstrate the development of a sales-based pro forma company model.
h. explain how behavioral factors affect analyst forecasts and recommend remedial actions for analyst biases.
i. explain how competitive factors affect prices and costs.
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k. explain how to forecast industry and company sales and costs when they are subject to price inflation or deflation.
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m. explain considerations in the choice of an explicit forecast horizon.
n. explain an analyst's choices in developing projections beyond the short-term forecast horizon.

15. Analysis of Dividends and Share Repurchases

The candidate should be able to:

a. describe the expected effect of regular cash dividends, extra dividends, liquidating dividends, stock dividends, stock splits, and reverse stock splits on shareholders' wealth and a company's financial ratios.

b. compare theories of dividend policy and explain implications of each for share value given a description of a corporate dividend action.
c. describe types of information (signals) that dividend initiations, increases, decreases, and omissions may convey.
d. explain how agency costs may affect a company's payout policy.
e. explain factors that affect dividend policy in practice.
f. calculate and interpret the effective tax rate on a given currency unit of corporate earnings under double taxation, dividend imputation, and split-rate tax systems.
g. compare stable dividend with constant dividend payout ratio, and calculate the dividend under each policy.
h. describe broad trends in corporate payout policies.
i. compare share repurchase methods.
j. calculate and compare the effect of a share repurchase on earnings per share when 1) the repurchase is financed with the company's surplus cash and 2) the company uses debt to finance the repurchase.
k. calculate the effect of a share repurchase on book value per share.
l. explain the choice between paying cash dividends and repurchasing shares.
m. calculate and interpret dividend coverage ratios based on 1) net income and 2) free cash flow.
n. identify characteristics of companies that may not be able to sustain their cash dividend.

16. Environmental, Social, and Governance (ESG) Considerations in Investment Analysis

The candidate should be able to:
a. describe global variations in ownership structures and the possible effects of these variations on corporate governance policies and practices.
b. evaluate the effectiveness of a company's corporate governance policies and practices.
c. describe how ESG-related risk exposures and investment opportunities may be identified and evaluated.
d. evaluate ESG risk exposures and investment opportunities related to a company.

17. Cost of Capital: Advanced Topics

The candidate should be able to:
a. explain top-down and bottom-up factors that impact the cost of capital.
b. compare methods used to estimate the cost of debt.
c. explain historical and forward-looking approaches to estimating an equity risk premium.
d. compare methods used to estimate the required return on equity.
e. estimate the cost of debt or required return on equity for a public company and a private company.
f. evaluate a company's capital structure and cost of capital relative to peers.

18. Corporate Restructuring

The candidate should be able to:
a. explain types of corporate restructurings and issuers' motivations for pursuing them.
b. explain the initial evaluation of a corporate restructuring.
c. demonstrate valuation methods for, and interpret valuations of, companies involved in corporate restructurings.
d. demonstrate how corporate restructurings affect an issuer's EPS, net debt to EBITDA ratio, and weighted average cost of capital.
e. evaluate corporate investment actions, including equity investments, joint ventures, and acquisitions.
f. evaluate corporate divestment actions, including sales and spin offs.
g. evaluate cost and balance sheet restructurings.

READING 8

INTERCORPORATE INVESTMENTS

EXAM FOCUS

There are no shortcuts here. Spend the time necessary to learn how and when to use each method of accounting for intercorporate investments because the probability of this material being tested is high. Be able to determine the effects of each method on the financial statements and ratios. Pay particular attention to the examples illustrating the difference between the equity method and the acquisition method.

MODULE 8.1: CLASSIFICATIONS

Video covering this content is available online.

CATEGORIES OF INTERCORPORATE INVESTMENTS

LOS 8.a: Describe the classification, measurement, and disclosure under International Financial Reporting Standards (IFRS) for 1) investments in financial assets, 2) investments in associates, 3) joint ventures, 4) business combinations, and 5) special purpose and variable interest entities.

LOS 8.b: Compare and contrast IFRS and US GAAP in their classification, measurement, and disclosure of investments in financial assets, investments in associates, joint ventures, business combinations, and special purpose and variable interest entities.

Intercorporate investments in marketable securities are categorized as either (1) investments in financial assets (when the investing firm has no significant control over the operations of the investee firm), (2) investments in associates (when the investing firm has significant influence over the operations of the investee firm, but not control), or (3) business combinations (when the investing firm has control over the operations of the investee firm).

Percentage of ownership (or voting control) is typically used to determine the appropriate category for financial reporting purposes. However, the ownership percentage is only a guideline. Ultimately, the category is based on the investor's ability to influence or control the investee.

Investments in financial assets. An ownership interest of less than 20% is usually considered a passive investment. In this case, the investor cannot significantly influence or control the investee.

Investments in associates. An ownership interest between 20% and 50% is typically a noncontrolling investment; however, the investor can usually

significantly influence the investee's business operations. Significant influence can be evidenced by the following:

- Board of directors representation.
- Involvement in policy making.
- Material intercompany transactions.
- Interchange of managerial personnel.
- Dependence on technology.

It may be possible to have significant influence with less than 20% ownership. In this case, the investment is considered an investment in associates. Conversely, without significant influence, an ownership interest between 20% and 50% is considered an investment in financial assets.

The equity method is used to account for investments in associates.

Business combinations. An ownership interest of more than 50% is usually a controlling investment. When the investor can control the investee, the acquisition method is used.

It is possible to own more than 50% of an investee and not have control. For example, control can be temporary or barriers may exist such as bankruptcy or governmental intervention. In these cases, the investment is not considered controlling.

Conversely, it is possible to control with less than a 50% ownership interest. In this case, the investment is still considered a business combination.

Joint ventures. A joint venture is an entity whereby control is shared by two or more investors. Both IFRS and U.S. GAAP require the equity method for joint ventures. In rare cases, IFRS and U.S. GAAP allow proportionate consolidation as opposed to the equity method.

Figure 8.1 summarizes the accounting treatment for investments.

Figure 8.1: Accounting for Investments

Ownership	Degree of Influence	Accounting Treatment
Less than 20% (investments in financial assets)	No significant influence	Amortized cost, fair value through OCI, fair value through profit or loss
20%–50% (investment in associates)	Significant influence	Equity method
More than 50% (business combinations)	Control	Acquisition method

MODULE QUIZ 8.1

1. Tall Company owns 30% of the common equity of Short Incorporated. Tall has been unsuccessful in its attempts to obtain representation on Short's board of directors. For financial reporting purposes, Tall's ownership interest is *most likely* considered a(n):
   A. investment in financial assets.
   B. investment in associates.

C. business combination.

MODULE 8.2: INVESTMENTS IN FINANCIAL ASSETS (IFRS 9)

Video covering this content is available online.

IFRS 9

IASB and FASB have each issued similar new standards for accounting for investment in financial assets (minor differences remain). Consistent with the curriculum, the terminology mentioned here is the **International Financial Reporting Standards (IFRS)** terminology.

IFRS categorizes financial assets depending on whether they are carried at amortized cost or at fair value. The result is three classifications: amortized cost, fair value through profit or loss, and fair value through OCI. Corresponding classifications under U.S. GAAP are held-to-maturity, held for trading, and available for sale.

Amortized Cost (for Debt Securities Only)

Debt securities that meet two criteria are accounted for using the amortized cost method.

Criteria for amortized cost accounting:

1. **Business model test:** Debt securities are being held to collect contractual cash flows.
2. **Cash flow characteristic test:** The contractual cash flows are either principal, or interest on principal, only.

These debt securities are reported on the balance sheet at amortized cost. Amortized cost is the original cost of the debt security plus any discount, or minus any premium, that has been amortized to date.

Interest income (coupon cash flow adjusted for amortization of premium or discount) is recognized in the income statement, but subsequent changes in fair value are ignored.

Fair Value Through Profit or Loss (for Debt and Equity Securities)

Debt securities may be classified as **fair value through profit or loss (FVPL)** if held for trading, or if accounting for those securities at amortized cost results in an accounting mismatch. Equity securities that are held for trading must be classified as FVPL. Other equity securities may be classified as either fair value through profit or loss, or **fair value through other comprehensive income (FVOCI)**. Once classified, the choice is irrevocable. Derivatives that are not used for hedging are always carried at FVPL. If an asset has an embedded derivative (e.g., convertible bonds), the asset as a whole is valued at FVPL.

FVPL securities are reported on the balance sheet at fair value. The changes in fair value, both realized and unrealized, are recognized in the income statement along with any dividend or interest income.

Fair Value Through OCI (for Debt and Equity Securities)

Securities classified as fair value through OCI are carried on the balance sheet at fair value and any unrealized gain or loss is reported in OCI. Dividends and interest income are reported in the income statement.

Figure 8.2 summarizes the effects of the different classifications for financial assets on the balance sheet and income statement.

Figure 8.2: Summary of Classifications of Financial Assets

	Amortized Cost	Fair Value Through Profit or Loss	Fair Value Through OCI
Balance sheet	Amortized cost	Fair value	Fair value, with G/L recognized in equity
Income statement	Interest (including amortization) Realized G/L*	Interest Dividends G/L	Interest Dividends

* G/L = gains and losses

Let's look at an example of the different classifications for financial assets.

EXAMPLE: Investment in financial assets

At the beginning of the year, Midland Corporation purchased a 9% bond with a face value of $100,000 for $96,209 to yield 10%. The coupon payments are made annually at year-end. Suppose that the fair value of the bond at the end of the year is $98,500.

Determine the impact on Midland's balance sheet and income statement if the bond investment is classified as (1) amortized cost, (2) fair value through profit or loss, and (3) fair value through OCI.

Answer:

Amortized cost: Balance sheet value is based on amortized cost. At year-end, Midland recognizes interest revenue of $9,621 ($96,209 beginning bond investment × 10% yield). The interest revenue includes the coupon payment of $9,000 ($100,000 face value × 9% coupon rate) and the amortized discount of $621 ($9,621 interest revenue – $9,000 coupon payment).

At year-end, the bond is reported on the balance sheet at $96,830 ($96,209 beginning bond investment + $621 amortized discount).

Fair value through profit or loss: The balance sheet value is based on fair value of $98,500. Interest revenue of $9,621 ($96,209 beginning bond investment × 10% yield) and an unrealized gain of $1,670 ($98,500 – $96,209 – $621) are recognized in the income statement.

Fair value through OCI: The balance sheet value is based on fair value of $98,500. Interest revenue of $9,621 ($96,209 beginning bond investment × 10% yield) is recognized in the income statement. The unrealized gain of $1,670 ($98,500 – $96,209 – $621) is reported in stockholders' equity as a component of other comprehensive income.

Reclassification Under IFRS 9

Reclassification of equity securities under the new standards is not permitted as the initial designation (FVPL or FVOCI) is irrevocable. Reclassification of debt securities is permitted only if the business model has changed. For example, unrecognized gains/losses on debt securities carried at amortized cost and reclassified as FVPL are recognized in the income statement. Debt securities that are reclassified out of FVPL as measured at amortized cost are transferred at fair value on the transfer date, and that fair value will become the carrying amount.

Loan Impairment Under IFRS 9

A key feature of IFRS 9 was that the incurred loss model for loan impairment was replaced by the **expected credit loss model**. This requires companies to not only evaluate current and historical information about loan (including loan commitments and lease receivables) performance, but to also use forward-looking information. The new criteria results in an earlier recognition of impairment (12-month expected losses for performing loans and lifetime expected losses for nonperforming loans).

MODULE QUIZ 8.2

Use the following information to answer Questions 1 through 5.

Kirk Company acquired shares of both Company A and Company B. We have the following information from the public market about Company A and Company B's investment value at the time of purchase and at two subsequent dates:

Security	Cost	t = 1	t = 2
A	$950	$850	$900
B	250	180	350

1. Kirk Company will report the initial value of its investment in financial assets as:
   A. $700.
   B. $950.
   C. $1,200.
2. At t = 1, Kirk will:
   A. carry the financial assets at cost.
   B. write down the financial assets to $1,030 and recognize an unrealized loss of $170.
   C. write down the financial assets to $1,030 and recognize a realized loss of $170.
3. At t = 2, Kirk will report the carrying value of its financial assets as:
   A. $1,030.
   B. $1,200.
   C. $1,250.
4. Based on the information provided, which of the following statements is *most accurate*?
   A. Classifying the shares as fair value through profit or loss would result in greater reported earnings volatility for Kirk.
   B. Classifying the shares as fair value through OCI would result in a $220 realized gain for Kirk between t = 1 and t = 2.
   C. It is optimal for Kirk to classify its shares in Company A and Company B as fair value through profit or loss since it results in a net $50 gain recognized on the income statement at t = 2.

5. Suppose for this question only that Security A and Security B are both debt securities carried at amortized cost and purchased initially at par. At t = 2, Kirk will report the carrying value of these securities as:
   A. $1,030.
   B. $1,200.
   C. $1,250.

Video covering this content is available online.

MODULE 8.3: INVESTMENT IN ASSOCIATES, PART 1—EQUITY METHOD

Investments in Associates

Investment ownership of between 20% and 50% is usually considered influential. Influential investments are accounted for using the equity method. Under the equity method, the initial investment is recorded at cost and reported on the balance sheet as a noncurrent asset.

In subsequent periods, the proportionate share of the investee's earnings increases the investment account on the investor's balance sheet and is recognized in the investor's income statement. Dividends received from the investee are treated as a return of capital and thus, reduce the investment account. Unlike investments in financial assets, dividends received from the investee are not recognized in the investor's income statement.

If the investee reports a loss, the investor's proportionate share of the loss reduces the investment account and also lowers earnings in the investor's income statement. If the investee's losses reduce the investment account to zero, the investor usually discontinues use of the equity method. The equity method is resumed once the proportionate share of the investee's earnings exceed the share of losses that were not recognized during the suspension period.

Fair Value Option

U.S. GAAP allows equity method investments to be recorded at fair value. Under IFRS, the fair value option is only available to venture capital firms, mutual funds, and similar entities. The decision to use the fair value option is irrevocable and any changes in value (along with dividends) are recorded in the income statement.

EXAMPLE: Implementing the equity method

Suppose that we are given the following:

- December 31, 20X5, Company P (the investor) invests $1,000 in return for 30% of the common shares of Company S (the investee).
- During 20X6, Company S earns $400 and pays dividends of $100.
- During 20X7, Company S earns $600 and pays dividends of $150.

Calculate the effects of the investment on Company P's balance sheet and reported income for 20X6 and 20X7.

Answer:

Using the equity method for 20X6, Company P will:

- Recognize $120 ($400 × 30%) in the income statement from its proportionate share of the net income of Company S.
- Increase its investment account on the balance sheet by $120 to $1,120, reflecting its proportionate share of the net assets of Company S.

- Receive $30 ($100 × 30%) in cash dividends from Company S and reduce its investment in Company S by that amount to reflect the decline in the net assets of Company S due to the dividend payment.

At the end of 20X6, the carrying value of Company S on Company P's balance sheet will be $1,090 ($1,000 original investment + $120 proportionate share of Company S net income − $30 dividend received).

For 20X7, Company P will recognize income of $180 ($600 × 30%) and increase the investment account by $180. Also, Company P will receive dividends of $45 ($150 × 30%) and lower the investment account by $45. Hence, at the end of 20X7, the carrying value of Company S on Company P's balance sheet will be $1,225 ($1,090 beginning balance + $180 proportionate share of Company S net income − $45 dividend received).

Excess of Purchase Price Over Book Value Acquired

Rarely does the price paid for an investment equal the proportionate book value of the investee's net assets, since the book value of many assets and liabilities is based on historical cost.

At the acquisition date, the excess of the purchase price over the proportionate share of the investee's book value is allocated to the investee's identifiable assets and liabilities based on their fair values. Any remainder is considered goodwill.

In subsequent periods, the investor recognizes expense based on the excess amounts assigned to the investee's assets and liabilities. The expense is recognized consistent with the investee's recognition of expense. For example, the investor might recognize additional depreciation expense as a result of the fair value allocation of the purchase price to the investee's fixed assets.

It is important to note that the purchase price allocation to the investee's assets and liabilities is included in the investor's balance sheet, not the investee's. In addition, the additional expense that results from the assigned amounts is not recognized in the investee's income statement. Under the equity method of accounting, the investor must adjust its balance sheet investment account and the proportionate share of the income reported from the investee for this additional expense.

PROFESSOR'S NOTE

Under the equity method, the investor does not actually report the separate assets and liabilities of the investee. Rather, the investor reports the investment in one line on its balance sheet. This one-line investment account includes the proportionate share of the investee's net assets at fair value and the goodwill.

EXAMPLE: Allocation of purchase price over book value acquired

At the beginning of the year, Red Company purchased 30% of Blue Company for $80,000. On the acquisition date, the book value of Blue's identifiable net assets was $200,000. Also, the fair value and book value of Blue's assets and liabilities were the same except for Blue's equipment, which had a book value of $25,000 and a fair value of $75,000 on the acquisition date. Blue's equipment is depreciated

over 10 years using the straight-line method. At the end of the year, Blue reported net income of $100,000 and paid dividends of $60,000.

Part A: Calculate the goodwill created as a result of the purchase.

Part B: Calculate Red's income at the end of the year from its investment in Blue.

Part C: Calculate the investment in Blue that appears on Red's year-end balance sheet.

Answer:

Part A

The excess of purchase price over the proportionate share of Blue's book value is allocated to the equipment. The remainder is goodwill.

Purchase price:	$80,000
Less: Pro rata book value of net assets:	60,000 ($200,000 book value × 30%)
Excess of purchase price:	$20,000
Less: Excess allocated to equipment:	15,000 [($75,000 FV – $25,000 BV) × 30%]
Goodwill:	$5,000

Part B

Red recognizes its proportionate share of Blue's net income for the year. Also, Red must recognize the additional depreciation expense that resulted from the purchase price allocation.

Red's proportionate share of Blue's net income:	$30,000 ($100,000 NI × 30%)
Less: Additional depreciation from excess of purchase price allocated to Blue's equipment:	1,500 ($15,000 excess / 10 years)
Equity income:	$28,500

Part C

The beginning balance of Red's investment account is increased by the equity income from Blue and is decreased by the dividends received from Blue.

Investment balance at beginning of year:	$80,000 (Purchase price)
Equity income:	28,500 (From Part B)
Less: Dividends:	18,000 ($60,000 × 30%)
Investment balance at end of year:	$90,500

PROFESSOR'S NOTE

An alternative method of calculating the year-end investment is as follows:

% acquired × (book value of net assets at beginning of year + net income − dividends) + unamortized excess purchase price = [0.3 × (200,000 + 100,000 − 60,000)] + (20,000 − 1,500) = $90,500

MODULE QUIZ 8.3

1. If a company uses the equity method to account for an investment in another company:

A. income is combined to the extent of ownership.
B. all income of the affiliate is included except intercompany transfers.
C. earnings of the affiliate are included but reduced by any dividends paid to the company.

Use the following information to answer Questions 2 through 4.

Suppose Company P acquired 40% of the shares of Company A for $1.5 million on January 1, 2023. During the year, Company A earned $500,000 and paid dividends of $125,000.

1. At the end of 2023, Company P reported investment in Company A as:
   A. $1.5 million.
   B. $1.65 million.
   C. $1.7 million.
2. For 2023, Company P reported investment income of:
   A. $50,000.
   B. $150,000.
   C. $200,000.
3. For 2023, Company P received cash flow from the investee of:
   A. $50,000.
   B. $150,000.
   C. $200,000.

Video covering this content is available online.

MODULE 8.4: INVESTMENT IN ASSOCIATES, PART 2

Impairments of Investments in Associates

Equity method investments must be tested for impairment. Under U.S. GAAP, if the fair value of the investment falls below the carrying value (investment account on the balance sheet) and the decline is considered other-than-temporary, the investment is written-down to fair value and a loss is recognized on the income statement. Under IFRS, impairment needs to be evidenced by one or more loss events. Under both IFRS and U.S. GAAP, if there is a recovery in value in the future, the asset cannot be written-up.

Transactions With the Investee

So far, our discussion has ignored transactions between the investor and investee. Because of its ownership interest, the investor may be able to influence transactions with the investee. Thus, profit from these transactions must be deferred until the profit is confirmed through use or sale to a third party.

Transactions can be described as upstream (investee to the investor) or downstream (investor to the investee). In an upstream sale, the investee has recognized all of the profit in its income statement. However, for profit that is unconfirmed (goods have not been used or sold by the investor), the investor must eliminate its proportionate share of the profit from the equity income of the investee.

For example, suppose that Investor owns 30% of Investee. During the year, Investee sold goods to Investor and recognized $15,000 of profit from the sale. At year-end, half of the goods purchased from Investee remained in Investor's inventory.

All of the profit is included in Investee's net income. Investor must reduce its equity income of Investee by Investor's proportionate share of the unconfirmed profit. Since half of the goods remain, half of the profit is unconfirmed. Thus, Investor must reduce its equity income by $2,250 [($15,000 total profit × 50% unconfirmed) × 30% ownership interest]. Once the inventory is sold by Investor, $2,250 of equity income will be recognized.

In a downstream sale, the investor has recognized all of the profit in its income statement. Like the upstream sale, the investor must eliminate the proportionate share of the profit that is unconfirmed.

For example, imagine again that Investor owns 30% of Investee. During the year, Investor sold $40,000 of goods to Investee for $50,000. Investee sold 90% of the goods by year-end.

In this case, Investor's profit is $10,000 ($50,000 sales – $40,000 COGS). Investee has sold 90% of the goods; thus, 10% of the profit remains in Investee's inventory. Investor must reduce its equity income by the *proportionate share* of the unconfirmed profit: $10,000 profit × 10% unconfirmed amount × 30% ownership interest = $300. Once Investee sells the remaining inventory, Investor can recognize $300 of profit.

Analytical Issues for Investments in Associates

When an investee is profitable, and its dividend payout ratio is less than 100%, the equity method usually results in higher earnings as compared to the accounting methods used for minority passive investments. Thus, the analyst should consider if the equity method is appropriate for the investor. For example, an investor could use the equity method in order to report the proportionate share of the investee's earnings, when it cannot actually influence the investee.

Also, the investee's individual assets and liabilities are not reported on the investor's balance sheet. The investor simply reports its proportionate share of the investee's equity in one line on the balance sheet. By ignoring the investee's debt, leverage is lower. In addition, the margin ratios are higher since the investee's revenues are ignored.

Finally, the proportionate share of the investee's earnings is recognized in the investor's income statement, but the earnings may not be available to the investor in the form of cash flow (dividends). That is, the investee's earnings may be permanently reinvested.

Under the *acquisition method*, all of the assets, liabilities, revenues, and expenses of the subsidiary are combined with the parent. Intercompany transactions are excluded.

In the case where the parent owns less than 100% of the subsidiary, it is necessary to create a noncontrolling (minority) interest account for the proportionate share of the subsidiary's net assets that are not owned by the parent.

MODULE 8.5: BUSINESS COMBINATIONS: BALANCE SHEET

Video covering this content is available online.

Business Combinations

Under IFRS, business combinations are not differentiated based on the structure of the surviving entity. Under U.S. GAAP, business combinations are categorized as:

- **Merger.** The acquiring firm absorbs all the assets and liabilities of the acquired firm, which ceases to exist. The acquiring firm is the surviving entity.
- **Acquisition.** Both entities continue to exist in a parent-subsidiary relationship. Recall that when less than 100% of the subsidiary is owned by the parent, the parent prepares consolidated financial statements but reports the unowned (minority or noncontrolling) interest on its financial statements.
- **Consolidation.** A new entity is formed that absorbs both of the combining companies.

Historically, two accounting methods have been used for business combinations: (1) the purchase method and (2) the pooling-of-interests method. However, the pooling method has been eliminated from U.S. GAAP and IFRS. Now, the **acquisition method** (which replaces the purchase method) is required.

PROFESSOR'S NOTE

The acquisition method is often also referred to as consolidation or the consolidation method.

The **pooling-of-interests method**, also known as **uniting-of-interests method** under IFRS, combined the ownership interests of the two firms and viewed the participants as equals—neither firm acquired the other. The assets and liabilities of the two firms were simply combined. Key attributes of the pooling method include the following:

- The two firms are combined using historical book values.
- Operating results for prior periods are restated as though the two firms were always combined.
- Ownership interests continue, and former accounting bases are maintained.

Note that fair values played no role in accounting for a business combination using the pooling method—the actual price paid was suppressed from the balance sheet and income statement. Analysts should be aware that transactions reported under the pooling (uniting-of-interests) method prior to 2001 (2004) may still be reported under that method.

Let's look at an example of the acquisition method.

Suppose that on January 1, 2023, Company P acquires 80% of the common stock of Company S by paying $8,000 *in cash* to the shareholders of Company S. The preacquisition balance sheets of Company P and Company S are shown in Figure 8.3.

Figure 8.3: Preacquisition Balance Sheets

Preacquisition Balance Sheets January 1, 2023	Company P	Company S
Current assets	$48,000	$16,000
Other assets	32,000	8,000
Total	$80,000	$24,000
Current liabilities	$40,000	$14,000
Common stock	28,000	6,000
Retained earnings	12,000	4,000
Total	$80,000	$24,000

Under the equity method of accounting, Company P will report its 80% interest in Company S in a one-line investment account on the balance sheet.

In an acquisition, the assets and liabilities of Company P and Company S are combined, and the stockholders' equity of Company S is ignored. It is also necessary to create a minority interest account for the portion of Company S's equity that is not owned by Company P. Figure 8.4 compares the acquisition method and the equity method on Company P's post-acquisition balance sheet.

Figure 8.4: Balance Sheet Comparison of the Acquisition and Equity Methods

Company P Post-Acquisition Balance Sheet January 1, 2023	Acquisition Method	Equity Method
Current assets	$56,000	$40,000
Investment in S		8,000
Other assets	40,000	32,000
Total	$96,000	$80,000
Current liabilities	$54,000	$40,000
Minority interest	2,000	
Common stock	28,000	28,000
Retained earnings	12,000	12,000
Total	$96,000	$80,000

Post-acquisition, Company P's current assets are lower by the $8,000 cash used to acquire 80% of Company S. Under the acquisition method, the current assets are $56,000 ($48,000 P current assets + $16,000 S current assets – $8,000 cash). With the equity method, current assets are $40,000 ($48,000 P current assets – $8,000 cash).

PROFESSOR'S NOTE
Where does the $8,000 go? It goes to the departing shareholders from whom the shares were purchased.

When using the acquisition method, Company P reports 100% of Company S's assets and liabilities even though Company P only owns 80%. The remaining 20% of Company S is owned by minority investors and the difference is accounted for using a noncontrolling (minority) interest account. The minority interest is created by multiplying the subsidiary's equity by the percentage of the subsidiary not owned by the parent. In our example, the minority interest is $2,000 ($10,000 S equity × 20%). Noncontrolling interest is reported in stockholders' equity.

MODULE 8.6: BUSINESS COMBINATIONS: INCOME STATEMENT

Video covering this content is available online.

Now let's look at the income statements. Figure 8.5 contains the separate income statements of Company P and Company S for the year ended December 31, 2023.

Figure 8.5: Company P and S Income Statements

Income Statements Year ended December 31, 2023	Company P	Company S
Revenue	$60,000	$20,000
Expenses	40,000	16,000
Net income	$20,000	$4,000

Under the equity method, Company P will report its 80% share of Company S's net income in a one-line account in the income statement. Under the acquisition method, the revenue and expenses of Company P and Company S are combined. It is also necessary to create a minority interest in the income statement for the portion of Company S's net income that is not owned by Company P.

Figure 8.6 compares the income statement effects of the acquisition method and equity method.

Figure 8.6: Income Statement Comparison of Acquisition and Equity Methods

Company P Income Statement Year ended December 31, 2023	Acquisition Method	Equity Method
Revenue	$80,000	$60,000
Expenses	56,000	40,000
Operating income	$24,000	$20,000
Equity in income of S		3,200
Minority interest	(800)	
Net income	$23,200	$23,200

Similar to the consolidated balance sheet, Company P reports 100% of Company S's revenues and expenses even though Company P only owns 80%. Thus, a minority interest is created by multiplying the subsidiary's net income by the percentage of the subsidiary not owned. In our example, the minority interest is $800 ($4,000 S net income × 20%). The minority interest is subtracted in arriving at consolidated net income.

Notice the acquisition method results in higher revenues and expenses, as compared to the equity method, but net income is the same.

PROFESSOR'S NOTE

This example assumed that the parent company acquired its interest in the subsidiary by paying the proportionate share of the subsidiary's book value. If the parent pays more than its proportionate share of book value, the excess is allocated to tangible and intangible assets. The minority interest computation in the example also would be different. This will be covered later in this topic review.

MODULE QUIZ 8.4, 8.5, 8.6

Use the following information to answer Questions 1 and 2.

Company M acquired 20% of Company N for $6 million on January 1, 2023. Company N's debt and equity securities are publicly traded on an organized exchange. Company N reported the following for the year ended 2023:

Year	Net Income (Loss)	Dividends
2023	($450,000)	$600,000

1. If Company M can significantly influence Company N, what is the balance sheet carrying value of Company M's investment at the end of 2023?
   A. $5,790,000.
   B. $5,970,000.
   C. $6,000,000.
2. If Company M can significantly influence Company N, what amount of income should Company M recognize from its investment for the year ended 2023?
   A. ($90,000).
   B. ($210,000).
   C. $30,000.
3. Selected operating results for Lowdown, Inc., in 2022 and 2023 are shown in the following table:

Lowdown, Inc.	2022	2023
Sales and operating revenues	$1,000	$1,140
Investment income	$45	$160
Total revenues	1,045	1,300
Operating costs	500	640
Pre-tax operating income	545	660

   Martha Patterson, an analyst with Cauldron Associates, has been assigned the task of separating Lowdown's operating and investment results. She intends to do this by removing the effects of the returns on Lowdown's marketable securities portfolio and forecasting operating income for 2024. Patterson assumes that growth trend in operating income from 2022 to 2023 will continue in 2024.

   The appropriate forecast of Lowdown's operating income in 2024 based on Patterson's analysis is *closest* to:
   A. $500.
   B. $650.
   C. $700.

Use the following information to answer Questions 4 through 6.

Suppose Company P acquires 80% of the common stock of Company S on December 31, 2022, by paying $120,000 cash to the shareholders of Company S. The two firms' pre-acquisition balance sheets as of December 31, 2022, and pro forma income statements for the year ending December 31, 2023, follow:

Pre-Acquisition Balance Sheets December 31, 2022	Company P	Company S
Current assets	$720,000	$240,000
Other assets	480,000	120,000
Total assets	$1,200,000	$360,000
Current liabilities	$600,000	$210,000
Common stock	420,000	90,000
Retained earnings	180,000	60,000
Total liabilities & equity	$1,200,000	$360,000

Unconsolidated Income Statements December 31, 2023	Company P	Company S
Revenue	$900,000	$300,000
Expenses	600,000	240,000
Net income	$300,000	$60,000
Dividends		$15,000

4. Immediately after the acquisition, in its consolidated balance sheet, Company P will report total assets of:
   A. $1,080,000.
   B. $1,440,000.
   C. $1,560,000.
5. For the year ended December 31, 2023, Company P's pro forma consolidated net income is:
   A. $300,000.
   B. $348,000.
   C. $360,000.
6. On its December 31, 2023, pro forma consolidated balance sheet, Company P should report a minority ownership interest of:
   A. $0.
   B. $39,000.
   C. $42,000.

MODULE 8.7: BUSINESS COMBINATIONS: GOODWILL

Video covering this content is available online.

Under the acquisition method, the purchase price is allocated to the *identifiable* assets and liabilities of the acquired firm on the basis of fair value. Any remainder is reported on the balance sheet as goodwill. Goodwill is said to be an *unidentifiable* asset that cannot be separated from the business.

Under U.S. GAAP, goodwill is the amount by which the fair value of the subsidiary is greater than the fair value of the subsidiary's identifiable net assets (*full goodwill*). Under IFRS, goodwill is the excess of the purchase price over the fair value of the acquiring company's proportion of the acquired company's identifiable net assets (*partial goodwill*). However, IFRS permits the use of the full goodwill approach also.

Full goodwill (required under U.S. GAAP; allowed under IFRS):

full goodwill = (purchase price / % owned)
− (fair value of net identifiable assets of the subsidiary)

Partial goodwill (only allowed under IFRS):

partial goodwill
= purchase price − (% owned × FV of net identifiable assets of the subsidiary)

or

partial goodwill = % owned × full goodwill

Let's look at an example of calculating acquisition goodwill.

EXAMPLE: Goodwill

Wood Corporation paid $600 million for all of the outstanding stock of Pine Corporation. At the acquisition date, Pine reported the following condensed balance sheet:

Pine Corporation Condensed Balance Sheet

	Book Value (in millions)
Current assets	$80
Plant and equipment, net	760
Goodwill	30
Liabilities	400
Stockholders' equity	470

The fair value of the plant and equipment was $120 million more than its recorded book value. The fair values of all other identifiable assets and liabilities were equal to their recorded book values. Calculate the amount of goodwill Wood should report in its consolidated balance sheet.

Answer:

(in millions)		
Purchase price		$600
Current assets	$80	
Plant and equipment, net	880	
Liabilities	(400)	
Less: Fair value of net assets		560
Acquisition goodwill		$40

Goodwill is equal to the excess of purchase price over the fair value of identifiable assets and liabilities acquired. The plant and equipment was *written-up* by $120 million to reflect fair value. The goodwill reported on Pine's balance sheet is an unidentifiable asset and is thus ignored in the calculation of Wood's goodwill.

EXAMPLE: Full goodwill vs. partial goodwill

Continuing the previous example, suppose that Wood paid $450 million for 75% of the stock of Pine. Calculate the amount of goodwill Wood should report using the

full goodwill method and the partial goodwill method.

Answer:

Full goodwill method:

Wood's balance sheet goodwill is the excess of the fair value of the subsidiary ($450 million / 0.75 = $600 million) over the fair value of identifiable net assets acquired, just as in the previous example. Acquisition goodwill = $40 million.

Partial goodwill method:

Wood's balance sheet goodwill is the excess of the acquisition price over Wood's proportionate share of the fair value of Pine's identifiable net assets:

Purchase price		$450 million
Less: 75% of fair value of net assets	0.75 × $560 =	$420 million
Acquisition goodwill		$30 million

Goodwill is lower using the partial goodwill method. How is this reflected on the liabilities-and-equity side of the balance sheet?

The value of *noncontrolling interest* also depends on which method is used. If the full goodwill method is used, noncontrolling interest is based on the acquired company's fair value. If the partial goodwill method is used, noncontrolling interest is based on the fair value of the acquired company's identifiable net assets.

noncontrolling interest (full goodwill) = % not owned × (purchase price / % owned)

noncontrolling interest (partial goodwill) = % not owned × (fair value of net identifiable assets of the subsidiary)

In the previous example, noncontrolling interest using the full goodwill method is 25% of Wood's fair value of $600 million, or $150 million. Using the partial goodwill method, noncontrolling interest is 25% of the fair value of Pine's identifiable net assets, or $140 million. The difference of $10 million balances the $10 million difference in goodwill.

The full goodwill method results in higher total assets and higher total equity than the partial goodwill method. Thus, return on assets and return on equity will be lower if the full goodwill method is used.

Goodwill is not amortized. Instead, it is tested for impairment at least annually. Impairment occurs when the carrying value exceeds the fair value. However, measuring the fair value of goodwill is complicated by the fact that goodwill cannot be separated from the business. Because of its inseparability, goodwill is valued at the reporting unit level.

Under IFRS, testing for impairment involves a single step approach. If the carrying amount of the cash generating unit (where the goodwill is assigned) exceeds the recoverable amount, an impairment loss is recognized.

Under U.S. GAAP, goodwill impairment potentially involves two steps. In the first step, if the carrying value of the reporting unit (including the goodwill) exceeds the fair value of the reporting unit, an impairment exists.

Once it is determined the goodwill is impaired, the loss is measured as the difference between the carrying value of the goodwill and the *implied* fair value of the goodwill. The impairment loss is recognized in the income statement as a part of continuing operations.

PROFESSOR'S NOTE
Notice that the impairment test for goodwill is based on the decline in value of the reporting unit, while the loss is based on the decline in value of the goodwill.

The *implied* fair value of the goodwill is calculated in the same manner as goodwill at the acquisition date. That is, the fair value of the reporting unit is allocated to the identifiable assets and liabilities as if they were acquired on the impairment measurement date. Any excess is considered the *implied* fair value of the goodwill.

Let's look at an example.

EXAMPLE: Impaired goodwill

Last year, Parent Company acquired Sub Company for $1,000,000. On the date of acquisition, the fair value of Sub's net assets was $800,000. Thus, Parent reported acquisition goodwill of $200,000 ($1,000,000 purchase price – $800,000 fair value of Sub's net assets).

At the end of this year, the fair value of Sub is $950,000, and the fair value of Sub's net assets is $775,000. Assuming the carrying value of Sub is $980,000, determine if an impairment exists and calculate the loss (if applicable) under U.S. GAAP and under IFRS.

Answer:

U.S. GAAP (two-step approach):

1. Since the carrying value of Sub exceeds the fair value of Sub ($980,000 carrying value > $950,000 fair value), an impairment exists.
2. In order to measure the impairment loss, the implied goodwill must be compared to the carrying value of the goodwill. At the impairment measurement date, the implied value of the goodwill is $175,000 ($950,000 fair value of Sub – $775,000 fair value of Sub's net assets). Since the carrying value of the goodwill exceeds the implied value of the goodwill, an impairment loss of $25,000 is recognized ($200,000 goodwill carrying value – $175,000 implied goodwill) thereby reducing goodwill to $175,000.

IFRS (one-step approach):

Goodwill impairment and loss under IFRS is 980,000 (carrying value) – 950,000 (fair value) = $30,000.

Bargain Purchase

In rare cases, acquisition purchase price is less than the fair value of net assets acquired. Both IFRS and U.S. GAAP require that the difference between fair value of net assets and purchase price be recognized as a gain in the income statement.

MODULE QUIZ 8.7

1. According to U.S. GAAP, goodwill is considered impaired if the:
   A. implied goodwill at the measurement date exceeds the carrying value of goodwill.
   B. carrying value of the reporting unit is greater than fair value of the reporting unit.
   C. goodwill can be separated from the business and valued separately.
2. Adam Corporation acquired Hardy Corporation recently using the acquisition method. Adam is preparing to report its year-end results to include Hardy according to IFRS. Which of the following statements regarding goodwill is *most accurate*?
   A. Adam would amortize its goodwill over no more than 20 years.
   B. Adam would test its goodwill annually to ensure the carrying value is not greater than the recoverable amount.
   C. Adam would test its goodwill annually to ensure the fair value is not greater than the carrying value.

MODULE 8.8: JOINT VENTURES

Video covering this content is available online.

Joint Ventures

Recall that a joint venture is an entity in which control is shared by two or more investors. Joint ventures are created in various legal, operating, and accounting forms and are often used to invest in foreign markets, special projects, or risky ventures. Both U.S. GAAP and IFRS require the equity method of accounting for joint ventures.

In rare circumstances, the **proportionate consolidation method** may be allowed under U.S. GAAP and IFRS. Proportionate consolidation is similar to a business acquisition, except the investor (venturer) only reports the proportionate share of the assets, liabilities, revenues, and expenses of the joint venture. Since only the proportionate share is reported, no minority owners' interest is necessary.

PROFESSOR'S NOTE
Proportionate consolidation is not the same as consolidation (also known as the acquisition method).

Let's return to our earlier acquisition example. Recall that Company P acquired 80% of Company S on January 1, 2023, for $8,000 cash. Figure 8.7 compares the proportionate consolidation method and the equity method on the post-acquisition balance sheet of Company P.

Figure 8.7: Balance Sheet Comparison of Proportionate Consolidation and Equity Methods

Company P Post-Acquisition Balance Sheet January 1, 2023	Proportionate Consolidation Method	Equity Method
Current assets	$52,800	$40,000
Investment in S		8,000
Other assets	38,400	32,000
Total	$91,200	$80,000
Current liabilities	$51,200	$40,000
Common stock	28,000	28,000
Retained earnings	12,000	12,000
Total	$91,200	$80,000

Under proportionate consolidation, Company P's current assets are $52,800 [$48,000 P current assets − $8,000 cash paid + ($16,000 S current assets × 80%)].

With proportionate consolidation, Company P reports its 80% share of each of Company S's assets and liabilities. No minority ownership interest is necessary. Just like a regular consolidation, Company S's equity is ignored.

Notice that proportionate consolidation results in higher assets and liabilities, compared to the equity method, but stockholders' equity (or net assets) is the same.

Figure 8.8: Income Statement Comparison of Proportionate Consolidation and Equity Methods

Company P Income Statement Year Ended December 31, 2023	Proportionate Consolidation Method	Equity Method
Revenue	$76,000	$60,000
Expenses	52,800	40,000
Operating income	$23,200	$20,000
Equity in income of S		3,200
Net income	$23,200	$23,200

With proportionate consolidation, Company P reports its 80% share of Company S's revenues and expenses. Once again, no minority ownership interest is necessary.

Notice that proportionate consolidation results in higher revenues and expenses compared to the equity method, but net income is the same.

MODULE QUIZ 8.8

Use the following information to answer Questions 1 through 3.

Company C owns a 50% interest in a joint venture, JVC, and accounts for it using the equity method. JVC's assets and liabilities have a book value equal to their fair value. They have each reported the following 2024 financial results.

Balance Sheets	Company C	JVC
Cash	$1,550	$300
Accounts receivable	3,500	700
Inventory	3,000	800
Fixed assets	5,000	2,600
Investment in JVC	400	
Total assets	**$13,450**	**$4,400**
Accounts payable	$3,500	$1,200
Long-term debt	4,000	2,400
Equity	5,950	800
Total liabilities and equity	**$13,450**	**$4,400**

Income Statements	Company C	JVC
Revenues	$17,430	$2,800
Equity in JVC earnings	100	
Cost of goods sold	7,000	2,000
Other expenses	9,600	600
Net income	**$930**	**$200**

1. Assuming consolidation using the acquisition method, Company C's stockholders' equity at the end of 2024 is *closest* to:
   A. $5,950.
   B. $6,350.
   C. $6,750.
2. Assuming consolidation using the acquisition method, Company C's total assets at the end of 2024 is *closest* to:
   A. $15,250.
   B. $15,650.
   C. $17,450.
3. Assuming proportionate consolidation, Company C's cost of goods sold and net income for the year ended 2024 are *closest* to:

	Cost of goods sold	Net income
A.	$8,000	$930
B.	$9,000	$1,030
C.	$8,000	$830

4. According to U.S. GAAP, which of the following statements about the method used to account for a joint venture whereby each party owns 50% is *most accurate*?
   A. The investor can choose between the acquisition method and the equity method.
   B. The equity method is required.
   C. The acquisition method is required.

MODULE 8.9: SPECIAL PURPOSE ENTITIES

Video covering this content is available online.

Special Purpose and Variable Interest Entities

A special purpose entity (SPE) is a legal structure created to isolate certain assets and liabilities of the sponsor. An SPE can take the form of a corporation, partnership, joint venture, or trust. The typical motivation is to reduce risk and thereby lower the cost of financing. SPEs are often structured such that the sponsor company has control over the SPE's finances or operating activities while third parties have controlling interest in the SPE's equity.

In the past, SPEs were often maintained off-balance-sheet, thereby enhancing the sponsor's financial statements and ratios.

The FASB uses the term variable interest entity (VIE) to describe a special purpose entity that meets certain conditions. According to FASB ASC Topic 810, *Consolidation*, a VIE is an entity that has one or both of the following characteristics:

1. At-risk equity that is insufficient to finance the entity's activities without additional financial support.
2. Equity investors that lack any one of the following:
   - Decision making rights.
   - The obligation to absorb expected losses.
   - The right to receive expected residual returns.

If an SPE is considered a VIE, it must be consolidated by the primary beneficiary. The primary beneficiary is the entity that absorbs the majority of the risks or receives the majority of the rewards.

PROFESSOR'S NOTE

In a VIE, the capital source labeled as stockholders' equity is not truly equity, as the amount is insufficient to have the risk/return characteristics of equity. Generally, in these companies, "variable interest" refers to a stake in the company (or guarantees given) by the primary beneficiary. This stake has the same economic characteristics as "normal" equity.

The IASB continues to use the term special purpose entity. According to IFRS 10, *Consolidated Financial Statements,* the sponsoring entity must consolidate if it controls the SPE.

EXAMPLE: Special purpose entity

Company P, a textile manufacturer, wants to borrow $100 million. It has two options:

Option A: Borrow $100 million from Bank B.

Option B: Sell $100 million worth of accounts receivable to Company S, an SPE created for this purpose. The SPE will fund the purchase by borrowing the money from Bank B.

Company P's balance sheet before the borrowing is provided in the following:

Assets	$ millions	Liabilities and Equity	$ millions
Cash	$50	Current liabilities	$500
Accounts receivable	$200	Debt	$1,200
Fixed assets	$2,000	Equity	$550
Total assets	$2,250	Total	$2,250

Prepare Company P's balance sheet under both options assuming that the SPE in Option B meets the requirements for consolidation.

Answer:

Option A: Company P's cash and debt will both increase by the new borrowing of $100 million.

Company P's balance sheet after the borrowing:

Assets	$ millions	Liabilities and Equity	$ millions
Cash	$150	Current liabilities	$500
Accounts receivable	$200	Debt	$1,300
Fixed assets	$2,000	Equity	$550
Total	$2,350	Total	$2,350

Option B: Company P's (nonconsolidated) balance sheet will reflect a reduction in accounts receivable of $100 million and an increase in cash by the same amount.

Company P's balance sheet after the sale of accounts receivable to the SPE:

Assets	$ millions	Liabilities and Equity	$ millions
Cash	$150	Current liabilities	$500
Accounts receivable	$100	Debt	$1,200
Fixed assets	$2,000	Equity	$550
Total	$2,250	Total	$2,250

SPE's balance sheet after purchase of accounts receivable and bank loan:

Assets	$ millions	Liabilities and Equity	$ millions
Accounts receivable	$100	Debt	$100
Total	$100	Total	$100

After consolidation, the SPE's debt gets included with Company P's debt, and accounts receivable for Company P increase by the same amount.

Company P's balance sheet after consolidation:

Assets	$ millions	Liabilities and Equity	$ millions
Cash	$150	Current liabilities	$500
Accounts receivable	$200	Debt	$1,300
Fixed assets	$2,000	Equity	$550
Total	$2,350	Total	$2,350

The balance sheet of Company P under either option is the same. Company P cannot hide the borrowing "off the books."

OTHER ISSUES IN BUSINESS COMBINATIONS THAT WEAKEN COMPARABILITY

Contingent Assets and Liabilities

Under IFRS, only contingent liabilities whose fair value can be measured reliably are recognized at the time of acquisition. (Contingent *assets* are never recognized.) In subsequent periods, contingent liabilities are measured at the higher of the value initially recognized, or the best estimate of the amount needed to settle the liabilities.

U.S. GAAP divides contingent assets and liabilities into contractual and noncontractual. Contractual contingent assets and liabilities are recorded at their fair values on the acquisition date. Noncontractual contingent assets and liabilities are also recorded if, "more likely than not" they meet the definition of an asset or liability. Subsequently, measurement of contingent liabilities is similar under IFRS, while contingent assets are recognized at the *lower* of the initial value and the best estimate of the future settlement amount.

Contingent Consideration

If the terms of the acquisition involve a contingent consideration (e.g., a specific extra amount is payable to the former shareholders of the subsidiary if certain earnings or revenue targets are met), such consideration is recognized at fair value under both IFRS and U.S. GAAP as an asset, liability, or equity. Subsequent changes in value are recognized in the income statement, unless the value was originally classified in equity (any changes then settle within equity and not via the income statement).

In-Process R&D

In-process R&D is capitalized as an intangible asset and included as an asset under both U.S. GAAP and IFRS. In-process R&D is subsequently amortized (if successful) or impaired (if unsuccessful).

Restructuring Costs

Restructuring costs are expensed when incurred—and not capitalized as part of the acquisition cost—under both IFRS and U.S. GAAP.

LOS 8.c: Analyze how different methods used to account for intercorporate investments affect financial statements and ratios.

The effects of the choice of accounting methods on reported financial results have been covered earlier in this topic review, so we won't repeat the discussion here.

Instead, we'll compare the effects of the equity method, the proportionate consolidation method, and the acquisition method.

There are four important effects on the balance sheet and income statement items that result from the choice of accounting method (in most situations):

1. All three methods report the same net income.
2. Equity method and proportionate consolidation report the same equity. Acquisition method equity will be higher by the amount of minority interest.
3. Assets and liabilities are highest under the acquisition method and lowest under the equity method; proportionate consolidation is in-between.
4. Revenues and expenses are highest under the acquisition method and lowest under the equity method; proportionate consolidation is in-between.

Figure 8.9: Reported Financial Results from Different Accounting Methods

	Equity Method	Proportionate Consolidation	Acquisition Method
Net profit margin	Higher—sales are lower and net income is the same	In-between	Lower
ROE	Higher—equity is lower and net income is the same	Same as equity method	Lower
ROA	Higher—net income is the same and assets are lower	In-between	Lower

MODULE QUIZ 8.9

1. A company accounts for its investment in a subsidiary using the equity method. The reported net profit margin is 14%. An analyst adjusts the financials and determines that the company's own net profit margin is 8% while the subsidiary's profit margin is 10%. The net profit margin based on consolidation would *most likely* be:
   A. less than 8%.
   B. more than 14%.
   C. between 8% and 14%.

KEY CONCEPTS

LOS 8.a

Accounting for investments:

Ownership	Degree of Influence	Accounting Treatment
Less than 20% (investments in financial assets)	No significant influence	Amortized cost, fair value through profit or loss, fair value through OCI
20%–50% (investments in associates)	Significant influence	Equity method
More than 50% (business combinations)	Control	Acquisition method

Investments in financial assets: Dividends and interest income are recognized in the investor's income statement. Amortized cost securities are reported on the balance sheet at amortized cost. Subsequent changes in fair value are ignored. Fair value through profit or loss securities are reported at fair value, and the unrealized gains and losses are recognized in the income statement. Fair value through OCI securities are also reported at fair value, but the unrealized gains and losses are reported in stockholders' equity.

Investments in associates/joint ventures: With the equity method, the proportionate share of the investee's earnings increase the investor's investment account on the balance sheet and are recognized in the investor's income statement. Dividends received reduce the investment account. Dividends received are not recognized in the investor's income statement under the equity method. In rare cases, proportionate consolidation may be allowed. Proportionate consolidation is similar to a business combination, except the investor only includes the proportionate share of the assets, liabilities, revenues, and expenses of the joint venture. No minority owners' interest is required.

Business combinations: In an acquisition, all of the assets, liabilities, revenues, and expenses of the subsidiary are combined with the parent. Intercompany transactions are excluded. When the parent owns less than 100% of the subsidiary, it is necessary to create a noncontrolling interest account for the proportionate share of the subsidiary's net assets and net income that is not owned by the parent.

Under IFRS, the sponsor of a special purpose entity (SPE) must consolidate the SPE if their economic relationship indicates that the sponsor controls the SPE. U.S. GAAP requires that a variable interest entity (VIE) must be consolidated by its primary beneficiary.

LOS 8.b

Differences between IFRS and U.S. GAAP treatment of intercorporate investments include:

- IFRS and U.S. GAAP differ between contingent asset and liability recognition under the acquisition method.
- IFRS permits either the partial goodwill or full goodwill method to value goodwill and noncontrolling interest in business combinations. U.S. GAAP requires the full goodwill method.

LOS 8.c

The effects of the equity method versus the acquisition method:

- Both report the same net income.
- Acquisition method equity will be higher by the amount of minority interest.
- Assets and liabilities are higher under the acquisition method.
- Sales are higher under the acquisition method.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 8.1

1. **A** Usually an ownership interest between 20% and 50% would indicate the ability to significantly influence. However, in this case, Tall is unable to influence Short as evidenced by its failure to obtain board representation; thus, Tall's ownership interest should be considered an investment in financial assets. (LOS 8.a)

Module Quiz 8.2

1. **C** Initially, the carrying value of all security investments is cost.
   initial cost = $950 + 250 = $1,200 (LOS 8.a)

2. **B** Fair value through OCI and fair value through profit or loss securities are carried at market value on the balance sheet. Also, both classifications call for recognition of unrealized losses and gains. Market value at t = 1 is $850 + $180 = $1,030. Unrealized loss is ($850 – $950) + ($180 – $250) = –$170. Note that the recognition differs. With fair value through OCI securities, the recognition is only on the balance sheet. With fair value through profit or loss securities, the recognition impacts the income statement. (LOS 8.a)

3. **C** The increase in value requires that investment securities be written up to $900 + $350 = $1,250. Because these are equity securities, the amortized cost classification is not available. (LOS 8.a)

4. **A** Classifying the shares as fair value through profit or loss requires both realized and unrealized gains and losses to be recognized on the income statement. As a result, this would have the effect of greater reported earnings volatility. There is actually a $220 *unrealized* gain between t = 1 and t = 2; the gain is unrealized because the shares were not actually sold. The net gain of $50 between the acquisition date and t = 2 is not recognized on the income statement (it goes directly to equity). Classification as either fair value through profit or loss or as fair value through OCI securities results in the same fair market value of $1,250 reported on the balance sheet at t = 2. (LOS 8.a)

5. **B** Debt securities at amortized cost are securities that meet both the cash flow and business model test. They are carried at amortized cost ($1,200), and no unrealized or realized gains or losses are recognized until disposition. Because these securities were purchased at par, there is no amortization of premium/discount. (LOS 8.a)

Module Quiz 8.3

1. **A** With the equity method, the proportional share of the affiliate's income (% ownership × affiliate earnings) is reported on the investor's income statement. (LOS 8.a)

2. **B** $1,500,000 + 0.4($500,000 − $125,000) = $1,650,000. (LOS 8.a)

3. **C** $500,000 × 0.4 = $200,000; dividends are not included in income under the equity method. (LOS 8.a)

4. **A** $125,000 × 0.4 = $50,000; the dividend is cash flow = $50,000. (LOS 8.a)

Module Quiz 8.4, 8.5, 8.6

1. **A** $6,000,000 + 0.2(–$450,000) – 0.2($600,000) = $5,790,000. (Module 8.5, LOS 8.a)

2. **A** 0.2(–$450,000) = –$90,000. (Module 8.6, LOS 8.a)

3. **A** After removing the investment gains in 2022 and 2023, operating income is $500 each year. Based on a growth trend of 0%, the appropriate operating income forecast for 2024 is also $500.

	2022	2023
Sales and operating revenues	$1,000	$1,140
Operating costs	500	640
Adjusted operating income	500	500

(Module 8.6, LOS 8.a)

4. **B** Total assets = $1,200,000 + $360,000 – $120,000 = $1,440,000. (Module 8.5, LOS 8.a)

5. **B** Minority interest income = $60,000(0.2) = $12,000.

   Consolidated net income (after minority interest income is subtracted) = $300,000 + $60,000 – $12,000 = $348,000. (Module 8.4, LOS 8.a)

6. **B** The beginning balance of the minority interest is $30,000 ($150,000 S equity × 20%). The minority interest is increased by the minority share of Company S's income of $12,000 ($60,000 × 20%) and is decreased by the minority share of the dividends paid by Company S of $3,000 ($15,000 × 20%). Thus, the ending balance is $39,000 ($30,000 + $12,000 – $3,000). Note that the value of goodwill at the time of acquisition is zero; hence, there is no need to specify whether full or partial goodwill accounting is used. (Module 8.4, LOS 8.a)

Module Quiz 8.7

1. **B** In testing goodwill for impairment, the carrying value of the reporting unit (including goodwill) is compared to the fair value of the reporting unit. Once an impairment has been detected, the loss is equal to the difference in the book value of the goodwill and the implied value of the goodwill. (LOS 8.a)

2. **B** Adam is required to perform an annual impairment test. The carrying value cannot exceed the fair value; if it does, then an impairment has taken place and the goodwill must be written down. (LOS 8.a)

Module Quiz 8.8

1. **B** Company C would include minority interest (50% of $800) along with its own equity of $5,950 in the consolidated financial statements. (Module 8.5, LOS 8.a)

2. **C** Company C would include all the assets of JVC and remove its equity investment in the consolidated balance sheet. $13,450 – $400 + $4,400 = $17,450. (Module 8.6, LOS 8.a)

3. **A** COGS = $7,000 Company C + 50% of $2,000 JVC = $8,000.

Net income of $930 is not affected by proportionate consolidation. (Module 8.8, LOS 8.a)

4. **B** Under U.S. GAAP (and IFRS), equity method is required to be used to account for joint ventures. Only in rare cases is proportionate consolidation allowed. (Module 8.8, LOS 8.b)

Module Quiz 8.9

1. **C** The equity method typically yields a higher measure of net profit margin. Consolidation is most likely to result in a net profit margin somewhere between the profit margins of the two entities. (LOS 8.c)

READING 9

EMPLOYEE COMPENSATION: POST-EMPLOYMENT AND SHARE-BASED

EXAM FOCUS

This is a complicated topic, but don't be intimidated. Share-based compensation expense is based on fair value on the grant date, and it is often necessary to use an option pricing model to estimate fair value. Understand the dilutive effects of share-based compensation plans. Accounting for pension plans may be complex, but the economic reasoning is not too difficult to grasp. Despite significant convergence between U.S. GAAP and IFRS, some differences remain, particularly with respect to recognition of pension cost in income statement. You should be able to explain how reported results are affected by management's assumptions.

Employee compensation costs comprise cash, plus the value of benefits that employers provide to their employees. We need to understand the accounting treatment underlying different types of compensation, and their analytical issues.

MODULE 9.1: SHARE-BASED COMPENSATION

Video covering this content is available online.

LOS 9.a: Contrast types of employee compensation.

Different types of employee compensation include:

- Short-term (less than 12 months): Salaries, wages, bonus, health insurance, company match in defined contribution plans, and paid leave.
- Long-term (greater than 12 months): Long-term disability and long-term paid leave.
- Stock-based: Options or stock grants.
- Post-retirement: Defined benefit pensions and health care.

Employees earn their compensation at the end of a **vesting period**. This is typically a couple of weeks for salaries or wages, but several years for stock and option grants. At the end of the vesting period, the compensation is settled (either by payment in cash or by issuance of stock) on the **settlement date**.

Short-term compensation is expensed to the income statement as it vests; any amount unpaid at the end of the year is shown as a current liability. Compensation expense is not separately disclosed; rather, it is embedded in appropriate expense categories. Wages for factory workers are included as part of cost of goods sold. Any compensation expense associated with unsold inventory is capitalized (i.e., included in the value of ending inventory on the balance sheet). Compensation expense for employees engaged in research is included in R&D expense.

Share-based compensation plans (which are typically offered to managers) can take several forms, including stock options and outright share grants. Share-based compensation can motivate and retain key employees, and serve as a way to reward employees with no additional outlay of cash by the firm. There are drawbacks though. For example, the additional stock dilutes the interests of shareholders. Also, because most employees' actions have a minimal impact on the stock price, the motivational value that these grants provide may be limited. Furthermore, the asymmetric (i.e., upside only) payoff of stock options may incentivize managers to take too much risk. Stock grants, on the other hand, may excessively tie managers' personal wealth to that of the company (along with their existing employment) and, therefore, may motivate those managers to take a less-than-optimal amount of risk.

LOS 9.b: Explain how share-based compensation affects the financial statements.

Stock Options

Employees are granted nontradeable call options. If the stock price is greater than the exercise price (i.e., the option is in-the-money) when the option vests (but prior to the maturity of the option), then the employee can exercise the option and earn the difference. Compensation expense is based on the fair value of the options on the grant date. The compensation expense is then allocated straight line (i.e., amortized in equal installments) to the income statement over the **vesting period**, which is the time between the grant date and the vesting date. This compensation expense will decrease net income and retained earnings, and the offsetting entry is to increase the share-based compensation reserve (which is part of equity). Because the share-based compensation reserve increases by the same amount that retained earnings decreases, there is no change to total equity.

Determining Fair Value

The fair value of a stock option is determined based on the observable market price of a similar option—if a comparable option is available. Otherwise, the firm can use an option-pricing model such as Black-Scholes. Neither IFRS nor U.S. GAAP mandates a particular valuation model; however, the model used should be consistent with sound economic principles, consistent with fair value measurement requirements, and reflect all substantive elements of the grant. Note that fair value is only estimated on the grant date; subsequent changes in fair value are not considered.

Companies are required to disclose the assumptions used to estimate fair value. While most of the assumptions (e.g., grant date, stock price, maturity, exercise price,

and the risk-free rate) are observable, assumptions about future stock price volatility are subjective. Companies often use implied volatilities based on other market-traded options on the company's stock or based on historical volatility. If a lower estimate of future volatility is used, the value of the options will be underestimated; hence, the compensation expense will be underestimated, and reported earnings will be higher.

Employees will exercise options only when they are in-the-money and those employees that leave before the options vest forfeit their grant.

