Learning Module 2: Analyzing Income Statements

LOS 2a: describe general principles of revenue recognition, specific revenue recognition applications, and implications of revenue recognition choices for financial analysis

Revenue is reported on the top line of the income statement. Accrual accounting allows revenue to be recognized, i.e., reported on the income statement when it is earned and not necessarily when cash is received.

Companies disclose their revenue recognition policies in the notes to their financial statements. Reviewing these policies to understand how and when a company recognizes revenue, especially compared with other companies, is useful.

General Principles of Revenue Recognition

The IASB and FASB released converged accounting standards in May 2014, introducing changes to revenue recognition principles. These standards are nearly identical, focusing on a principles-based approach applicable to various revenue-generating activities.

The converged standard asserts that revenue should be recognized to "depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services."

Based on the standard, recognition of revenue involves five steps:

Step 1: Identifying contracts with a customer

Based on the standard, a contract is a commitment and agreement with commercial substance between parties with established rights and responsibilities. A contract contains the obligations and rights of the parties involved and the payment terms. Notably, a contract exists only if collectability is probable. Both IFRS and US GAAP use the exact words while describing the standard. However, the description of probable collectability differs. In IFRS, "probable" implies more likely than not, and in US GAAP, it implies likely to occur.

Step 2: Identifying the separate or distinct performance obligations in the contract

Performance obligations are linked to the provision of distinct goods or services. A good or service is considered distinct if the customer can benefit from it independently or with easily accessible resources and if its transfer can be independently identified from other commitments in the contract. Each recognized performance obligation is treated individually in accounting.

Step 3: Determining the transaction price.

The transaction price is the amount the seller expects to receive to transfer the goods or services specified in the contract.

Step 4: Allocate the transaction price to the performance obligations in the contract

The price is then distributed across each identified performance obligation.

Step 5: Recognizing revenue upon performance obligation fulfillment.

Revenue is recognized when a performance obligation is met. The recognized amounts consider expectations regarding the likelihood of collection and, if relevant, the distribution across multiple obligations within the same contract.

Moreover, revenue should only be recognized when there is a high likelihood that it will not be reversed in the future. If there is a likelihood of reversal, the seller will record a minimal amount of revenue at the time of sale and recognize a refund liability and a "right to return goods" asset on the balance sheet, calculated as the carrying amount of the inventory minus any recovery costs.

The entity will recognize revenue when it can fulfill the performance obligation by transferring control of the good or service to the customer. Factors to consider when assessing whether the customer has obtained control include:

- The company has a right to payment.
- The customer has a legal claim to the asset.
- The customer has accepted the service or good.

- Significant rewards and risks of ownership have been transferred to the customer.
- The customer physically possesses the goods.

Completing the five steps for a contract with one obligation is easy. More complex contracts, such as those that are satisfied over time, are not as straightforward.

If no contingencies surround the payment, revenue and accounts receivable are recognized. However, if payment depends on an additional condition or obligation, a contract asset is recorded on the balance sheet until the condition or obligation has been met. If payment is made before the performance obligation is met, the seller records a contract liability.

IFRS 15 requires companies to disaggregate contracts with customers into different categories when disclosing revenue. Disclosure must also be made for balances related to any contract liability and assets.

Cases of Applying Revenue Recognition Standards

Case 1: Principal vs Agent

In cases where a company acts as principal (controls the product before it is delivered to the customer), revenue is recorded as the total amount received for the product transfer. On the other hand, if a company acts as an agent (facilitates the transfer of a product controlled by a third-party seller), the company should record revenue only for the portion of the payment that corresponds to its fee or commission.

Lastly, for companies operating as both the principal and the agent, an analyst would need to assess the relative proportion of principal versus agent sales to evaluate and forecast overall margins.

Case 2: Franchising or Licensing Companies

In the case of franchising companies (such as McDonald's), revenue recognition standards mandate that companies break down revenue from contracts with customers into categories that illustrate how the nature, amount, timing, and uncertainty of revenue and cash flows are influenced by economic factors. Companies must present disaggregated revenues in consolidated

income statements to fulfill this requirement.

For franchising companies, such disaggregated revenue items include owned stores or restaurants, franchise royalties, fees, and supply chain revenues.

Case 3: Software Services or License

Under IFRS 15, if a company grants a license to use software where the company will install the software on its system, the company will recognize revenue either over the term of the license or at the time the license is transferred.

Specifically, companies should spread out the revenue recognition from a software license over the duration of the license if, according to the contract or the company's usual operations:

- the software provider continues to perform significant activities that impact the software (such as updates or improvements),
- the customer's rights are affected by these activities, either positively or negatively, and
- these activities do not constitute a delivery of goods or services.

If these conditions are not satisfied, revenue should be recognized when the license is handed over to the customer.

Case 4: Long-Term Contracts

Consider a company that enters into long-term contracts spanning several years and that the performance obligations are fulfilled over time.

According to IFRS 15, a performance obligation is satisfied over time if it meets one of the following criteria:

- The customer immediately receives and utilizes the benefits provided by the entity's performance as it is carried out, such as in regular service agreements.
- The entity's performance leads to the creation or improvement of an asset that the customer controls as the asset is being created or enhanced. For example, renovating a

factory that the customer owns and controls.

