

# Financial Statement Analysis

## CFA一级培训项目

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10年授课，5,000+授课课时

### 资质证书

- 通过特许金融分析师（CFA）三级
- 注册会计师（CPA）
- 美国注册财务策划师（RFP）
- 量化金融分析师（AQF）
- 注册金融风险管理师（CFRM）

### 服务客户

- 中国银行、广发证券、中国建设银行、中国工商银行、国家进出口银行、交通银行、招商银行、农业银行、上海银行、太平洋保险、平安证券、兴业证券、国泰君安等。

### 工作经历

- **金程教育资深培训师**、资深证券分析师、美国注册财务策划师协会（大中华管理中心）特聘资深专家；
- 在财务分析、估值建模、兼并收购、投资理财、税务筹划、资产证券化等方面拥有丰富的管理与实战经验。曾就职于全球顶级咨询公司与会计师事务所，并担任某世界500强企业投资总监，主导并参与多个大型企业兼并收购及IPO项目，投资标的及服务的客户包括阿里巴巴、中国中铁、中国南车、TPG Capital、L Capital、野村证券等。
- 先后为数十家国内外银行、保险公司、证券公司、世界500强企业提供专业培训，备受好评，服务的客户包括中国银行、中国建设银行、国家进出口银行、国泰君安等多家大型金融机构。

## Financial Statement Analysis

1. Introduction to Financial Statement Analysis
2. Analyzing Income Statements
3. Analyzing Balance Sheets
4. Analyzing Statements of Cash Flows I
5. Analyzing Statements of Cash Flows II
6. Analysis of Inventories
7. Analysis of Long-Term Assets
8. Topics in Long-Term Liabilities and Equity
9. Analysis of Income Taxes
10. Financial Reporting Quality
11. Financial Analysis Techniques
12. Introduction to Financial Statement Modeling

## 中文精读

1. 财务报表分析介绍
2. 利润表分析
3. 资产负债表分析
4. 现金流量表分析1
5. 现金流量表分析2
6. 存货分析
7. 长期资产分析
8. 长期负债和权益专题
9. 所得税分析
10. 财务报告质量
11. 财务报表分析技术
12. 财务报表建模导论

# Module

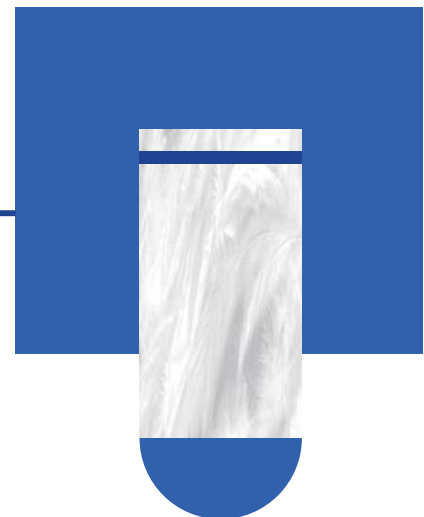


## Introduction to Financial Statement Analysis

- The Role of Financial Reporting and FSA
- Financial Statement Elements
- Measurement of Financial Elements
- The Resources Used for FSA
- Auditing and Financial Statement Analysis
- Accounting Equation and Accrual Accounting
- Standard-setting Bodies & Regulatory Authorities
- IASB & FASB: Conceptual Framework

### The Role of Financial Reporting and FSA

- The Role of Financial Reporting and FSA
- Financial Statements



### — The Role of Financial Reporting and FSA —

- **The role of financial reporting**
  - The **International Accounting Standards Board (IASB)** definition:
    - ✓ The objective of financial reporting is to **provide financial information** that is **useful to users in making decisions** about providing resources to the reporting entity, where those decisions relate to equity and debt instruments, or loans or other forms of credit, and in influencing management's actions that affect the use of the entity's economic resources.
    - ✓ The objective of financial statements is to provide information about
      - **financial position;**
      - **financial performance;**
      - **changes in financial position of an entity** that is useful to a wide range of users **in making economic decisions;**
      - **cash flow statement.**
- The role of financial reporting analysis is **to use the information in a company's financial statements, along with other relevant information, to make economic decisions.**

## — The Role of Financial Reporting and FSA —

- In evaluating financial reports, analysts typically have a specific economic decision in mind.
- Examples of these decisions include the following:
  - Evaluating an equity investment for inclusion in a portfolio.
  - Evaluating a merger or acquisition candidate.
  - Evaluating a subsidiary or operating division of a parent company.
  - Deciding whether to make a venture capital or other private equity investment.
  - Determining the creditworthiness of a company in order to decide whether to extend a loan to the company and if so, what terms to offer.
  - Extending credit to a customer.
  - Examining compliance with debt covenants or other contractual arrangements.
  - Assigning a debt rating to a company or bond issue.
  - Valuing a security for making an investment recommendation to others.
  - Forecasting future net income and cash flow.

## — Financial Statements —

### ● Financial Statements

Financial position	Financial performance	Change in financial position
The balance sheet	The income statement	The cash flow statement
<b>Assets = liabilities + owner's equity</b>	● Revenue ● Expenses ↓ ● Net income	● Operating cash flows ● Investing cash flows ● Financing cash flows ↓ <b>Net cash inflow or outflow for the financial year</b>

The statement of changes in owner's equity

## — Financial Statements —

### ● Key financial statements

#### ○ Balance sheet

- ✓ The balance sheet (also known as the **statement of financial position** or **statement of financial condition**) reports the firm's **financial position at a point in time**.
- ✓ The balance sheet consists of three elements
  - Assets are the **resources controlled** by the firm.
  - Liabilities are amounts **owed to lenders and other creditors**.
  - Owners' equity is the **residual interest** in the net assets of an entity that remains after deducting its liabilities.
- ✓ Transactions are measured so that the fundamental accounting equation holds
  - **Assets = Liabilities + Owners' Equity**

## Financial Statements

### ● Income statement

- The **income statement** (also known as **the statement of operations** or **the profit and loss statement**) reports on the financial performance of the firm **over a period of time**.
- The elements of the income statement include:
  - ✓ **Revenue** is the income generated by the operations of a business for a period, it typically refers to amounts charged for the delivery of goods or services **in the ordinary activities of a business**.
  - ✓ **Expenses** are the costs of running the business for the same period, it reflect outflows, depletions of assets, and incurrences of liabilities that decrease equity.
    - Expenses typically include such items as **cost of sales (cost of goods sold)**, **administrative expenses**, and **income tax expenses** and that may be defined to include losses.
- **Net income** (=revenue + other income - expenses) on the income statement is often referred to as the **"bottom line"** because of its proximity to the bottom of the income statement.
  - ✓ Net income may also be referred to as **"net earnings," "net profit," and "profit or loss."**
  - ✓ In the event that expenses exceed revenues and other income, the result is referred to as **"net loss."**

## Financial Statements

### ● Cash flow statement

- The statement of cash flows reports the company's cash receipts and payments.
- These cash flows are classified as follows
  - ✓ **Operating cash flows** include the cash effects of transactions that involve **the normal business** of the firm.
  - ✓ **Investing cash flows** are those resulting from the **acquisition or sale** of property, plant, and equipment; of a subsidiary or segment; of securities; and of investments in other firms.
  - ✓ **Financing cash flows** are those resulting from **issuance or retirement** of the firm's debt and equity securities and include dividends paid to stockholders.

## Financial Statements

### ● The statement of comprehensive income

- **The statement of comprehensive income** reports **all changes in equity except for** shareholder transactions (e.g., issuing stock, repurchasing stock, and paying dividends).
  - ✓ Under IFRS
    - The income statement can be combined with **"other comprehensive income"** and presented as a single statement of comprehensive income.
    - Alternatively, the income statement and the statement of comprehensive income can be **presented separately**.
  - ✓ Presentation is **similar under US GAAP**, except that firms can **choose to report comprehensive income in the statement of shareholders' equity**.

### ● The statement of changes in equity

- The statement of changes in equity reports **the amounts and sources of changes in** equity investors' investment in the firm over a period of time.

# Summary

## The Role of Financial Reporting and FSA

### The Role of Financial Reporting Financial Statements

## Financial Statement Elements

- ❑ Classifying Accounts into the Financial Statement Elements
- ❑ Contra Accounts

## Financial Statement Elements

- Financial statements portray the financial effects of transactions and other events by grouping them into broad classes (**elements**) according to their **economic characteristics**.
- **Classifying accounts into the financial statement elements**
  - **Assets:** Resources controlled by an enterprise as a result of past events or transactions, and from which future economic benefits are expected to flow to the enterprise.
  - **Liability:** Present obligations of an enterprise arising from past events, the settlement of which is expected to result in an outflow of resources embodying economic benefits, and it's creditors' claims on the resources of a company.
  - **Owners' equity:** The excess of assets over liabilities; the residual interest of shareholders in the assets of an entity after deducting the entity's liabilities. Also called **shareholders' equity** or **shareholders' funds**.
  - **Income:** Revenues represent income from the **ordinary activities of the enterprise** (e.g., the sale of products or provision of services). **Gains** may result from ordinary activities or other activities (the sale of surplus equipment).
  - **Expenses:** Outflows of economic resources or increases in liabilities that result in decreases in equity (other than decreases because of distributions to owners); reductions in net assets associated with the creation of revenues.

## Financial Statement Elements

- **Financial statement elements**
  - are the major classifications of assets, liabilities, owners' equity, revenues, and expenses.
- **Accounts** are the specific records within each element where various transactions are entered.
  - On the financial statements, accounts are typically presented in groups such as "inventory" or "accounts payable."
- A company's **chart of accounts** is a detailed list of the accounts that make up the five financial statement elements and the line items presented in the financial statements.
- **Contra accounts** are used for entries that offset some part of the value of another account.

## Summary

### Financial Statement Elements

Classifying Accounts into the Financial Statement Elements  
Contra Accounts

## Measurement of Financial Elements

- ❑ Underlying Assumptions in Financial Statements
- ❑ Recognition
- ❑ Measurement of Financial Elements

## — Measurement of Financial Elements —

- **Underlying assumptions in financial statements**
  - Accrual accounting
    - ✓ Assumes that financial statements should reflect transactions in the period **when they actually occur**, not necessarily when cash movements occur.
  - Going concern
    - ✓ The assumption that the company will **continue in business for the foreseeable future**.
- **Recognition**
  - Recognition means that an item is **included in the balance sheet or income statement**.
  - Recognition occurs if the item
    - ✓ Meets the definition of an element;
    - ✓ Satisfies the criteria for recognition.
  - Recognition is **appropriate** if it results in both **relevant information** about assets, liabilities, equity, income and expenses and a **faithful representation** of those items, because the aim is to provide information that is useful to investors, lenders and other creditors.

## — Measurement of Financial Elements —

- **Measurement of financial elements**
  - **Historical cost**
    - ✓ The amount originally paid for the asset.
  - **Amortized cost**
    - ✓ Historical cost **adjusted for** amortisation, depreciation, or depletion and/or impairment.
  - **Current cost**
    - ✓ The amount the firm would have to **pay today for the same asset**.
  - **Realizable value**
    - ✓ In reference to assets, realizable value is the amount of cash or cash equivalents that could currently be obtained **by selling the asset in an orderly disposal**.
    - ✓ For liabilities, the equivalent to realizable value is called "**settlement value**"—that is, settlement value is **the undiscounted amount of cash or cash equivalents** expected to be paid to satisfy the liabilities in the normal course of business.
  - **Present value**
    - ✓ The discounted value of the asset's expected future cash flows.
  - **Fair value**
    - ✓ The amount at which two knowledgeable, willing parties **in an arm's-length transaction** would exchange the asset.

***Carrying amount=carrying value=amortised cost=net book value=book value***

### Example

#### Measurement of Financial Elements

- A company's current financial position would best be evaluated using the
  - A. balance sheet.
  - B. income statement.
  - C. cash flow statement
- Solution: A.
  - The balance sheet portrays the current financial position.
  - The income statement and cash flow statement present different aspects of performance.

## Example

### Measurement of Financial Elements

- A company's profitability for a period would best be evaluated using the
  - A. balance sheet.
  - B. income statement.
  - C. cash flow statement.
- Solution: B.
  - Profitability is the performance aspect measured by the income statement.
  - The balance sheet portrays the current financial position.
  - The cash flow statement presents a different aspect of performance.

## Summary

### Measurement of Financial Elements

Underlying Assumptions in Financial Statements

Recognition

Measurement of Financial Elements

## The Resources Used for FSA

- The Resources Used for FSA



## The Resources Used for FSA

- **Financial statement notes (footnotes)**

- Provide **further details** about the information summarized in the financial statements.
- Footnotes allow users to improve their assessments of **the amount, timing, and uncertainty** of the estimates reported in the financial statements.
- Issues disclosed in footnotes
  - ✓ Discuss **the basis of presentation** such as the **fiscal period** covered by the statements and the inclusion of consolidated entities;
  - ✓ Provide information about **accounting methods, assumptions, and estimates** used by management;
  - ✓ Provide additional information on items such as **business acquisitions or disposals, legal actions, employee benefit plans, contingencies and commitments.**

## The Resources Used for FSA

- **Financial statement notes (footnotes)**

- In addition, **note disclosures** include information about the following (this is not an exhaustive list):
  - ✓ segment reporting;
  - ✓ business acquisitions and disposals;
  - ✓ contractual obligations, including both on- and off-balance sheet debt;
  - ✓ financial instruments and risks arising from financial instruments;
  - ✓ legal proceedings;
  - ✓ related-party transactions; and
  - ✓ subsequent events (i.e., events that occur after the balance sheet date).

## The Resources Used for FSA

- **Business and Geographic Segment Reporting**

- Companies are required to provide some disaggregated information under both IFRS and US GAAP in the notes to financial statements by operating segment.
- An operating segment is defined as a component of a company that
  - ✓ engages in activities that may generate revenue and create expenses, including a start-up segment that has yet to earn revenues;
  - ✓ whose results are regularly reviewed by the company's senior management;
  - ✓ for which discrete financial information is available.
- A company must disclose separate information about any operating segment that constitutes **10 percent or more** of the combined operating segments' revenue, assets, or profit.
  - ✓ The absolute value of the segment's profit or loss **as a percentage** of the **greater** of
    - the combined profits of all profitable segments and
    - the absolute amount of the combined losses of all loss-making segments

## The Resources Used for FSA

- **Management's commentary (unaudited)**
  - **Management's commentary** [also known as **management's report**, **operating and financial review**, and **Management's Discussion and Analysis (MD&A)**] is one of the most useful sections of the annual report.
    - ✓ In this section, management discusses a variety of issues. IFRS guidance recommends that management commentary **address** the **nature** of the business, management's objectives, the company's past performance, **the performance measures used**, and the company's key relationships, resources, and risks. Analysts must be aware that some parts of management's commentary may be **unaudited**.
  - For publicly held firms in the United States, the **US Securities and Exchange Commission (SEC)** requires that MD&A discuss **trends and identify significant events** and **uncertainties** that affect the firm's liquidity, capital resources, and results of operations. MD&A must also discuss:
    - ✓ Effects of inflation and changing prices if material.
    - ✓ Impact of **off-balance-sheet obligations** and **contractual obligations such as purchase commitments**.
    - ✓ **Accounting policies** that require significant judgment by management.
    - ✓ **Forward-looking expenditures and divestitures**.

## The Resources Used for FSA

- **Proxy statements are issued to shareholders when there are matters that require a shareholder vote.**
  - Management compensation;
  - Election of board members;
  - Issuance of stock options.
- **Interim reports**
  - Are also provided **either semiannually or quarterly**, depending on the applicable regulatory requirements.
  - Interim reports generally present the four basic financial statements and condensed notes but are **not audited**;
  - Provide updated information since the last annual period.

## The Resources Used for FSA

- **Earnings announcements**
  - Followed by a conference call in which the company's senior executives describe the company's performance and answer questions posed by conference call participants.
- **External sources**
  - Analysts should review all these company sources of information;
  - Information **from external sources** regarding the economy, the industry, the company, and peer (comparable) companies;
  - External information is helpful in assessing the company's future.

## Example

### The Resources Used for FSA

- Accounting methods, estimates, and assumptions used in preparing financial statements are found
  - A. in footnotes.
  - B. management's discussion and analysis
  - C. in the proxy statement.
- Solution: A.
  - The footnotes disclose choices in accounting methods, estimates, and assumptions.

## Example

### The Resources Used for FSA

- Information about material events and uncertainties would best be found in
  - A. footnotes.
  - B. the proxy statement.
  - C. management's discussion and analysis
- Solution: C.
  - This is a component of management's discussion and analysis.