Conditional Grants and Stock Grants

Stock or option grants often have specific conditions attached for the grants to vest. **Restricted stock** grants have requirements that must be met before the stock can be sold. A **service condition** is the most common restriction; this simply specifies the number of years of employment required before the options or stock vest. Under a **performance condition**, the grant vests upon achievement of a specific target (e.g., the EPS exceeds some amount) or a **market condition** where the target is based on a market metric (e.g., stock price). Performance-based restricted stocks are called **performance shares**. **Restricted stock units (RSUs)** are similar to performance shares, but instead of receiving shares upfront, RSUs are exchanged for stock when they vest. (Note that employees receiving RSU don't accrue any dividends during the vesting period). RSUs are preferred over stock options by employees because they accrue some value if the stock price is above zero, are simpler for individual tax calculations, and have no exercise price outlays.

The value of a stock grant is simply the value of the stock on the grant date times the number of shares granted. For RSU, the stock price is reduced by the estimated present value of dividends expected during the vesting period. The total value is expensed over the vesting period and taken to equity as part of share-based compensation reserve.

Upon settlement, the value of the stock is transferred out of the share-based compensation reserve and allocated to common stock and paid-in-capital. For option grants, upon exercise, there is a cash inflow from the strike price that is reported as financing activity in the cash flow statement. This exercise amount, along with the amount in the compensation expense reserve account, is allocated to common stock/paid-in capital. If the options expire out-of-the-money, there is no further accounting treatment.

> **EXAMPLE: Stock and option grant**
>
> Zephire, Inc., has an employee stock option and RSU grant plan for its senior management team. On January 1, 20X1, the company made a grant of 2 million at-the-money options (maturing in five years) and 1 million shares. The fair value of the options was $2.85 and the stock price on the date of the grant was $23. Both awards vest after 4 years.
>
> Calculate the annual expense for the options and the stock grant, and the effect on the balance sheet and cash flow statement.
>
> **Answer:**

Value of the options on grant date = $2.85 × 2 million = $5.70 million

Value of stock grant = $23 × 1 million = $23 million

Both are amortized straight-line over 4 years.

Expense = ($5.70 million + $23 million) / 4 = $7,175,000 per year

Increase in the share-based compensation reserve (in equity) will exactly offset the reduction in retained earnings; hence, there is no change in the value of total equity. Also, there will be no impact on the statement of cash flows on the grant date.

Tax Implications

For financial reporting, the compensation expense is based on the stock price on the grant date (for both option and stock grants). However, for tax purposes, deduction for stock-based compensation is only allowed upon settlement.

Tax deduction for stock grants

= share price on settlement date × number of shares vested

Tax deduction for options

= intrinsic value on settlement date × number of options vested

= (stock price on settlement date – strike price) × number of options

If the stock price on the settlement date is higher than the grant date price, the tax deduction will be higher than the cumulative compensation expense reported, resulting in a tax windfall or **excess tax benefit**. On the other hand, if the stock price on the settlement date is lower than the grant date price, there will be a **tax shortfall**.

Tax windfalls and shortfalls are reported directly to equity under IFRS. Under U.S. GAAP, tax windfalls (shortfalls) reduce (increase) tax expense in the income statement. The income statement treatment of tax windfalls and shortfalls results in volatility in the reported net income and in the effective tax rate.

Dilution Effects

Upon settlement, stock and option grants (if exercised) increase the number of basic shares outstanding. Prior to settlement, these grants can be **potentially dilutive**. (Recall from Level I, dilutive securities are those that reduce the fully diluted EPS.) If the shares are dilutive, they should be included in diluted shares outstanding using the **treasury stock method**. If a company reports a net loss, basic EPS and fully diluted EPS will be the same (i.e., dilutive securities = 0).

The determination of whether performance shares are potentially dilutive can be subjective.

Performance shares that vest based on a period of service are usually considered dilutive if the stock price has not declined substantially. However, expectations about vesting of shares based on other performance metrics (such as an increase in EPS over the vesting period) is more subjective.

Unvested options that are in-the-money are considered dilutive. RSUs and restricted stock grants are considered antidilutive only if the current stock price is *significantly* less than the price on the grant date (i.e., when the unrecognized compensation expense per share is higher than the current market price).

The treasury stock method *nets* the number of hypothetically repurchased shares against the total number of potentially dilutive securities. The number of hypothetically repurchased shares is based on the average share price during the reporting period.

number of treasury shares = assumed proceeds / average share price during the reporting period

where:

assumed proceeds = cash proceeds + average unrecognized share-based compensation expense

cash proceeds = number of options × exercise price *(Cash proceeds is zero for stock grants)*

average unrecognized share-based compensation expense
= average of the last two period-end values of unamortized amounts of share-based expense

EXAMPLE: Stock and option grant

Zephire, Inc., has an employee stock option and a RSU plan for its senior management team. On January 1, 20X1, the company made a grant of 2 million at-the-money options (maturing in 5 years) and 1 million shares. On that date, the fair value of the options was $2.85, and the stock price was $23. Both vest after 4 years. The average stock price was $24.50 during 20X1 and $25 at the end of that year.

The unrecognized value of the compensation expense was $4,275,000 for the options and $17,250,000 for the stock grant.

Calculate number of dilutive shares.

Answer:

Options:

cash proceeds = number of options × exercise price
= 2 million × $23 = $46 million

average unrecognized share-based compensation expense
= ($4.275 million + 0) / 2 = $2.1375 million

Note: Since the plan was started on January 1, 20X1, the unrecognized amount was $0 at the prior year-end.

assumed proceeds = $46 million + $2.1375 million = $48.1375 million

number of treasury shares = assumed proceeds / average share price during the reporting period

= 48.1375 ÷ 24.50 = 1.965 million shares

dilutive shares = 2 million – 1.965 million = 0.035 million or 35,000 shares.

Stock Grant:

Cash proceeds = $0

average unrecognized share-based compensation expense
= ($17.25 million + 0) / 2 = $8.625 million

Assumed proceeds = 0 + $8.625 million = $8.625 million

number of treasury shares = assumed proceeds / average share price during the reporting period

= $8,625,000 / $24.50 = 0.352 million shares

dilutive shares = 1 million – 0.352 million = 0.648 million shares

Note: We are given the value of unrecognized share-based compensation directly here. Using the data from the previous example, the value of the option grant and stock grant was $5.70 million and $23 million, respectively. Both vest over 4 years and, hence, the annual recognized cost = 5.70 / 4 = $1.425 million and 23 / 4 = $5.75 million, respectively. After the first year, the unrecognized cost = 5.70 – 1.425 = $4.275 million and 23 – 5.75 = $17.25 million for the option and stock grant, respectively.

Companies report antidilutive securities in the footnotes to their financial statements. Analysts should pay attention to these disclosures when the company reports a loss or when there is a large decline in earnings: both conditions will make the grants antidilutive for the current year (but potentially dilutive in subsequent years).

IFRS requires the following disclosures regarding share-based compensation expense: the nature and extent of the compensation arrangement, how the fair value was determined, and the arrangement's impact on earnings.

LOS 9.c: Explain how to forecast share-based compensation expense and shares outstanding in a financial statement model and their use in valuation.

Expense for share-based compensation is not separately reported in the income statement; rather, it is included in COGS (for manufacturing employees), R&D expense (for research employees), and SG&A (for management). If we expect the relationship between each of these expense categories and revenues to remain static, then we need not separate out share-based compensation for forecasting purposes. However, if those proportions do not hold, we should first subtract the amounts attributable to share-based compensation from each of the relevant categories, then forecast individual expenses as a proportion of revenues (based on historical trends), and finally forecast the share-based compensation separately. Information sources that may help predict changes in share-based compensation include historical data, management guidance, and assumptions about reversion to industry mean.

Another benefit of separating share-based compensation is its treatment in the cash flow statement. In the forecast statement of cash flow, share-based compensation should be added back to net income to arrive at cash flow from operating activities.

The expected cash inflow from the exercise of options should be reflected in financing activities.

An analyst should additionally forecast the increase in the number of shares outstanding (i.e., the dilution effect). Unvested grants can be accounted for by using the diluted number of shares outstanding as reported. A more conservative analyst will add the gross number of antidilutive shares (rather than using the treasury stock method).

Estimates of future grants are more challenging to forecast. The dilution from future grants can be estimated by discounting the estimated value of equity by a *dilution factor* or by estimating an increase in the number of shares outstanding.

Because share-based compensation is noncash, a company with a higher noncash compensation component will report higher free cash flow (and any other cash flow measure). Ratios such as P/FCF are often used in relative valuation to compare a company to its peers. Such a comparable analysis would be misleading when there are significant differences in the compensation structure (cash compensation vs. share-based compensation) across the companies.

MODULE QUIZ 9.1

1. Which of the following are necessary inputs in order to compute share-based compensation expense using an option pricing model?
   A. The exercise price and the stock price one year after the grant date.
   B. The expected dividend yield and the firm's cost of capital.
   C. The maturity of the option and the expected volatility of the stock price.
2. Which of the following statements about share-based compensation is *most accurate*?
   A. Compensation expense is only recognized if an employee stock option has intrinsic value on the grant date.
   B. In a restricted stock plan, the employer recognizes compensation expense when the employee sells the stock.
   C. The compensation expense for employee stock options is allocated over the employee's service period.
3. Which of the following is *least accurate*? Short-term compensation:
   A. is expensed to the income statement as it vests.
   B. includes bonuses, health insurance, retirement contributions, and paid leave.
   C. is subject to high measurement error in estimating costs.
4. A company has both employee stock options and RSU grants as part of its compensation plan. For 20X1, the stock options and RSU grants had an equal number of unvested underlying shares. Suppose that the company reports positive basic EPS and the same unrecognized compensation expense. Relative to the RSU plan, the options grants are *most likely* to result in:
   A. more dilutive securities.
   B. fewer dilutive securities.
   C. the same number of dilutive securities.

MODULE 9.2: POST-EMPLOYMENT BENEFITS

Video covering this content is available online.

LOS 9.d: Explain how post-employment benefits affect the financial statements.

A pension is a form of deferred compensation earned over time through employee service. The most common pension arrangements are defined-contribution plans and defined benefit plans.

A **defined contribution plan** is a retirement plan whereby the firm contributes a certain sum each period to the employee's retirement account. The firm's contribution can be based on any number of factors including years of service, the employee's age, compensation, profitability, or even a percentage of the employee's contribution. In any event, the firm makes no promise to the employee regarding the future value of the plan assets. The investment decisions are left to the employee, who assumes all of the investment risk.

Financial reporting for defined-contribution plans is straightforward: the pension expense is simply equal to the employer's contribution, and nothing is reported on the balance sheet. The remainder of this topic review will focus on accounting for the other major category of retirement scheme: defined-benefit plans.

In a **defined-benefit plan**, the firm promises to make a lump sum or periodic payment to the employee after retirement. This periodic payment is usually based on the employee's years of service and the employee's compensation at retirement. For example, an employee might earn a retirement benefit of 2% of her final salary for each year of service. Under this scheme, an employee with 20 years of service and a final salary of $100,000 upon retirement would receive $40,000 ($100,000 final salary × 2% × 20 years of service) each year until death.

Because the employee's future benefit is predetermined, it is the employer that assumes the investment risk.

Financial reporting for a defined-benefit plan is much more complicated than for a defined-contribution plan because the employer must estimate the value of its future obligation. This involves forecasting a number of variables such as future compensation levels, employee turnover, retirement age, mortality rates, as well as choosing an appropriate discount rate.

A company that offers defined pension benefits typically funds the plan by contributing assets to a separate legal entity, usually a trust. The plan assets are managed to generate the income and principal growth necessary to pay the pension benefits as they come due.

The difference between the benefit obligation and the plan assets is referred to as the **funded status of the plan**. If the plan assets exceed the pension obligation, the plan is said to be "overfunded." Conversely, if the pension obligation exceeds the plan assets, the plan is "underfunded."

Other post-employment benefits, primarily health care benefits for retired employees, are similar to a defined-benefit pension plan. The future benefit is defined today but is based on a number of unknown variables. For example, in a

post-employment health care plan, the employer must forecast the health care costs that are expected when the employee retires.

Funding is an area where defined-benefit pension plans differ from other post-employment benefit plans. Pension plans are typically funded at some level, while other post-employment benefit plans are usually unfunded. In the case of an unfunded plan, the employer recognizes an expense in the income statement as the benefits are earned; however, the employer's cash flow is not affected until the benefits are actually paid to the employee.

Balance Sheet

The **projected benefit obligation (PBO)** is the actuarial present value (at an assumed discount rate) of all future pension benefits earned to date, *based on expected future salary increases*. It measures the value of the obligation, assuming the firm is a going concern and that the employees will continue to work for the firm until they retire. The discount rate used for PV computation is typically the yield on investment-grade corporate bonds.

The funded status reflects the economic standing of a pension plan:

funded status = fair value of plan assets – PBO

The balance sheet presentation under both U.S. GAAP and IFRS is as follows:

balance sheet asset (liability) = funded status

If the funded status is negative, it is reported as a liability. If the funded status is positive, it is reported as an asset.

Income Statement

Pension expense is comprised of several elements, and the accounting treatment differs between U.S. GAAP and IFRS. Let's look at the different components of pension expense:

Current service cost. Current service cost is the present value of benefits earned by the employees during the current period; it represents the increase in PBO that results from the employees working one more period. Current service cost is recognized in the income statement "above the line" (i.e., before EBIT).

Past (prior) service costs. When a firm amends its pension plan retroactively (i.e., grants increased benefits for prior years' of service), the PBO is immediately increased by the PV of increased benefits already earned. The beginning PBO is effectively understated by the amount of past service cost.

- Under U.S. GAAP, instead of expensing the cost immediately, it is reported as a part of other comprehensive income and amortized over the remaining service life of the affected employees.
- Under IFRS, the past service costs are recognized in P&L immediately and not amortized.

Interest cost.

Under U.S. GAAP:

interest cost = [beginning PBO + past service cost] × discount rate

Under IFRS:

net interest income (expense) = [beginning funded status – past service cost] × discount rate

If the resulting amount is negative (i.e., the plan is underfunded), an expense is reported. (If positive, it is reported as net interest income.)

Expected return on plan assets. The employer contributes assets to a separate entity (trust) to be used to satisfy the pension obligation in the future. The "expected" return on the plan assets has no effect on the PBO or fair value of plan assets. Expected return (versus actual return) on plan assets is used as an offset for the computation of reported pension expense. Expected rate of return should be consistent with historical data and the plan's asset allocation. The difference between expected return and the actual return is combined with other items related to changes in actuarial assumptions into the "actuarial gains and losses" account (discussed next).

PROFESSOR'S NOTE
Under IFRS, the expected rate of return on plan assets is implicitly assumed to be the same as the discount rate and is netted against interest cost and a net interest cost/(income) is reported.

Actuarial gains and losses ('Remeasurements' in IFRS): There are two components within actuarial gains and losses. The first component is the gain (loss) due to a decrease (increase) in PBO caused by changes in actuarial assumptions; the second component is the difference between actual and expected return on plan assets. Actuarial gains and losses are recognized in *other comprehensive income (OCI)*.

- Under IFRS, actuarial gains and losses are never amortized.
- Under U.S. GAAP, actuarial gains and losses are amortized using the corridor approach.

Corridor Approach (U.S. GAAP Only)

For any period, once the beginning balance of actuarial gains and losses exceeds 10% of the greater of the beginning PBO or plan assets, amortization is required under U.S. GAAP. An excess amount outside the "corridor" is amortized as a component of pension cost in P&L over the remaining service life of the employees. The amortization of an actuarial gain reduces pension cost, while the amortization of a loss increases pension cost.

Figure 9.1: Difference Between Recognition of Components of Pension Costs Under U.S. GAAP and IFRS

Component	U.S. GAAP	IFRS
Current service cost	Income statement	Income statement
Past service cost	OCI, amortized over service life in subsequent years	Income statement
Interest cost	Income statement	Income statement*
Expected return	Income statement	Income statement*
Actuarial gains/losses	Amortized portion in income. Unamortized in OCI.	All in OCI—not amortized.

*Under IFRS, the expected rate of return on plan assets equals the discount rate, and net interest expense/income is reported.

From one period to the next, the benefit obligation changes as a result of current service cost, interest cost, past (prior) service cost, changes in actuarial assumptions, and benefits paid to employees.

Cash Flow Statement Impact

Actual cash flow is the employer contributions during the year as is reported in operating activities.

EXAMPLE: Defined benefit pension plan

The following information is provided for the defined benefit pension plan of Zenith Industries for the fiscal year ending 20X5:

Employer contributions	€ 1,200
Current service costs	€ 1,850
Beginning of year benefit obligation	€ 38,870
End of year benefit obligation	€ 43,619
Increase in benefit obligation due to changes in actuarial assumption	€ 619
Beginning of year plan assets	€ 28,322
End of year plan assets	€ 30,682
Actual return on plan assets	€ 1,795
Benefits paid	€ 635
Unamortized actuarial losses (U.S. GAAP only)	€ 3,150
Expected rate of return on plan assets	6%
Yield on long-term investment-grade bonds	7.5%

Calculate:

1. Beginning and ending funded status.
2. Pension cost reported under U.S. GAAP.
3. Pension cost reported under IFRS.

Answer:

While not necessary for answering any of the questions, reconciliation of beginning PBO to ending PBO and beginning plan assets to ending plan assets would be informative:

PBO

Beginning of year benefit obligation	€ 38,870
(+) Current service costs	€ 1,850
(+) interest cost (beg PBO × 7.5%)	€ 2,915
(+) Actuarial loss/(gain)	€ 619
(–) Benefits paid	€ 635
(=) End of year benefit obligation	€ 43,619

Plan Assets

Beginning of year plan assets	€ 28,322
(+) Employer contributions	€ 1,200
(+) Actual return	€ 1,795
(–) Benefits paid	€ 635
(=) End of year plan assets	€ 30,682

Note: Since there is no past service cost, it is not included in the formula for computing interest cost/net interest cost.

1. Beginning funded status = beginning plan assets – beginning PBO

   = 28,322 – 38,870 = – € 10,548

   Ending funded status = ending plan assets – ending PBO

   = 30,682 – 43,619 = – € 12,937

2. Pension cost in P&L (U.S. GAAP):

   Corridor approach:

   Because beginning PBO > beginning plan assets, we take 10% of beginning PBO: €3,875.

   Because unamortized actuarial losses do not exceed 10% of beginning PBO, no amortization is necessary.

   Pension cost in P&L:

Current service costs	€1,850
(+) Interest cost[1]	€2,915
(–) Expected return on plan assets[2]	€1,699
(=) Pension expense reported in P&L	€3,066

   [1]Interest cost = discount rate × beginning PBO

   = 0.075 × 38,870 = €2,915

   [2]Expected return = expected rate of return × beginning plan assets

   = 6% × €28,322 = €1,699

3. Pension cost in P&L (IFRS):

Current service cost	€1,850
(+) Net interest cost[1]	€791
(=) Pension expense reported in P&L	€2,641

[1]Net interest cost = discount rate × beginning funded status
= 7.5% × –€10,548 = –€791
(negative figure = expense)

Disclosures

Under IFRS, plans are required to

- disclose the main characteristic of the plan and the risks involved,
- identify and explain the figures in the financial statements arising from them, and
- describe the amount, timing, and uncertainty of future cash flows.

Estimates of pension cost and funded status rely on a number of assumptions, some of which are disclosed in the footnotes. Analysts must compare the pension and other post-employment benefit assumptions over time and across firms to assess the quality of earnings. Aggressive accounting choices (those that reduce the pension expense and PBO) include low life expectancy of plan beneficiaries, low future inflation, low salary growth rate, and a high discount rate. Assumed higher expected rate of return on plan assets (U.S. GAAP only) reduces reported pension expense but does not affect the PBO or the FV of plan assets.

LOS 9.e: Explain financial modeling and valuation considerations for post-employment benefits.

Pension costs are generally embedded within a relevant expense category (e.g., SG&A, COGS), and those expenses are typically modeled as a percentage of revenues. This is an acceptable practice because pension expenses typically vary systematically with wages/salaries. However, if there are changes in the plan or if the plan is closed (or frozen), separate forecasts need to be made. Detailed forecasts are not needed for smaller plans that are well funded or closed/frozen.

For valuation purposes, an underfunded liability should be deducted from enterprise value.

MODULE QUIZ 9.2

1. The total service cost and interest cost for Carlingson Bakery's pension plan for 20X3 was $38 million. The fair market value of plan assets on January 1, 20X3, was $159 million. The projected benefit obligation (PBO) on January 1, 20X3, was $193 million, and the PBO on December 31, 20X3, was $220 million. There are no effects of foreign currency exchange rate changes, changes in assumptions affecting the PBO, business combinations, divestitures, curtailments, settlements, special terminations, or contributions by the employer or plan participants. Actual return on assets in 20X3 was $32 million. The expected return on plan assets for 20X3 was 10%. The fair value of plan assets on December 31, 20X3, is *closest* to:
   A. $148 million.
   B. $164 million.
   C. $180 million.

2. Company Z has a defined-benefit plan. The projected benefit obligation is $60 million, and the fair value of the plan's assets is $40 million. Under U.S. GAAP, what amount should Company Z report on its balance sheet as a result of the pension plan?
   A. $10 million liability.
   B. $10 million asset.
   C. $20 million liability.
3. Jacklyn King has been asked to do some accounting for Alexeeff Corp.'s pension plan. Alexeeff reports under U.S. GAAP. At the beginning of the period, the PBO was $12 million, and the fair market value of plan assets totaled $8 million. Long-term investment-grade corporate bonds yield 9%, expected return on plan assets is $0.96 million, and the anticipated compensation growth rate is 4%. At the end of the period, it was determined that the actual return on assets was 14%, plan assets equaled $9 million, and the service cost for the year was $0.9 million. Ignore amortization of unrecognized prior service costs and actuarial gains and losses. Pension cost reported in the income statement for the year should be *closest* to:
   A. $0.72 million.
   B. $0.86 million.
   C. $1.02 million.
4. The *most likely* impact of an increase in the compensation growth rate is:
   A. retained earnings will be lower.
   B. PBO will be lower.
   C. plan assets will be higher.
5. All else equal, a decrease in the discount rate is *most likely* to result in the funded status:
   A. increasing.
   B. decreasing.
   C. remaining unchanged.
6. SCP Incorporated disclosed the following information related to its defined-benefit pension plan:

	20X3	20X2	20X1
Discount rate	4.4%	4.3%	4.1%
Expected return on assets	5.2%	4.9%	4.9%
Expected salary growth rate	3.1%	3.1%	3.1%
Actual inflation rate	2.3%	2.5%	2.6%
Allocation of plan assets:			
Debt investments	40%	30%	30%
Equity investments	60%	70%	70%

   SCP's pension assumptions are internally consistent with regard to:
   A. inflation expectations but not asset returns.
   B. asset returns but not inflation expectations.
   C. neither asset returns nor inflation expectations.

KEY CONCEPTS

LOS 9.a

Employee compensation can be short-term (less than 12 months: salaries, wages, bonuses, health insurance, retirement contributions, and paid leave), long-term (greater than 12 months: LT disability and LT paid leave), stock-based (option or

stock grants), and post-retirement (pensions). Share-based compensation plans are offered to motivate and retain key employees. Disadvantages of share-based compensation plans include dilution, limited motivation value, option grants incentivizing excessive risk-taking, and stock grants encouraging managers to take a less-than-optimal amount of risk.

LOS 9.b

Share-based compensation expense is based on the fair value of the option or stock at the grant date and is amortized over the service (vesting) period. The corresponding credit is to share-based compensation reserve (part of equity). Upon exercise of the option or vesting of the shares, the applicable amounts are transferred out of the reserve account into common stock/additional paid-in-capital.

Many of the option pricing model inputs require subjective estimates that can significantly affect the fair value of the option and, ultimately, compensation expense. A low volatility assumption will reduce option value and compensation expense. The tax deduction is equal to the intrinsic value (for options) or share price on the settlement date. Relative to the grant date stock price, if the stock price is higher (lower) at settlement, it results in a tax windfall (tax shortfall). Under IFRS, tax windfalls or shortfalls are taken directly to stockholders' equity. Under U.S. GAAP, windfalls (shortfalls) reduce (increase) tax expense in the income statement.

Share-based compensation plans may increase the number of dilutive securities and, hence, reduce diluted EPS. The treasury stock method is used to account for the dilutive effects of share-based compensation.

assumed proceeds = cash proceeds + average unrecognized expense

treasury stock = assumed proceeds / average stock price during the year

number of dilutive securities = (options or RSUs granted) – treasury stock

LOS 9.c

Share-based compensation can be modeled as a percentage of revenues. However, any changes in expense behavior going forward (e.g., discontinued plans) need to be incorporated into the forecasts. Information sources include historical data, management guidance, or reversion toward industry mean.

LOS 9.d

The projected benefit obligation (PBO) is the actuarial present value of future pension benefits earned to date, based on expected future salary increases.

balance sheet asset (liability) = fair value of plan assets – PBO

Components of pension cost:

- Current service cost: The present value of benefits earned by the employees during the current period. Expensed in the income statement.
- Interest cost (U.S. GAAP) = discount rate × beginning PBO

  Net interest cost (IFRS) = discount rate × beginning funded status
- Expected return on plan assets: Offsets reported pension cost. Under U.S. GAAP, the expected rate of return is assumed. Under IFRS, the expected rate of return is

the same as the discount rate.

- Amortization of actuarial gains and losses: Under U.S. GAAP only, the losses (or gains) during the year due to changes in actuarial assumptions and due to differences between expected and actual return are recognized in OCI and amortized using the corridor method. Under IFRS, the actuarial gains and losses during the year are recognized in OCI and are not amortized.
- Amortization of past service cost: Under U.S. GAAP only, an increase in PBO resulting from plan amendments (granting a retroactive increase in benefits) is amortized. Under IFRS, past service costs are immediately expensed in the income statement.

Firms can improve reported results by increasing the discount rate, lowering the compensation growth rate, reducing beneficiary life expectancy, or, in the case of U.S. GAAP, increasing the expected return on plan assets.

LOS 9.e

Categories of expenses in the income statement such as COGS and SG&A include pension expense and can be forecasted based on percentage of revenues. Projections of pension cost need to incorporate anticipated changes in the plan.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 9.1

1. **C** The stock price after the grant date and the firm's required cost of capital are not inputs to option pricing models. (LOS 9.b)

2. **C** For share-based compensation, expense is recognized based on the fair value of the compensation *as of the grant date* and is allocated over the employee's service period. No expense is recognized when the option is exercised or the stock is sold. (LOS 9.b)

3. **C** Short-term employee compensation vests in less than 12 months and includes salaries, wages, bonuses, health insurance, retirement contributions, and paid leave. Because it is settled in cash, there is a *limited scope for* measurement error. Short-term compensation is expensed to the income statement as it vests, and the unpaid amount at the end of the year is shown as a current liability in the balance sheet. (LOS 9.a)

4. **B** Option grants include cash proceeds from exercise (while RSU does not) in the calculation of estimated proceeds. This results in a greater amount of treasury stock—reducing the number of dilutive securities. (LOS 9.c)

Module Quiz 9.2

1. **C** The first step is to solve for benefits paid. The beginning PBO balance plus the cost components minus benefits paid is equal to the ending PBO balance: $193 + $38 – benefits paid = $220 million, which implies benefits paid are equal to $11 million. The question specifies that there are no contributions during the year, thus the ending fair value of plan assets is equal to beginning asset value,

plus actual return on assets, less benefits paid: $159 + $32 – $11 = $180 million. (LOS 9.d)

2. **C** The funded status equals plan assets minus PBO. This plan is underfunded by $20 million ($40 million plan assets – $60 million PBO), which is reported as a liability on the balance sheet. (LOS 9.d)

3. **C**

periodic pension cost in P&L = current service cost + interest cost – expected return on assets

current service cost = $0.90 million (given)

interest cost = beginning PBO × discount rate
= $12 million × 0.09 = $1.08 million

expected return on plan assets = $0.96 million (given)

periodic pension cost in P&L = $0.90 million + $1.08 million – $0.96 million = $1.02 million (LOS 9.d)

4. **A** A higher compensation growth rate will increase periodic pension cost reported in P&L and, thus, lower net income. Lower net income results in lower retained earnings. A higher compensation growth rate will *increase* the PBO. The compensation growth rate does not affect plan assets. (LOS 9.d)

5. **B** A decrease in the discount rate will increase the PBO. A higher PBO lowers the funded status (plan assets – PBO). (LOS 9.d)

6. **C** Neither inflation expectations nor asset returns are internally consistent. The discount rate is increasing, despite the inflation rate decreasing. There is usually a direct relationship between the discount rate and the inflation rate. Furthermore, in 20X3, the expected rate of return increased, despite SCP decreasing its allocation to equity investments. Generally, reducing exposure to equity investments in favor of debt investments will decrease returns. (LOS 9.d)

READING 10

MULTINATIONAL OPERATIONS

EXAM FOCUS

This topic review covers a detailed discussion of accounting for foreign subsidiaries and operations of multinational firms. The main issue is how to convert the results of a foreign subsidiary into the parent's consolidated financial statements. You have several significant tasks to master. First, you need to become familiar with the terminology of translation. Second, you need to be able to distinguish between and implement the two methods of accounting for foreign operations (i.e., remeasurement via the temporal method or translation via the current rate method). Third, you need to be able to analyze the impact of these two methods on reported earnings, cash flows, and financial ratios for both the subsidiary and the parent. This reading is important and challenging. Begin by concentrating on the examples of each method and then move on to the analysis section.

MODULE 10.1: TRANSACTION EXPOSURE

Video covering this content is available online.

LOS 10.a: Compare and contrast presentation in (reporting) currency, functional currency, and local currency.

Foreign currency can affect a multinational firm's financial statements in two ways: (1) the multinational firm may engage in business transactions that are denominated in a foreign currency, and (2) the multinational firm may invest in subsidiaries that maintain their books and records in a foreign currency. In both cases, special accounting treatment is required.

Before we move on, we need to define the different currencies that are involved in multinational accounting.

- The **local currency** is the currency of the country being referred to.
- The **functional currency**, determined by management, is the currency of the primary economic environment in which the entity operates. It is usually the currency in which the entity generates and expends cash. The functional currency can be the local currency or some other currency.
- The **presentation (reporting) currency** is the currency in which the parent company prepares its financial statements.

LOS 10.b: Describe foreign currency transaction exposure, including accounting for and disclosures about foreign currency transaction gains and

losses.

Foreign currency–denominated transactions, including sales, are measured in the presentation (reporting) currency at the spot rate on the transaction date. Foreign currency risk arises when the transaction date and the payment date differ.

For example, let's consider a U.S. firm that sells goods to a company located in Italy for €10,000 when the spot exchange rate is $1.60 per euro. Payment is due in 30 days. When payment is actually received, the euro has depreciated to $1.50.

On the transaction date, the U.S. firm recognizes a sale, and an account receivable, in the amount of $16,000 (€10,000 × $1.60). On the payment date, the U.S. firm receives €10,000 and immediately converts the euros to $15,000 (€10,000 × $1.50). As a result of the depreciating euro, the U.S. firm recognizes a $1,000 loss in the income statement [€10,000 × ($1.50 − $1.60)]. If the euro had appreciated to $1.70, the U.S. firm would have recognized a $1,000 gain [€10,000 × ($1.70 − $1.60)]. Note that the Italian firm recognized no gain or loss since the purchase and settlement transactions were both denominated in euros.

If the balance sheet date occurs before the transaction is settled, gains and losses on foreign currency transactions are recognized. Accordingly, the balance sheet amounts are adjusted based on the exchange rate on the balance sheet date, and an unrealized gain or loss is recognized in the income statement. Once the transaction is settled, additional gain or loss is recognized if the exchange rate changes after the balance sheet date.

Returning to our earlier example, let's assume the sale occurred on December 15 of last year when the euro exchange rate was $1.60. At the end of the year, the euro depreciated to $1.56. The transaction was settled on January 15 when the euro exchange rate was $1.50.

At the end of the year, the U.S. firm will reduce its account receivable by $400 and recognize a $400 loss [€10,000 × ($1.56 − $1.60)] in the December income statement. When the receivable is collected, the U.S. firm receives €10,000 and immediately converts the euros to $15,000 (€10,000 × $1.50). As a result, a loss of $600 [€10,000 × ($1.50 − $1.56)] is recognized in the January income statement.

If the U.S. firm purchases goods (denominated in euros) from the Italian firm with payment due in 30 days, the same concepts are applied except that the U.S. firm would recognize a gain on the payment date. In this case, the U.S. firm has an account payable denominated in euros. If the euro depreciates relative to the dollar, the U.S. firm recognizes a gain in the income statement because it will take less U.S. dollars to buy the necessary euros to settle the transaction.

Analyst Issues

While transaction gains and losses are recognized in the income statement, the accounting standards do not provide any guidance to include them within operating or non-operating income. IFRS requires disclosure of the "amount of exchange rate differences recognized in profit or loss" while U.S. GAAP requires disclosure of "the aggregate transaction gain or loss included in determining net income for the period." However, neither standard requires disclosure of where such gains/losses

would be recorded. Obviously, the comparability of operating margins between entities would be diminished if the compared entities used different methods.

MODULE QUIZ 10.1

1. On December 15, 2022, a U.S. firm with a fiscal year end of December 31, 2022, sold merchandise to a Mexican firm. Payment (in pesos) was due in 30 days but was actually received on January 20, 2023. Using the following exchange rates, what is the effect on the U.S. firm's income statement when payment is received?

	MXN/USD
December 15, 2022	10.0
December 31, 2022	12.0
January 15, 2023	12.5
January 20, 2023	11.5

A. Gain.
B. Loss.
C. No effect.

MODULE 10.2: TRANSLATION

Video covering this content is available online.

LOS 10.c: Analyze how changes in exchange rates affect the translated sales of the subsidiary and parent company.

LOS 10.d: Compare the current rate method and the temporal method, evaluate how each affects the parent company's balance sheet and income statement, and determine which method is appropriate in various scenarios.

There are two methods used to remeasure or translate the financial statements of a foreign subsidiary to the parent's presentation (reporting) currency.

- **Remeasurement** involves converting the local currency into functional currency using the temporal method.
- **Translation** involves converting the functional currency into the parent's presentation (reporting) currency using the current rate method. The current rate method is also known as the all-current method.

PROFESSOR'S NOTE
The term "translation" is used in two different ways in this topic review. First, translation refers to a specific method of converting account and transaction balances to another currency. Second, translation is used to describe (without identifying a specific methodology) the general process of converting account and transaction balances from one currency to another. Thus, both the remeasurement methodology and the translation methodology result in "translation," or the conversion of account and transaction balances to another currency. The ensuing discussion should make this distinction clear.

The translation method, current rate or temporal, is determined by the functional currency relative to the parent's presentation currency. Since the functional currency is chosen by management, it may not be completely objective.

According to the IASB, management should consider the following factors in deciding on the functional currency:

- The currency that influences sales prices for goods and services.
- Currency of the country whose competitive forces and regulations mainly determine the sale price of goods and services.
- The currency that influences labor, material, and other costs.
- The currency from which funds are generated.
- The currency in which receipts from operating activities are usually retained.

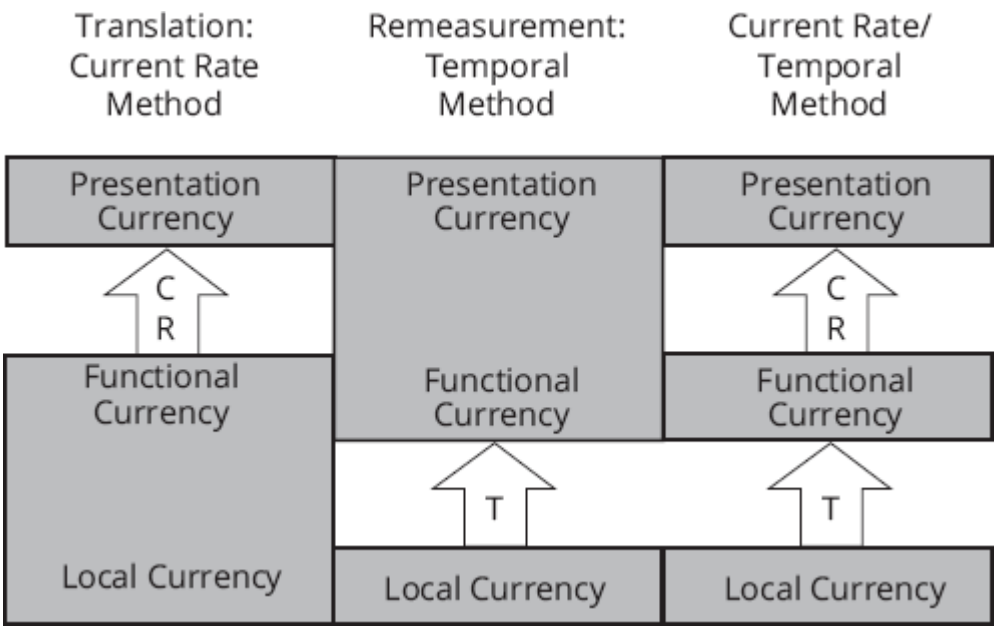
The FASB provides similar guidance.

Generally, we can use the following to determine the appropriate translation method:

- If the functional currency and the parent's presentation currency differ, the **current rate method** is used to translate the foreign currency financial statements. Translation usually involves self-contained, independent subsidiaries whose operating, investing, and financing activities are decentralized from the parent. See Column 1 of Figure 10.1.
- If the functional currency is the same as the parent's presentation currency, the **temporal method** is used to remeasure the foreign currency financial statements. Remeasurement usually occurs when a subsidiary is *well integrated* with the parent (i.e., the parent makes the operating, investing, and financing decisions). See Column 2 of Figure 10.1.
- In the case where the local currency, the functional currency, and the presentation currency all differ, both the temporal method and the current rate method are used. For example, consider a U.S. firm that owns a German subsidiary whose functional currency is the Swiss franc. In this case, the temporal method is used to remeasure from the local currency (euros) into the functional currency (Swiss francs). Then, the current rate method is used to translate from the functional currency (Swiss francs) to the presentation currency (U.S. dollar). See Column 3 of Figure 10.1.
- If a subsidiary is operating in a hyperinflationary environment, the functional currency is considered to be the parent's presentation currency, and the temporal method is used under U.S. GAAP. Under IFRS, the subsidiary's financial statements are restated for inflation and then translated using the current exchange rate. Hyperinflation will be discussed in more detail later in this topic review.

Figure 10.1 illustrates the three ways the local currency may be remeasured and/or translated into the presentation currency of the parent. Note that the choice of the functional currency determines the method used for conversion.

Figure 10.1: Three Methods for Remeasurement/Translation of Local Currencies



Let's look at an example.

EXAMPLE: Determining the appropriate translation method (1)

A U.S. multinational firm has a Japanese subsidiary. The subsidiary's functional currency is the Japanese yen (¥). The subsidiary's books and records are maintained in yen. The parent's presentation currency is the U.S. dollar. Determine which foreign currency translation method is appropriate.

Answer:

Since the functional currency and the parent's presentation currency differ, the current rate method is used to translate the subsidiary's financial statements from yen to U.S. dollars.

EXAMPLE: Determining the appropriate translation method (2)

Now imagine the Japanese subsidiary's functional currency is the U.S. dollar. Determine which foreign currency translation method is appropriate.

Answer:

Since the functional currency and the parent's presentation currency are the same, the temporal method is used to remeasure the subsidiary's financial statements from yen to U.S. dollars.

Before discussing the specific procedures used in applying the current rate and the temporal methods, we need to define a few exchange rates.

- The **current rate** is the exchange rate on the balance sheet date.
- The **average rate** is the average exchange rate over the reporting period.
- The **historical rate** is the actual rate that was in effect when the original transaction occurred. For example, if a firm bought machinery on January 2, 2023, the historical rate for that transaction at every balance sheet date in the future would be the exchange rate on January 2, 2023.

MODULE QUIZ 10.2

1. Which of the following is *least likely* a condition that requires the use of the temporal method for a U.S. parent that reports results in U.S. dollars?
   A. The functional currency is the local currency.
   B. The foreign subsidiary is operating in a highly inflationary economy.
   C. The functional currency is some currency other than the local currency or the U.S. dollar.

2. Mazeppa, Inc., is a multinational firm with its home office located in Toronto, Canada. Its main foreign subsidiary is located in Paris, but the primary economic environment in which the foreign subsidiary generates and expends cash is in the United States (New York).
   A. The local currency is the U.S. dollar.
   B. The functional currency is the euro.
   C. The presentation (reporting) currency is the Canadian dollar.

MODULE 10.3: TEMPORAL METHOD

Video covering this content is available online.

Applying the Temporal Method

The temporal method is applied using the following procedures:

- Monetary assets and liabilities are remeasured using the current exchange rate. Monetary assets and liabilities are fixed in the amount of currency to be received or paid and include: cash, receivables, payables, and short-term and long-term debt.
- All other assets and liabilities are considered nonmonetary and are remeasured at the historical (actual) rate. The most common nonmonetary assets include inventory, fixed assets, and intangible assets. An example of a nonmonetary liability is unearned (deferred) revenue.

PROFESSOR'S NOTE
There is one exception. Nonmonetary assets and liabilities measured on the balance sheet at "fair value" (e.g., inventory carried at market value) are remeasured at the current exchange rate, not the historical rate.

- Just like the current rate method, common stock and dividends paid are remeasured at the historical (actual) rate.
- Expenses related to nonmonetary assets such as COGS, depreciation expense, and amortization expense are remeasured based on the historical rates prevailing at the time of purchase.
- Revenues and all other expenses are translated at the average rate.
- Remeasurement gain or loss is recognized in the income statement. This results in more volatile net income as compared to the current rate method whereby the translation gain or loss is reported in shareholders' equity.

Inventory and COGS Under the Temporal Method

Remember, the historical rate is the actual rate in effect when the original transaction occurred. Thus, there can be numerous historical rates to keep track of as a firm purchases nonmonetary assets (e.g., inventory, fixed assets, and intangibles) over time. Inventory can be particularly complicated since the firm's cost flow assumption (i.e., FIFO, LIFO, or average cost) must also be considered.

Recall that ending inventory under FIFO consists of the costs from the most recently purchased goods. Thus, FIFO ending inventory is remeasured based on more recent exchange rates. On the other hand, FIFO COGS consists of costs that are older; thus, the exchange rates used to remeasure COGS are older.

Under LIFO, ending inventory consists of older costs; thus, the inventory is remeasured at older exchange rates. LIFO COGS, however, consists of costs from the most recently purchased goods; thus, COGS is remeasured based on more recent exchange rates.

Not surprisingly, under the weighted-average method, ending inventory and COGS are remeasured at the weighted-average exchange rate for the period.

MODULE 10.4: CURRENT RATE METHOD

Video covering this content is available online.

Applying the Current Rate Method

The current rate method is applied using the following procedures:

- All income statement accounts are translated at the rate that existed when the transaction occurred—but in practice, we typically use the average rate.
- All balance sheet accounts are translated at the current rate *except for common stock*, which is translated at the historical (actual) rate that applied when the stock was issued.
- Dividends are translated at the rate that applied when they were declared.
- Translation gain or loss is reported in shareholders' equity as a part of the cumulative translation adjustment (CTA).

Figure 10.2 summarizes the impact of changing exchange rates on the parent's exposure.

Figure 10.2: Impact of Changing Exchange Rates on Exposure

	Local Currency	
Exposure	**Appreciating**	**Depreciating**
Current rate method:		
Net assets	Gain	Loss
Net liabilities	Loss	Gain
Temporal method:		
Net monetary assets	Gain	Loss
Net monetary liabilities	Loss	Gain

Calculating the Translation/Remeasurement Gain or Loss

Recall that under the current rate method, the translation gain or loss is reported in shareholders' equity as a part of the CTA. The CTA is simply a "plug" figure that forces the basic accounting equation (A = L + E) to balance.

Let's try an example.

EXAMPLE: Calculating the ending balance of the CTA under the current rate method

Given the following balance sheet data, calculate the ending balance of the CTA.

Assets	$1,000
Liabilities	600
Common stock	150
Beginning retained earnings	175
Current period net income	50
Dividends paid	25

Answer:

First, we need to calculate the ending balance of retained earnings. Given the beginning balance of retained earnings, the current period net income, and the dividends paid, we can calculate the ending balance of retained earnings as $200 ($175 beginning retained earnings + $50 net income – $25 dividends paid). Now, we can force the accounting equation to balance with a CTA of $50 ($1,000 assets – $600 liabilities – $150 common stock – $200 ending retained earnings).

It is important to understand that the CTA is an accumulated balance of all of the translation gains and losses at a point in time. In order to compute the translation gain or loss for a specific period, we need the *change* in the CTA for the period. Returning to our example, if the beginning balance of the CTA was $20 and the ending balance (plug) was $50, the translation gain for the period was $30.

Under the temporal method, no CTA is reported in shareholders' equity. Instead, the remeasurement gain or loss is recognized in the income statement. The remeasurement gain or loss is also a plug figure and is simply the difference in the earnings before the gain or loss and the earnings after the gain or loss.

Let's summarize what we have learned about the temporal and current rate methods.

PROFESSOR'S NOTE

Figure 10.3 is a must-know for the exam. Memorize it!

Figure 10.3: Summary of Temporal Method and Current Rate Method

	Temporal Method	Current Rate Method
Monetary assets and liabilities	Current rate	Current rate
Nonmonetary assets and liabilities	Historical rates	Current rate
Common stock	Historical rates	Historical rates
Equity (taken as a whole)	Mixed*	Current rate**
Revenues and SG&A	Average rate	Average rate
Cost of goods sold	Historical rates	Average rate
Depreciation and amortization	Historical rates	Average rate
Net income	Mixed rate*	Average rate
Exposure	Net monetary assets	Net assets
Exchange rate gain or loss	Income statement	Equity

* Net income is remeasured at a "mixed rate" (i.e., a mix of the average rate and the historical rate) under the temporal method because (1) the FX gain or loss is shown in the income statement, and (2) revenues and SG&A are remeasured at the average rate while COGS, depreciation, and amortization are remeasured at the historical rate. Equity is "mixed" because the change in retained earnings (which includes net income) is mixed.

** Under the current rate method, total assets and liabilities are translated at the current rate. The total equity (equity taken as a whole) would then have to be translated at the current rate for the balance sheet to balance.

Exposure to Changing Exchange Rates

Before calculating the gain or loss that results from changing exchange rates, it is necessary to understand the parent's *exposure* under the two methods. Under the current rate method, exposure is defined as the net asset position of the subsidiary. A firm has a net asset position when its assets exceed its liabilities. Recall that under the current rate method, all of the assets and liabilities are translated at the current rate. Thus, it is the net assets, that is, the subsidiary's equity, that are exposed to changing exchange rates. So, if the subsidiary has a net asset exposure and the local currency is appreciating, a gain is recognized. Conversely, a net asset exposure in a depreciating environment will result in a loss.

PROFESSOR'S NOTE

Although it is possible for a firm to have a net liability position under the current rate method, it is unusual. Most firms can't survive very long when their liabilities exceed their assets.

Recall that under the temporal method, the nonmonetary assets and liabilities are remeasured at historical rates. Thus, only the monetary assets and liabilities are exposed to changing exchange rates. Therefore, under the temporal method, exposure is defined as the subsidiary's net monetary asset or net monetary liability position. A firm has net monetary assets if its monetary assets exceed its monetary liabilities. If the monetary liabilities exceed the monetary assets, the firm has a net monetary liability exposure.

Since very few assets are considered to be monetary (mainly cash and receivables), most firms have net monetary liability exposures. If the parent has a net monetary

liability exposure when the foreign currency is appreciating, the result is a loss. Conversely, a net monetary liability exposure coupled with a depreciating currency will result in a gain.

Under the temporal method, firms can eliminate their exposure to changing exchange rates by balancing monetary assets and monetary liabilities. When balanced, no gain or loss is recognized. For example, imagine that a U.S. multinational firm has a net monetary liability exposure of €1 million. In this case, a loss will occur if the euro appreciates relative to the dollar. To eliminate the exposure, the firm could sell euro denominated nonmonetary assets, such as fixed assets or inventory, and use the proceeds to reduce the monetary liabilities.

Eliminating exposure under the current rate method is more difficult because it is necessary to balance total assets and total liabilities. Balancing assets and liabilities would eliminate shareholders' equity.

PROFESSOR'S NOTE

There are other ways of eliminating exposure using various hedging techniques. However, the specifics of hedging are beyond the scope of this topic review.

MODULE QUIZ 10.3, 10.4

1. Which of the following statements is *most accurate* regarding foreign currency translation? Under the:
   A. temporal method, the monetary asset accounts of a foreign subsidiary are translated using the current rate.
   B. temporal method, the nonmonetary asset accounts of a foreign subsidiary are translated using the current rate.
   C. current rate method, all balance sheet accounts of a foreign subsidiary are translated using the average rate.
2. Which of the following statements about the temporal method and the current rate method is *least accurate*?
   A. Net income is generally more volatile under the temporal method than under the current rate method.
   B. Subsidiaries that operate in highly inflationary environments will generally use the temporal method under U.S. GAAP.
   C. Subsidiaries whose operations are well integrated with the parent will generally use the current rate method.
3. If a foreign subsidiary's functional currency and the parent's reporting currency are the same, the parent's exposure to changing exchange rates is based on:
   A. total assets minus total liabilities.
   B. monetary assets minus monetary liabilities.
   C. nonmonetary assets minus nonmonetary liabilities.
4. XYZ Company is a U.S. subsidiary that operates in the United Kingdom where the functional currency is the British pound (£). XYZ's income statement shows £400 of net income and a £100 dividend declared on October 31 when the exchange rate was $1.60 per £. The current exchange rate is $1.70 per £, and the average rate is $1.55 per £. The change in retained earnings for the period in U.S. dollars is *closest* to:
   A. $460.
   B. $465.
   C. $480.

5. A foreign subsidiary is operating in a country where the local currency is depreciating relative to the parent's presentation currency. Assuming the subsidiary is a FIFO firm, which accounting method will result in the highest gross profit margin reported in the parent's consolidated income statement?
   A. Current rate method.
   B. Temporal method.
   C. The current rate method and the temporal method will result in the same COGS.

6. How many of the following situations *might* result in a translation gain?
   - Total assets exceed total liabilities when the foreign currency is depreciating using the current rate method.
   - Monetary liabilities exceed monetary assets when the foreign currency is appreciating using the temporal method.
   - Monetary assets exceed monetary liabilities when the foreign currency is depreciating using the temporal method.
   - Total assets equal total liabilities when the foreign currency is appreciating using the current rate method.

   A. None.
   B. One.
   C. Two.

Use the following information to answer Questions 7 and 8.

Gila Sailing and Fishing, Inc. (Gila), is a subsidiary of Sea of Cortez Unlimited Boating Adventures, Inc. (Cortez), a multinational organization headquartered in Tempe, Arizona. Gila is located in the Sonora Valley and sells fishing trips off the coast of the Sea of Cortez. Cortez accounts for Gila using the temporal method. Gila's current balance sheet (denominated in pesos) is as follows:

Cash	1,000,000
Accounts receivable	11,000,000
Fixed assets	43,000,000
Total assets	55,000,000
Accounts payable	9,000,000
Deferred revenue	2,000,000*
Long-term debt	8,000,000
Equity	36,000,000
Total liabilities and equity	55,000,000

* Note: Deferred revenue relates to a wealthy customer who paid for several trips in advance but has been unable to find enough spare time to come back to Sonora.

7. Nonmonetary assets less nonmonetary liabilities are:
   A. 5,000,000.
   B. 41,000,000.
   C. 43,000,000.

8. Cortez is concerned about depreciation of the peso and would like to change Gila's capital structure. This would be *best* accomplished by:
   A. borrowing pesos and reducing equity.
   B. using cash to reduce accounts payable.

C. selling receivables and using the proceeds to pay down long-term debt.

MODULE 10.5: EXAMPLE

Video covering this content is available online.

LOS 10.e: Calculate the translation effects and evaluate the translation of a subsidiary's balance sheet and income statement into the parent company's presentation currency.

Let's look at extended examples of both translation methods.

CURRENT RATE METHOD

EXAMPLE: The current rate method

FlexCo International is a U.S. company with a subsidiary, Vibrant, Inc., located in the country of Martonia. Vibrant was acquired by FlexCo on 12/31/2021. FlexCo reports its financial results in U.S. dollars. The currency of Martonia is the loca (LC). Vibrant's financial statements for 2022 are shown in the following two figures.

Vibrant December 31, 2021 and 2022 Balance Sheet

	2021	2022
Cash	LC100	LC100
Accounts receivable	500	650
Inventory	1,000	1,200
Current assets	LC1,600	LC1,950
Fixed assets	800	1,600
Accumulated depreciation	(100)	(700)
Net fixed assets	LC700	LC900
Total assets	LC2,300	LC2,850
Accounts payable	400	500
Current debt	100	200
Long-term debt	1,300	950
Total liabilities	LC1,800	LC1,650
Common stock	400	400
Retained earnings*	100	800
Total equity	LC500	LC1,200
Total liabilities and equity	LC2,300	LC2,850

* Retained earnings on December 31, 2021, were $50.

Vibrant 2022 Income Statement

	2022
Revenue	LC5,000
Cost of goods sold	(3,300)
Gross margin	1,700
Other expenses	(400)
Depreciation expense	(600)
Net income	LC700

The following exchange rates between the U.S. dollar and the loca were observed:

- December 31, 2021: $0.50 = LC1.00.
- December 31, 2022: $0.4545 = LC1.00.
- Average for 2022: $0.4762 = LC1.00.
- Historical rate for equity: $0.50 = LC1.00.
- Historical rate for PP&E and depreciation: $0.4881 = LC1.00.
- Historical rate for beginning and ending inventory $0.52/LC and $0.456/LC, respectively.
- Purchases were made evenly throughout the year.

The majority of Vibrant's operational, financial, and investment decisions are made locally in Martonia, although Vibrant does rely on FlexCo for information technology expertise.

Use the appropriate method to translate Vibrant's 2022 balance sheet and income statement into U.S. dollars.

Answer:

Vibrant is relatively self-contained, which likely means the loca is the functional currency. Since the functional currency ≠ the parent's presentation currency, the current rate method is used to translate Vibrant's financial statements from the functional currency to the parent's presentation currency. The current rate method uses the current rate for all balance sheet accounts (except common stock, which is translated at the historical rate) and the average rate for all income statement accounts. The translation gain or loss is included in the CTA, which is reported in the equity section of the balance sheet as a part of other comprehensive income.

Vibrant's translated 2022 income statement is shown in the following table. Notice that we translate the income statement first with the current rate method to derive net income, which we then use to calculate retained earnings on the balance sheet.

Vibrant's 2022 Translated Income Statement Under the Current Rate Method

	2022 (LC)	Rate	2022 ($)
Revenue	LC5,000	$0.4762	$2,381.0
Cost of goods sold	(3,300)	$0.4762	(1,571.5)
Gross margin	1,700		809.5
Other expenses	(400)	$0.4762	(190.5)
Depreciation expense	(600)	$0.4762	(285.7)
Net income	LC700		$333.3

Vibrant's 2022 translated balance sheet is shown in the next table.

Vibrant 2022 Translated Balance Sheet Under the Current Rate Method

	2022 (LC)	Rate	2022 ($)
Cash	LC100	$0.4545	$45.5
Accounts receivable	650	$0.4545	295.4
Inventory	1,200	$0.4545	545.4
Current assets	LC1,950		$886.3
Fixed assets	1,600	$0.4545	727.2
Accumulated depreciation	(700)	$0.4545	(318.2)
Net fixed assets	LC900		$409.0
Total assets	LC2,850		$1,295.3
Accounts payable	500	$0.4545	227.2
Other liabilities	200	$0.4545	90.9
Long-term debt	950	$0.4545	431.8
Total liabilities	LC1,650		$749.9
Common stock	400	$0.50	200.0
Retained earnings	800	(a)	383.3
Cumulative translation adjustment	—	(b)	(37.9)
Total equity	LC1,200		$545.4
Total liabilities and shareholders' equity	LC2,850		$1,295.3

(a) Beginning (2022) retained earnings were $50, so ending (2022) retained earnings are $50 + $333.3 = $383.3.

(b) The CTA is a plug figure that makes the accounting equation balance: $1,295.3 assets – $749.9 liabilities – $200.0 common stock – $383.3 retained earnings = –$37.9.

Notice the change in the CTA from 2021 to 2022 is equal to –$37.9 (–$37.9 ending CTA – $0 beginning CTA). Because Vibrant was acquired at the end of 2021, the CTA was zero on that date. Thus, the depreciating loca resulted in translation loss

of $37.9 for the year ended 2022. The translation loss occurred because Vibrant had a net asset exposure (assets > liabilities) and the loca depreciated relative to the dollar.

TEMPORAL METHOD

Now let's apply the temporal method to Vibrant.

EXAMPLE: The temporal method

Suppose instead that the majority of Vibrant's operational, financial, and investment decisions are made by the parent company, FlexCo. In this case, Vibrant's functional currency and FlexCo's presentation currency are likely the same; thus, the temporal method is used to remeasure the loca to the dollar. All other information is the same.

Use the appropriate method to translate Vibrant's 2022 balance sheet and income statement into U.S. dollars.

Under the temporal method, we'll start with the balance sheet.

Vibrant 2022 Remeasured Balance Sheet Under the Temporal Method

	2022 (LC)	Rate	2022 ($)
Cash	LC100	$0.4545	$45.5
Accounts receivable	650	$0.4545	295.4
Inventory	1,200	$0.4560	547.2
Current assets	LC1,950		888.1
Fixed assets	1,600	$0.4881	781.0
Accumulated depreciation	(700)	$0.4881	(341.7)
Net fixed assets	LC900		$439.3
Total assets	LC2,850		$1,327.4
Accounts payable	500	$0.4545	227.3
Current debt	200	$0.4545	90.9
Long-term debt	950	$0.4545	431.8
Total liabilities	LC1,650		$750.0
Common stock	400	$0.50	200.0
Retained earnings	800	(a)	377.4
Total equity	LC1,200		577.4
Total liabilities and shareholders' equity	LC2,850		$1,327.4

(a) Retained earnings is a plug figure that makes the accounting equation balance:

$1,327.4 assets – $750.0 liabilities – $200.0 common stock = $377.4 retained earnings.

Vibrant's remeasured income statement using the temporal method is shown in the following table. Remember the remeasurement gain or loss appears in the income statement under the temporal method.

Vibrant's 2022 Remeasured Income Statement Under the Temporal Method

	2022 (LC)	Rate	2022 ($)
Revenue	LC5,000	$0.4762	$2,381.0
Cost of goods sold	(3,300)	(c)	(1,639.5)
Gross margin	1,700		741.5
Other expenses	(400)	$0.4762	(190.5)
Depreciation expense	(600)	$0.4881	(292.9)
Income before remeasurement gain	700		258.1
Remeasurement gain	—	(b)	69.3
Net income	LC700	(a)	$327.4

(a) Net income is derived from the beginning and ending balances of retained earnings and dividends paid: ($50.0 beginning balance + net income – $0 dividends paid = $377.4 ending balance). Solving for net income, we get $327.4.

(b) The remeasurement gain is a plug that is equal to the difference in net income and income before remeasurement gain: $327.4 – $258.1 = $69.3.

(c) LC purchases = LC COGS + LC ending inventory – LC beginning inventory

LC purchases = 3,300 + 1,200 – 1,000 = LC 3,500

$ COGS = $ beginning inventory + $ purchases – $ ending inventory = (1,000 × 0.52) + (3,500 × 0.4762) – (1,200 × 0.456) = $1,639.5

The remeasurement gain occurred because Vibrant had a net monetary liability exposure (monetary liabilities > monetary assets), and the loca depreciated relative to the dollar.

Why Do the Two Methods Report Significantly Different Results?

You should immediately notice that the two different methods report very different results, particularly related to the size and sign of the translation gain/loss, net income, and total assets. These comparisons are shown in Figure 10.4.

Figure 10.4: Vibrant Example: Current Rate vs. Temporal Method

	Current Rate	Temporal
Income before translation gain/loss	$333.3	$258.1
Translation gain/loss	–$37.9	$69.3
	(on the balance sheet)	(on the income statement)
Net income	$333.3	$327.4
Total assets	$1,295.3	$1,327.4

We can make the following observations.

Income before translation gain/loss is different between the two methods. This is because COGS and depreciation are translated/remeasured at different rates under the two methods. Under the current rate method, COGS and depreciation expense are translated at the average rate thereby reflecting the depreciating local currency. Under the temporal method, COGS and depreciation expense are remeasured at historical (actual) rates, and thus, do not reflect the depreciating local currency.

The translation gain/loss is different between the two methods; it's not even the same sign. The current rate method results in a translation loss, while the temporal method results in a translation gain. This is NOT an unusual occurrence. Under the current rate method, Vibrant's net assets (assets > liabilities) are exposed to the depreciating local currency. Holding net assets in a depreciating environment results in a loss. Under the temporal method, Vibrant's net monetary liabilities (monetary liabilities > monetary assets) are exposed. Holding net monetary liabilities in a depreciating environment results in a gain.