- The entity's performance does not result in an asset that can be used for other purposes by the entity, and the entity has a legally enforceable right to payment for the work completed so far. For example, building a large, specialized asset that cannot easily be sold to another customer, such as a weapons system.

The company recognizes revenue from long-term contracts over the duration of the contract as work progresses, either through the production of products or the provision of services, due to the ongoing transfer of control to the customer.

Under IFRS 15, the degree of progress towards completion can be assessed using output methods such as appraisals or units completed or input methods such as costs incurred relative to estimated total costs.

The cost of sales is recorded as it occurs. The revenue reported is calculated by adding a proportional amount of the estimated profit to the cost of sales reported.

For instance, consider a manufacturing company with a 2-year contract with a buyer to deliver goods for USD 100 million for USD 70 million. In the first year, the company incurred USD 40 million in costs. In the first year, the company will recognize a revenue of USD 57.14 million (= 40/70 ×100) and a profit of USD 17.14 million [= 40/70 ×(100-70)].

In the sound year, the actual cumulative costs turned out to be USD 77 million. The company will recognize revenue of USD 42.86 million (=100-57.14), cost of USD 37 million (=77 - 40), and cumulative profit of USD 23 million.

Case 5: Companies with Bill and Hold Arrangements

Consider a company that manufactures products the customer may be unable to take possession of immediately due to constraints such as lack of storage. IFRS 15 stipulates that in a "bill and hold" arrangement, a company can ascertain when its performance obligation is fulfilled based on when the customer gains control of the product.

According to IFRS 15, this occurs when the following conditions are satisfied:

- There must be a substantial reason for the bill and hold arrangement (e.g., it is requested by the customer).
- The product must be distinctly identified as the customer's property.
- The product must be prepared for physical delivery to the customer.
- The entity cannot have the ability to use the product or to direct it to another customer.

Revenue Disclosure Requirements under IFRS 15

Under IFRS 15, the disclosure requirements are extensive to provide ample information to users of financial statements about the nature, amount, and timing of cash flows from customers. Some of the disclosures include:

- Companies must disclose revenue from contracts with customers, broken down into different categories of contracts. These categories could be based on factors such as product type, geographic region, customer type or sales channel, pricing terms of the contract, contract duration, or the timing of transfers.
- Companies must also disclose the balances of any assets and liabilities associated with contracts and significant changes in those balances, remaining performance obligations and the transaction price allocated to those obligations, and any significant judgments and changes in judgments related to revenue recognition.

Question

When should revenue be recognized according to the fundamental principle of accrual accounting?

A. When the company delivers the goods or services.
B. When the company receives cash for the goods or services.
C. When the company decides to recognize it.

Solution

A is correct. The fundamental principle of accrual accounting states that revenue should be recognized when the company delivers the goods or services and the risk and reward of ownership are transferred.

LOS 2b: describe general principles of expense recognition, specific expense recognition applications, implications of expense recognition choices for financial analysis and contrast costs that are capitalized versus those that are expensed in the period in which they are incurred

The IASB Conceptual Framework defines expenses as reductions in economic benefits occurring throughout the accounting period. These reductions manifest as outflows or depletions of assets or the incurrence of liabilities, leading to a decrease in equity. Notably, this excludes reductions related to distributions to equity participants.

General Principles of Expense Recognition

Typically, a company records expenses when it uses up the economic benefits related to the expenditure or when it forfeits a previously recognized economic benefit. There are three prevalent models for recognizing expenses: the matching principle, immediate expensing upon incurring, and capitalization followed by gradual depreciation or amortization.

Matching Principle Model

In the matching approach, a company records expenses, such as the cost of goods sold, when the related revenues are recognized, thereby aligning expenses and revenues. These associated revenues and expenses arise directly and jointly from the same transactions or events.

Unlike a simple situation where a company buys inventory and sells all of it within the same accounting period, it is more common for some sales in the current period to come from inventory purchased in a previous period or periods. Similarly, it is likely that some inventory bought in the current period will remain unsold at the end of the period and will be sold in a subsequent period.

The matching approach requires that a company recognize the cost of goods sold in the same period as the revenues from the sale of those goods. It is important to note that IFRS does not explicitly refer to a "matching principle" but rather to a "matching concept" or a process that results in the "matching of costs with revenues.

Example: Applying Matching Principle

Anderson Merchandising Corporation (AMC), a hypothetical company, acquires inventory items to resell them. At the start of 20X2, AMC had no inventory in stock. Throughout 20X2, AMC engaged in the following transactions:

Inventory Purchases

Quarter	Units	Cost per Unit
First quarter	2,500	USD38
Second quarter	1,800	USD39
Third quarter	2,000	USD42
Fourth quarter	2,300	USD44
Total	8,600	USD163

During the year, AMC sold 6,500 inventory units at USD48 per unit, receiving payment in cash. AMC established that 2,100 units of inventory were left over, with 2,000 units specifically identified as being bought in the fourth quarter and 100 units acquired in the third quarter.

Determine the revenue and expenses related to these transactions in 20X2 by identifying the specific inventory items sold or remaining in stock, assuming the company anticipates no product returns.