## Summary

### The Resources Used for FSA

Financial statement notes, Business and geographic segment reporting, Management's commentary (unaudited), Proxy statements, Interim reports, Earnings announcements, External sources

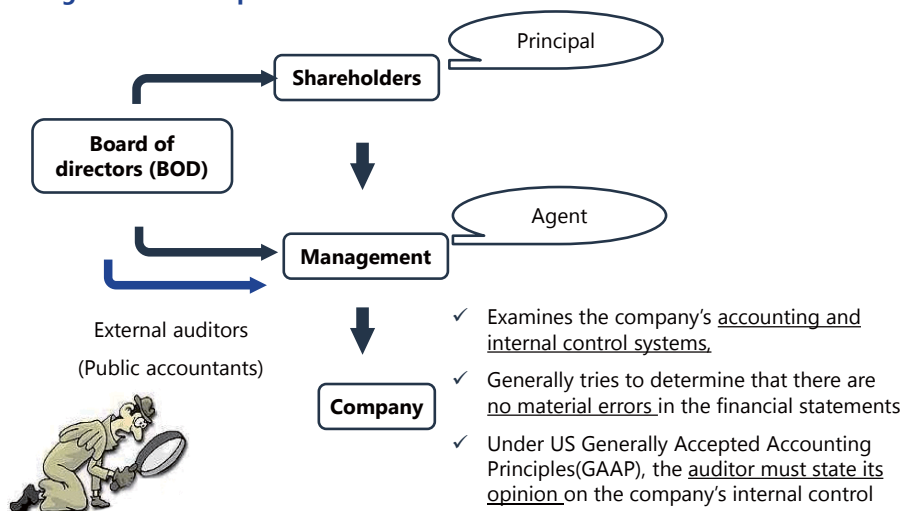
# Auditing and Financial Statement Analysis

- ❑ Auditing
- ❑ Financial Statement Analysis



## Auditing

- A principal – agent relationship



## Auditing

- Auditing

- Definition

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

- The **audit process** provides a basis for the independent auditor to express an audit opinion on **the fairness** of the financial statements that were audited.

- Objective

- ✓ Auditor provides **reasonable assurance** that the financial statements are fairly presented, **meaning that there is a high probability** that the audited financial statements are **free from material error, fraud, or illegal acts** that have a direct effect on the financial statements.

## Auditing

The Standard Auditor's Opinion	
1	Whereas the financial statements are prepared by management and are its responsibility, the auditor has performed an <b>independent review</b> .
2	<b>Generally accepted auditing standards</b> were followed, thus providing <b>reasonable assurance</b> the financial statements <b>contain no material errors</b> .
3	The auditor is <b>satisfied</b> that the statements were prepared in accordance with <b>accepted accounting principles and that the principles chosen and estimates made are reasonable</b> .
Results	



## Auditing

- **The standard auditor's opinion**
  - **Unqualified (clean) opinion**: free from material errors, fraud, or illegal acts.
  - **Qualified opinion**: if statements make **any exceptions to the accounting principles**, can issue qualified opinion and explain the exceptions.
  - **Adverse opinion**: if not presented fairly or not materially conforming with accounting standards.
  - **Disclaimer of opinion**: If the auditor is unable to express an opinion (e.g., in the case of a scope limitation), a disclaimer of opinion is issued.
  - Any opinion other than unqualified is sometimes referred to as a **modified opinion**.

## Auditing

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

## Auditing

- **Internal control system**

- The processes by which the company ensures that it presents accurate financial statements.
- Internal controls are the responsibility of management.
- Under US Generally Accepted Accounting Principles (GAAP), the **auditor must express an opinion on the firm's internal controls**.
- ✓ The auditor can provide this opinion separately or as the fourth element of the standard opinion.

## Auditing

- **Auditor describes the basis for the auditor's opinion for listed companies, including**

- **Key Audit Matters (international)**

- ✓ Key Audit Matters are defined as issues that the auditor considers **to be most important**, such as those that have a higher risk of misstatement, involve significant management judgment, or report the effects of significant transactions during the period.

- **Critical Audit Matters (US)**

- ✓ Critical Audit Matters are defined as issues that involve "especially challenging, subjective, or complex auditor judgment" and similarly include areas with higher risk of misstatement or involving significant management judgment and estimates.

## Financial Statement Analysis

- **The financial statement analysis framework consists of six steps:**

- Step 1: Articulate the Purpose and Context of the Analysis.
  - ✓ Determine what questions the analysis seeks to answer, the form in which this information needs to be presented, and what resources and how much time are available to perform the analysis.
- Step 2: Collect data.
  - ✓ Acquire the company's financial statements and other relevant data on its industry and the economy. Ask questions of the company's management, suppliers, and customers, and visit company sites.
- Step 3: Process data.
  - ✓ Make any appropriate adjustments to the financial statements. Calculate ratios. Prepare exhibits such as graphs and common-size balance sheets.
- Step 4: Analyze and interpret the data.
  - ✓ Use the data to answer the questions stated in the first step. Decide what conclusions or recommendations the information supports.
- Step 5: Develop and communicate conclusions and recommendations.
  - ✓ Prepare a report and communicate it to its intended audience. Be sure the report and its dissemination comply with the Code and Standards that relate to investment analysis and recommendations.
- Step 6: Follow-up.
  - ✓ Repeat these steps periodically and change the conclusions or recommendations when necessary.

## Financial Statement Analysis

Phase	Sources of information	Output
<b>1. Articulate the purpose and context of the analysis</b>	<ul style="list-style-type: none"> <li>Nature</li> <li>Needs &amp; concern</li> <li>Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>Statement of purposes and objectives</li> <li>A list of specific questions</li> <li>Timetable &amp; budgeted resources</li> </ul>
<b>2. Collect data</b>	<ul style="list-style-type: none"> <li>Financial data</li> <li>Discussion</li> <li>Visits</li> </ul>	<ul style="list-style-type: none"> <li>Financial statements and</li> <li>Other quantitative data</li> <li>Complete questionnaires</li> </ul>
<b>3. Process data</b>	<ul style="list-style-type: none"> <li>Data from previous phase</li> </ul>	<ul style="list-style-type: none"> <li>Adjusted F/S</li> <li>Common-size statements</li> <li>Ratios &amp; Forecasts</li> </ul>

## Financial Statement Analysis

Phase	Sources of information	Output
<b>4. Analyze/interpret the processed data</b>	<ul style="list-style-type: none"> <li>Input data</li> <li>Processed data</li> </ul>	<ul style="list-style-type: none"> <li>Analytical results</li> <li>Forecasts</li> <li>Valuations</li> </ul>
<b>5. Conclusions &amp; recommendations</b>	<ul style="list-style-type: none"> <li>Analytical results</li> <li>Previous reports</li> <li>Published reports</li> </ul>	<ul style="list-style-type: none"> <li>Analytical reports</li> <li>Recommendation</li> </ul>
<b>6. Follow up</b>	<ul style="list-style-type: none"> <li>Periodically repeating</li> </ul>	<ul style="list-style-type: none"> <li>Comparison of actual to expected results</li> <li>Revised forecasts</li> <li>Updated reports &amp; recommendations</li> </ul>

### Example

## Financial Statement Analysis

- Ratios are an input into which step in the financial analysis framework?
  - Process data.
  - Collect input data.
  - Analyze/interpret the processed data.
- Solution: C.
  - Ratios are an output of the process data step but are an input into the analyze/interpret data step.

# Summary

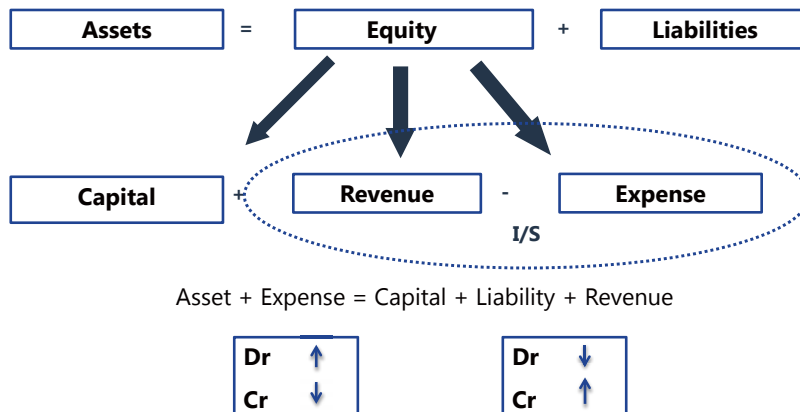
## Auditing and Financial Statement Analysis

Auditing  
Financial Statement Analysis

## Accounting Equation and Accrual Accounting

- Accounting Equation
- Accrual Accounting

### Accounting Equation



## Accounting Equation

- **Accounting equation**

- The **basic accounting equation** is the relationship among the three balance sheet elements:

- ✓ assets = liabilities + owners' equity

- **Expanded accounting equation**

- ✓ Owners' equity consists of capital contributed by the firm's owners and the cumulative earnings the firm has retained.

- Owners' Equity

- = Contributed Capital + **Retained earnings** + accumulated OCI

Assets = Liabilities  
 + Contributed capital  
 + Ending retained earnings  
 + Accumulated OCI

## Accounting Equation

- **Accounting equation**

- **Ending retained earnings** for an accounting period are the result of adding that period's retained earnings (revenues minus expenses minus dividends) to beginning retained earnings.

- ✓ **Ending retained earnings** = Beginning retained earnings

- + Net income

- Dividend declared

- Net income = Revenue – Expense

Assets = Liabilities  
 + Contributed capital  
 + Beginning retained earnings  
 + Revenue  
 - Expenses  
 - Dividend declared  
 + Accumulated OCI

## Example

### Accounting Equation

- An analyst has compiled the following information regarding Rubsam, Inc.

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

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

A. €2,100.  
 B. €2,300.  
 C. €2,800.

## Example

### Accounting Equation

- Solution: C.
  - $\text{Assets} = \text{Liabilities} + \text{Contributed capital} + \text{Beginning retained earnings} - \text{Distributions to owners} + \text{Revenues} - \text{Expenses}$

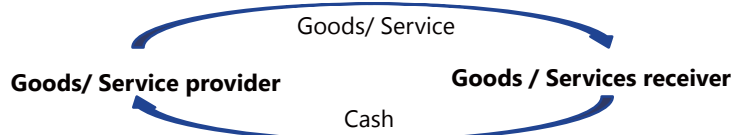
Liabilities	\$1,000
+ Contributed capital	500
+ Beginning retained earnings	600
- Distributions to owners	(0)
+ revenues	5,000
- expenses	(4,300)
= Assets	\$2,800

## Example

### Accounting Equation

- If a company reported fictitious revenue, it could try to cover up its fraud by
  - decreasing assets.
  - increasing liabilities.
  - creating a fictitious asset.
- Solution: C.
  - In order to balance the accounting equation, the company would either need to increase assets or decrease liabilities.
  - Creating a fictitious asset would be one way of attempting to cover up the fraud.

### Accrual Accounting



<b>Cash received in advance</b> Deferred income deferred revenue (Unearned revenue)	↔	<b>Cash paid in advance</b> Prepaid expense
<b>Cash received in arrears</b> Accrued revenue	↔	<b>Cash paid in arrears</b> Accrued expense

## Accrual Accounting

		Assets	Liabilities	Revenue	Expense	Equity
<b>Deferred income deferred revenue (Unearned revenue)</b>	•No revenue recognized •A liability	↑	↑			
<b>Total receivables (Accrued revenue)</b>	•Revenue recognition •An asset	↑		↑		↑
<b>Prepaid expenses</b>	•No expense recognized •An asset	↓ ↑				
<b>Accrued expenses</b>	•Expenses recognition •A liability		↑		↑	↓

### Example

## Accrual Accounting

- On 30 April 2006, Pinto Products received a cash payment of \$30,000 as a deposit on production of a custom machine to be delivered in August 2006. This transaction would most likely result in which of the following on 30 April 2006?
  - A. No effect on liabilities.
  - B. A decrease in assets of \$30,000.
  - C. An increase in liabilities of \$30,000.
- Solution: C.
  - The receipt of cash in advance of delivering goods or services results in **unearned revenue**, which is a liability. The company has an obligation to deliver \$30,000 in goods in the future. This balances the increase in cash (an asset) of \$30,000.

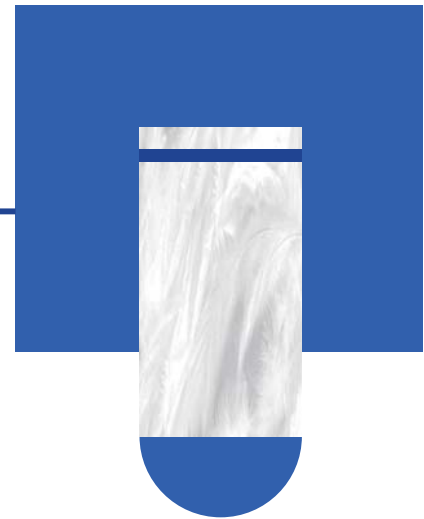
## Summary

### Accounting Equation and Accrual Accounting

Accounting Equation  
Accrual Accounting

# Standard-setting Bodies & Regulatory Authorities

- ❑ Standard-setting Bodies
- ❑ Regulatory Authorities
- ❑ SEC Filings Required



## Standard-setting Bodies

- **Conceptual framework**

- The conceptual framework is used in the development of accounting standards.
- Previously, financial reporting standards were primarily developed independently by each country's standard-setting body. This independent standard setting process created a wide range of standards, some of which were quite comprehensive and complex (rules-based standards), and others that were more general (principles-based standards).
- Given the variety and complexity of possible transactions and the estimates and assumptions a firm must make when presenting its performance, financial statements could potentially take any form if reporting standards did not exist. Thus, financial reporting standards are needed to provide consistency by narrowing the range of acceptable responses.
- The IASB and the US-based Financial Accounting Standards Board (FASB) have developed similar financial reporting frameworks which specify the overall objective and qualities of information to be provided.
- Reporting standards ensure that transactions are reported by firms similarly. However, standards must remain flexible and allow discretion to management to properly describe the economics of the firm.
- Financial reporting is not designed solely for valuation purposes; however, it does provide important inputs for valuation purposes.

## Standard-setting Bodies

- **International Accounting Standards Board**

- The IASB is the **independent** standard-setting body of the IFRS Foundation, an independent, not-for-profit private sector organization.
- The Trustees of the IFRS Foundation make a commitment to act in the public interest. The **principal objectives** of the IFRS Foundation are:
  - ✓ to develop and promote the use and adoption of a single set of high-quality financial standards;
  - ✓ to ensure the standards result in transparent, comparable, and decision-useful information while taking into account the needs of a range of sizes and types of entities in diverse economic settings;
  - ✓ and to promote the convergence of national accounting standards and IFRS.
  - ✓ The Trustees are responsible for ensuring that the IASB is and is perceived as independent.
- The members of the IASB are appointed by the Trustees on the basis of professional competence and practical experience and reflect a diversity of geographical and professional backgrounds.

## Standard-setting Bodies

- **International Accounting Standards Board**

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

- **Financial Accounting Standards Board**

- US GAAP, as established by the FASB, is officially recognized as authoritative by the SEC, however the SEC retains the authority to establish standards.

## Standard-setting Bodies

- **Standard-setting bodies**

- **Standard-setting bodies** are professional organizations of accountants and auditors that establish financial reporting standards. Regulatory authorities are government agencies that have the legal authority to enforce compliance with financial reporting standards.
- **Desirable attributes of standard-setters:**
  - ✓ **Observe** high professional standards
  - ✓ Have adequate authority, resources, and competencies to accomplish its mission
  - ✓ Have clear and consistent standard-setting processes
  - ✓ Guided by a well-articulated framework
  - ✓ Operate independently while still seeking input from stakeholders
  - ✓ Should not be compromised by special interests
  - ✓ Decisions are made in the public interest

## Regulatory Authorities

- **Regulatory authorities**

- Government agencies that have legal authority to enforce compliance with financial reporting standards.
  - ✓ The **Securities and Exchange Commission (SEC)** in the US
  - ✓ The **Financial Service Authority (FSA)** in the U.K.
- Most national authorities belong to the **International Organization of Securities Commissions (IOSCO)**. The three objectives of financial market regulation according to IOSCO are to
  - ✓ Protect investors;
  - ✓ Ensure the fairness, efficiency, and transparency of markets; and
  - ✓ Reduce systemic risk.
- Two bodies related to securities regulation established by the European Commission are the European Securities Committee (ESC) and the European Securities and Market Authority (ESMA).

## Regulatory Authorities

- **SEC filing requirements for publicly traded companies in the US**

- Securities Offerings Registration Statement:
  - ✓ New issuers as well as previously registered companies that are **issuing new securities** are required to file these statements.
  - ✓ Required information and the precise form vary depending upon the size and nature of the offering.
  - ✓ Typically, required information includes:
    - Disclosures about the securities being offered for sale;
    - The relationship of these new securities to the issuer's other capital securities;
    - The information typically provided in the annual filings;
    - **Recent audited financial statements**;
    - **Risk factors** involved in the business.

## Regulatory Authorities

- **SEC filing requirements for publicly traded companies in the US**

- The SEC has the responsibility of enforcing the Sarbanes-Oxley Act of 2002.
  - ✓ The act prohibits a company's external auditor **from providing certain additional paid services** to the company, to **avoid the conflict of interest** involved and to **promote auditor independence**.
  - ✓ The act requires a company's executive management to certify that the financial statements are **presented fairly** and to include a statement about **the effectiveness of the company's internal controls of financial reporting**.
  - ✓ Additionally, the external auditor must provide **a statement confirming** the effectiveness of the company's internal controls.

## Regulatory Authorities

- **SEC filing requirements for publicly traded companies in the US**

- Securities Offerings Registration Statement:
  - ✓ Registration statement filed **prior to the sale of new securities to the public**. The registration statement includes audited financial statements, risk assessment, underwriter identification, and the estimated amount and use of the offering proceeds.
- Forms 10-K, 20-F, and 40-F:
  - ✓ These are forms that companies are required to file **annually**.
  - ✓ Form 10-K is for US registrants, Form 40-F is for certain Canadian registrants, and Form 20-F is for all other non-US registrants.
  - ✓ These forms **require a comprehensive overview**, including information concerning a **company's business, financial disclosures, legal proceedings, and information related to management**.
  - ✓ The financial disclosures include a historical summary of financial data (usually 10 years), management's discussion and analysis (MD&A) of the company's financial condition and results of operations, and audited financial statements.