Net income is different between the two methods. This is because of the different exchange rates used to translate/remeasure COGS and depreciation expense as previously discussed. In addition, the gain/loss recognized under the two methods are reported in different financial statements. Under the current rate method, the translation loss is reported in shareholders' equity as a part of the CTA. Under the temporal method, the remeasurement gain is reported in the income statement. Reporting the gain or loss in the income statement results in more volatile net income.

Total assets are different between the two methods because inventory and net fixed assets are different. Inventory and fixed assets are translated at the current rate under the current rate method thereby reflecting the depreciating local currency. Under the temporal method, the historical rate is used, thus, inventory and fixed assets do not reflect the depreciating local currency.

Comparing Subsidiary Results to Translated Results Under the Current Rate Method

A side-by-side comparison of Vibrant's 2022 balance sheet and income statement before and after translation is presented in Figure 10.5.

Figure 10.5: Vibrant LC and Translated Balance Sheet and Income Statement

	2022 (LC)	2022 ($) Current Rate Method
Cash	LC100	$45.5
Accounts receivable	650	295.4
Inventory	1,200	545.4
Current assets	LC1,950	$886.3
Fixed assets	1,600	727.2
Accumulated depreciation	(700)	(318.2)
Net fixed assets	LC900	$409.0
Total assets	LC2,850	$1,295.3
Accounts payable	500	227.2
Current debt	200	90.9
Long-term debt	950	431.8
Total liabilities	LC1,650	$749.9
Common stock	400	200.0
Retained earnings	800	383.3
Cumulative translation adjustment	—	(37.9)
Total equity	LC1,200	$545.4
Total liabilities and shareholders' equity	LC2,850	$1,295.3
Revenue	LC5,000	$2,381.0
Cost of goods sold	(3,300)	(1,571.5)
Gross margin	1,700	809.5
Other expenses	(400)	(190.5)
Depreciation expense	(600)	(285.7)
Net income	LC700	$333.3

MODULE 10.6: RATIOS

Video covering this content is available online.

LOS 10.f: Analyze how the current rate method and the temporal method affect financial statements and ratios.

Pure Balance Sheet and Pure Income Statement Ratios

Pure income statement and pure balance sheet ratios are *unaffected* by the application of the current rate method. In other words, the local currency trends and relationships are "preserved." What we mean by "pure" is that all of the components of the ratio are from the balance sheet, or all of the components are from the income statement.

For example, the current ratio (current assets / current liabilities) is a pure balance sheet ratio because both the numerator and denominator are from the balance sheet and are translated at the current rate. If you multiply both numerator and denominator by the same exchange rate, the rate cancels, and you're left with the same ratio.

All profit margin measures are pure income statement ratios because both the numerator (gross profit, operating profit, or net profit) and the denominator (revenue) are from the income statement and are translated at the average rate.

Selected pure balance sheet and pure income statement ratios from the Vibrant example are presented in Figure 10.6. Notice the current rate method preserves the original LC ratio in each case.

Figure 10.6: Vibrant Pure Balance Sheet and Pure Income Statement Ratios

Ratio	2022 (LC)	2022 ($) Current Rate Method
Pure Balance Sheet Ratios		
Current ratio	2.79	2.79
Quick ratio	1.07	1.07
LTD-to-total capital	0.40	0.40
Pure Income Statement Ratios		
Gross profit margin	34.0%	34.0%
Net profit margin	14.0%	14.0%

PROFESSOR'S NOTE
Interest coverage (EBIT / interest expense) is another example of a pure income statement ratio.

Mixed Balance Sheet/Income Statement Ratios

A **mixed ratio** combines inputs from both the income statement and balance sheet. The current rate method results in small changes in mixed ratios because the numerator and the denominator are almost always translated at different exchange rates. The change will likely be small and the direction will depend on the relationship between the exchange rate used to translate the denominator and the exchange rate used to translate the numerator.

Our analysis of mixed ratios isn't as clear-cut as the analysis of pure ratios, but we can make one definitive statement: *mixed ratios calculated from financial statements translated using the current rate method will be different than the same ratio calculated from the local currency statements before translation*. However, we can't make any definitive statements about whether specific ratios will be larger or smaller after translation unless we make the assumption that all mixed ratios are calculated using end-of-period balance sheet figures. The analysis that follows does not necessarily apply for mixed ratios calculated using beginning or average balance sheet figures.

This is a very important point so we'll repeat it again: the conclusions drawn in the following section assume we're using end-of-period balance sheet figures.

Selected mixed balance sheet and income statement ratios from the Vibrant example are presented in Figure 10.7. Recall that during 2022, the loca depreciated relative to the parent's presentation currency, the U.S. dollar.

Figure 10.7: Vibrant Mixed Balance Sheet/Income Statement Ratios (Depreciating LC)

Ratio*	2022 (LC)	2022 ($) Current Rate Method
Return on assets	24.6%	25.7%
Return on equity	58.3%	61.1%
Total asset turnover	1.75	1.84
Inventory turnover	2.75	2.88
Accounts receivable turnover	7.69	8.06

*Ratios are calculated using end-of-period balance sheet numbers.

Notice that in each case the translated ratio is larger than the original ratio. This will always be the case when the foreign currency is depreciating because the average rate (which is used in the numerator of the ratio) is greater than the ending rate (which is used in the denominator of the ratio). When the foreign currency is appreciating, each of these ratios will decrease.

PROFESSOR'S NOTE
In the Level II curriculum, we don't run across many mixed ratios with a balance sheet item in the numerator and an income statement item in the denominator. However, one example is the receivables collection period. Just remember that if accounts receivable turnover increases, receivables collection period will decrease. The same is true for the inventory processing period.

On the exam, remember these key points regarding the original versus the translated financial statements (using the current rate method) and ratios:

- Pure balance sheet and pure income statement ratios will be the same.
- If the foreign currency is depreciating, translated mixed ratios (with an income statement item in the numerator and an end-of-period balance sheet item in the denominator) will be larger than the original ratio.
- If the foreign currency is appreciating, translated mixed ratios (with an income statement item in the numerator and an end-of-period balance sheet item in the denominator) will be smaller than the original ratio.

Comparing Results Using the Temporal Method and Current Rate Method

Now, let's compare the results of the temporal method and current rate method as they relate to Vibrant's 2022 balance sheet and income statement.

Figure 10.8: Comparison of Vibrant's Balance Sheet and Income Statement Using the Temporal Method and the Current Rate Method

	2022 ($) Temporal Method	2022 ($) Current Rate Method
Cash	$45.5	$45.5
Accounts receivable	295.4	295.4
Inventory	547.2	545.4
Current assets	$881.1	$886.3
Fixed assets	781.0	727.2
Accumulated depreciation	(341.7)	(318.2)
Net fixed assets	439.3	409.0
Total assets	$1,327.4	$1,295.3
Accounts payable	227.3	227.2
Current debt	90.9	90.9
Long-term debt	431.8	431.8
Total liabilities	$750.0	$749.9
Common stock	200.0	200.0
Retained earnings	377.4	383.3
Cumulative translation adjustment	—	(37.9)
Total equity	577.4	$545.4
Total liabilities and shareholders' equity	$1,327.4	$1,295.3
Revenue	$2,381.0	$2,381.0
Cost of goods sold	(1,639.5)	(1,571.5)
Gross margin	741.5	809.5
Other expenses	(190.5)	(190.5)
Depreciation expense	(292.9)	(285.7)
Income before remeasurement gain	258.1	333.3
Remeasurement gain	69.3	—
Net income	$327.4	$333.3

Please note that this analysis assumes **end-of-period balance sheet figures**.

Analyzing the effect on the financial ratios of the choice of accounting method is a little more difficult in this case, but the basic procedure is as follows:

- Determine whether the foreign currency is appreciating or depreciating.
- Determine which rate (historical rate, average rate, or current rate) is used to convert the numerator under both methods. Determine whether the numerator of the ratio will be the same, larger, or smaller under the temporal method versus the current rate method.
- Determine which rate (historical rate, average rate, or current rate) is used to convert the denominator under both methods. Determine whether the

denominator of the ratio will be the same, larger, or smaller under the temporal method versus the current rate method.

- Determine whether the ratio will increase, decrease, or stay the same based on the direction of change in the numerator and the denominator.

For example, let's analyze the fixed asset turnover ratio, which is equal to revenue divided by fixed assets. Assume the foreign currency is depreciating.

- The numerator (revenue) is converted at the same rate (the average rate) under both methods.
- The denominator (fixed assets) is converted at the historical rate under the temporal method and the current rate under the current rate method. If the foreign currency is depreciating, the historical rate will be higher than the current rate, which means fixed assets will be higher under the temporal method.
- Since fixed assets are higher, turnover will be lower under the temporal method (higher denominator).

MODULE QUIZ 10.5, 10.6

1. Which of the following ratios may be larger in the presentation currency versus the local currency when translated under the current rate method?
   A. Current ratio.
   B. Return on assets.
   C. Net profit margin.

Use the following information to answer Questions 2 through 5.

This information is a continuation of the FlexCo/Vibrant example from the topic review. Suppose it is now the end of 2023 and Vibrant reports the operating results shown in the following table.

Vibrant December 31, 2022 and 2023 Balance Sheet

	2022	2023
Cash	LC100	LC150
Accounts receivable	650	800
Inventory	1,200	1,400
Current assets	LC1,950	LC2,350
Fixed assets	1,600	2,500
Accumulated depreciation	(700)	(1,500)
Net fixed assets	LC900	LC1,000
Total assets	LC2,850	LC3,350
Accounts payable	500	500
Current debt	200	100
Long-term debt	950	1,150
Total liabilities	LC1,650	LC1,750
Common stock	400	400
Retained earnings*	800	1,200
Total equity	LC1,200	LC1,600
Total liabilities and equity	LC2,850	LC3,350

*At the beginning of 2023, retained earnings were $383.3.

Vibrant 2023 Income Statement

	2023
Revenue	LC5,500
Cost of goods sold	(3,800)
Gross margin	1,700
Other expenses	(500)
Depreciation expense	(800)
Net income	LC400

The following exchange rates between the U.S. dollar and the loca were observed:

- December 31, 2022: USD/LC 0.4545.
- December 31, 2023: USD/LC 0.4000.
- Average for 2023: USD/LC 0.4292.
- Historical rate for fixed assets, inventory, and equity: USD/LC 0.5000.

The CTA at the end of 2022 was equal to –$37.9 under the current rate method.

2. Assume for this question only that Vibrant operates relatively independently from FlexCo. For 2023, FlexCo *most likely* will report a cumulative translation loss on the consolidated:
   A. income statement of $77.1 related to Vibrant.
   B. balance sheet of $77.1 related to Vibrant.
   C. balance sheet of $115.0 related to Vibrant.
3. The gross profit margin ratio and the return on ending assets ratio from Vibrant's 2023 U.S. dollar financial statements translated using the current rate method are *closest* to:

	Gross profit margin	Return on assets
A.	22.7%	14.2%
B.	30.9%	12.8%
C.	33.6%	11.9%

4. The gross profit margin ratio from Vibrant's 2023 U.S. dollar financial statements remeasured using the temporal method is:
   A. lower.
   B. the same.
   C. higher.

5. As compared to the current rate method, which of the following *best* describes the impact of the temporal method on accounts receivable turnover from Vibrant's 2023 U.S. dollar financial statements?
   A. Higher.
   B. Lower.
   C. The same.

6. Bob Haskell, CFA, is analyzing the financial statements of a U.S.-based company called Seriev Motor. Seriev has a foreign subsidiary located in Japan. Seriev translates the subsidiary results using the current rate method. Haskell determines that the following four ratios will remain the same after translation from yen into U.S. dollars:
   - Gross profit margin.
   - Interest coverage (EBIT/interest expense).
   - Return on assets.
   - Quick ratio.

   The dollar has depreciated against the yen during the most recent year. Haskell is correct in his analysis of:
   A. all four ratios.
   B. three of the four ratios.
   C. two of the four ratios.

MODULE 10.7: HYPERINFLATION

Video covering this content is available online.

LOS 10.g: Analyze how alternative translation methods for subsidiaries operating in hyperinflationary economies affect financial statements and ratios.

In a **hyperinflationary environment**, the local currency will rapidly depreciate relative to the parent's presentation currency because of a deterioration of purchasing power. In this case, using the current rate to translate all of the balance sheet accounts will result in much lower assets and liabilities after translation. Using the lower values, the subsidiary seems to disappear in the parent's consolidated financial statements.

In reality, the real value of the nonmonetary assets and liabilities is typically not affected by hyperinflation because the local currency-denominated values increase to offset the impact of inflation (e.g., real estate values rise with inflation). Unfortunately, adjusting the nonmonetary asset and liabilities for inflation is not allowed under U.S. GAAP; although, adjusting for inflation is permitted under IFRS.

As a result, IFRS and U.S. GAAP differ significantly when dealing with a subsidiary operating in a hyperinflationary environment.

Under U.S. GAAP, a hyperinflationary environment is one where cumulative inflation exceeds 100% over a 3-year period. Assuming compounding, an annual inflation rate of more than 26% over three years will result in cumulative inflation over 100% ($1.26^3 - 1$ is approximately equal to 100%). When hyperinflation is present, the functional currency is considered to be the parent's presentation currency; thus, the temporal method is used to remeasure the financial statements.

The IASB does not specifically define hyperinflation; however, cumulative inflation of over 100% in a 3-year period is one indication that hyperinflation exists.

IFRS does not use the temporal method for subsidiaries operating in a hyperinflationary environment. Instead, the foreign currency financial statements are restated for inflation and then translated using the current exchange rate. Restating for inflation involves the following procedures:

- Nonmonetary assets and nonmonetary liabilities are restated for inflation using a price index. Since most nonmonetary items are reported at historical cost, simply multiply the original cost by the change in the price index for the period between the acquisition date and the balance sheet date.
- It is not necessary to restate monetary assets and monetary liabilities.
- The components of shareholders' equity (other than retained earnings) are restated by applying the change in the price index from the beginning of the period or the date of contribution if later.
- Retained earnings is the plug figure that balances the balance sheet.
- In the statement of retained earnings, net income is the plug figure.
- The income statement items are restated by multiplying by the change in the price index from the date the transactions occur.
- The net purchasing power gain or loss is recognized in the income statement based on the net monetary asset or liability exposure. Holding monetary assets during inflation results in a purchasing power loss. Conversely, holding monetary liabilities during inflation results in a purchasing power gain. This figure forces the net income to be same as the net income figure that was the plug figure in the statement of retained earnings.

Let's look at an example.

EXAMPLE: Adjusting financial statements for inflation

Imagine that a foreign subsidiary was created on December 31, 2021. The LC is the currency of the country where the foreign subsidiary is located. The subsidiary's balance sheets for 2021 and 2022, and income statement for the year-ended 2022, are shown in the following:

(in LCs)	2021	2022
Cash	5,000	8,000
Supplies	25,000	25,000
Total assets	30,000	33,000
Accounts payable	20,000	20,000
Common stock	10,000	10,000
Retained earnings	0	3,000
Liabilities and equity	30,000	33,000
Revenue		15,000
Expenses		(12,000)
Net income		3,000

Also, use the following price indices:

December 31, 2021	100
December 31, 2022	150
Average for 2022	125

Prepare an inflation adjusted balance sheet and income statement for 2022.

Answer:

(in LCs)	2022	Adjustment Factor	Inflation Adjusted
Cash	8,000		8,000
Supplies	25,000	150 / 100	37,500
Total assets	33,000		45,500
Accounts payable	20,000		20,000
Common stock	10,000	150 / 100	15,000
Retained earnings	3,000		10,500
Liabilities and equity	33,000		45,500
Revenue	15,000	150 / 125	18,000
Expenses	(12,000)	150 / 125	(14,400)
Net purchasing power gain			6,900
Net income	3,000		10,500

The nonmonetary assets (supplies) and the common stock are inflation adjusted based on the change in the beginning and ending price index because the amounts were outstanding for the entire year. The revenues and expenses occurred throughout the year and are inflation adjusted using the change in the average and

ending price index. Notice the monetary assets (cash) and monetary liabilities (accounts payable) are not inflation adjusted. Instead, the purchasing power gains and losses are calculated.

In this example, 2022 was the first year—hence, there were no beginning retained earnings. Therefore, the plug figure of LC10,500 has to be net income minus dividends for the current year. Given that dividends = 0, net income has to be LC10,500. But it is not; hence, again, a plug figure (this time, in income statement) is needed to make sure that net income is equal to LC10,500. This plug (in income statement) is the net purchasing power gain or loss. Here, the gain is LC6,900.

Alternatively, inflation results in a purchasing power loss of LC2,500 on the beginning cash balance [–LC5,000 × (150 – 100) / 100] and a loss of LC600 on the increase in cash [–LC3,000 × (150 – 125) / 125]. Additionally, inflation results in a purchasing power gain of LC10,000 on the accounts payable [LC20,000 × (150 – 100) / 100]. Thus, adjusting for inflation will result in a net purchasing power gain of LC6,900 (–LC2,500 loss on beginning cash – LC600 loss on increase in cash + LC10,000 gain on accounts payable).

Notice the similarities of adjusting the financial statements for inflation and remeasuring the financial statements using the temporal method.

- Under the temporal method, the monetary assets and liabilities are exposed to changing exchange rates. Similarly, it is the monetary assets and liabilities that are exposed to the risk of inflation.
- Purchasing power gains and losses are analogous to exchange rate gains and losses when the foreign currency is depreciating. For example, if a subsidiary has net monetary liability exposure in a depreciating environment, a gain is recognized under the temporal method. Likewise, a purchasing power gain is recognized when a net monetary liability exposure is adjusted for the effects of inflation.
- The gain or loss from remeasurement is recognized in the income statement as is the net purchasing power gain or loss that results from inflation.

Under IFRS, once the subsidiary's financial statements are adjusted for inflation, the restated financial statements are translated into the parent's reporting currency using the current exchange rate.

Analyzing Foreign Currency Disclosure

Up to this point, we have examined a multinational parent with only one subsidiary. This made the analysis easier (although it sure doesn't seem that way) because we were able to link the effect of the choice of translation method to the consolidated financial statements for the specific subsidiary.

However, in practice, multinational firms may have many foreign subsidiaries, which means that the CTA on the balance sheet, the remeasurement gain or loss in the income statement, and the parent company's ratios include the effects of all of the subsidiaries. Unfortunately, disclosure requirements are limited, so it is difficult for the analyst to get information about the firm's currencies and the specific exposure to the currencies. In some cases, it is even difficult to determine what accounting method (temporal or current rate) the firm uses for its various foreign operations.

What little information that is available is found in the financial statement footnotes and the management discussion and analysis section of the annual report.

As previously discussed, management judgment is involved in deciding on the functional currency of a foreign subsidiary. Firms operating in the same industry may use different methods for translation purposes thereby making comparisons more difficult. One solution involves adding the change in the CTA to the firm's net income. Recall the change in the CTA is equal to the translation gain or loss for the period. By bringing the translation gain or loss into the income statement, comparisons with a temporal method firm are improved. The solution does not totally resolve the problem but it is a good start.

The same solution can be applied to all non-owner changes in shareholders' equity. For example, adding the unrealized gains and losses from fair value through OCI securities to net income would allow an analyst to compare the company to a firm that owns fair value through profit or loss securities.

Including the gains and losses (that are reported in shareholders' equity) in net income is known as *clean-surplus accounting* in the analytical community. The term *dirty-surplus* is used to describe gains and losses that are reported in shareholders' equity.

MODULE QUIZ 10.7

1. Barkley Corporation, a wholly-owned subsidiary of a U.S. firm, is located in a country that is experiencing hyperinflation. Barkley's functional currency and the parent's presentation currency differ. What exchange rate should be used to convert Barkley's intangible assets into U.S. dollars according to U.S. GAAP?
   A. Historical rate.
   B. Current rate.
   C. Prime rate.

2. Tiny Company, a subsidiary of Large Corporation, operates in a country that is experiencing hyperinflation. Assuming Large follows IFRS, which of the following exposures will result in a net purchasing power gain?
   A. Nonmonetary assets and current liabilities.
   B. Monetary liabilities.
   C. Nonmonetary assets and nonmonetary liabilities.

MODULE 10.8: TAX, SALES GROWTH, FINANCIAL RESULTS

Video covering this content is available online.

LOS 10.h: Describe how multinational operations affect a company's effective tax rate.

Tax Implications of Multinational Operations

Multinational corporations are subject to multiple tax jurisdictions with differing laws and tax rates. In the United States, for example, the tax code allows a credit for foreign taxes paid by U.S. companies, effectively taxing the company at the U.S. tax rate.

Effective tax rate is the tax expense in the income statement divided by pretax profit. **Statutory tax rate** is provided by the tax code of the home country. Accounting standards require companies to provide a reconciliation between the effective tax rate and the statutory tax rate. This reconciliation disclosure can be used by the analyst to project future tax expense.

Changes in effective tax rate on account of foreign operations can be due to:

- Changes in the mix of profits from different countries (with varying tax rates).
- Changes in the tax rates.

EXAMPLE: Analysis of reconciliation of effective tax rate

The reconciliation between the statutory tax rate and effective tax rate for two companies (Amco and Bianco) for 2024 is provided.

Item	Amco	Bianco
Statutory tax rate	25.0%	30.0%
Effect of disallowed expenses	3.0%	1.0%
Effect of exempt income	(2.0%)	(0.5%)
Effect of taxes in foreign jurisdictions	3.4%	(1.2%)
Effect of recognition of prior losses	(0.8%)	(3.0%)
Effective tax rate	28.6%	26.3%

1. Which company benefited from the lowering of tax expense on account of its foreign operations?
2. If the mix of foreign operations for both companies is expected to increase over time, which company is most likely to report lower effective tax rate in the future? Assume that the statutory tax rates do not change.

Answer:

1. The effect of foreign operations resulted in an increase in effective tax rate for Amco by 3.4% and a decrease for Bianco by 1.2%. Hence, Bianco benefited from its foreign operations in reducing its effective tax rate and tax expense.
2. If the mix of foreign operations increases, assuming no change to the tax rate, Bianco would see its effective tax rate decrease further and Amco would see its effective tax rate increase.

LOS 10.i: Explain how changes in the components of sales affect the sustainability of sales growth.

Financial statements for multinational companies report sales denominated in the reporting currency even though the actual sales may have occurred in many different currencies. Changes in currency values affect the value of translated sales. Sales growth owing to an increase in volumes or prices is considered more sustainable than sales growth due to appreciation of the foreign currencies in which sales were made.

Organic growth in sales is defined as growth in sales excluding the effects of acquisitions/divestitures and currency effects. Companies often report foreign currency effects on sales in the MD&A section of their annual reports. This information can be used by analysts to improve the accuracy of their forecasts of future sales.

EXAMPLE: Analysis of sales components

BCN, Inc., an American multinational, reported the following in its MD&A for 2024:

Region	% Change in Sales	Impact of Currency	% Change in Sales Excluding Currency Effect
North America ex-U.S.	3%	–2%	5%
Asia (incl. Japan)	2%	0%	2%
Europe	2%	3%	–1%

Comment on the growth rates observed in different markets for BCN.

Answer:

BCN experienced highest growth in North America ex-U.S. Excluding the loss in translation (due to depreciation of the foreign currency in which sales are denominated) for North America ex-U.S., the revenue growth would have been 5% due to an increase in volumes and/or price.

In Europe, the revenue growth is 2%, but that was due to appreciation of the currencies in which sales occurred. Excluding the currency effect, sales were down in Europe by 1%.

In Asia, the revenue growth of 2% is solely due to price/volume changes.

LOS 10.j: Analyze how currency fluctuations potentially affect financial results, given a company's countries of operation.

Major Sources of Foreign Exchange Risk

Foreign exchange risks reflect the effect of changes in currency values on the assets and liabilities of a business as well as on future sales. We discussed transaction and translation exposure earlier in this topic review and the impact of each on reported profits.

Disclosures as part of MD&A may include the impact of currency value changes on profits. Such disclosures help an analyst estimate the potential impact of currency value changes on a company's earnings going forward. If such information is not provided, analysts can conduct their own sensitivity analysis to further improve their forecasts and understand risks faced by the company. Analysts also should inquire about any hedging tools employed by the company to manage its currency exposures.

EXAMPLE: Walmart's foreign exchange risk management practice

An excerpt from Walmart's 2015 Annual Report:

> We are exposed to fluctuations in foreign currency exchange rates as a result of our net investments and operations in countries other than the U.S. For fiscal 2015, movements in currency exchange rates and the related impact on the translation of the balance sheets of the Company's subsidiaries in Canada, the United Kingdom, Japan, Mexico, and Chile were the primary cause of the $3.6 billion net loss in the currency translation and other category of accumulated other comprehensive income (loss). We hedge a portion of our foreign currency risk by entering into currency swaps and designating certain foreign currency–denominated long-term debt as net investment hedges.
>
> We hold currency swaps to hedge the currency exchange component of our net investments and also to hedge the currency exchange rate fluctuation exposure associated with the forecasted payments of principal and interest of non-U.S.-denominated debt. The aggregate fair value of these swaps was in a liability position of $110 million at January 31, 2015, and in an asset position of $550 million at January 31, 2014. The change in the fair value of these swaps was due to fluctuations in currency exchange rates, primarily the strengthening of the U.S. dollar relative to other currencies in the latter half of fiscal 2015. A hypothetical 10% increase or decrease in the currency exchange rates underlying these swaps from the market rate at January 31, 2015, would have resulted in a loss or gain in the value of the swaps of $435 million. A hypothetical 10% change in interest rates underlying these swaps from the market rates in effect at January 31, 2015, would have resulted in a loss or gain in value of the swaps of $20 million.

MODULE QUIZ 10.8

1. Suparna, Inc., is a U.S.-based multinational engineering company specializing in advanced water management solutions. Outside the United States, Suparna has extensive operations in Asia-Pacific, Europe, and Latin America.

   The following information is collected from the MD&A section of Suparna's annual report for 2022:

   Reconciliation of the Statutory Tax Rate

Item	Suparna
Statutory tax rate	35.0%
Effect of disallowed provisions	2.0%
Effect of taxes in foreign jurisdictions	(1.9%)
Other	0.3%
Effective tax rate	35.4%

   Due to its foreign operations, Suparna's effective tax rate was *most likely*:

   A. higher than the prior year's effective tax rate.
   B. lower than its statutory tax rate.
   C. higher than the statutory tax rate.

Use the following information to answer Questions 2 and 3.

IBM's 2012 annual report includes the following excerpts:

Foreign currency fluctuations often drive operational responses that mitigate the simple mechanical translation of earnings. During periods of sustained movements in currency, the marketplace and competition adjust to the changing rates. For example, when pricing offerings in the marketplace, the company may use some of the advantage from a weakening U.S. dollar to improve its position competitively, and price more aggressively to win the business, essentially passing on a portion of the currency advantage to its customers. Competition will frequently take the same action. Consequently, the company believes that some of the currency based changes in cost impact the prices charged to clients. The company also maintains currency hedging programs for cash management purposes which mitigate, but do not eliminate, the volatility of currency impacts on the company's financial results. The company translates revenue, cost, and expense in its non-U.S. operations at current exchange rates in the reported period.

References to "adjusted for currency" or "constant currency" reflect adjustments based upon a simple constant currency mathematical translation of local currency results using the comparable prior period's currency conversion rate. However, this constant currency methodology that the company utilizes to disclose this information does not incorporate any operational actions that management may take in reaction to fluctuating currency rates. Based on the currency rate movements in 2012, total revenue decreased 2.3 percent as reported and was flat at constant currency versus 2011. On a pre-tax income basis, these translation impacts offset by the net impact of hedging activities resulted in a theoretical maximum (assuming no pricing or sourcing actions) decrease of approximately $100 million in 2012. The same mathematical exercise resulted in an increase of approximately $600 million in 2011. The company views these amounts as a theoretical maximum impact to its as-reported financial results. Considering the operational responses mentioned previously, movements of exchange rates, and the nature and timing of hedging instruments, it is difficult to predict future currency impacts on any particular period, but the company believes it could be substantially less than the theoretical maximum given the competitive pressure in the marketplace.

2. IBM's 2012 revenue growth excluding the impact of currency rate movements was *most likely*:
   A. higher than as reported in the financial statements.
   B. lower than as reported in the financial statements.
   C. the same as reported in the financial statements.
3. The *most likely* impact of currency fluctuations on IBM's 2011 pre-tax earnings net of hedging activities is that pre-tax earnings were:
   A. lower by $600 million.
   B. lower by $100 million.
   C. higher by $600 million.

KEY CONCEPTS

LOS 10.a

The local currency is the currency of the country to which it refers.

The functional currency, determined by management, is the currency of the primary economic environment in which the entity operates. The functional currency is usually the currency in which the entity generates and expends cash. It can be the local currency or some other currency.

The presentation (reporting) currency is the currency in which the entity prepares its financial statements.

LOS 10.b

Foreign currency–denominated transactions, including sales, are measured in the presentation (reporting) currency at the spot rate on the transaction date. If the exchange rate changes, gain or loss is recognized on the settlement date. If the balance sheet date occurs before the transaction is settled, the gain or loss is based on the exchange rate on the balance sheet date. Once the transaction is settled, additional gain or loss is recognized if the exchange rate changes after the balance sheet date.

The standards do not provide guidance as to where such gains/losses are recognized and, hence, reduce comparability of financial statements.

LOS 10.c

Revenues are translated at average exchange rate under both the temporal method and under the current rate method.

LOS 10.d

If the functional currency and the parent's presentation currency differ, the current rate method is used to translate the subsidiary's financial statements. This usually occurs when the subsidiary is relatively independent of the parent. Under the current rate method, all assets and liabilities are translated at the current rate; common stock and dividends paid at the historic rate; and revenues and expenses at the average rate. Translation gains and losses are reported in equity in the CTA account. The CTA is a plug figure that makes the accounting equation balance.

If the functional currency is the same as the parent's presentation currency, the temporal method is used to remeasure the subsidiary's financial statements. This usually occurs when the subsidiary is well integrated with the parent. Under the temporal method:

- Monetary assets and liabilities are remeasured at the current rate.
- Nonmonetary assets and liabilities are remeasured at the historical rate.
- Common stock and dividends paid are remeasured at the historical rate.
- COGS, depreciation, and amortization expense are remeasured at the historical rate.
- All other revenues and expenses are remeasured at the average rate.
- Remeasurement gains and losses are reported in the income statement.

LOS 10.e

Under the current rate method, exposure is defined as the net asset position (assets – liabilities) of the subsidiary. Under the temporal method, exposure is defined as the net monetary asset or net monetary liability position of the subsidiary. When assets are exposed to a depreciating foreign currency, a loss results. When liabilities are exposed to a depreciating foreign currency, a gain results.

The local currency trends and relationships of pure balance sheet and income statement ratios are preserved under the current rate method. When compared to the local currency mixed ratios will differ after translation.

LOS 10.f

In comparing the ratio effects of the temporal method and current rate method, it is necessary to:

- Determine whether the local currency is appreciating or depreciating.
- Determine which rate (historical rate, average rate, or current rate) is used to convert the numerator under both methods and analyze the effects on the ratio.
- Determine which rate (historical rate, average rate, or current rate) is used to convert the denominator under both methods and analyze the effects on the ratio.
- Determine whether the ratio will increase, decrease, or stay the same based on the direction of change in the numerator and the denominator.

LOS 10.g

A hyperinflationary environment is one where cumulative inflation exceeds 100% over a 3-year period (more than 26% annual inflation). Under U.S. GAAP, the temporal method is required when the subsidiary is operating in a hyperinflationary environment. Under IFRS, the foreign currency financial statements are first restated for inflation and then translated using the current exchange rate. Restating for inflation results in recognition of the net purchasing power gain or loss which is based on the net monetary asset or liability of the subsidiary.

LOS 10.h

Earnings of multinational companies are subject to multiple tax jurisdictions; hence, the statutory tax rate often differs from the effective tax rate. Expected changes in the mix of profits from different countries can be used by the analyst to forecast future tax expenses for the company.

LOS 10.i

Revenues of multinational companies may be denominated in different currencies but are translated into the reporting currency for the purpose of preparing financial statements. Revenue growth can occur due to price or volume changes and due to changes in exchange rates. Analysts separate the two because the growth in revenues due to changes in price or volume is considered more sustainable.

LOS 10.j

Foreign exchange risks include the impact of changes in currency values on assets and liabilities of a business, as well as on future sales. Disclosures may enable an analyst to evaluate the impact of changes in currency values on a company's business.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 10.1

1. **A** This is an indirect quotation from the perspective of the U.S. firm. Since the peso depreciated from the sale date to the end of 2022, a loss is recognized in 2022. However, the peso appreciated from the end of 2022 to the payment date on January 20, 2023. Thus, a gain is recognized in 2023. (LOS 10.b)

Module Quiz 10.2

1. **A** If the functional currency is the local currency, then the functional currency and the parent's presentation currency are different. In this case, the current rate method is used. (LOS 10.a)

2. **C** As a multinational firm, the location of Mazeppa's head office would most likely determine the currency to be used to prepare its final, consolidated financial statements. Since Mazeppa's is located in Canada, the presentation currency is likely the Canadian dollar. Based on the facts, the local currency is the euro and the functional currency is the U.S. dollar. (LOS 10.a)

Module Quiz 10.3, 10.4

1. **A** Monetary asset accounts of a foreign subsidiary are translated using the current rate under the temporal method. (Module 10.3, LOS 10.d)

2. **C** Subsidiaries whose operations are well integrated with the parent will generally use the parent's currency as the functional currency. Remeasurement from the local currency to the functional currency is done with the temporal method. (Module 10.3, LOS 10.a)

3. **B** If the functional currency is the same as the parent's presentation currency, the temporal method is used. Under the temporal method, the subsidiary's net monetary asset or net monetary liability position is exposed to changing exchange rates. (Module 10.3, LOS 10.e)

4. **A** Since the functional currency (£) differs from the parent's presentation currency ($), the current rate method is used. Under the current rate method, net income is translated at the average rate. Dividends are translated at the historical rate on the date the dividends were declared.

   $(\$1.55/£ \times £400) - (\$1.60/£ \times £100) = \$460$

   (Module 10.4, LOS 10.c)

5. **A** The current rate method will result in higher gross profit in a depreciating environment. Under the temporal method, the subsidiary's COGS will be remeasured at the historical rate. This means that COGS will be relatively less affected by the depreciating currency. Sales, however, will be affected by the depreciating currency. Thus, gross profit margin will be lower. Under the current rate method, both sales and COGS will be affected by the depreciating currency. (Module 10.4, LOS 10.d)

6. **A** None of the situations will result in a gain. When total assets equal total liabilities, net assets are zero; thus, no gain or loss is recognized as a result of changing exchange rates. The other situations would result in a translation loss. (LOS 10.c)

7. **B** Fixed assets are the only nonmonetary assets. Deferred revenue is the only nonmonetary liability. Equity is not relevant to this question. (LOS 10.c)

8. **A** Reducing equity and increasing peso liabilities would be most effective in reducing currency risk to the parent. The other options leave the net exposure unchanged since there is a one-for-one reduction in both monetary assets and monetary liabilities. (LOS 10.c)

Module Quiz 10.5, 10.6

1. **B** All pure income statement and balance sheet ratios are unaffected by the application of the current rate method. What we mean by "pure" is that the components of the ratio all come from the balance sheet, or the components of the ratio all come from the income statement. Return on assets is a "mixed ratio" because assets come from the balance sheet and are translated at the current rate and net income is translated at the average rate. Unless the exchange rate doesn't change during the year, the two inputs will be translated at different rates, and the local currency value of the ratio will change when translated into the reporting currency. The other ratios will *always* be the same using the current rate method. (Module 10.6, LOS 10.f)

2. **C** If Vibrant operates independently from FlexCo, the functional currency is the loca and the current rate method applies.

   The first step is to compute the ending balance of retained earnings of $555 [$383.3 beginning retained earnings + (LC400 net income × $0.4292)].

   Next, translate assets, liabilities, and common stock. Assets are $1,340 (LC3350 × 0.4), liabilities are $700 (LC1,750 × 0.4), and common stock is $200 (LC400 × 0.5).

   Finally, make the accounting equation balance with the CTA of –$115 ($1,340 assets – $700 liabilities – $200 common stock – $555 ending retained earnings). (Module 10.2, LOS 10.c)

3. **B** It might look like you have to construct the translated financial statements to answer this question, but you actually don't have to if you remember the relationships between the original subsidiary ratios measured in the local currency and the translated ratios measured in U.S. dollars.

   Pure income statement ratios like gross profit margin will be the same. The gross profit margin measured in the local currency is LC1,700 gross profit / LC5,500 revenue = 30.9%; the gross margin measured in U.S. dollars must also be 30.9%.

   Mixed ratios like ROA will be different. In this case, since the local currency is depreciating, the translated ROA will be greater than the original ROA. This occurs because net income (in the numerator) is translated at the higher average rate, and ending total assets (in the denominator) will be translated at the lower current rate. ROA measured in the local currency is LC400 net income / LC3,350 ending total assets = 11.9%. The ROA measured in U.S. dollars must be greater than 11.9%, which means 12.8% is the only possible answer.

   If you did go through the process of calculating the translated ratios, you should have arrived at these numbers:

$$\text{translated gross margin} = \frac{1{,}700 \times 0.4292}{5{,}500 \times 0.4292} = \frac{\$729.60}{2{,}360.60} = 30.9\%$$

$$\text{translated ROA} = \frac{400 \times 0.4292}{3{,}350 \times 0.40} = \frac{\$171.70}{\$1{,}340} = 12.8\%$$

   (Module 10.6, LOS 10.f)

4. **A** The local currency is depreciating, so the gross profit margin remeasured in U.S. dollars using the temporal method will be lower than the gross profit margin translated into U.S. dollars using the current rate method. This is because COGS will be measured at the higher historical rate under the temporal method and at the lower average rate under the current rate method. With temporal method COGS greater than current rate COGS, temporal method gross margin will be less than current rate method gross margin. Current rate gross margin is the same as in the original currency (from the previous problem), which means the only possible answer is "lower." (Module 10.6, LOS 10.f)

5. **C** Accounts receivable turnover will be the same under both methods. The numerator (sales) is converted at the average rate under both methods. The denominator (accounts receivable) is converted at the current rate under both methods. (Module 10.6, LOS 10.f)

6. **B** Gross profit margin and interest coverage are pure income statement ratios that will not change. The quick ratio is a pure balance sheet ratio that will not change. Return on assets is a mixed ratio (income statement item in the numerator and balance sheet item in the denominator), so it will change as long as the average and current exchange rates are different. Given that the dollar is depreciating against the yen, the current and average rates are likely to be different.

   Therefore, Haskell is correct in his analysis of three of the four ratios: gross profit margin, interest coverage, and the quick ratio. (Module 10.6, LOS 10.f)

Module Quiz 10.7

1. **A** In an inflationary environment, the temporal method is required under U.S. GAAP, even if the functional currency and the parent's presentation currency differ. Under the temporal method, inventory, fixed assets, and intangible assets are remeasured at the historical rate; that is, the actual rate when the assets were purchased. (LOS 10.g)

2. **B** Nonmonetary items are not exposed to purchasing power gains or losses during inflation. Monetary assets will result in purchasing power losses, and monetary liabilities will result in purchasing power gains. (LOS 10.g)

Module Quiz 10.8

1. **B** Suparna's effective tax rate was lowered by 1.9% due to the effect of taxes in foreign jurisdictions. (LOS 10.h)

2. **A** Per the annual report, total revenue decreased 2.3% as reported and was flat at constant currency versus 2011. Hence, the constant currency growth rate was higher than the reported growth rate. (LOS 10.i)

3. **C** Pre-tax earnings offset by the net impact of hedging activities decreased approximately $100 million in 2012 and increased by approximately $600 million due to currency translation effects. (LOS 10.j)

READING 11

ANALYSIS OF FINANCIAL INSTITUTIONS

EXAM FOCUS

This topic review covers financial analysis techniques that are specific to banks and insurance companies. Know the CAMELS framework of analysis for a bank (this is the main focus of the topic review). Also know and be able to interpret the key ratios in analyzing both P&C and L&H insurance companies.

MODULE 11.1: FINANCIAL INSTITUTIONS

Video covering this content is available online.

LOS 11.a: Describe how financial institutions differ from other companies.

Financial institutions provide a broad range of products and services, including serving as an intermediary between providers and users of capital, asset and risk management, and transaction executions.

Financial institutions differ from other companies as follows:

1. Systemic importance. Financial institutions are necessary for the smooth functioning and overall health of the economy. As an intermediary between providers and users of capital, there are often inter-linkages between financial institutions. These inter-dependencies introduce a system-wide risk of failure when one of the member institutions fails—*the contagion effect.* As a deposit-taking institution, banks are especially prone to the risk of a bank run. To avoid financial contagion, bank deposits are often insured up to a certain limit by the government.
2. Regulated. Given the significance of financial institutions, they are often highly regulated. Regulations include minimum capital requirements, minimum liquidity requirements, and limits on risk-taking.
3. Assets. The assets of financial institutions tend to be financial assets such as loans and securities that are usually reported at fair value. This contrasts with other companies that primarily own tangible assets reported at depreciated historic cost.

LOS 11.b: Describe key aspects of financial regulations of financial institutions.

Due to global inter-linkages between financial institutions, financial contagion may spread beyond a single economy. To manage this global systemic risk, global and regional regulatory bodies coordinate rules and oversight. Uniformity in standards also seeks to prevent regulatory arbitrage.

One of the most important global organizations is the Basel Committee on Banking Supervision, a standing committee of the Bank of International Settlements. The Basel committee develops the regulatory framework for banks (currently **Basel III**) with the objective of increasing the banking sector's ability to absorb economic and financial shocks.

The three pillars of the Basel III framework are the maintenance of minimum levels of capital, liquidity, and stable funding.

- Minimum required capital for a bank is based on the risk of the bank's assets. The riskier a bank's assets are, the higher its required capital.
- Basel III specifies that a bank should hold enough liquid assets to meet demands under a 30-day liquidity stress scenario.
- The Basel III framework requires stable funding relative to a bank's liquidity needs over a one-year time horizon. Stability in funding is proportional to the tenor of the bank's deposits; longer-term deposits are more stable than shorter-term deposits. Stability also depends on the type of deposit (e.g., consumer deposits are more stable than interbank market funds).

Other global organizations that coordinate regulations include the:

1. Financial Stability Board, which seeks to coordinate actions of participating jurisdictions in identifying and managing systemic risks.
2. International Association of Deposit Insurers, which seeks to improve the effectiveness of deposit insurance systems.
3. International Organization of Securities Commissions (IOSCO), which seeks to promote fair and efficient security markets.
4. International Association of Insurance Supervisors (IAIS), which seeks to improve supervision of the insurance industry.

MODULE QUIZ 11.1

1. Which of the following is *least likely* to be recommended by the Basel III framework?
   A. Minimum percentage of risk-weighted assets that needs to be held as capital.
   B. Rate spread earned on assets over the deposit crediting rate should be positive.
   C. The minimum required stable funding level to cover one-year time-horizon liquidity needs.
2. Which international organization strives to maintain fair and efficient security markets?
   A. IOSCO.
   B. Basel III Committee.
   C. IAIS.

MODULE 11.2: CAPITAL ADEQUACY AND ASSET QUALITY

LOS 11.c: Explain the CAMELS (capital adequacy, asset quality, management, earnings, liquidity, and sensitivity) approach to analyzing a bank, including key ratios and its limitations.

Video covering this content is available online.

The **CAMELS** approach is a six-factor analysis of a bank, including capital adequacy, asset quality, management, earnings, liquidity, and sensitivity.

Capital Adequacy

To prevent financial insolvency, a bank must maintain adequate capital to sustain business losses. Capital adequacy is based on **risk-weighted assets (RWAs)**; more risky assets require a higher level of capital. Risk-weighting is specified by individual regulators.

EXAMPLE: Risk-weighted assets

Mega Bank is regulated by the Central Bank of Zima. Per the central bank rules, the following risk weightings are applied to the bank's assets.

Asset Type	Risk Weight
Cash and Central Bank deposits	0%
Corporate loans—performing	100%
Corporate loans—nonperforming	200%
Consumer real estate loans	90%

An Analysis of Mega Bank's balance sheet for 20X8 reveals the following.

Asset Type	Amount ('000)
Cash and Central Bank deposits	$120
Corporate loans—performing	$1,130
Corporate loans—nonperforming	$920
Consumer real estate loans	$2,450
Total assets	$4,620

Calculate Mega Bank's RWA.

Answer:

Asset Type	Risk Weight	Amount ('000)	RWA ('000)
Cash and Central Bank deposits	0%	$120	$0
Corporate loans—performing	100%	$1,130	$1,130
Corporate loans—nonperforming	200%	$920	$1,840
Consumer real estate loans	90%	$2,450	$2,205
Total risk-weighted assets			$5,175

Basel III defines a bank's capital in a tiered, hierarchical approach:

1. Tier 1 capital:
   a. **Common Equity Tier 1 capital** (the most important component): Common stock, additional paid-in capital, retained earnings, and OCI less intangibles and deferred tax assets.
   b. **Other Tier 1 capital**: subordinated instruments with no specified maturity and no contractual dividends (e.g., preferred stock with discretionary dividends).
2. Tier 2 capital: Subordinated instruments with *original* (i.e., when issued) maturity of more than five years.

Tier 1 capital plus Tier 2 capital makes up the total capital of a bank.

Again, individual jurisdictions specify the minimum capital requirements. Basel III guidelines specify a minimum Common Equity Tier 1 capital of 4.5% of RWA, minimum total Tier 1 capital of 6% of RWA, and minimum total capital of 8% of RWA.

EXAMPLE: Capital position

Mega Bank's RWA for 20X7 and 20X8 were $4,700,000 and $5,175,000, respectively. An analysis of bank's capital for the two years reveals the following information.

Capital Type	Amount ('000)	
	20X7	20X8
Common Equity Tier 1	$200	$190
Subordinated debt, no maturity, no dividends/interest	$85	$95
Subordinated debt, maturity 5+ years	$110	$120

1. Determine the Common Equity Tier 1 capital ratio, Tier 1 capital ratio and total capital ratio for both years.
2. Comment on capital adequacy for Mega Bank.

Answer:

1. Mega Bank's capital ratios as a percentage of its RWA for the two years are shown in the following table.

Capital Type	% of RWA	
	20X7	20X8
Common Equity Tier 1	4.26%	3.67%
Subordinated debt, no maturity, no dividends/interest	1.81%	1.84%
Subordinated debt, maturity 5+ years	2.34%	2.32%
Total capital	8.40%	7.83%

   total Tier 1 ratio for 20X7 = 4.26% + 1.81% = 6.07%

   total Tier 1 ratio for 20X8 = 3.67% + 1.84% = 5.51%

2. Mega Bank's Common Equity Tier 1 ratio is less than Basel III guideline of 4.5%. Furthermore, it has worsened from 20X7 to 20X8. Given that this is the most important component of capital, it should be a cause for concern for the bank's regulators. The bank's total Tier 1 ratio was above the Basel III guideline of 6% in 20X7, but it has fallen below the guideline for 20X8. The total capital ratio is above the Basel III guideline of 8% for 20X7 but again has fallen short in 20X8.

Asset Quality

In a broad context, asset quality derives from the processes of generating assets, managing them, and controlling overall risk. Evaluation of asset quality includes analysis of current and potential credit risk associated with the bank's assets.

Bank assets include loans (the largest component) and investments in securities. While loans are generally carried on the balance sheet at amortized cost (net of allowances), the accounting treatment for investments in securities differs between U.S. GAAP and IFRS. Under IFRS 9, depending on the business model, debt securities may be carried at amortized cost, fair value through OCI, or fair value through profit or loss. Equity securities are always carried at fair value (either through OCI or through profit or loss). Under U.S. GAAP, equity investments are carried at fair value through profit or loss, while debt securities can be carried at amortized cost (held-to-maturity classification), fair value through OCI (available for sale classification) or fair value through profit or loss (trading classification).

It helps to be familiar with a couple of terms used in bank balance sheets (even though terms used can vary quite a bit among banks):

1. *Reverse repurchase agreements* are bank loans advanced under a repurchase agreement (i.e., against a high-quality collateral).
2. *Assets held for sale* pertain to discontinued operations whose value in the balance sheet assumes disposition (as opposed to long-term holding).

Credit Risk Analysis

The nature of a bank's business entails a large exposure to credit risk. Credit risk is present in debt securities that the bank invests in, loans the bank makes, as well as in the bank's off-balance-sheet liabilities (e.g., unused lines of credit, or letters of

credit). Analyzing the credit quality of a bank's assets can provide an analyst key insights into the bank's solvency and future profitability.

EXAMPLE: Credit analysis

The following table provides information for loans held by Small Bank at the end of 20X8 and 20X7.

Loans	20X8	20X7
Very strong credit quality	661	596
Strong credit quality	882	894
Good credit quality	1,488	1,292
Satisfactory credit quality	606	696
Sub-standard credit quality	992	894
Past due but not yet impaired	276	199
Impaired	441	298
Seriously impaired	165	99
Total	5,511	4,968

1. It appears that from 20X7 to 20X8, the credit quality of Small Bank's loan assets has *most likely*:

   A. worsened.

   B. improved.

   C. remained essentially the same.

2. The proportion of loans at the end of 20X8 that are either past due or impaired is *closest* to:

   A. 12%.

   B. 16%.

   C. 19%.

Answers:

The following table summarizes the percentage of loans in each category for both years.

Loans	20X8	20X7	20X8	20X7
Very strong credit quality	661	596	12%	12%
Strong credit quality	882	894	16%	18%
Good credit quality	1,488	1,292	27%	26%
Satisfactory credit quality	606	696	11%	14%
Sub-standard credit quality	992	894	18%	18%
Past due but not yet impaired	276	199	5%	4%
Impaired	441	298	8%	6%
Seriously impaired	165	99	3%	2%
Total	5,511	4,968	100%	100%

1. **A** It appears that proportion of better quality loans (at least satisfactory credit quality) has declined while that of poor credit quality (past due, impaired and seriously impaired) has increased.
2. **B** The total of loans that were either past due or impaired (including seriously impaired) at the end of 20X8 = 5% + 8% + 3% = 16%. Though not asked for in this question, the total for 20X7 was 4% + 6% + 2% = 12%.

Loan Loss Provisions

For a bank, loans represent a large portion of its total assets. Accordingly, the credit quality of loans and loss provisions are critical in evaluating the bank's financial position and performance. **Allowance for loan losses** is a contra asset account to loans and is the result of **provision for loan losses,** an expense subject to management discretion. Analysts need to evaluate the bank's policy of setting aside adequate provisions relative to actual loan performance. Actual losses (net of recoveries) are then written off against these provisions.

Several ratios are useful in this evaluation:

1. Ratio of allowance for loan losses to nonperforming loans.
2. Ratio of allowance for loan losses to net loan charge-offs.
3. Ratio of provision for loan losses to net loan charge-offs.

Each ratio compares a discretionary metric (i.e., allowance or provision) to a more objective measure.

EXAMPLE: Loan loss provisions

The following information is collected for Mega Bank.

Loans	20X8	20X7
Total loans	5,511	4,968
Nonperforming loans	606	397
Provisions for loan losses	122	108
Allowance for loan losses	338	404
Write-offs	202	178
Recoveries	(14)	(19)
Net write-offs	188	159

Calculate the appropriate ratios to evaluate the adequacy of loan loss reserves as well as provisions for loan losses for Mega Bank.

Answer:

Ratios		
Allowance for loan losses to nonperforming loans	0.56	1.02
Allowance for loan losses to net loan charge-offs	1.80	2.54
Provision for loan losses to net loan charge-offs	0.65	0.68

The allowance for loan losses to nonperforming loans ratio has declined from 1.02 to 0.56, indicating that the bank has not made sufficient provisions for loan losses (i.e., possible aggressive accounting).

This aggressive accounting is also evidenced by the provision for loan losses to net loan charge-offs ratio, which is also declining from 0.68 to 0.65. In other words, for 20X8, the expense recorded for loan losses was only 65% of actual losses during that year.

The allowance for loan losses to net loan charge-offs ratio has decreased for 20X8, indicating that the rate of increase in allowance for loan losses is significantly below the growth rate of actual write-offs.

MODULE QUIZ 11.2

1. The *most* important source of capital for a bank is:
   A. Tier 1 capital.
   B. Common Equity Tier 1 capital.
   C. total capital.

2. According to Basel III guidelines, total Tier 1 capital must be at *least*:
   A. 4.5% of risk-weighted assets.
   B. 6% of risk-weighted assets.
   C. 8% of risk-weighted assets.

3. Securities issued by a bank that are subordinate to deposits and other debt obligations and without specified maturity or contractual payments are *most likely* part of:
   A. Tier 1 capital.
   B. Common Equity Tier 1 capital.
   C. Tier 2 capital.

4. Under current accounting standards, equity securities in a bank's portfolio are *most likely* shown on the balance sheet at:

A. fair value.
B. fair value under US GAAP and fair value or amortized cost under IFRS.
C. fair value under IFRS and fair value or amortized cost under US GAAP.

MODULE 11.3: MANAGEMENT CAPABILITIES AND EARNINGS QUALITY

Video covering this content is available online.

Management Capabilities

The quality of a bank's management influences the success with which the bank is able to exploit profitable opportunities while also controlling the level of risks taken. Risk management and control is critical for banks. This includes identification and control of different types of risk (e.g., credit, market, operating, legal, and other). A bank's internal control and governance systems (including an independent board) ensure that managers do not take undue risks or engage in self-serving behavior. The board also sets appropriate levels of maximum allowable risk for the managers. Internal control systems should continuously measure and monitor the myriad risks that the bank may be exposed to.

Earnings

Earnings are considered high quality if they are adequate (providing a rate of return above the cost of capital) as well as sustainable. Ideally, the trend in earnings should be positive and the underlying accounting estimates (used to arrive at reported earnings) should be unbiased. Finally, earnings should ideally be derived from recurring sources.

A major source of earnings of a bank is from investment in securities. Estimates used in the valuation of these securities may lead to biased earnings. Both IFRS and U.S. GAAP use the concept of a *fair value hierarchy* based on types of inputs used in determining the fair value of financial assets.

Level 1 inputs are quoted market prices of identical assets. Level 2 inputs are observable but not quoted prices of identical assets. Examples of Level 2 inputs include quoted prices of similar assets, quoted prices of identical assets in non-active markets, observable interest rates, spreads, and implied volatility. Level 3 inputs are non-observable and hence subjective. For example, fair value may be derived from models or based on estimated future cash flows discounted at an estimated discount rate.

In practice, banks often use the fair value hierarchy to label their assets (e.g., Level 2 securities are those whose value was determined using Level 2 inputs) or to label their valuation methodology (e.g., Level 2 methodology is defined as one that uses Level 2 inputs).

Similar to other companies, other subjective estimates (e.g., goodwill impairment, recognition of deferred tax assets, and recognition of contingent liabilities) affects the quality of a bank's earnings.

For a typical bank, major sources of earnings are (1) net interest income, (2) service income, and (3) trading income. Of these, trading income is the most volatile year-

to-year, and, hence, on a relative basis, banks with proportionally higher net interest income and service income would have more sustainable earnings.

MODULE QUIZ 11.3

1. Regarding inputs into valuation of securities, Level 1 inputs are *most accurately* described as:
   A. quoted market prices of identical securities.
   B. quoted market prices of similar securities.
   C. inputs derived from market prices.
2. Which of the following sources of earnings for a bank is *most* volatile?
   A. Service income.
   B. Net interest income.
   C. Trading income.

MODULE 11.4: LIQUIDITY POSITION AND SENSITIVITY TO MARKET RISK

Video covering this content is available online.

Liquidity Position

Having adequate liquidity is critical for a bank. The Basel III framework introduced two minimum liquidity standards:

1. **Liquidity coverage ratio (LCR)** is calculated as the value of a bank's highly liquid assets divided by its expected cash outflows.

$$\text{LCR} = \frac{\text{highly liquid assets}}{\text{expected cash outflows}}$$

   Highly liquid assets are those that are easily convertible into cash, while expected cash flows are the estimated one-month liquidity needs *in a stress scenario.* The standards recommend a minimum LCR of 100%.

2. **Net stable funding ratio (NSFR)** is the percentage of required stable funding that is sourced from *available* stable funding.

$$\text{NSFR} = \frac{\text{available stable funding}}{\text{required stable funding}}$$

   Available stable funding is a function of the composition and maturity distribution of a bank's funding sources (i.e., capital, deposits, and other liabilities). Required stable funding is a function of the composition and maturity distribution of the bank's asset base.

   Available stable funding (ASF) is determined based on an ASF factor that is assigned to each funding source, as shown in Figure 11.1.

Figure 11.1: Available Stable Funding Components

Funding Component	ASF Factor
Regulatory capital minus Tier 2 instruments maturing in a year Other capital instruments and liabilities with maturity > 1 year	100%
Stable demand deposits and term deposits (maturity < 1 year) from retail and small business customers	95%
Less-stable demand deposits and term deposits (maturity < 1 year) from retail and small business customers	90%
Funding from nonfinancial corporates (maturity < 1 year), operational deposits, funding from sovereigns, public sector (maturity < 1 year), multilateral and national development banks	50%
All other liabilities	0%

NSFR relates the liquidity needs of a bank's assets to the liquidity provided by the bank's liabilities (i.e., funding sources). Longer-dated liabilities are considered more stable and hence would be suitable to fund assets with longer maturities (e.g., long-term loans). Deposits from retail and small business clients are considered more stable than deposits from corporate clients. The standards recommend a minimum NSFR of 100%.

Other liquidity monitoring metrics recommended by Basel III include *concentration of funding* and *maturity mismatch*. Relatively concentrated funding indicates a bank's reliance on relatively few funding sources. This lack of diversification may pose a problem when the sources withdraw funding, resulting in heightened liquidity risk for the bank. Maturity mismatch occurs when the asset maturities differ meaningfully from maturity of the liabilities (funding sources). The higher the mismatch, the higher the liquidity risk for the bank. For example, sometimes banks try to maximize the spread between lending and borrowing rates by borrowing at low, short-term rates and lending at higher, longer-term rates. This mismatch in assets and liabilities may expose the bank to a liquidity crunch if it is unable to roll over its borrowings at reasonable rates.

EXAMPLE: Liquidity analysis

The following information is collected for Mega Bank.

Description	20X9	20X8
Highly liquid assets	1,250	1,100
Average monthly withdrawals	900	750
Expected monthly outflows in a stress scenario	1,300	1,050

Describe the liquidity risk faced by Mega Bank.

Answer:

LCR for 20X8 = (1,100/1,050) = 104.76%

LCR for 20X9 = (1,250/1,300) = 96.15%

For 20X9, the bank's LCR has dropped from prior year, dropping even below the minimum requirement of 100%, indicating higher liquidity risk.

Sensitivity to Market Risk

Bank earnings are affected by various market risks (e.g., volatility of security prices, currency values, interest rates). The most critical of these is interest rate risk. A bank's interest rate risk is the result of differences in maturity, rates, and repricing frequency between the bank's assets and its liabilities. For example, in a rising interest rate scenario, if the assets are repriced more frequently than liabilities, the bank's net interest income would increase.

Banks respond to opportunities presented in the market and alter their balance sheets. For example, following the financial crisis of 2008, central banks around the world reduced short-term interest rates, allowing banks to borrow at lower rates. To benefit from this interest rate scenario, many banks increased their duration risk (i.e., borrowed more short-term funds while lending long term).

Similarly, the impact of a change in the shape of the yield curve differs among banks, based on differences in the composition of their assets and liabilities. In the MD&A section of their annual reports, banks often disclose exposure to a wide variety of market and nonmarket risks. For example, a bank may disclose the impact of a change in yield on its earnings.

The impact of market risk can be captured by value at risk (VaR). We will discuss this important risk metric in the portfolio management topic area of the curriculum.

MODULE QUIZ 11.4

1. For a bank, a maturity mismatch between assets and liabilities is *most likely* to contribute to the bank's:
   A. earnings quality risk.
   B. liquidity risk.
   C. capital adequacy risk.

2. What does NSFR measure?
   A. Liquidity of a bank's funding sources relative to the liquidity needs of its assets.
   B. Stability of a bank's funding sources relative to its assets.
   C. A bank's capital relative to its stable funding sources.

3. What is the *minimum* NSFR recommended by the Basel III standards?
   A. 10%.
   B. 50%.
   C. 100%.

4. Based on the following information, which bank has the *highest* liquidity risk in a stress scenario?

Bank	LCR	NSFR
Alpha	125%	121%
Beta	141%	118%
Charlie	108%	132%
Delta	111%	89%

   A. Beta.
   B. Delta.
   C. Charlie.

5. Based on the following information, which bank has the *highest* liquidity risk measured by funding stability?

Bank	LCR	NSFR
Alpha	125%	121%
Beta	141%	118%
Charlie	108%	132%
Delta	111%	89%

A. Charlie.
B. Beta.
C. Delta.

MODULE 11.5: OTHER FACTORS

LOS 11.d: Analyze a bank based on financial statements and other factors.

Video covering this content is available online.