Solution:

The income for 20X2 would amount to USD312,000, calculated from the sale of 6,500 units at USD48 each. Initially, the overall cost of the acquired goods, totaling USD351,400, would be recorded as inventory (an asset). Throughout 20X2, the expense for the 6,500 units sold would be deducted (aligned with the revenue). In contrast, the expense for the remaining 2,100 units that were not sold would continue to be listed as inventory, as detailed below:

Cost of Goods Sold

Source	Amount
From the first quarter	2,500 units at USD38 per unit = USD95,000
From the second quarter	1,800 units at USD39 per unit = USD70,200
From the third quarter	1,900 units at USD42 per unit = USD79,800
From the fourth quarter	300 units at USD44 per unit = USD13,200
Total cost of goods sold	USD258,200

Cost of Goods Remaining in Inventory

Source	Amount
From the third quarter	100 units at USD42 per unit = USD4,200
From the fourth quarter	2,000 units at USD44 per unit = USD88,000
Total remaining (or ending) inventory cost	USD92,200

The cost of the goods sold would be expensed against the revenue of USD312,000 as shown below:

Item	Amount
Revenue	USD312,000
Cost of Goods Sold	USD258,200
Gross Profit	USD53,800

Immediate Expensing upon Incurring

Period costs (expenses less directly linked to revenue generation) are typically expensed as incurred, either when the company pays out cash or incurs a liability. These costs often include administrative, managerial, information technology (IT), research, and development expenses, as well as costs for maintaining or repairing assets.

For most companies, payroll expenses are treated as period costs, except for employees whose compensation is regarded as a product cost and recorded as inventory, subsequently becoming part of the cost of goods sold, or expenses like sales commissions, which are capitalized and systematically expensed or expensed alongside sales.

Capitalization followed by Gradual Depreciation or Amortization

Certain expenditures are initially recognized as assets on the balance sheet and typically manifest as an investing cash outflow on the statement of cash flows. Over the asset's useful life, these capitalized amounts are expensed as depreciation or amortization, reducing both net income and the asset's value on the balance sheet. As non-cash expenses, depreciation, and amortization impact the cash flow statement primarily through their effect on taxable income and taxes payable.

This approach aligns with the matching principle, where expenses are recognized on the income statement over the asset's expected useful life, ensuring that costs and benefits are matched. Capitalizing expenditures, instead of expensing them, generally results in higher reported cash from operations. Analysts should be vigilant for signs of companies manipulating reported cash flow from operations by capitalizing expenditures that ought to be expensed.

Capitalizing an expenditure boosts current profitability and reported cash flow from operations as long as capital expenditures exceed depreciation expenses. When analyzing performance, it's essential to consider the motivations behind capitalizing expenditures, such as meeting earnings targets for a specific period. Conversely, expensing a cost in the current period lowers immediate profits but enhances future profitability, contributing to a positive profit trend.

In environments where financial reporting and tax accounting methods are identical, expensing has a more favorable impact on cash flow due to lower taxes in the earlier period, creating an opportunity for interest income on the saved cash.

While it may not be feasible to identify individual instances of discretion in capitalizing or expensing expenditures, analysts can typically identify significant items treated differently across companies. The most relevant differences in expenditure treatment will vary by industry, highlighting the importance of industry-specific considerations in the analysis of capitalization practices.

Capitalization of Interest Costs

Companies typically capitalize interest costs for assets that require an extended period to prepare for their intended use. This accounting practice allows interest costs to be either capitalized on the balance sheet or expensed on the income statement. For assets constructed for the company's use, capitalized interest is included as part of the relevant long-lived asset on the balance sheet and is expensed over time through depreciation. In contrast, for assets constructed for sale, such as in the case of a real estate construction company, capitalized interest is included in the inventory and expensed as part of the cost of sales when the asset is sold.

The treatment of capitalized interest raises several considerations for analysts. Firstly, it affects

the categorization of cash flow, with capitalized interest appearing as part of investing cash outflows, while expensed interest typically reduces operating cash flow. Under US GAAP, interest is categorized in operating cash flow, whereas under IFRS, it can be categorized in operating, investing, or financing cash flows. Analysts may need to assess the impact on reported cash flows. Secondly, interest coverage ratios, which are indicators of solvency, measure the extent to which a company's earnings or cash flow cover its interest costs. Capitalized and expensed portions of interest expenditure should be considered in the calculations to assess a company's interest coverage. Additionally, if a company is depreciating interest capitalized in a previous period, income should be adjusted to eliminate the effect of that depreciation.

Overall, understanding the treatment of capitalized and expensed interest is crucial for accurately assessing a company's cash flows and solvency, particularly when analyzing interest coverage ratios and assessing compliance with covenant requirements in lending agreements.

Capitalization of Internal Development Costs

Accounting standards mandate capitalizing software development costs upon establishing product feasibility. However, variations arise due to judgment in feasibility assessment, leading to differing capitalization practices. Choosing to expense development costs instead of capitalizing them reduces current-period net income. This holds as long as current development expenses surpass amortization from prior capitalized costs, typical during cost escalation.

Opting for expense recognition for development costs lowers net operating cash flows and elevates net investing cash flows on the cash flow statement. Adjustments can align their financial performance when comparing companies like Microsoft (expenses development) to those capitalizing. Adjustments include (1) recognizing software development costs as expenses in the income statement, excluding prior years' amortization; (2) deducting capitalized software from the balance sheet (reducing assets and equity); and (3) reducing operating cash flows and cash used in investing on the cash flow statement by current-period development costs. Ratios involving income, assets, and cash flow–like return on equity–will also be influenced.