## Regulatory Authorities

- **SEC filing requirements for publicly traded companies in the US**
  - **Annual Report**—prepared to shareholders
    - ✓ This is not a requirement of the SEC.
    - ✓ The annual report is usually viewed as one of the **most significant opportunities for a company to present itself to shareholders** and other external parties; accordingly, it is often **a highly polished marketing document** with photographs, an opening letter from the chief executive officer, financial data, market segment information, research and development activities, and future corporate goals.
    - ✓ In contrast, the **Form 10-K is a more legal type of document** with minimal marketing emphasis.
    - ✓ Although the perspectives vary, there is considerable overlap between a company's annual report and its Form 10-K.

## Regulatory Authorities

- **SEC filing requirements for publicly traded companies in the US**
  - Proxy Statement
    - ✓ The SEC requires that shareholders of a company **receive a proxy statement prior to a shareholder meeting.**
    - ✓ A proxy is an authorization from the shareholder giving another party the right to cast its vote. Shareholder meetings are held **at least once a year**, but any **special meetings also require a proxy statement.**
    - ✓ Such information typically includes proposals that require a shareholder vote, details of security ownership by management and principal owners, biographical information on directors, and disclosure of executive compensation.
    - ✓ Proxy statement information is filed with the SEC as Form DEF-14A.

## Regulatory Authorities

- **SEC filing requirements for publicly traded companies in the US**
  - Corporate reports and press releases are written by management and are often viewed as public relations or sales materials.
  - Not all of the material is independently reviewed by outside auditors. Such information can often be found on the company's website.
  - Firms often provide **earnings guidance** before the financial statements are released. Once an earnings announcement is made, **a conference call** may be held whereby senior management is available to answer questions.

## Regulatory Authorities

- SEC filing requirements for publicly traded companies in the US

- Forms 10-Q

- ✓ These are forms that companies are required to submit for interim periods (quarterly for US companies on Form 10-Q, semiannually for many non-US companies on Form 6-K).
- ✓ The filing requires certain **financial information**, including unaudited financial statements and a MD&A for the interim period covered by the report. Additionally, if certain types of **non-recurring events**—such as the adoption of a significant accounting policy, commencement of significant litigation, or a material limitation on the rights of any holders of any class of registered securities—take place during the period covered by the report, these events must be included in the Form 10-Q report.

- Form 8-K

- ✓ In addition to filing annual and interim reports, SEC registrants must report **material corporate events** on a more current basis.
- ✓ Form 8-K (6-K for non-US registrants) is the “current report” companies must file with the SEC to announce such **major events** as acquisitions or disposals of corporate assets, changes in securities and trading markets, matters related to accountants and financial statements, corporate governance and management changes, and Regulation Fair disclosures (FD).
- ✓ FD provides that when an issuer discloses **material non-public information** to certain individuals or entities—generally, securities market professionals such as stock analysts or holders of the issuer’s securities who may trade on the basis of the information—the issuer must make **public disclosure** of that information.

## Regulatory Authorities

- SEC filing requirements for publicly traded companies in the US

- Forms 3, 4, 5 and 144

- ✓ Forms 3, 4 and 5 are required to report **beneficial ownership of securities**. These filings are required for any director or officer of a registered company as well as beneficial owners of greater than 10 percent of a class of registered equity securities.
- ✓ Form 3 is the initial statement, Form 4 reports changes, and Form 5 is the annual report.
- ✓ Form 144 is notice of the proposed sale of **restricted securities** or **securities held by an affiliate of the issuer**.
- ✓ These forms can be used to examine purchases and sales of securities by officers, directors, and other affiliates of the company, who collectively are regarded as **corporate insiders**.

- Form 11-K

- ✓ This is the annual report of employee stock purchase, savings, and similar plans.
- ✓ It might be of interest to analysts for companies with **significant employee benefit plans** because it contains more information than that disclosed in the company’s financial statements.

## Summary

### Standard-setting Bodies & Regulatory Authorities

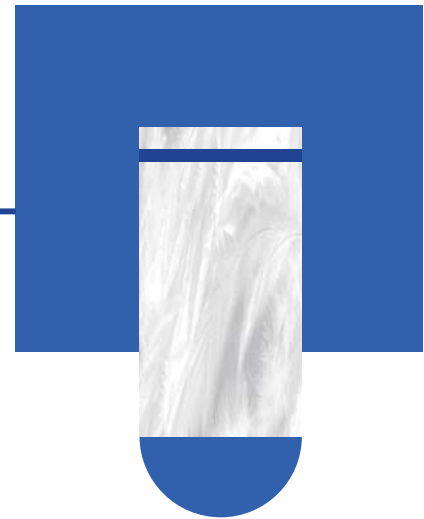
Standard-setting Bodies

Regulatory Authorities

SEC Filings Required

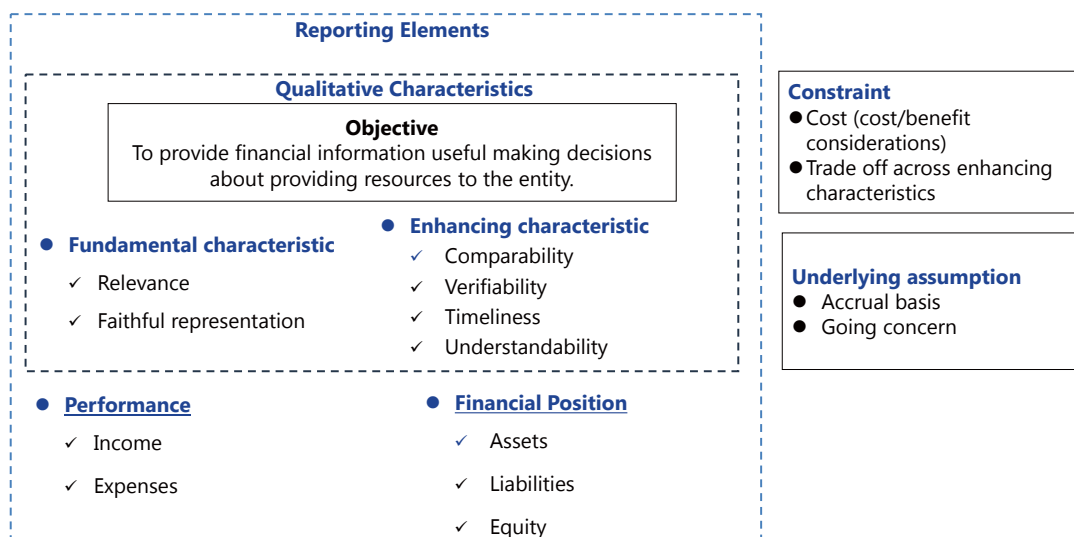
# IASB & FASB: Conceptual Framework

- ❑ IASB & FASB: Conceptual Framework
- ❑ General Features for Preparing F/S
- ❑ Summary of IFRS Required Disclosures
- ❑ Differences between IFRS and US GAAP



## — IASB & FASB: Conceptual Framework —

### ● IASB Conceptual Framework



## — IASB & FASB: Conceptual Framework —

- **Qualitative Characteristics: two fundamental characteristics**
  - **Relevance.** Information is relevant if it would potentially affect or make a difference in user's decisions. The information have **predictive and confirmatory value**. Relevant information helps users of financial information to evaluate past, present, and future events, or to confirm or correct their past evaluations in a decision-making context.
    - ✓ **Materiality:** If omission or misstatement of information could influence users' decisions. Materiality is considered in both nature and amount.
  - **Faithful representation.** Information that **is faithfully** representative is **complete** (all information necessary is depicted), **neutral** (without bias), and **free from error** (no errors of **commissions or omission** in the description of the economic phenomenon) and that an appropriate process to arrive at the reported information was selected and was adhered to without error.
    - ✓ Faithful representation **maximizes** the qualities of complete, neutral, and free from error to the extent possible.

## IASB & FASB: Conceptual Framework

### ● International Accounting Standards Board's conceptual framework

#### ○ Four characteristics that enhance relevance and faithful representation:

##### ✓ **Comparability.**

- Comparability allows users **"to identify and understand similarities and differences of items."** Information presented **in a consistent manner over time and across entities** enables users to make comparisons more easily than information with variations in how similar economic phenomena are represented.

##### ✓ **Verifiability.**

- Verifiability means that different knowledgeable and independent observers would agree that the information presented **faithfully represents** the economic phenomena it purports to represent.

##### ✓ **Timeliness.**

- Timely information is available to decision makers prior to their making a decision.

##### ✓ **Understandability.**

- Users with a basic knowledge of business and accounting and who make a reasonable effort to study the financial statements should be able to **readily understand** the information the statements present. Useful information should not be omitted just because it is complicated.

## IASB & FASB: Conceptual Framework

### ● Constraints on financial reports

#### ○ It is necessary to **make tradeoffs across** the enhancing characteristics.

- ✓ The application of the enhancing characteristics follows no set order of priority and each enhancing characteristic may take priority over the others.
- ✓ The aim is an appropriate balance among the enhancing characteristics.

#### ○ It is necessary to **balance between costs and benefits.**

- ✓ Benefits derived from information should exceed the costs of providing and using it.

#### ○ A limitation of financial reporting involves information that is not included.

- ✓ Financial statements, by necessity, but omit information that is **non-quantifiable**. e.g. work force, customer loyalty etc.

## IASB & FASB: Conceptual Framework

### **Required Financial Statements under IAS No.1**

- Statement of financial position (B/S)
- Statement of comprehensive income (Single statement or income statement + Statement of comprehensive income)
- Statement of changes in equity
- Statement of cash flows
- Notes, summarizing accounting policies and disclosing other items
- In certain cases, Statement of financial position from earliest comparative period

### **General Features**

- Fair presentation
- Going concern
- Accrual basis
- Materiality and aggregation
- No offsetting
- Frequency of reporting
- Comparative information
- Consistency of presentation

### **Structure and Content**

- Classified balance sheet
- Minimum specified information on face
- Minimum specified note disclosure
- Comparative information

## General Features for Preparing F/S

- General features for preparing financial statements
  - Fair presentation
    - ✓ Fair presentation requires the faithful representation of the effects of transactions, other events and conditions in accordance **with the definitions and recognition criteria** for assets, liabilities, income and expenses set out in the Framework.
  - Going concern basis
    - ✓ Financial statements are prepared on a going concern basis **unless** management either intends to liquidate the entity or to cease trading, or has no realistic alternative but to do so.
    - ✓ If not presented on a going concern basis, the fact and rationale should be disclosed.
  - Accrual basis of accounting
    - ✓ Financial statements (except for cash flow information) are to be prepared using the accrual basis of accounting.
  - Consistency
    - ✓ **The presentation and classification of items** in the financial statements are usually retained from one period to the next.

## General Features for Preparing F/S

- General features for preparing financial statements
  - Materiality and aggregation
    - ✓ Omissions or misstatements of items are material if they could, individually or collectively, **influence** the economic decisions that users make on the basis of the financial statements.
    - ✓ **Each material class of similar items** is presented **separately**.
    - ✓ Dissimilar items are presented separately unless they are immaterial.
  - No offsetting
    - ✓ Assets and liabilities, and income and expenses, are not offset **unless required or permitted by an IFRS**.
  - Frequency of reporting
    - ✓ Financial statements must be prepared **at least annually**.
  - Comparative information
    - ✓ Financial statements must include comparative information from the previous period.
    - ✓ **The comparative information of prior periods** is disclosed for all amounts reported in the financial statements, **unless an IFRS requires or permits otherwise**.

## General Features for Preparing F/S

- The structure and content of financial statements
  - Classified Statement of Financial Position (Balance Sheet)
    - ✓ Requires the balance sheet to distinguish between **current and non-current assets**, and between current and non-current liabilities unless a presentation based on liquidity provides more relevant and reliable information.
  - Minimum Information on the Face of the Financial Statements
    - ✓ **Specifies the minimum line item disclosures** on the face of, or in the notes to, the financial statements. For example, companies are specifically required to disclose the amount of their plant, property, and equipment as a line item on the face of the balance sheet.
  - Minimum Information in the Notes (or on the face of financial statements)
    - ✓ **Specifies disclosures** about information to be presented in the financial statements.
    - ✓ This information must be provided **in a systematic manner and cross-referenced** from the face of the financial statements to the notes.
  - Comparative Information
    - ✓ For all amounts reported in a financial statement, comparative information should be **provided for the previous period** unless another standard requires or permits otherwise. Such comparative information allows users to better understand reported amounts

## Summary of IFRS Required Disclosures

Summary of IFRS Required Disclosures in the Notes to the Financial Statements	
<b>Disclosure of Accounting Policies</b>	<ul style="list-style-type: none"> <li>• <b>Measurement bases</b> used in preparing financial statements</li> <li>• <b>Significant accounting policies</b> used</li> <li>• Judgments made in applying accounting policies that have <b>the most significant effect</b> on the amounts recognized in the financial statements</li> </ul>
<b>Sources of Estimation Uncertainty</b>	<ul style="list-style-type: none"> <li>• <b>Key assumptions</b> about the future and other key sources of estimation uncertainty that have a significant risk of causing material adjustment to the carrying amount of assets and liabilities within the next year</li> </ul>
<b>Other Disclosures</b>	<ul style="list-style-type: none"> <li>• Information about capital and about certain financial instruments <b>classified as equity</b></li> <li>• <b>Dividends not recognized as a distribution during the period</b>, including dividends declared before the financial statements were issued and any cumulative preference dividends</li> <li>• <b>Description of the entity</b>, including its domicile, legal form, country of incorporation, and registered office or business address</li> <li>• Nature of operations and principal activities</li> <li>• Name of parent and ultimate parent</li> </ul>

## Differences between IFRS and US GAAP

Differences between IFRS and US GAAP		
Basis for Comparison	US GAAP: Generally Accepted Accounting Principle	IFRS: International Financial Reporting Standard
<b>Developed by</b>	Financial Accounting Standard Board (FASB).	International Accounting Standard Board (IASB).
<b>Based on</b>	Rules	Principles
<b>Interest paid</b>	CFO	CFF or CFO
<b>Inventory valuation</b>	FIFO, LIFO and Weighted Average Method.	FIFO and Weighted Average Method.
<b>Development cost</b>	Treated as an expense	Capitalized, only if certain conditions are satisfied
<b>Reversal of Inventory</b>	Prohibited	Permissible, if specified conditions are met

## Summary

### IASB & FASB: Conceptual Framework

IASB & FASB: Conceptual Framework  
 General Features for Preparing F/S  
 Summary of IFRS Required Disclosures  
 Differences between IFRS and US GAAP

# Summary

## Module: Introduction to Financial Statement Analysis

- The Role of Financial Reporting and FSA
- Financial Statement Elements
- Measurement of Financial Elements
- The Resources Used for FSA
- Auditing and Financial Statement Analysis
- Accounting Equation and Accrual Accounting
- Standard-setting Bodies & Regulatory Authorities
- IASB & FASB: Conceptual Framework

# Module



## Analyzing Income Statements

- Income Statement Format and Components
- Accrual Accounting & Revenue Recognition
- Capitalizing or Expensing
- Basic EPS
- Diluted EPS
- Common-size Income Statement

### Income Statement Format and Components

- Income Statement Format and Components



## — Income Statement Format and Components —

- **Net income = revenues - ordinary expenses + other income - other expense + gains - losses**
- **Revenue** generally refers to the amount charged for **the delivery of goods or services in the ordinary activities of a business** (top line of the income statement).
  - ✓ Revenue is **reported after adjustments** (e.g., for cash or volume discounts, or for other reductions), and the term net revenue is sometimes used to specifically indicate that the revenue has been adjusted (e.g., for estimated returns).
- **Expenses** are the amounts incurred to generate revenue and include cost of goods sold, operating expenses, interest, and taxes.
  - ✓ Expenses are grouped together by their nature or function.
  - ✓ **By nature**
    - Presenting all **depreciation expense** from manufacturing and administration together in one line of the income statement.
  - ✓ **By function**
    - Combining all costs associated with manufacturing (raw materials, depreciation, labor, etc.) as **cost of goods sold**.

## — Income Statement Format and Components —

- **Net income = (revenues - ordinary expenses) + (other income - other expense) + (gains - losses)**
- **Gain or loss:** may or may not result from ordinary business activities. Gains and losses result in an increase (gains) or decrease (losses) of economic benefits.
  - ✓ E.g. sell surplus equipment used in manufacturing operation that is no longer needed. The difference between the sales price and book value is reported as a gain or loss on the income statement.
  - ✓ Summarizing, **net income** is equal to income (revenues + gains) minus expenses (including losses).
- **Noncontrolling interest.** If a firm has a controlling interest in a subsidiary, the pro rata share of the subsidiary's income not owned by the parent is reported in parent's income statement as the noncontrolling interest (also known as minority interest or minority owners' interest).
  - ✓ The noncontrolling interest is subtracted in arriving at net income because the parent is reporting all of the subsidiary's revenue and expense.
- Income is **increases in economic benefits** during the accounting period in the form of inflows or enhancements of assets or decreases of liabilities that result in increases in equity, other than those relating to contributions from equity participants. In IFRS, the term **"income" includes revenue and gains**.