We have already described the CAMELS framework that should be used to analyze a bank. Due to the limitation of time allocated to each question on the exam, focus on different types of analysis (e.g., of capital adequacy, asset quality, liquidity risk, etc.) rather than a comprehensive analysis.

EXAMPLE: Asset quality

The following excerpts are from the annual report of JP Morgan Chase & Co. (Source: JP Morgan Chase & Co. 2017 Annual Report).

Excerpt 1: Asset Composition

Assets	2017	2016
Cash and due from banks	$25,827	$23,873
Deposits with banks	$404,294	$365,762
Federal funds sold and securities purchased under resale agreements	$198,422	$229,967
Securities borrowed	$105,112	$96,409
Trading assets	$381,844	$372,130
Securities	$249,958	$289,059
Loans	$930,697	$894,765
Allowance for loan losses	$(13,604)	$(13,776)
Loans, net of allowance for loan losses	$917,093	$880,989
Accrued interest and accounts receivable	$67,729	$52,330
Premises and equipment	$14,159	$14,131
Goodwill, MSRs, and other intangible assets	$54,392	$54,246
Other assets	$114,770	$112,076
Total assets	$2,533,600	$2,490,972

Notes: Cash and due from banks and deposits with banks are the bank's most liquid assets. Fed funds sold and securities purchased under repurchase agreements, and securities borrowed are loans made against high-quality collateral.

Excerpt 2: Capital Ratios

Ratio	2017	2016	2015	2014	2013
Common Equity Tier 1 ("CET1") capital ratio	12.20%	12.30%	11.80%	10.20%	10.70%
Tier 1 capital ratio	13.9	14.0	13.5	11.6	11.9
Total capital ratio	15.9	15.5	15.1	13.1	14.3

Excerpt 3: Fair Value Assets

December 31, 2017 (in billions, except ratio data)	Total assets at fair value	Total Level 3 assets
Trading debt and equity instruments	$325.3	$5.4
Derivative receivables	56.5	6.0
Trading assets	381.8	11.4
AFS securities	202.2	0.3
Loans	2.5	0.3
MSRs	6.0	6.0
Other	33.2	1.2
Total assets measured at fair value on a recurring basis	625.7	19.2
Total assets measured at fair value on a nonrecurring basis	1.3	0.8
Total assets measured at fair value	$627.0	$20.0
Total Firm assets	$2,533.6	
Level 3 assets as a percentage of total Firm assets		0.8%
Level 3 assets as a percentage of total Firm assets at fair value		3.2%

Using information in Excerpt 1:

1. What portion of bank assets is held in most liquid assets? What was the change from 2016 to 2017?
2. On a relative basis, what is the change in loans (including reverse repurchase agreements) from 2016 to 2017?
3. On a relative basis, what is the change in the bank's exposure to investments from 2016 to 2017?

Using information in Excerpt 2:

4. Comment on the bank's capital adequacy.

Using information in Excerpt 3:

5. What portion of bank's fair value assets are Level 1 and Level 2 assets?
6. What portion of bank's total assets are assets measured at fair value?
7. What portion of bank's total assets are Level 3 assets?

Answers:

For answers 1 to 3, calculation of each asset as a percentage of total assets is shown as follows.

Assets	2017	2016	2017	2016
Cash and due from banks	$25,827	$23,873	1.02%	0.96%
Deposits with banks	$404,294	$365,762	15.96%	14.68%
Federal funds sold and securities purchased under resale agreements	$198,422	$229,967	7.83%	9.23%
Securities borrowed	$105,112	$96,409	4.15%	3.87%
Trading assets	$381,844	$372,130	15.07%	14.94%
Securities	$249,958	$289,059	9.87%	11.60%
Loans	$930,697	$894,765	36.73%	35.92%
Allowance for loan losses	$(13,604)	$(13,776)	–0.54%	–0.55%
Loans, net of allowance for loan losses	$917,093	$880,989	36.20%	35.37%
Accrued interest and accounts receivable	$67,729	$52,330	2.67%	2.10%
Premises and equipment	$14,159	$14,131	0.56%	0.57%
Goodwill, MSRs, and other intangible assets	$54,392	$54,246	2.15%	2.18%
Other assets	$114,770	$112,076	4.53%	4.50%
Total assets	$2,533,600	$2,490,972	100.00%	100.00%

1. liquid assets for 2017 = 1.02% + 15.96% = 16.98%

   liquid assets for 2016 = 0.96% + 14.68% = 15.64%

   Bank's liquidity position improved from 2016 to 2017.
2. Loans (net of allowances) and including repurchase agreement loans and securities borrowed are:

   2017: 7.83% + 4.15% + 36.20% = 48.18%

   2016: 9.23% + 3.87% + 35.37% = 48.47%

   On a relative basis, the bank's lending activities have not changed significantly from 2016 to 2017.
3. investments for 2016 = 14.94% + 11.60% = 26.54%

   Investments seem to have declined slightly on a relative basis from 2016 to 2017.
4. J.P. Morgan's capital levels have generally been increasing over time indicating a strengthening of capital position. Additionally, Common Equity Tier 1 ratio of 12.20% for 2017 exceeds the minimum level of 4.5% specified by the Basel III framework. Total Tier 1 capital ratio of 13.90% exceeds the minimum recommended level of 6%, and the total capital of ratio of 15.90% exceeds the minimum recommended level of 8%.

5. Level 3 assets represent 3.2% of total fair value assets. Hence, Level 1 and 2 assets must be 96.8% (100 – 3.2) of total fair value assets.
6. fair value assets as a proportion of total assets = 627 / 2,533.6 = 24.75%
7. Level 3 assets are given to be 0.8% of the bank's total assets.

LOS 11.e: Describe other factors to consider in analyzing a bank.

In addition to the CAMELS approach to analyzing bank, other factors that analysts should consider include the following.

Government Support

Apart from providing deposit insurance, governments often serve as a backstop against bank failure. This is usually due to the systemic importance of the banking sector. During the financial crisis of 2008, the U.S. government created the Troubled Asset Relief Program (TARP) to prop up numerous banks that had taken on more risk than their capital could handle. The expected level of government support is related to the inter-linkages in the banking sector. Usually, the larger the bank and more inter-linked it is, the more likely that its failure will have a contagion effect. Therefore, larger banks enjoy a higher probability of implicit government support. Further, the current status of the banking sector in the country should be considered. A healthy overall sector may be able absorb the failure of an isolated bank. Hence, the implicit support level is inversely related to the overall health of the banking sector; during good times, support levels are low.

Government Ownership

Public ownership of banks may be due to the strategic importance of banks in promoting economic development. In some countries, absent government ownership, depositors may not have faith in the banking sector, a critical element for a bank's existence. Public ownership increases faith (of implicit government backing) in a bank. Shrinking public ownership and divestment would conversely reduce this security blanket.

During the financial crisis of 2008, some governments became reluctant owners of struggling banks. When the governments eventually exited their ownership stakes, it was perceived as a sign of confidence in the bank's balance sheet.

Bank Mission

Apart from profit-making, banks may also pursue other objectives. For example, community banks may be guided by community development in their lending decisions. If the community is dependent on a primary industry (e.g., banks in Houston, TX, had their fortunes tied to the oil industry in the 1980s), it may lead to concentration of risk in a community bank's asset portfolio. Global banks, on the other hand, have well-diversified asset bases, reducing their overall risk.

Culture

A bank's culture influences its propensity to seek risky investments. A relatively conservative culture may result in calculated risk-taking, while a risk-seeking culture may lead to an overly aggressive risk stance. There is a need for balance, because if the culture is too risk-averse, it may fail to provide an adequate return on investment.

Culture evaluation can be conducted by a review of:

- Diversity of a bank's assets. Banks that have generated losses due to an investment strategy with a narrow focus may be too aggressive.
- Accounting restatements due to failures of internal controls pertaining to financial reporting. Restatements may indicate an unethical culture.
- Management compensation. Excessive compensation that is too closely tied to the performance of the bank's stock may lead to a culture of excessive risk-taking.
- Speed with which a bank adjusts its loan loss provisions relative to actual loss behavior. A slower response rate generally indicates aggressive accounting practices and a risk-taking culture.

Apart from these factors, there are general factors that are relevant to analysis of any company (not just banks). These include:

- *A competitive environment* affects a bank's culture and risk-taking behavior. For example, a regional bank may be satisfied with its current market position and may not be tempted to take excessive risk. Global banks may end up taking excessive risk as their management seeks to outdo their large rivals.
- *Off-balance-sheet assets and/or liabilities* may seriously affect an entity if the underlying risks turn out to be larger than the available resources. Often, key information about a bank's off-balance-sheet exposures may be opaque or not readily available to analysts, making it very difficult to examine. However, all off-balance-sheet items are not equally nefarious. Operating leases, for example, are a lot less risky compared to selling protection in a CDS. Bank analysts should look out for variable interest (or special purpose) entities, which are usually required to be consolidated. In some instances, if an SPE is not deemed to be a VIE and therefore does not get consolidated, there may be a significant off-balance-sheet risk not reflected in the financial statements.
  - *Segment information* may provide insights into different lines of business or different geographical markets that the bank operates in. Each segment may be exposed to different levels or types of risk, such as sensitivity to markets, geo-political risks, or cyclicality.
- *Currency exposure* is significant for large, global banks trading in currencies or holding significant assets or liabilities in different currencies whose values fluctuate. Volatility in currency values can have a significant impact on a bank's earnings.

MODULE QUIZ 11.5

1. While analyzing a bank, elements of culture evaluation are *least likely* to include:
   A. the speed with which the bank adjusts its loss provisions.
   B. any prior restatements of financial statements.
   C. the tenure of the current management team.

2. Government ownership of a significant stake in a bank is *most likely* to indicate that:
   A. there is a high likelihood of government support in the event of failure.
   B. required liquidity ratios are lower than for privately owned banks.
   C. the ratio of Common Equity Tier 1 to risk-weighted assets is high.
3. Implicit government backing of the banking sector is *most likely* to be:
   A. positively related to the health of the banking sector.
   B. positively related to the size of the bank.
   C. negatively related to the degree of inter-linkages in the banking sector.
4. Community banks are *most likely* to have a:
   A. well-diversified asset base.
   B. significant exposure to economic factors that affect a single industry or employer.
   C. mission statement focused on alleviating poverty, inequality, and social injustice.

MODULE 11.6: INSURANCE COMPANIES

LOS 11.f: Describe key ratios and other factors to consider in analyzing an insurance company.

Video covering this content is available online.

Insurance company revenues include premium income and income on **float** (i.e., income earned on premiums between their collection and the payment of claims). **Property and casualty (P&C)** insurers differ from **life and health (L&H)** insurers in terms of variability of claims and contract duration. Claims for P&C insurers tend to be lumpier as compared to relatively stable and predictable claims for L&H insurers. Contract duration (i.e., policy period) is much higher for L&H insurers relative to that of P&C insurers. Regulatory requirements that focus on solvency of insurance companies often result in different reporting standards compared to IFRS or U.S. GAAP.

P&C Insurance Companies

Premium income is usually the highest source of income for a P&C insurer. Keys to the profitability of an insurer are prudence in underwriting, pricing of adequate premiums for bearing risk, and diversification of risk. To diversify their risks, insurers often *reinsure* some risks. The policy period is often very short, with premiums received at the beginning of the period and invested during the float period. Claim events (e.g., fire, accident, etc.) are clearly defined but may take a long time to emerge.

Property insurance covers specific assets against loss due to insured events. Casualty insurance (also called liability insurance) protects against a legal liability (often to a third party) due to the occurrence of a covered event. Sometimes a policy, known as *multiple peril policy,* may cover both property and casualty losses occurring during a covered event.

P&C Profitability

P&C margins are cyclical. During periods of heightened competition, price cutting to obtain new business leads to slim or negative margins (*soft pricing* period). This soft pricing period leads to losses and a shrinking capital base for many insurers, who either leave the industry or stop underwriting new policies. The resulting reduction in competition leads to a healthier pricing environment (*hard pricing* period), which in turn results in fatter margins. Higher margins during the hard pricing period attract new competition, perpetuating the cycle.

Major expenses for P&C insurers include claims expense and the expense of obtaining new policy business. The cost of writing new policies depends on whether the insurer uses a direct-to-customer model (in which case it would bear the fixed cost of staffing) or the agency model (in which case it would pay variable commissions). Soft or hard pricing is driven by the industry's combined ratio (total insurance expenses divided by net premiums earned). When the ratio is low (high), it is a hard (soft) market.

For a single insurer, a combined ratio in excess of 100% indicates an underwriting loss.

The combined ratio, per Statutory Accounting Practices, is the sum of the **underwriting loss ratio** and the **expense ratio**.

$$\text{underwriting loss ratio} = \frac{\text{claims paid} + \Delta \text{ loss reserves}}{\text{net premium earned}}$$

$$\text{expense ratio} = \frac{\text{underwriting expenses including commissions}}{\text{net premium written}}$$

PROFESSOR'S NOTE
Many companies report "loss and loss adjustment expense ratio" (addressed in the following discussion) instead of the underwriting loss ratio.

The underwriting loss ratio measures the relative efficiency of the company's underwriting standards (whether the policies are priced appropriately relative to risks borne), while the expense ratio measures the efficiency of the company's operations. The underwriting loss ratio is also called the loss and loss adjustment expense (discussed later). The expense ratio is also called the *underwriting expense ratio*.

Notice that the denominator in the two ratios is different. For reporting purposes, sometimes insurers use U.S. GAAP, which calls for net premium earned as the denominator for both ratios.

The **loss reserve** is an estimated value of unpaid claims (based on estimated losses incurred during the reporting period). Subject to management discretion in measurement, the loss reserve is a highly material amount. Insurers revise their estimate of the loss reserve as more information becomes available. Downward revisions indicate that the company was conservative in estimating their losses in the first place. Upward revisions indicate aggressive profit booking, a warning sign for analysts.

Other Profitability Ratios

Loss and loss adjustment expense ratio measures the relative success in estimation of risks insured (lower is more successful).

$$\text{loss and loss adjustment expense ratio} = \frac{\text{loss expense + loss adjustment expense}}{\text{net premiums earned}}$$

Dividends to policyholders (shareholders) ratio is a liquidity measure measuring cash outflow on account of dividends relative to premium income.

$$\text{dividends to policyholders ratio} = \frac{\text{dividends to policy holders (shareholders)}}{\text{net premiums earned}}$$

$$\text{combined ratio} = \text{loss and loss adjustment expense ratio} + \text{underwriting expense ratio}$$

Combined ratio after dividends (CRAD) measures total efficiency and is more comprehensive than the combined ratio.

$$\text{CRAD} = \text{combined ratio} + \text{dividends to policyholders ratio}$$

EXAMPLE: P&C profitability ratios

Andy Miranda is evaluating three P&C insurers and has collected selected information for the latest fiscal year.

Description ($ millions)	ABC, Inc.	PDQ, Inc.	XYZ, Inc.
Loss and loss adjustment expense	5,400	3,212	2,467
Underwriting expense	2,111	1,860	1,387
Dividends to policyholders (shareholders)	412	232	148
Net premiums earned	8,114	5,445	4,087
Net premiums written	8,217	5,348	4,299

1. Calculate the loss and loss adjustment expense ratio, underwriting expense ratio, combined ratio, and CRAD to policyholders.
2. Which insurer is *most profitable* on a combined ratio basis?
3. Which insurer has the *most efficient* operations?
4. Which insurer is *most profitable* overall?

Answers:

1. The computation of ratios is shown in the following:

Ratio	ABC, Inc.	PDQ, Inc.	XYZ, Inc.
Loss and loss adjustment expense ratio	66.55%	58.99%	60.36%
Underwriting expense ratio	25.69%	34.78%	32.26%
Combined ratio	92.24%	93.77%	92.63%
Dividends to policyholders ratio	5.08%	4.26%	3.62%
Combined ratio after dividends	97.32%	98.03%	96.25%

2. On a combined ratio basis, ABC, Inc., has the lowest combined ratio and is most profitable.
3. ABC, Inc., has the most efficient operations as evidenced by its lowest underwriting expense ratio.
4. XYZ, Inc., is the most profitable as evidenced by the lowest CRAD.

Investment Returns

After premium income, investment return is an important source of P&C insurers' profitability. Due to the inherent risk of the insurance business, insurers tend to invest premiums conservatively. An evaluation of a P&C insurer's investment portfolio should look for diversification by asset class and concentration by type, maturity, industry classification, and geographic location. The **total investment return ratio** is used to evaluate the performance of an insurer's investment operations.

total investment return ratio = total investment income ÷ invested assets

Instead of total investment income, computing the ratio after excluding unrealized capital gains from income provides information about the importance of unrealized gains and losses to the insurer's total income.

Liquidity

Liquidity is an important consideration for P&C insurers as they stand ready to meet their claim obligations. One way to gauge the liquidity of the investment portfolio is to look at their fair value hierarchy reporting. As stated earlier for banks, Level 1 assets are based on readily available prices for traded securities and therefore tend to be most liquid. Level 2 assets tend to have lower liquidity, and Level 3 assets are generally the least liquid.

Capitalization

There are no global risk-based capital requirement standards for insurers. Regionally, the E.U. has adopted the Solvency II standards, while NAIC in the United States has specified minimum capital levels based on size and risk (including asset, credit, liquidity, underwriting, and other relevant risks).

L&H Insurance Companies

Similar to P&C insurers, L&H insurers derive their revenue primarily from premiums, while investment income is the secondary source. Life insurance policies

can be basic term-life, whereby the insurer makes payment if death occurs during the policy period. Other types of policies may include other investment products attached to pure life policies. Health insurance policies vary globally by the type of coverage provided.

Primary considerations in analysis of L&H insurers include:

1. **Revenue diversification**. The proportion of income generated from premiums, investments, and fees can vary over time and among insurers. While diversification is a desirable attribute, premium income tends to be more stable over time relative to other sources.
2. **Earnings characteristics**. An L&H insurer's profitability reflects a number of accounting items that require judgment and estimates. Actuarial assumptions affect the value of the future liabilities due to policyholders. Current period claim expense includes not only actual claim payments, but also interest on the estimated liability to policyholders. L&H insurers also capitalize the cost of acquiring new and renewal policies and amortize it based on actual and estimated future profits from that business. Therefore, estimates influence the amount that is amortized in any given period. Estimates also affect the value of securities and, hence, investment returns (discussed in the next section). Finally, mismatches between the valuation approaches for assets and liabilities can distort values when the interest rate environment changes.

   Apart from standard ratios such as ROA, ROE, and EBIT margins, industry-specific cost ratios include:
   a. total benefits paid ÷ net premiums written and deposits.
   b. commissions and expenses ÷ net premiums written and deposits.
3. **Investment returns**. L&H insurers have a longer float period than P&C insurers, so investment returns are a key component of the insurer's profitability. A large portion of the investment portfolio is often long-term debt. Duration mismatch between the insurer's assets and liabilities is an area of concern. Similar to P&C insurers, the total investment income ratio (investment income divided by amount of invested assets) is often used to evaluate an L&H insurer's investment portfolio performance. Analysts often recalculate this ratio after removing unrealized gains and losses from investment income to remove the impact of estimated fair values for some of the investment assets.
4. **Liquidity**. While policy surrenders can be unpredictable, the liquidity needs of L&H insurers are generally fairly predictable. Hence, keeping excess liquidity is not as much of a concern for L&H insurers compared to P&C insurers. Analysis of liquidity for an insurer includes analyzing the insurer's investment portfolio. Non-investment-grade bonds and equity real estate are typically relatively illiquid as compared to investment grade debt.

   A liquidity measure used by Standard and Poor's, for example, takes a ratio of adjusted investment assets to adjusted obligations. Assets are adjusted based on their ready convertibility into cash, while obligations are adjusted based on assumptions about withdrawals. This ratio is estimated both under normal market conditions and under stress scenarios to assess the liquidity risk for the insurer.

5. **Capitalization**. Similar to P&C insurers, there are no global minimum capitalization standards. Domestic regulators often do specify risk-adjusted minimum capital requirements. Due to duration mismatches between assets and liabilities for L&H insurers, risk-adjusted capital requirements usually incorporate interest rate risk.

MODULE QUIZ 11.6

1. Relative to L&H insurers, P&C insurers are *most likely* to have:
   A. longer contract periods.
   B. lumpier claims.
   C. lower liquidity risk.
2. Relative to P&C insurers, L&H insurers are *most likely* to have a:
   A. higher float.
   B. shorter contract period.
   C. lower interest rate risk.
3. Relative to P&C insurers, L&H insurers are *most likely* to have:
   A. higher interest rate risk.
   B. longer soft pricing period.
   C. lumpier claims.
4. A soft pricing period is *most accurately* characterized by a period in which the combined ratio is:
   A. higher for P&C insurers.
   B. higher for L&H insurers.
   C. lower for P&C insurers.
5. For a single insurer, a combined ratio of greater than 100% would *most accurately* indicate:
   A. an underwriting loss.
   B. an underwriting profit.
   C. high liquidity.

Use the following information to answer Questions 6 through 10.

Jia Li, CFA, is reviewing the relative performance of three P&C insurers. Li has collected the following information for 20X9.

Description ($ millions)	IPCO	SYMCO	DELPHI
Loss and loss adjustment expense	4,512	2,278	3,265
Underwriting expense	1,322	1,799	1,867
Dividends to policyholders (shareholders)	122	198	148
Net premiums earned	7,598	4,978	5,994
Net premiums written	7,682	5,222	6,322

6. Which insurer has the *highest* loss and loss adjustment expense ratio?
   A. IPCO.
   B. SYMCO.
   C. DELPHI.
7. Which insurer with the *lowest* underwriting expense ratio?
   A. IPCO.
   B. SYMCO.
   C. DELPHI.

8. Which insurer with the *highest* combined ratio?
   A. IPCO.
   B. SYMCO.
   C. DELPHI.
9. Which insurer with the *lowest* dividend to policyholders (shareholders) ratio?
   A. IPCO.
   B. SYMCO.
   C. DELPHI.
10. Which insurer with the *highest* combined ratio after dividends?
   A. IPCO.
   B. SYMCO.
   C. DELPHI.

KEY CONCEPTS

LOS 11.a

Financial institutions differ from other companies due to their systemic importance and regulated status. The assets of financial institutions tend to be primarily financial assets as opposed to tangible assets for other companies.

LOS 11.b

The Basel Committee on Banking Supervision provides the framework (currently Basel III) that specifies minimum levels of capital and liquidity as well as stability of funding.

Other global institutions include the Financial Stability Board, International Association of Deposit Insurers, International Organization of Securities Commissions (IOSCO), and International Association of Insurance Supervisors (IAIS).

LOS 11.c

CAMELS approach:

- Capital adequacy: based on risk-weighted assets (RWA); more risky assets require a higher level of capital. Total capital is composed of Tier 1 capital (which includes Common Equity Tier 1 and other Tier 1 capital) and Tier 2 capital. Basel III specifies minimums for Common Equity Tier 1 capital of 4.5% of RWA, total Tier 1 capital of 6% of RWA, and total capital of 8% of RWA.
- Assets: include loans and investments. Loans are evaluated on their credit quality. Valuation and accounting treatment of investment securities differs between standards (IFRS vs. U.S. GAAP).
- Management quality: influences how prudent management is at seeking and managing risks that the bank takes. Internal control systems should continuously measure and monitor different risks that the bank is exposed to.
- Earnings quality: influenced by numerous estimates (loss provisions, valuation of securities, goodwill impairment, etc.). In the fair value hierarchy for valuation of financial assets, Level 1 inputs are quoted market prices of identical assets; Level 2 inputs are observable but not quoted prices of identical assets; and Level 3 inputs are non-observable.

- Liquidity: critical for a bank. Ratios to evaluate liquidity risk include the following:

$$\text{liquidity coverage ratio} = \frac{\text{highly liquid assets}}{\text{expected cash outflows}}$$

$$\text{net stable funding ratio} = \frac{\text{available stable funding}}{\text{required stable funding}}$$

  Liquidity coverage ratio (LCR) measures the availability of liquid funds (in highly liquid assets) relative to expected one-month liquidity needs in a stress scenario. Net stable funding ratio (NSFR) is the ratio of required stable funding that is sourced from available stable funding. Basel III standards recommend minimum 100% for both ratios.
- Sensitivity to market risk: banks are exposed to a variety of market risks including market risk of their investment portfolio, currency risk, credit risk, and interest rate risk. Interest rate risk is key for a bank due to mismatches between assets and liabilities with respect to maturity and repricing frequency.

LOS 11.d

A comprehensive analysis of a bank involves using the CAMELS framework as well as evaluation of other factors that affect the bank's liquidity position, its ability to withstand shocks, and its profitability.

LOS 11.e

Other than the CAMELS framework, analysts may also consider any government support for the banking sector, government ownership of a bank, and a bank's mission and culture. Additional factors (not unique to the banking sector) include the competitive environment, off-balance-sheet obligations, segment information, and currency exposure.

LOS 11.f

P&C insurers have cyclical soft and hard pricing markets, driven by the industry's combined ratio (total insurance expenses divided by net premiums earned). When the ratio is low (high), it is a hard (soft) market.

Ratios include:

$$\text{underwriting loss ratio} = \frac{\text{claims paid} + \Delta \text{ loss reserves}}{\text{net premium earned}}$$

$$\text{expense ratio} = \frac{\text{underwriting expenses including commissions}}{\text{net premium written}}$$

$$\text{loss and loss adjustment expense ratio} = \frac{\text{loss expense} + \text{loss adjustment expense}}{\text{net premiums earned}}$$

$$\text{dividends to policyholders ratio} = \frac{\text{dividends to policy holders (shareholders)}}{\text{net premiums earned}}$$

$$\text{combined ratio after dividends} = \text{combined ratio} + \text{dividends to policyholders}$$

$$\text{total investment return ratio} = \text{total investment income} \div \text{invested assets}$$

L&H Insurers have a longer contract period, higher float, and higher interest rate risk than P&C insurers. Ratios include:

total benefits paid / net premiums written and deposits

commissions and expenses / net premiums written and deposits

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 11.1

1. **B** The three pillars of Basel III framework are minimum capital requirements (as a proportion of risk-weighted assets), minimum liquidity, and stable funding. While a positive spread on deposit is always needed for a bank to be profitable, it is not a recommendation of the Basel III framework. (LOS 11.b)

2. **A** The International Organization of Securities Commissions (IOSCO) seeks to promote fair and efficient securities markets. The Basel III Committee provides a framework for analyzing and regulating banks. The International Association of Insurance Supervisors (IAIS) seeks to promote effective supervision of insurance sector. (LOS 11.b)

Module Quiz 11.2

1. **B** The most important tier of capital is the Common Equity Tier 1 capital, which includes common stock, additional paid-in capital, retained earnings, other comprehensive income and adjustments pertaining to deductions for intangible assets, and deferred tax assets. (LOS 11.c)

2. **B** Under Basel III guidelines, total Tier 1 capital must be at least 6% of risk-weighted assets. (LOS 11.c)

3. **A** Subordinated instruments without specified maturity or dividend/interest are considered part of Tier 1 capital. Together with Common Equity Tier 1 capital, it forms total Tier 1 capital. (LOS 11.c)

4. **A** Equity securities are carried on the balance sheet at fair value (and unrealized gains are shown in the income statement) under current U.S. GAAP standards. Under IFRS, equity is also carried at fair value on the balance sheet, but unrealized gains can be in OCI (fair value through OCI classification) or in the income statement (fair value through profit or loss classification). (LOS 11.c)

Module Quiz 11.3

1. **A** Level 1 inputs are quoted prices of identical assets. (LOS 11.c)
2. **C** Out of service income, net interest income, and trading income, trading income is most volatile. (LOS 11.c)

Module Quiz 11.4

1. **B** Maturity mismatch is a liquidity risk metric and measures the mismatch in maturity of a bank's assets and liabilities. (LOS 11.c)
2. **A** NSFR is the ratio of available stable funding sources to the required stable funding and measures liquidity of funding sources relative to liquidity needs of the assets. (LOS 11.c)
3. **C** Basel III standards recommend a minimum NSFR of 100%. (LOS 11.c)
4. **C** Liquidity risk in a stress scenario is measured by LCR. Charlie has the lowest LCR and hence the highest liquidity risk. (LOS 11.c)
5. **C** Funding stability is captured by NSFR. Delta has the lowest NSFR (below the recommended 100%), indicating the highest liquidity risk. (LOS 11.c)

Module Quiz 11.5

1. **C** While slower speed of adjustments of loss provisions and restatements of financial statements are used as an indicator of aggressive, risk-seeking culture, the tenure of the bank's management team is typically not included in an evaluation of the bank's culture. (LOS 11.e)
2. **A** Government ownership of part or all of a bank is an indication of implied government backing of the bank should the bank's capital prove inadequate to absorb losses. (LOS 11.e)
3. **B** Due to the significance of the banking sector to the overall economy, and to minimize the contagion effect of banking failures, governments often bail out troubled banks. This implicit government backing increases during times of economic stress (i.e., negatively related to the health of the banking sector) and is more likely for larger banks with a higher likelihood of causing contagion. Higher inter-linkages in the banking sector lead to a higher risk of bank failure–induced contagion and a higher probability of government backing. (LOS 11.e)
4. **B** Mission statements of many community banks include promoting community development and, hence, lead to community-focused lending. Often, this leads to a larger concentration of loan assets tied to the fortunes of a single industry. (LOS 11.e)

Module Quiz 11.6

1. **B** P&C insurers' claims are more variable because they arise from unpredictable events like accidents, while L&H insurers' claims can be accurately predicted in aggregate by using mortality rates. Hence, P&C insurers have a higher liquidity risk compared to L&H insurers. The contract period (the time between receipt of premium and payment of claim) is typically much longer for L&H insurers than for P&C insurers. (LOS 11.f)

2. **A** Due to their longer contract period, float for L&H insurers is typically higher than for P&C insurers. (LOS 11.f)

3. **A** Due to duration mismatches between assets and liabilities of L&H insurers, interest rate risk is more of concern for L&H insurers compared to P&C insurers. (LOS 11.f)

4. **A** During a soft pricing period, price competition among P&C insurers leads to high combined ratios. (LOS 11.f)

5. **A** For a single insurer, a combined ratio in excess of 100% indicates a loss. (LOS 11.f)

Use the following information for answers to Questions 6 through 10.

Ratio	IPCO	SYMCO	DELPHI
Loss and loss adjustment expense ratio	59.38%	45.76%	54.47%
Underwriting expense ratio	17.21%	34.45%	29.53%
Combined ratio	76.59%	80.21%	84.00%
Dividends to policyholders ratio	1.61%	3.98%	2.47%
Combined ratio after dividends	78.2%	84.19%	86.47%

6. **A** IPCO with a loss and loss adjustment expense ratio of 59.38% has the highest ratio. (LOS 11.f)

7. **A** IPCO has the lowest underwriting expense ratio of 17.21%. (LOS 11.f)

8. **C** DELPHI has the highest combined ratio of 84%. (LOS 11.f)

9. **A** IPCO's dividend to policyholders ratio is lowest at 1.61%. (LOS 11.f)

10. **C** DELPHI has the highest combined ratio after dividends of 86.47%. (LOS 11.f)

READING 12

EVALUATING QUALITY OF FINANCIAL REPORTS

EXAM FOCUS

It is important for an analyst to evaluate the quality of a company's financial reports before relying on the reports for information to make investment decisions. Financial reports can be low-quality due to non-compliance with accounting standards, fraud, bias, and other factors.

MODULE 12.1: QUALITY OF FINANCIAL REPORTS

Video covering this content is available online.

LOS 12.a: Demonstrate the use of a conceptual framework for assessing the quality of a company's financial reports.

FINANCIAL REPORT QUALITY

The quality of financial reports can be viewed along two highly related dimensions: **earnings quality** and **reporting quality**. Reporting quality is an assessment of the information disclosed in the financial reports. High-quality reporting provides *decision-useful information*; information that is accurate as well as relevant. Low-quality reporting impedes assessment while high-quality reporting enables it.

The term *high-quality earnings* refers to a high level of earnings (i.e., meets the required return on investment) as well as sustainability of earnings. Good economic performance and sustainable earnings are considered higher quality. Conversely, low-quality earnings arise either due to genuinely bad performance or due to misrepresentation of economic performance. Earnings quality is also referred to as **results quality**. High-quality earnings increase the value of a company more than low-quality earnings.

One cannot have both low-quality reporting and high-quality earnings; high-quality earnings assume high-quality reporting. However, one could have a situation in which the company has high quality reporting but low-quality earnings. For example, a strike during the reporting period may have resulted in LIFO liquidation and, hence, given a one-off boost (i.e., earnings have low persistence) to reported earnings. However, the underlying reporting was accurate and decision-useful.

The conceptual framework for assessing the quality of a company's reports entails answering two questions:

1. Are the underlying financial reports GAAP compliant *and* decision-useful?
2. Are the earnings of high quality?

For this discussion, GAAP is used in a generic sense and refers to either U.S. GAAP or IFRS.

Based on the answer to the previous two questions, the overall quality of financial reports can be classified along a continuum of high to low quality as shown in Figure 12.1.

Figure 12.1: Financial Reports Quality (High to Low)

1. GAAP compliant and decision-useful, high-quality earnings.
2. GAAP compliant and decision-useful, low-quality earnings.
3. GAAP compliant but not decision-useful (biased choices).
4. Non-compliant accounting.
5. Fraudulent accounting.

Biased accounting provides information that hinders an analyst's ability to generate accurate forecasts of the future performance of the company. Biased accounting can be aggressive (recognizing future revenues/earnings in the current period) or conservative (postponing current earnings to the future). A related bias is 'earnings management' (e.g., earnings smoothing).

LOS 12.b: Explain potential problems that affect the quality of financial reports.

Potential problems that affect the quality of financial reports may arise from:

- Measurement and timing issues and/or
- Classification issues.

Measurement and Timing Issues

Errors in measurement and/or timing typically affect multiple financial statement elements. For example, aggressive revenue recognition practices increase reported revenues, profits, equity, and assets. Similarly, omission or postponement of expense recognition would increase profits, equity, and assets. Conversely, conservative revenue recognition practices reduce reported revenues, profits, equity, and assets.

Classification Issues

Classification issues refer to how an individual financial statement element is categorized within a particular financial statement (e.g., classification of expenses as operating vs. non-operating in the income statement). While timing/measurement issues affect multiple financial statement elements, classification issues typically

affect one element. Figure 12.2 provides some examples of classification issues and the effects of misclassification.

Figure 12.2: Examples of Misclassification

Misclassification	Effect
Removing accounts receivable by selling or transferring receivables to a related entity or by treating them as long-term receivables.	Reduces days' sales outstanding and enhances the receivables turnover ratio. May be done to mask aggressive revenue recognition practices.
Reclassifying inventory as other (long-term) assets.	Increases inventory turnover ratio. Current ratio will decrease.
Reclassifying non-core revenues as revenues from core continuing operations.	Misleads analysts about the sustainability of future revenues.
Reclassifying expenses as non-operating.	Causes analysts to treat recurring expenses as one-time costs.
Treating investing cash flows (e.g., sale of long-term assets) as operating cash flows.	Operating cash flow is considered to be recurring and increasing it may lead to higher equity valuation.

BIASED ACCOUNTING

Biased accounting choices seek to further a specific agenda—to sell a story. Some examples of biased accounting choices and their related warning signs are shown next.

Mechanisms to misstate profitability:

- Aggressive revenue recognition, including channel stuffing (aggressively selling products to distributors on generous terms such as lax return policies), bill-and-hold sales (where economic title to goods may not truly pass to customers), and outright fake sales.
- Lessor use of finance lease classification.
- Classifying non-operating revenue/income as operating, and operating expenses as non-operating.
- Channeling gains through net income and losses through OCI.

Warnings signs of misstated profitability:

- Revenue growth higher than peers'.
- Receivables growth higher than revenue growth.
- High rate of customer returns.
- High proportion of revenue is received in final quarter.
- Unexplained boost to operating margin.
- Operating cash flow lower than operating income.
- Inconsistency in operating versus non-operating classification over time.
- Aggressive accounting assumptions (e.g., high estimated useful lives).
- Executive compensation largely tied to financial results.

Mechanisms to misstate assets/liabilities:

- Choosing inappropriate models and/or model inputs and thus affecting estimated values of financial statement elements (e.g., estimated useful lives for long-lived assets).
- Reclassification from current to non-current.
- Over- or understating allowances and reserves.
- Understating identifiable assets (and overstating goodwill) in acquisition method accounting for business combinations.

Warnings signs of misstated assets/liabilities:

- Inconsistency in model inputs for valuation of assets versus valuation of liabilities.
- Typical current assets (e.g., inventory, receivables) being classified as non-current.
- Allowances and reserves differ from those of peers and fluctuate over time.
- High goodwill relative to total assets.
- Use of special purpose entities.
- Large fluctuations in deferred tax assets/liabilities.
- Large off-balance-sheet liabilities.

Mechanisms to overstate operating cash flows:

- Managing activities to affect cash flow from operations (e.g., stretching payables).
- Misclassifying investing cash flow as cash flow from operations.

Warnings signs of overstated operating cash flows:

- Increase in payables combined with decreases in inventory and receivables.
- Capitalized expenditures (which flow through investing activities).
- Increases in bank overdraft.

BUSINESS COMBINATIONS—ACQUISITION METHOD ACCOUNTING

Mergers and acquisitions often provide opportunities and motivations to manage financial results. For example, companies with declining operating cash flow may be motivated to acquire other cash-generating entities to increase cash flow from operations. Cash acquisitions are reflected in cash flow from investing activities. If acquisitions are paid for using stock, such a payment would bypass the cash flow statement altogether.

Stock acquisitions provide an incentive for the acquiring company management to pursue aggressive accounting so as to inflate their stock price prior to acquisition. Similarly, target company managers may also be motivated to inflate their firm's stock price to fetch an attractive price at acquisition.

In some cases, misreporting is actually the impetus for acquisitions: acquiring company managers may pursue acquisitions to hide pre-acquisition accounting irregularities. Such companies may acquire targets with dissimilar operations or

with less publicly available information to reduce the comparability and consistency of their own financial statements.

At the time of acquisition, acquiring company must allocate the purchase price to fair value of identifiable net assets of the subsidiary and the balance to goodwill. Acquiring companies often underestimate the value of identifiable net assets—thereby overestimating goodwill on acquisition. Fair value adjustments for identifiable assets typically result in excess depreciation which reduces profits for future reporting periods. Since goodwill is not amortized, the effect of overestimating goodwill (and underestimating the value of identifiable assets) is to increase future reported profits. Such inflated goodwill will eventually have to be written down as part of impairment testing but such losses can be timed. In addition, impairment losses can be downplayed as a one-off, non-recurring event.

GAAP ACCOUNTING BUT NOT ECONOMIC REALITY

Sometimes, an accounting treatment may conform to reporting standards but, nonetheless, result in financial reporting that does not faithfully represent economic reality. For example, prior to mandatory consolidation requirements for variable interest entities under U.S. GAAP, Enron was able to avoid consolidation of various special purpose entities on technical grounds—thereby keeping large losses and liabilities off-balance-sheet.

Restructuring provisions and impairment losses provide opportunities to time the recognition of losses (i.e., earnings management). Typically, recognition of impairment or restructuring losses in a period reflects overstatement of income in prior periods. Conversely, impairment or restructuring provisions may be strategically timed to shift future expenses into the current period. For example, impairment losses on long-lived assets recognized in the current period will reduce future depreciation expense. Similarly, restructuring provisions allow managers to effectively set aside profits in the current period to be used in the future. Provisions are non-cash expenses charged in the current period; future expenses from such provisions bypass the income statement. In such cases, losses recognized in the current period will boost income in the future when reversed.

Video covering this content is available online.

MODULE 12.2: EVALUATING EARNINGS QUALITY, PART 1

LOS 12.c: Describe how to evaluate the quality of a company's financial reports.

LOS 12.d: Evaluate the quality of a company's financial reports.

Steps in evaluating the quality of financial reports:

Step 1: Understand the company, its industry, and the accounting principles it uses and why such principles are appropriate.

Step 2: Understand management including the terms of their compensation. Also evaluate any insider trades and related party transactions.

Step 3: Identify material areas of accounting that are vulnerable to subjectivity.

Step 4: Make cross-sectional and time series comparisons of financial statements and important ratios.

Step 5: Check for warning signs as discussed previously.

Step 6: For firms in multiple lines of business or for multinational firms, check for shifting of profits or revenues to a specific part of the business that the firm wants to highlight. This is particularly a concern when a specific segment shows dramatic improvement while the consolidated financials show negative or zero growth.

Step 7: Use quantitative tools to evaluate the likelihood of misreporting.

QUANTITATIVE TOOLS

The Beneish Model

The Beneish model is a probit regression model that estimates the probability of earnings manipulation using eight independent variables. The M-score determines the probability of earnings manipulation – higher values indicate higher probabilities.

$$\text{M-score} = -4.84 + 0.920\,(\text{DSRI}) + 0.528\,(\text{GMI}) + 0.404\,(\text{AQI}) + 0.892\,(\text{SGI}) + 0.115\,(\text{DEPI}) - 0.172\,(\text{SGAI}) + 4.679\,(\text{Accruals}) - 0.327\,(\text{LEVI})$$

where:

M-score > –1.78 (i.e., less negative) indicates a higher-than-acceptable probability of earnings manipulation.

- Days sales receivable index (DSRI): Ratio of days' sales receivables in year t relative to year $t - 1$. A large increase in DSRI could be indicative of revenue inflation.
- Gross margin index (GMI): Ratio of gross margin in year $t - 1$ to that in year t. When this ratio is greater than 1, the gross margin has deteriorated. A firm with declining margins is more likely to manipulate earnings.

- Asset quality index (AQI): Ratio of non-current assets other than plant, property, and equipment to total assets in year *t* relative to year *t* – *1*. Increases in AQI could indicate excessive capitalization of expenses.
- Sales growth index (SGI): Ratio of sales in year *t* relative to year *t* – *1*. While not a measure of manipulation by itself, growth companies tend to find themselves under pressure to manipulate earnings to meet ongoing expectations.
- Depreciation index (DEPI): Ratio of depreciation rate in year *t* – *1* to the corresponding rate in year *t*. The depreciation rate is depreciation expense divided by depreciation plus PPE. A DEPI greater than 1 suggests that assets are being depreciated at a slower rate in order to manipulate earnings.
- Sales, general and administrative expenses index (SGAI): Ratio of SGA expenses (as a % of sales) in year *t* relative to year *t* – *1*. Increases in SGA expenses might predispose companies to manipulate.
- Accruals = (income before extraordinary items – cash flow from operations) / total assets.
- Leverage index (LEVI): Ratio of total debt to total assets in year t relative to year *t* – *1*.

PROFESSOR'S NOTE
Don't memorize the model or coefficients—instead be able to interpret the model as illustrated in the following example.

PROFESSOR'S NOTE
You might wonder why, given the variables' descriptions, the coefficients on SGAI and LEVI are negative rather than positive. Beneish expected positive coefficients on these variables, but actual regression results produced negative values.

This is likely why Beneish created an alternate model (not included in the curriculum) that excludes SGAI and LEVI.

EXAMPLE: Beneish model interpretation

Beneish's M-score analysis for Pattern Processors, Inc., (PPI) is shown in the following:

Variable	Value
DSRI	1.19
GMI	0.88
AQI	0.90
SGI	1.12
DEPI	1.19
SGAI	0.78
Accruals	0.12
LEVI	0.55
M-score	–1.53
Probability	6.30%

1. Using a cutoff value of –1.78 for the M-score, what would you conclude about the probability of earnings manipulation for PPI?
2. What are the implications of the DSRI and DEPI variables for PPI?

Answer:

1. The M-score for PPI is given as –1.53 which is higher than –1.78, indicating a higher-than-acceptable probability of earnings manipulation. The estimated probability of earnings manipulation is 6.30%.
2. Both DSRI and DEPI (as well as SGI) have a value greater than 1. A DSRI value greater than 1 may indicate that the firm is accelerating revenue recognition. A DEPI value greater than 1 indicates that the depreciation rate was lower than in the previous year. PPI may have used aggressive estimates for estimated useful lives or estimated salvage values or may be adopting more income friendly methods of depreciation.

Limitations of the Beneish Model

The Beneish model relies on accounting data, which may not reflect economic reality. Deeper analysis of underlying relationships may be warranted to get a clearer picture. Additionally, as managers become aware of the use of specific quantitative tools, they may begin to game the measures used. This concern is supported by evidence indicating that the predictive power of the Beneish model is decreasing over time.

Altman Model

While not directly related to earnings quality, Altman's Z-score model was developed to assess the probability that a firm will file for bankruptcy.

Altman's model relies on discriminant analysis to generate a Z-score using five variables. The variables used include net working capital as a proportion of total assets, retained earnings as a proportion of total assets, operating profit as a proportion of total assets, market value of equity relative to book value of liabilities, and sales relative to total assets. Each variable is positively related to the Z-score, and a higher Z-score is better (less likelihood of bankruptcy). Hence, higher values of any of the five variables reduce the probability of bankruptcy under Altman's model.

One limitation of the Altman model is that it is a single-period static model and, hence, does not capture the change in key variables over time. Additionally, similar to the Beneish model, Altman's model mostly uses accounting data. Other market based data sources may provide more meaningful information for evaluation of default risk.

LOS 12.e: Describe indicators of earnings quality.

High-quality earnings are characterized by two elements:

1. Sustainable: high-quality earnings tend to persist in the future.
2. Adequate: high-quality earnings cover the company's cost of capital.

As stated previously, high-quality earnings assume high-quality reporting. In other words, low-quality earnings come about due to (a) earnings that are below the firm's cost of capital and/or (b) earnings that are not sustainable and/or (c) poor reporting quality (i.e., the reported information does not provide a useful indication of a firm's performance).

LOS 12.f: Describe the concept of sustainable (persistent) earnings.

Sustainable or **persistent** earnings are earnings that are expected to recur in the future. Earnings comprised of a high proportion of non-recurring items are considered to be non-sustainable (and hence low-quality).

Classification of items as non-recurring is highly subjective and, hence, is open for gaming. Classification shifting does not affect the total net income but rather is an attempt to mislead the user of the financial statements into believing that the "core" or "recurring" portion of earnings is higher than it actually is. One way to overstate persistent earnings is to mis-classify normal operating expenses as expenses from discontinued operations. Analysts should be wary of large special items or when the company is reporting unusually large operating income for a period. Companies may include non-GAAP metrics such as pro forma income which excludes non-recurring elements. Analysts should review the disclosures reconciling pro forma income to reported income to evaluate whether the items that are labeled as non-recurring are truly non-recurring.

One way to gauge earnings persistence is to use a regression model such as:

$$\text{earnings}_{(t+1)} = \alpha + \beta_1 \text{ earnings}_{(t)} + \varepsilon$$

In this model, a higher value of β_1 indicates higher persistence of earnings.

Accruals

Under the accrual basis of accounting, revenues are recognized when earned and expenses are recognized when incurred, regardless of the timing of cash flow. Unfortunately, accrual accounting requires considerable subjectivity because of the many estimates and judgments involved with assigning revenues and expenses to appropriate periods. Due to this subjectivity in revenue and expense recognition, disaggregating income into its two major components, cash and accruals, further enhances its quality as an input for forecasting future earnings. The accrual component of income is less persistent than the cash component. In the following regression model, $\beta_1 > \beta_2$:

$$\text{earnings}_{(t+1)} = \alpha + \beta_1 \text{ cash flow}_{(t)} + \beta_2 \text{ accruals}_{(t)} + \varepsilon$$

It is important to recognize that some accruals occur as part of normal business. Such accruals are called as *non-discretionary accruals*. Discretionary accruals result from non-normal transactions or non-normal accounting choices, and are sometimes used to manipulate earnings. One mechanism to separate discretionary and non-discretionary accruals is to model (using regression) total accruals as a function of a set of factors that typically give rise to normal accruals (e.g., growth of

credit sales, amount of depreciable assets). The residuals from such a model would be an indicator of discretionary accruals.

Finally, a major red flag about earnings quality is raised when a company reports positive net income while reporting negative operating cash flow.

Other Indicators

One metric used to identify potentially low-quality earnings is to look for those companies that repeatedly meet or barely beat consensus estimates. While this is not a foolproof metric, analysts should be wary of a company that narrowly beats its benchmarks consistently.

External indicators of low-quality earnings include enforcement actions by regulatory authorities (e.g., SEC) and restatements. External indicators are not very useful as they cannot be used to forecast deficiencies before such deficiencies are publicly known.

Video covering this content is available online.

MODULE 12.3: EVALUATING EARNINGS QUALITY, PART 2

LOS 12.g: Explain mean reversion in earnings and how the accruals component of earnings affects the speed of mean reversion.

When examining net income, analysts should be aware that earnings at extreme levels tend to revert back to normal levels over time. This phenomenon is known as mean reversion. (Mean reversion can be explained with basic principles of economics: the competitive marketplace corrects poor performance; thus, losses are eliminated as firms abandon negative value projects. Conversely, capital is attracted to successful projects thereby increasing competition and lowering returns.)

Because of mean reversion, analysts should not expect extreme earnings (high or low) to continue indefinitely. When earnings are largely comprised of accruals, mean reversion will occur faster—and even more so when the accruals are largely discretionary.

LOS 12.h: Evaluate the earnings quality of a company.

Accounting systems require many estimates and rely on many subjective choices. These estimates and choices can be misused by managers to present misleading performance.

Two major contributors to earnings manipulation are:

1. Revenue recognition issues, and
2. Expense recognition issues (capitalization).

Revenue Recognition Issues

Revenue is the largest and most important element in the income statement. Subjectivity in revenue recognition practices makes revenue highly vulnerable to manipulation and therefore should be scrutinized by analysts. Analysts should not only concern themselves with quantity of revenue, but also with the quality of revenues (i.e., how those revenues were generated). Revenues generated via deliberate channel stuffing or as a result of bill-and-hold arrangements should be considered spurious and inferior. Even (relatively) genuine revenues, when secured via the use of heavy discounting practices, come at the expense of deteriorating margins. A higher growth rate of receivables relative to the growth rate of revenues is a red flag. Similarly, an increasing days' sales outstanding (DSO) over time is an indication of poor revenue quality.

> **EXAMPLE: Evaluating earnings quality**
>
> Daniel Springs, Inc., (DSI) produces heavy-duty automotive components. Financial results for DSI, as well as industry comparables, are shown in the following:
>
> DSI selected financial data ($ 000s):

	20X1	20X2	20X3
Sales	$12,117	$13,112	$14,766
Accounts receivable	$1,272	$1,573	$2,363

Industry average:

	20X1	20X2	20X3
DSO	22.6	22.8	22.4
Receivables turnover	16.2	16.0	16.3

1. Compute DSI's increase in revenue and receivables from 20x1 to 20x2 and from 20x2 to 20x3. Compare the change in revenues to the change in receivables.
2. Using end-of-year accounts receivables, comment on the trend in days' sales outstanding (DSO) and receivables turnover for DSI and compare it to the industry average.
3. Comment on possible revenue recognition issues at DSI.

Answers:

1. DSI's revenues increased at a slower rate compared to the growth rate in receivables indicating potential problems with collections and low quality of receivables.

	20X1	20X2	20X3
Change in sales	-	8.2%	12.6%
Change in receivables	-	23.7%	50.2%

2. DSI's days' sales outstanding is increasing over time and is significantly higher than the industry average. The receivables turnover ratio for DSI is declining over time and is lower than industry average. Finally, the change in receivables as a proportion of revenues is positive and is increasing over time.

	20X1	20X2	20X3
Receivables/revenue	10.5%	12.0%	16.0%
Change in rec/rev	-	14.3%	33.3%
DSO	38.3	43.8	58.4
Receivables turnover	9.5	8.3	6.3

Sample calculations:

20X3 receivables turnover ratio = net annual sales / average receivables = $14,766 / $2,363 = 6.249

20X3 days of sales outstanding (DSO) = 365 / receivables turnover ratio = 365 / 6.25 = 58.41

3. Based on all indicators, it appears that revenues at DSI are potentially of inferior quality. Analysts should be extremely skeptical about earnings quality of DSI.

Steps in the analysis of revenue recognition practices:

Step 1: **Understand the basics.** From the information disclosed, understand the revenue recognition practices followed by the company including relevant shipping terms, return policies, rebates, and the existence of multiple deliverables.

Step 2: **Evaluate and question ageing receivables.** Compare receivables metrics with those from the past and with the industry median.

Step 3: **Cash versus accruals.** Evaluate the proportion of earnings that are cash-based versus accruals-based.

Step 4: **Compare financials with physical data provided by the company.** For example, correlate sales with capacity utilization data.

Step 5: **Evaluate revenue trends and compare with peers.** Narrow down such analysis by segments.

Step 6: **Check for related party transactions.** For example, a company might artificially boost fourth-quarter revenues by recognizing a large sale to an affiliated entity.

Expense Capitalization

One way to boost reported performance is to under-report an operating expense by capitalizing it. Capitalizing an expense does however show up on the balance sheet as an asset and an analyst should be wary of unsupported changes in major asset categories. When the proportion of PP&E increases over time in common-size balance sheets, analysts should question whether there is a systematic capitalization of expenses underway.

Steps in the analysis of expense recognition practices:

Step 1: **Understand the basics.** Understand the company's cost capitalization policies based on information disclosed in the annual report. Also gather information about depreciation policies and how they compare with those of the company's peers.

Step 2: **Trend and comparative (peer) analysis.** Evaluate changes in non-current assets over time to see if there are any anomalies which could be explained by cost capitalization. Stable or improving profit margins coupled with a buildup of non-current assets would be a warning sign. Steady or rising revenue coupled with declining asset turnover ratios is another warning sign of cost capitalization.

Compare depreciation expense as a proportion of asset size over time and with peers. Finally compare capital expenditures to gross PP&E over time and with peers. Rising capital expenditures as a percentage of PP&E is another warning sign of cost capitalization.

Step 3: **Check for related party transactions.** An example of a problematic transaction would be if the company is shifting resources to a privately held company that is owned by senior managers. On the other hand, analysts should also watch for propping practices whereby profits from related

entities temporarily prop up an ailing public company. (Managers might prop up a public company to preserve the option of misappropriating funds in the future.)

MODULE 12.4: EVALUATING CASH FLOW QUALITY

Video covering this content is available online.

LOS 12.l: Describe indicators of cash flow quality.

High-quality cash flow means the reported cash flow was high (i.e., good economic performance) and the underlying reporting quality was also high. Because operating cash flow (OCF) has the most direct impact on the valuation of a company, we will focus on OCF while evaluating cash flows.

A cash flow statement should be evaluated in the context of the corporate life cycle as well as industry norms. It would be quite normal for early-stage start-ups to have negative operating and investing cash flows, financed by cash flow from financing activities (e.g., equity issuance). For a mature firm, negative operating cash flow coupled with positive financing cash flow is usually problematic.

High-quality cash flow is characterized by positive OCF that is derived from sustainable sources and is adequate to cover capital expenditures, dividends, and debt repayments. Furthermore, high-quality OCF is characterized by lower volatility than that of the firm's peers. Significant differences between OCF and earnings, or differences that widen over time, can be an indicator of earnings manipulation.

While cash flows are less amenable to manipulation, management can affect cash flows via strategic decisions (timing issues). For example, OCF can be increased by slowing payments to suppliers (increasing accounts payables) or by selling receivables. Analysts can identify such practices by reviewing activity ratios (receivables and payables turnover ratios).

Management may also try to shift positive cash flows from investing or financing activities into operating activities to boost OCF (classification issues).

PROFESSOR'S NOTE:
Operating cash flow (OCF) and cash flow from operating activities (CFO) refer to the same thing: the money a company brings in from regular, ongoing business activities.

LOS 12.i: Evaluate the cash flow quality of a company.

Evaluation of the statement of cash flows (and more importantly cash flow from operating activities) entails:

1. **Checking for any unusual items or items that have not shown up in prior years.**
2. **Checking revenue quality.** Aggressive revenue recognition practices typically result in an increase in receivables—which reduces operating cash flow. Another

common indicator of aggressive revenue recognition is an increase in inventories (and hence a cash outflow) when sham sales are reversed (i.e., treated as returns from customers).

3. **Checking for strategic provisioning.** Provisions for restructuring charges show up as an inflow (i.e., a non-cash expense) in the year of the provision and then as an outflow when ordinary operating expenses are channeled through such reserves.

Analysts should be aware that accounting standards afford some flexibility in the treatment of certain items in the statement of cash flows. For example, while interest paid, interest received, and dividends received have to be treated as operating cash flows under U.S. GAAP, interest paid can be classified as either operating or financing cash flow under IFRS. Also, interest/dividend received can be classified as either operating or investing cash flow under IFRS. A company reporting under IFRS and accounting for interest paid as an operating cash flow could instead report it as a financing cash flow, giving the appearance of an increase in operating cash flows in a year-over-year comparison. Also, cash flows from sale of available-for-sale securities are treated as investing cash flows, while cash flows from sale of trading securities are treated as operating cash flows. Remember that companies have significant flexibility in designating investments as trading or available for sale. Hence, managers can shift cash flows from one classification to another. Such variation in the classification of cash flow items reduces comparability across companies.

MODULE 12.5: EVALUATING BALANCE SHEET QUALITY

Video covering this content is available online.

LOS 12.j: Describe indicators of balance sheet quality.

LOS 12.k: Evaluate the balance sheet quality of a company.

High-quality financial balance sheet reporting is evidenced by completeness, unbiased measurement, and clarity of presentation.

Completeness

Completeness of a balance sheet is compromised by the existence of off-balance-sheet liabilities such as purchase agreements structured as take-or-pay contracts. Analysts should restate the reported balance sheet by recording purchase contract obligations, if significant.

PROFESSOR'S NOTE
"Take-or-pay" contractual provisions obligate a party to either *take* delivery of goods or *pay* a specified amount (i.e., a penalty).

In the case of intercorporate investments, the equity method of accounting allows one-line consolidation for investments in associates. The equity method of accounting would result in certain profitability ratios (e.g., net profit margin, return on assets) being higher than under the acquisition method. Firms consolidating

several subsidiaries with close to a 50% ownership stake by using the equity method would be a cause for concern.

Unbiased Measurement

The balance sheet reflects subjectivity in the measurement of several assets and liabilities:

- Value of the pension liability (based on several actuarial assumptions).
- Value of investment in debt or equity of other companies for which a market value is not readily available.
- Goodwill value (subjectivity in impairment testing).
- Inventory valuation (subjectivity in testing for impairment).
- Impairment of PP&E and other assets.

Overstatement of asset values (i.e., not recognizing adequate impairment losses) overstates profitability and equity.

Clear Presentation

While accounting standards specify which items should be included in the balance sheet, they do not typically specify how such items must be presented. Companies have discretion regarding which items they present as a single-line item versus those that are grouped together. Clarity of presentation allows an analyst to gather relevant information as well as to make comparisons across companies. Clarity should be evaluated in conjunction with information found in the notes to financial statements and supplementary disclosures.

LOS 12.m: Describe sources of information about risk.

Evaluating the financial, operating, and other risks that a business is exposed to is an important part of analyst's job. There are several sources of information about such risks:

- **Financial statements.** Financial statements contain information regarding the leverage used by the company and the variability of cash flows and earnings over time. Quantitative models (e.g., Altman's Z-score) often rely on this accounting information.
- **Auditor's report.** Because an audit report provides only historical information, such a report's usefulness as an information source is limited. However, involuntary changes in auditors, a small-sized audit firm relative to the size of the company being audited, and a lack of auditor independence are red flags that an analyst should pay special attention to.
- **Notes to financial statements.** Companies are required to make certain risk related disclosures in the notes to financial statements. Both GAAP and IFRS require companies to disclose risks related to pension benefits, contingent obligations, and financial instruments.

  Disclosures about contingent liabilities include a description of the liability, as well as estimated amounts and timing of the payments. Disclosures about pension benefits include information

about actuarial assumptions. Disclosures about financial instruments include information about credit risk, liquidity risk and market risk.

- **Management Discussion and Analysis (MD&A).** Ideally, companies should include principal risks that are unique to the business (as opposed to risks faced by most businesses) in their MD&A. However, discussion of generic risks and "boiler plate" language often makes this information of low utility.
- **SEC Form 'NT'.** In the United States, SEC form 'NT' is filed when a firm is unable to file required reports in a timely manner. Because such an occurrence is usually due to a breakdown in accounting systems or internal controls, or the discovery of misrepresentation that needs to be investigated, such filings typically signal problems in reporting quality.
- **Financial press.** Often the initial information about accounting irregularities at a company is obtained from the financial press. Analysts should do their own due diligence to ensure that the information revealed has merit and to ascertain the magnitude of the irregularity and its impact on valuation.

MODULE QUIZ 12.1, 12.2, 12.3, 12.4, 12.5

Use the following information to answer Questions 1 through 6.

Rana Midha, CFA, works as a freelance equity analyst in the United States. Midha's main area of expertise is in the analysis of financial statements, and he is currently reviewing the latest annual reports issued by five large companies in the retail sector.