Implications for Financial Analysts: Expense Recognition

Similar to revenue recognition, a company's choice of expense recognition reflects its conservatism. Policies deferring expense recognition are less conservative. Expense items often require estimations impacting net income significantly. Analyzing financial statements and comparing companies necessitates understanding estimation variations and their potential influence.

For instance, substantial changes year-to-year in estimates like uncollectible accounts, warranty expenses, or asset valuable lives need scrutiny. Are changes due to operational shifts or manipulation for net income impact? When different industry companies exhibit contrasting estimates, the reasons behind the differences should be explored. Do these differences align with operational variations or signal manipulation?

Companies detail accounting policies and key estimates in financial statement notes and annual reports. Where possible, quantifying policy and estimation differences aid meaningful comparisons, adjusting reported expenses for comparability. If precise effects can't be calculated, assessing the relative conservatism qualitatively helps understand the impact on expenses and financial ratios.

Example: Effect of Capitalizing versus Expensing

Companies A and B have identical beginning-of-the-year book equity values and share the same tax rate. Throughout the year, both companies engage in similar transactions and report them in the same manner, with one exception. On 1 January of the new year, each company purchases a piece of machinery valued at EUR 500,000, which has a useful life of five years and a salvage value of EUR 0. Company A opts to capitalize the machinery and depreciate it using the straight-line method, while Company B chooses to expense the machinery immediately. The year-end data for Company A is presented in the table below.

Company A as of 31 December

Item	Value
Ending Shareholders’ Equity	EUR 15,000,000
Tax Rate	25%
Dividends	EUR 0.00
Net Income	EUR 1,200,000

Based on the information in the table above, Company B's return on equity using year-end equity will be closest to:

Solution

Company B will have an additional EUR 400,000 of expenses (as of 31 December) compared with Company A. Company B expensed the machinery for EUR 500,000 rather than capitalizing the machinery and having a depreciation expense of EUR 100,000 like Company A. Company B's net income and shareholders' equity will be EUR 300,000 lower (= EUR 400,000 × 0.75) than that of Company A. As such, company B's ROE

$$\text{ROE} = \frac{\text{Net income}}{\text{Shareholders' Equity}} = \frac{\text{EUR}900,000}{\text{EUR}14,700,000} = 0.0612 = 6.12\%$$

Question

Why is understanding the treatment of capitalized interest important when analyzing financial statements?

A. It affects the balance sheet items only.
B. It has no impact on cash flow categorization.
C. It influences both cash flow categorization and interest coverage ratios.

Solution

The correct answer is **C**

The treatment of capitalized interest impacts how interest costs are categorized in the cash flow statement and affect the calculation of interest coverage ratios. Both aspects are crucial in assessing a companys' financial health and solvency.

A is incorrect. The treatment of capitalized interest also affects the income statement and cash flow statement. While it does impact the balance sheet by increasing the carrying amount of the asset to which the interest is capitalized, it also affects the income statement by reducing interest expense in the period the interest is capitalized. This, in turn, affects the calculation of interest coverage ratios.

B is incorrect. Capitalized interest does impact cash flow categorization. In the cash flow statement, interest paid is typically classified as an operating activity. However, when interest is capitalized, it is included in the investing section as part of the cash outflow for the acquisition of the asset. This reclassification affects the presentation of cash flows and can influence the analysis of a company's operating performance and investment activities.

LOS 2c: describe the financial reporting treatment and analysis of non-recurring items (including discontinued operations, unusual or infrequent items) and changes in accounting policies

When assessing a company's possible future performance, it is advisable to separate recurring and non-recurring items. Recurring items are items of income and expense likely to continue in the future, while non-recurring items (such as discontinued operations and unusual or infrequent items) are less likely to continue.

The effects of changes in accounting policies should also be considered when assessing a company's possible future performance. Changes in accounting policies can materially change how information is presented in the financial statements.

Other items that may be reported separately include unusual items, items that occur infrequently, and non-operating income.

Discontinued Operations

Under IFRS and US GAAP, a company must separately report the impact of discontinued operations on its income statement. Discontinued operations refer to parts of the business that the company has either already disposed of or plans to dispose of, with no future involvement expected.

Discontinued operations are considered separate both physically and operationally, and their results are presented at the bottom of the income statement on a net basis, including per share figures. The other sections of the income statement, such as revenue, cost of goods sold, and earnings per share from the ongoing businesses, represent the outcomes of continuing operations and are reported accordingly.

On the balance sheet, assets and liabilities associated with the discontinued operations are grouped and listed as held for sale. This distinction allows analysts to more clearly assess the financial performance of continuing versus discontinued operations. Since discontinued operations will no longer contribute to the company's earnings or cash flow after their disposal,

analysts may exclude them when projecting the company's future financial performance after a specific date.

Unusual or Infrequent Items

Since December 15, 2015, US GAAP has mandated that items of a material nature that are either unusual or infrequent, or both, should be distinctly presented within a company's continuing operations. An example of such an item is the expenses related to a company's restructuring, such as plant closure costs and employee severance payments.

IFRS also emphasizes the importance of separately disclosing items that are significant or essential for understanding an entity's financial performance. Items that are unusual or infrequent are likely to fit these criteria. For instance, gains or losses from the sale of assets or business segments at a value different from their book value are disclosed separately on the income statement, as these transactions are considered part of regular business activities.