## — Income Statement Format and Components —

- **Presentation Formats**
- A firm can present its income statement using a single-step or multi-step format.
  - ✓ In a **single-step statement**, all revenues are grouped together and all expenses **are grouped together**.
  - ✓ A **multi-step format includes gross profit**, which equals revenues minus cost of goods sold.
- **Gross profit is the amount that remains after the direct costs of producing a product or service are subtracted from revenue.**
- **Operating profit or operating income**
- **Subtracting operating expenses**, such as selling, general, and administrative expenses, from gross profit results in another subtotal known as **operating profit or operating income**.
- For nonfinancial firms, **operating profit** is profit **before financing costs, income taxes, and non-operating items are considered**. Subtracting interest expense and income taxes from operating profit results in the firm's net income, sometimes referred to as **"earnings" or the "bottom line"**.

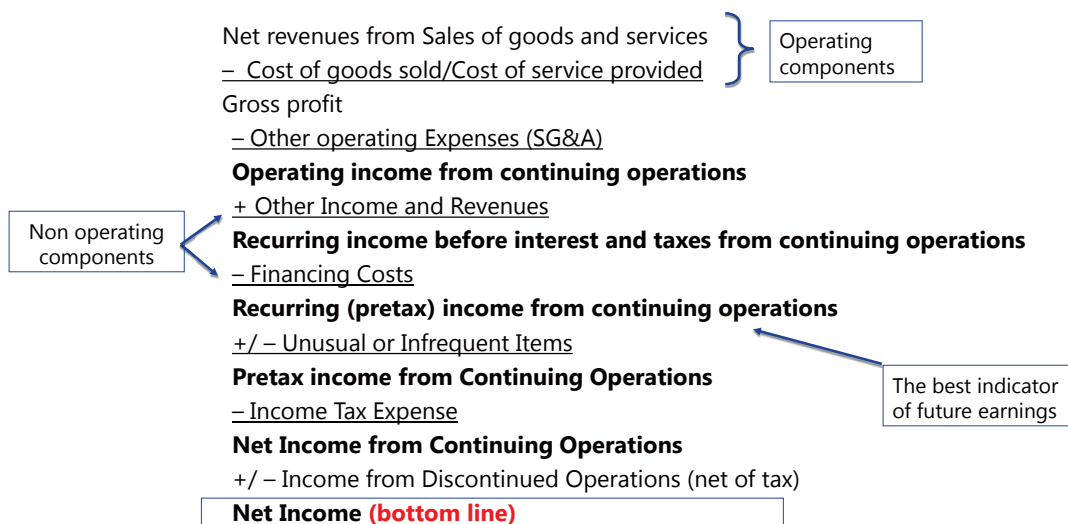
## — Income Statement Format and Components —

- Income statement can use a **single-step** or **multi-step** format.

Multi – step I/S	\$'000
<b>Revenue</b>	<b>4,000</b>
<b>Cost of goods sold</b>	<b>(3,000)</b>
Gross profit	1,000
<b>Other operating expenses</b>	<b>(500)</b>
Operating profit (EBIT)	500
<b>Interest expense</b>	<b>(100)</b>
Earning before tax (EBT)	400
<b>Tax expense</b>	<b>(120)</b>
Net income (NI)	280

Single – step I/S	\$'000
<b>Revenue</b>	<b>4,000</b>
<b>Cost of goods sold</b>	<b>(3,000)</b>
<b>Other operating expenses</b>	<b>(500)</b>
Operating profit (EBIT)	500
<b>Interest expense</b>	<b>(100)</b>
Earning before tax (EBT)	400
<b>Tax expense</b>	<b>(120)</b>
Net income (NI)	280

## — Income Statement Format and Components —



## — Income Statement Format and Components —

- Unusual or infrequent items (nonrecurring items)**
  - Reported "above the line" and presented on a pretax basis
    - ✓ G/L from the sale of assets or part of a business
    - ✓ Impairments, write-offs, write-downs, and restructuring costs.
- Discontinued operations (presented on net of tax)**
  - When a company disposes of or establishes a plan to dispose of one of its component operations and will have no further involvement in the operation, the income statement reports separately the effect of this disposal as a "discontinued" operation under both IFRS and US GAAP.
- Accounting changes (notes)**
  - Change in accounting principle (might be retrospective);
  - Change in accounting estimate (prospective and not a below line item).
  - Error (retrospective)

## Example

### Net Revenue

- Fairplay had the following information related to the sale of its products during 2006, which was its first year of business:

Revenue	\$1,000
Returns of goods sold	\$100
Cash collected	\$800
Cost of goods sold	\$700

- Under the accrual basis of accounting, how much net revenue would be reported on Fairplay's 2006 income statement?
  - A. \$200.
  - B. \$800.
  - C. \$900.
- Solution: C.
  - Net revenue is revenue for goods sold during the period less any returns and allowances, or  $\$1,000 - \$100 = \$900$ .

## Example

### Gross Profit

- Denali Limited, a manufacturing company, had the following income statement information:

Revenue	\$4,000
Cost of goods sold	\$3,000
Other operating expenses	\$500
Interest expense	\$100
Tax expense	\$120

- Denali's gross profit is equal to:
  - A. \$280.
  - B. \$500.
  - C. \$1,000.
- Solution: C.
  - Gross margin is revenue minus cost of goods sold. A is net income and B is operating income.

## Summary

### Income Statement Format and Components

Net Revenue

Expenses: By Nature & By Function

Single-step & Multi-step

Unusual or infrequent items, Discontinued operations, Accounting changes

# Accrual Accounting & Revenue Recognition

- ❑ Revenue Recognition
- ❑ Expense Recognition
- ❑ Other Issues



## Revenue Recognition

- **Accounting Standards for Revenue Recognition**
  - The core principle of the converged standard is 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 an exchange for those goods or services.”
  - To achieve the core principle, the standard describes the application of five steps in recognizing revenue.
    - ✓ Identify **the contract(s)** with a customer;
    - ✓ Identify the separate or distinct **performance obligations** in the contract;
    - ✓ Determine **the transaction price**;
    - ✓ **Allocate the transaction price** to the performance obligations in the contract;
    - ✓ **Recognize revenue** when (or as) the entity satisfies a performance obligation.

## Revenue Recognition

- **Accounting Standards for Revenue Recognition**
  - A contract is an agreement and commitment, with commercial substance, between the contracting parties. It establishes each party's obligations and rights, including payment terms. In addition, a contract exists **only if collectability is probable.**
  - Each standard uses the same wording, but the threshold for probable collectability differs.
    - ✓ Under IFRS, probable means more likely than not,
    - ✓ and under US GAAP it means likely to occur.
    - ✓ As a result, economically similar contracts may be treated differently under IFRS and US GAAP.
  - Revenue should only be recognized when it is highly probable that it will not be subsequently reversed.
    - ✓ This may result in the recording of a minimal amount of revenue upon sale when an estimate of total revenue is not reliable.
    - ✓ The balance sheet will be required to reflect the entire refund obligation as a liability and will include an asset for the “right to returned goods” based on the carrying amount of inventory less costs of recovery.
  - When revenue is recognized, **a contract asset** is presented on the balance sheet.
    - ✓ It is only at the point when all performance obligations have been met **except for payment** that a receivable appears on the seller's balance sheet.
  - If consideration is received in advance of transferring good(s) or service(s), the seller presents **a contract liability.**

## Revenue Recognition

### ● Accounting Standards for Revenue Recognition

- The **performance obligations** within a contract represent promises to transfer distinct good(s) or service(s).
  - ✓ A good or service is **distinct** if the customer can benefit from it on its own or in combination with readily available resources and if the promise to transfer it can be separated from other promises in the contract.
  - ✓ Each identified performance obligation is accounted for **separately**.
- The **transaction price** is what the seller estimates will be received in exchange for transferring the good(s) or service(s) identified in the contract. The transaction price is then allocated to each identified performance obligation. Revenue is recognized when a performance obligation is fulfilled.
- The amount recognized reflects **expectations about collectability** and (if applicable) an allocation to multiple obligations within the same contract.
- Revenue is recognized when **the obligation-satisfying transfer** is made.

## Revenue Recognition

### ● For long-term contracts

- Revenue is recognized based on a firm's progress toward completing a performance obligation.
  - ✓ **Progress toward completion** can be measured from the input side (e.g., using the percentage of completion costs incurred as of the statement date).
  - ✓ Progress can also be measured from the output side, using engineering milestones or percentage of the total output delivered to date.
- A final notable change to the standards for accounting for a long-term contract is that the costs to secure the contract, **such as sales commissions, must be capitalized**; that is, they are put on the balance sheet as an asset.
  - ✓ The effect of capitalizing these expenses is to decrease reported expenses on the income statement, increasing reported profitability during the contract period.
- There are a significant number of required disclosures under the converged standards. They include:
  - ✓ Contracts with customers **by category**.
  - ✓ Assets and liabilities related to contracts, **including balances and changes**.
  - ✓ **Outstanding performance obligations** and the transaction prices allocated to them.
  - ✓ **Management judgments** used to determine the amount and timing of revenue recognition, including any changes to those judgments.

## Revenue Recognition

- In order to recognize the revenue, factors to consider when assessing **whether the customer has obtained control of an asset** at a point in time
  - Entity has a present right to payment;
  - Customer has legal title;
  - Customer has physical possession;
  - Customer has the significant risks and rewards of ownership;
  - Customer has accepted the asset.

## Example

### Revenue Recognition

- Builder Co. enters into a contract with Customer Co. to construct a commercial building. Builder Co. identifies various goods and services to be provided, such as pre-construction engineering, construction of the building's individual components, plumbing, electrical wiring, and interior finishes.
- With respect to "Identifying the Performance Obligation," should Builder Co. treat each specific item as a separate performance obligation to which revenue should be allocated?
- Solution
  - The standard provides two criteria, which must be met, to determine if a good or service is **distinct** for purposes of identifying performance obligations.
    - ✓ First, the customer can benefit from the good or service either on its own or together with other readily available resources.
    - ✓ Second, the seller's "promise to transfer the good or service to the customer is **separately identifiable** from other promises in the contract."
  - In this example, The seller will integrate all the goods and services into a **combined output** and each specific item should not be treated as a distinct good or service but **accounted for together as a single performance obligation**.

## Example

### Revenue Recognition

- Builder Co.'s contract with Customer Co. to construct the commercial building specifies consideration of \$1000. Builder Co.'s expected total costs are \$700. The Builder incurs \$420 in costs in the first year.
- Assuming that costs incurred provide an appropriate measure of **progress toward completing the contract**, how much revenue should Builder Co. recognize for the first year?
- Solution
  - The standard states that for performance obligations satisfied over time (e.g., where there is a long-term contract), revenue is recognized over time by measuring **progress toward satisfying the obligation**.
  - In this case, the Builder has incurred 60% of the total expected costs (\$420/\$700) and will thus recognize \$600 ( $60\% \times \$1000$ ) in revenue for the first year.
  - Instead, the standard refers to performance obligations satisfied over time and requires that progress toward complete satisfaction of the performance obligation be measured
    - ✓ **based on input method** such as the one illustrated here (recognizing revenue based on the proportion of total costs that have been incurred in the period)
    - ✓ or **an output method** (recognizing revenue based on units produced or milestones achieved).

## Example

### Revenue Recognition

- Assume that Builder Co.'s contract with Customer Co. to construct the commercial building specifies consideration of \$1000 **plus a bonus of \$200** if the building is completed within 2 years.
  - Builder Co. has **only limited experience** with similar types of contracts and knows that many factors outside its control (e.g., weather, regulatory requirements) could cause delay.
- Builder Co.'s expected total costs are \$700. The Builder incurs \$420 in costs in the first year.
- Assuming that costs incurred provide an appropriate measure of progress toward completing the contract, how much revenue should Builder Co. recognize for the first year?
- Solution
  - The standard addresses so-called "**variable consideration**" as part of determining the transaction price.
  - A company is only allowed to recognize variable consideration if it can conclude that it will not have to reverse the cumulative revenue in the future.
  - In this case, Builder Co. does not recognize any of the bonus in year one because it cannot reach **the non-reversible conclusion** given its limited experience with similar contracts and potential delays from factors outside its control.

## Example

### Revenue Recognition

- Assume that Builder Co.'s contract with Customer Co. to construct the commercial building specifies consideration of \$1000 **plus a bonus of \$200** if the building is completed within 2 years.
  - Builder Co. **has only limited experience** with similar types of contracts and knows that **many factors outside its control** (e.g., weather, regulatory requirements) could cause delay.
- Builder Co.'s expected total costs are \$700. The Builder incurs \$420 in costs in the first year.
- In the beginning of year two, Builder Co. and Customer Co. agree to **change the building floor plan** and **modify the contract**.
  - As a result the consideration will increase by \$150, and the allowable time for achieving the bonus is extended by 6 months. Builder expects its costs will increase by \$120.
  - Also, given the additional 6 months to earn the completion bonus, Builder concludes that it now meets the criteria for including the \$200 bonus in revenue.
- How should Builder account for this change in the contract?

## Example

### Revenue Recognition

- Solution
  - The converged standard provides guidance on whether a change in a contract is **a new contract or a modification of an existing contract**.
    - ✓ To be considered a new contract, the change would need to involve goods and services that are **distinct** from the goods and services already transferred.
  - In this case, the change does not meet the criteria of a new contract and is therefore considered **a modification of the existing contract**, which requires the company to reflect the impact **on a cumulative catch-up basis**.
  - Therefore, the company must update its transaction price and measure of progress.
    - ✓ Total revenue on the transaction (transaction price) = \$1000 original + the \$150 new consideration + \$200 for the completion bonus = \$1350.
    - ✓ Builder Co.'s progress toward completion =  $\frac{\$420 \text{ costs incurred}}{\text{total expected costs of } \$820} = 51.2\%$ .
    - ✓ Based on the changes in the contract, the amount revenue to be recognized =  $51.2\% \times \$1350 = \$691.2$ .
    - ✓ The amount of additional revenue to be recognized =  $\$691.2 - \$600 \text{ already recognized} = \$91.2$ , the additional \$91.2 of revenue would be recognized as a **"cumulative catch-up adjustment"** on the date of the contract modification.

### Revenue Recognition

- **Gross revenue reporting**
  - **Gross amount** of sales proceeds received from their customers.
- **Net revenue reporting**
  - **Net difference** between sales proceeds and their cost.
- **Under US GAAP, to report gross revenue, the firm must:**
  - Be the primary obligor of the contract;
  - Independently choose its supplier;
  - Tolerate risks involved, including inventory risk and credit risk;
  - Free to determine the price.

## Example

### Revenue Recognition

- Flyalot has agreements with several major airlines to obtain airline tickets at reduced rates.
- The company pays only for tickets it sells to customers. In the most recent period, Flyalot sold airline tickets to customers over the internet for a total of \$1.1 million. The cost of these tickets to Flyalot was \$1 million. The company's direct selling costs were \$2,000.
- Once the customers receive their ticket, the airline is responsible for providing all services associated with the customers' flights. Demonstrate the reporting of revenues under gross reporting and net reporting.

units: K

<b>Solution:</b>	Gross Reporting	Net Reporting
Revenues	\$1,100	\$100
Cost of sales	1,002	2
Gross margin	\$98	\$98

## Example

### Revenue Recognition

- Assume a Company operates a website that enables customers to purchase goods from various suppliers.
  - The customers pay the Company in advance, and orders are nonrefundable.
  - The suppliers deliver the goods directly to the customer, and the Company receives a 10% commission.
- Should the Company report Total Revenues equal to 100% of the sales amount (gross) or Total Revenues equal to 10% of the sales amount (net)?
- Solution
  - Revenues are reported gross if the Company is acting as a Principal and net if the Company is acting as an Agent.
  - In this example, the Company is **an Agent** because it isn't primarily responsible for fulfilling the contract, doesn't take any inventory risk or credit risk, doesn't have discretion in setting the price, and receives compensation in the form of a commission.
  - Because the Company is acting as an Agent, it should report **only the amount of commission as its revenue**.

### Expense Recognition

- **Expense recognition: general principles**
  - Expenses are **deducted against revenue** to arrive at a company's net profit or loss.
  - Expense decreases in economic benefits during the accounting period in the form of outflows or depletions of assets or incurrences of liabilities that result in decreases in equity, other than those relating to distributions to equity participants.
  - Expenses encompasses losses as well as those expenses that arise **in the course of the ordinary activities** of the enterprise.
    - ✓ Expenses that arise in the course of **the ordinary activities** of the enterprise include, for example, cost of sales, wages and depreciation.
      - They usually take the form of **an outflow or depletion of assets** such as cash and cash equivalents, inventory, property, plant and equipment.
    - ✓ **Losses** represent decreases in economic benefits and as such they are **no different in nature** from other expenses.
      - Losses include, for example, those resulting from disasters such as fire and flood, as well as those arising on the disposal of non-current assets.

## Expense Recognition

### ● Expense recognition: general principles

- In general, a company recognizes expenses in the period that it consumes (i.e., uses up) the economic benefits associated with the expenditure, or loses some previously recognized economic benefit.
- A general principle of expense recognition is the **matching principle** (matching concept or matching of cost with revenues under IFRS).
- Under matching, a company recognizes some expenses (e.g., cost of goods sold) when associated revenues are recognized and thus, expenses and revenues are matched.
  - ✓ **Associated revenues and expenses** are those that result directly and jointly from the same transactions or events.
- **Period costs**, expenditures **that less directly match revenues**, are reflected in the period when a company makes the expenditure or incurs the liability to pay.
  - ✓ Administrative expenses are an example of period costs.
- Other expenditures **that also less directly match revenues** relate **more directly to future expected benefits**; in this case, the expenditures are allocated systematically with the passage of time.
  - ✓ An example is depreciation expense.