Midha's approach to analyzing the results is to focus first on the quality of the financial reporting. To do this, he uses a conceptual framework that addresses the quality of earnings and whether the information is decision-useful. Midha then orders the companies on a quality spectrum.

Extracts from Midha's notes on three of the companies under analysis are shown in Exhibit 1.

Exhibit 1: Financial Reporting Quality

GGFT, Inc.

- Information provided adheres to GAAP without deviations.
- Disclosures provide a high level of relevant information.
- Accounting choices show a very aggressive bias.
- Earnings provide an adequate rate of return on capital.

FSKA, Inc.

- Information provided adheres to GAAP without deviations.
- Disclosures provide a high level of relevant information.
- Accounting choices show no appreciable bias.
- Earnings last year provided an adequate rate of return on capital.
- Earnings do not appear to be sustainable.

SDTT, Inc.

- Information provided adheres to GAAP without deviations.
- Disclosures provide a high level of relevant information.
- Accounting choices show no appreciable bias.
- Earnings last year provided an adequate rate of return on capital.
- Earnings appear to be sustainable.

In modeling the sustainability of earnings, Midha regresses earnings in the current period against those in the previous period using the following AR(1) model:

$$\text{earnings}_{t+1} = \alpha + \beta_1 \text{earnings}_t + \varepsilon$$

Another company that Midha is reviewing, PSAA, Inc., has released its annual report 14 days later than usual due to a disagreement with its auditors. New auditors were appointed two weeks after the financial year end. The details were widely reported in the press and an extract from an accounting journal is shown in Exhibit 2.

Exhibit 2: Accounting and Compliance Monthly (extract)

"... The disagreement stemmed from the proposed treatment of an entity set up by PSAA during the accounting year. CRAFT USA (CRAFT) was formed to develop a new range of low alcohol craft beers for the U.S. market. The entity immediately recruited a team of two head brewers from a local brewery which had gained national praise for their low-alcohol beverages. CRAFT's equity was owned entirely by the two head brewers who each had a 50% share and contributed $200,000 of share capital. In addition, PSAA provided $2,500,000 by way of convertible debt, exercisable at the end of each of the next 10 years.

PSAA's provisional accounts recognized the interest income from the convertible debt but not the operating losses CRAFT incurred during the year. PSAA's CEO commented that 'the entire share capital and, hence, voting rights reside entirely with the head brewing team ..."

Midha also likes to analyze the probability of earnings manipulation using Messod D. Beneish and colleagues' M-score. Exhibit 3 shows the model as Midha uses it and the M-scores for two companies, BDNF, Inc. and QKLK, Inc.

Exhibit 3: M-Score

M-score = −4.84 + 0.920 (DSRI) + 0.528 (GMI) + 0.404 (AQI) + 0.892 (SGI) + 0.115 (DEPI) − 0.172 (SGAI) + 4.670 (Accruals) − 0.327 (LEVI)

M-score = score indicating probability of earnings manipulation

DSRI (days sales receivable index) = (receivables$_t$ / sales$_t$) / (receivables$_{t-1}$ / sales$_{t-1}$)

GMI (gross margin index) = gross margin$_{t-1}$ / gross margin$_t$

AQI (asset quality index) = [1 − (PPE$_t$ + CA$_t$) / TA$_t$] / [1 − (PPE$_{t-1}$ + CA$_{t-1}$) / TA$_{t-1}$], where PPE is property, plant, and equipment; CA is current assets; and TA is total assets.

SGI (sales growth index) = sales$_t$ / sales$_{t-1}$

DEPI (depreciation index) = depreciation rate$_{t-1}$ / depreciation rate$_t$, where depreciation rate = depreciation / (depreciation + PPE).

SGAI (sales, general, and administrative expenses index) = (SGA$_t$ / sales$_t$) / (SGA$_{t-1}$ / sales$_{t-1}$)

accruals = (income before extraordinary items − cash from operations) / total assets

LEVI (leverage index) = leverage$_t$ / leverage$_{t-1}$, where leverage is calculated as the ratio of debt to assets.

Company	M-Score
BDNF	−1.62
QKLK	−1.10

1. Which of the following conclusions is Midha *most likely* to draw from the extracts shown in Exhibit 1?
   A. FSKA will be lower on the quality spectrum than GGFT.
   B. GGFT will be lower on the quality spectrum than FSKA.
   C. Midha will classify FSKA as having high quality earnings.

2. For this question, the companies referenced are described in Exhibit 1. If Midha runs the simple AR(1) model on earnings as described, which of the following statements is *least accurate*?
   A. FSKA will have a lower β_1 than SDTT.
   B. Higher proportions of cash-based earnings as opposed to accruals-based earnings lead to lower β_1 coefficients.
   C. A higher β_1 coefficient is consistent with higher quality earnings.

3. Which of the following statements regarding CRAFT, as detailed in Exhibit 2, is *most accurate*?
   A. CRAFT should be consolidated as a variable interest entity even if the convertible debt has no voting rights.
   B. CRAFT should be consolidated as a variable interest entity and, hence, the interest income and operating losses should be recognized separately in PSAA's consolidated income statement.
   C. CRAFT should not be consolidated as a variable interest entity if the coupon rate on the convertible debt is fixed.

4. Which of the following statements regarding the M-score model in Exhibit 3 is *most accurate*?
   A. Midha's notes incorrectly calculate the DSRI coefficient as he has not correctly calculated the days of sales receivable ratios.

B. A company with a DEPI variable of less than one may be manipulating earnings by increasing the useful economic lives of assets.
C. An AQI variable of greater than one may indicate excessive expenditure capitalization.

5. Which of the following statements about the M-scores Midha calculated in Exhibit 3 is *most accurate*?
   A. BDNF's M-score indicates a larger probability of earnings manipulation than QKLK's M-score.
   B. QKLK's M-score indicates a probability of earnings manipulation of 1.10%.
   C. Using a cut off M-score of -1.78, both firms would be classified as potential manipulator companies.
6. Which of the following statements regarding sources of information about risk is *least accurate*?
   A. Frequent changes of auditor are an indication of potential risk.
   B. A clean audit report is a key piece of information regarding potential risk.
   C. An audit firm which has inadequate resources for the complexity of a company audit is a warning sign regarding potential risk.

Use the following information to answer Questions 7 through 12.

Hannah Jones, CFA, is currently reviewing the financial statements of three pharmaceutical companies she covers in her role as an equity analyst. Her primary aim is to establish the growth in operating earnings over the last year for each company. Exhibit 1 shows operating earnings for each company in 2020 and 2021.

Exhibit 1: Operating Earnings ($ Millions)

Company	2020 Operating Earnings	2021 Operating Earnings
ZZYP	142.5	140.3
AART	209.8	195.4
XXPG	220.9	233.2

While performing her review, Jones makes adjustments to the earnings figures to arrive at her "core earnings growth" figure. The following are adjustments she intends to make:

- ZZYP has sold two of its patents in the last two years. Both sales were forced by government anti-trust actions. Jones wants to remove the impact of these non-recurring items from operating earnings. The sale boosted operating profit by $8.2 million in 2020 and $1.9 million in 2021.
- AART uses IFRS and in 2020 capitalized development costs totaling $20.1 million. No similar costs were capitalized in 2021 but the development project was finished during the year and depreciation of $5.0 million on the previously capitalized costs was charged. Jones believes the costs should be expensed as incurred.

A colleague, Jim Hartford, recently reviewed similar calculations that Jones had performed on a group of retail companies. He was impressed with the detail, but made the following two constructive comments:

Comment 1:	Break earnings down into its cash-based, discretionary accruals-based, and non-discretionary accruals-based elements. Companies with large accruals-based elements, particularly non-discretionary accruals-based elements, are more likely to be engaged in aggressive profit recognition practices.
Comment 2:	Use the analysis of cash-based and accruals-based earnings to assess the likelihood of earnings reverting to the mean. Companies with large accruals-based earnings historically have seen earnings trend away from the mean for longer periods than those that have largely cash-based earnings.

Jones is also aware that operating earnings do not always translate into operating cash flows. As a result, she always takes a detailed look at the reconciliation of operating profit to operating cash flows for each company analyzed. The reconciliation for ZZYP is shown in Exhibit 2.

Exhibit 2: ZZYP Operating Cash Flow Reconciliation 2020

	$ Millions
Operating Income (EBIT)	**98.5**
Depreciation, amortization, and impairment	137.4
(Increase)/decrease in trade and other receivables	(11.5)
Decrease/(increase) in inventories	(4.1)
Increase/(decrease) in trade and other payables and provisions	12.4
Decrease/(increase) in short term investments	15.2
Non-cash and other movements	7.7
Interest paid	(14.2)
Tax paid	(25.1)
Net cash flow from operating activities	**216.3**

Jones is concerned with two things in the reconciliation and intends to make the following adjustments before doing any detailed analysis:

Adjustment 1:	Changes in short-term investments should be classified as investing activities.
Adjustment 2:	For comparative analysis, interest paid should be classified as a financing cash flow.

Jones always considers operating cash flows that are negative and those that are trending below net earnings as warnings signs of low quality cash flow. She will never advise clients to invest in a company with negative operating cash flows unless they are what she classifies as an "ESS" company, meaning an early-stage start-up company that the market believes has potential. She believes that such companies differ from well-established companies because they may have negative operating and investing cash flows funded by a positive cash flow from financing.

7. Using the information in Exhibit 1 and Jones' proposed adjustments, the company with the highest "core earnings growth" from 2020 to 2021 was *most likely*:

A. ZZYP.
B. AART.
C. XXPG.

8. Hartford's Comment 1 is *most likely*:
   A. correct.
   B. incorrect because non-discretionary accruals do not impact earnings.
   C. incorrect because discretionary accruals are more likely to indicate manipulation than non-discretionary.
9. Hartford's Comment 2 is *most likely*:
   A. correct.
   B. incorrect because companies with large proportions of accruals-based earnings historically have experienced more rapid reversions to the mean.
   C. incorrect because the speed at which earnings revert to the mean is not affected by the proportions of cash-based and accruals-based earnings.
10. If Jones makes the two adjustments to the operating cash flow reconciliation shown in Exhibit 2, the adjusted cash flow from operations would be *closest* to:
    A. $230.5.
    B. $215.3.
    C. $200.8.
11. Jones' statement regarding companies that she classifies as "ESS" is *most likely*:
    A. correct.
    B. incorrect because start-up companies typically have positive cash from investing due to a build-up of cash generating assets.
    C. incorrect because start-up companies cannot typically raise large amounts of debt and, hence, usually will not have positive cash flows from financing.
12. The presence of significant off-balance sheet financing *most likely* indicates a:
    A. lack of completeness, which reduces financial reporting quality.
    B. decrease in leverage, which reduces financial results quality.
    C. lack of clear presentation, which reduces financial reporting quality.

KEY CONCEPTS

LOS 12.a

High-quality reporting provides decision-useful information; information that is accurate as well as relevant. High-quality earnings are sustainable and meet the required return on investment. High-quality earnings assume high-quality reporting.

The conceptual framework for assessing the quality of a company's reports entails answering two questions:

1. Are the underlying financial reports GAAP compliant and decision-useful?
2. Are the earnings of high quality?

LOS 12.b

Potential problems that affect the quality of financial reports can result from:

1. Measurement and timing issues and/or
2. Classification issues.

Additionally, biased accounting and accounting for business combinations can compromise the quality of financial reports. GAAP compliance is a necessary but not sufficient condition for high-quality financial reporting.

LOS 12.c

Evaluation of the quality of financial reports involves understanding the company, its management, and identifying material areas of accounting that are exposed to subjectivity. It also requires cross-sectional (with peers) and time-series (versus the past) comparison of key financial metrics, checking for any warning signs of poor quality reporting, and the use of quantitative tools.

LOS 12.d

The Beneish model is used to estimate the probability of earnings manipulation and is based on eight variables. However, as managers become aware of the use of such models, they are likely to game the model's inputs. This concern is supported by an observed decline in the predictive power of the Beneish model over time.

LOS 12.e

High-quality earnings are characterized by two elements:

1. Sustainable: high-quality earnings are expected to recur in future periods.
2. Adequate: high-quality earnings cover the company's cost of capital.

LOS 12.f

Sustainable or persistent earnings are those that are expected to recur in the future. Earnings with a high proportion of non-recurring items are considered to be non-sustainable (and hence low-quality).

LOS 12.g

Mean reversion in earnings, or the tendency of earnings at extreme levels to revert back to normal levels over time, implies that earnings at very high levels are not sustainable. Mean reversion is quicker for accruals-based earnings and faster still if such accruals are discretionary.

LOS 12.h

Two major contributors to earnings manipulation are:

1. Revenue recognition issues; and
2. Expense recognition issues (capitalization).

Bill-and-hold sales or channel stuffing are examples of aggressive revenue recognition practices. Analysis of DSO and receivables turnover (over time and compared to peers) is used to reveal red flags. Cost capitalization will result in an excessive asset base which can be spotted by evaluation of the trend and comparative analysis of common-size balance sheets.

LOS 12.i

Elements to check for in the statement of cash flows:

- Unusual items or items that have not shown up in prior years.
- Excessive outflows for receivables and inventory due to aggressive revenue recognition.
- Provisions for, and reversals of, restructuring charges.

LOS 12.j

High financial reporting quality for a balance sheet is evidenced by completeness, unbiased measurement, and clarity of presentation.

LOS 12.k

Completeness of a balance sheet can be compromised by the existence of off-balance sheet liabilities. Also, biased measurement may be present in the measurement of pension obligations, goodwill, investments, inventory, and other assets.

LOS 12.l

High-quality cash flow means that the reported cash flow was high (i.e., good economic performance) and the underlying reporting quality was also high.

LOS 12.m

Sources of information about the risk of a business include financial statements, auditor's reports, notes to financial statements, MD&A, and the financial press.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 12.1, 12.2, 12.3, 12.4, 12.5

1. **B** The bias in accounting choices means GGFT is lower on the spectrum than FSKA. FSKA appears to have high-quality financial reporting, but earnings are of low quality due to the lack of sustainability. (Module 12.1, LOS 12.a)

2. **B** Cash-based earnings are more persistent than accruals-based earnings. Hence, companies with a higher proportion of cash-based earnings will have a higher persistence of earnings and, hence, a higher beta coefficient in the AR(1) model. (Module 12.2, LOS 12.f)

3. **A** PSAA may still have to consolidate CRAFT as a VIE despite the voting rights residing with the equity holders. PSAA is exposed to a variable interest due to gains and losses on the conversion option on the convertible debt. If CRAFT is classified as a VIE, the interest income will not be recognized in the consolidated income statement. (Module 12.2, LOS 12.c)

4. **C** The AQI variable measures the change in proportion of assets other than PPE and current assets over time. A value greater than 1 for AQI indicates an increase in proportion of assets other than PPE and CA (from last period) and may indicate excessive expenditure capitalization. A DEPI variable of less than 1 results from a higher depreciation rate for the current year compared to the prior year and would not occur if the company was extending useful lives. (Module 12.2, LOS 12.d)

5. **C** The M-score is a standard normal variable. The larger (less negative) the M-score, the higher the probability of earnings manipulation. Using a cut off of –1.78, both companies would be considered to be likely manipulators of earnings. (Module 12.2, LOS 12.d)

6. **B** A clean audit report is unlikely to provide timely information about potential risks. Due to its focus on historical information, it is also unlikely to be useful to the analyst. (Module 12.5, LOS 12.m)

7. **B**

ZZYP	2020	2021	Growth
Op earnings	142.5	140.3	
Non-recurring	(8.2)	(1.9)	
Core earnings	**134.3**	**138.4**	**3.05%**

AART	2020	2021	Growth
Op earnings	209.8	195.4	
Dev costs	(20.1)	5.0	
Core earnings	**189.7**	**200.4**	**5.64%**

XXPG	2020	2021	Growth
Op/core earnings	**220.9**	**233.2**	**5.57%**

(Module 12.5, LOS 12.k)

8. **C** Hartford's comment is incorrect. Discretionary accruals, and to a lesser extent non-discretionary accruals-based earnings, are more likely to be indications of manipulation than cash-based earnings. (Module 12.2, LOS 12.f)

9. **B** Studies have shown the accruals-based earnings are less sustainable than cash-based earnings and, hence, revert to the mean more quickly. (Module 12.2, LOS 12.f)

10. **B**

	$ Millions
EBIT	**98.5**
Depreciation, amortization, and impairment	137.4
(Increase)/decrease in trade and other receivables	(11.5)
Decrease/(increase) in inventories	(4.1)
Increase/(decrease) in trade and other payables and provisions	12.4
Decrease/(increase) in short term investments (CFI)	-
Non-cash and other movements	7.7
Interest paid (CFF)	-
Tax paid	(25.1)
Net cash flow from operating activities	**215.3**

(Module 12.4, LOS 12.i)

11. **A** Start-ups typically take time to start showing positive operating cash flows. In the early years CFI is negative because the company is spending cash to buy assets and CFF is positive due to capital raised via debt or equity. (Module 12.4, LOS 12.i)

12. **A** Off-balance sheet financing indicates a lack of completeness. Completeness, along with unbiased reporting and clear presentation, is required for high quality financial reporting. (Module 12.5, LOS 12.j)

READING 13

INTEGRATION OF FINANCIAL STATEMENT ANALYSIS TECHNIQUES

EXAM FOCUS

This is a key topic review in Financial Statement Analysis, and perhaps as important as any of the financial statement analysis material. Here, you are required to use material presented earlier to make appropriate adjustments to the balance sheet and income statement using a common framework. Make sure you can determine and interpret the effects of management's choice of accounting methods and assumptions on the reported financial results and ratios.

MODULE 13.1: FRAMEWORK FOR ANALYSIS

Video covering this content is available online.

LOS 13.a: Demonstrate the use of a framework for the analysis of financial statements, given a particular problem, question, or purpose (e.g., valuing equity based on comparables, critiquing a credit rating, obtaining a comprehensive picture of financial leverage, evaluating the perspectives given in management's discussion of financial results).

The primary purpose of financial statement analysis is to identify potential outcomes, good or bad, that could affect an investment decision.

A basic framework, presented in Figure 13.1, has been developed to assist the user based on the objectives of the analysis. The framework can be used in making decisions about an equity ownership interest in a firm, a lending decision, evaluating a credit rating, or anticipating the impact on a firm of a change in accounting standards.

Figure 13.1: Framework for Analysis

Step	Input	Output
1. Establish the objectives	■ Perspective of the analyst (e.g., evaluating a debt/equity investment or issuing a credit rating) ■ Needs or concerns communicated by the client or supervisor ■ Institutional guidelines	■ Purpose statement ■ Specific questions to be answered ■ Nature and content of the final report ■ Timetable and resource budget
2. Collect data	■ Financial statements ■ Communication with management, suppliers, customers, and competitors	■ Organized financial information
3. Process data	■ Data from Step 2	■ Adjusted financial statements ■ Common-size statements ■ Ratios ■ Forecasts
4. Analyze data	■ Data from Steps 2 and 3	■ Results
5. Develop and communicate conclusions	■ Results from analysis ■ Published report guidelines	■ Report answering questions posed in Step 1 ■ Recommendations
6. Follow up	■ Periodically updated information	■ Updated analysis and recommendations

Of course, which data are processed and analyzed will depend on the specific objectives of the analysis. In the example we present here, the objective is an analysis of a purchase decision for a long-term equity investment. The analysis focuses on the following:

- Sources of earnings and return on equity.
- Asset base.
- Capital structure.
- Capital allocation decisions.
- Earnings quality and cash flow analysis.
- Market value decomposition.
- Anticipating changes in accounting standards.

PROFESSOR'S NOTE

A detailed example of financial statement adjustments and analysis is the best way to address the LOS in this topic review. To make the example easier to follow, we provide the financial statement data necessary to conduct our analysis as needed, rather than all at once.

MODULE QUIZ 13.1

1. When applying the financial analysis framework, which of the following is the *best* example of output from processing data?
   A. A written list of questions to be answered by management.
   B. Audited financial statements.
   C. Common-size financial statements.

2. When applying the financial analysis framework to the valuation of an equity security, communicating with company suppliers, customers, and competitors is an input that occurs while:
   A. establishing the objective of the analysis.
   B. processing data.
   C. collecting data.

MODULE 13.2: EARNINGS SOURCES AND PERFORMANCE

Video covering this content is available online.

LOS 13.b: Identify financial reporting choices and biases that affect the quality and comparability of companies' financial statements and explain how such biases may affect financial decisions.

LOS 13.c: Evaluate the quality of a company's financial data and recommend appropriate adjustments to improve quality and comparability with similar companies, including adjustments for differences in accounting standards, methods, and assumptions.

We consider the acquisition of a minority equity interest in Thunderbird Corporation, a publicly held firm located in the United States. Thunderbird is a leading producer of electronic components used in automotive, aircraft, and marine applications.

Sources of Earnings and Return on Equity

We begin our analysis by identifying the sources of Thunderbird's earnings and determining whether these sources are sustainable over time.

Return on equity (ROE) can be decomposed using the extended **DuPont equation**, as follows:

$$\text{ROE} = \underbrace{\frac{\text{NI}}{\text{EBT}}}_{\text{Tax Burden}} \times \underbrace{\frac{\text{EBT}}{\text{EBIT}}}_{\text{Interest Burden}} \times \underbrace{\frac{\text{EBIT}}{\text{revenue}}}_{\text{EBIT Margin}} \times \underbrace{\frac{\text{revenue}}{\text{average assets}}}_{\text{Total Asset Turnover}} \times \underbrace{\frac{\text{average assets}}{\text{average equity}}}_{\text{Financial Leverage}}$$

The DuPont decomposition allows us to identify the firm's performance drivers, allowing us to expose effects of weaker areas of business that are being masked by the effects of other, stronger areas. For example, a firm could offset a declining EBIT margin by increasing asset turnover or increasing leverage.

We must also consider the firm's sources of income and whether the income is generated internally from operations or externally. For example, the firm has less control over income that is generated by an ownership interest in an associate than over income generated internally. If equity income from associates or joint ventures is a significant source of earnings, we should isolate these effects by removing the equity income from our DuPont analysis to eliminate any bias.

As mentioned before, the equity method is used to account for influential investments (generally an ownership interest of 20% to 50%). Under the equity method, the investor recognizes its pro rata share of the investee's earnings on the income statement. Eliminating the equity income from the investor's earnings

permits analysis of the investor's performance resulting exclusively from its own asset base. Assuming the investee is profitable, this adjustment will decrease both the investor firm's earnings and net profit margin.

Since, under the equity method, the firm's investment is reported as a balance sheet asset, total assets should be reduced by the carrying value of investment. This will increase total asset turnover (smaller denominator). We can use the extended DuPont equation to determine the overall effect on ROE.

PROFESSOR'S NOTE

In order to make the accounting equation balance, you might be tempted to adjust equity downward for the elimination of the investment asset. However, without information about how the investment is financed (e.g., debt, stock, cash, or a combination), it would be arbitrary to adjust assets and equity for purposes of calculating financial leverage. Unless the question specifically provides this information, don't adjust the leverage (you are implicitly assuming that the investment was financed using the same leverage as the rest of the company).

We begin our extended example using the selected financial data for Thunderbird presented in Figure 13.2. Thunderbird owns a 30% equity interest in one of its suppliers, Eagle Corporation.

Figure 13.2: Selected Financial Data—Thunderbird Corporation

$ in millions	2023	2022	2021	2020
Income statement				
Revenue	$75,286	$68,921	$63,781	•
EBIT	10,517	9,311	8,313	•
EBT	9,463	8,474	7,258	•
Income from associates and joint ventures[1]	896	674	627	•
Net income	7,967	6,894	6,023	•
Balance sheet				
Total assets	$80,261	$71,264	$71,903	$61,731
Equity method investment	6,255	5,901	4,951	3,638
Stockholders' equity	37,964	36,994	34,348	27,382

[1] Not included in EBIT and EBT

Using these data, we can decompose Thunderbird's ROE using the **extended DuPont** equation.

Figure 13.3: Extended DuPont Analysis (As Reported)

	Tax Burden	×	Interest Burden	×	EBIT Margin	×	Total Asset Turnover	×	Financial Leverage	=	ROE
2021	82.98%		87.31%		13.03%		0.955		2.165		19.51%
2022	81.35%		91.01%		13.51%		0.963		2.007		19.33%
2023	84.19%		89.98%		13.97%		0.994		2.021		21.26%

Note the slight improvement in ROE over the period, from 19.51% to 21.26%. The decomposition reveals that this is the result of an increasing EBIT margin and decreased effects of taxes and interest, which is offset to some degree by a reduction in financial leverage. Note that an increase in the interest and tax burden ratios indicates that the effective tax rate and impact of interest charges on operating earnings have *decreased*.

By removing the equity income of Eagle from earnings and the equity investment from total assets, we can examine Thunderbird's performance on a standalone basis. Another common adjustment made by analysts is to remove the effects of any unusual items (e.g., provisions for restructuring and litigation, goodwill impairment, etc.) from reported operating earnings (EBIT) before computing the EBIT margin and the tax burden ratios.

Figure 13.4: Extended DuPont Analysis (Excluding Equity Income and Investment Asset)

	Tax Burden[1]	×	Interest Burden	×	EBIT Margin	×	Total Asset Turnover[2]	×	Financial Leverage	=	ROE
2021	74.35%		87.31%		13.03%		1.020		2.165		18.68%
2022	73.40%		91.01%		13.51%		1.042		2.007		18.87%
2023	74.72%		89.98%		13.97%		1.080		2.021		20.51%

[1] (net income – equity income) / EBT

[2] revenue / [(beginning total assets – beginning equity investment + ending total assets – ending equity investment) / 2]

As compared to the reported ROE (Figure 13.3), adjusted ROE (Figure 13.4) has been decreased by eliminating equity income and the investment asset. Note that EBIT margin did not change because Thunderbird did not include equity income from Eagle as a part of EBIT.

PROFESSOR'S NOTE

We did not adjust the financial leverage because (in the absence of any specific information) we assume that the investment in associate used the same capital structure (i.e., mix of debt and equity) as the parent company.

MODULE QUIZ 13.2

1. Lorenzo Company recently reported EBIT margin of 11%, total asset turnover of 1.2, a financial leverage ratio of 1.5, and interest burden of 70%. Assuming an income tax rate of 35%, Lorenzo's return on equity is *closest* to:
   A. 9%.
   B. 10%.
   C. 11%.

2. McAdoo Corporation recently reported the following:

Earnings before interest and taxes	$246,500
Interest expense	(10,000)
Earnings before taxes	$236,500
Income taxes	(94,600)
Income from associates	16,750
Net income	$158,650

Tax burden, without the regard to the investments in associates, is *closest* to:

A. 57.6%.
B. 60.0%.
C. 67.1%.

3. Selected financial information from Westcreek Corporation follows:

	2023	2022
Revenue	$848,000	$732,800
Fixed assets	$146,800	$114,400
Investment in Creston Corp.	$56,400	$42,100
Total assets	$468,000	$363,600

At the end of 2023, Westcreek's total asset turnover, without regard to the investment in Creston, is *closest* to:

A. 2.0.
B. 2.3.
C. 2.5.

4. Rainbow Corporation recently reported the following financial information for its two separate divisions:

Division	EBIT Margin	Total Assets %	Total CapEx %
Green	9.5%	60%	30%
Red	3.2%	40%	70%

Rainbow is *most likely* overallocating resources to:

A. Red only.
B. Green only.
C. Red and Green.

MODULE 13.3: ASSET BASE AND CAPITAL STRUCTURE

Video covering this content is available online.

Asset Base

Analysis of the asset base requires an examination of changes in the composition of balance sheet assets over time. Presenting balance sheet items in a common-size format (i.e., as a proportion of total assets) is a useful starting point.

We begin by examining a common-size presentation of Thunderbird's assets in Figure 13.5.

Figure 13.5: Total Assets

$ in millions	2023		2022		2021	
Current assets	$25,039	31.2%	$24,714	34.7%	$29,236	40.7%
PP&E	15,445	19.2%	14,161	19.9%	13,293	18.5%
Identifiable intangibles	5,052	6.3%	2,641	3.7%	1,996	2.8%
Goodwill	23,396	29.1%	19,959	28.0%	18,893	26.3%
Other noncurrent assets	11,329	14.1%	9,789	13.7%	8,485	11.8%
Total assets	$80,261		$71,264		$71,903	

A manufacturing firm, such as Thunderbird, is expected to have considerable investments in both current assets (primarily receivables and inventory) and fixed assets (primarily plant, property, and equipment). However, note the significance of goodwill, which is 29.1% of total assets at the end of 2023. Goodwill is an unidentifiable intangible asset representing the difference between the purchase price and market value of identifiable assets with finite lives in a business acquisition reported under the purchase method.

According to Figure 13.5, goodwill has increased since 2021, indicating Thunderbird has completed a number of business acquisitions.

The increases in Thunderbird's EBIT margin and ROE (Figure 13.3) may be partially due to successful acquisitions. However, since goodwill is no longer amortized through the income statement, we must consider the possibility of losses in the future if goodwill is determined to have been impaired.

Capital Structure

A firm's capital structure must be able to support management's strategic objectives as well as to allow the firm to honor its future obligations.

Referring to Figure 13.3, Thunderbird's financial leverage ratio has decreased over the last three years from 2.2 in 2021 to 2.0 in 2023. Unfortunately, the ratio does not reveal the true nature of the leverage, as some liabilities are more burdensome than others. Financial liabilities and bond liabilities, for example, can be placed in default if not paid on time, or in the event of noncompliance with the lending covenants (i.e., technical default). On the other hand, liabilities such as employee benefit obligations, deferred taxes, and restructuring provisions are less burdensome and may or may not require a cash outflow in the future.

Next, we will examine the components of Thunderbird's long-term capital.

Figure 13.6: Long-Term Capital

$ in millions	2023		2022		2021	
Long-term debt	$4,290	8.6%	$4,866	10.0%	$5,794	12.4%
Other long-term liabilities	7,679	15.4%	6,669	13.7%	6,663	14.2%
Stockholders' equity	37,964	76.0%	36,994	76.2%	34,348	73.4%
Total long-term capital	$49,933		$48,529		$46,805	

Thunderbird's long-term debt has decreased from 12.4% of long-term capital in 2021 to 8.6% in 2023, a significant decrease in financial leverage.

Given that Thunderbird's long-term debt has decreased, we consider the possibility of an offsetting change in the firm's working capital. Various working capital ratios are presented in Figure 13.7.

Figure 13.7: Selected Working Capital Data and Ratios

$ in millions	2023	2022	2021	2020
Balance sheet				
Cash and equivalents	$4,616	$3,695	$3,261	$3,431
Marketable securities	2,031	4,338	8,915	7,266
Accounts receivable	10,795	10,204	10,004	8,266
Inventories	6,490	5,620	5,713	4,918
Other current assets	1,107	857	1,343	818
Current assets	$25,039	$24,714	$29,236	$24,699
Accounts payable	$9,925	$8,800	$7,782	$6,352
Notes payable	17,179	10,846	13,189	10,305
Other current liabilities	3,224	3,089	4,127	3,732
Current liabilities	$30,328	$22,735	$25,098	$20,389
Other data				
Revenue	$75,286	$68,921	$63,781	•
Cost of goods sold	31,526	28,499	26,542	•
Purchases*	32,396	28,406	27,337	•
Average daily expenditures	173.3	159.5	148.4	•
Working capital ratios				
Current ratio	0.83	1.09	1.16	•
Quick ratio	0.58	0.80	0.88	•
Defensive interval ratio	100.6	114.3	149.4	•
Days' sales outstanding (DSO)	50.9	53.5	52.3	•
Days' inventory on hand (DOH)	70.1	72.6	73.1	•
Days' payables	(105.5)	(106.5)	(94.4)	•
Cash conversion cycle	15.5	19.6	31.0	•

* Purchases = COGS + ending inventory − beginning inventory

Both the current ratio and quick ratio have declined as a result of both the increase in notes payable and the decrease in marketable securities. The defensive interval ratio has been declining due to both an increase in daily expenditures and a decrease in marketable securities.

On the other hand, the firm appears to be better managing its receivables, inventory, and payables, as shown by a decrease in the cash conversion cycle from 31.0 days to

15.5 days. Receivables are being collected sooner (declining DSO), inventory turnover has increased (declining DOH), and the firm is paying suppliers more slowly (increasing days' payables).

MODULE 13.4: CAPITAL ALLOCATION

Video covering this content is available online.

Capital Allocation Decisions

Consolidated financial statements can hide the individual characteristics of dissimilar subsidiaries. As a result, firms are required to disaggregate financial information by segments to assist users.

Recall that a business segment is a portion of a larger company that accounts for more than 10% of the company's revenues or assets, and is distinguishable from the company's other line(s) of business in terms of risk and return characteristics. Geographic segments are also identified based on the same criteria.

Although required disclosure under U.S. GAAP and IFRS is limited, the disclosures are valuable in identifying each segment's contribution to revenue and profit, the relationship between capital expenditures and rates of return, and which segments should be de-emphasized or eliminated.

Continuing our example, Thunderbird operates four different divisions: aircraft, automotive, marine, and specialty products. Figure 13.8 presents Thunderbird's revenue and EBIT by segment.

Figure 13.8: Revenue and EBIT by Segment

$ in millions	2023		2022		2021	
Revenue						
Aircraft	$11,027	14.6%	$8,856	12.8%	$7,863	12.3%
Automotive	34,631	46.0%	32,754	47.5%	30,276	47.5%
Marine	22,345	29.7%	20,566	29.8%	19,491	30.6%
Specialty	7,283	9.7%	6,745	9.8%	6,151	9.6%
	$75,286		$68,921		$63,781	
EBIT						
Aircraft	$2,440	23.2%	$1,955	21.0%	$1,696	20.4%
Automotive	5,059	48.1%	4,674	50.2%	4,115	49.5%
Marine	2,482	23.6%	2,160	23.2%	2,020	24.3%
Specialty	536	5.1%	522	5.6%	482	5.8%
	$10,517		$9,311		$8,313	

Figure 13.8 reveals that in terms of contributing revenue and EBIT, the automotive division is the largest segment while the specialty products division is the smallest. Also, the percentage contribution to EBIT by the specialty products division declined from 5.8% in 2021 to 5.1% in 2023.

Thunderbird's assets and capital expenditures by segment are presented in Figure 13.9.

Figure 13.9: Assets and Capital Expenditures by Segment

$ in millions	2023		2022		2021	
Assets*						
Aircraft	$14,777	27.5%	$6,861	15.4%	$5,288	12.8%
Automotive	20,059	37.4%	19,553	43.9%	19,166	46.6%
Marine	12,310	22.9%	11,927	26.8%	10,779	26.2%
Specialty	6,509	12.1%	6,219	14.0%	5,928	14.4%
	$53,655		$44,560		$41,161	
Capital expenditures						
Aircraft	$383	11.3%	$336	11.8%	$240	10.4%
Automotive	1,432	42.3%	1,199	42.1%	1,018	44.3%
Marine	841	24.8%	667	23.4%	618	26.9%
Specialty	730	21.6%	646	22.7%	421	18.3%
	$3,386		$2,848		$2,297	

* Not equal to total assets due to unallocated and non-segment assets.

Not surprisingly, Figure 13.9 reveals that the automotive division requires the greatest proportion of assets and capital expenditures. Note that the specialty products division has the least assets of all four divisions and that the aircraft division has required the least capital expenditures. Also note that the capital expenditures of the specialty products division have increased over the period.

Using the percentages from Figure 13.9, we can calculate the ratio of proportional capital expenditures to proportional assets for each segment. A ratio greater than one indicates the firm is growing the segment by allocating a greater percentage of its capital expenditures to a segment than that segment's proportion of total assets. Conversely, a ratio of less than one indicates the firm is allocating a smaller percentage of its capital expenditures to a segment than its proportion of total assets. If these trends continue, the segments will represent a more or less significant proportion of the firm over time.

By comparing the EBIT margin contributed by each segment to its ratio of capital expenditure proportion to asset proportion, we can determine if the firm is investing its capital in its most profitable segments.

Figure 13.10: EBIT Margin and CapEx % to Assets % by Segment

	EBIT Margin			CapEx % / Assets %		
	2023	2022	2021	2023	2022	2021
Aircraft	22.1%	22.1%	21.6%	0.41	0.77	0.81
Automotive	14.6%	14.3%	13.6%	1.13	0.96	0.95
Marine	11.1%	10.5%	10.4%	1.08	0.87	1.03
Specialty	7.4%	7.7%	7.8%	1.79	1.62	1.27

From Figure 13.10, we note that while the specialty products division has, by far, the lowest EBIT margin, it has the highest capital expenditures proportion to assets

proportion ratio. Additionally, the specialty products division's EBIT margin is declining. If Thunderbird continues to overallocate capital resources to the specialty products division, the firm's company-wide returns may suffer.

Accrual-based measures such as EBIT may not be a good indicator of an entity's ability to generate cash flow. We would rather evaluate segmental capital allocation decisions based on cash flows generated by each segment. However, segmental cash flow data is generally not reported. We can, however, approximate cash flow as EBIT plus depreciation and amortization. Figure 13.11 provides depreciation and amortization expense by segment. Figure 13.12 shows the cash flow estimates using segmental EBIT from Figure 13.8 and segmental depreciation and amortization information from Figure 13.11.

Figure 13.11: Depreciation and Amortization Expense by Segment

$ in millions	2023	2022	2021
Aircraft	$172	$165	$142
Automotive	$644	$590	$603
Marine	$377	$328	$366
Specialty	$329	$318	$251
Total	$1,522	$1,401	$1,362

Figure 13.12: Estimated Cash Flow = EBIT + Depreciation/Amortization

$ in millions	2023	2022	2021
Aircraft	$2,612	$2,120	$1,838
Automotive	$5,703	$5,264	$4,718
Marine	$2,859	$2,488	$2,386
Specialty	$865	$840	$733
Total	$12,039	$10,712	$9,675

We then compute cash operating return on average total assets using information from Figure 13.12 and computing average total assets for 2022 and 2023 from information in Figure 13.9. Figure 13.13 shows the relevant information including EBIT margins from Figure 13.10.

Figure 13.13: Segmental Cash Generation and EBIT Margins

	Cash Flow/Average Assets		EBIT Margin	
	2023	2022	2023	2022
Aircraft	24.1%	34.9%	22.1%	22.1%
Automotive	28.8%	27.2%	14.6%	14.3%
Marine	23.6%	21.9%	11.1%	10.5%
Specialty	13.6%	13.8%	7.4%	7.7%

Average assets are calculated as beginning assets + ending assets divided by 2. Using data from Figure 13.9, the 2023 average assets for the aircraft division is ($14,777 +

$6,861)/2 or $10,819. Hence, for 2023, the cash flow to average assets for the aircraft division is $2,612 / $10,819 = 24.1%. Figure 13.13 confirms poor capital allocation decision to the specialty products division. In addition, we can see that the aircraft division—while continuing to produce superior operating margins—has fallen behind in cash generation in the latest year.

MODULE 13.5: EARNINGS QUALITY AND CASH FLOW ANALYSIS

Video covering this content is available online.

LOS 13.d: Evaluate how a given change in accounting standards, methods, or assumptions affects financial statements and ratios.

LOS 13.e: Analyze and interpret how balance sheet modifications, earnings normalization, and cash flow statement related modifications affect a company's financial statements, financial ratios, and overall financial condition.

Earnings Quality and Cash Flow Analysis

Earnings quality refers to the persistence and sustainability of a firm's earnings. Earnings that are closer to operating cash flow are considered higher quality. Of course, earnings are subject to accrual accounting events that require numerous judgments and estimates. As a result, earnings are more easily manipulated than cash flow.

We can disaggregate earnings into their cash flow and accruals components using either a balance sheet approach or a cash flow statement approach. With either approach, the ratio of accruals to average net operating assets can be used to measure earnings quality. The interpretation of both ratios is the same: the lower the ratio, the higher the earnings quality.

Accruals Ratio

Balance sheet approach. Using the balance sheet, we can measure accruals as the change in net operating assets over a period. Net operating assets (NOA) is the difference between operating assets and operating liabilities. Operating assets are equal to total assets minus cash, equivalents to cash, and marketable securities. Operating liabilities are equal to total liabilities minus total debt (both short term and long term). In summary, the formula for balance sheet based aggregate accruals is:

$$\text{accruals}^{BS} = \text{NOA}_{END} - \text{NOA}_{BEG}$$

In order to make comparisons, it is necessary to scale the accrual measure for differences in size. Just like ROA and ROE, the measure can be distorted if a firm is growing or contracting quickly. Scaling the measure also allows for comparisons with other firms. Scaling is done by dividing the accrual measure by the average NOA for the period. The result is known as the accruals ratio:

$$\text{accruals ratio}^{BS} = \frac{(\text{NOA}_{END} - \text{NOA}_{BEG})}{(\text{NOA}_{END} + \text{NOA}_{BEG})/2}$$

Cash flow statement approach. We can also derive the aggregate accruals by subtracting cash flow from operating activities (CFO) and cash flow from investing activities (CFI) from reported earnings as follows:

$$\text{accruals}^{CF} = \text{NI} - \text{CFO} - \text{CFI}$$

PROFESSOR'S NOTE

You might wonder why CFI and CFO appear in the cash flow statement approach to calculating accruals but CFF doesn't.

The purpose here is to evaluate the persistence and reliability of earnings by calculating accruals as a percentage of net income. (Higher accruals indicate less reliability.)

Net income arises from transactions associated with CFO and CFI: CFO represents profit from our normal operating business, and CFI represents income from investments in other businesses.

CFF, however, arises out of decisions about how the company's operations are financed.

Recall that IFRS allows some flexibility in the classifications of certain cash flows, primarily interest and dividends paid. Thus, for firms following U.S. GAAP, it may be necessary to reclassify these cash flows from operating activities to financing activities for comparison purposes.

Like the balance sheet accrual measure, the cash flow measure must be scaled for comparison purposes. Thus, the accruals ratio based on the cash flow statement is:

$$\text{accruals ratio}^{CF} = \frac{(\text{NI} - \text{CFO} - \text{CFI})}{(\text{NOA}_{END} + \text{NOA}_{BEG})/2}$$

Figure 13.14 contains the necessary data to calculate the accruals ratio using both approaches.

Figure 13.14: Selected Balance Sheet and Cash Flow Data

$ in Millions	2023	2022	2021
Balance sheet			
Total assets	$80,261	$71,264	$71,903
Cash and marketable securities	(6,647)	(8,033)	(12,176)
Operating assets	$73,614	$63,231	$59,727
Total liabilities	$42,297	$34,270	$37,555
Long-term debt	(4,290)	(4,866)	(5,794)
Short-term debt	(17,179)	(10,846)	(13,189)
Operating liabilities	$20,828	$18,558	$18,572
Net operating assets (NOA)[1]	$52,786	$44,673	$41,155
Balance sheet accruals[2]	$8,113	$3,518	$6,541
Cash flow statement			
Net income	$7,967	$6,894	$6,023
(–) Operating cash flow	9,407	8,173	7,144
(–) Investing cash flow	(11,027)	(7,364)	(3,261)
Cash flow accruals[3]	$9,587	$6,085	$2,140

[1] NOA totaled $34,614 at the end of 2020

[2] Year-to-year change in NOA

[3] 9,587 = (+7,967) – (+9,407) – (–11,027)

Using the data contained in Figure 13.14, we can calculate the balance sheet and cash flow statement accruals ratios in Figure 13.15.

Figure 13.15: Balance Sheet and Cash Flow Accruals Ratios

$ in millions	2023	2022	2021
Balance sheet approach			
$\frac{\text{BS accruals}}{\text{average NOA}}$	$\frac{\$8,113}{\$48,730} = 16.6\%$	$\frac{\$3,518}{\$42,914} = 8.2\%$	$\frac{\$6,541}{\$37,885} = 17.3\%$
Cash flow statement approach			
$\frac{\text{CF accruals}}{\text{average NOA}}$	$\frac{\$9,587}{\$48,730} = 19.7\%$	$\frac{\$6,085}{\$42,914} = 14.2\%$	$\frac{\$2,140}{\$37,885} = 5.6\%$

Under the balance sheet approach, the accruals ratio has fluctuated widely over the period, from 17.3%, down to 8.2% in 2022, and back up to 16.6%. Wide fluctuations like these may be an indication of earnings manipulation.

Equally disturbing, the accruals ratio calculated using the cash flow approach has steadily increased over the last three years from 5.6% in 2021 to 19.7% in 2023.

PROFESSOR'S NOTE

Although both accruals ratios are conceptually equivalent (both measure the degree of accruals present in a firm's earnings), their results can differ because of acquisitions and divestitures, exchange rate gains and losses, and inconsistent treatment of specific items on the balance sheet and on

the cash flow statement. As noted earlier, Thunderbird has been involved in a number of acquisitions over the 3-year period.

Because of the potential for earnings manipulation by increasing accruals, we decide to compare Thunderbird's cash flow to its operating income. Our interest is in determining whether operating income is confirmed by cash flow. However, we cannot directly use the cash flow from operating activities as a proxy for cash flow for this purpose.

In order to compare the two measures, it is necessary to eliminate cash paid for interest and taxes from operating cash flow by adding them back. (Interest and taxes are deducted for operating cash flow but not for operating income.) This adjusted figure is the **cash generated from operations (CGO)**. CGO can also be calculated as:

CGO = EBIT + non-cash charges − increase in working capital.

PROFESSOR'S NOTE

Be careful when making the cash interest and tax adjustment to operating cash flow. Firms that follow IFRS have the choice of reporting cash paid for interest as an operating cash flow or as a financing cash flow. If a firm reports the interest as a financing cash flow, no interest adjustment is necessary.

As shown in Figure 13.16, we can calculate the ratio of cash generated from operations to operating income.

Figure 13.16: Cash Flow to Operating Income

$ in Millions	2023	2022	2021
Operating cash flow (OCF)*	$9,407	$8,173	$7,144
(+) Cash interest paid	552	419	306
(+) Cash taxes paid	2,150	1,968	1,778
Cash generated from operations (CGO)	$12,109	$10,560	$9,228
Operating income	$10,517	$9,311	$8,313
Cash generated from operations / operating income	1.15	1.13	1.11

* After deducting cash paid for interest and taxes

The ratio of CGO to operating income confirms that cash generated from operations has exceeded operating income over the past three years. The results of this analysis reduce our earlier concerns of potential earnings manipulation from our accruals analysis.

In order to evaluate Thunderbird's recent acquisitions, we examine the cash return on total assets.

Figure 13.17: Cash Return on Total Assets

$ in Millions	2023	2022	2021
Cash generated from operations	$12,109	$10,560	$9,228
Average total assets	$75,763	$71,584	$66,817
CGO / average total assets	16.0%	14.8%	13.8%

The cash return on total assets has increased over the period, which seems to justify the recent acquisitions. However, since the results of the accruals ratios, calculated in Figure 13.15, gave us cause for concern, we need to calculate cash flow to reinvestment, cash flow to total debt, and cash flow interest coverage ratios.

Figure 13.18: Selected Cash Flow Ratios

$ in Millions	2023	2022	2021
Cash flow to reinvestment			
Cash generated from operations (CGO)	$12,109	$10,560	$9,228
Capital expenditures	$3,386	$2,848	$2,297
CGO / capital expenditures	3.6	3.7	4.0
Cash flow to total debt			
Cash generated from operations (CGO)	$12,109	$10,560	$9,228
Total debt	$21,469	$15,712	$18,983
CGO / total debt	56.4%	67.2%	48.6%
Cash flow interest coverage			
Cash generated from operations (CGO)	$12,109	$10,560	$9,228
Cash interest paid	$552	$419	$306
CGO / cash interest	21.9	25.2	30.2

All three cash flow measures presented in Figure 13.18 are reassuring. Although cash flow to reinvestment declined slightly over the period, cash flow still covered capital expenditures by 3.6 times in 2023. This indicates there are sufficient resources to fund Thunderbird's ongoing capital expenditures.

Cash flow to total debt of 56.4% in 2023 confirms Thunderbird's relatively low leverage. Cash flow interest coverage (the interest coverage ratio calculated on a cash flow basis) has been declining over the past three years but, for 2023, cash flow still covered interest paid 21.9 times, which is excellent. With low leverage and high interest coverage, Thunderbird has the flexibility to increase its debt if the need arises.

MODULE QUIZ 13.3, 13.4, 13.5

1. Suppose that we are provided the following financial data for MegaCo Industries:

Operating income	20,000
Net income	12,000
Cash from operations	33,000
Cash from investing	(30,000)
Cash from financing	(10,000)
Average total assets	900,000
Average net operating assets	180,000

MegaCo's cash flow accruals ratio is *closest* to:

A. 5.0%.
B. 7.5%.
C. 10.0%.

MODULE 13.6: MARKET VALUE DECOMPOSITION

Video covering this content is available online.

Market Value Decomposition

When a parent company has an ownership interest in an associate (subsidiary or affiliate), it may be beneficial to determine the *standalone* value of the parent; that is, the implied value of the parent without regard to the value of the associate. The implied value is equal to the parent's market value less the parent's pro rata share of the associate's market value. If the associate's stock is traded on a foreign stock exchange, it may be necessary to convert the market value of the associate to the parent's reporting currency.

As noted earlier, Thunderbird owns a 30% equity interest in Eagle Corporation, a publicly traded firm located in Europe. Let's suppose that the market capitalization of Thunderbird is $137 billion. Also, let's imagine that the market capitalization of Eagle is €60 billion and, at year-end, the $/€ exchange rate is $1.40.

In this case, Thunderbird's pro rata share of Eagle's market value is $25.2 billion (€60 billion × 30% × $1.40). Therefore, the implied value of Thunderbird, excluding Eagle, is $111.8 billion ($137 billion – $25.2 billion) or 81.6% of Thunderbird's market capitalization ($111.8 billion / $137 billion).

Next, let's compute Thunderbird's P/E multiple without Eagle. Let's suppose Thunderbird's P/E multiple is 17.1 ($137 billion market capitalization / $8 billion net income). Assuming the S&P 500 multiple is 20.1, Thunderbird's P/E is a 15% discount to the P/E of the S&P index.

The implied P/E multiple of Thunderbird without Eagle is 15.7 [$111.8 billion implied value / ($8 billion Thunderbird net income – $896 million equity income from Eagle)]. Thus, Thunderbird's implied P/E multiple is an even greater 22% discount to the S&P multiple.

PROFESSOR'S NOTE

Had Eagle's earnings been stated in euros, it would have been necessary to convert the earnings into dollars at the average exchange rate for the period. The average rate is used since it is assumed the earnings occurred evenly throughout the year.

The discount to the S&P multiple seems excessive given Thunderbird's low leverage and strong cash flow position. Thus, Thunderbird's stock may be undervalued relative to the market.

Thunderbird's implied P/E multiple is a crude measure because of the potential differences in accounting methods used by the two firms—Thunderbird reports under U.S. GAAP while Eagle reports under IFRS.

We can summarize our findings as follows.

Support for investment in Thunderbird

- Thunderbird's earnings growth has been generated internally from operations, through acquisitions, and by investment income from Eagle.
- Thunderbird's ROE is positive and trending upward. Investment income from Eagle has improved Thunderbird's ROE.
- Earnings quality appears to be good as operating earnings are confirmed by cash flow.
- Cash flow is sufficient to support capital expenditures and an increase in debt if necessary.
- Thunderbird is growing through acquisitions and its cash return on assets continues to increase.
- After eliminating Thunderbird's pro rata share of Eagle's market value and equity income, Thunderbird appears to be undervalued based on its implied P/E multiple relative to that of the S&P index.

Concerns

- Potential earnings manipulation as evidenced by increasing accrual ratios. However, this concern is reduced due to Thunderbird's strong cash flow.
- Thunderbird may be overallocating capital resources to the lowest margin segment (specialty products). Future monitoring will be required.
- Recent acquisitions may result in losses from goodwill impairment in the future.

MODULE QUIZ 13.6

Use the following information to answer Questions 1 and 2.

Big Company owns 25% of Small Company. Selected recent financial data for both firms follows:

	Big	Small
Net income	£16,000	€6,000
Market capitalization	£275,000	€150,000
Current exchange rate (£/€)	0.85	
Average exchange rate (£/€)	0.80	

1. The percentage of Big's value explained by its ownership of Small is *closest* to:
   A. 10.9%.
   B. 11.6%.
   C. 13.6%.

2. The implied P/E multiple of Big, without regard to Small, is *closest* to:
   A. 16.1.
   B. 16.4.
   C. 17.2.

KEY CONCEPTS

LOS 13.a

The basic financial analysis framework involves:

1. Establishing the objectives.
2. Collecting the data.
3. Processing the data.
4. Analyzing the data.
5. Developing and communicating the conclusions.
6. Following up.

LOS 13.b

Use the extended DuPont equation to examine the sources of earnings and performance. Remove equity income from associates and the investment account to eliminate any bias.

Examine the composition of the balance sheet over time.

Determine if the capital structure can support future obligations and strategic plans by analyzing the components of long-term capital. Some liabilities don't necessarily result in an outflow of cash.

Segment disclosures are valuable in identifying the contribution of revenue and profit by each segment, the relationship between capital expenditures and rates of return, and identifying segments that should be de-emphasized or eliminated.

LOS 13.c

The balance sheet should be adjusted for off-balance-sheet liabilities—for example, by recognizing the present value of any take-or-pay purchase agreements.

LOS 13.d

Users must be aware of the proposed changes in accounting standards because of the financial statement effects and the potential impact on a firm's valuation.

LOS 13.e

Earnings can be disaggregated into cash flow and accruals using a balance sheet approach and a cash flow statement approach. The lower the accruals ratio, the higher the earnings quality.

Earnings are considered higher quality when confirmed by cash flow. Cash flow can be compared to operating profit by adding back cash paid for interest and taxes to operating cash flow.

The standalone market value of a firm can be computed by eliminating the pro rata market value of investment in associates.

An implied P/E multiple can be computed by dividing the standalone market value by earnings without regard to equity income from associates.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 13.1

1. **C** Common-size financial statements are created in the data processing step of the framework for financial analysis. (LOS 13.a)

2. **C** Communication with management, suppliers, customers, and competitors is an input during the data collection step. (LOS 13.a)

Module Quiz 13.2

1. **A** ROE = tax burden × interest burden × EBIT margin × asset turnover × financial leverage = (1 − 0.35) × 0.70 × 0.11 × 1.2 × 1.5 = 0.09

   tax burden = net income / earnings before tax = 1 − tax rate

   (LOS 13.b)

2. **B** (158,650 net income − 16,750 equity income) / 236,500 EBT = 60.0% (LOS 13.b)

3. **B** 848,000 revenue / [(2023 total assets of 468,000 − 2023 Creston investment of 56,400 + 2022 total assets of 363,600 − 2022 Creston investment of 42,100) / 2] = 848,000 / 366,550 = 2.31 (LOS 13.b)

4. **A** Rainbow may be overallocating resources to Red because Red has the lowest EBIT margin and a ratio of proportional capital expenditures to proportional assets that is greater than 1 (70% / 40% = 1.75). Green has highest EBIT margin and a ratio of proportional capital expenditures to proportional assets that is less than 1 (30% / 60% = 0.50). (LOS 13.b)

Module Quiz 13.3, 13.4, 13.5

1. **A** Cash flow accruals ratio = (NI − CFO − CFI) ÷ average NOA = [12,000 − 33,000 − (−30,000)] / 180,000 = 5%. (Module 13.5, LOS 13.e)

Module Quiz 13.6

1. **B** Pro rata share of Small's market cap / Big's market cap = (€150,000 × 25% × 0.85) / £275,000 = 11.6%. (LOS 13.e)

2. **B** Big's implied value without Small is £243,125, or £275,000 Big market cap − £31,875 pro rata share of Small market cap (€150,000 × 25% × 0.85 current exchange rate).

   Big's net income without Small is £14,800, or £16,000 Big net income − £1,200 pro rata share of Small net income (€6,000 × 25% × 0.80 average exchange rate).

   Implied P/E = 16.4 (£243,125 Big's implied value without Small / £14,800 Big's net income without Small). (LOS 13.e)

READING 14

FINANCIAL STATEMENT MODELING

EXAM FOCUS

This topic review discusses estimation of inputs for the price multiples and DCF valuation models discussed in subsequent topic reviews. Be able to forecast income statement and balance sheet items given specific assumptions. Understand the different approaches to developing inputs, the influence of Porter's five forces on forecasts, and the concepts of inflection points and cannibalization factor.

MODULE 14.1: FORECASTING FINANCIAL STATEMENTS

Video covering this content is available online.

LOS 14.a: Compare top-down, bottom-up, and hybrid approaches for developing inputs to equity valuation models.

Bottom-up analysis starts with analysis of an individual company or its reportable segments. Revenue projections based on historical revenue growth or a company's new product introductions over the forecast horizon are considered bottom-up approaches. Another approach is linkage to balance sheet (e.g., interest revenue forecasts for a bank) where the changes in balance sheet composition guides the forecast.

Top-down analysis begins with expectations about a macroeconomic variable, often the expected growth rate of nominal GDP. Revenue projections that are derived from an estimate of GDP growth and an expected relationship between GDP growth and company sales are an example of a top-down approach.

A **hybrid** analysis incorporates elements of both top-down and bottom-up analysis. By using elements of both methods, a hybrid analysis can highlight any inconsistencies in assumptions between the top-down and bottom-up approaches. A hybrid analysis is the most common type.

LOS 14.b: Compare "growth relative to GDP growth" and "market growth and market share" approaches to forecasting revenue.

When forecasting revenue with a "**growth relative to GDP growth**" approach, the relationship between GDP and company sales could be modeled as "GDP growth plus x%" or "to increase at the growth rate of GDP times 1 + x%." For example, if we forecast that GDP will grow at 5% and we believe that our company's revenue will grow at a 20% faster rate, then our forecast of increase in company revenue would be 5% × (1 + 0.20) = 6%.

An alternative approach, the "**market growth and market share**" approach, begins with an estimate of industry sales (market growth), and then company revenue is estimated as a percentage of industry sales (market share). Market share times estimated industry sales provides the estimate of company revenues. Note that different business or geographic segments may have significantly different relationships between GDP growth and revenue growth. For example, a company's Chinese division may be forecast to grow at a lower rate than the Chinese GDP growth rate while the Japanese division may be forecast to grow at a rate higher than the Japanese GDP growth rate.

LOS 14.c: Evaluate whether economies of scale are present in an industry by analyzing operating margins and sales levels.

If the average cost of production decreases as industry sales increase, we say that the industry exhibits **economies of scale**. A company with economies of scale will have higher operating margins (because of lower average cost) as production volume increases, and sales volume and margins will tend to be positively correlated.

Economies of scale are observed when larger companies (i.e., companies with higher sales) in an industry have larger margins. One way to evaluate if economies of scale are present is to look at common-size income statements. Economies of scale in COGS are evidenced by lower COGS as a proportion of sales for larger companies. Similarly, lower SG&A as a proportion of sales for larger companies is evidence of economies of scale in SG&A.

LOS 14.d: Demonstrate methods to forecast cost of goods sold and operating expenses.

Cost of Goods Sold (COGS)

Because cost of goods sold is closely related to revenue, future COGS is usually estimated as a percentage of future revenue:

forecast COGS = (historical COGS / revenue) × (estimate of future revenue)

or

forecast COGS = (1 − gross margin)(estimate of future revenue)

If a company's gross margin shows an increasing or decreasing trend (reflecting changes in business or market conditions), an analyst forecasting future gross margins should consider the probability that this trend might continue.

It can be worthwhile to examine the gross margins of a firm's competitors in the market as a check of the reasonableness of future gross margin estimates. In some cases, differences between firms' business models may be the underlying reason for differences in gross margins. However, when differences in firms' business models are accounted for, any remaining difference should be investigated.

A closer examination of the volume and price of a firm's inputs may improve the quality of a forecast of COGS, especially in the short run. For example, fuel costs can be volatile, and will have a significant impact on an airline's COGS, gross margins, and net margins. Firms with commodity-type inputs that cannot easily pass on higher input costs to their customers often hedge their future input costs by using forward contracts or other derivative securities. An analyst must be aware of the proportion of future input costs hedged in this way or, at a minimum, whether the firm has historically hedged these costs and over what horizon. It's important to note that a hedge works both ways: a hedge that protects the firm's gross margins from declining when input prices rise will also "protect" the firm's gross margins from increasing when input prices fall.

Estimates of a firm's COGS may also be improved by forecasting COGS for the firm's various product categories and business segments separately.

Selling General and Administrative Costs (SG&A)

Compared to COGS, SG&A operating expenses are less sensitive to changes in sales volume; SG&A's fixed cost component is generally greater than its variable cost component. Research and development (R&D) expenditures may be set by management, especially over a near-term horizon, and may be uncorrelated with revenues. Expenses for corporate headquarters, management salaries, and IT operations are other examples of costs that are more fixed than variable in nature. These costs tend to grow gradually as the firm grows rather than being driven by changes in firm sales in the current period.

Selling and distribution costs, on the other hand, may be more directly related to sales volumes, because it is likely that more salespeople will be hired to support higher firm sales. If a firm's financial statements break out the components of SG&A separately, the different components can be considered separately to improve the overall forecast of SG&A expenses. If segment information for SG&A is provided and different segments have significant differences in SG&A as a percentage of revenue, SG&A for each segment can be forecasted to produce better estimates of segment operating margins going forward.