Highlighting the unusual or infrequent nature of these items aids analysts in evaluating the probability of their recurrence, aligning with the IFRS requirement to disclose items that are pertinent to understanding an entity's financial performance.

In forecasting future operations, analysts should consider whether the reported items are likely to reoccur and their potential impact on future earnings. It is generally not recommended to simply overlook all unusual items.

Changes in Accounting Policies

Companies may need to change accounting policies due to new standards issued by standard setters. These changes can be applied either prospectively, meaning for future periods, or retrospectively, meaning restating financial statements as though the new policy had always been in place. For example, the new revenue recognition standard allowed companies to use a "modified retrospective" approach, where they didn't need to revise previously reported financial statements but adjusted opening balances of retained earnings and other relevant accounts for

the cumulative impact of the new standard.

In some instances, changes in accounting policies, such as switching from one acceptable inventory costing method to another, are required. Unless impractical, these changes should generally be applied retrospectively. The financial statement notes should explain and justify the change.

Apart from policy changes, companies sometimes adjust accounting estimates, like the useful life of a depreciable asset. These changes are handled prospectively, affecting only the financial statements for the period of the change and future periods. Prior statements are not adjusted, and the change is not highlighted on the income statement's face. Significant changes in estimates should be disclosed in the notes.

Additionally, companies may need to correct errors from previous periods. This is done by restating the financial statements for the prior periods presented in the current financial statements.

Changes in Scope and Exchange Rates

In a case where an issuer acquires a controlling interest in another company, the financial statements are consolidated from the acquisition's closing date. The relative size of the acquired company can significantly affect the comparability of the acquirer's financial results and position in previous periods.

Moreover, fluctuations in exchange rates can influence the income statements of multinational corporations, impacting reported revenues. Although accounting standards do not require the disclosure of the effects of changes in scope or exchange rates on financial statements, many issuers provide summary information, such as revenue and earnings per share growth rates excluding these changes, in management reporting or other documents.

Question

Which of the following statements is *most likely* accurate?

A. Changes in accounting policies should always be applied prospectively.
B. Unusual or infrequent items should be presented separately in a company's continuing operations.
C. An analyst should include discontinued operations in assessing a company's future financial performance.

Solution

The correct answer is **B**.

Unusual, infrequent, or items that fall in both categories are presented separately as part of a company's continuing operations.

A is incorrect. Changes in accounting policies do not always have to be applied prospectively. They can also be applied retrospectively. In fact, unless it is impractical to do so, it is preferred that changes in accounting policies are reported through retrospective application.

C is incorrect. Analysts should exclude discontinued operations from assessing a company's future financial performance.

LOS 2d: describe how earnings per share is calculated and calculate and interpret a company’s basic and diluted earnings per share for companies with simple and complex capital structures including those with antidilutive securities

Both IFRS and US GAAP mandate the presentation of earnings per share (EPS) on the income statement, specifically for net profit or loss (net income) and profit or loss (income) from continuing operations. The method of calculating EPS varies, contingent on whether the company possesses a simple or complex capital structure.

Simple vs. Complex Capital Structures

A company's capital is made up of its equity and debt. Certain equity types have priority over others, and some debt along with other instruments can be converted into equity.

According to IFRS, the equity type for which earnings per share (EPS) is calculated is known as ordinary equity. Ordinary shares are those that rank below all other equity types. Essentially, ordinary shareholders are the company's owners—the equity holders who are last in line to be paid in a company liquidation and who stand to gain the most when the company performs well.

Under US GAAP, this ordinary equity is called common stock or common shares, reflecting the terminology used in the US. We will use the terms "ordinary shares," "common stock," and "common shares" interchangeably, at least for this matter.

A company is said to have a complex capital structure if it has issued any financial instrument potentially convertible into common stock (or ordinary shares). Examples of these financial instruments include convertible bonds, convertible preferred stock, and employee stock options. The company is said to have a simple capital structure if its capital structure does not include such potentially convertible financial instruments.

Financial instruments that are potentially convertible into common stock could dilute or decrease EPS due to an increase in ordinary shares after conversion. The EPS that results from the conversion of all dilutive financial instruments is called diluted EPS.

Basic EPS describes EPS that does not involve the conversion of dilutive financial instruments. It is calculated using the reported earnings available to common shareholders of a company and the weighted average number of outstanding shares.

Companies are required to report both basic and diluted EPS.

Basic EPS

Basic EPS is the amount of income available to common shareholders divided by the weighted average number of common shares outstanding over a period. In this case, income that is accessible to ordinary shareholders is the net income left over after any preferred dividends have been distributed.

Basic EPS is computed as follows:

$$\text{Basic EPS} = \frac{\text{Net income} - \text{Preferred dividends}}{\text{Weighted average number of shares outstanding}}$$

Where:

‘**net income – preferred dividends**’- amount of income available to common shareholders,

‘**weighted average number of outstanding shares**' - time weighting of outstanding common shares.