## Expense Recognition

### ● Issues in expense recognition

- Doubtful Accounts
  - ✓ When a company sells its products or services **on credit**, it is likely that some customers will ultimately default on their obligations (i.e., fail to pay). At the time of the sale, it is not known which customer will default.
  - ✓ One possible approach to recognizing credit losses on customer receivables would be for the company to wait **until such time as a customer defaulted** and only then recognize the loss (**direct write-off method**).
    - Such an approach would usually not be consistent with generally accepted accounting principles.
  - ✓ Under the matching principle, at the time revenue is recognized on a sale, a company is required to record **an estimate of how much of the revenue will ultimately be uncollectible.**
    - Companies make such estimates based on previous experience with uncollectible accounts.
    - Such estimates may be expressed as **a proportion of the overall amount of sales, the overall amount of receivables, or the amount of receivables overdue by a specific amount of time.**
    - The company records its estimate of **uncollectible amounts as an expense** on the income statement, not as a direct reduction of revenues.

## Expense Recognition

### ● Issues in expense recognition

- Warranties
  - ✓ At times, companies offer **warranties** on the products they sell.
    - If the product proves deficient in some respect that is covered under the terms of the warranty, the company will incur an expense to repair or replace the product.
    - At the time of sale, the company does not know the amount of future expenses it will incur in connection with its warranties.
  - ✓ One possible approach would be for a company **to wait until actual expenses** are incurred under the warranty and to reflect the expense at that time.
    - However, this would not result in a matching of the expense with the associated revenue.
  - ✓ **Under the matching principle**, a company is **required to estimate** the amount of future expenses resulting from its warranties, to recognize an estimated warranty expense in the period of the sale, and to update the expense as indicated by experience over the life of the warranty.

## Expense Recognition

### ● Implications for financial analysts: expense recognition

- A company's choice of expense recognition can be characterized by **its relative conservatism**.
  - ✓ A company's **estimates** for doubtful accounts and/or for warranty expenses can affect its reported net income.
  - ✓ A company's **choice** of depreciation or amortization method, estimates of assets' useful lives, and estimates of assets' residual values can affect reported net income.
  - ✓ In addition, many items of expense require the company to make estimates that can significantly affect net income.
- A policy that results in **recognition of expenses later** rather than sooner is considered **less conservative**.
- Analysis of a company's financial statements, and particularly comparison of one company's financial statements with those of another, requires an understanding of **differences in these estimates and their potential impact**.
- Analysts should also compare a firm's estimates **to those of other firms within the firm's industry**.
  - ✓ If a firm's warranty expense is significantly less than that of a peer firm, is the lower warranty expense a result of higher quality products, or is the firm's expense recognition more aggressive than that of the peer firm?
- Firms disclose **their accounting policies and significant estimates** in the financial statement footnotes and in the management discussion and analysis (MD&A) section of the annual report.

## Other Issues

### ● Accounting changes

- Accounting changes include changes in **accounting policies, changes in accounting estimates, and prior-period adjustments**. Such changes may require either retrospective application or prospective application.
- With **retrospective application**, any prior-period financial statements presented in a firm's current financial statements must be restated, applying the new policy to those statements as well as future statements. Retrospective application enhances the comparability of the financial statements over time.
- With **prospective application**, prior statements are not restated, and the new policies are applied only to future financial statements.
- Standard setting bodies, at times, issue a change in accounting policy. Sometimes a firm may change which accounting policy it applies, for example, by changing its inventory costing method or capitalizing rather than expensing specific purchases.
  - ✓ **Unless it is impractical**, changes in accounting policies require retrospective application.
- In the recent change to revenue recognition standards, firms were given the option of **modified retrospective application**.
  - ✓ This application does not require restatement of prior-period statements; however, beginning values of affected accounts are adjusted for the cumulative effects of the change.

## Other Issues

### ● Accounting estimate

- Generally, a change in accounting estimate is the result of a change in management's judgment, usually due to new information.
  - ✓ For example, management may change the estimated useful life of an asset because new information indicates the asset has a longer or shorter life than originally expected. **Changes in accounting estimates are applied prospectively** and do not require the restatement of prior financial statements.
- Analytical implications: Accounting estimate changes typically do not affect cash flow. An analyst should review changes in accounting estimates to determine their impact on future operating results.

### ● A correction of an accounting error

- Sometimes a change from an incorrect accounting method to one that is acceptable under GAAP or IFRS is required.
  - ✓ A correction of an accounting error made in previous financial statements is **reported as a prior-period adjustment** and **requires retrospective application**. Prior-period results are restated. Disclosure of the nature of any significant prior-period adjustment and its effect on net income is also required.
- Analytical implications: Prior-period adjustments usually involve errors or new accounting standards and do not typically affect cash flow. Analysts should review adjustments carefully because errors may indicate **weaknesses in the firm's internal controls**.

## Other Issues

### ● Non-operating items

- Non-operating items are typically **reported separately** from operating income because they are material and/or relevant to the understanding of the entity's financial performance.
- Under both IFRS and US GAAP, the income statement reports separately the effect of the disposal of a component operation as a "discontinued" operation.
  - ✓ Under IFRS, there is no definition of operating activities, and companies that choose to report operating income or the results of operating activities should ensure that these represent activities **that are normally regarded as operating**.
  - ✓ Under US GAAP, operating activities generally involve producing and delivering goods and providing services and include all transactions and other events **that are not defined as investing or financing activities**.
- For example, if a non-financial service company invests in equity or debt securities issued by another company, any interest, dividends, or profits from sales of these securities will be shown as non-operating income.
  - ✓ In general, for non-financial services companies, non-operating income that is disclosed separately on the income statement (or in the notes) includes amounts earned through investing activities.

## Other Issues

### ● Non-operating items (cont.)

- ✓ Among non-operating items on the income statement (or accompanying notes), non-financial service companies **also disclose the interest expense on their debt securities**, including amortisation of any discount or premium.
- ✓ The amount of interest expense is related to the amount of a company's borrowings and is generally described **in the notes to the financial statements**.
- For financial service companies, interest income and expense are likely components of operating activities.
  - ✓ **Note** that the characterization of interest and dividends as non-operating items on the income statement is not necessarily consistent with the classification on the statement of cash flows.
  - ✓ Specifically, under IFRS, interest and dividends received can be shown either as operating or as investing on the statement of cash flows, while under US GAAP interest and dividends received are shown as operating cash flows.
  - ✓ Under IFRS, interest and dividends paid can be shown either as operating or as financing on the statement of cash flows, while under US GAAP, interest paid is shown as operating and dividends paid are shown as financing.

## Summary

### Accrual Accounting & Revenue Recognition

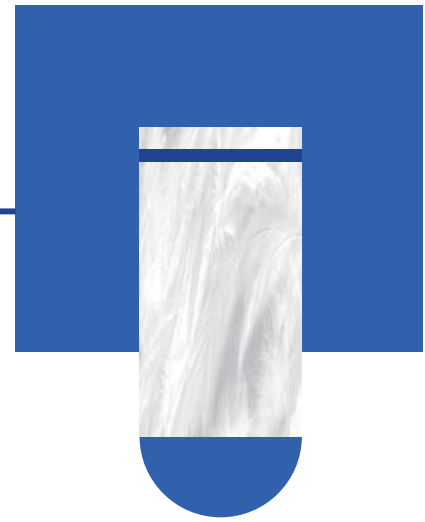
Revenue Recognition

Expense Recognition

Other Issues

# Capitalizing or Expensing

- ❑ Capitalizing or Expensing
- ❑ Capitalizing Interest



## Capitalizing or Expensing

Spending Expenditures: Future Economic Benefit Is Probable?	Yes	Recognize assets in the balance sheet , while the effects will flow to the income statement over the asset's useful life	Inventory		Go to I/S when the inventory is sold Cost of goods sold
			Non current assets	Tangible assets	Depreciation expense over useful life
				Intangible assets	Amortization expense over useful life
	No	Recognize Expenses in the income statement when incurred	e.g. •selling expense •general expense •administrative expense		<div> <div></div> <div>Affect NI thus R/E</div> </div>

## Capitalizing or Expensing

- **How to treat an expenditure depending on the nature of the expenditure**
  - Capitalize as an asset on the **B/S**;
  - or
  - Recognize as an expenses in the **I/S**;
- **Remember: The asset you capitalized today will be expensed in the future.**

Impact on the Cash flow statement:

- **Capitalized expenditures** are classified as **CFI**
- **Expensed expenditures** are classified as **CFO**

## Capitalizing or Expensing

F/S	Items	Capitalizing	Expensing
B/S & ratios	Total assets	Higher	Reverse
	Shareholders' equity	Higher	
	Leverage ratios (debt/equity & debt/assets)	Lower	
I/S & ratios	<b>Income volatility</b>	<b>Lower</b>	
	Net income – first year ( ROA & ROE )	Higher	
	Net income – later years ( ROA & ROE )	Lower	
CFS	<b>Total cash flow</b>	<b>Same</b>	<b>Same</b>
	Cash flow from operating	Higher	Reverse
	Cash flow from investing	Lower	

## Capitalizing or Expensing

### Capitalization

- When a firm constructs an asset for its own use or, in limited circumstances, for resale, the interest that accrues **during the construction period** is capitalized as a part of the asset's cost.
  - ✓ The reasons for capitalizing interest are to accurately measure the cost of the asset and to better match the cost with the revenues generated by the constructed asset.
  - ✓ The treatment of construction interest is similar under US GAAP and IFRS.
- Capitalized interest is not reported in the income statement as interest expense. Once construction interest is capitalized, the interest cost is allocated to the income statement **through depreciation expense (if the asset is held for use) , or COGS (if the asset is held for sale)**
- Generally, capitalized interest is reported in the cash flow statement as an **outflow from investing activities**, while interest expense is reported as an **outflow from operating activities under U. S. GAAP**. Note, however, that interest expense can be an operating, financing, or investing cash flow under IFRS.
- For analysis:
  - ✓ **Both capitalized and expensed interest** should be used when calculating interest coverage ratios.
  - ✓ **Any depreciation of capitalized interest** on the income statement should be added back when calculating income measures.

## Capitalizing Interest

### Capitalizing Interest

- When a firm constructs an asset for its own use or resale, the interest that accrues during the construction period must be capitalized as a part of the asset's cost (depreciation or COGS).
  - ✓ IFRS: net interest expense = interest expense – interest income from the special borrowing
  - ✓ US GAAP: no reduction of interest received

Items Impacts	Interest expense	Income statement impacts	Net Income	Interest coverage ratio	CFI	CFO
First Year	N/A	No	Higher	Higher? the same?	Understate	Overstate
Later Years		Depreciation expense	Lower	Lower		

- Implications for analysis
  - ✓ Treat as normal interest
  - ✓ i.e. interest expense charged to I/S directly, and classified as part of CFO

# Summary

## Capitalizing or Expensing

Capitalizing or Expensing

Capitalizing Interest

## Basic EPS

- ❑ Earnings Per Share (EPS)
- ❑ Calculation of Basic EPS

## Earnings per share (EPS)

- **Earnings per share (EPS)**
  - EPS is one of the most commonly used corporate profitability performance measures for **publicly-traded firms** (nonpublic companies are not required to report EPS data).
  - EPS is reported only for shares of common stock (also known as ordinary stock).
    - ✓ Basic EPS
    - ✓ Diluted EPS due to the securities of the potential dilution:
      - ❑ Convertible debt
      - ❑ Convertible preferred stock
      - ❑ Stock option, or Warrants

## Calculation of Basic EPS

- The **basic EPS** calculation does not consider the effects of any **dilutive securities** in the computation of EPS.
  - $$\text{Basic EPS} = \frac{\text{NI} - \text{dividend}_{\text{preferred stock}}}{\text{weighted average number of common shares outstanding}} = \frac{\text{NI} - \text{dividend}_{\text{preferred stock}}}{\text{WACSO}}$$
- **Weighted average number of common share outstanding**
  - New issue, repurchase is weighted by time (days or months);
  - Stock dividend & stock split
    - ✓ A stock dividend is the distribution of additional shares to each shareholder in an amount **proportional to their current number of shares**.
      - If a 10% stock dividend is paid, the holder of 100 shares of stock would receive 10 additional shares.
    - ✓ A stock split refers to the division of each "old" share into a specific number of "new" (post-split) shares.
      - The holder of 100 shares will have 200 shares after a 2-for-1 split or 150 shares after a 3-for-2 split.
    - ✓ **Stock dividend/split is not weighted by time**, instead it should adjust the number of common share which exist before the stock dividend or split.

### Example

#### Calculation of Basic EPS

- Johnson company has net income of \$10,000 and paid \$1,000 cash dividend to its preferred shareholders and \$1,750 cash dividend to its common shareholders. At the beginning of the year, there were 10,000 shares of common stock outstanding. 2,000 new shares were issued on July 1. what is Johnson's basic EPS?
- Solution:
  - $\text{WACSO} = 10,000 \times (12/12) + 2,000 \times (6/12) = 11,000$
  - $\text{BEPS} = (\$10,000 - \$1,000) / 11,000 = \$0.82$

## Summary

### Basic EPS

Earnings Per Share (EPS)  
Calculation of Basic EPS

## Diluted EPS

- ❑ Dilutive securities & Antidilutive securities
- ❑ Calculation of Diluted EPS: If-converted Method & Treasury Stock Method



## Diluted EPS

- **DEPS**

- Diluted EPS = 
$$\frac{\text{Adjusted income available for common shares}}{\text{WACSO \& potential common shares outstanding}}$$
  

$$= \frac{[\text{NI} - \text{Div}_{\text{preferred shares}}] + [\text{Div}_{\text{convertible preferred shares}}] + [\text{Interest}_{\text{convertible debt}}](1-t)}{\text{WACSO} + [\text{Shares}_{\text{conversion of convertible preferred shares}}] + [\text{Shares}_{\text{conversion of convertible debt}}] + [\text{Shares}_{\text{Issuable from stock option}}]}$$

- **WACSO**: weighted average common shares outstanding.
- **Dilutive securities & Antidilutive securities**
  - **Dilutive securities** are stock options, warrants, convertible debt, or convertible preferred stock that would **decrease** EPS if exercised or converted to common stock.
  - **Antidilutive securities** are stock options, warrants, convertible debt, or convertible preferred stock that would **increase** EPS if exercised or converted to common stock.
- **In the case of diluted EPS, if there are dilutive securities, then the numerator must be adjusted as follows:**
  - If convertible preferred stock is dilutive (meaning EPS will fall if it were converted to common stock), the convertible preferred dividends must be added to earnings available to common shareholders.
  - If convertible bonds are dilutive, then the bonds' after-tax interest expense is not considered an interest expense for diluted EPS. Hence, interest expense multiplied by (1 - the tax rate) must **be added back to the numerator**.

## Diluted EPS

- **Diluted EPS**

- Diluted EPS is calculated using **the if-converted method for convertible securities** and **the treasury stock method for options**.
- When the firm has dilutive securities outstanding
  - ✓ The denominator is the basic EPS denominator **adjusted for the equivalent number of common shares** that would be created by the conversion of all dilutive securities outstanding (convertible bonds, convertible preferred shares, warrants, and options), with each one considered separately to determine if it is dilutive.
- If a dilutive security was issued during the year
  - ✓ The increase in the weighted average number of shares for diluted EPS is based on only the portion of the year the dilutive security was outstanding.
- Dilutive stock options or warrants increase the number of common shares outstanding in the denominator for diluted EPS. There is no adjustment to the numerator.

## Example

### Calculation of Diluted EPS

- During 2006, Golden Future reported net income of \$115,600, and had 200,000 shares of common and 1,000 shares of preferred stock outstanding for the entire year. GF's 10%, \$100 par value preferred-stock are each convertible to 40 shares of common stock. The tax rate is 40%.
- Compute diluted EPS
- Solution:
  - $BEPS = (115.600 - 100 \times 1 \times 10\%) / 200 = 0.528 \text{ \$/share}$
  - Adjusted income available for common shares = 115.600 (\$K)
  - Weighted average common shares and potential shares =  $200 + 1 \times 40 = 240 \text{ (\$K)}$
  - $DEPS = 115.600 / 240 = 0.482 \text{ \$/share}$

## Example

### Calculation of Diluted EPS

- During 2006 GF corp. reported net income of \$115,600 and had 200,000 shares of common stock outstanding for the entire year. GF also had 1,000 shares of 10%, par \$100 preferred stock outstanding during 2006. During 2005, GF issued 600, \$1,000 par, 7% bonds for \$600,000 (issued at par). Each of these bonds is convertible to 100 shares of common stock. The tax rate is 40%.
- Compute the diluted EPS.
- Solution:
  - Adjusted income available for common shares  
 $= \$115.6 - \text{preferred div } \$10 + \text{interest saving } \$600 \times 7\% \times (1-40\%) = \$130.800$
  - Weighted average common shares and potential shares =  $200 + 0.600 \times 100 = 260$
  - $DEPS = \$130.8 / 260 \text{ share} = 0.503 \text{ \$/share}$

### Diluted EPS: Options or Warrants

- **Diluted EPS: Options or Warrants**
  - If the options or warrants are dilutive, use the treasury stock method to calculate the number of shares used in the denominator.
    - ✓ **The treasury stock method** assumes that the funds received by the company from the exercise of the options would be used to hypothetically purchase shares of the company's common stock in the market at the average market price.
    - ✓ The net increase in the number of shares outstanding (the adjustment to the denominator) is the number of shares created by exercising the options less the number of shares hypothetically repurchased with the proceeds of exercise.
      - $\text{Net increase} = N - NX / \text{AMP} = N \times (1 - X / \text{AMP})$ , only when  $X < \text{AMP}$
      - N is the number of shares from options, X is the striking price of options, AMP is the average market price during the period of outstanding options.