LOS 14.e: Demonstrate methods to forecast non-operating items, financing costs, and income taxes.

Financing Cost

The financial structure of a company includes both debt and equity financing. The primary determinants of **gross interest expense** are the level of (gross) debt and market interest rates.

Companies may also have interest income from investments. This is especially true for banks and other financial companies, and less so for nonfinancial companies such as manufacturers. **Net debt** is *gross debt* minus cash, cash equivalents, and short-term securities. **Net interest expense** is gross interest expense minus interest income on cash and short-term debt securities.

Given these definitions, we can calculate the interest rates on both gross and net debt, as the following example illustrates.

EXAMPLE: Calculating gross and net interest rates

Atwood, Inc., a small manufacturer of knobs and switches, provided the following information:

$ (000s)	20X1	20X2	Average*
Gross debt	3,200	3,600	3,400
Cash + ST securities	800	700	750
Net debt	2,400	2,900	2,650
Gross interest expense for 20X2		220	
Interest income for 20X2		8	
Net interest expense 20X2		212	

*Average values = (beginning value + ending value) / 2

Calculate Atwood's 20X2 interest expense on average gross and average net debt and the yield on average cash balances.

Answer:

Gross interest expense rate is 220 / 3,400 = 6.47%. Net interest expense rate is 212 / 2,650 = 8.00%. Yield on average cash balance is 8 / 750 = 1.07%.

Analysts should also use any planned debt issuance or retirement and the maturity structure of existing debt (disclosed in footnotes to financial statements) to improve the forecasts of future financing costs.

Income Tax Expense

There are three primary tax rates used in analysis:

1. The **statutory rate** is the percentage tax charged in the country where the firm is domiciled.
2. The **effective tax rate** is income tax expense as a percentage of pretax income on the income statement.
3. The **cash tax rate** is cash taxes paid as a percentage of pretax income.

Changes in deferred tax items account for the difference between income tax expense and cash taxes due. Recall that income tax expense is cash tax due plus changes in deferred tax liabilities minus changes in deferred tax assets.

Differences between the statutory and effective tax rates can arise for a variety of reasons. A reconciliation of these two rates is contained in the footnotes to financial statements and can provide information about one-time events as well as tax rates for the various tax jurisdictions in which the firm operates. The statutory and

effective tax rates may differ because there are expenses recognized in the income statement that are not deductible for tax purposes (a permanent difference). The effective tax rate for a corporation that has taxable income in several countries will be a weighted average of the effective tax rates in each country (where the weights equal the proportion of taxable income from each country). Note that if a company has relatively higher (lower) earnings growth in a high tax country, its effective tax rate will increase (decrease).

An analyst should pay special attention to estimates of tax rates for companies that consistently report an effective tax rate that is less than the statutory rate (or consistently less than that of comparable peer companies).

Other Items

Dividends can be estimated based on historical data, using a constant growth rate or a constant payout ratio as a starting point. Forecasting the number of shares outstanding due to share repurchases and issuances requires analysts to pay attention to stated changes in capital structure. Unusual charges should be excluded in the forecasts; however, if the company has a history of such charges, then a 'normalized' amount of such charges should be included in the expense forecasts.

LOS 14.f: Describe approaches to balance sheet modeling.

When building a forecast model, many balance sheet items flow from the forecasted income statement items. Net income less dividends declared will flow through to retained earnings. Working capital items can be forecast based on their historical relationship with income statement items.

One of the measures of inventory management is inventory turnover. The forecasted annual COGS divided by the inventory turnover ratio can be used to forecast an inventory value for the balance sheet that is consistent with income statement projections of COGS.

"Days sales outstanding," a measure of accounts receivable management, can be used to forecast accounts receivable for the balance sheet:

projected accounts receivable = (days sales outstanding) × (forecasted sales/365)

Estimates derived in this way will preserve working capital items' relationship with income statement items, and absent any complicating factors, working capital items will increase at the same rate as revenues.

Property, plant, and equipment (PP&E) on the balance sheet is determined by depreciation and capital expenditures (capex). One approach to estimating PP&E is to assume it will be equal to its historical average proportion of sales so that PP&E will grow at the same rate as revenue. However, by having an understanding of the company's operations and future plans and incorporating this information into her model, an analyst can make more accurate projections of a company's future capital needs. Forecasts may also be improved by analyzing **capital expenditures for maintenance** separately from **capital expenditures for growth**. Historical depreciation should be increased by the inflation rate when estimating capital

expenditure for maintenance because replacement cost can be expected to increase with inflation.

Once the forecasted financial statements are constructed, an analyst should perform sensitivity analysis for individual assumptions, or perform analyses with alternative assumptions (scenario analysis), to examine the sensitivity of net income to changes in assumptions.

LOS 14.h: Explain how behavioral factors affect analyst forecasts and recommend remedial actions for analyst biases.

Like everyone, those in the financial industry are prone to behavioral biases, which for analysts can result in imprecise forecasts. For each of the following five biases, know the definition, the effect of the bias, and how to mitigate the effects.

1. **Overconfidence bias**. Having too much faith in one's own work. Analysts may underestimate their forecasting errors and hence have a narrower confidence interval for their forecasts than warranted. Research has shown that analysts that 'go against the grain' (i.e., forecasting what others are not) are more likely to suffer from overconfidence bias. This bias may be mitigated by sharing forecasts and by the analyst soliciting critique of their work. Analysts should evaluate the efficacy of past forecasts and learn from their own forecasting errors, which should lead to a widening their confidence intervals. Scenario analysis may help to identify any shortcomings.
2. **Illusion of control bias**. A false sense of security in one's forecasts. There are two ways this bias is manifested: seeking 'expert' opinions to justify a forecast, and making a model more complex and granular (e.g., by including more independent variables). Overfitted models perform poorly out of sample and can also conceal assumptions that are not updated based on new information. Illusion of control can be mitigated by focusing only on variables with known explanatory power, and by seeking outside opinions only from those that have unique or specific perspective.
3. **Conservatism bias**. Also called *anchoring*. In this behavioral bias, the analyst makes only small adjustments to their prior forecasts when new information becomes available. Usually conservatism results in reluctance to incorporate new negative information, however it could also lead to lags in incorporating positive news. Mitigation requires periodic evaluation of forecasting errors, and using flexible models with few independent variables.
4. **Representativeness bias**. This bias occurs due to a tendency to classify data based on past information and known classifications. Sometimes new information may only be superficially similar to a known classification, and hence may be best viewed from a fresh perspective. A phenomenon's rate of incidence in a larger population is known as the **base rate**. A focus on the base rate (for example, viewing the company as a member of a particular industry) is sometimes known as the "outside view," while the situation-specific view (for example, fixating on the firm's company-specific factors) is known as the "inside view." One common form of representativeness bias is the base-rate neglect, where an observation's membership, (its base-rate), is neglected in favor of

situation or member-specific information. Analysts should consider both inside and outside view to generate forecasts.

5. **Confirmation bias**. Confirmation bias causes an analyst to seek out (or pay attention to) data that affirms their earlier convictions, and to disregard or underestimate information that disputes those opinions. For example, an analyst that has a positive view of a particular company may choose to discuss the firm with particular colleagues who share the same point of view. Two ways to reduce confirmation bias are to keep abreast of research from analysts that have an opposite view, or to seek out the points of view of colleagues that have no emotional investment. Analysts should also recognize inherent biases while evaluating management representations.

MODULE 14.2: COMPETITIVE ANALYSIS AND GROWTH RATE

Video covering this content is available online.

LOS 14.i: Explain how competitive factors affect prices and costs.

LOS 14.j: Evaluate the competitive position of a company based on a Porter's five forces analysis.

Once financial projections are completed, the **return on invested capital (ROIC)** can be calculated. While analysts use varying definitions of ROIC, it can be thought of as net operating profit adjusted for taxes (NOPLAT) divided by invested capital (operating assets minus operating liabilities). ROIC is a return to both equity and debt and is preferable to return on equity (ROE) in some contexts because it allows comparisons across firms with different capital structures. Firms with higher ROIC (relative to their peers) are likely exploiting some **competitive advantage** in the production and/or sale of their products.

The competitive environment that a firm operates in and how successful it is in that environment are very important determinants of the firm's future financial results. There are no formulas for, or clear rules about, how a firm's competitive environment affects its future revenue and costs, but a firm's future competitive success is possibly the most important factor in determining future revenue and profitability. Recall from a previous topic review the analysis of industry competition based on **Porter's five forces.** Let's review how these five industry characteristics may affect future financial results and, therefore, financial forecasts.

1. Companies have less (more) pricing power when the **threat of substitute products** is high (low) and switching costs are low (high).
2. Companies have less (more) pricing power when the **intensity of industry rivalry** is high (low). Pricing power is low when industry concentration is less, when fixed costs and exit barriers are high, when industry growth is slow or negative, and when products are not differentiated to a significant degree.
3. Company prospects for earnings growth are lower when the **bargaining power of suppliers** is high. If suppliers are few, they may be able to extract a larger portion of any value added.

4. Companies have less pricing power when the **bargaining power of customers** is higher, especially in a circumstance where a small number of customers are responsible for a large proportion of a firm's sales and also when switching costs are low.
5. Companies have more pricing power and better prospects for earnings growth when the **threat of new entrants** is low. Significant barriers to entry into an industry make it possible for existing companies to maintain high returns on invested capital.

LOS 14.k: Explain how to forecast industry and company sales and costs when they are subject to price inflation or deflation.

Input costs can be significant in many industries. The cost of jet fuel in the airline industry, the cost of grains to cereal and baking companies, and the cost of coffee beans to coffee shops are all variable. Changes in these costs can significantly affect earnings.

Companies with commodity-type inputs can hedge their exposure to changes in input prices through derivatives or, more simply, fixed-price contracts for future delivery. Such hedging will reduce the effect of short-term changes in input prices and increase the time until longer-term price changes affect costs and earnings. Companies that are vertically integrated (and are in effect their own suppliers) will be less subject to the effects of variations in input prices.

For a company that neither hedges input price exposure nor is vertically integrated, the issue for the analyst is to determine how rapidly, and to what extent, the increase in costs can be passed on to customers, as well as the expected effect of price increases on sales volume and sales revenue.

An analyst should monitor a company's production costs by product category and geographic location with a focus on the significant factors that affect input prices, such as weather, governmental regulation and taxation, tariffs, and the characteristics of input markets. It may be the case that a firm can reduce the impact of an increase in an input price by switching to a substitute input; for example, rising oil prices may lead power generation firms to switch from oil to natural gas.

When estimating the effects of an increase in input prices, an analyst must make assumptions about the company's pricing strategy and the effects of price increases on unit sales. When increases in input costs are thought to be temporary, a company may cut other costs (e.g., advertising expense) in order to preserve operating margins. This strategy is, however, not appropriate for long-term increases in input costs.

The effects of increasing a product's price depend on the product's elasticity of demand. For most firms, product demand is relatively elastic. With elastic demand, the percentage reduction in unit sales is greater than the percentage increase in price, and a price increase will decrease total sales revenue. If the dollar amount of the increase in cost per unit is added to product price and unit sales do not decrease

(this is unlikely), the amount of operating profit is unchanged but gross margins, operating margins, and net margins will fall.

EXAMPLE: Effect of price inflation on gross profits, gross margins, and operating margins

Alfredo, Inc., sells a specialized network component. The firm's income statement for the past year is given next.

Alfredo, Inc., Income Statement for the Year Ended 20X1

Revenues	1,000 @ $100	$ 100,000
COGS	1,000 @ $40	$ 40,000
Gross profit		$ 60,000
SG&A		$ 30,000
Operating profit		$ 30,000

For 20X2, the input costs (COGS) will increase by $5 per unit.

1. Calculate the gross margin and operating margin for Alfredo, Inc., for 20X1.
2. Calculate the 20X2 gross margin and operating margin assuming that the:
   a. Entire increase in input cost is passed on to the customers through an equal increase in selling price. The number of units sold is not affected.
   b. Selling price is increased by 5% and the number of units sold decreases by 5%.
   c. Selling price is increased by 5% and the number of units sold decreases by 10%.

Answer:

1. gross margin = gross profit / sales = $60,000 / $100,000 = 60%
   operating margin = operating profit / sales = $30,000 / $100,000 = 30%
2.
   a. 20X2, given an increase in unit price by $5 and no change in units sold:

Revenues	1,000 units @ $105	$ 105,000
COGS	1,000 units @ $45	$ 45,000
Gross profit		$ 60,000
SG&A		$ 30,000
Operating profit		$ 30,000
Gross margin		57%
Operating margin		29%

   gross margin = gross profit / sales = $60,000 / $105,000 = 57%
   operating margin = operating profit / sales = $30,000 / $105,000 = 29%

   b. 20X2, given an increase in unit price by $5 and a decrease of 50 in units sold:

Revenues	950 units @ $105	$ 99,750
COGS	950 units @ $45	$ 42,750
Gross profit		$ 57,000
SG&A		$ 30,000
Operating profit		$ 27,000
Gross margin		57%
Operating margin		27%

gross margin = gross profit / sales = $57,000 / $99,750 = 57%
operating margin = operating profit / sales = $27,000 / $99,750 = 27%

c. 20X2, given an increase in unit price by $5 and a decrease of 100 in units sold:

Revenues	900 units @ $105	$ 94,500
COGS	900 units @ $45	$ 40,500
Gross profit		$ 54,000
SG&A		$ 30,000
Operating profit		$ 24,000
Gross margin		57%
Operating margin		25%

gross margin = gross profit / sales = $54,000 / $94,500 = 57%
operating margin = operating profit / sales = $24,000 / $94,500 = 25%

The elasticity of demand is most affected by the availability of substitute products. In a competitive industry, the pricing decisions of other firms in the industry can affect the market shares of all firms in an industry. A company that is the first to increase prices in response to increased costs will experience a greater decrease in unit sales than a company that increases prices after other firms have already done so. A firm may decide to delay increasing prices in order to gain market share when other firms increase prices in response to increased costs. Firms that are too quick to increase prices will experience declining sales volumes, though firms that are slow to increase prices will experience declining gross margins.

An analyst must also understand a company's hedging activities and vertical integration, if any, to guide assumptions about a subject company's response to increasing costs and the effect of price increase on sales volume, total revenue, and profit margins. As always, different business and geographic segments should be considered separately when appropriate, and scenario and/or sensitivity analysis should be conducted.

LOS 14.l: Evaluate the effects of technological developments on demand, selling prices, costs, and margins.

Some advances in technology decrease costs of production, which will increase profit margins (at least for early adopters), and, over time, increase industry supply and unit sales as well.

Other advances in technology will result in either improved substitutes or wholly new products. The introduction of tablets created a substitute for desktop and laptop computers that did not previously exist. Some technological advances can disrupt not only markets but entire industries, as digital photography has done in the camera and film industries.

One way for an analyst to model the introduction of new substitutes for a company's products is to estimate a **cannibalization** factor, which is the percentage of new product sales that will replace existing product sales.

$$\text{cannibalization rate} = \frac{\text{new product sales that } \textit{replace} \text{ existing product sales}}{\text{total new product sales}}$$

This cannibalization factor can be different for different sales channels and is likely to be lower for business customers than for direct purchases by consumers.

As always, scenario or sensitivity analysis using a variety of scenarios encompassing new product introductions can be informative.

EXAMPLE: Cannibalization

Alpha, Inc., manufactures LED lightbulbs for sale to businesses as well as to households. Seventy-five percent of Alpha's unit sales are to business customers. Technological advances have enabled bulb manufacturers to produce a new bulb that is more energy efficient, and Alpha is planning to introduce a bulb next year that uses this new technology. Projected sales for the new bulb are shown as follows.

Market	Units
Businesses	87,000
Households	11,000
Total units	**98,000**

Calculate the lost unit sales of current product due to cannibalization, assuming a cannibalization factor of 50% for businesses and 20% for households.

Answer:

Cannibalization in business market segment = 87,000 × 0.50 = 43,500 units. Cannibalization in household market segment = 11,000 × 0.20 = 2,200 units. Total lost unit sales = 45,700 units.

LOS 14.m: Explain considerations in the choice of an explicit forecast horizon.

For a buy-side analyst, the appropriate forecast horizon may simply be the expected holding period for a stock. For example, for a portfolio with a 25% annual turnover, the average holding period of a stock is 4 years, so 4 years may be the most appropriate forecast horizon. Hence, the forecast horizon should be considered in conjunction with the investment strategy for which the stock is being considered.

Highly cyclical companies present difficulties when choosing a forecast horizon. The horizon should be long enough that the effects of the current phase of the economic cycle are not driving above-trend or below-trend earnings effects. The forecast horizon should be long enough to include the middle of a business cycle so the analyst's forecast includes mid-cycle level of sales and profits. **Normalized earnings** are expected mid-cycle earnings or, alternatively, expected earnings when the current (temporary) effects of events or cyclicality are no longer affecting earnings.

When there are recent impactful events, such as acquisitions, mergers, or restructurings, these events should be considered temporary, and the forecast horizon should be long enough that the perceived benefits of such events can be realized (or not).

It may also be the case that the forecast horizon is dictated by the analyst's manager.

LOS 14.n: Explain an analyst's choices in developing projections beyond the short-term forecast horizon.

For earnings projections beyond the short term, one method of forecasting future financial results is to assume that a trend growth rate of revenue over the previous cycle will continue. Pro forma financial results can be estimated based on the projection of each future period's revenue.

An analyst will typically value a stock using the earnings or some measure of cash flow over a forecast period, along with the stock's *terminal value* at the end of the forecast horizon. This terminal value is usually estimated using either a relative valuation (i.e., price multiple) approach or a discounted cash flow approach.

When using a multiples approach, an analyst must ensure that the multiple used is consistent with the estimate of the company's growth rate and required rate of return. Using the average P/E ratio for the company over the last 10 years, for example, presupposes that the growth in earnings and required rate of return of the stock will be, on average, the same in the future as over the previous 10 years.

When using a discounted cash flow approach to estimate the terminal value, two key inputs are a cash flow or earnings measure and an expected future growth rate. The expected earnings or cash flow should be normalized to a mid-cycle value that is not affected by temporary initiatives and events. Because the terminal value is calculated as the present value of a perpetuity, small changes in the estimated (perpetual) growth rate of future earnings or cash flows can have large effects on estimated terminal values and, hence, the current stock value. Assuming that the growth in future profitability will be the same as average profitability growth in the past may not be justified. A difficult part of an analyst's job is recognizing **inflection points**—those instances when the future will not be like the past, due to change in a company's or an industry's competitive environment or to changes in the overall economy.

Inflection points occur due to changes in:

- Overall economic environment.

- Business cycle stage.
- Government regulations.
- Technology.

PROFESSOR'S NOTE
We present the next LOS out of order for ease of exposition.

LOS 14.g: Demonstrate the development of a sales-based pro forma company model.

Sales-based pro forma financial statements are the end result of all of the assumptions and estimates developed using the techniques we have covered so far. Rather than repeat all of those points here, we present the steps in producing pro forma statements, leaving aside the choice of estimation method and the complexities of estimating the important financial statement items.

Do not forget the usual caveats. Use segment information and create segment forecasts when the subject company has business or geographical segments that differ from each other in important respects. Use sensitivity analysis or scenario analysis to estimate a range of possible outcomes and their probabilities when appropriate.

Steps in developing a sales-based pro forma model:

1. Estimate revenue growth and future expected revenue (using market growth plus market share, trend growth rate, or growth relative to GDP growth).
2. Estimate COGS (based on a percentage of sales, or on a more detailed method based on business strategy or competitive environment).
3. Estimate SG&A (as either fixed, growing with revenue, or using some other estimation technique).
4. Estimate financing costs (using interest rates, debt levels, and the effects of any large anticipated increases or decreases in capital expenditures or anticipated changes in financial structure).
5. Estimate income tax expense and cash taxes (using historical effective rates and trends, segment information for different tax jurisdictions, and anticipated growth in high- and low-tax segments).
6. Estimate cash taxes, taking into account changes in deferred tax items.
7. Model the balance sheet based on items that flow from the income statement [working capital accounts (i.e., accounts receivable, accounts payable, and inventory)].
8. Use depreciation and capital expenditures (for maintenance and for growth) to estimate capital expenditures and net PP&E for the balance sheet.
9. Use the completed pro forma income statement and balance sheet to construct a pro forma cash flow statement.

Clearly, estimation methods can be simple (as when we modeled COGS as a constant percentage of sales) or more complex (as when we forecast the prices of significant

productive inputs based on the competitive environment of input markets). An analyst must always decide when additional or more complex analysis is warranted and when additional complexity in the estimation method provides real benefits in terms of improved forecasts and value estimates.

MODULE QUIZ 14.1, 14.2

Use the following information to answer Questions 1 through 6.

Jane Larsted, CFA, works as an equity analyst for Rivington Capital where she heads up a team of three analysts covering the retail sector. Larsted is currently reviewing forecasts made by her team for two home improvement retailers in the United States.

The first company, Retail, Inc., has a dominant market share. The second, Midsize, Inc., has a significantly smaller share of the market. Financial results for the most recent three years for Retail, Inc., and Midsize, Inc., are shown in Exhibit 2.

Larsted believes in allowing her team to reach a group conclusion, and she always starts by letting each member of the team choose their own method of forecasting. The results are then discussed in a team meeting where the team arrives at a common approach.

Larsted asked the team to state the assumptions used to forecast revenues. The responses are shown in Exhibit 1.

Exhibit 1: Assumptions Used for Modeling Revenue

E. Meyers

"I have assumed that the U.S. economy will expand sufficiently to post output growth in nominal terms of 2% for the coming year. Retail, Inc., is positioned in the home improvement sector, which is currently enjoying an upswing due to the recent strength of the housing sector. My model assumes that Retail, Inc., will see revenue growth that is 10% faster than U.S. output growth."

J. Conway

"My model used to forecast the revenue of Retail, Inc., assumes that the company will be able to increase its market share for next year from the current level of 35% to 38%. This is a realistic assumption given the number of new Retail, Inc., stores coming online and the demise of a significant competitor. However, I have assumed that housing growth will falter, and that the size of the home improvement retail sector will decrease from a total revenue figure of $40 billion this year to $38 billion for the forecast period."

E. Dominguez

"Revenue growth includes the following assumptions:

- U.S. GDP will grow at a long-term real rate of 1% per year into the foreseeable future.
- Retail, Inc., has seen an average revenue growth rate of 4% per year for the last five years. I expect this growth rate to decline linearly over the next five years until it is equal to the long-term U.S. GDP growth rate.
- Long-term inflation is expected to be 2%."

Exhibit 2: Financial Results for Retail, Inc., and Midsize, Inc.

	2017 ($ million)	2018 ($ million)	2019 ($ million)
Revenue	14,020	14,585	15,091
Cost of goods sold	9,255	9,635	9,966
Selling, general, administrative	3,433	3,559	3,645
Operating income	1,332	1,391	1,480

Midsize, Inc.

	2017 ($ million)	2018 ($ million)	2019 ($ million)
Revenue	8,040	8,281	8,488
Cost of goods sold	5,548	5,715	5,857
Selling, general, administrative	1,932	1,986	2,033
Operating income	560	580	598

Larsted is concerned that the U.S. tax code may change in the near future. She has asked her team to prepare for the meeting by analyzing potential effects of a change in tax rules. Larsted provides selected information for Retail, Inc., as shown in Exhibit 3.

Exhibit 3: Tax Rate for Retail, Inc.

	2019 ($ million)
Profit before tax	1,480
Effective tax rate	28%

Larsted wants to know the likely effect on the cash tax rate next year if, in the current period, the tax authorities in the United States increase the allowance for depreciation expense. Larsted has asked the team to assume the following:

1. The result would be a 25% reduction in the amount of taxes charged in the current period and an increase by the same amount in the following period. This would be repeated each year in the future.
2. The profit before tax increases by 10% next year.

Larsted also intends to forecast the amount of debt that would be shown on Retail, Inc.'s, balance sheet for the next three years. For this task, she makes the assumptions shown in Exhibit 4.

Exhibit 4: Balance Sheet Debt Assumptions

- Retail, Inc., will continue to maintain a constant debt-to-equity ratio.
- Due to excess cash balances, the company has announced a policy of paying out 100% of net income for the year as dividends for each of the next five years. There will be no share repurchases.
- The company expects to see no gains or losses in other comprehensive income for the next three years.
- Profits are expected to be positive and to increase by 5% per year for the next five years.

1. Which of the following statements regarding the three team members' assumptions shown in Exhibit 1 is *most accurate*?
   A. Myers is using a top-down approach, Conway is using a hybrid approach, and Dominguez is using a bottom-up approach.
   B. Conway is using a top-down approach, and Myers is using a bottom-up approach.
   C. Myers and Conway are using a top-down approach, while Dominguez is using a hybrid approach.
2. Which of the following statements regarding the three analysts' models in Exhibit 1 is *most accurate*?
   A. The analyst using the "growth relative to GDP growth" approach is predicting a higher growth rate in Retail, Inc.'s, revenue than the analyst using the "market growth and market share" approach.
   B. The analyst using the "growth relative to GDP growth" approach is predicting a lower growth rate in Retail, Inc.'s, revenue than the analyst using the "market growth and market share" approach.
   C. The analyst using the "growth relative to GDP growth" approach is predicting a growth rate in Retail, Inc.'s, revenue that is more than 5% higher than the analyst using the "market growth and market share" approach.
3. Using the financial results for 2019 shown in Exhibit 2, it would be *most appropriate* for Larsted to conclude that economies of scale for firms in the home improvements retail sector:
   A. do not exist.
   B. exist and are realized in cost of goods sold only.
   C. exist and are realized in both cost of goods sold and SG&A.
4. Using the information in Exhibit 3 and Larsted's two assumptions, the cash tax rate should be *closest* to:
   A. 21% in 2019 and 27% in 2020.
   B. 21% in 2019 and subsequent years.
   C. 26% in 2019 and 27% in subsequent years.
5. Under the assumptions given in Exhibit 4, Retail, Inc.'s, level of debt on the balance sheet is *most likely* to:
   A. increase over the next three years.
   B. remain constant over the next three years.
   C. decrease over the next three years.
6. To try to validate her forecast of rapid revenue growth for Retail Inc. over the next year, Meyers schedules an in-depth interview with the management of Retail Inc. Meyers is *most likely* to be exhibiting the behavioral bias of:
   A. conservatism.
   B. representativeness.
   C. confirmation.

Use the following information to answer Questions 7 through 13.

Jorge Stanza, CFA, is a sell-side equity analyst who covers Entertaining Kids, Inc., (ENK), a large retailer of children's toys based in the United States. Stanza is reviewing the ENK annual report that has just been released. At the moment, Stanza has a buy recommendation on the company, but the impressive performance of some of ENK's competitors and a recent product recall have led him to revisit his recommendation in depth.

The product recall involved an inflatable swimming pool that ENK manufactures and sells for children 4 years and over. Unfortunately, a number of ENK customers have recently reported that an electrical problem in the pump caused injury to their children. After several such incidents in the industry in the past months, it is

expected that the government will step in to impose strict regulation covering the manufacturing of all children's toys in that category.

Stanza wants to build this possibility into his five forces competitive analysis model by adding government involvement as a sixth force.

Stanza's current analysis using the five forces model is shown in Exhibit 1.

Exhibit 1: ENK Five Forces Analysis

Force	Threat to Profitability	Factors
Threat of substitutes	Medium	ENK sells a wide range of toys from sporting goods to electronics. There has been a growing trend for customers to prefer traditional hand-crafted toys made and sold by independent retailers.
Rivalry	Low	ENK has a 55% share of the market and enjoys economies of scale that give it significant cost advantages over competitors.
Bargaining power of suppliers	Low	Inputs into the vast majority of products are widely available. Suppliers of game consoles are also reliant on ENK to distribute their product.
Bargaining power of buyers	Low	ENK sells directly to consumers who represent a highly fragmented group.
Threat of new entrants	High	ENK has established a large distribution network, and the large costs of replicating such a network means the barriers to entry are high.

Another significant concern is the near-term threat of increased inflation. Stanza fears that if ENK's input costs rise due to a general rise in prices, ENK will not be able to pass on the full increase in input costs to customers. Extreme weather events have already had an adverse effect on food prices, leaving families with less discretionary income to spend on children's toys.

Exhibit 2 shows ENK's current gross margin and two possible scenarios if inflation of 5% is realized next year.

Exhibit 2: Gross Margin

	2019 ($ million)
Revenue	13,201
Cost of goods sold	8,755
Gross profit	4,446
Gross margin	33.7%

Scenarios	Scenario 1	Scenario 2
Price increase for revenues	3%	5%
Volume growth	2%	0%
Input cost increase	5%	5%

Stanza is also concerned about a new game console that was released in the final quarter of this year. Although ENK has an exclusive agreement with the maker of the new console, the XTF 2500, Stanza is concerned that the sale of the new console will reduce sales of other consoles that ENK currently sells. A significant segment of ENK's revenue is currently generated by sales of consoles to both individual customers and also to assisted living facilities (ALFs) that use the consoles as part of their rehabilitation program.

Exhibit 3: Current Year Sales Figures

	2019 ($ million)
Existing console	
Individuals	2,640
ALFs	400
Total	3,040
XTF 2500	
Individuals	45
ALFs	0
Total	45

Exhibit 4: Forecasting Assumptions

1. Individual sales of the XTF 2500 will increase by 375% next year, but the new console will not be adopted by ALFs.
2. Sales of existing consoles to ALFs will remain static.
3. Sales of existing consoles to individuals will shrink by 25% as a result of the XTF 2500.

The new console is being billed as a game changer, coming in at a price point not much higher than existing consoles but with significantly more features. Stanza has analyzed this year's sales of existing and new console using the data shown in Exhibit 3 and intends to forecast next year's sales using the assumptions listed in Exhibit 4.

Stanza based his forecasts on information obtained from a colleague, Jon Hoombert, who covers Vau Soft, the maker of the XTF 2500. Hoombert is convinced that the introduction of the XTF 2500 to the market represents an inflection point in the home console industry. As a result, he is not using his usual approach of using historic price

multiples to predict the terminal value of companies in the sector. Hoombert states that he has seen three factors in recent times that have led to inflection points:

Factor 1:	The addition of internet capabilities to consoles is causing a rapid shift away from PC gaming.
Factor 2:	Increased competition in the sector has led to a gradual reduction in the price of gaming consoles.
Factor 3:	With the introduction of the XTF 2500, which offers advanced computing capabilities at a relatively low price, analyst estimates suggests that Vau Soft's market share will double.

7. Stanza's intended treatment of government intervention in his competitive analysis model is:
   A. consistent with Porter's five forces approach.
   B. inconsistent with Porter's five forces approach, as government involvement should always be considered a reduction in the threat of new entrants.
   C. inconsistent with Porter's five forces approach, as Stanza should analyze how government involvement affects all of the five forces.
8. Stanza is *most likely* wrong regarding the threat to profitability resulting from the:
   A. bargaining power of customers, because a highly fragmented group (i.e., a large number of low-volume customers) complicates pricing strategy, which implies a high threat to profitability.
   B. threat of new entrants, as the high costs of setting up a distribution network and new stores means there is a low threat to profitability.
   C. bargaining power of suppliers, as the reliance of console suppliers on ENK gives ENK a high level of bargaining power.
9. Which of the following statements regarding the inflation scenarios in Exhibit 2 is *most accurate*?
   A. Scenario 1 would lead to an increase in gross profit but a decrease in gross margin.
   B. Both scenarios would lead to an unchanged gross margin.
   C. Only Scenario 2 would leave gross profit unchanged.
10. Using the information in Exhibits 3 and 4, total estimated revenue from consoles next year should be *closest* to:
   A. $2,494 million.
   B. $2,548 million.
   C. $2,594 million.
11. Regarding the choice of forecast horizon for a discounted cash flow model, which of the following statements is *least accurate*? The forecast horizon:
   A. for a highly cyclical company should be long enough to allow the company to reach a mid-cycle level of sales and profitability.
   B. should be independent of the investment strategy for which the stock is being considered.
   C. should be long enough to allow the full benefits from an acquisition to be reflected in the financial statements.
12. Which of the three factors suggested by Hoombert is *least likely* to be the cause of an inflection point?
   A. Factor 1.
   B. Factor 2.
   C. Factor 3.
13. Which of the following statements about building a model using pro forma financial statements is *least accurate*?

A. The cash flow forecast can be automatically generated using the forecasted balance sheet and income statement.
B. Depreciation is typically forecasted as a decreasing percentage of sales to reflect the ageing assets.
C. Working capital is often forecasted as a constant percentage of sales.

KEY CONCEPTS

LOS 14.a

Bottom-up analysis starts with analysis of an individual company or reportable segments of a company. Top-down analysis begins with expectations about a macroeconomic variable, often the expected growth rate of nominal GDP. A hybrid analysis incorporates elements of both top-down and bottom-up analysis.

LOS 14.b

When forecasting revenue with a "growth relative to GDP growth" approach, the relationship between GDP and company sales is estimated, and then company sales growth is forecast based on an estimate for future GDP growth.

The "market growth and market share" approach begins with an estimate of industry sales (market growth), and then company sales are estimated as a percentage (market share) of industry sales. Forecast revenue then equals the forecasted market size multiplied by the forecasted market share.

LOS 14.c

A company with economies of scale will have lower costs and higher operating margins as production volume increases, and should exhibit positive correlation between sales volume and margins.

LOS 14.d

COGS is primarily a variable cost and is often modeled as a percentage of estimated future revenue. Expectations of changes in input prices can be used to improve COGS estimates.

The R&D and corporate overhead components of SG&A are likely to be stable over the short term, while selling and distribution costs will tend to increase with increases in sales.

LOS 14.e

The primary determinants of **gross interest expense** are the amount of debt outstanding (gross debt) and interest rates. **Net debt** is gross debt minus cash, cash equivalents, and short-term securities. **Net interest expense** is gross interest expense minus interest income on cash and short-term debt securities owned.

The expected effective tax rate times the forecasted pretax income provides a forecast of income tax expense. Any expected change in the future effective tax rate should be included in the analysis.

LOS 14.f

Some items on a pro forma balance sheet, such as retained earnings, flow from forecasted income statement items. Net income less dividends declared will flow through to retained earnings. Working capital items can be forecast based on turnover ratios. In a simple case, items such as inventory, receivables, and payables will all increase proportionately to revenues.

Property, plant, and equipment (PP&E) on the balance sheet is determined by depreciation and capital expenditures (capex) and may be improved by analyzing **capital expenditures for maintenance** separately from **capital expenditures for growth**. Historical depreciation should be increased by the inflation rate when estimating capital expenditure for maintenance because replacement costs can be expected to increase.

LOS 14.g

The development of sales-based pro forma financial statements includes the following steps:

1. Estimate revenue growth and future expected revenue.
2. Estimate COGS.
3. Estimate SG&A.
4. Estimate financing costs.
5. Estimate income tax expense and cash taxes, taking into account changes in deferred tax items.
6. Model the balance sheet based on items that flow from the income statement and estimates for important working capital accounts.
7. Use historical depreciation and capital expenditures to estimate future capital expenditures and net PP&E for the balance sheet.
8. Use the completed pro forma income statement and balance sheet to construct a pro forma cash flow statement.

LOS 14.h

Behavioral factors that affect analyst forecasts:

1. Overconfidence in Forecasting: Too much faith in one's work. Analysts may underestimate their forecasting errors.
2. Illusion of Control: A false sense of security in one's forecasts. Mitigation requires focusing only on those variables with known explanatory power, and seek outside opinions.
3. Conservatism Bias: Also called anchoring. The analyst makes only small adjustments to their prior forecasts when new information becomes available.
4. Representativeness Bias: The tendency to classify data based on past information and known classifications.
5. Confirmation Bias: The tendency to look for information that confirms prior beliefs, and ignore data that contradicts them.

LOS 14.i

While analysts use varying definitions of ROIC, it can be thought of as net operating earnings adjusted for taxes (NOPLAT), divided by invested capital (operating assets

minus operating liabilities), and is a return to both equity and debt. Firms with ROIC consistently higher than those of peer companies are likely exploiting some **competitive advantage** in the production and sale of their products.

There are no formulas or clear rules on how a firm's competitive environment affects its future revenue and costs, but expectations of a firm's future competitive success are important factors in forecasting future revenue and financial statements.

LOS 14.j

1. Companies have less (more) pricing power when the **threat of substitute products** is high (low) and switching costs are low (high).
2. Companies have less (more) pricing power when the **intensity of industry rivalry** is high (low).
3. Company prospects for earnings growth are lower when the **bargaining power of suppliers** is high. If suppliers are few, these suppliers may be able to extract a larger portion of any increase in profits.
4. Companies have less pricing power when the **bargaining power of customers** is high, especially in a circumstance where a small number of customers are responsible for a large proportion of a firm's sales and when switching costs are low.
5. Companies have more pricing power and better prospects for earnings growth when the **threat of new entrants** is low. Significant barriers to entry into an industry make it possible for existing companies to maintain high returns on invested capital.

LOS 14.k

Increases in input costs will increase COGS unless the company has hedged the risk of input price increases with derivatives or contracts for future delivery. Vertically integrated companies are likely to be less affected by increasing input costs. The effect on sales of increasing product prices to reflect higher COGS will depend on the elasticity of demand for the products, and on the timing and amount of competitors' price increases.

LOS 14.l

Some advances in technology decrease costs of production, which will increase profit margins, at least for early adopters.

Other advances in technology will result in either improved substitutes or wholly new products. One way for an analyst to model the introduction of new substitutes for a company's products is to estimate a cannibalization factor, the percentage of a new product's sales that are stolen from an existing product's sales.

LOS 14.m

For a buy-side analyst, the appropriate forecast horizon to use may simply be the expected holding period for a stock.

For highly cyclical companies, the forecast horizon should include the middle of a cycle so that the analyst can forecast **normalized earnings** (i.e., expected mid-cycle earnings).

When there have been recent impactful events, such as acquisitions, mergers, or restructurings, these events should be considered temporary, and the forecast horizon should be long enough that the perceived benefits of such events can be realized.

It may be the case that the forecast horizon to use is dictated by the analyst's manager.

LOS 14.n

Earnings projections over a forecast period beyond the short term are often based on the historical average growth rate of revenue over the previous economic cycle.

An analyst will typically estimate a terminal value for a stock at the end of the forecast horizon, using either a price multiple or a discounted cash flow approach. Using a P/E multiple approach, the estimated earnings in the final forecast period are multiplied by a company's historical average P/E (possibly adjusted for the phase of the business cycle).

Because the terminal value using the discounted cash flow approach is calculated as the present value of a perpetuity, small changes in the estimated (perpetual) growth rate of future profits or cash flows can have large effects on the estimates of the terminal value and thus the current stock value.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 14.1, 14.2

1. **C** Myers is using a "growth relative to GDP growth" approach, which is top down. Conway is using a market growth and market share approach, which is also top down. Dominguez is using both a "growth relative to GDP" and historic data for Retail, Inc., which is a hybrid approach. (Module 14.1, LOS 14.b)

2. **B** Myers is using the "growth relative to GDP growth" approach.

Growth rate predicted:	
GDP growth	2%
Revenue growth	2% × 1.10 = **2.2%**

Conway is using the "market growth and market share" approach.

Growth rate predicted:	
Revenue this year	40bn × 35% =14bn
Revenue next year	38bn × 38% = 14.44bn
Growth rate	0.44 / 14 = **3.1%**

(Module 14.1, LOS 14.b)

3. **B**

Retail, Inc., operating margin 2019	1,480 / 15,091	= 9.8%
Midsize, Inc., operating margin 2019	598 / 8,488	= 7.0%

Retail, Inc., is a bigger firm and has a larger operating margin, suggesting that economies of scale are more likely to exist.

Retail COGS as a % of Revenue 2019	9,966 / 15,091	= 66%
Midsize COGS as a % of Revenue 2019	5,857 / 8,488	= 69%
Retail SG&A as a % of Revenue 2019	3,645 / 15,091	= 24%
Midsize SG&A as a % of Revenue 2019	2,033 / 8,488	= 24%

Analysis of the expense ratios shows that the economies of scale are realized in COGS rather than in SG&A. (Module 14.2, LOS 14.c)

4. **A** **Retail, Inc.**

	2019 ($ million)	2020 ($ million)
Profit before tax	1,480	1,628
Tax (@ 28%)	414.4	455.8
Tax reduction (25%)	(103.6)	(113.95)
Postponed tax		103.6
Total tax	310.8	445.45
Cash tax rate	21%	27.4%

(Module 14.1, LOS 14.e)

5. **B** Given a constant debt-to-equity ratio, the level of debt will remain constant if the level of equity remains constant. Given that Retail, Inc., intends to pay out all net income as dividends over the period, and there are no share repurchases or gains and losses in other comprehensive income, Retail, Inc.'s, equity will remain constant. (Module 14.1, LOS 14.f)

6. **C** The management of Retail Inc. is likely to be biased in favor of the company's success and is likely to validate Meyers's expectations of rapid revenue growth for the firm. To mitigate this behavioral bias, Meyers should seek out the opinions of other analysts who view Retail Inc.'s prospects less favorably. (Module 14.1, LOS 14.h)

7. **C** Government involvement is best analyzed by considering the impact on all five of Porter's forces. (Module 14.2, LOS 14.j)

8. **B** High barriers to entry result in a low threat to profitability. (Module 14.2, LOS 14.i)

9. **A** **Entertaining Kids, Inc.**

	2019 ($ million)	Scenario 1 ($ million)	Explanation
Revenue	13,201	13,869	13,201 × 1.03 × 1.02
Cost of goods sold	8,755	9,377	8,755 × 1.05 × 1.02
Gross profit	4,446	4,492	
Gross margin	33.7%	32.4%	

Entertaining Kids, Inc.

	2019 ($ million)	Scenario 2 ($ million)	Explanation
Revenue	13,201	13,861	13,201 × 1.05
Cost of goods sold	8,755	9,193	8,755 × 1.05
Gross profit	4,446	4,668	
Gross margin	33.7%	33.7%	

(Module 14.2, LOS 14.k)

10. **C**

	2019 ($ million)	2020 Forecast ($ million)	
Existing console			
Individual sales	2,640	1,980	2,640 × 0.75
ALFs	400	400	
Total existing	3,040	2,380	
XTF 2500			
Individual sales	45	214	45 × 4.75
ALFs	0	0	
Total XTF 2500	45	214	
Total consoles	3,085	2,594	

Note: To forecast new sales after a 100% increase in sales, we would multiply old sales by (100% + 100%) = 2. Similarly, an increase of 375% means that old sales needs to be multiplied by (100% + 375%) = 4.75 (not 3.75) to forecast new sales. (Module 14.2, LOS 14.l)

11. **B** The forecast horizon should be influenced by the investment strategy for which the stock is being considered. (Module 14.2, LOS 14.m)

12. **B** A gradual reduction in prices can be incorporated into a long-term growth rate and so does not represent an inflection point. (Module 14.2, LOS 14.n)

13. **B** Depreciation is typically forecasted as a constant percentage of sales—or, if the company has an expanding asset base, as an increasing percentage of sales. (Module 14.2, LOS 14.g)

Topic Quiz: Financial Statement Analysis

You have now finished the Financial Statement Analysis topic section. Please log into your Schweser online dashboard and take the Topic Quiz on this section. The Topic Quiz provides immediate feedback on how effective your study has been for this material. Questions are more exam-like than typical Module Quiz or QBank questions; a score of less than 70% indicates that your study likely needs improvement. These tests are best taken timed; allow three minutes per question.

READING 15

ANALYSIS OF DIVIDENDS AND SHARE REPURCHASES

EXAM FOCUS

The focus of the Level II exam is valuation, so pay close attention to the theories that explain how dividend policy affects company value and the signals investors get from dividend changes. Payout policy is broader than dividend policy as it includes other means (e.g., special dividends, stock repurchases, etc.) by which companies can pay out cash to stockholders. In recent years, firms have announced plans to repurchase record numbers of shares, making this an important and timely topic. You should have a basic understanding of the factors that affect a firm's payout policy and be able to analyze the sustainability of dividends using coverage ratios.

MODULE 15.1: THEORIES OF DIVIDEND POLICY

Video covering this content is available online.

LOS 15.a: Describe the expected effect of regular cash dividends, extra dividends, liquidating dividends, stock dividends, stock splits, and reverse stock splits on shareholders' wealth and a company's financial ratios.

Types of dividends include the following:

1. **Regular cash dividends:** Periodic dividend payments made in cash are known as regular cash dividends. Generally, companies strive for stability in their regular dividends—increasing them slowly and refraining from any reductions. Stable or increasing dividends paid regularly are perceived as a sign of consistent (and growing) profitability.

   Frequency of dividend payments vary globally: U.S. and Canadian companies typically pay dividends quarterly, while European and Asian companies typically pay dividends semiannually and annually, respectively.

2. **Extra or special (irregular) dividends:** A cash dividend supplementing regular dividends, or a dividend of a company that normally does not pay dividends, is known as a special dividend. Special dividends are paid under unusual circumstances (e.g., when the company sells off a division) under the expectation that the dividend is not recurring. Extra dividends may be paid if the company had an especially profitable year but does not want to commit to a higher *ongoing* regular dividend payment.

3. **Liquidating dividend:** This is paid by a company when the whole firm or part of the firm is sold, or when dividends in excess of cumulative retained earnings are paid (resulting in a reduction of stated capital). A liquidating dividend is considered to be a return *of* capital as opposed to a return *on* capital.
4. **Stock dividend:** A non-cash dividend paid in the form of additional shares is known as a stock dividend. After payment of a stock dividend, shareholders have more shares and the cost per share will be lower (while the total cost basis remains the same). Shareholders' proportionate ownership of the company does not change, because every shareholder receives the same percentage stock dividend. Shareholders are usually not taxed on stock dividends. Because the market value of the company is unchanged, the market price per share declines, leaving the shareholders with no net gain.

   Imagine a company earning $100,000 annually that has 100,000 shares outstanding with a market price per share of $10. Current EPS and P/E are then $1.00 and 10, respectively. Suppose that this company then declares a 10% stock dividend; the company now has 110,000 shares outstanding and earnings per share (EPS) of $0.90909. Applying the original P/E multiple of 10, the stock price should now be $9.091. Hence, a holder of 110 shares should have holdings valued at $1000—the same as before the stock dividend.

   Companies consider stock dividends desirable because they encourage long-term investing and, hence, may reduce the cost of equity capital. Stock dividends also help increase a stock's float, and therefore, its liquidity. Stock dividends may also be used to decrease the market price of a stock to a desirable trading range that attracts more investors (high stock prices coupled with a minimum order size tend to limit ownership by small retail investors). Companies that continue to pay the same regular cash dividend per share following a stock dividend have effectively increased their cash dividend. However, companies that pay out the same total *amount* of cash dividends as before (i.e., the same payout ratio) effectively *decrease* the dividend per share (though the dividend yield would be unchanged, because dividends and price decrease by same percentage following the stock dividend).

   The popularity of stock dividends varies by market. For example, stock dividends are very popular in China.
5. **Stock splits:** These are similar to stock dividends (non-cash) but generally larger in size. A two-for-one stock split is the same as a 100% stock dividend. Reverse stock splits (much less common) reduce the number of shares outstanding and increase the price per share. The intent of a reverse stock split is similar to that of a regular stock split—to bring the market price of the stock within a desirable range, but in this case the firm is trying to attract institutional investors and mutual funds that shun low-priced stocks. Reverse stock splits are less common in Asia (e.g., reverse stock splits were illegal in Japan until 2001).

Accounting Issues

Cash dividend payments reduce cash as well as stockholders' equity. This results in a lower quick ratio and current ratio, and higher leverage (e.g., debt-to-equity and debt-to-asset) ratios. Conversely, stock dividends (and stock splits or reverse stock splits) leave a company's capital structure unchanged and do not affect any of these

ratios. In the case of a stock dividend, a decrease in retained earnings (corresponding to the value of the stock dividend) is offset by an increase in contributed capital, leaving the value of total equity unchanged. A stock split or reverse stock split does not affect the book value of the equity, nor does it affect the tax cost basis for the shareholders.

LOS 15.b: Compare theories of dividend policy and explain implications of each for share value given a description of a corporate dividend action.

Dividend irrelevance. Merton Miller and Franco Modigliani (MM) maintain that *dividend policy* is irrelevant, as it has no effect on the price of a firm's stock or its cost of capital. MM's argument of dividend irrelevance is based on their concept of *homemade dividends*. Assume, for example, that you are a stockholder and you don't like the firm's dividend policy. If the firm's cash dividend is too big, you can just take the excess cash received and use it to buy more of the firm's stock. If the cash dividend you received was too small, you can sell a little bit of your stock in the firm to get the cash flow you want. In either case, the combination of the value of your investment in the firm and your cash in hand will be the same.

You should note that the dividend irrelevance theory holds only in a perfect world with no taxes, no brokerage costs, and infinitely divisible shares. You should also note that the MM discussion pertains to the firm's total *payout policy* (rather than to the narrower *dividend policy*).

Bird-in-hand (dividend preference theory) argument for dividend policy. When MM conclude that dividends are irrelevant, they mean that investors don't care about the firm's dividend policy since they can create their own. If they don't care, the firm's dividend policy will not affect the firm's stock price and, consequently, dividend policy will not affect the firm's required rate of return on equity capital (r_s). Myron Gordon and John Lintner, however, argue that r_s decreases as the dividend payout increases. Why? Because investors are less certain of receiving future capital gains from the reinvested retained earnings than they are of receiving current (and therefore certain) dividend payments. The main argument of Gordon and Lintner is that investors place a higher value on a dollar of dividends that they are certain to receive than on a dollar of *expected* capital gains. They base this argument on the fact that, when measuring total return, the dividend yield component, D_1 / P_0, has less risk than the growth component g.

PROFESSOR'S NOTE
The Gordon/Lintner argument is called the bird-in-the-hand-theory based on the old expression: a "bird in the hand" (dividends) is worth two in the bush (expected capital gains).

Tax aversion. In many countries, dividends have historically been taxed at higher rates than capital gains. In the 1970s, U.S. tax rates on dividend income were as high as 70%, while the taxes on capital gains were 35%. In the late 1990s, the rates were much lower, but the same general relationship was still in place: dividends were taxed as ordinary income with rates as high as 39.1%, while long-term capital gains were taxed at 20%. Under such a situation, according to the tax-aversion theory,

investors will prefer to *not* receive dividends due to their higher tax rates. Taken to the extreme, the tax-aversion theory implies that investors would want companies to have a zero dividend payout ratio so that they will not be burdened with higher tax rates.

In the real world, tax laws often prevent companies from accumulating excess earnings, making dividend payments necessary. Also note that in 2003, tax laws in the United States changed so that dividends and long-term capital gains are both taxed at the same 15% rate.

Conclusions from the three theories. The results of empirical tests are unclear as to which of these theories best explains the empirical observations of dividend policy. Research suggests that higher tax rates do result in lower dividend payouts. In the United States, however, the change in tax law that put dividends and capital gains on common ground is likely to make the tax aversion theory irrelevant. There is empirical support for the "bird-in-the-hand" theory as some companies that pay dividends are perceived as less risky and specific groups of investors do prefer dividend paying stocks. MM counter this argument by saying that different dividend policies appeal to different clienteles, and that since all types of clients are active in the marketplace, dividend policy has no effect on company value if all clienteles are satisfied.

LOS 15.c: Describe types of information (signals) that dividend initiations, increases, decreases, and omissions may convey.

Information asymmetry refers to differences in information available to a company's board and management (insiders) as compared to the investors (outsiders). Dividends convey more credible information to the investors as compared to plain statements. This is so because dividends entail actual cash flow and are expected to be "sticky" (i.e., continue in the future). Companies refrain from increasing dividends unless they expect to continue to pay out the higher levels in the future. Similarly, companies loathe cutting dividends unless they expect that the lower levels of dividends reflect long-run poorer prospects of the company in the future.

The information conveyed by **dividend initiation** is ambiguous. On one hand, a dividend initiation could mean that a company is optimistic about the future and is sharing its wealth with stockholders—a positive signal. On the other hand, initiating a dividend could mean that a company has a lack of profitable reinvestment opportunities—a negative signal.

An **unexpected dividend increase** can signal to investors that a company's future business prospects are strong and that managers will share the success with shareholders. Studies have found that companies with a long history of dividend increases are dominant in their industries and have high returns on assets and low debt ratios.

Unexpected dividend decreases or **omissions** are typically negative signals that the business is in trouble and that management does not believe that the current dividend payment can be maintained. In rare instances, however, a dividend

decrease or omission could be a positive sign. Management may believe that profitable investment opportunities are available and that shareholders would ultimately receive a greater benefit by having earnings reinvested in the company rather than being paid out as dividends.

LOS 15.d: Explain how agency costs may affect a company's payout policy.

Agency Costs

Between shareholders and managers: Agency costs reflect the inefficiencies due to divergence of interests between managers and stockholders. One aspect of agency issue is that managers may have an incentive to overinvest ("empire building"). This may lead to investment in some negative NPV projects, which reduces stockholder wealth. One way to reduce agency cost is to increase the payout of free cash flow as dividends. Generally, it makes sense for growing firms to retain a larger proportion of their earnings. However, mature firms in relatively non-cyclical industries do not need to hoard cash. In such cases, a higher dividend payout would be welcomed by the investors resulting in increases in stock value.

Between shareholders and bondholders: For firms financed by debt as well as equity, there may be an agency conflict between shareholders and bondholders. When there is risky debt outstanding, shareholders can pay themselves a large dividend, leaving the bondholders with a lower asset base as collateral. This way, there could be a transfer of wealth from bondholders to stockholders. Typically, agency conflict between stockholders and bondholders is resolved via provisions in the bond indenture. These provisions may include restrictions on dividend payment, maintenance of certain balance sheet ratios, and so on.

LOS 15.e: Explain factors that affect dividend policy in practice.

A company's dividend payout policy is the approach a company follows in determining the amount and timing of dividend payments to shareholders. Six primary factors affect a company's dividend payout policy:

1. **Investment opportunities.** Availability of positive NPV investment opportunities and the speed with which the firm must react to the opportunities determines the amount of cash the firm must keep on hand. If a firm faces many profitable investment opportunities and has to react quickly to capitalize on the opportunities (i.e., it does not have time to raise external capital), the dividend payout may be low.
2. **Expected volatility of future earnings.** Firms tie their target payout ratio to long-run sustainable earnings and are reluctant to increase dividends unless reversal is not expected in the near future. Hence, when earnings are volatile, firms are more cautious in *changing* dividend payout.
3. **Financial flexibility.** Firms with excess cash and a desire to maintain financial flexibility may resort to stock repurchases instead of dividends as a way to pay out excess cash. Since stock repurchase plans are not considered sticky (i.e., there is no implicit expectation by the market of an ongoing repurchase program), they

don't entail reduction in financial flexibility going forward. Having cash on hand affords companies flexibility to meet unforeseen operating needs and investment opportunities. Financial flexibility is especially important during times of crisis when liquidity dries up and credit may be hard to obtain.

4. **Tax considerations.** Investors are concerned about after-tax returns. Investment income is taxed by most countries; however, the ways that dividends are taxed vary widely from country to country. The method and amount of tax applied to a dividend payment can have a significant impact on a firm's dividend policy. Generally, in countries where capital gains are taxed at a favorable rate compared to dividends, high-tax-bracket investors (like some individuals) prefer low dividend payouts, and low-tax-bracket investors (like corporations and pension funds) prefer high dividend payouts.

   A lower tax rate for dividends compared to capital gains does not necessarily mean companies will raise their dividend payouts. Stockholders may not prefer a higher dividend payout, even if the tax rate on dividends is more favorable, for multiple reasons:

   – Taxes on dividends are paid when the dividend is received, while capital gains taxes are paid only when shares are sold.

   – The cost basis of shares may receive a step-up in valuation at the shareholder's death. This means that taxes on capital gains may not have to be paid at all.

   – Tax-exempt institutions, such as pension funds and endowments, will be indifferent between dividends or capital gains.

5. **Flotation costs.** When a company issues new shares of common stock, a *flotation cost* of 3% to 7% is taken from the amount of capital raised to pay for investment bankers and other costs associated with issuing the new stock. Since retained earnings have no such fee, the cost of new equity capital is always higher than the cost of retained earnings. Larger companies typically have lower flotation costs as compared to smaller companies. Generally, the higher the flotation costs, the lower the dividend payout, given the need for equity capital in positive NPV projects.

6. **Contractual and legal restrictions.** Companies may be restricted from paying dividends either by legal requirements or by implicit restrictions caused by cash needs of the business. Common legal and contractual restrictions on dividend payments include:

   – The **impairment of capital rule.** A legal requirement in some countries mandates that dividends paid cannot be in excess of retained earnings.

   – **Debt covenants.** These are designed to protect bondholders and dictate things a company must or must not do. Many covenants require a firm to meet or exceed a certain target for liquidity ratios (e.g., current ratio) and coverage ratios (e.g., interest coverage ratio) before they can pay a dividend.

LOS 15.f: Calculate and interpret the effective tax rate on a given currency unit of corporate earnings under double taxation, dividend imputation, and split-rate tax systems.

Dividends paid in the United States are taxed according to what is called a **double-taxation system**. Earnings are taxed at the corporate level regardless of whether they are distributed as dividends, and dividends are taxed again at the shareholder level. In 2003, new tax legislation was passed in the United States that reduced the maximum tax rate on dividends at the individual shareholder level from 39.6% to 15%.

Since a dollar of earnings distributed as dividends is first taxed at the corporate level, with the after-corporate-tax amount taxed at the individual level, we can calculate the total effective tax rate as:

effective tax rate = corporate tax rate + (1 − corporate tax rate)(individual tax rate)

EXAMPLE: Effective tax rate under a double taxation system

A U.S. company's annual earnings are $300, and the corporate tax rate is 35%. Assume that the company pays out 100% of its earnings as dividends. Calculate the effective tax rate on a dollar of corporate earnings paid out as dividends assuming a 15% tax rate on dividend income.

Answer:

Earnings	$300.00
(–) Tax @ 35%	(105.00)
Earnings after tax	195.00
Dividends (100% payout)	195.00
Tax on dividends (@ 15%)	(29.25)
After tax dividend to investor	165.75

Effective (double) tax rate = (300 − 165.75) / 300 = 44.75%

or

0.35 + (1 − 0.35)(0.15) = 0.4475 or 44.75%.

A **split-rate** corporate tax system taxes earnings distributed as dividends at a lower rate than earnings that are retained. The effect is to offset the higher (double) tax rate applied to dividends at the individual level. Germany had a split-rate system until 2009. The calculation of the effective tax rate under a split-rate system is similar to the computation of the effective tax rate under double taxation except that the corporate tax rate applicable would be the corporate tax rate for distributed income.

EXAMPLE: Effective tax rate under a split-rate system

A German company's annual pretax earnings are €300. The corporate tax rate on retained earnings is 35%, and the corporate tax rate that applies to earnings paid out as dividends is 20%. Assuming that the company pays out 50% of its earnings as dividends, and the individual tax rate that applies to dividends is 30%, calculate the effective tax rate on one euro of corporate earnings paid out as a dividend.

Answer:

effective tax rate on income distributed as dividends = 20% + [(1 − 20%) × 30%] = 44%

Note that under a split-rate system, earnings that are distributed as dividends are still taxed twice, but at a lower corporate tax rate (the corporate rate for distributed income).

Under an **imputation tax system**, taxes are paid at the corporate level but are attributed to the shareholder, so that *all taxes are effectively paid at the shareholder rate*. Shareholders deduct their portion of the taxes paid by the corporation from their tax return. If the shareholder tax bracket is lower than the company rate, the shareholder would receive a tax credit equal to the difference between the two rates. If the shareholder's tax bracket is higher than the company's rate, the shareholder pays the difference between the two rates.

EXAMPLE: Effective tax rate under an imputation system

Phil Cornelius and Ian Todd both own 100 shares of stock in a British corporation that makes £1.00 per share in pretax income. The corporation pays out all of its income as dividends. Cornelius is in the 20% individual tax bracket, while Todd is in the 40% individual tax bracket. The tax rate applicable to the corporation is 30%. Calculate the effective tax rate on the dividend for each shareholder.

Answer:

Effective Tax Rate Under an Imputation System

	Cornelius: 20% Rate	Todd: 40% Rate
Pretax income	£100	£100
Taxes at 30% corporate tax rate	£30	£30
Net income after tax	£70	£70
Dividend assuming 100% payout	£70	£70
Shareholder taxes on pretax income	£20	£40
Less tax credit for corporate payment	£30	£30
Tax due from shareholder	(£10)	£10
Effective tax rate on dividend	20 / 100 = 20%	40 / 100 = 40%

Under an imputation system, the effective tax rate on the dividend is simply the shareholder's marginal tax rate.

MODULE QUIZ 15.1

Use the following information to answer Questions 1 through 4.