Example: Calculating Basic EPS

For the fiscal year ending on December 31, 2020, Fisher Enterprises reported a net income of USD 3,400,000. The company declared and paid USD 300,000 in dividends on preferred stock. The company's common stock share information is presented in the following table:

Shares outstanding on January 1, 2020	$1,200,000$
Shares issued on March 1, 2020	$300,000$
Shares repurchased (treasury shares) on September 1, 2020	$(150,000)$
Shares outstanding on December 31, 2020	$1,350,000$

The company’s basic earnings per share (EPS) for the year is *closest to:*

Solution

The first step is to calculate the weighted average number of shares outstanding based on the duration each share quantity was outstanding:

1,200,000 shares × (2 months/12 months) = 200,000

1,500,000 shares × (6 months/12 months) = 750,000

1,350,000 shares × (4 months/12 months) = 450,000

Weighted average number of shares outstanding = 1,400,000

As such, Fisher Enterprise's Basic EPS is:

$$\begin{aligned}\text{Basic EPS} &= \frac{\text{(Net income – Preferred dividends)}}{\text{Weighted average number of shares}} \\ &= \frac{\text{(USD 3,400,000 – USD 300,000)}}{\text{1,400,000}} \\ &= \text{USD 2.21}\end{aligned}$$

Diluted EPS

Note that when a company has a simple capital structure (lacks any financial instruments that could potentially dilute earnings), its basic earnings per share (EPS) will be the same as its diluted EPS. On the other hand, if the company possesses financial instruments that could dilute earnings, its diluted EPS might vary from its basic EPS. By definition, diluted EPS is always equal to or less than basic EPS.

We shall consider three potential categories of dilutive financial instruments diluted EPS:

1. Convertible preferred stock,
2. Convertible debt, and
3. Employee stock options.

Diluted EPS: If-Converted Method (Convertible Preferred Stock)

Calculation of diluted EPS, whenever a company has outstanding convertible preferred stock, is done using the if-converted method. The if-converted method looks at the effect of converting the convertible preferred shares at the beginning of the period.

Note that conversion of convertible shares results in a higher weighted average number of outstanding shares and a higher net income available to common shareholders than in the basic EPS calculation because, due to conversion, the company will no longer pay preferred dividends.

Therefore, the formula for calculating diluted EPS using the if-converted method for preferred stock is given as follows:

$$\text{Dilutes EPS} = \frac{\text{Net Income}}{\begin{array}{l}(\text{Weighted average number of outstanding shares} \\ + \text{New common shares that would have been issued} \\ \quad \text{at conversion})\end{array}}$$

Example: Calculating Diluted EPS using the If-Converted Method (Convertible Preferred Stock)

As of December 31, 2022, a hypothetical company Vista Utilities reported a net income of USD 2,250,000. Over the year, the company had an average of 600,000 shares of common stock outstanding, 25,000 shares of convertible preferred stock, and no other potentially dilutive financial instruments. Each share of preferred stock pays an annual dividend of USD 12 and is convertible into 6 shares of Vista Utilities' common stock.

Vista Utilities' basic and diluted earnings per share (EPS) are *closest to:*

Solution

Should the 25,000 shares of convertible preferred stock be converted, Vista Utilities would issue an additional 150,000 shares of common stock (6 shares of common for each of the 25,000 shares of preferred).

Without the conversion, the company would not need to disburse preferred dividends totaling USD 300,000 (25,000 shares of preferred at USD 12 per share). Therefore, the company’s basic EPS would be USD 3.25, and its diluted EPS would be USD 2.81, as illustrated in the modified

table:

	Basic EPS	Diluted EPS Using If-Converted Method
Net income	USD2,250,000	USD2,250,000
Preferred dividend	$-300,000$	0
Numerator	USD1,950,000	USD2,250,000
Weighted average number of shares outstanding	600,000	600,000
Additional shares issued if preferred converted	0	150,000
Denominator	600,000	750,000
EPS	USD3.25	USD3.00

Diluted EPS: If-Converted Method (Convertible Debt Oustanding)

Calculation of diluted EPS, whenever a company has a convertible outstanding debt, is also done using the if-converted method. In other words, Diluted EPS is determined under the assumption that convertible debt was converted into equity at the start of the period. If the conversion of debt to equity had occurred, there would no longer be any outstanding debt securities but rather a greater number of common stock shares. Moreover, had this conversion happened, the company would not have incurred interest expenses on the convertible debt, thereby boosting the net income available to common shareholders by the interest expense amount after taxes.

As such, the formula for calculating diluted EPS using the if-converted method for convertible debt is given by:

$$\text{Diluted EPS} = \frac{\begin{array}{l}(\text{Net Income} \\ + \text{After-tax Interest on Convertible Debt} \\ - \text{Preferred Dividends})\end{array}}{\begin{array}{l}(\text{Weighted Average Number of Outstanding shares} \\ + \text{Additional Common Shares that would have been} \\ \text{Issued at Conversion})\end{array}}$$

Example: Calculating Diluted EPS using the If-Converted Method (Convertible Debt Oustanding)

For the fiscal year concluding on December 31, 2022, a hypothetical company TechGenix Limited

reported a net income of USD 825,000. The firm had a weighted average of 780,000 shares of common stock outstanding. The company's potential dilutive securities include USD 60,000 of 5 percent convertible bonds, which are convertible into a total of 15,000 shares of common stock. With a tax rate of 25 percent, compute the basic and diluted earnings per share (EPS) for TechGenix Limited.