## Example

### Calculation of Diluted EPS

- GF has 5000 shares outstanding all year. GF had 2000 outstanding warrants all year, convertible into one share each at \$20 per share. The year-end price of GF stock was \$40, and the average stock price was \$30. If GF had net income of \$10,000 of the year, what is GF basic and diluted EPS?
- Solution:
  - BEPS =  $\$10,000 / 5,000 = 10/5 = \$2.00$
  - Adjusted income available for common shares = \$10,000
  - Additional shares from warrants =  $2000 \times (1 - 20/30) = 667$
  - Weighted average common shares and potential shares =  $5,000 + 667 = 5,667$
  - DEPS =  $\$10,000 / 5,667 = \$1.76$  per share

Shares outstanding	5,000
Warrants conversion	2,000
Treasury shares purchased	(1,333)
Denominator	5,667

## Example

### Calculation of Diluted EPS

- An analyst gathered the following information about a company:
  - 100,000 common shares outstanding from the beginning of the year.
  - Earnings of 150,000
  - 1,000 shares 7%, \$1,000 par bonds convertible into 25 shares each, outstanding as of the beginning of the year.
  - Tax rate is 40%
- The company's DEPS is closest to:
  - A. 1.22
  - B. 1.50
  - C. 1.54

## Example

### Calculation of Diluted EPS

- Solution: B.
  - BEPS =  $150 / 100 = 1.5$
  - If the convertible bonds are converted
    - ✓  $DEPS = \frac{150 + 1 \times 1,000 \times 7\% \times (1 - 40\%)}{100 + 1 \times 25} = 1.536$
    - ✓  $1.536 > 1.5$ , the convertible bonds are anti-dilutive securities, and DEPS is 1.5.

## Example

### Calculation of Diluted EPS

- An analyst gathered the following information about a company
  - 100,000 common shares outstanding from the beginning of the year.
  - Earnings of 150,000
  - 1,000 shares, 7%, \$1,000 par bonds convertible into 40 shares each, outstanding since the 1<sup>st</sup> July of this year.
  - Tax rate is 40%
- The company's DEPS is closest to:
  - A. 1.34
  - B. 1.50
  - C. 1.43

## Example

### Calculation of Diluted EPS

- Solution: C.
  - $BEPS = 150 / 100 = 1.50$
  - If the convertible bonds are converted
    - ✓  $DEPS = \frac{150 + 1 \times 1,000 \times 7\% \times (1 - 40\%) \times 6 / 12}{100 + 1 \times 40 \times 6 / 12} = 1.425$
    - ✓  $1.425 < 1.5$ , the convertible bonds are dilutive securities, and DEPS is 1.43
  - **Time shifting** for the period of issuance since the middle of the year.

## Summary

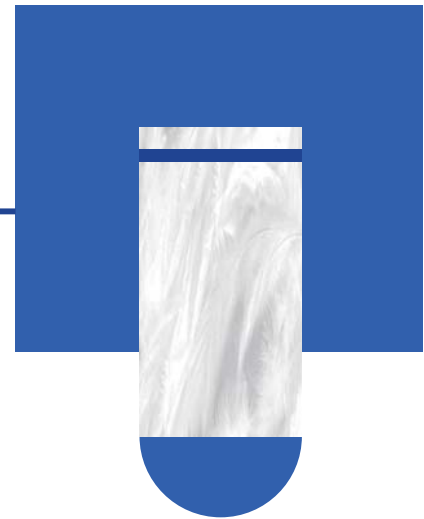
### Diluted EPS

Dilutive securities & Antidilutive securities

Calculation of Diluted EPS: If-converted Method & Treasury Stock Method

## Common-size Income Statement

- ❑ Common-size I/S
- ❑ Retained Earnings and Comprehensive Income



### Common-size I/S

- Example of item in the income statement account /revenues

	I/S (\$)	Common – size I/S
Revenue	<b>1,000</b>	<b>100%</b>
COGS	<b>(200)</b>	<b>(20%)</b>
Gross profit	<b>800</b>	<b>80%</b>
Other Operating expense	<b>(150)</b>	<b>(15%)</b>
Operating profit (EBIT)	<b>650</b>	<b>65%</b>
Interest expense	<b>(50)</b>	<b>(5%)</b>
Earning before tax (EBT)	<b>600</b>	<b>60%</b>
Tax expense	<b>(180)</b>	<b>(18%)</b>
Net income (NI)	<b>420</b>	<b>42%</b>

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

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

$$\text{Net profit margin} = \frac{\text{Net income}}{\text{Revenue}}$$

### Common-size I/S

- **Difference between IFRS and US GAAP**
  - While both IFRS and US GAAP have the same three available treatments of unrealized gains and losses, specific securities may be classified differently under IFRS or US GAAP.
  - An analyst must account for [these differences](#) when comparing ratios that involve net income, such as net profit margin and price-to-earnings.
  - The potential impact of such accounting differences on specific ratios can be examined by comparing the ratios calculated with net income to those calculated [using comprehensive income](#).

## ← Retained Earnings and Comprehensive Income →

- **Retained earnings**

- At the end of each accounting period, the net income of the firm is added to stockholders' equity through an account known as retained earnings.
- Therefore, any transaction that affects the income statement (net income) will also affect stockholders' equity.

- **Comprehensive income**

- **Comprehensive income** is a more inclusive measure that includes all changes in equity except for owner contributions and distributions. That is, comprehensive income is the sum of net income and other comprehensive income. Other comprehensive income includes transactions that are not included in net income.

- Other comprehensive Income:

- ✓ Foreign currency translation adjustments.
- ✓ Certain costs of a company's defined benefit post-retirement plans that are not recognized in the current period.
- ✓ Available-for-sale debt securities under US GAAP and securities designated as "fair value through other comprehensive income" under IFRS.
- ✓ Unrealized G/L on derivatives contracts accounted for as cash flow hedges.
- ✓ Under IFRS, changes in the value in excess of historical cost of long lived assets measured using the revaluation model rather than the cost model.

## Summary

### Common-size Income Statement

Common-size I/S

Retained Earnings and Comprehensive Income

## Summary

### Module: Analyzing Income Statements

Income Statement Format and Components

Accrual Accounting & Revenue Recognition

Capitalizing or Expensing

Basic EPS

Diluted EPS

Common-size Income Statement

# Module

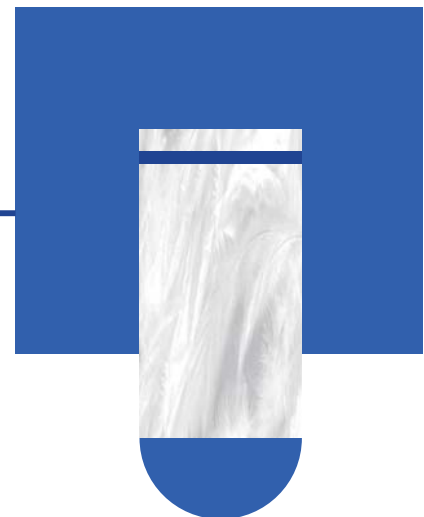


## Analyzing Balance Sheets

- Balance Sheet Format and Components
- Financial Instruments
- Statement of Changes in Equity

### Balance Sheet Format and Components

- ❑ Balance Sheet Format
- ❑ Balance Sheet Components
- ❑ Common Size B/S



### — Balance Sheet Format and Components —

- **Assets**
  - Provide **probable future economic benefits controlled** by an entity as a result of **previous transactions**.
  - Current and Non-current assets (Long-lived assets)
- **Liabilities**
  - Are **obligations owed** by an entity **from previous transactions** that are expected to result in **an outflow of economic benefits in the future**.
  - Current and Non-current liabilities (Long-term liabilities)
- **Stockholders' equity**
  - Is **the residual interest in assets** that remains after subtracting a firm's liabilities.
- A financial statement item should be recognized if a future economic benefit from the item (flowing to or from the firm) is **probable** and the item's value or cost can be measured reliably.

## ● Balance Sheet Format and Components ●

- **Uses and limitations of the balance sheet in financial analysis.**
  - The balance sheet can be used to assess a firm's liquidity, solvency, and ability to make distributions to shareholders.
    - ✓ From the firm's perspective, liquidity is the ability to meet short-term obligations
    - ✓ Solvency is the ability to meet long-term obligations.
- **Classified balance sheet**
  - Both IFRS and US GAAP require firms to **separately report** their current assets and noncurrent assets and current and noncurrent liabilities.
  - The current/noncurrent format is known as a classified balance sheet and is **useful in evaluating liquidity**.
- **Liquidity-based presentations**
  - Under IFRS, firms can choose to use a liquidity-based format if the presentation is more relevant and reliable.
  - Liquidity-based presentations, which are often used in the banking industry, present assets and liabilities in the order of liquidity.

## ● Balance Sheet Format and Components ●

### ● Account format

The balance sheet			
Assets	X	Equity	X
		Liabilities	X
Total assets	X	Total equity and liabilities	X

### ● Report format - Classified balance sheet

<b>Assets</b>		
Non – current assets		X
Current assets		X
<b>Total assets</b>		<b>X</b>
<b>Equity &amp; liabilities</b>		
Equity		X
Non – current liabilities		X
Current liabilities		X
<b>Total equity and liabilities</b>		<b>X</b>

## ● Balance Sheet Format and Components ●

### ● Assets

<b>Current Assets</b>	Cash and cash equivalents	Or presented in the order of liquidity
	Accounts receivable	
	Inventory	
	Prepaid expenses	
	Short-term investments	
	Other current assets	
<b>Non Current Assets</b>	Property , plant and equipment (PP&E)	
	Intangible assets	
	Long-term investments	
	Deferred tax assets	
	Pension assets	

## ● — Balance Sheet Format and Components — ●

### ● Liabilities

<b>Current Liabilities</b>	Bank overdraft	<b>In the order of</b> •Maturity •Descending order by amount In the event of liquidation
	Accounts payable	
	Accrued expenses	
	Unearned revenue	
	The current portion of long-term debt	
	Current taxes payable	
<b>Long-Term Liabilities</b>	Notes payable	
	Bonds payable	
	Capital / Financial lease obligations	
	Pension liabilities	
	Deferred tax liabilities	

## ● — Balance Sheet Format and Components — ●

### ● Stockholders' equity

<b>Capital</b>	Common stock , preferred stock
<b>Additional paid-in-capital</b>	Capital in excess of par i.e. premium
<b>Treasury stock</b>	Stock has been reacquired by the issuing firm but not yet retired No voting rights, no dividend
<b>Retained earnings</b>	Net Income – Dividend
<b>Accumulated OCI</b>	<ul style="list-style-type: none"> <li>Foreign currency translation adjustment (gain or losses)</li> <li>Certain costs of defined benefit post-retirement plans that are not recognized in the current period.</li> <li>Unrealized G/L on available for sale securities (US GAAP)</li> <li>Unrealized G/L on FVTOCI (IFRS)</li> <li>Unrealized G/L from cash flow hedging derivatives</li> <li>Under IFRS, changes in the value in excess of historical cost of long lived assets measured using the revaluation model rather than the cost model.</li> </ul>
<b>Noncontrolling interest</b>	Group accounting
<i>Accumulated other comprehensive income includes all changes in stockholders' equity except for transactions recognized in the income statement (net income) and transactions with shareholders, such as issuing stock, reacquiring stock, and paying dividends.</i>	

## Example

### Statement of Comprehensive Income

#### ● OCI from Statement of Comprehensive Income

<b>Earnings after tax</b>
Pension plan remeasurements recognized in other comprehensive income, net of tax
Share of other comprehensive income of equity-accounted investments that will not be reclassified to profit or loss, net of tax
<b>Items that will not be reclassified to profit or loss</b>
Exchange differences on translating foreign operations, net of tax
Cash flow hedges, net of tax
Available-for-sale financial assets, net of tax
Share of other comprehensive income of equity-accounted investments that may be reclassified subsequently to profit or loss, net of tax
<b>Items that may be reclassified subsequently to profit or loss</b>
Other comprehensive income, net of tax
<b>Total comprehensive income</b>

## — Balance Sheet Format and Components —

- **Cash and cash equivalents**

- Cash equivalents are short-term, highly liquid investments that are readily convertible to cash and near enough to maturity that interest rate risk is insignificant.
  - ✓ Examples of cash equivalents include Treasury bills, commercial paper, and money market funds.
- Cash and cash equivalents are considered financial assets.
- Generally, financial assets are reported on the balance sheet at amortized cost or fair value.
  - ✓ For cash equivalents, **either measurement base** should result in about the same value.

## — Balance Sheet Format and Components —

- **Inventory**

- **Standard costing**, often used by manufacturing firms, involves assigning predetermined amounts of materials, labor, and overhead to goods produced.
- Firms that use **the retail method** measure inventory at retail prices and then subtract gross profit in order to determine cost.
- Inventories are reported at **the lower of cost or net realizable value under IFRS**, and under US GAAP for companies that use inventory cost methods other than LIFO or retail.
- **Net realizable value** is equal to the selling price less any completion costs and disposal (selling) costs.
  - ✓ Under US GAAP, companies using LIFO or the retail method report **inventories at the lower of cost or market**.
    - Market is usually equal to replacement cost; however, market cannot be greater than net realizable value or less than net realizable value less a normal profit margin.
  - ✓ If net realizable value (IFRS) or market (US GAAP) is less than the inventory's carrying value, the inventory is written down and a loss is recognized in the income statement.
  - ✓ If there is a subsequent recovery in value, the inventory can be written back up under IFRS.
  - ✓ No write-up is allowed under US GAAP, thus reporting greater profit when the inventory is sold.

## — Balance Sheet Format and Components —

- **Unearned revenue.**

- Unearned revenue (also known as **unearned income, deferred revenue, or deferred income**) is cash collected in advance of providing goods and services.
  - ✓ For a magazine publisher receives subscription payments before delivery. When payment is received, assets (cash) and liabilities (unearned revenue) increase by the same amount. As the magazines are delivered, the publisher recognizes revenue in the income statement and reduces the liability.

## — Balance Sheet Format and Components —

- **Property, plant, and equipment.**
  - **Property, plant, and equipment (PP&E)** are tangible assets used in the production of goods and services. PP&E includes land and buildings, machinery and equipment, furniture, and natural resources.
    - ✓ Under IFRS, PP&E can be reported using the cost model or the revaluation model.
    - ✓ Under US GAAP, only the cost model is allowed.
  - Also under the cost model, PP&E must be tested for impairment. An asset is impaired if its carrying value exceeds the recoverable amount.
    - ✓ Under IFRS, the recoverable amount of an asset is **the greater of fair value less any selling costs, or the asset's value in use**. **Value in use** is the present value of the asset's future cash flow stream. If impaired, the asset is written down to its recoverable amount and a loss is recognized in the income statement.
    - ✓ Loss recoveries are allowed under IFRS but not under US GAAP.
  - Under IFRS, identifiable intangibles that are purchased can be reported on the balance sheet using the cost model or the revaluation model, although the revaluation model can **only be used if an active market for the intangible asset exists**.
    - ✓ Both models are basically the same as the measurement models used for PP&E. Under US GAAP, only the cost model is allowed.

## — Balance Sheet Format and Components —

- **Deferred tax assets**
  - **Deferred taxes** are the result of temporary differences between financial reporting income and tax reporting income.
    - ✓ **Deferred tax assets** are created when the amount of taxes payable exceeds the amount of income tax expense recognized in the income statement.
      - This can occur when expenses or losses are recognized in the income statement before they are tax deductible, or when revenues or gains are taxable before they are recognized in the income statement.
      - Eventually, the deferred tax asset will reverse when the expense is deducted for tax purposes or the revenue is recognized in the income statement.
    - ✓ Deferred tax assets can also be created **by unused tax losses from prior periods**, which have value because they can be used to reduce taxes in subsequent periods.

## — Balance Sheet Format and Components —

- **Goodwill**
  - Goodwill is **the excess of purchase price over the fair value** of the identifiable net assets (assets minus liabilities) acquired in a business acquisition.
    - ✓ Acquirers are often willing to pay **more than the fair value of the target's identifiable net assets** because the target may have assets that are not reported on its balance sheet. For example, the target's reputation and customer loyalty certainly have value; however, the value is not quantifiable.
    - ✓ Also, the target may have research and development assets that remain off-balance-sheet because of current accounting standards.
    - ✓ Finally, part of the acquisition price may reflect perceived synergies from the business combination.
      - For example, the acquirer may be able to eliminate duplicate facilities and reduce payroll as a result of the acquisition.
  - Occasionally, the purchase price of an acquisition is less than fair value of the identifiable net assets. In this case, the difference is immediately recognized **as a gain in the acquirer's income statement**.
  - Goodwill is only created in a purchase acquisition.
    - ✓ **Internally generated goodwill is expensed as incurred**.

## — Balance Sheet Format and Components —

- Goodwill is not amortized but **must be tested for impairment at least annually**.
  - ✓ If impaired, goodwill is reduced and a loss is recognized in the income statement. The impairment loss does not affect cash flow. As long as goodwill is not impaired, it can remain on the balance sheet indefinitely.
- Since goodwill is not amortized, firms can manipulate net income upward by allocating more of the acquisition price to goodwill and less to the identifiable assets.
  - ✓ The result is less depreciation and amortization expense, resulting in higher net income.
- Accounting goodwill should not be confused with economic goodwill.
  - ✓ **Economic goodwill** derives from the expected future performance of the firm, while accounting goodwill is the result of past acquisitions.
- **When computing ratios**
  - ✓ Analysts should **eliminate** goodwill from the balance sheet and goodwill impairment charges from the income statement for comparability.
  - ✓ Also, analysts should evaluate future acquisitions in terms of the price paid **relative to the earning power of the acquired assets**.