Klaatu is a country that taxes dividends based on a double-taxation system. The corporate tax rate on company profits is 35%. Barada is a country that taxes dividends based on a split-rate tax system. The corporate tax rate applied to retained earnings is 36%, while the corporate tax rate applied to earnings paid out as dividends is 20%. Nikto is a country that taxes dividends based on an imputation tax

system. The corporate tax rate on earnings is 38%.

1. An investor living in Klaatu holds 100 shares of stock in the Lucas Corporation. Lucas's pretax earnings for the current year are $2.00 per share, and the company has a payout ratio of 100%. The investor's individual tax rate on dividends is 30%. The effective tax rate on a dollar of funds to be paid out as dividends is *closest* to:
   A. 35.0%.
   B. 54.5%.
   C. 62.3%.
2. An investor living in Barada holds 100 shares of Prowse, Inc. Prowse's pretax earnings in the current year are $1.00 per share, and Prowse pays dividends based on a target payout ratio of 40%. The individual tax rate that applies to dividends is 28%, and the individual tax rate that applies to capital gains is 15%. The effective tax rate on earnings distributed as dividends is:
   A. 20.0%.
   B. 42.4%.
   C. 53.9%.
3. Jenni White and Janet Langhals are each shareholders that live in Nikto, and each owns 100 shares of OCP, Inc., which has €1.00 per share in net income. OCP pays out 100% of its earnings as dividends. White is in the 25% tax bracket, while Langhals is in the 42% tax bracket. The effective tax rate on earnings paid out as dividends is:
   A. 28.0% for White and 42.0% for Langhals.
   B. 53.5% for White and 64.0% for Langhals.
   C. 25.0% for White and 42.0% for Langhals.
4. The bird-in-hand argument for dividend policy is based on the idea that:
   A. $r_s = D_1 / P_0 + g$ is constant for any dividend policy.
   B. a decrease in current dividends signals that future earnings will fall.
   C. because of perceived differences in risk, investors value a dollar of dividends more highly than a dollar of expected capital gains.

MODULE 15.2: STOCK BUYBACKS

Video covering this content is available online.

LOS 15.g: Compare stable dividend with constant dividend payout ratio, and calculate the dividend under each policy.

Stable Dividend Policy

The **stable dividend policy** focuses on a steady dividend payout, even though earnings may be volatile from year to year. Companies that use a stable dividend policy typically look at a forecast of their long-run earnings to determine the appropriate level for the stable dividend. This typically means aligning the company's dividend growth rate with the company's long-term earnings growth rate.

A stable dividend policy could be gradually moving towards a target dividend payout ratio. A model of gradual adjustment is called a **target payout adjustment model**.

Target Payout Adjustment Model

If company earnings are expected to increase and the current payout ratio is below the target payout ratio, an investor can estimate future dividends through the

following formula:

expected increase in dividends = [(expected earnings × target payout ratio) – previous dividend] × adjustment factor

where:

adjustment factor = 1 / number of years over which the adjustment in dividends will take place

EXAMPLE: Expected dividend based on a target payout adjustment approach

Last year, Buckeye, Inc., had earnings of $3.50 per share and paid a dividend of $0.70. In the current year, the company expects to earn $4.50 per share. The company has a 35% target payout ratio and plans to bring its dividend up to the target payout ratio over a 5-year period. Calculate the expected dividend for the current year using the target payout adjustment model.

Answer:

expected increase in dividends

= [(expected earnings × target payout ratio) – previous dividend] × adjustment factor

= [($4.50 × 35%) – $0.70] × 0.2 = $0.175

expected dividend for the current year

= previous dividend + expected increase in dividends

= $0.70 + $0.175 = $0.875

PROFESSOR'S NOTE

Notice that the payout ratio actually *falls* from 20% to 19.4%. This is counterintuitive and seems to contradict the concept of the target payout ratio approach, which suggests that the firm should always be moving toward its target payout ratio (which in this case is 35%). Level II candidates are always troubled by the apparent inconsistency in the target payout adjustment approach. However, we can assure you that this example correctly applies the method and answers the LOS accurately. The target payout adjustment approach is expected to work in the long-run, even though year-to-year results may defy the logic behind it.

Constant Dividend Payout Ratio Policy

A payout ratio is the percentage of total earnings paid out as dividends. The constant payout ratio represents the proportion of earnings that a company plans to pay out to shareholders. A strict interpretation of the constant payout ratio method means that a company would pay out a specific percentage of its earnings each year as dividends, and the amount of those dividends would vary directly with earnings. This practice is seldom used.

LOS 15.h: Describe broad trends in corporate payout policies.

Dividend policy has been seen to have differences across countries and over time. This is probably to accommodate differences in investor preferences globally as well as changing investor preferences over time. The following generalizations can be made with respect to global trends in corporate payout policies:

1. Globally, in developed markets, the proportion of companies paying cash dividends has trended downwards over the long term.
2. The percentage of companies making stock repurchases has been trending upwards in the United States since the 1980s and in the United Kingdom and continental Europe since the 1990s. Major companies in Asia (particularly China and Japan) have made substantial repurchases since the 2010s.

LOS 15.i: Compare share repurchase methods.

Four common methods are used for share buybacks, though due to varying rules, some markets may not allow all methods. Outside the United States and Canada, method 1 is used almost exclusively.

1. **Open market transactions** are the most flexible approach, allowing a company to buy back its shares in the open market at the most favorable terms. There is no obligation on the part of the company to complete an announced buyback program. Unlike their European counterparts, American companies do not need shareholder approval for open market transactions.
2. **Fixed-price tender offer** is an approach where the firm buys a predetermined number of shares at a fixed price, typically at a premium over the current market price. Although the company forgoes flexibility (the firm cannot execute its purchases at an exact opportune time), it allows a company to buy back its shares rather quickly. If more than the desired number of shares are tendered in response to the offer, the company will typically buy back a prorated number of shares from each shareholder responding to the offer.
3. **Dutch auction** is a tender offer in which the company specifies not a single fixed price but rather a range of prices. Dutch auctions identify the minimum clearing price for the desired number of shares that need to be repurchased. Each participating shareholder indicates the price and the number of shares tendered. Bids are accepted based on lowest price first until the desired quantity is filled. The price of the last offer accepted (i.e., the highest accepted bid price) will however be the price paid for all shares tendered. Hence, a shareholder can increase the chance of having their tender accepted by offering shares at a low price. Dutch auctions also can be accomplished rather quickly, though not as quickly as tender offers.
4. **Repurchase by direct negotiation** entails purchasing shares from a major shareholder, often at a premium over market price. This method is often used in a greenmail scenario (where a hostile bidder is offered a premium to go away) to the detriment of the remaining shareholders. A negotiated purchase can also occur when a company wants to remove a large overhang in the market that is dampening the share price. Surprisingly, many negotiated transactions occur at a discount to market price, indicating that urgent liquidity needs of the seller motivated the transaction.

LOS 15.j: Calculate and compare the effect of a share repurchase on earnings per share when 1) the repurchase is financed with the company's surplus cash and 2) the company uses debt to finance the repurchase.

Repurchases made using a company's surplus cash will lower cash and shareholders' equity and, therefore, increase the firm's leverage (i.e., the debt-to-asset and debt-to-equity ratios). After the repurchase, earnings per share may increase (depending on the amount of cash used) because there will be fewer shares outstanding. If the repurchase was financed with additional debt offerings, the reduction in net income from the (after-tax) cost of the borrowed funds must also be factored in to determine the new impact on earnings per share.

EXAMPLE: Methods of financing a stock repurchase and their effect on EPS

JetFun, Inc., has 10 million shares outstanding and has just reported net income of $50 million. Because the company has $100 million of excess cash currently earning no return, JetFun's directors are considering repurchasing 2 million JetFun shares at a premium of 25% over the current market price of $40. Calculate and compare the effect of repurchase on EPS when the repurchase is (1) financed using the existing surplus cash, or (2) financed using new debt borrowed at an after-tax interest rate of 3%.

Answer:

Current EPS = $50 million / 10 million shares = $5

Repurchase price = $40 + 25% premium = 40(1.25) = $50 per share

Total cost of repurchase = $50 × 2 million shares = $100 million

Number of shares outstanding after buyback = 10 − 2 = 8 million shares

1. Using surplus cash:

   foregone income = $0

   new EPS = $50 million / 8 million shares = $6.25 (*an increase of 25% from $5*)

2. Using new debt:

   after-tax cost of funds = 3% of $100 million or $3 million

   earnings after deducting the cost of funds = 50 – 3 = $47 million

   new EPS = $47 million / 8 million shares = $5.875 (*an increase of 17.5% from $5*)

Note: Earnings yield before repurchase = EPS / price paid per share = 5/50 = 10%. When earnings yield is greater than the after-tax cost of debt (as is the case in both funding scenarios here), EPS will increase due to the repurchase.

From the previous example, we see that EPS will increase when the after-tax funding cost is less than the earnings yield. However, the firm will then also have higher leverage and, therefore, a higher cost of capital. Accordingly, an increase in EPS should not automatically lead to an increase in share price or in shareholder wealth.

LOS 15.k: Calculate the effect of a share repurchase on book value per share.

After a stock repurchase, the number of outstanding shares will decrease and the book value per share (BVPS) is likely to change as well. If the price paid is higher (lower) than the pre-repurchase BVPS, the BVPS will decrease (increase).

EXAMPLE: Impact of share repurchase on book value per share

Consider two companies, Alpha and Beta, which are both considering the repurchase of $5 million worth of shares. Additional details are given in the following:

	Alpha	Beta
Stock price	$20	$20
Number of shares outstanding	1 million	1 million
Book value	$15 million	$25 million

Calculate the impact of the repurchase transactions on BVPS.

Answer:

	Alpha	Beta
BVPS (before buyback)	15 / 1 = $15	25 / 1 = $25
Number of shares repurchased	$5 million / $20 = 250,000	$5 million / $20 = 250,000
Number of shares outstanding (after buyback)	1,000,000 – 250,000 = 750,000	1,000,000 – 250,000 = 750,000
Book value (after buyback)	15 – 5 = $10 million	25 – 5 = $20 million
BVPS (after buyback)	$10 million / 750,000 = $13.33	$20 million / 750,000 = $26.67

Alpha's BVPS of $15.00 was less than the $20.00 stock price, so after the buyback, Alpha's BVPS decreased to $13.33. Beta's BVPS increased from $25.00 to $26.67 after the buyback because the BVPS was greater than the $20.00 stock price.

LOS 15.l: Explain the choice between paying cash dividends and repurchasing shares.

There are five common rationales for share repurchases (versus dividends):

1. **Potential tax advantages.** When the tax rate on capital gains is lower than the tax rate on dividend income, share repurchases have a tax advantage over cash dividends.
2. **Share price support/signaling.** Companies may purchase their own stock, thereby signaling to the market that the company views its own stock as a good investment. Signaling is important in the presence of asymmetric information (where corporate insiders have access to better information about the company's

prospects than outside investors). Management can send a signal to investors that the future outlook for the company is good. This tactic is often used when a share price is declining and management wants to convey confidence in the company's future to investors.

3. **Added flexibility.** A company could declare a regular cash dividend and periodically repurchase shares as a supplement to the dividend. Unlike dividends, share repurchases are not a long-term commitment. Since paying a cash dividend and repurchasing shares are economically equivalent, a company could declare a small stable dividend and then repurchase shares with the company's leftover earnings. Additionally, managers have discretion with respect to "market timing" their repurchases.
4. **Offsetting dilution from employee stock options.** Repurchases offset EPS dilution that results from the exercise of employee stock options.
5. **Increasing financial leverage.** When funded by new debt, share repurchases increase leverage. Management can change the company's capital structure (and perhaps move toward the company's optimal capital structure) by decreasing the percentage of equity.

EXAMPLE: Impact of share repurchase and cash dividend of equal amounts

Spencer Pharmaceuticals, Inc., (SPI) has 20,000,000 shares outstanding with a current market value of $50 per share. SPI made $100 million in profits for the recent quarter, and since only 70% of these profits will be reinvested back into the company, SPI's Board of Directors is considering two alternatives for distributing the remaining 30% to shareholders:

- Pay a cash dividend of $30,000,000 / 20,000,000 shares = $1.50 per share.
- Repurchase $30,000,000 worth of common stock.

Suppose that dividends are received when the shares go ex-dividend, the stock can be repurchased at the market price of $50 per share, and there are no differences in tax treatment between the two alternatives. How would the wealth of an SPI shareholder be affected by the board's chosen method of distribution?

Answer:

(1) Cash dividend

After the shares go ex-dividend, a shareholder of a single share would have $1.50 in cash and a share worth $50 – $1.50 = $48.50.

The ex-dividend value of $48.50 can also be calculated as the market value of equity after the distribution of the $30 million, divided by the number of shares outstanding after the dividend payment.

$$\frac{(20{,}000{,}000)(\$50) - \$30{,}000{,}000}{20{,}000{,}000} = \$48.50$$

Total wealth from the ownership of one share = $48.50 + $1.50 = $50.

(2) Share repurchase

With $30,000,000, SPI could repurchase $30,000,000 / $50 = 600,000 shares of common stock. The share price after the repurchase is calculated as the market

value of equity after the $30,000,000 repurchase divided by the shares outstanding after the repurchase:

$$\frac{(20{,}000{,}000)(\$50) - \$30{,}000{,}000}{20{,}000{,}000 - 600{,}000} = \frac{\$970{,}000{,}000}{19{,}400{,}000} = \$50$$

Total wealth from the ownership of one share = $50.

This demonstrates that, assuming the tax treatment of the two alternatives is the same, a share repurchase has the same impact on shareholder wealth as a cash dividend payment of an equal amount.

In the previous example, we assumed that the company used cash to repurchase its stock. What if the company borrows funds to buy back the stock?

EXAMPLE: Share repurchase when the after-tax cost of debt is less than the earnings yield

Spencer Pharmaceuticals, Inc., (SPI) plans to borrow $30 million that it will use to repurchase shares. SPI's chief financial officer has compiled the following information:

- Share price at the time of buyback = $50.
- Shares outstanding before buyback = 20,000,000.
- EPS before buyback = $5.00.
- Earnings yield = $5.00 / $50 = 10%.
- After-tax cost of borrowing = 8%.
- Planned buyback = 600,000 shares.

Calculate the EPS after the buyback.

Answer:

total earnings = $5.00 × 20,000,000 = $100,000,000

$$\text{EPS after buyback} = \frac{\text{total earnings} - \text{after-tax cost of funds}}{\text{shares outstanding after buyback}}$$

$$= \frac{\$100{,}000{,}000 - (600{,}000 \text{ shares} \times \$50 \times 0.08)}{(20{,}000{,}000 - 600{,}000) \text{ shares}}$$

$$= \frac{\$100{,}000{,}000 - \$2{,}400{,}000}{19{,}400{,}000 \text{ shares}}$$

$$= \frac{\$97{,}600{,}000}{19{,}400{,}000 \text{ shares}}$$

$$= \$5.03 \text{ per share}$$

Since the after-tax cost of borrowing of 8% is less than the 10% earnings yield (E/P) of the shares, the share repurchase will increase the company's EPS.

EXAMPLE: Share repurchase with borrowed funds, where the after-tax cost of debt *exceeds* the earnings yield

Spencer Pharmaceuticals, Inc., (SPI) plans to borrow $30 million that it will use to repurchase shares; however, creditors perceive the company to be a significant credit risk, and the after-tax cost of borrowing has jumped to 15%. Using the other information from the previous example, calculate the EPS after the buyback.

Answer:

$$\text{EPS after buyback} = \frac{\text{total earnings} - \text{after-tax cost of funds}}{\text{shares outstanding after buyback}}$$

$$= \frac{\$100{,}000{,}000 - (600{,}000 \text{ shares} \times \$50 \times 0.15)}{(20{,}000{,}000 - 600{,}000) \text{ shares}}$$

$$= \frac{\$100{,}000{,}000 - \$4{,}500{,}000}{19{,}400{,}000 \text{ shares}}$$

$$= \frac{\$95{,}500{,}000}{19{,}400{,}000 \text{ shares}}$$

$$= \$4.92 \text{ per share}$$

Because the after-tax cost of borrowing of 15% exceeds the earnings yield of 10%, the added interest paid reduces earnings, and the EPS after the buyback is less than the original $5.00.

The conclusion is that a share repurchase using borrowed funds will increase EPS if the after-tax cost of debt used to buy back shares is less than the earnings yield of the shares before the repurchase. It will decrease EPS if the cost of debt is greater than the earnings yield, and it will not change EPS if the two are equal.

LOS 15.m: Calculate and interpret dividend coverage ratios based on 1) net income and 2) free cash flow.

LOS 15.n: Identify characteristics of companies that may not be able to sustain their cash dividend.

Dividend safety is the metric used to evaluate the probability of dividends continuing at the current rate for a company. Traditional ratios, such as **dividend payout ratio** (dividends/net income) or its inverse **dividend coverage ratio** (net income/dividends), are typically used for this purpose. A higher than normal dividend payout ratio (and lower than normal dividend coverage ratio) tends to typically indicate a higher probability of a dividend cut (or a lower probability of dividend sustainability).

In analyzing these ratios, we should compare the computed ratio to the average ratio for the industry and market within which a company operates. In making a qualitative judgment about a company, stable or increasing dividends are looked

upon favorably, whereas companies that have cut their dividends in the past are looked upon unfavorably.

Another ratio considers free cash flow to equity (FCFE). FCFE is the cash flow available for distribution to stockholders after working capital and fixed capital needs are accounted for.

FCFE coverage ratio = FCFE / (dividends + share repurchases)

Note that unlike the dividend payout ratio, the FCFE coverage ratio considers not only dividends but also share repurchases.

A FCFE coverage ratio significantly less than one is considered unsustainable. In such a situation, the company is drawing down its cash reserves for dividends and repurchases.

PROFESSOR'S NOTE
FCFE is discussed extensively in the Equity Valuation portion of the curriculum.

EXAMPLE: Dividend sustainability analysis

Chevron Corp. (NYSE: CVX) is a San Ramon, CA based global integrated energy company. Selected financial data for the years ending December 31, 2008 and 2009 is provided.

Year Ending 31 December (US $ Millions)	2009	2008
Net income	$10,483	$23,931
Cash flow from operations	$19,373	$29,632
Capital expenditures (FCInv)	$19,843	$19,666
Net borrowing	$1,659	$1,682
Dividends paid	$5,373	$5,261
Stock repurchases	$(168)	$6,821

Source: Yahoo! Finance website. July 27, 2010.

1. Using the information provided, calculate:
   A. Dividend payout ratio.
   B. Dividend coverage ratio.
   C. FCFE coverage ratio.
2. Discuss the trend in dividend coverage ratio and compare it to FCFE coverage ratio.
3. Is Chevron's dividend sustainable?

Answer:

1. a. Dividend payout ratio = dividend / net income.
   2008: 5,261 / 23,931 = 0.22 or 22%
   2009: 5,373 / 10,483 = 0.51 or 51%
   b. Dividend coverage ratio = net income / dividend
   2008: 23,931 / 5,261 = 4.55
   2009: 10,483 / 5,373 = 1.95

c. FCFE = cash flow from operations − FCInv + net borrowings
2008: FCFE = 29,632 − 19,666 + 1,682 = 11,648
2009: FCFE = 19,373 − 19,843 + 1,659 = 1,189
FCFE coverage ratio = FCFE / (dividends + share repurchases)
FCFE coverage ratio:
2008: 11,648 / (5,261 + 6,821) = 0.96
2009: 1,189 / [5,373 + (−168)] = 0.23

2. The dividend coverage ratio has decreased considerably from 4.55 in 2008 to 1.95 in 2009. The FCFE coverage ratio has also decreased significantly from 0.96 to 0.23. It appears that Chevron's dividend sustainability is lower in 2009 compared to 2008.
3. Chevron's dividend coverage has decreased significantly from 2008 to 2009. Still, even with this decrease, Chevron's dividend coverage is almost 2 times. Chevron's FCFE coverage ratio has also decreased dramatically from 2008 to 2009. This is despite the fact that the company stopped its share repurchase plan in 2009 (in fact it issued additional stock—most likely to provide shares for exercise of employee stock options). Additionally, even if we consider 2009 to be a bad year due to a downturn in oil prices, the 2008 ratio is still below one. FCFE coverage ratio analysis therefore suggests that Chevron's payout policy is unsustainable for the long run.

MODULE QUIZ 15.2

1. Over the past 25 years, in the developed markets including the United States, the United Kingdom, and the European Union, the fraction of companies that:
   A. pay out cash dividends has decreased.
   B. repurchase shares has decreased.
   C. use particular dividend policies has been consistent over time and across countries.
2. Which of the following is *most likely* to be sustainable?
   A. A FCFE coverage ratio of 0.5.
   B. A dividend payout ratio of 0.5.
   C. A dividend coverage ratio of 0.5.
3. Nick Adams is recommending to the board of directors that they share the profits from an excellent year (totaling $56 million) with shareholders by either declaring a special cash dividend of $20 million, or using the $20 million to repurchase shares of Volksberger common stock in the open market. Selected financial information about the firm is shown in the following:

Shares outstanding:	40 million
Current stock price:	$28.00
52-week trading range:	$20.00 to $36.00
Book value of equity:	$880 million
After-tax cost of borrowing:	5.5%

Adams drafts a memo to the board of directors detailing the financial impact of declaring a special cash dividend versus repurchasing shares. His memo includes the following two statements:

Statement 1: The total shareholder wealth resulting from owning one share of stock with the special dividend option will increase to $28.50.

Statement 2: Our company's P/E ratio after the share buyback will remain the same as before the buyback.

Which of Adams's statements are correct?

A. Both statements are correct.
B. Only one of the statements is correct.
C. Neither statement is correct.

4. Which of the following would not be a good reason for a company to repurchase shares of its own stock? Management:
   A. believes a stable cash dividend is in the best interests of shareholders.
   B. believes its stock is overvalued.
   C. wants to increase the amount of leverage in its capital structure.
5. Last year, Wolverine Shoes and Boots had earnings of $4.00 per share and paid a dividend of $0.20. In the current year, the company expects to earn $4.40 per share. The company has a 30% target payout ratio and plans to bring its dividend up to the target payout ratio over an 8-year period. Next year's expected dividend is *closest* to:
   A. $0.14.
   B. $0.24.
   C. $0.34.

KEY CONCEPTS

LOS 15.a

Cash dividend payments reduce cash as well as stockholders' equity. This results in a lower quick ratio and current ratio, and higher leverage (e.g., debt-to-equity and debt-to-asset) ratios. Stock dividends (and stock splits) leave a company's capital structure unchanged and do not affect any of these ratios. In the case of a stock dividend, a decrease in retained earnings (corresponding to the value of the stock dividend) is offset by an increase in contributed capital, leaving the value of total equity unchanged.

LOS 15.b

Following are the three theories of investor preference:

- MM's dividend irrelevance theory holds that in a no-tax/no-fees world, dividend policy is irrelevant since it has no effect on the price of a firm's stock or its cost of capital, because individual investors can create their own homemade dividend.
- Dividend preference theory says investors prefer the certainty of current cash to future capital gains.
- Tax aversion theory states that investors are tax averse to dividends and would prefer companies instead buy back shares, especially when the tax rate on dividends is higher than the tax rate on capital gains.

LOS 15.c

The signaling effect of dividend changes is based on the idea that dividends convey information about future earnings from management to investors (who have less information about a firm's prospects than management). In general, unexpected

increases are good news and unexpected decreases are bad news as seen by U.S. investors.

LOS 15.d

Two types of agency costs affect dividend payout policies:

- Agency conflict between shareholders and managers can be reduced by paying out a higher proportion of the firm's free cash flow to equity so as to discourage investment in negative NPV projects.
- Agency conflict between shareholders and bondholders occurs when shareholders can expropriate bondholder wealth by paying themselves a large dividend (and leaving a lower asset base for outstanding bonds as collateral). Agency conflict between bondholders and stockholders is typically resolved via provisions in bond indenture.

LOS 15.e

Six primary factors affect a company's dividend payout policy:

1. Investment opportunities: affects the residual income available to pay as dividends.
2. Expected volatility of future earnings: firms are more cautious in changing dividend payout in the presence of high earnings volatility.
3. Financial flexibility: Firms may not increase dividends (even in presence of significant free cash flow) so as not to be forced to continue paying those dividends in the future and losing financial flexibility. Instead, firms can choose to pay out excess cash via stock repurchases.
4. Tax considerations: In the presence of differential tax rate on capital gains versus dividends, companies may structure their dividend policy to maximize investors' after-tax income.
5. Flotation costs: Flotation cost increases the cost of external equity as compared to retained earnings. Hence, higher flotation cost would motivate firms to have a lower dividend payout.
6. Contractual and legal restrictions: Dividend policy may be affected by debt covenants that the firm has to adhere to. Legal restrictions in some jurisdictions limit the dividend payout of a firm.

LOS 15.f

Effective rate under double taxation = corporate tax rate + (1 − corporate tax rate) × (individual tax rate)

A split-rate system has different corporate tax rates on retained earnings and earnings that are paid out in dividends (distributed income). Under split-rate system, effective tax rate is computed the same way as double taxation but we use the corporate tax rate for distributed income as the relevant corporate tax rate in the double taxation formula.

Under a tax imputation system, taxes are paid at the corporate level but are used as credits by the stockholders. Hence, all taxes are effectively paid at the shareholder's marginal tax rate.

LOS 15.g

Stable dividend policy: A company tries to align its dividend growth rate with the company's long-term earnings growth rate to provide a steady dividend. A firm with a stable dividend policy could use a target payout adjustment model to gradually move towards its target payout.

$$\text{expected increase in dividends} = [(\text{expected earnings} \times \text{target payout ratio}) - \text{previous dividend}] \times \text{adjustment factor}$$

where:

$$\text{adjustment factor} = 1 / \text{number of years over which the adjustment in dividends will take place}$$

Constant payout ratio: Company defines a proportion of earnings that it plans to pay out to shareholders regardless of volatility in earnings (and consequently in dividends).

LOS 15.h

Global trends in corporate payout policies:

1. Globally, the proportion of companies paying cash dividends has trended downwards.
2. Stock repurchases have been trending upwards in the United States since the 1980s and in the United Kingdom and continental Europe since the 1990s.

LOS 15.i

Share repurchase methods:

1. Open market transactions: The firm buys back its shares in the open market.
2. Fixed-price tender offer: The firm buys a predetermined number of shares at a fixed price, typically at a premium over the current market price.
3. Dutch auction: A tender offer where the company specifies a range of prices rather than a fixed price. Bids are accepted (lowest price first) until the desired quantity is filled. All accepted bids are then filled at the (higher) price of the last accepted bid.
4. Repurchase by direct negotiation: Purchasing shares from a major shareholder, often at a premium over market price. This method may be used in a greenmail scenario, or when a company wants to remove a large overhang in the market.

LOS 15.j

Repurchases made using a company's surplus cash will lower cash and shareholders' equity and, therefore, increase the firm's leverage. Earnings per share may increase because there will be fewer shares outstanding.

When the company uses debt to finance the repurchase, EPS will increase if the after-tax funding cost is less than the earnings yield. However, the firm will then also have higher leverage and, therefore, a higher cost of capital, so an increase in EPS will not automatically lead to an increase in share price or in shareholder wealth.

LOS 15.k

After a stock repurchase, the number of outstanding shares will decrease and the book value per share (BVPS) is likely to change as well. If the price paid is higher

(lower) than the pre-repurchase BVPS, the BVPS will decrease (increase).

LOS 15.l

There are five common rationales for share repurchases (versus dividends):

1. Potential tax advantages: When capital gains are taxed favorably as compared to dividends.
2. Share price support/signaling: Management wants to signal better prospects for the firm.
3. Added flexibility: Reduces the need for "sticky" dividends in the future.
4. Offsets dilution from employee stock options.
5. Increases financial leverage by reducing equity in the balance sheet.

LOS 15.m

Dividend coverage ratio = net income / dividends

FCFE coverage ratio = FCFE / (dividends + share repurchases)

LOS 15.n

For both dividend and FCFE coverage, ratios that are below industry averages or trending downwards over time indicate problems for dividend sustainability.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 15.1

1. **B** The effective tax rate on earnings distributed as dividends is 0.35 + (1 − 0.35)(0.30) = 0.545 = 54.5%. (LOS 15.f)

2. **B** The effective tax rate on earnings distributed as dividends is 0.20 + (1 − 0.20)(0.28) = 0.424 = 42.4%. (LOS 15.f)

3. **C** Under an imputation tax system, the effective tax rate on earnings distributed as dividends is the tax rate of the shareholder receiving the dividends. (LOS 15.f)

4. **C** The bird-in-hand argument for dividend policy is based on the fact that a dividend payment is more certain than future capital gains. (LOS 15.b)

Module Quiz 15.2

1. **A** Over the past decades, it has been observed that the percentage of companies engaging in share repurchases has increased over time. At the same time, the fraction of companies paying cash dividends has decreased. In addition to changing over time, dividend policies have been noted to differ between countries. (LOS 15.h)

2. **B** An FCFE coverage ratio or dividend coverage ratio much less than one is not sustainable because the company is drawing on cash and marketable securities to make payments. A dividend payout ratio less than one indicates that the company is paying out less in dividends than it is earning, which is the normal (and desirable) situation. (LOS 15.n)

3. **C** Adams is incorrect with respect to Statement 1. If the firm pays its special dividend of $20 million, both the assets and equity of the firm will drop by $20 million. The total wealth from owning one share will be [(40 million)($28) – $20 million] / 40 million = $27.50, plus $20 million / 40 million = $0.50 per share as a dividend, so the total shareholder wealth resulting from owning one share of stock is $28. Note that the total shareholder wealth of $28 is the same whether the cash dividend or share repurchase option is chosen. Adams is also incorrect with respect to Statement 2. The current EPS is $56 million / 40 million = $1.40, so the current P/E ratio is $28 / $1.40 = 20 times earnings. The price per share will remain the same. Share buyback = $20 million / 28 = 714,286 shares. New price = [(40 million × $28/share) − $20 million] / (40 million − 714,286) = $28/share. EPS will increase. $56 million / 39,285,714 = $1.43. Since the price is the same, and EPS increases, the P/E ratio will fall slightly after the repurchase. (LOS 15.j)

4. **B** Management would repurchase shares of its own stock if it believed the shares were undervalued, not overvalued. (LOS 15.l)

5. **C** expected increase in dividends

= [(expected earnings × target payout ratio) – previous dividend] × adjustment factor

= [($4.40 × 30%) – $0.20] × (1 / 8)

= $0.14

expected dividend for the current year

= previous dividend + expected increase in dividends

= $0.20 + $0.14

= $0.34

(LOS 15.g)

READING 16

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) CONSIDERATIONS IN INVESTMENT ANALYSIS

EXAM FOCUS

In this topic review, we consider how environmental, social, and governance (ESG) factors affect analysis of a company. First, we think about global variations in corporate ownership structures and how corporate governance is impacted by these structures. Next, we reflect on various company-specific corporate governance factors. We then identify the various ESG risks and opportunities to analyze. Finally, we consider some examples that demonstrate how ESG risk and opportunities are evaluated.

INTRODUCTION

In the field of investment analysis, factors related to ESG have become an increasingly important consideration. For example, environmental risks have taken on a greater focus as the public devotes more thought to conservation of the planet's resources and as corresponding regulations are strengthened globally. In general, a firm today should give considerable attention to its impact on the local community, its employee health policies, and how the company promotes itself.

MODULE 16.1: GLOBAL VARIATIONS IN OWNERSHIP STRUCTURES

Video covering this content is available online.

LOS 16.a: Describe global variations in ownership structures and the possible effects of these variations on corporate governance policies and practices.

Global differences in legal, social, political, and economic factors have led to differences in ownership structures.

CONCENTRATED OWNERSHIP VS. DISPERSED OWNERSHIP

Corporate ownership structures can be classified as either concentrated, dispersed, or a hybrid. Globally, the most common ownership structure category is concentrated ownership, where a single shareholder or a group of shareholders have control over the corporation. These controlling shareholders can be a family, other companies, or a sovereign entity. Dispersed ownership refers to the situation where the shareholders are numerous and none has control.

Percentage ownership is not always a reliable indicator of concentration of control: certain shareholders may have a greater degree of control than their ownership percentage would suggest. A minority shareholder (i.e., holding less than 50% of shares) could have control of a corporation through a **vertical ownership** arrangement(where the group has a controlling interest in holding companies, which in turn have controlling interests in operating companies) or a **horizontal ownership** arrangement (where companies with common suppliers or customers cross-hold each other's shares).

Another disconnect between control and percentage ownership comes in the form of dual-class shares, wherein one class of shareholders has fewer voting rights, while the other class has superior voting rights.

CONFLICTS WITHIN DIFFERENT OWNERSHIP STRUCTURES

Depending on the type of ownership structure present in a corporation, different kinds of conflicts may emerge among shareholders and between managers and shareholders.

Dispersed ownership and dispersed voting power describes a situation where shareholders (called *weak shareholders*) do not hold power over managers (called *strong managers*). In this situation, principal–agent conflict is likely: shareholders want shareholder value maximized, while managers may use the firm's resources to their own advantage. This problem can be mitigated by the presence of controlling shareholders.

Concentrated ownership and concentrated voting power refers to a situation where so-called "strong" shareholders hold power over minority shareholders and "weak" managers. This arrangement allows controlling shareholders to control the board of directors and effectively control and monitor management. The downside of this situation is that a principal–principal problem may arise: controlling owners can take advantage of firm resources to the detriment of minority owners.

Dispersed ownership and concentrated voting power indicates that the majority of the shares of a company are not owned by strong controlling shareholders. Rather, the controlling shareholders gain control over other minority shareholders through pyramid structures or dual-class shares, despite the controlling shareholders having less-than-majority ownership (again, the principal–principal problem). These controlling shareholders' voting power also allows them to monitor management.

Concentrated ownership and dispersed voting power occurs in the presence of voting caps, where the voting rights of large share positions are restricted. Sovereign countries sometimes enact voting caps to discourage foreign investors from taking a

controlling position in a company belonging to an industry that is considered important.

CATEGORIES OF INFLUENTIAL SHAREHOLDERS

To properly identify various corporate governance risks, it can be helpful to consider the various types of shareholders and how they may impact corporate governance.

1. **Banks.** When a bank lends money to a firm or holds an equity stake, the bank can often exert some control over that corporation. (This is especially common in Asia and Europe.) If a bank is both a lender and a shareholder to a firm, the bank may use its influence to encourage the firm to take out large expensive loans from the bank. Corporate governance controls here could ensure that the bank does not take advantage of its role as lender at the expense of other shareholders.
2. **Families.** In Latin America and some other places, family ownership is common. It is also common for individuals to sit on the boards of numerous companies, a term called *interlocking directorates*, resulting in one family controlling multiple companies. One advantage of family control is that principal–agent issues may be reduced. On the other hand, family ownership can make it difficult to recruit quality outsiders for management and often leads to lack of concern for minority shareholders, as well as minimal transparency and low accountability by management.
3. **State-owned enterprises.** When a corporation operates in a sector that the government feels is strategically important, or needs to produce some good or product essential to a country's population, or if the capital required exceeds what the private sector can fund, the corporation may be operated as a state-owned enterprise (SOE). A **listed SOE** is partly owned by the government and also trades on an exchange. It may be the case that SOEs will seek to provide social benefits to the public rather than focusing only on shareholder value maximization.
4. **Institutional investors.** In many countries, institutional investors (e.g., pension funds, insurance companies, mutual funds) can represent a large portion of equity ownership, and tend to wield their shareholder rights with expertise because of the experience and resources that they bring to the table. While institutional investors usually will not own a large enough position to be a controlling shareholder, they can typically pressure a firm's management and board to act in the interest of shareholders.
5. **Group companies**, such as South Korea's Samsung, can achieve an outsized amount of control through cross-holding of shares via vertical and horizontal ownership. These cross-holding schemes make it difficult for outsiders to acquire shares. Cross-holding also increases the potential for the firms to participate in related-party transactions that do not advantage minority shareholders.
6. **Private equity firms** invest in private companies (or public companies that they plan to take private). The involvement of private equity firms may bring beneficial changes to the portfolio firms' corporate governance, such as introducing performance-based compensation for managers, or the addition of codes.

7. **Foreign investors.** Foreign investors typically demand greater accountability and transparency. This is particularly true in emerging market countries. Minority shareholders can benefit when a company decides to cross-list its shares in a country that has a greater protection for investors and higher standards of transparency.
8. **Managers and board directors.** When the board of directors and company managers own shares in a firm, their interests become more aligned with those of other shareholders, and these insiders are more likely to use the firm's resources to boost profitability over the long term. On the other hand, there is also the potential for insiders to use their ownership stakes to protect their own interests rather than those of other shareholders.

OWNERSHIP STRUCTURE AND CORPORATE GOVERNANCE

Some of the major ownership structure factors that impact corporate governance include:

1. **Director independence.** When a board member has no significant remuneration, ownership, or employment relationship with the firm, the board member is considered independent. Independent directors are important in countries with dispersed ownership where the principal–agent problem is greater and thus the board's role of monitoring managers is key. The portion of directors on boards that are independent has grown in the aftermath of corporate scandals (e.g., Enron).
2. **Board structures.** Boards of directors can generally be categorized as one- or two-tier. A one-tier board is the most common and is made up of both internal (executive) directors and external (nonexecutive) directors. Under a two-tier structure (required in countries such as Russia, Germany, and Argentina), the **management board** is overseen by a **supervisory board**. This supervisory board performs functions such as determining management compensation, supervising external auditors, and reviewing the firm's financial records. In some jurisdictions, representatives of stakeholders such as labor groups sit on the supervisory board.
3. **Special voting arrangements.** Some countries attempt to provide an advantage to minority shareholders through special voting arrangements for board nomination and election.
4. **Corporate governance codes, laws, and listing requirements.** Some countries have adopted national "comply or explain" corporate governance codes that require firms to either adopt best practices of corporate governance or explain why they have not.
5. **Stewardship codes.** Stewardship codes exist in some countries that seek to engage investors in corporate governance by exercising their legal rights. In some cases, these codes are voluntary, but in the U.K., for example, institutional investors are required to "comply or explain" with respect to the U.K.'s Stewardship Code.

MODULE QUIZ 16.1

1. The principal–agent problem is *most severe* under a corporate ownership structure of:
   A. dispersed ownership and dispersed voting power.
   B. concentrated ownership and concentrated voting power.
   C. dispersed ownership and concentrated voting power.
2. A corporation's two-tier board of directors is *most likely* to consist of a(n):
   A. executive board that oversees an internal board.
   B. external board that oversees a nonexecutive board.
   C. supervisory board that oversees a management board.

MODULE 16.2: EVALUATING ESG EXPOSURES

Video covering this content is available online.

LOS 16.b: Evaluate the effectiveness of a company's corporate governance policies and practices.

It is important for a firm's corporate governance to be effective. Consequences of ineffective corporate governance can include damage to reputation, difficulty competing, low or volatile stock price, higher borrowing costs, and decreased profitability. When a company is not behaving according to stockholders' wishes, **shareholder activism** may occur: this is the term for techniques used by shareholders to force management to act in shareholders' interests.

BOARD POLICIES AND PRACTICES

A board's policies and practices determine its effectiveness.

1. **Structure of board of directors.** When analyzing the board structure, the analyst should focus on whether the board is appropriate in light of its accountability to shareholders and its oversight and representation. **CEO duality** occurs when the chairperson of the board is also the chief executive officer (CEO). CEO duality raises concerns that the chairperson's oversight and monitoring responsibilities may not be effectively rendered.
2. **Board independence.** Ideally, a majority of board members should be independent; independent directors are more likely to prevent management from self-serving behavior. It will also lower investor perceptions of risk.
3. **Board committees.** The number and types of board committees will vary greatly between companies but often include committees related to governance issues such as compensation, nomination, and audit committees, as well as in areas such as risk and compliance. When analyzing a corporation's board, an analyst should consider whether the key committees related to financial reporting, management selection, and compensation are sufficiently independent.
4. **Skills and experience of board.** Ideally, board members will have industry-specific experience and skills while also having the broad expertise needed to function efficiently in the board member role. When the company faces specific ESG risks, it is essential that board members have some previous exposure to those kinds of concerns.

Board tenure is another consideration. A board member's long tenure (say, more than 10 years) can be viewed as either an asset or a liability. A long-tenured board member will have strong knowledge of how the firm's management has been operating, as well as a good understanding of the firm's business operations. However, long tenure can make a board member resistant to beneficial change and can cause board members to become too friendly with management, affecting the board members' independence.

5. **Composition of board.** It has been observed in recent years that small, diverse boards of directors are generally more effective than large boards made up of members with similar backgrounds. Diversity refers to characteristics such as age, gender, length of tenure, education, culture, and place of birth.
6. **Other board evaluation considerations.** A board of directors may be evaluated from a number of perspectives, but an evaluation is generally undertaken to appease investors and to ensure that the firm is operating effectively. Typical areas of interest include the board's structure and committees, the culture of the board, its interaction with management, its effectiveness, and its leadership. Board evaluations can be self-evaluations or external reviews (by outsiders). The audience for a particular evaluation can be investors, regulators, or some other interested party.

Executive Compensation

When the remuneration of a firm's executives is analyzed, one of the primary concerns is whether this compensation scheme properly aligns management's incentives with the corporation's value creation. Metrics such as KPIs (key performance indicators) are useful measures of incentive mechanisms. **Clawback policies** allow firms to reclaim past compensation if inappropriate conduct comes to light later (e.g., violations of the law, misreported financial statements). **Say-on-pay** rules can give stakeholders the opportunity to vote on executive compensation. The pay differential between the CEO and the firm's average worker has come under scrutiny in recent years.

VOTING RIGHTS OF SHAREHOLDERS

When investing in a company, it is important to be aware of the rights associated with holding various classes of shares. Some firms structure share offerings as a single class with equal voting rights. Alternatively, in a dual-class structure, the shares held by the firm's founders or management have more voting power than those sold to external investors. Such a structure will disadvantage minority shareholders and sets up a conflict of interest between the two classes of shareholders.

LOS 16.c: Describe how ESG-related risk exposures and investment opportunities may be identified and evaluated.

As awareness of ESG-related risks has increased over time among stakeholders, the amount of related disclosures has also risen. However, obtaining sufficient quality and quantity of information about ESG concerns is still a challenge for investment

analysts. Sources of ESG data can include corporate communications as well as corporate filings. However, there is no uniformity in such disclosures, and they are usually purely voluntary.

INVESTMENT HORIZON AND MATERIALITY

Analysts should consider the impact of identified ESG factors over time; issues that are likely to have a financial impact on the firm only over the long term may be of little concern for short-term investors. Further, the analyst should determine if the impact is material or not. **Materiality** refers to an impact on the company's share price, its operations, or other financial aspects. In general, an investor would consider an ESG factor material if it would affect their investment decisions.

RELEVANT ESG FACTORS

Before an analyst starts compiling data related to a specific company's ESG exposures, the analyst should first work to determine which specific ESG factors are most relevant to that particular industry and firm. Several methods might be used to identify these factors, including ESG data providers, industry organizations, and proprietary methods.

1. **ESG data providers.** Data is sourced from a vendor of ESG information, such as MSCI, Sustainalytics, or RepRisk. These vendors provide information in the form of rankings, scores, and quantitative analysis.
2. **Industry organizations.** These not-for-profit groups can provide information about ESG factors. Examples include the IIRC (International Integrated Reporting Council) and the SASB (Sustainable Accounting Standards Board). These organizations work to promote standardized corporate disclosures of ESG issues. For example, the SASB seeks to promote consistent accounting standards for sustainability.
3. **Proprietary methods.** The analyst uses her firm's tools along with her judgment to gather ESG data from published reports, government organizations, and other sources. ESG data specific to a particular firm can be derived from sources such as 10-K regulatory filings, corporate sustainability reports, and annual reports. While considerations like the board structure may be similar across many companies, ESG factors are likely to vary significantly between industries. For example, a financial institution may have exposures related to issues of data security, while an energy company is more likely to be exposed to environmental concerns. While various organizations are working toward consistent standards relating to reporting ESG factors, comparability continues to be a challenge for analysts.

SECURITY ANALYSIS: FIXED INCOME VS. EQUITY

ESG analysis is applicable both to fixed-income and equity securities, and the methods used to identify applicable ESG factors are essentially the same. However, when it comes to valuation of securities, there are differences between the valuation of fixed-income and equity instruments in terms of how ESG factors are used.

Fixed-Income Analysis

Fixed-income analysts usually will focus on ESG factors' downside risk. For example, an analyst evaluating a company that could be subject to lawsuits might make corresponding adjustments to that firm's liquidity ratios, cash flow ratios, credit ratios, or credit spreads. The timing of such a lawsuit should be considered: the impact of a potential lawsuit far in the future on short-maturity instruments is likely to be minimal. Similarly, for a company with equipment that is likely to become obsolete (known as a **stranded assets** issue), it is the value of the firm's 20-year bonds that should be particularly sensitive to the risk that the equipment will no longer be viable in 20 years.

Equity Analysis

Equity analysts consider both the upside and downside impact of ESG factors when valuing a firm's stock. For example, the analyst may use a lower discount rate for a company that has implemented new manufacturing practices that are environmentally friendly compared to those of competitors. Conversely, the analyst may increase the projected operating expenses of a firm that is struggling with employee retention.

Green bonds are fixed-income instruments used to fund projects related to the environment. Aside from the intended use of the proceeds, these bonds tend to have the same recourse and credit ratings as the issuer's other bonds. Valuation of these bonds is similar to that of a conventional bond, except that green bonds may command a price premium. One concern is greenwashing, where a bond's proceeds are not actually used for the environmental purpose advertised.

LOS 16.d: Evaluate ESG risk exposures and investment opportunities related to a company.

ESG considerations are increasingly being taken into account during the investment process. In the following sections, we will consider some examples of how ESG factors can be included in a fixed-income or equity valuation.

ESG INTEGRATION

ESG factors are generally included in a firm's valuation by making various adjustments to the company's financial statements. For example, a company's projected cash flow statement or income statement may be adjusted in terms of earnings, margins, revenues, costs, capital expenditures, or other items. Adjustments to the balance sheet often take the form of altering the value of assets to reflect impairment. The credit spread of a fixed-income instrument may be adjusted to reflect ESG concerns. Similarly, an adjustment to discount rate or cost of capital may be used to reflect ESG considerations in an equity analysis.

ESG INTEGRATION EXAMPLES

We illustrate the ESG analytical principles involved using three fictitious companies.

1. **Environmental factors.** Concerned about wasting water, a soft-drink company has been able to lower its water usage in its manufacturing process over the past three years. The corresponding analyst adjustment is to reduce projected cost of

goods sold (as a percentage of revenues). This leads to improved gross margin, higher forecasted earnings, and a higher stock price. This may also lead to a modest improvement in CDS or bond prices, due to slightly improved creditworthiness.

2. **Social factors.** A drug company has experienced a long string of product recalls, product quality controversies, and fines and warning letters from regulators. To reflect that these negative factors may recur in the future, the analyst makes some adjustments: COGS (a as percentage of revenues) are increased, and projected non-operating expenses (as a percentage of operating income) related to restructuring are increased as well. Negative valuation impacts for stock and bondholders are also appropriate, especially if the firm's brand reputation is impaired.
3. **Governance factors.** Compared to its peers, a bank's board is found to be lagging in a number of measures: the bank's chairperson is not independent, the board's overall independence and diversity is low, board members' industry experience is low, and a number of board members have long tenures. In addition to these factors, the bank has a higher ratio of nonperforming loans than its peers. To reflect these additional risks, the analyst uses a higher risk premium to value the bank's stock and also increases the credit spread used to value the bank's debt.

MODULE QUIZ 16.2

1. *CEO duality* refers to a situation where the chief executive officer (CEO):
   A. is a shareholder in the company.
   B. serves as chairperson of the board.
   C. has been granted superior or even sole voting rights.
2. In fixed-income analysis, ESG integration is:
   A. generally focused on identifying downside risk.
   B. used to identify both potential opportunities and downside risk.
   C. generally focused on identifying potential opportunities.

KEY CONCEPTS

LOS 16.a

Shareholder ownership is usually categorized as concentrated, dispersed, or a hybrid.

Dispersed ownership indicates that none of the many shareholders has control over the corporation.

Concentrated corporate ownership means that controlling shareholders (i.e., an individual or group) can exercise control over the company. The controlling shareholders can be either minority or majority shareholders.

Vertical (also known as pyramid) ownership refers to a structure where a company has a controlling interest in multiple holding companies, and those holding companies hold controlling interests in operating companies. Horizontal ownership refers to companies with shared business interests that cross-hold the shares of each other.

Dual-class shares give superior (or sole) voting rights to one share class and lesser (or no) voting rights to another.

The board of directors of a company can be structured either as a one-tier board consisting of internal (executive) and external (non-executive) directors, or a two-tiered board where the management board is overseen by a supervisory board.

LOS 16.b

The situation where the CEO is also the company's chairperson of the board is called CEO duality. CEO duality raises the concern that, relative to having independent chairperson and CEO roles, oversight and monitoring roles of the board could be compromised.

LOS 16.c

ESG information and metrics are inconsistently reported by companies, and such disclosure is voluntary. This makes it difficult for analysts to identify useful and relevant ESG factor data.

Materiality in ESG refers to an issue that could impact a firm's securities, performance, or operations.

There are three main approaches for identifying a company's ESG factors: 1) ESG data providers, 2) industry organizations, and 3) proprietary methods.

In fixed-income analysis, ESG considerations are primarily concerned with downside risk. In equity analysis, ESG is considered both in regards to upside opportunities and downside risk.

LOS 16.d

Analysts evaluate ESG factors and then make corresponding adjustments to estimate a discount rate or risk premium. ESG factor adjustments related to income statement and statement of cash flows relate to projected revenues, costs, margins, earnings, capex, or other line items. ESG adjustments to a firm's balance sheet often involve evaluating potential impairment of the firm's assets.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 16.1

1. **A** Under the combination of dispersed ownership and dispersed voting power, the principal–agent problem is likely to arise: this is the risk that managers will use a company's resources to pursue their own interests. The other two ownership structures mentioned are more closely associated with the principal–principal problem. (LOS 16.a)

2. **C** Two-tier boards of directors consist of a supervisory board that oversees a management board. A one-tier board is a single board of directors that is composed of internal (i.e., executive) and external (i.e., nonexecutive) directors. (LOS 16.a)

Module Quiz 16.2

1. **B** CEO duality refers to the situation when the chief executive officer also serves as chairperson of the board. When a board director or manager is also a shareholder of a company, they are known as insiders. Dual-class shares generally grant one or more share classes superior or even sole voting rights. (LOS 16.b)

2. **A** In fixed-income analysis, ESG integration is generally focused on identifying downside risk. (In equity analysis, ESG integration is used to identify both potential opportunities and downside risk.) (LOS 16.c)

READING 17

COST OF CAPITAL: ADVANCED TOPICS

EXAM FOCUS

This reading focuses on estimation of companies' cost of capital. Understand the qualitative factors that influence the risk premiums on debt and equity, and how equity risk premium is calculated based on historical data or on forward-looking estimates. Finally, understand the complications involved in estimating the cost of capital for privately held and international companies.

WARM-UP: WEIGHTED AVERAGE COST OF CAPITAL

The **weighted average cost of capital (WACC)** for a company is calculated as:

$$WACC = W_e r_e + W_p r_p + W_d r_d(1 - T)$$

where:

r_e = cost of equity

r_p = cost of preferred equity

r_d = cost of debt

and W_e, W_p, and W_d are the respective weights.

We consider the *after-tax* cost of debt if the interest expense is tax-deductible (using the marginal tax rate for the company).

PROFESSOR'S NOTE

The weights in the equation just listed should be *target* weights of the company. Unless told otherwise, assume that current market value-based weights reflect the company's target capital structure.

MODULE 17.1: FACTORS AFFECTING THE COST OF CAPITAL AND THE COST OF DEBT

LOS 17.a: Explain top-down and bottom-up factors that impact the cost of capital.

Top-down (i.e., external or macro) factors include:

- *Capital availability*. Economies with plentiful availability of capital will have lower cost of capital. Developed economies with established liquid capital markets tend to have more stable currency values and better investor protections via rule of law, and accordingly will have greater capital availability compared to developing economies. In some less-developed countries that lack corporate debt markets, businesses have to rely on bank lending or a **shadow banking** system of unregulated, non-bank sources.
- *Market conditions*. Factors include inflation, interest rates, and the state of the economy. Lower levels of expected inflation lead to lower nominal risk-free rates. Risk premiums on both debt and equity shrink during economic expansions, and rise during economic contractions. The transparent and predictable monetary policies of developed economies tend to reduce risk premiums and interest rates. Finally, countries with higher currency volatility will need to offer higher risk premiums to risk-averse investors.
- *Legal and regulatory considerations*, *country risk*. Countries that follow common law–based legal systems offer stronger protection to investors, leading to lower risk premiums compared to countries with civil law–based legal systems.
- *Tax jurisdiction*. Tax code affects the deductibility of interest expense on debt. All else equal, the higher the marginal tax rate, the greater the tax benefit of using debt in the capital structure.

Bottom-up (i.e., company-specific) factors that affect the cost of capital include:

- *Business or operating risk*. Volatility in revenues, earnings, and cash flows is a measure of business risk. Businesses with stable revenues (e.g., utilities or subscription-based services) have relatively stable earnings and cash flows, and are therefore less risky than businesses with more-volatile revenues (e.g., cyclical industries). Companies generating most of their revenues from only a few customers face **customer concentration risk**. Use of debt in the capital structure increases financial leverage, which increases the volatility of earnings and cash flows. Companies with poor corporate governance, as well as companies with high ESG-related risk exposures, will see investors demand higher risk premiums.
- *Asset nature and liquidity*. Company assets form the collateral for servicing debt in the event of a liquidation. Companies with tangible, non-specialized (i.e., fungible) assets and more liquid assets would have a higher recovery rate and hence a lower risk premium. Specialized assets and intangibles (e.g., goodwill, patents, proprietary production processes, etc.) do not have a ready liquid market, resulting in a lower recovery rate. Assets specifically designated as collateral reduce the cost of secured debt, but increase the cost of other subordinated unsecured debt as their claim becomes inferior.
- *Financial strength and profitability*. Companies with higher profitability, higher ability to generate cash, and lower leverage, have a lower probability of default; therefore, investors will accept a lower risk premium. Leverage ratios such as debt-to-equity or debt-to-EBITDA are used by analysts.
- *Security features*. Embedded call options make a security less desirable and increase the risk premium. While a callable bond increases the current cost of borrowing for the issuer, it does allow the company to refinance the debt at a

favorable rate should interest rates decline in the future. Conversely, a put option or conversion option reduces the cost of borrowing for the company, because a putable bond is issued at a favorable rate. However, the borrowing cost may increase in the future if investors put back the bond in a rising interest rate scenario and the company is forced to refinance at a higher rate. A **cumulative preferred stock** accumulates missed dividends when the company is unprofitable; such stock has a lower risk premium than equivalent non-cumulative preferred stock. Classes of common equity that have superior rights have a lower cost than those classes with inferior rights.

LOS 17.b: Compare methods used to estimate the cost of debt.

LOS 17.e: Estimate the cost of debt or required return on equity for a public company and a private company.

Estimated cost of debt is impacted by various factors, including whether the debt is publicly traded, whether it is rated by a ratings agency, and which currency the debt was issued in.

Publicly Traded Debt

If the company's debt is publicly traded, the yield to maturity for the longest maturity straight debt outstanding is generally the best estimate of the cost of debt. However, if the longest maturity debt is thinly traded, and a shorter-maturity debt with more-reliable market price information is available, we may use the yield on this shorter maturity debt instead.

Non-Traded/Thinly Traded

If the company's debt is not traded or is thinly traded, we can use matrix pricing to consider the yields on traded securities with the same maturity and credit ratings. If the debt is not credit rated, then financial ratios of the company such as the **interest coverage (IC) ratio** or financial leverage (D/E) ratio may be used to infer a credit rating for that debt. It is also common to obtain credit spreads for specific ratings and add those to the benchmark rates to arrive at the cost of debt. When using credit ratings, analysts should realize that an issuer rating may differ from the ratings of the issuer's individual series of debt, depending on the seniority of the specific series and whether it is secured by a collateral.

EXAMPLE: Cost of debt using matrix pricing

Brevis Solutions is a technology provider for the healthcare sector. Sunil Tilak, CFA is trying to estimate the cost of debt, which represents 30% of Brevis' capital structure. The 6-year, BB rated debt is thinly traded. Tilak collects data, shown here, on similar BB rated securities that have liquid markets.

Company	Maturity (yrs)	Annual Coupon	Price (Par = $100)
Silva	4	5%	$ 99.45
Deso	4	6%	$ 101.75
Manfried	7	7%	$ 110.00
Listor	7	8%	$ 114.00

Estimate the cost of debt using the matrix method.

Answer:

First calculate the YTM of each of the four comparable securities.

Company	Maturity (yrs)	Annual Coupon	Price (Par = $100)	YTM
Silva	4	5%	$ 99.45	5.16%
Deso	4	6%	$ 101.75	5.50%
Manfried	7	7%	$ 110.00	5.26%
Listor	7	8%	$ 114.00	5.53%

Using your calculator, for Listor: PV = −114, N = 7, PMT = 8, FV = 100, CPT I/Y = 5.53%

We then construct a matrix of maturity and coupon rates as follows:

	Coupon Rate				
Maturity	5%	6%	7%	8%	Average
4	5.16%	5.50%	–	–	5.33%
7	–	–	5.26%	5.53%	5.39%

The average yields for each maturity are then calculated and used as estimates for those maturities.

Finally, we use linear interpolation to determine the YTM for a 6-year bond as follows:

interpolated yield = $\text{yield}_{\text{short}} + [(\text{yield}_{\text{long}} - \text{yield}_{\text{short}})/(\text{maturity}_{\text{long}} - \text{maturity}_{\text{short}})] \times (\text{maturity}_{\text{interpolated}} - \text{maturity}_{\text{short}})$

$= 5.33\% + [(5.39 - 5.33) / (7 - 4)] \times (6 - 4)$

$= 5.33\% + (0.02\% \times 2)$

$= 5.37\%$

In many countries, bank debt is the primary source of debt capital. Because we are interested in the marginal cost or the cost of a new bank loan, the rate on existing debt will not be a good estimate if the company's characteristics or the general level of rates has changed.

Leases—and specifically, finance (i.e., capital) leases—can be used to estimate the cost of borrowing. The **rate implicit in the lease (RIIL)** is the implied cost of capital in a lease. RIIL is the IRR in the following equation:

PV of lease payments + PV of residual value = Fair value of leased asset + Lessor's initial direct cost

Usually, the terms of a finance lease are disclosed. If they are not, then the **incremental borrowing rate (IBR)**, the rate on a new secured loan over the same term, may be used.

> **EXAMPLE: Capital lease**
>
> Company A has signed a 15-year lease on an asset, calling for annual payments of $10 million at the end of each year. The lease residual value is $30 million. The fair value of the asset is $120 million, and the lessor incurs a cost of $5 million at the time of lease initiation.
>
> Calculate the RIIL for this lease.
>
> **Answer:**
>
> Using our financial calculator:
>
> PV = −125, N = 15, PMT = 10, and FV = 30. CPT I/Y = 4.28%
>
> Thus, the rate implicit in the lease (RIIL) is 4.28%.

International Considerations

For foreign borrowers, the cost of debt should include a country risk premium. A **country risk rating (CRR)** reflects risks related to economic conditions, political stability, exchange rate risk, and the level of capital market development. Country ratings can be similar in format to debt ratings (e.g., AA), or can be a numerical rating (e.g., 8).

A country may be assigned a rating relative to a benchmark country. The excess of the median interest rate for that country relative to the benchmark country rate determines the country risk premium. In Figure 17.1, Country A is the benchmark country, and hence that country's risk premium is zero. Country C's median interest rate is 6.80% resulting in a country risk premium of 6.80% − 4.20% = 2.60%.

Figure 17.1: Country Risk Premium

Country	CRR (100 = Least Risky)	Median Interest Rate	Country Risk Premium
A	100	4.20%	0
B	90	5.60%	1.40%
C	80	6.80%	2.60%
D	70	7.20%	3.00%
E	60	8.25%	4.05%

MODULE 17.2: ERP AND THE COST OF EQUITY

LOS 17.c: Explain historical and forward-looking approaches to estimating an equity risk premium.

Equity risk premium (ERP) is the extra return (over the risk-free rate) that an investor demands for investing in risky equity securities.

ESTIMATES OF THE EQUITY RISK PREMIUM

There are two types of estimates of the equity risk premium: historical estimates and forward-looking estimates.

Historical Estimates

A historical estimate of the ERP consists of the difference between the historical mean return for a broad-based equity market index over some time period, and a risk-free rate over the same period. Its strength is its objectivity and simplicity.