Solution

Consider the following table:

	Basic EPS	Diluted EPS Using If-Converted Method
Net income	USD 825,000	USD 825,000
After-tax cost of interest		USD 2,250
Numerator	USD 825,000	USD 827,250
Weighted average number of shares outstanding	780,000	780,000
If converted	0	15,000
Denominator	780,000	795,000
EPS	USD 1.06	USD 1.04

The diluted EPS in the above table is calculated as:

$$\begin{aligned}\text{Diluted EPS} &= \frac{\begin{array}{l}(\text{Net Income}\\ +\,\text{After-tax Interest on Convertible Debt}\\ -\,\text{Preferred Dividends})\end{array}}{\begin{array}{l}(\text{Weighted Average Number of Outstanding shares}\\ +\,\text{Additional Common Shares that would have been}\\ \text{Issued at Conversion})\end{array}}\\ &= \frac{825,000 + ((1-0.25)\times 0.05 \times 60,000) - 0}{780,000 + 15,000}\\ &= \frac{825,000 + (0.75 \times 0.05 \times 60,000)}{795,000}\\ &= \frac{825,000 + 2,250}{795,000}\\ &= \frac{827,250}{795,000}\\ &= 1.04\end{aligned}$$

Note that If the convertible bonds were converted, the bond liability would cease to exist, and instead, TechGenix Limited would have an additional 15,000 shares of common stock

outstanding. Also, if the bonds were converted, the company would save on interest payments of USD 3,000 (5 percent of USD 60,000), increasing the net income for common shareholders by USD 2,250 after taxes [= USD 3,000 × (1 – 0.25)].

Diluted EPS: The Treasury Stock Method

When a company possesses financial instruments like stock options or warrants, the computation of diluted earnings per share (EPS) assumes these instruments are exercised, and the company utilizes the proceeds from this exercise to buy back as many shares of its common stock as it can at the period's average market price.

Consequently, the diluted EPS calculation adjusts the weighted average number of shares outstanding, increasing it by the net amount of shares issued upon the exercise of the instruments minus the shares that could be bought back with the exercise proceeds. Under US GAAP, this approach is referred to as the treasury stock method, as it often leads to companies holding the repurchased shares as treasury stock. Although not explicitly named, IFRS employs the same technique for such calculations.

Generally speaking, in determining diluted EPS with this technique, the hypothetical exercise of these financial instruments is presumed to result in:

- the company receiving cash in return for issuing new shares upon the exercise.
- the company utilizing the cash gained to buy back shares at the period's weighted average market price.

As such, the formula to calculate diluted EPS using the treasury stock method for options is given as:

$$\text{Diluted EPS} = \frac{(\text{Net Income} - \text{Preferred Dividends})}{\begin{array}{l}\text{Weighted Average Number of Outstanding Shares} \\ + (\text{New Shares that would have been purchased with Cash Received upon Ex} \\ - \text{Shares that could have been purchased with cash received upon exercise} \\ \times \text{Proportion of year during which the Financial Instruments were Outstandi}\end{array}}$$

Example: Calculating Diluted EPS using the If-Converted Method (Treasury Stock

Method)

A hypothetical company, Advanced Robotics Inc. disclosed a net profit of USD1.5 million for the fiscal year ending December 31, 2023, with an average of 950,000 ordinary shares outstanding throughout the year. At the fiscal year's start, Advanced Robotics had issued 25,000 warrants with a strike price of USD40 each. No other convertible financial instruments were present. During the year, the average market value of the firm's stock was USD60 per share.

The basic and diluted earnings per share (EPS) for the company are *closest to:*

Solution

Applying the treasury stock method, we compute that the exercise of all warrants would have generated USD1 million (USD40 for each of the 25,000 warrants). These warrants would not be open; instead, the company would have an additional 25,000 shares in circulation. The treasury stock method assumes that the company would use the proceeds from the warrant exercises to buy back shares at the average market price. With the USD1 million from the warrant exercises, Advanced Robotics could repurchase 16,667 (=1,000,000/60) shares at USD60 each. Thus, the incremental share count is 8,333 (25,000 original warrants less 16,667 shares repurchased). The diluted EPS calculation does not adjust the numerator. The new figures reveal that the basic EPS for Advanced Robotics was USD1.58, while the diluted EPS was USD1.55.

To represent this numerically, you could use a similar table format:

	Basic EPS	Diluted EPS Using Treasury Stock Method
Net Income	USD 1,500,000	USD 1,500,000
Numerator	USD 1,500,000	USD 1,500,000
Weighted average number of shares outstanding	950,000	950,000
If converted	0	8,333
Denominator	950,000	958,333
EPS	USD 1.58	USD 1.57

Note that the diluted EPS above is calculated as:

$$\text{Diluted EPS} = \frac{(\text{Net Income} - \text{Preferred Dividends})}{\begin{array}{l}\text{Weighted Average Number of Outstanding Shares} \\ + (\text{New Shares that would have been purchased with Cash Received upon Ex} \\ - \text{Shares that could have been purchased with cash received upon exercise} \\ \times \text{Proportion of year during which the Financial Instruments were Outstandi}\end{array}}$$

$$= \frac{\text{USD } 1,500,000 - 0)}{950,000 + [(25,000 - 16,667) \times 1]} = 1.57$$

Dilutive versus Anti-dilutive Securities and Implications for EPS Calculation

Dilutive securities are those financial instruments that are potentially convertible into common stock and could potentially dilute or decrease EPS due to the increase in the number of ordinary shares after conversion.