## — Balance Sheet Format and Components —

### ● Financial instruments

#### ○ Financial Asset Measurement Base - US GAAP

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

- While the three different treatments are essentially the same as those used under US GAAP, there are significant differences in how securities are classified under IFRS and under US GAAP.
- Similarities and differences are as follows:
  - ✓ Under both IFRS and US GAAP, loans, notes receivable, debt securities a firm intends to hold until maturity, and unlisted securities for which fair value cannot be reliably determined, are all measured at (amortized) historical cost.
  - ✓ Under IFRS, debt securities for which a firm intends to collect the interest payments but also to sell the securities are measured at fair value through other comprehensive income. This is similar to the treatment of available-for-sale securities under US GAAP.

## Summary

### Balance Sheet Format and Components

Balance Sheet Format

Balance Sheet Components

Common Size B/S

# Financial Instruments

- Classification of Financial Instruments
- Measurement of Financial Instruments



## — Classification of Financial Instruments —

### ○ Financial Asset Classifications – IFRS

Measured at amortized cost	Measured at fair value through other comprehensive income	Measured at fair value through profit and loss
<ul style="list-style-type: none"><li>● Debt securities acquired with the intent to hold them to maturity</li><li>● Loans receivable</li><li>● Notes receivable</li><li>● Unlisted equity securities if fair value cannot be determined reliably</li></ul>	<ul style="list-style-type: none"><li>● Debt securities acquired with intent to collect interest payments but sell before maturity</li><li>● Equity securities only if this treatment is chosen at time of purchase</li></ul>	<ul style="list-style-type: none"><li>● Debt securities acquired with intent to sell in near term</li><li>● Equity securities (unless fair value through OCI is chosen at time of purchase)</li><li>● Derivatives</li><li>● Any security not assigned to the other two categories</li><li>● Any security for which this treatment is chosen at time of purchase</li></ul>

## — Classification of Financial Instruments —

### ● Under IFRS

#### ○ Debt instrument

- ✓ SPPI: solely payment of principal and interest
- ✓ For SPPI: business model
  - If the company decides to hold the asset to collect the cash flow, the financial asset should be **measured at amortized cost**.
  - If the company involves both collecting contractual cash flows and selling the financial assets, the financial asset should be **measured at FVOCI**.
  - If the financial asset cannot be measured at amortized cost or FVOCI, the financial asset should be measured at FVTPL.
- ✓ For non-SPPI
  - The financial asset should be measured at FVTPL.

## — Classification of Financial Instruments —

### ● Under IFRS

#### ○ Equity instrument

- ✓ If the equity instrument is held for trading purpose, the financial asset should be measured at FVTPL.
- ✓ If the equity instrument is held not for trading purpose:
  - ❑ The financial asset should be measured at FVTPL;
  - ❑ **Irrevocably** select measured at FVOCI, and the gain or loss after disposition **should be recognized in R/E**.

## — Classification of Financial Instruments —

IFRS			
Debt instrument	SPPI*	Hold to collect contractual cash flow	Amortized cost
		Collecting contractual cash flows and selling the financial assets	FVTOCI
		Others	FVTPL
	Non-SPPI	FVTPL	
Equity instrument	Trading	FVTPL	
	Not for trading	FVTPL or Desingated FVTOCI (irrevocable)	
Notes	<b>For FVOCI (Fair value through other comprehensive income):</b> 1. Debt & SPPI & hold-to-collect and sell 2. Equity & not-for-trading & select as FVOCI		
SPPI*: solely payment of principal and interest			

## — Classification of Financial Instruments —

### ● Under US GAAP

#### ○ Debt instrument

- ✓ **Held-to-maturity securities:** only if the reporting entity has the positive intent and ability to hold those securities to maturity.
- ✓ **Trading securities.** If a security is acquired with the intent of selling it within hours or days, the security shall be classified as trading.
- ✓ **Available-for-sale securities.** Investments in debt securities not classified as trading securities or as held-to-maturity securities shall be classified as available-for-sale securities.

#### ○ Equity instrument

- ✓ All investments in equity securities are measured at FVTPL, and the gain or loss after disposition **should be recognized in I/S**.

## — Measurement of Financial Instruments —

Category	Measurement	Unrealized/Realized Gains or Losses
<b>HTM/ Amortized cost</b>	Amortized cost	<u>Unrealized</u> : not reported <u>Realized</u> : reported in income statement
<b>Trading/ FVTPL</b>	Fair value	<u>Unrealized</u> : reported in income statement <u>Realized</u> : reported in income statement
<b>AFS/ FVTOCI</b>	Fair value	<u>Unrealized</u> : reported in equity (OCI) <u>Realized</u> : reported in income statement*

*Under IFRS\*, equity investment of FVTOCI, the realized gain go through retained earning.*

## — Measurement of Financial Instruments —

IFRS		US GAAP	
Amortized cost (AC)	以摊余成本进行计量的金融资产：债权投资	Held-to-maturity (HTM)	持有至到期
Fair value through profit or loss (FVTPL)	以公允价值计量且变动计入当期损益的金融资产：交易性金融资产	Trading security	交易性金融资产
Fair value through other comprehensive income (FVTOCI)	以公允价值计量且变动计入其他综合收益的金融资产：其他债权投资（债权类）、其他权益工具投资（股权类）	Available-for-sale (AFS)	可供出售金融资产

### Example

#### Financial Instruments

- For financial assets classified as trading securities, how are unrealized gains and losses reflected in shareholders' equity?
  - A. They are not recognized.
  - B. They flow through income into retained earnings.
  - C. They are a component of accumulated other comprehensive income.
- Solution: B.
  - For financial assets classified as trading securities, unrealized gains and losses are reported on the income statement and flow to shareholders' equity as part of retained earnings.

- For financial assets classified as available for sale, how are unrealized gains and losses reflected in shareholders' equity?
  - A. They are not recognized.
  - B. They flow through retained earnings.
  - C. They are a component of accumulated other comprehensive income.
- Solution: C.
  - For financial assets classified as available for sale, unrealized gains and losses are not recorded on the income statement and instead are part of other comprehensive income. Accumulated other comprehensive income is a component of Shareholders' equity

## Summary

### Financial Instruments

Classification of Financial Instruments  
Measurement of Financial Instruments

## Statement of Changes in Equity

- Statement of Changes in Equity



## Statement of Changes in Equity

- **Statement of Changes in Equity**

- The statement of changes in equity (or statement of shareholders' equity) presents information about the increases or decreases in a company's equity over a period. IFRS requires the following information in the statement of changes in equity:
  - ✓ total comprehensive income for the period;
  - ✓ the effects of any accounting changes that have been retrospectively applied to previous periods;
  - ✓ capital transactions with owners and distributions to owners; and
  - ✓ reconciliation of the carrying amounts of each component of equity at the beginning and end of the year.
- Under US GAAP, the requirement as specified by the SEC is for companies to provide an analysis of changes in each component of stockholders' equity that is shown in the balance sheet.

## Summary

Statement of Changes in Equity

## Summary

### Module: Analyzing Balance Sheets

Balance Sheet Format and Components

Financial Instruments

Statement of Changes in Equity

# Module

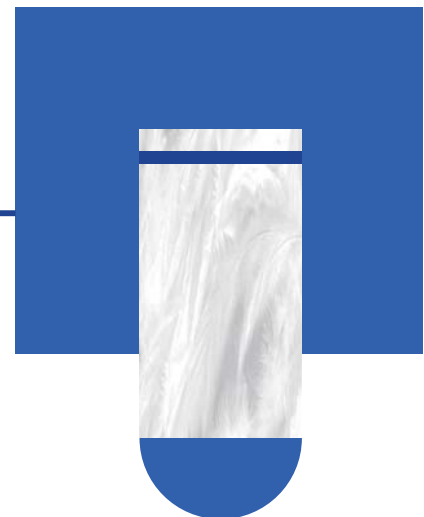


## Analyzing Statements of Cash Flows I

- Classification of Cash Flow
- CFO Calculation - Indirect Method
- CFO Calculation - Direct Method
- CFI Calculation
- CFF Calculation

### Classification of Cash Flow

- ❑ The Cash Flow Statement
- ❑ Types of Cash Flows
- ❑ Noncash Transaction
- ❑ Disclosure Requirements



### The Cash Flow Statement

- **The Cash Flow Statement**
  - The cash flow statement provides information beyond that available from the income statement, which is based on accrual, rather than cash, accounting.
  - The cash flow statement provides the following
    - ✓ Information about a company's cash receipts and cash payments **during an accounting period**.
    - ✓ Information about a company's **operating, investing, and financing activities**.
    - ✓ An understanding of the impact of accrual accounting events on cash flows.
  - The cash flow statement provides information to assess the firm's liquidity, solvency, and financial flexibility.
  - An analyst can use the statement of cash flows to determine whether
    - ✓ Regular operations **generate enough cash** to sustain the business.
    - ✓ Enough cash is generated **to pay off existing debts** as they mature.
    - ✓ The firm is likely to need additional financing.
    - ✓ Unexpected obligations can be met.
    - ✓ The firm can take advantage of new business opportunities as they arise.

## The Cash Flow Statement

- **Items on the cash flow statement come from two sources**
  - Income statement items
  - Changes in balance sheet accounts
    - Operating cash flow
    - + Investing cash flow
    - + Financing cash flow
    - = Change in cash balance for the current year
    - + Beginning cash balance
    - = Ending cash balance
  - **Non-cash activities** are not reported in the cash flow statement.

## Types of Cash Flows

- **Types of Cash Flows**
  - Cash flow from operating activities (CFO)
    - ✓ Sometimes referred to as "**cash flow from operations**" or "**operating cash flow**", consists of the inflows and outflows of cash **resulting from transactions that affect a firm's net income**.
  - Cash flow from investing activities (CFI)
    - ✓ Consists of the inflows and outflows of cash **resulting from the acquisition or disposal of long-term assets and certain investments**.
  - Cash flow from financing activities (CFF)
    - ✓ Consists of the inflows and outflows of cash **resulting from transactions affecting a firm's capital structure**.

## Types of Cash Flows

- **US GAAP Cash Flow Classification**

<b>Cash flows from Operating Activities</b>	
Cash flows resulting from transaction that affect a <b>firm's net income</b>	
<b>Inflows</b>	<b>Outflows</b>
Cash collected from customers	Cash paid to employees and suppliers
<b>Sale proceeds from trading securities</b>	Acquisition of trading securities
	Cash paid for other expenses
	Purchase trading
Interest received	Interest paid
Dividend received	
	Taxes paid

## Types of Cash Flows

### ● US GAAP Cash Flow Classification

<b>Cash flows from Investing Activities</b>	
Cash flows resulting from the acquisition or disposal of <b>long-term</b> assets and certain investments	
Inflows	Outflows
<b>Sale proceeds</b> from fixed assets	Acquisition of fixed assets
Sale proceeds from debt & equity investments	Acquisition of debt & equity investments
Principal received from loans made to others	Loans made to others

## Types of Cash Flows

### ● US GAAP Cash Flow Classification

<b>Cash flows from Financing Activities</b>	
Cash flows resulting from transaction that affect a firm's <b>capital structure</b>	
Inflows	Outflows
Principal amounts of debt issued	Principal paid on debt
Proceeds from issuing stocks	Payments to reacquire stock
	Dividends paid to shareholders

## Types of Cash Flows

### ● Comparison between US GAAP and IFRS

Items	US GAAP	IFRS
<b>Interest received</b>	CFO	CFO or <u>CFI</u>
<b>Interest paid</b>	CFO	CFO or CFF
<b>Dividends received</b>	CFO	CFO or <u>CFI</u>
<b>Dividends paid</b>	CFF	CFO or CFF
<b>Taxes paid</b>	CFO	<u>CFO</u> , CFI or CFF
<b>Bank overdrafts</b>	CFF	Cash equivalents
<b>Disclosure</b>	Encourage <b>direct method</b> , but allows indirect method. If direct method presented, footnotes must also be provided of the indirect method.	Encourage <b>direct method</b> , but permits either. IFRS permits more flexibility in reporting

- Direct method is encouraged in both US GAAP and IFRS.

## Noncash Transaction

- **Noncash transaction**

- **Noncash investing and financing activities** are not reported in the cash flow statement since they do not result in inflows or outflows of cash.
  - ✓ For example, if a firm **acquires real estate with financing** provided by the seller, the firm has made an investing and financing decision. This transaction is the equivalent of borrowing the purchase price. However, since no cash is involved in the transaction, it is not reported as an investing and financing activity in the cash flow statement.
  - ✓ Another example of a noncash transaction is **an exchange of debt for equity**. Such an exchange results in a reduction of debt and an increase in equity. However, since no cash is involved in the transaction, it is not reported as a financing activity in the cash flow statement.
- Noncash transactions must be disclosed in **either a footnote or supplemental schedule** to the cash flow statement.
- Analysts should be aware of the firm's noncash transactions, incorporate them into analysis of past and current performance, and include their effects in estimating future cash flows.

## Disclosure Requirements

- **Disclosure Requirements**

- Under US GAAP, a direct method presentation must also disclose the adjustments necessary to reconcile net income to cash flow from operating activities. This disclosure is the same information that is presented in an indirect method cash flow statement. This reconciliation is not required under IFRS.
- Under IFRS, payments for interest and taxes must be disclosed separately in the cash flow statement under either method (direct or indirect).
- Under US GAAP, payments for interest and taxes can be reported in the cash flow statement or disclosed in the footnotes.

## Summary

### Classification of Cash Flow

The Cash Flow Statement

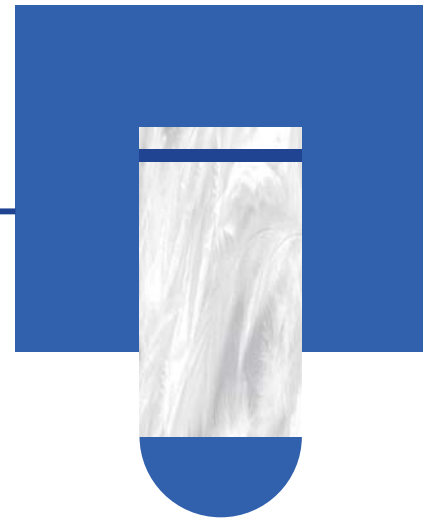
Types of Cash Flows

Noncash Transaction

Disclosure Requirements

## CFO Calculation - Indirect Method

- Indirect and Direct Methods
- CFO Calculation - Indirect Method



### Indirect and Direct Methods

- The only difference between the indirect and direct methods of presentation is in the cash flow from operations (**CFO**).
  - **Direct Method**
    - ✓ Converts an accrual-basis income statement into a cash-basis income statement.
    - ✓ The direct method begins with cash inflows from customers and then deduct cash outflows for purchases, operating expenses, interest, and taxes.
  - **Indirect Method** (for CFO only)
    - ✓ Net income is converted to operating cash flow by making adjustments for transactions that affect net income but are not cash transactions.
    - ✓ These adjustments include eliminating:
      - **I/S:** noncash expenses (e.g., depreciation and amortization), nonoperating items (e.g., gains and losses); and
      - **B/S:** changes in balance sheet accounts resulting from accrual accounting events.

### Indirect and Direct Methods

- **Arguments in Favor of Each Method**
  - The direct method provides more information than the indirect method.
    - ✓ The primary advantage of the direct method is that it presents the firm's operating cash receipts and payments, while the indirect method only presents the net result of these receipts and payments.
    - ✓ This knowledge of past receipts and payments is useful in estimating future operating cash flows.
  - The indirect provides a useful link to the income statement when forecasting future operating cash flow.
    - ✓ The main advantage of the indirect method is that it focuses on the difference between net income and operating cash flow.
    - ✓ Analysts forecast net income and then derive operating cash flow by adjusting net income for the differences between accrual accounting and the cash basis of accounting.

## CFO Calculation - Indirect Method

- **A basic setting: To an entity**
  - Cash inflow: +
  - Cash outflow: -
- **Liability**
  - +  $\Delta$ ; Namely, + (ending – beginning)
  - If liability increases, then cash inflow.
- **Assets**
  - -  $\Delta$  ; Namely, - (ending – beginning)
  - If asset increases, the cash outflow.

## CFO Calculation - Indirect Method

Calculation of CFO by Indirect method	
Net income	Income statement items
+ Non-cash expenses or losses	
- Non-cash revenues or gains	
+ Non-operating loss	
- Non-operating gain	
-Increase in non-cash operating asset accounts (Inventory, A/R)	Balance sheet items (working capital)
+Increase in operating liability accounts (A/P)	
=CFO	

### Example

## CFO Calculation - Indirect Method

- An analyst gathered the following information from a company's 2005 financial statements (\$ millions):

Balances as of year ended 31 December	2004	2005
Retained earnings	120	145
Accounts receivable	38	43
Inventory	45	48
Accounts payable	36	29

- The company **declared and paid** cash dividends of \$10 million in 2005 and recorded depreciation expense in the amount of \$25 million for 2005. The company's 2005 cash flow from operations (\$ millions) was closest to:
  - A. 25.
  - B. 35.
  - C. 45.