Analysts making a historical estimate need to decide on four important issues:

1. Index selection: The equity market index chosen should be one that serves as a good proxy for the average returns equity investors earn over time.
2. Sample period: Analysts generally choose a longer sample period because covering multiple business cycles and a variety of market conditions, the standard error (i.e., noise) should be lower. However, older data may not reflect current market conditions. On the other hand, smaller samples using only recent data can have a higher forecast error but may be representative of expected market conditions.
3. Mean type: Analysts need to decide whether to use an arithmetic mean or a geometric mean. An arithmetic mean is a good estimate of a one-period expected return, but does a poor job of estimating multiperiod return, which is needed to determine expected terminal wealth. A geometric mean gives lower weight to outliers, and estimates the expected terminal wealth more accurately. While the geometric mean is preferred, both means are used in practice.
4. Risk-free rate proxy: Analysts may use either short-term or long-term government bond rates as a proxy for the risk-free rate. The short-term (e.g., T-bill) rate is a good proxy for the true risk-free rate because (unlike long-term rates) it does not include reinvestment (of coupon) risk. However, because the duration of equity is long-term (actually infinite), many analysts favor using long-term government bond rates as proxies for the risk-free rate.

A weakness of the historical approach is the assumption that the mean and variance of the returns are constant over time (i.e., the ERP time series is stationary). This does not seem to be the case. In fact, the equity risk premium actually appears to be countercyclical—it is low during good times and high during bad times. Thus, an analyst using historical data to estimate the current equity premium should choose the sample period carefully. Another concern with a historical estimate is that it may suffer from **survivorship bias**: it will be upward-biased if only firms that have survived during the period of measurement are included in the sample.

Forward-Looking Estimates

Forward-looking or ex-ante estimates use current information and expectations concerning economic and financial variables. As such, they do not rely on an assumption of stationarity and is less subject to problems like survivorship bias.

There are three main categories of forward-looking estimates: survey-based estimates, dividend discount model estimates, and estimates from macroeconomic modeling.

Survey Estimates

Survey estimates of the ERP use a consensus of opinions, typically experts. Surveys tend to estimate higher ERPs for developing markets relative to developed markets. A weakness is that the surveys tend to be biased toward recent market returns.

Dividend Discount Models

The constant growth model (Gordon Growth Model) is a popular method for generating forward-looking estimates. Rearranging the GGM to isolate the required rate of return gives:

$$r_e = (D_1/V_0) + g$$

The first term is the expected dividend yield on a broad-based index; this measure should be relatively free from large surprises. The second term is the earnings growth rate for the index, based on consensus forecasts. Recall that the constant growth rate is also the capital gains yield on the index.

Subtracting the current risk-free rate gives us the ERP estimate:

$$\text{ERP} = \text{E(dividend yield)} + g - r_f$$

Recall that the constant growth model assumes a constant growth rate in earnings and dividends. If this assumption is not valid, an analyst will need to include relevant expectations of expansion or contraction of the market P/E ratio. (We will discuss this in a moment in the macroeconomic model approach).

For developing economies, where the current high growth rate is transitory, we might incorporate three stages of growth (high, moderate, and mature) and model the stock market index value this way:

$$\text{current index value} = \text{PV(stage 1)} + \text{PV(stage 2)} + \text{PV(stage 3)}$$

The IRR that balances this equation is then our estimate of required rate of return. After subtracting the current risk-free rate, we can obtain the ERP for that market.

Macroeconomic Models

We will use the Grinold-Kroner (2001) model to illustrate a macroeconomic model. The **Grinold-Kroner model** decomposes 'g' (the capital gains yield, CGY) in the dividend discount model as:

$$\text{CGY} = \Delta P/E + \text{expected inflation } (i) + \text{real economic growth rate (G)} - \Delta S$$

where:

$\Delta P/E$ = expected repricing or expansion/contraction in P/Es

ΔS = % change in shares outstanding, on an aggregate basis

ΔS reflects the net buyback of stock, which is another way corporations can effectively pay cash to their shareholders. If ΔS is positive, it is a dilution effect (hence, is subtracted).

The Grinold-Kroner model can be used to express the expected market equity return as a function of five factors:

$$ERP = [DY + \Delta P/E + i + G - \Delta S] - r_f$$

where:

DY = dividend yield; the expected income component of the equity investment

i = expected inflation

One approach to estimate expected inflation is to compare the nominal yield on a U.S. Treasury bond to the yield on an equivalent inflation-protected Treasury security (TIPS).

$$i = \frac{1 + YTM_{Treas}}{1 + YTM_{TIPS}} - 1$$

EXAMPLE: Macroeconomic model

Patrick McGill is trying to estimate the equity risk premium for the U.S. market. McGill uses the S&P 500 index as the proxy for the market and estimates that the dividend yield is 1.2%. The real GDP growth rate is forecast to be 3% and McGill believes that the market is currently fairly valued. The current 10-year Treasury yield is 2.4%, while 10-year TIPS yield 0.25%. McGill assumes no net change in shares outstanding, and that the risk-free rate is 0.50%.

Calculate the equity risk premium.

Answer:

$$i = \frac{1 + YTM_{Treas}}{1 + YTM_{TIPS}} - 1 = (1.024 / 1.0025) - 1 = 2.1\%$$

$$ERP = [DY + \Delta P/E + i + G - \Delta S] - r_f$$

$$= [1.2\% + 0 + 2.1\% + 3\% - 0] - 0.5\%$$

$$= 5.8\%$$

LOS 17.d: Compare methods used to estimate the required return on equity.

LOS 17.e: Estimate the cost of debt or required return on equity for a public company and a private company.

There are several approaches to estimating the **required rate of return on equity** including the DDM, bond yield plus risk premium, build-up approaches, and risk premium models.

Dividend Discount Model (DDM)

For an individual company, cost of equity is dividend yield plus capital gains yield.

$$r_e = DY + CGY$$

(Note that since we are calculating required return and not risk premium, *we do not subtract the risk-free rate.*)

If the company's earnings growth rate was not constant, then a 2-stage model could be used instead.

EXAMPLE: Cost of equity using DDM

Cogenics, Inc., is expected to pay a dividend of $4 at the end of its first year. Dividends are expected to grow at a constant rate of 4% per year. The current Cogenics stock price is $100.

Betagenics, Inc., is expected to pay a dividend of $1.50, $2.00, $2.50, and $3.00 at the end of each of the next four years, respectively. The current Betagenics stock price is $50, and is expected to be $60 at the end of four years.

Based on this data, calculate the cost of equity for Cogenics and Betagenics.

Answer:

Dividend yield for Cogenics = 4 / 100 = 4%

$r_{e(Cogenics)}$ = DY + CGY = 4% + 4% = 8%

For Betagenics, we need to solve for r_e in the following equation:

$$\$50 = \frac{1.50}{(1 + r_e)} + \frac{2.00}{(1 + r_e)^2} + \frac{2.50}{(1 + r_e)^3} + \frac{3.00 + 60}{(1 + r_e)^4}$$

On our TI BA II PLUS calculator: CF0 = −50; C01 = 1.50; C02 = 2.00; C03 = 2.50; C04 = 63

CPT IRR = 8.78%

Thus, the cost of equity for Betagenics is 8.78%.

Bond-Yield-Plus–Risk-Premium Method

The **bond-yield-plus-risk-premium (BYRPM) method** is a build-up approach appropriate for estimating the cost of equity for a company that has publicly traded debt. This method simply adds a risk premium to the yield to maturity (YTM) of the company's *long-term* debt. One approach to selecting a risk premium is to use an average of the historical difference between equity returns and cost of debt, similar to the historical estimation of the equity risk premium.

An issue with this method is that the risk premium is rather arbitrary and if the firm has several debt securities outstanding, there is no perfect option regarding which security's yield to use.

EXAMPLE: Applying the bond-yield-plus-risk-premium approach

Company LMN has bonds with 15 years to maturity, a coupon of 8.2%, and a price of 101.70. An analyst estimates that the additional risk assumed from holding the firm's equity rather than bonds justifies a risk premium of 3.8%. Calculate the cost of equity using the bond-yield-plus-risk-premium approach.

Answer:

Using our calculator's TVM keys: PV = −101.70, N = 15, PMT = 8.2, FV = 100, CPT I/Y = 8.0%.

Cost of equity = 8.0% + 3.8% = 11.8%

Risk-Based Models

Capital Asset Pricing Model

The **capital asset pricing model (CAPM)** is a single-factor model that estimates the required return on equity using the following formula:

required return on stock = risk-free rate + (equity risk premium × beta of stock)

> **EXAMPLE: Using the CAPM to calculate the required return on equity**
>
> The expected risk-free rate is 4%, and the equity risk premium is 3.9%. Calculate the required return on equity for a stock with beta of 0.8.
>
> **Answer:**
>
> required return on stock
>
> = risk-free rate + (equity risk premium × beta of stock)
>
> = 4% + (3.9% × 0.8) = 7.12%

CAPM beta can be estimated using the **market model**, where we regress the historical return on the stock against the corresponding return on a broad-based equity index. Note that the returns used are generally excess returns, that is, return over the risk-free rate, but raw returns can also be used. The estimated slope coefficient in this simple linear regression is the estimated beta of the stock.

To estimate the beta of a private company, the beta of a comparable publicly traded company may be used (after adjusting for leverage differences).

Multifactor Models

Multifactor models can have greater explanatory power than the CAPM (which is a single-factor model).

The general form of an *n*-factor multifactor model is:

$$\text{required return} = r_f + (\text{risk premium})_1 + (\text{risk premium})_2 + \ldots + (\text{risk premium})_n$$

where:

$$(\text{risk premium})_i = (\text{factor sensitivity})_i \times (\text{factor risk premium})_i$$

The factor sensitivity (also called the *factor beta*) is the asset's sensitivity to a particular factor, all else equal. The factor risk premium is the expected return above the risk-free rate from a unit (i.e., = 1) sensitivity to the factor (and zero sensitivity to all other factors).

Fama–French Models

The **Fama–French model** is a multifactor model that adds two additional factors to the CAPM systematic risk factor: size (measured by market cap) and value (measured by the book-to-market ratio).

$$\text{required return of stock} = r_f + \beta_1 \text{ERP} + \beta_2 \text{SMB} + \beta_3 \text{HML}$$

where:

SMB = size premium = average difference in return of small-cap portfolios over large-cap portfolios

HML = value premium = average difference in return of high book-to-market portfolios over low book-to-market portfolios.

A five-factor Fama–French model adds to the model two additional factors: profitability (RMW), and investment factor (CMA).

$$\text{required return of stock} = r_f + \beta_1 \text{ERP} + \beta_2 \text{SMB} + \beta_3 \text{HML} + \beta_4 \text{RMW} + \beta_5 \text{CMA}$$

where:

RMW = profitability premium = average difference in portfolio returns of companies with "robust profitability" over "weak profitability"

CMA = investment premium = average difference in portfolio returns of companies with "conservative" investments over companies with "aggressive" investments

EXAMPLE: Cost of equity using the Fama–French Five-Factor Model

Suppose the current risk-free rate of return is 2.1%. Calculate the cost of equity for Fulton Corp. given the following information.

Factor	Beta	Risk Premium
Market	1.1	3.2%
Size	0.2	1.3%
Value	–0.3	2.0%
Profitability	0.18	4.2%
Investment Style	0.5	2.4%

Answer:

$r_e = 2.1\% + (1.1 \times 3.2\%) + (0.2 \times 1.3\%) + (-0.3 \times 2\%) + (0.18 \times 4.2\%) + (0.5 \times 2.4\%) = 7.2\%$

Cost of Equity for Private Companies

Private companies are often smaller and less mature than public companies. Since they have no market price data, the CAPM and Fama–French models are not suitable to apply directly to private companies. Illiquidity and the lack of transparency (e.g., no security filings and disclosures) increase the investment risk of private companies.

Appropriate risk premiums for a private company include: **size premium (SP)**, **industry risk premium (IP)**, and **specific company risk premium (SCRP)**. SCRP is a general risk premium covering unique risks of the private company such as key-person risk, geographical location risk, etc., which are difficult to diversify away.

Factors Affecting SCRP

Qualitative factors: Industry in which the company operates, corporate governance quality, asset nature and type (e.g., tangible, liquid, fungible, etc.), customer and supplier concentration, geographical concentration, competitive position in the industry, and management quality. Lower corporate governance quality, large proportion of intangibles in total assets, poor competitive standing in the industry, management without adequate skill and experience, geographical concentration, customer concentration, or supplier concentration all indicate higher risk.

Quantitative factors: Operating and financial leverage, earnings volatility and predictability, and cash flow volatility. Higher leverage and volatility indicate higher risk.

There are two approaches to estimate the cost of equity for private companies—expanded CAPM and build-up approach.

Expanded CAPM

The **expanded CAPM** approach starts with using the standard CAPM (with a peer beta) and then adding risk premiums as needed:

$$\text{required return} = r_f + \beta_{peer} \times ERP + SP + IP + SCRP$$

where:
β_{Peer} = the industry beta from peer public companies
SP = size premium
IP = industry risk premium
SCRP = specific company risk premium

Build-Up

The **build-up approach** starts with the risk-free rate, and adds the equity risk premium to arrive at the required return on an *average large* public company (because ERP is calculated using a market-cap weighted index, large caps dominate the index, and no beta is used). Further risk premiums for size, industry, and company-specific characteristics are added as needed, depending on how different the subject company from the average large public company.

$$\text{required return} = r_f + ERP + SP + SCRP$$

International Considerations

While CAPM may work well for developed market securities, risks unique to emerging markets require additional premiums. The **country-spread model** and the **country risk rating model** are alternative ways to estimate these risk premiums.

The country-spread model estimates a **country risk premium (CRP)** (also called a country spread premium) for a specific emerging market. The estimated equity risk premium then becomes:

$$ERP_{\text{emerging market}} = ERP_{\text{developed}} + (\lambda \times CRP)$$

where:
λ = exposure of the company to the local (emerging market) economy.

We can use the **sovereign yield spread** (the difference in yields of emerging market government securities relative to developed market benchmark security) as an estimate of CRP. However, differences in legal and market environment complicate the use of just yield spreads for CRP.

Damodaran recommended adjusting the sovereign yield spread by the ratio of standard deviation of the country's equity and bond markets:

$$\text{CRP} = \text{sovereign yield spread} \times (\sigma_{\text{equity}} / \sigma_{\text{bond}})$$

Extended CAPM

For countries operating globally, several approaches are used to estimate r_e including global CAPM, international CAPM, and country spread and risk rating models.

Global CAPM (GCAPM) uses a global market index to estimate the ERP, rather than using only a local market index. Because of low correlation between developed markets and emerging markets, the beta coefficient using a global market proxy is usually quite low (or even negative). To overcome this, a second factor representing the local market is sometimes included; but the availability of reliable market index data is a concern in many emerging markets.

International CAPM (ICAPM) is a 2-factor model, based on (1) a global market index (e.g., MSCI All Country World Index) factor, and (2) a foreign currency–denominated, wealth-weighted market index.

$$E(r_e) = r_f + \beta_G[E(r_{gm}) - r_f] + \beta_C[E(r_C) - r_f]$$

where:
β_G = sensitivity to the global market index
r_{gm} = global market return
β_C = sensitivity to the foreign currency index
r_C = foreign currency index return

The first factor captures the company's relationship with the local economy relative to the global economy: lower values of β_G indicate lower integration of the company with the global economy. The second factor captures the sensitivity of the company's cash flows to changes in its local currency exchange rate.

In summary, for companies with global operations that are limited to developed markets, GCAPM or ICAPM are appropriate approaches to estimating the required return on equity. For companies with exposure to developing markets, the appropriate approach is less well-defined. For these firms, a country risk premium (CRP) can be used, if we can assume that the historical estimate is representative of the risk premium going forward.

LOS 17.f: Evaluate a company's capital structure and cost of capital relative to peers.

This LOS uses a case study approach to pull together the concepts learned in the prior LOS. Exam questions need to be solvable in approximately three minutes each,

so a full-fledged case study on exam day is impractical. However, individual questions can be fair game, as illustrated in the module quiz.

MODULE QUIZ 17.1, 17.2

Use the following information to answer Questions 1 through 6.

Daniel Hsu, CFA, follows the pharmaceutical industry for Applied Fundamentals LLC. Hsu has asked associate Rudolph Hsei to evaluate the cost of capital in two countries P and Q. Hsei collects the information shown in Exhibit 1.

Exhibit 1: Selected Information for Countries P and Q

Factor	Country P	Country Q
Legal System	Common law	Civil law
Capital Markets	Developed	Less developed
Volatility of currency value	Low	High

Hsu is interested in estimating the cost of capital for two companies: Sizemore and Minicure. Sizemore is a large-cap company with a rich portfolio of successful drugs, while Minicure is a privately held company with a single drug, Mitra, which was approved by the FDA for treatment of early-stage dementia.

Exhibit 2 shows selected financial information relevant to Sizemore.

Exhibit 2: Sizemore, Selected Data ($ in millions)

Net revenues	17,942
EBITDA	4,498
EBIT	3,421
Interest expense	814
Income tax	662
Net income	1,945
Total debt	8,671
Cash and cash equivalents	2,400
Stockholders' equity	17,342

Sizemore's tax rate is 34%.

After analyzing hundreds of rated securities, Hsu arrives at a matrix for interest coverage (IC) ratios and financial leverage (D/E) ratios by rating class and credit spread relative to the benchmark security (currently yielding 2.3%) as shown in Exhibit 3.

Exhibit 3: Rating Classes, Ratios and Spreads (truncated)

Rating Class	IC	D/E	Spread
AAA	IC > 10	D/E < 25%	0.25%
AA	7 < IC < 10	25% < D/E < 35%	0.50%
A	5 < IC < 7	35% < D/E < 40%	0.80%
BBB	4 < IC < 5	40% < D/E < 52%	1.20%
BB	3 < IC < 4	52% < D/E < 60%	1.75%
B	2 < IC < 3	60% < D/E < 67%	2.33%
CCC	1 < IC < 2	67% < D/E < 75%	3.20%

While discussing the computation of the equity risk premium, Hsei makes the following statements:

Statement 1: The arithmetic mean of historical values of the equity risk premium (ERP) provides the best estimate of terminal value of wealth if invested at the ERP.

Statement 2: Forward-looking estimates of the equity risk premium (ERP) do not suffer from survivorship bias and do not rely on the ERP being stationary.

Hsu obtains estimates of economic data for use in the calculation of ERP as shown in Exhibit 4.

Exhibit 4: Selected Data: Wilshire 5000

Expected dividend yield	1.10%
Forecast P/E growth rate	−0.10%
Forecast real GDP growth	3%
10-year Treasury yield	2.67%
10-year TIPS yield	0.33%
Change in shares outstanding	0

Hsu then compiles consensus estimates of Sizemore's dividends and stock price. Sizemore is expected to pay a dividend of $1.00 per share in each of the next three years, and the stock price is expected to be $34 at the end of three years. Sizemore's current stock price is $25.

Hsei collects the following information and ponders how they might affect the SCRP for Minicure:

Factor 1: Minicure's founder is the chairman and CEO. The management team is comprised of the team of scientists whose research initially led to the development of Mitra.

Factor 2: The value of the patent on Mitra represents 90% of Minicure's total assets.

Factor 3: Subcontractor Samita, Inc., handles the commercial production of Mitra because Samita is the only company that has the necessary specialized equipment.

1. Based on the information in Exhibit 1, Hsei should conclude that relative to Country P, Country Q's cost of capital would be *most likely* be:

A. higher.
B. lower.
C. approximately the same.

2. Based on information provided in Exhibits 2 and 3 and elsewhere, the after-tax cost of debt for Sizemore should be *closest* to:
A. 2.31%.
B. 3.50%.
C. 4.05%.

3. Which statements made by Hsei regarding the equity risk premium are correct?
A. Statement 1 only.
B. Statement 2 only.
C. Neither statement is correct.

4. Using information in Exhibit 4, the estimate of equity risk premium (ERP) consistent with the Grinold-Kroner model is *closest* to:
A. 2.44%.
B. 3.44%.
C. 3.66%.

5. Based on DDM, Sizemore's cost of equity is *closest* to:
A. 11.39%.
B. 13.82%.
C. 14.42%.

6. How many of the factors considered by Hsei would support a higher specific company risk premium (SCRP) for Minicure?
A. Only one of the factors.
B. Two of the factors.
C. All three factors.

KEY CONCEPTS

LOS 17.a

Top-down (i.e., macro) factors that affect the cost of capital include capital availability, market conditions, legal and regulatory considerations, and tax jurisdiction.

Bottom-up (i.e., company-specific) factors that affect the cost of capital include business or operating risk, asset nature and liquidity, financial strength and profitability, and security features.

LOS 17.b

If a company's debt is publicly traded, the yield to maturity for the firm's longest-maturity straight debt outstanding is our best estimate of its cost of debt. If a company's debt is not traded (or is thinly traded), we can use matrix pricing, based on the yields on traded securities with the same maturity and credit ratings. If the debt is not credit rated, we can use financial ratios of the company such as interest coverage or financial leverage to infer a credit rating on the debt.

For a finance lease, the rate implicit in the lease (RIIL) is the cost of debt. The RIIL can be estimated as the IRR that equates the fair value of the leased asset (plus the lessor's direct initial costs) to the present value of the lease payments plus the residual value.

For foreign borrower, a country risk premium (such as the yield difference between foreign sovereign debt and a benchmark government security) should be added.

LOS 17.c

There are two types of estimates of the equity risk premium: historical estimates and forward-looking estimates.

A historical estimate of the ERP consists of the difference between the historical mean return for a broad-based equity market index and a risk-free rate, over a given time period. Survivorship bias and non-stationarity in the time series are concerns with historical estimates.

Forward-looking estimates can be survey estimates, estimates based on DDM, or estimates based on macroeconomic variables.

Grinold-Kroner model: ERP = [DY + ΔP/E + i + G – ΔS] – r_f

LOS 17.d, 17.e

Cost of equity based on DDM:

cost of equity (r_e) = dividend yield (DY) + capital gains yield (CGY)

Fama–French model: required return of stock = $r_f + \beta_1 ERP + \beta_2 SMB + \beta_3 HML$

The five-factor Fama–French extended model adds two additional factors: profitability (RMW) and investment factor (CMA).

$$\text{required return of stock} = r_f + \beta_1 \text{ERP} + \beta_2 \text{SMB} + \beta_3 \text{HML} + \beta_4 \text{RMW} + \beta_5 \text{CMA}$$

Required return for private companies can be calculated using an expanded CAPM that includes risk premiums appropriate to a private company: size premium (SP), industry risk premium (IP), and specific company risk premium (SCRP).

$$\text{required return} = r_f + \beta_{peer} \times \text{ERP} + \text{SP} + \text{IP} + \text{SCRP}$$

Alternatively, the build-up approach adds to the risk-free rate the ERP, and any additional risk premiums as applicable, for size, industry, and company-specific characteristics.

$$\text{required return} = r_f + \text{ERP} + \text{SP} + \text{SCRP}$$

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 17.1, 17.2

1. **A** Civil law countries afford fewer protections to investors as compared to common law countries and hence investors in civil law jurisdictions like Country Q may demand a higher risk premium. Countries with less-developed capital markets and highly volatile currencies would similarly call for a higher risk premium. (Module 17.1, LOS 17.a)

2. **A** Sizemore's interest coverage (IC) ratio = 3,421 / 814 = 4.20. Sizemore's financial leverage (D/E) ratio = 8,671 / 17,342 = 0.50. Both values fall within the range for BBB classification; this indicates a 1.20% spread. After-tax cost of

debt = r_d (1 – T) = (2.30% + 1.20%) × (1 – 0.34) = 2.31% (Module 17.1, LOS 17.b, e)

3. **B** Statement 1 is incorrect. Arithmetic mean is a good estimate of a one-period expected return, but does a poor job of estimating multiperiod return (which determines expected terminal wealth). A geometric mean gives lower weight to outliers and estimates the expected terminal wealth more accurately.

   Statement 2 is correct. A weakness of the *historical approach* (and not forward-looking estimates) is the assumption that the mean and variance of the returns are constant over time (i.e., the ERP time series is stationary). *Historical estimates* (not forward-looking estimates) may suffer from survivorship bias. (Module 17.2, LOS 17.c)

4. **C** Expected inflation = (1+ nominal $\text{yield}_{\text{Treasury}}$) / (1 + $\text{yield}_{\text{TIPS}}$) − 1 = (1.0267 / 1.0033) – 1 = 2.33%. ERP = [DY + ΔP/E + *i* + G – ΔS] – E(r_f) = [1.10% – 0.10% + 2.33% + 3% – 0] – 2.67% = 3.66%

   Note: If a risk-free rate is separately provided, use that. In this case, we are given 10-year nominal Treasury yield, which in the absence of any other guidance is used as the risk-free rate. (Module 17.2, LOS 17.e)

5. **C** Using our calculator's CF function: CF0 = –25, C01 = 1, C02 = 1, C03 = 1 + 34, CPT IRR = 14.42% (Module 17.2, LOS 17.d)

6. **C** All three factors represent higher risk for investors in Minicure. Minicure's management team clearly has strong R&D skills, but that may not translate to experience and expertise in running a company. The assets of Minicure are not tangible; rather they are specialized and illiquid. The supplier concentration involved in the production of Mitra reduces the power of Minicure to extract a high margin for the product. (Module 17.2, LOS 17.d)

READING 18

CORPORATE RESTRUCTURING

EXAM FOCUS

For this reading, pay attention to the various types of restructurings, the motivations behind them, and their impacts on company value. The perspective here is that of an investment analyst seeking to identify the effect of an announced restructuring on company value. This reading is mostly qualitative: there is lots of terminology, and very little computation.

MODULE 18.1: RESTRUCTURING TYPES AND MOTIVATIONS

LOS 18.a: Explain types of corporate restructurings and issuers' motivations for pursuing them.

Large corporations often have diverse lines of business under a common corporate umbrella. This can yield benefits of group ownership called **synergies**. Synergies can be *cost synergies* (lower expenses), *revenue synergies* (increased sales), or a combination of the two. Lower costs can arise from economies of scale or elimination of redundant functions. Revenue synergies arise from economies of scope (e.g., cross-selling of products or reduced competitive pressure). Sometimes, inefficiencies or costs (i.e., negative synergies) may instead result from these diverse holdings due to diseconomies of scale, or loss of focus on core competencies.

Managers alter the portfolio of company businesses in response to a changing business environment to reduce inefficiencies and increase synergies. Figure 18.1 shows types of corporate transactions and company-specific motivations for each.

Figure 18.1: Types of Corporate Transactions

Transaction	Definition	Motivations
Investment	Increases the size of the company or the scope of the company's operations, thereby increasing company revenues and/or the revenue growth rate	Realize synergies, increase growth, improve company capabilities, acquire needed resources/talent, or acquire an undervalued target
Divestment	Reduces the size of the company by shedding parts of the business that have lower profitability, slower growth, or higher risk	Liquidity, valuation (i.e., fetching an attractive price), refocus on core business, or to comply with regulatory requirements
Restructuring	Does not change the size of the company, but improves its cost structure and capital structure to enhance profitability, increase growth, or reduce risk	Address financial challenges (including bankruptcy and liquidation), or improve return on capital

There are two *top-down* drivers of all three kinds of actions: high security prices overall and industry shocks.

High security prices. All three corporate transactions tend to be cyclical, increasing in prevalence during economic expansions and decreasing during contractions. There are several possible explanations for this:

- *Greater CEO confidence*. CEO confidence levels rise during rising markets when security prices are high; CEOs are more likely to execute major corporate actions in this environment.
- *Lower cost of capital*. When stock and bond prices are high, the cost of capital is low, allowing for less dilution to existing shareholders, or lower interest cost.
- *Overvalued stock*. It is attractive for the board and management to use an overpriced security in corporate transactions (e.g., to finance an acquisition).

Yet empirical studies suggest that corporate transactions taken during *weaker* economic times tend to create more value. A BCG study found that weak-economy deals tend to have a 10% higher rate of return than strong-economy deals over the three years following the transactions.

Industry shocks. Corporate restructuring also tends to have industry-specific waves: Mergers in an industry are often followed by more mergers. This phenomenon of **industry shocks** suggests a reactionary motivation behind some corporate transactions.

Within the three major categories of corporate transactions, there are nine specific types as shown in Figure 18.2.

Figure 18.2: Categories of Corporate Transactions

Investments	Equity investment
	Joint venture
	Acquisition
Divestments	Sale
	Spin-off
Restructurings	Cost restructuring ■ Outsourcing ■ Offshoring
	Balance sheet restructuring ■ Sale and leaseback ■ Dividend recapitalization
	Reorganization
Leveraged buyouts	

1. Investment Actions

Acquisitions can enable a company to expand quickly (e.g., into foreign countries) or to access inputs at a favorable price (vertical integration). There are three subtypes of investment actions:

a. A purchase of a material but less-than-50% stake in another company is an **equity investment**. While both companies maintain their independence, the investor may get board representation in the investee (depending on the size of the investment). An equity investment may represent a strategic investment (to influence the investee), a move toward an eventual acquisition, or simply an investment in a perceived undervalued asset

b. In a **joint venture**, two or more companies contribute resources, knowledge, or talent, and jointly control a separate, independent company. Often, a company seeking to expand into a foreign market may undertake a joint venture with a local company that has an existing distribution network and local know-how.

c. Controlling investments are **acquisitions** where the investee company becomes a subsidiary of the investor company. After the acquisition, the investor company reports consolidated financial statements, including the results of the investee company.

2. Divestment

Divestment is the action of selling off subsidiary business interests. Motivations for divestment include liquidity needs, regulatory requirements, or simply refocusing on core competencies. Companies may also sell divisions that have become overvalued by the market. Divestments can take two different forms: sales and spin-offs.

a. **Sale of a division** to another company is the opposite of an acquisition. After the sale, the seller company has no exposure to the divested business. The sale proceeds (i.e., capital freed up by divestiture) can be returned to shareholders or otherwise put to better use.

b. **Spin-off** involves creating a new, separate legal entity, and distributing equity in the newly created spin-off to the divesting company's shareholders. A spin-off is intended to improve the focus of the management and employees of the new company, and allows stock-based compensation schemes to be implemented. Unlike a sale, a spin-off does not generate any proceeds for the divesting company.

   The value of the divested business is often a key consideration in the choice between a sale and a spin-off: A moderate-to-large-sized business unit sought by several potential acquirers might be expected to fetch a high sale price.

3. Restructuring

A restructuring can be forced or opportunistic. In an opportunistic restructuring, a business changes its balance sheet composition, cuts costs, or alters its business model to improve the return on capital. A forced restructuring may be necessitated by overcapacity, poor management, falling demand, or a worsening competitive landscape.

a. **Cost restructuring** actions typically follow periods of underperformance, and pursue improvements in the operational efficiency of the company. Two common restructuring approaches are outsourcing and offshoring.

   i. **Outsourcing** involves contracting out standardized business process (e.g., payroll, human resources) to third-party vendors that have lower costs due to their economies of scale. A risk of outsourcing is the need to manage multiple contractual obligations.

   ii. **Offshoring** uses cheaper foreign labor while still keeping a business process in-house, and usually involves creating a wholly owned foreign subsidiary. Outsourcing and offshoring are often combined, with a business process outsourced to a foreign company.

b. **Balance sheet restructuring** involves changing the mix of assets, changing the capital structure, or both. Types of balance sheet restructuring include:

   i. **Sale and leaseback** involves selling an asset to a lessor, and then entering into a lease contract over the remaining economic life of the asset. The result is an immediate cash infusion for the seller. Lease payments should be higher than the depreciation of the asset, reflecting interest charged by the lessor. One motivation for a sale and leaseback transaction is if the lessor is able to obtain financing at more favorable terms than the lessee.

   ii. **Dividend recapitalization** involves increasing leverage on the balance sheet by increasing debt-financed dividends or by repurchasing shares. The objective is to replace equity in the capital structure with cheaper debt, thereby reducing the company's WACC. The higher risk that comes with increased leverage means that dividend recapitalization is most appropriate for issuers with stable cash flows.

c. **Reorganization** may be mandated by a court during an insolvency proceeding. Management's reorganization plan, which specifies the terms of exiting the bankruptcy proceeding, must be approved by the court. The court then oversees measures such as asset sales, refinancing, or conversion of debt

to equity. If the court does not approve management's plan, the company may be liquidated.

4. Leveraged Buyout (LBO)

A **leveraged buyout (LBO)** is a special kind of corporate restructuring involving investment, divestment, and restructuring. In an LBO, a private equity firm first purchases a company using a large amount of debt to finance the transaction (the investment). Subsequently, unrelated parts are sold to generate cash to service the significant debt (the divestment). Reorganization of the remaining business operations is generally performed to generate synergies. Eventually there is an exit via a sale or public listing. If the target is an existing public company, an LBO may be referred to as a "take-private" transaction.

LOS 18.b: Explain the initial evaluation of a corporate restructuring.

The steps involved in analyzing an announced corporate action include:

1. Initial evaluation.
2. Preliminary valuation.
3. Modeling and valuation.
4. Update investment thesis.

Investment analysts seek to answer four questions when conducting the initial evaluation of an announced corporate restructuring: What, why, when, and is it material?

Corporate press releases, securities filings, and analyst conference calls help to answer the first three questions. While gathering information, analysts should attempt to understand the real motivations behind the restructuring, and contextualize it with their existing understanding of the company's business strategy.

Analysts typically evaluate materiality along the dimensions of size and fit. For an acquisition or divestiture, size is evaluated based on the value of the transaction (including cash, issuance of stock, or assumption of debt) as a proportion of the enterprise value of the acquiring company. Cost restructuring may be evaluated as estimated savings as a percentage of sales. In either case, a proportion greater than 10% generally indicates a material action.

Analysts should also evaluate a transaction in terms of fit with existing company strategy or with prior actions. For example, the divestment of an unrelated business for a company that had previously been diversifying into such businesses may indicate a change in strategy, or an acknowledgment that the strategy is not working.

The change in the company's stock price when a restructuring is announced is one indicator of the value that the market expects to be created or destroyed. This price change incorporates the market's estimate of the probability of the transaction actually completing (due to required shareholder/creditor/regulatory approvals, etc.) as well as the time the restructuring action will take. Note that the initial

market reaction is often wrong when compared to the company's performance in subsequent years.

MODULE QUIZ 18.1

1. A large retail pharmacy chain has made a significant capital investment to incorporate health care kiosks within their stores. If the company would like to receive cash up front in exchange for the kiosks, and yet retain the right for their future use, the company would *most* appropriately pursue a:
   A. spin-off.
   B. balance sheet restructuring.
   C. reorganization.
2. A social media company has three business segments. While the "text messaging" and "video sharing" segments have a healthy growth rate, the "blogging" segment has been performing poorly due to changes in the regulatory environment. The *most* appropriate corporate action for this company would be a(n):
   A. sale.
   B. acquisition.
   C. balance sheet restructuring.
3. Which of the following is *least* likely to represent a top-down driver of corporate actions?
   A. Industry shocks.
   B. CEO confidence.
   C. High security prices.

MODULE 18.2: VALUATION

LOS 18.c: Demonstrate valuation methods for, and interpret valuations of, companies involved in corporate restructurings.

We now discuss *preliminary valuation* using relative valuation methods. For acquisitions or divestitures, we need to estimate the value of the target. There are three primary approaches to this valuation: discounted cash flow analysis, comparable company analysis, and comparable transaction analysis.

1. Discounted Cash Flow (DCF) Analysis

DCF analysis entails estimating the target's future free cash flows using estimates of earnings, capital expenditures, working capital investments, and other inputs. These future free cash flows are discounted to generate an estimate of value. We will cover this in more detail in the Equity Valuation topic area.

2. Comparable Company Analysis

Comparable company analysis uses relative valuation metrics of comparable firms to estimate value, and then adds a takeover premium to determine a fair price for the acquirer to pay for the target.

Comparable company analysis (CCA) involves the following steps:

Step 1: *Identify the set of comparable firms*. CCA requires us to first select a set of other companies that are similar to the target firm. Ideally, the other companies will come from the same industry as the target and have a similar

size, growth rate, operating margin, and ROIC.

Step 2: *Calculate various relative value measures based on the current market prices of companies in the sample*. Some analysts use relative value measures based on enterprise value (EV), which is the market value of the firm's debt and equity minus the value of cash and investments. These measures include EV to EBITDA, and less commonly EV to free cash flow. Equity multiples such as the price to earnings (P/E) ratio may also be used as relative value measures. Other sector-specific measures are also sometimes employed, such as EV to subscribers (for tech companies) or EV to reserves (for oil and gas companies).

Step 3: *Apply the average multiple to develop an estimated target value*. Applying the mean or median of the chosen multiples to the target provides an estimate of the value and allows for a basic reasonableness check for the transaction price announced.

Because the estimated value of the target under CCA does not include a control or takeover premium, CCA is most commonly used in the valuation of spin-offs rather than acquisitions.

3. Comparable Transaction Analysis

Comparable transaction analysis (CTA) is similar to CCA but uses *actual takeover transaction* prices rather than market prices of stock: in CTA, the comparables are actual takeover targets. Since the transaction price already includes a takeover premium, we don't have to estimate it separately to add to the CCA estimate of value.

Advantages of CCA:

- Data for comparable companies is easy to access.
- The assumption that similar assets should have similar values is fundamentally sound.
- Unlike a discounted cash flow approach, estimates of value are derived directly from the market rather than assumptions and estimates about the future.

Disadvantages of CCA:

- The approach implicitly assumes that the market's valuation of the comparable companies is fair.
- Comparable companies provide an estimate of a fair stock price, rather than a fair *takeover* price. An appropriate takeover premium must be determined separately.
- Sometimes the target may be unique and therefore there may not be any true peers.

Advantages of CTA:

- Since the approach uses data from actual transactions, there is no need to estimate a separate takeover premium.
- Unlike a discounted cash flow approach, estimates of value are derived directly from recent prices for actual deals completed in the marketplace, rather than from assumptions and estimates about the future.

Disadvantages of CTA:

- The CTA approach implicitly assumes that the M&A market valued past transactions appropriately. If past transactions were over- or underpriced, those mispricings will be carried over to the estimated value for the target.
- There may not be enough comparable transactions to develop a reliable estimate of the target value. An analyst who is unable to find enough similar companies might use M&A deals from other industries that are dissimilar to the deal being considered.
- Historical transactions may have occurred under different conditions (industry growth, regulatory frameworks, etc.) and hence may not represent current value reliably.

Premium Paid Analysis

In a takeover transaction, the acquiring firm typically pays a premium over the current market price as an incentive for the target to accept the offer. This premium can be estimated as:

$$\text{premium} = (DP - UP)/UP$$

where:
DP = deal price and UP = unaffected (i.e., pre-announcement) price.

Some effect of pre-announcement rumors may be incorporated in the trading price of the target prior to the announcement; hence care should be taken when estimating UP. Analysts might use a week-old market price or volume-weighted trading price over the prior week as the UP to mitigate this issue.

LOS 18.d: Demonstrate how corporate restructurings affect an issuer's EPS, net debt to EBITDA ratio, and weighted average cost of capital.

We now turn to the modeling and valuation phase. The first step in this phase is to generate pro forma financial statements that reflect the impact of the corporate action. The steps in this process are:

Step 1: Combine acquirer and target revenues and make adjustments for revenue synergies or dissynergies.

Step 2: Combine operating expenses and make adjustments for cost synergies or dissynergies.

Step 3: Combine depreciation/amortization.

Step 4: Combine other income/expenses.

Step 5: Beginning with acquirer interest expense, add additional interest on debt issued to finance the acquisition.

Step 6: Estimate taxes based on the weighted average tax rates of the acquirer and the target.

Step 7: The number of shares outstanding should include the additional shares issued as consideration for the acquisition.

From these results, we can estimate the future EPS of the combined entity.

Estimating WACC

Restructuring can alter the cost of debt and equity capital. Several factors influence these costs: profitability (EBITDA to sales, or EBIT to sales), volatility of revenues or EBITDA, leverage (debt to EBITDA), collateral (asset specificity, liquidity, existence of an active market), and prevailing interest rates. Weights of debt and equity are calculated using market values, and include any financing raised or additional equity issued.

Using the data from pro forma financial statements, and the estimate of future WACC, the analyst can use discounted cash flow techniques to value the target.

MODULE QUIZ 18.2

1. Naomi Hirauye and Michael Klinkenfus, financial analysts with Mintier Textiles, are discussing potential methods of valuing a firm that Mintier is considering acquiring. As they are discussing the most appropriate valuation method to use, Klinkenfus makes two statements:

Statement 1:	One advantage of the discounted cash flow method is that it makes it easy to model changes in the target company's cash flow resulting from changes in operating synergies that may occur after the merger.
Statement 2:	Since the comparable transaction approach uses actual transaction data, there is no need to calculate a takeover premium.

How should Hirauye respond to Klinkenfus's statements?

A. Agree with both statements.
B. Disagree with both statements.
C. Agree with only one statement.

MODULE 18.3: EVALUATION

LOS 18.e: Evaluate corporate investment actions, including equity investments, joint ventures, and acquisitions.

We will illustrate the process of evaluating corporate investment actions using an equity investment as an example. (Similar processes can be used for other corporate actions.)

EXAMPLE: Evaluating an equity investment

Alpha, Inc., a large movie studio, is a mature business that is concerned about new competition eroding its market share. Beta LLC is a digital distribution company that provides proprietary entertainment content to its subscriber base. Beta has had high organic growth over the past three years, but needs an infusion of capital to fund continued growth. Beta has zero debt and one class of common shares. Selected financials of the two companies for the past year (trailing 12 months) are shown here.

Selected Financial Data for 20X1 (TTM) for Alpha and Beta (USD millions)

	Alpha	Beta
Net revenues	16,484	720
EBITDA	3,297	202
EBIT	2,112	57
Interest expense	–817	0
Income tax	–615	–12
Net income	680	45
Total debt	8,671	0

Alpha makes a $1 billion cash investment to acquire 25% of the equity in Beta. Alpha finances the equity investment by issuing senior unsecured debentures. The two companies enter into an agreement to distribute the content library of Alpha based on 50-50 revenue sharing.

An analyst gathers the following information related to the peers of Beta LLC:

Comparable Company Analysis for Beta (USD millions)

Comparable	Enterprise Value	Net Revenues (TTM)
P	1,431	311
Q	1,019	112
R	1,994	391
S	769	157

Evaluate the implied valuation of Beta and the transaction's effects on Alpha's solvency.

Answer:

Let's think about some of the questions that an analyst might want to consider:

1. *What other corporate actions could Alpha have undertaken?*

   Alpha alternatively could have secured a controlling interest in Beta (i.e., an acquisition). Alpha could also have entered into an agreement to set up a third separate company as a joint venture; however, because Beta needs an infusion of cash, Beta is more motivated to find an investor than to commit to a new investment.

2. *What are the primary motivations for the two companies to enter into the announced transaction?*

   Alpha will obtain entry into a fast-growing business segment, as well as gain a mechanism to monetize its assets (i.e., its content library). Beta will obtain the necessary infusion of cash to finance its growth.

3. *Evaluate the valuation of Beta implied by the transaction.*

   Given that Alpha acquired a 25% stake for $1 billion, Beta's implied market cap is estimated at $4 billion. Given that Beta has no debt, Beta's implied enterprise value is also $4 billion.

   The following table shows the EV/revenue multiples for the comparables as well as the mean and median multiples.

Comparable	Enterprise Value	Net Revenues (TTM) $M	EV/Rev
Beta LLC		720	
P	1,431	311	4.6
Q	1,019	112	9.1
R	1,994	391	5.1
S	769	157	4.9
Median			5.0
Mean			5.925

Using the mean EV/revenue multiple of 5.925, the EV of Beta would be estimated to be 720 × 5.925 = $4.27 billion. Using the median multiple, the EV of Beta would be estimated to be 720 × 5 = $3.6 billion. The median multiple may be more representative because the mean is significantly skewed by Comparable Q, which appears to be an outlier. At a justified value of $3.6 billion, the $4 billion purchase price appears to be at a premium of 11%.

Other things to take into account are risk and growth rate differences among the peer companies.

4. *What is the impact of the investment on Alpha's debt-to-net-income ratio, assuming no change in the financials for the two companies over the next year?*

   Alpha's current debt-to-net income = 8,671 / 680 = 12.75x.

   Alpha's 25% stake in Beta would increase Alpha's net income by 25% of the net income of Beta (this will be shown as "income from associates" in Alpha's income statement).

   Alpha's new net income = 680 + (0.25 × 45) = 691

   Alpha's new debt = 8,671 + 1,000 = 9,671

   Alpha's new debt-to-net income = 9,671/691 = 14x.

   Thus, one impact of the investment in Beta is that Alpha's debt-to-net income ratio will increase from 12.75x to 14x.

Joint Ventures

The process of evaluating a joint venture announcement is similar. Questions to consider include: What are the gains to the two firms involved? What impact will the transaction have on the various ratios of the two companies?

The accounting for a joint venture is similar to that of equity investments. The two partners in the joint venture will report their stake in the venture using the equity method, reporting their share of income from the venture in their respective income statements. Any capital raised by the two partners will be accounted for in their own financial statements (e.g., debt used to finance the investment in the joint venture would increase the debt level of the investor company).

Acquisitions

We cover acquisition accounting in detail in the Financial Statement Analysis topic area. The acquisition method calls for line-by-line consolidation of the investor's financial statements with the financial statement of the subsidiary, with a recognition of non-controlling interest in the consolidated financial statements.

Evaluating an acquisition should include determining the impact of estimated synergies on the profitability ratios. The impact of consolidation on leverage ratios (debt-to-equity or debt-to-EBITDA) should also be analyzed, to determine the potential for a change in the parent company's debt ratings (and hence, in its cost of capital). The evaluation should consider the impact of the transaction on the diluted EPS of the parent and whether the transaction price appears to be reasonable, using comparable transaction analysis and the premium-paid analysis discussed earlier.

LOS 18.f: Evaluate corporate divestment actions, including sales and spin offs.

Evaluation of divestment actions typically involves:

1. Valuation of business segments.
2. Impact on ratios.

For the sale of a business segment, analysts should form an opinion on whether the valuation of the segment is reasonable. One approach is to use a multiple such as EV-to-EBITDA or EV-to-sales to value the various segments of a business. The sum of the values of these individual segments is then compared to the "conglomerate" EV to determine if the market is properly valuing the sum of the parts.

When preparing pro forma financial statements, the proceeds from the sale (i.e., cash or stock of the purchaser and/or assumption of debt) should be accounted for properly. Ratios such as debt-to-EBITDA can then be prepared to evaluate the impact of the sale on the company's debt ratings.

Unlike sales, spin-offs do not generate sale proceeds, and hence are easier to model.

LOS 18.g: Evaluate cost and balance sheet restructurings.

Many external factors can be responsible for the initiation of a corporate restructuring, for example, the actions of an activist shareholder, a failed acquisition, etc.

The evaluation of a restructuring announcement involves preparing pro forma financial statements that reflect our expectations about cost savings, as well as assessing the likelihood of success in achieving the intended restructuring goals. Given a starting set of financial statements, you should be able to apply the given assumptions to generate pro forma values. These can then be used to calculate the relevant ratio(s).

MODULE QUIZ 18.3

Use the following information to answer Questions 1 through 4.

Fastnar is a large European industrial supplies company with a market capitalization of €17 billion. During the COVID-19 pandemic, Fastnar's supply chain experienced significant stress, leading to the loss of several large customers.

Fastnar's board has made the decision to acquire 100% of the outstanding stock of Luxor, a transportation company. Pre-announcement, Luxor's stock was trading at €260.

The pre-acquisition income statements (in € millions) for the two companies are shown here:

	Fastnar	Luxor
Revenues	28,695	8,964
Cost of goods sold	20,660	6,006
Operating expenses	2,583	807
EBITDA	5,452	2,151
Depreciation & amortization	1,121	1,671
EBIT	4,331	480
Interest expense	1,100	112
Tax	679	55
Net income	2,553	313
Shares outstanding (millions)	1,000	20
EPS	2.55	15.66

Additional details:

- A new issue of 30-year bonds yielding 3% will finance the purchase price of €6.26 billion.
- Synergies in the form of cost savings of €480 million per year are expected from this transaction.
- Additional depreciation due to the fair market value adjustment of Luxor's fixed assets will be €35 million per year.
- Excluding the items just mentioned, in the first year after the acquisition, the pro forma income statements are expected to be the same as the pre-acquisition income statements.
- Fastnar's tax rate is 21%.
- Analysts have identified the following comparables for Luxor and collected their P/E ratios based on TTM EPS as shown here:

Comparable	P/E
A	16
B	19
C	22
D	15

1. Relative to the pre-announcement price of Luxor, the acquisition premium paid by Fastnar is *closest* to:
   A. 12%.
   B. 14%.
   C. 20%.

2. Using the average P/E of the comparables, the acquisition price premium is *closest* to:
   A. 11%.
   B. 12%.
   C. 14%.
3. The consolidated EPS of Fastnar in the first year after acquisition is *closest* to:
   A. €2.33.
   B. €2.87.
   C. €3.07.
4. Should an analyst consider this transaction to be material?
   A. Yes, because of the size.
   B. No, because of the size.
   C. No, because of the fit.

Use the following information to answer Questions 5 through 7.

Super, Inc., is a large distributor of telecom equipment in South American markets. Several years ago, Super acquired Norse Telecom, a maker of low-cost switching equipment that was very popular in the emerging markets. Due to a recession in several key markets, Norse's revenue has declined significantly over the past several quarters. New competition has also squeezed Norse's profit margins. Unconsolidated financial data for the two companies is as follows.

Exhibit 1: Selected Financial Data (TTM) in USD millions

	Super	Norse
Revenues	18,132	8,113
EBITDA	2,176	568
EBIT	1,632	325
Debt	14,506	5,077

Super could potentially spin off the Norse investment by distributing Norse shares to Super's shareholders on a 1:1 basis. Alternatively, Super could sell Norse for $6 billion (the consideration includes the assumption of Norse's debt).

5. What would be the impact of spinning off Norse on Super's consolidated debt-to-EDITDA ratio? The ratio is *most likely* to:
   A. stay the same.
   B. increase.
   C. decrease.
6. Assuming that the net proceeds from the sale would be used to pay down Super's debt, what would be the impact of selling Norse on Super's consolidated debt-to-EDITDA ratio? The ratio is *most likely* to:
   A. stay the same.
   B. increase.
   C. decrease.
7. The median operating margin of Super's competitors is 11%. Super's management believes that a reorganization following the divestment of Norse can achieve this objective. The amount by which management will need to decrease Super's operating costs is *closest* to:
   A. 363 million.
   B. 1.286 billion.
   C. 2.045 billion.

KEY CONCEPTS

LOS 18.a

Major corporate changes include investment (equity, joint venture, acquisition), divestment (sale, spin-off), and restructuring (cost and balance sheet).

Investment motivations include realizing synergies, increasing growth, improving company capabilities, acquiring resources and talent, or acquiring an undervalued target.

Divestment may be motivated by liquidity needs, high valuation, refocusing on a core business, or compliance with regulatory requirements.

Motivations behind restructuring may be financial challenges (including bankruptcy and liquidation) or simply to improve the return on capital.

LOS 18.b

The steps involved in analysis of an announced corporate action include:

1. Initial evaluation.
2. Preliminary evaluation.
3. Modeling and valuation.
4. Updating investment thesis.

Materiality is evaluated along the dimensions of size and fit. Transactions exceeding 10% of enterprise value, revenues, or market cap are considered material.

LOS 18.c

Comparable company analysis (CCA) uses relative valuation metrics for similar firms to estimate market value, then adds a takeover premium to determine a fair price for the acquirer to pay for the target. Since CCA does not incorporate the takeover premium directly, it is commonly used to value spin-offs as opposed to acquisitions.

Comparable transaction analysis (CTA) is similar to CCA but uses actual takeover transaction prices (as opposed to market trading prices). Since transaction prices already include a takeover premium, it is not necessary to estimate an add-on separately.

LOS 18.d

Evaluation of corporate transactions involve preparing pro forma financial statements that incorporate the terms of the transactions. Analysts should also estimate the impact of the transaction on the EPS, net debt-to-EBITDA ratio, and the WACC of the company.

LOS 18.e, 18.f, 18.g

In evaluating an equity investment, an analyst must recognize that income from associates is recorded in the investor's income statement. The consideration paid is used to adjust pro forma balance sheets.

A joint venture announcement is approached similarly: an analyst should calculate the gains to the firms involved, and the impact the transaction will have on the ratios of the two companies. Accounting for a joint venture is similar to that of equity investments.

Compared to other kinds of investments, acquisitions require a higher capital investment but allow for a controlling interest in the investee.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 18.1

1. **B** The company could unlock capital by undertaking a sale-and-leaseback transaction, which is considered to be a type of balance sheet restructuring. (LOS 18.a)

2. **A** Since the blogging business segment is underperforming, it may (absent synergies with other segments) be most appropriate to divest that segment. (LOS 18.a)

3. **B** CEO confidence is associated with the level of corporate actions, but is not itself a top-down factor. (LOS 18.a)

Module Quiz 18.2

1. **A** Hirauye should agree with both of Klinkenfus's statements. One of the key advantages to using the discounted cash flow method to value a target firm is that it makes it easy to model any changes that may result from operating synergies or changes in cash flow from the merger. One of the key advantages to the comparable transaction approach is that there is no need to compute a separate takeover premium as there is in the comparable company approach. (LOS 18.c)

Module Quiz 18.3

1. **C** Pre-announcement price per share = $260 (given). Acquisition price per share = $6,260 / 20 = $313. Premium paid = (313 – 260) / 260 = 53/260 = 20.38%. (LOS 18.c, e)

2. **A** Average P/E of comparables: (16 + 19 + 22 + 15) / 4 = 18 Value of Luxor stock using average P/E: 15.66 × 18 = 282 Premium = (313 – 282) / 282 = 33 / 280 = 10.99% (LOS 18.d, e)

3. **C** Consolidated net income before adjustments: 2,553 + 313 = 2,866 Adjustments:

Add synergies	480
Less: Additional depreciation	35
Less: Additional interest @3% of 6,260	188
Additional earnings (before tax)	257
Less: additional tax @ 21%	54
Additional net income	203

Adjusted consolidated net income: 2,866 + 203 = 3,069

Adjusted EPS = 3,069 / 1,000 = €3.07

(LOS 18.e)

4. **A** The acquisition value of €6.26 billion represents 37% of Fastnar's pre-acquisition market cap of €17 billion. A transaction greater than 10% of EV or market cap is considered material. The fit of the transaction may also indicate materiality as it suggests a shift in the business strategy to vertically integrate Fastnar's supply chain. (LOS 18.b, e)

5. **C** Current combined EBITDA = 2,176 + 568 = 2,744

Current combined debt = 14,506 + 5,077 = 19,583

Current debt-to-EBITDA ratio = 19,583 / 2,744 = 7.14

After the spin-off, Super's debt-to-EBITDA = 14,506 / 2,176 = 6.67

(LOS 18.f)

6. **C** Current combined EBITDA = 2,176 + 568 = 2,744

Current combined debt = 14,506 + 5,077 = 19,583

Current debt-to-EBITDA ratio = 7.14

Net proceeds from sale = 6,000 – 5,077 = 923

Repaying Super's debt to the extent of net proceeds, new debt = 14,506 – 923 = 13,583

New debt-to-EBITDA = 13,583 / 2,176 = 6.24

(Note: Since we are analyzing EBITDA, the interest savings do not factor in our calculation).

(LOS 18.f)

7. **A** 11% of current Super revenue = 0.11 × 18,132 = 1,995

Required increase of EBIT from current level = 1,995 – 1,632 = 363

(LOS 18.f)

Topic Quiz: Corporate Issuers

You have now finished the Corporate Issuers topic section. Please log into your Schweser online dashboard and take the Topic Quiz on this section. The Topic Quiz provides immediate feedback on how effective your study has been for this material. Questions are more exam-like than typical Module Quiz or QBank questions; a score of less than 70% indicates that your study likely needs improvement. These tests are best taken timed; allow three minutes per question.

FORMULAS

Financial Statement Analysis

number of treasury shares = assumed proceeds ÷ average share price during the reporting period

assumed proceeds = cash proceeds + average unrecognized share-based compensation expense

U.S. GAAP interest cost = [beginning PBO + past service cost] × discount rate

IFRS net interest income (expense) = [beginning funded status − past service cost] × discount rate

funded status of the plan: funded status = fair value of plan assets − PBO

$$\textbf{liquidity coverage ratio} = \frac{\text{highly liquid assets}}{\text{expected cash flows}}$$

$$\textbf{net stable funding ratio} = \frac{\text{available stable funding}}{\text{required stable funding}}$$

$$\textbf{underwriting loss ratio} = \frac{\text{claims paid} + \Delta \text{ loss reserves}}{\text{net premium earned}}$$

$$\textbf{expense ratio} = \frac{\text{underwriting expenses including commissions}}{\text{net premium written}}$$

$$\textbf{loss and loss adjustment expense ratio} = \frac{\text{loss expense} + \text{loss adjustment expense}}{\text{net premium earned}}$$

$$\textbf{dividends to policyholders ratio} = \frac{\text{dividends to policyholders (shareholders)}}{\text{net premium earned}}$$

combined ratio = loss and loss adjustment expense ratio + underwriting expense ratio

combined ratio after dividends = combined ratio + dividends to policyholders ratio

cash generated from operations (CGO)
= operating cash flow + cash interest + cash taxes
= EBIT + non-cash charges – increase in working capital

$$\textbf{accruals}^{CF} = NI - CFO - CFI$$

$$\textbf{accruals ratio}^{CF} = \frac{(NI - CFO - CFI)}{(NOA_{END} + NOA_{BEG})/2}$$

PROFESSOR'S NOTE
Not all of the following ratios are used in this book. However, this list includes most of the common ratios that you are likely to encounter on exam day.

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

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

$$\textbf{cash ratio} = \frac{\text{cash + short-term marketable securities}}{\text{current liabilities}}$$

$$\textbf{defensive interval ratio} = (\text{cash + short-term marketable investments + receivables}) \div \text{daily cash expenditures}$$

$$\textbf{receivables turnover} = \frac{\text{net annual sales}}{\text{average receivables}}$$

$$\textbf{inventory turnover} = \frac{\text{cost of goods sold}}{\text{average inventory}}$$

$$\textbf{days of sales outstanding (DSO) = average receivable collection period} = \frac{365}{\text{receivables turnover ratio}}$$

$$\textbf{days of inventory on hand} \left(\text{DOH}\right) = \frac{365}{\text{inventory turnover}}$$

$$\textbf{payables turnover} = \frac{\text{purchases}}{\text{average payables}}$$

$$\textbf{number of days of payables} = \frac{365}{\text{payables turnover}}$$

$$\textbf{total asset turnover} = \frac{\text{net sales}}{\text{average total assets}}$$

$$\textbf{fixed asset turnover} = \frac{\text{net sales}}{\text{average fixed assets}}$$

Corporate Issuers

effective tax rate = corporate tax rate + (1 − corporate tax rate)(individual tax rate)

expected increase in dividends = [(expected earnings × target payout ratio) − previous dividend] × adjustment factor

FCFE coverage ratio = FCFE / (dividends + share repurchases)

Grinold-Kroner model: $ERP = [DY + \Delta P/E + i + G - \Delta S] - r_f$

Cost of equity based on DDM:

cost of equity (r_e) = dividend yield (DY) + capital gains yield (CGY)

Fama–French model: required return of stock = $r_f + \beta_1 ERP + \beta_2 SMB + \beta_3 HML$

Five-factor Fama–French extended model:
required return of stock = $r_f + \beta_1 ERP + \beta_2 SMB + \beta_3 HML + \beta_4 RMW + \beta_5 CMA$

Expanded CAPM for private companies:
required return = $r_f + \beta_{peer} \times ERP + SP + IP + SCRP$

Build-up approach: required return = $r_f + ERP + SP + SCRP$

Premium Paid Analysis: premium = (DP – UP) / UP

= (deal price – unaffected price) / unaffected price

PROFESSOR'S NOTE
Not all of the following ratios are used in this book. However, this list includes most of the common ratios that you are likely to encounter on exam day.

$$\textbf{gross profit margin} = \frac{\text{gross profit}}{\text{net sales}}$$

$$\textbf{operating profit margin} = \frac{\text{operating profit}}{\text{net sales}} = \frac{\text{EBIT}}{\text{net sales}}$$

$$\textbf{net profit margin} = \frac{\text{net income}}{\text{net sales}}$$

$$\textbf{return on assets} = \frac{\text{net income}}{\text{average total assets}}$$

$$\textbf{return on total capital} = \frac{\text{EBIT}}{(\text{interest bearing debt} + \text{shareholders' equity})}$$

$$\textbf{return on total equity} = \frac{\text{net income}}{\text{average total equity}}$$

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

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

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

$$\textbf{debt-to-capital ratio} = \frac{\text{short-term debt} + \text{long-term debt}}{\text{short-term debt} + \text{long-term debt} + \text{total equity}}$$

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

$$\textbf{payout ratio} = \frac{\text{dividends paid}}{\text{net income}}$$

$$\textbf{retention ratio} = 1 - \text{payout ratio}$$

$$\textbf{earnings per share} = \frac{\text{net income} - \text{preferred dividends}}{\text{average common shares outstanding}}$$

$$\textbf{book value per share} = \frac{\text{common stockholders' equity}}{\text{total number of common shares outstanding}}$$

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