In contrast, some potentially convertible securities are anti-dilutive. This means their inclusion in the EPS calculation would result in higher diluted EPS than the company's basic EPS. Under both IFRS and US GAAP, however, these anti-dilutive securities are excluded from the calculation of diluted EPS.

As a rule, diluted EPS should always be less than or equal to basic EPS. Besides, it should reflect the maximum potential dilution from the conversion of potentially dilutive financial instruments.

Example: Showing the Antidilutive Effect

A company has a net income of $2,000,000, an average of 250,000 shares of common outstanding stock, and 10,000 shares of convertible preferred stock. Each preferred share pays a dividend of $13 per share and is convertible into one share of the company's stock. What is the company's basic and diluted EPS?

Solution

$$\text{Basic EPS} = \frac{\text{Net income} - \text{Preferred dividends}}{\text{Weighted average number of shares outstanding}}$$

$$\text{Net income– Preferred dividend} = \$2,000,000 - 10,000 \times \$13$$
$$\text{Net income– Preferred dividend} = \$2,000,000 - \$130,000 = \$1,870,000$$

Therefore,

$$\text{Basic EPS} = \frac{\$1,870,000}{250,000} = \$7.48$$

Diluted EPS calculation using the equation:

$$\text{Dilutes EPS} = \frac{\text{Net Income}}{\begin{array}{l}(\text{Weighted average number of outstanding shares} \\ + \text{New common shares that would have been issued} \\ \quad \text{at conversion})\end{array}}$$

If each convertible preferred stock is converted into one share, then, under the if-converted method, the company has an additional $10,000 \times 1 = 10,000$ common outstanding stock, and no preferred dividend would be paid.

Therefore,

$$\text{Diluted EPS} = \frac{\$2,000,000}{(250,000 + 10,000)} = \$7.69$$

Given that this value is greater than the basic EPS of $7.48, the convertible preferred shares are said to be anti-dilutive. As such, the effect of their conversion would be excluded from the diluted EPS calculation. As a result, Diluted EPS = Basic EPS = $7.48.

Question

If, at the end of its financial year, a company has a net income of $10 million, 2,000,000 shares of common outstanding stock, and no preferred stock or convertible financial instruments, which of the following is accurate?

A. The company has a simple capital structure with a basic EPS of $5.00.
B. The company has a complex capital structure with a diluted EPS of $5.00.
C. The company has a complex capital structure with a diluted EPS of less than $5.00.

Solution

The correct answer is A.

The company has a simple capital structure given that it does not have any potentially convertible financial instrument and has a basic EPS of $10,000,000/2,000,000 shares = $5.00.

LOS 2e: evaluate a company’s financial performance using common-size income statements and financial ratios based on the income statement

Conversion of the income statement to a common-size income statement facilitates an assessment of a company's performance across time periods (time series analysis) and across companies (cross-sectional analysis).

Common-size analysis of the income statement is performed by stating each line item on the income statement as a percentage of revenue. Benefits of common-sizing the income statement include:

- It allows for meaningful comparison between companies concerning the percentage of expenses and profit relative to sales; and
- It highlights any differences that may exist between company strategies. For example, the difference between the ratio of gross profit to sales for two companies may lead to more research being done to understand the underlying reasons for the difference and their implications for the future performance of the companies.

Profitability describes one aspect of a company's financial performance. Financial ratios and common-size income statements can assist in measuring profitability aside from offering quick insights into changes in a company's financial performance.

Several financial ratios can assist in measuring profitability. The net and gross profit margins are two ratios that may be found through common sizing of the income statement.

Income Statement Ratios

Net Profit Margin

A company's return on sales or net profit margin measures the income generated for each dollar of revenue. In the form of an equation:

$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Revenue}}$$

A higher level of net profit margin indicates a higher level of profitability.

Gross Profit Margin

The gross profit margin is another measure of profitability which is calculated as follows:

$$\text{Gross profit margin} = \frac{\text{Gross profit}}{\text{Revenue}}$$

Where gross profit = revenue minus the cost of goods sold.

As the equation indicates, the gross profit margin measures the gross profit a company generates for each dollar of revenue. Like in the case of the net profit margin, a higher gross profit margin indicates a higher level of profitability.

Question

The table below provides summary financial data for a company for the periods ended December 31, 2015, and December 31, 2016.

	December 31, 2016	December 31, 2015
Revenue	2,500,000	1,700,000
Cost of goods sold	1,200,000	600,000
Net profit	950,000	250,000

Which of the following statements is *most* accurate?

A. The company's net profit margin was the same in both years.

B. The company's gross profit margin in 2016 was higher than in 2015.

C. The company's gross profit margin in 2015 was higher than in 2016.

Solution

The correct answer is C.

The gross profit margin was higher in 2015 than in 2016, given that

$$\text{Gross profit margin in 2015} = \frac{(\$1,700,000 - \$600,000)}{\$1,700,000} = 64.71\%$$

$$\text{Gross profit margin in 2016} = \frac{(\$2,500,000 - \$1,200,000)}{\$2,500,000} = 52.00\%$$

A is incorrect because the net profit margin in 2015 $= \frac{\$250,000}{\$1,700,000} = 14.71\%$

B is incorrect because the gross profit margin was higher in 2015 than in 2016, as previously calculated.

while net profit margin in 2016 $= \frac{\$950,000}{\$2,500,000} = 38\%$. Therefore, the net profit margin is not the same in both years.