## Example

### CFO Calculation - Indirect Method

- Solution: C.
  - Net income (NI) for 2005 can be computed as the change in retained earnings, \$25, plus the dividends paid in 2005, \$10.  $R/E(\text{Beginning}) + NI - \text{Dividend declared} = R/E(\text{Ending})$ , the BASE principle.
  - NI can also be calculated from the formula: beginning retained earnings + NI - dividends declared = ending retained earnings.
    - ✓ Depreciation of \$25 would be added back to net income
    - ✓ while the increases in accounts receivable, \$5, and in inventory, \$3, would be subtracted from net income because they are uses of cash. The decrease in accounts payable is also a use of cash and, therefore, a subtraction from net income.
    - ✓ Thus, cash flow from operations for 2005 is  $\$25 + \$10 + \$25 - \$5 - \$3 - \$7 = \$45$  (\$ millions).

## Example

### CFO Calculation - Indirect Method

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

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

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

## Example

### CFO Calculation - Indirect Method

- Solution: B.
  - $CFO = NI$ 
    - +Depreciation-profit of sale of lands
    - $\Delta CA$  (excluding Cash) +  $\Delta CL$
    - = 120
    - +25 - 2
    - (-20) - 10 + 7 + (-5) + (15)
    - =170
  - Note that the profit on the sale of land should be subtracted from net income because this transaction is classified as investing, not operating.

# Summary

## CFO Calculation - Indirect Method

Indirect and Direct Methods  
CFO Calculation - Indirect Method

## CFO Calculation - Direct Method

- CFO Calculation - Direct Method

## CFO Calculation - Direct Method

Calculation of CFO by Direct method	
<b>Cash received from customers</b>	= Net sales- $\Delta A/R$ + $\Delta$ contract liability ( $\Delta$ unearned revenue)
<b>- Cash paid to suppliers</b>	= - COGS - $\Delta$ Inventories + $\Delta A/P$ + Depreciation included in COGS
<b>- Cash paid to employees</b>	= - wage expense + $\Delta$ wage payables
<b>- Interests paid</b>	= - interest expense + $\Delta$ Interest payable+ $\Delta$ bond payable (amortization bond discount- amortization bond premium)
<b>- Tax paid</b>	= - income tax expense + $\Delta$ tax payable + $\Delta$ DTL – $\Delta$ DTA (+ $\Delta$ DTL – $\Delta$ DTA, more accurately find in I/S as deferred tax expense) Income tax expense=current tax expense (tax payable)+deferred tax expense
<b>= CFO</b>	

## Example

### CFO Calculation - Direct Method

- An analyst gathered the following information from a company's 2004 financial statements (\$ millions):

Year ended 31 December	2003	2004
Net sales	245.80	254.60
Cost of goods sold	168.30	175.90
Accounts receivable	73.20	68.30
Inventory	39.00	47.80
Accounts payable	20.30	22.90

- Based only on the information above, the company's 2004 statement of cash flows prepared using the direct method would include amounts (\$ millions) for cash received from customers and cash paid to suppliers, respectively, that are closest to:

	Cash received from customers	Cash paid to suppliers
A	249.7	182.1
B	259.5	169.7
C	259.5	182.1

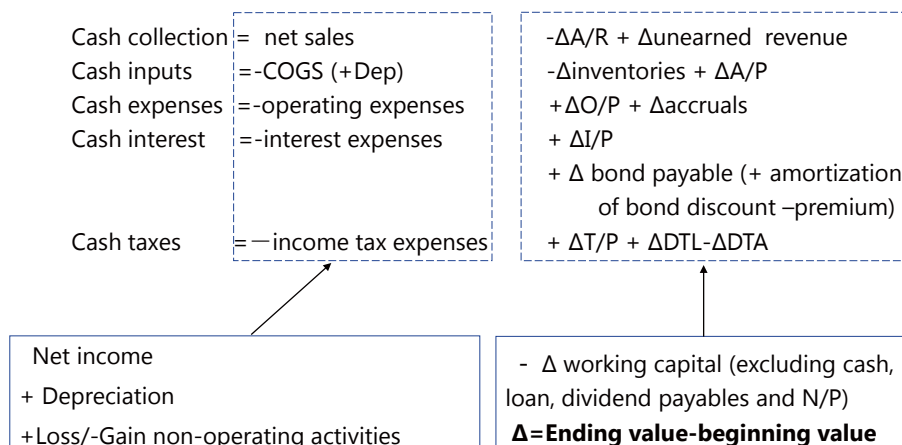
## Example

### CFO Calculation - Direct Method

- Solution: C
  - Cash received from customers  
= Net sales -  $\Delta A/R$  +  $\Delta$ contract liability =  $254.6 - (-4.9) = 259.5$ .
  - Cash paid to suppliers  
= -COGS -  $\Delta$  Inventories +  $\Delta A/P$  + Depreciation included in COGS + loss of inventory impairment  
=  $-175.9 - 8.8 + 2.6 = 182.1$

Year ended 31 December	2003	2004	change
Net sales	245.80	254.60	
Cost of goods sold	168.30	175.90	
Accounts receivable	73.20	68.30	-4.9
Inventory	39.00	47.80	+8.8
Accounts payable	20.30	22.90	+2.6

### CFO Calculation - Direct Method



# Summary

## CFO Calculation - Direct Method

Cash received from customers  
Cash paid to suppliers  
Cash paid to employees  
Interests paid  
Tax paid

## CFI Calculation

- ❑ CFI Calculation

## CFI Calculation

- **Cash used in purchase of fixed assets:**
  - Pay attention to the movement of fixed assets.
  - $\text{Book Value} = \text{Carrying value} = \text{Purchase cost} - \text{Accumulated Depreciation} - \text{Accumulated Impairment}$
  - $\text{BV end} = \text{BV Begin} + \text{Purchase} - \text{Disposal NBV} - \text{Depreciation}$
- **Proceeds received from sale of fixed assets**
  - $\text{Gain or loss} = \text{Proceeds received} - \text{Disposal NBV}$
  - Gain or loss resulting from disposal of PP&E or other long term assets are NOT presented in the CFI; instead, cash generated should be calculated based on the gain or loss.
- **Review other non-current assets: an increase in these items using cash, and vice versa.**
- **$\text{CFI} = -(\text{BV}_1 + \text{Depreciation} - \text{BV}_0) + \text{Gain} - \text{Loss}$**

## Example

### CFI Calculation

- Silverago Incorporated, an international metals company, reported a loss on the sale of equipment of \$2 million. In addition, the company's income statement shows depreciation expense of \$8 million and the cash flow statement shows capital expenditure of \$10 million, all of which was for the purchase of new equipment. Using the following information from the comparative balance sheets, how much cash did the company receive from the equipment sale?

Balances sheet item	12-31-2005	12-31-2006	change
Equipment	\$100million	\$105million	\$5million
Accumulated depreciation equipment	\$40million	\$46million	\$6million

- A. \$6 million.
- B. \$5 million.
- C. \$1 million.

## Example

### CFI Calculation

- Solution: C.
  - $BV_0 = 100 - 40 = 60$
  - $BV_1 = 105 - 46 = 59$
  - $Dep = 8$
  - $CFI = -(BV_1 + Dep - BV_0) + \text{gain-loss} = \text{Proceeds of sale} - \text{Expenditure}$   
 $= -(59 + 8 - 60) - 2 = \text{Proceeds of sale} - 10 = -9$
  - $\text{Proceeds of sale} = 1$

Balances sheet item	12-31-2005	12-31-2006	change
Equipment	\$100million	\$105million	\$5million
Accumulated depreciation equipment	\$40million	\$46million	\$6million
Net book value (BV)	60	59	

## Summary

### CFI Calculation

## CFF Calculation

### □ CFF Calculation



## CFF Calculation

- **All events that could have increased or decreased cash must be reconstructed.**
- **Review long-term debt and stock**
  - Increases supply cash and decreases use cash.
  - $\text{CFF} = \text{new bond issuance} - \text{repayment principal} + \text{new stock issuance} - \text{reacquired stock} - \text{dividend paid}$
- **Dividend paid**
  - $-\text{Dividend paid} = -\text{dividend declared} + \Delta\text{dividend payables}$
  - $\text{Beginning R/E} + \text{net Income} - \text{dividend declared} = \text{ending R/E}$

## Example

### CFF Calculation

- Jaderong Plinkett Stores reported net income of \$25 million, which equals the company's comprehensive income. The company has no outstanding debt. Using the following information from the comparative balance sheets (in millions), what should the company report in the financing section of the statement of cash flows?

Balances sheet item	Y1	Y2	change
Common stock	\$100	\$102	\$2
Additional paid-in capital common stock	\$100	\$140	\$40
Retained earnings	\$100	\$115	\$15
Total stockholders' equity	\$300	\$357	\$57

- A. Issuance of common stock \$42 million; dividends paid of \$10 million.
- B. Issuance of common stock \$38 million; dividends paid of \$10 million.
- C. Issuance of common stock \$42 million; dividends paid of \$40 million.

## Example

### CFF Calculation

- Solution: A.
  - The increase of \$42 million in common stock and additional paid-in capital indicates that the company issued stock during the year.
  - Dividend declared is \$10 million
    - ✓  $\text{RE } \$100 \text{ (B)} + \text{net income } \$25 \text{ (A)} - \text{dividend declared (S)} = \text{RE } \$115 \text{ (E)}$
    - ✓  $\text{Dividend declared (S)} = \text{RE } \$100 \text{ (B)} + \text{net income } \$25 \text{ (A)} - \text{RE } \$115 \text{ (E)} = 10$

Balances sheet item	Y1	Y2	change
Common stock	\$100	\$102	\$2
Additional paid-in capital common stock	\$100	\$140	\$40
Retained earnings	\$100	\$115	\$15
Total stockholders' equity	\$300	\$357	\$57

## Summary

### CFF Calculation

## Summary

### Module: Analyzing Statements of Cash Flows I

Classification of Cash Flow  
CFO Calculation - Indirect Method  
CFO Calculation - Direct Method  
CFI Calculation  
CFF Calculation

# Module

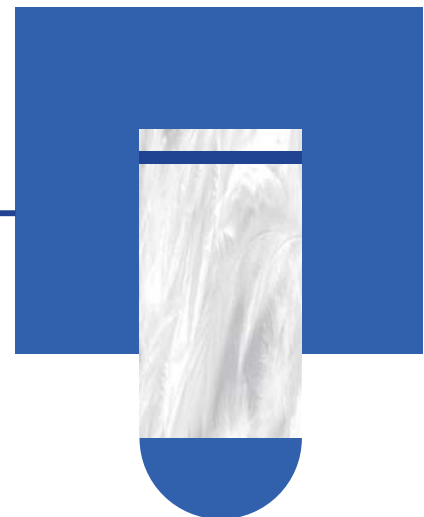


## Analyzing Statements of Cash Flows II

- Ratios and Common-Size Analysis
- Free Cash Flow

### Ratios and Common-Size Analysis

- ❑ Major Sources and Uses of Cash
- ❑ Ratios and Common-Size Analysis
- ❑ Evaluation of the Sources and Uses of Cash



### Major Sources and Uses of Cash

- **Major Sources and Uses of Cash**
  - Cash flow analysis begins with an evaluation of the firm's **sources and uses** of cash from operating, investing, and financing activities.
  - Sources and uses of cash change as the firm moves **through its life cycle**.
    - ✓ For example, when a firm is in the early stages of growth, it may experience negative operating cash flow **as it uses cash to finance** increases in inventory and receivables.
    - ✓ This negative operating cash flow is **usually financed externally** by issuing debt or equity securities. These sources of financing are **not sustainable**.
    - ✓ Eventually, the firm must begin generating positive operating cash flow or the sources of external capital may no longer be available.
    - ✓ Over the long term, successful firms must be able to generate operating cash flows that exceed capital expenditures and provide a return to debt and equity holders.

## — Ratios and Common-Size Analysis —

- **Common-Size Cash Flow Statement**

- The cash flow statement can be converted to common-size format by expressing each line item as a percentage of revenue.
- Alternatively, each inflow of cash can be expressed as a percentage of total cash inflows, and each outflow of cash can be expressed as a percentage of total cash outflows.
- **A revenue based common-size cash flow statement** is useful in identifying trends and forecasting future cash flow. Since each line item of the cash flow statement is stated in terms of revenue, once future revenue is forecast, cash flows can be estimated for those items that are tied to revenue.

## — Ratios and Common-Size Analysis —

- Examine the major sources and uses of cash

- Evaluating individual cash flow items

- **Operating Cash Flow**

- ✓ A check of the quality of a firm's earnings.

- **Investing Cash Flow**

- ✓ Increasing capital expenditures, a use of cash, is usually an indication of growth.

- **Financing Cash Flow**

- ✓ Whether the firm is generating cash flow by issuing debt or equity.
- ✓ Whether the firm is using cash to repay debt, reacquire stock, or pay dividends.

- **Common-size analysis**

- $$\frac{\text{cash flow statement account}}{\text{revenues}}$$

- $$\frac{\text{cash outflow}}{\text{total cash outflows}}$$

- $$\frac{\text{cash inflow}}{\text{total cash inflows}}$$

## — Evaluation of the Sources and Uses of Cash —

- **Evaluation of the Sources and Uses of Cash**

- Evaluation of the cash flow statement should involve an overall assessment of **the sources and uses of cash** between the three main categories as well as an assessment of **the main drivers of cash flow** within each category, as follows:
  - ✓ Evaluate **where the major sources and uses of cash flow** are between operating, investing, and financing activities.
  - ✓ Evaluate the primary determinants of operating cash flow.
  - ✓ Evaluate the primary determinants of investing cash flow.
  - ✓ Evaluate the primary determinants of financing cash flow.

## Example

### Ratios and Common-Size Analysis

- Which is an appropriate method of preparing a common-size cash flow statement?
  - A. Begin with net income and show the items that reconcile net income and operating cash flows.
  - B. Show each line item on the cash flow statement as a percentage of net revenue.
  - C. Show each line item on the cash flow statement as a percentage of total cash outflows.
- Solution: B.
  - Dividing each line item on the cash flow statement **by net revenue** is one of two acceptable approaches for preparing a common-size cash flow statement.
  - The other acceptable approach involves expressing each line item of cash inflow (outflow) as a percentage of total inflows (outflows) of cash.

## Summary

### Ratios and Common-Size Analysis

Major Sources and Uses of Cash  
Ratios and Common-Size Analysis  
Evaluation of the Sources and Uses of Cash

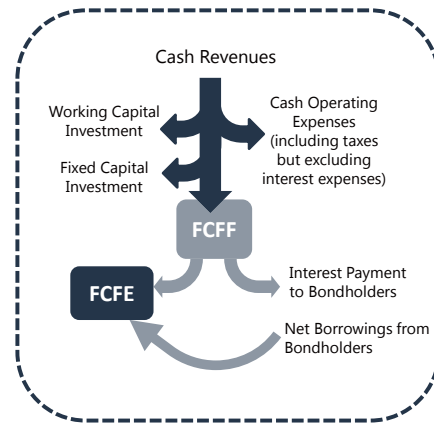
## Free Cash Flow

- ❑ Free Cash Flow to Firm
- ❑ Free Cash Flow to Equity



## Free Cash Flow

- Free cash flow attempts to measure the cash available for discretionary purposes.
- Two common measure
  - Free cash flow to the firm (FCFF)**
    - ✓ Cash available to all investors, both equity owners and debt holders
  - Free cash flow to equity (FCFE)**
    - ✓ Cash available to equity owners



## Free Cash Flow

- Under US GAAP**
  - $FCFF = NI + NCC - WCInv - FCInv + [Int \times (1 - \text{tax rate})]$
  - $FCFF = CFO - FCInv + [Int \times (1 - \text{tax rate})]$
  - $FCFE = CFO - FCInv + \text{Net borrowing}$ 
    - ✓ Where:
      - NI = net income
      - NCC = noncash charges ( depreciation and amortization)
      - Int = interest expense
      - FCInv = fixed capital investment (net capital expenditure)
      - WCInv = working capital investment= $\Delta WC = WC_1 - WC_0$ , Working Capital not including cash
      - Net borrowing = debt issued – debt repaid

## Free Cash Flow

- FCFF is calculated from net income**
  - $FCFF = NI + NCC + Int \times (1 - \text{tax rate}) - FCInv - WCInv$   
 $= EBIT \times (1 - \text{tax rate}) + NCC - FCInv - WCInv$
- FCFF is calculated from CFO when interest paid is deducted from CFO**
  - $FCFF = CFO + Int \times (1 - \text{tax rate}) - FCInv$
- FCFE is calculated as follows when interest paid is deducted from CFO**
  - $FCFE = [CFO + Int \times (1 - \text{tax rate}) - FCInv] + [\text{Net borrowing} - Int \times (1 - \text{tax rate})]$   
 $= CFO - FCInv + \text{Net borrowing}$   
 $= CFO - FCInv - \text{Net debt repayment}$

## Free Cash Flow

### ● FCFF calculation under US GAAP and IFRS

- All interest and dividend **received should be included in FCFF**.
- All interest and dividend **paid should be excluded from FCFF**.

	Interest received	Interest paid	Dividend received	Dividend paid	Adjustments
IFRS	CFO	CFO	CFO	CFF	+ Int paid $\times$ (1-t)
	CFO	CFF	CFO	CFF	
	CFI	CFO	CFI	CFF	+ Int received $\times$ (1-t) + Div received (if tax free) + Int paid $\times$ (1-t)
	CFO	CFO	CFO	CFO	+ Div paid + Int paid $\times$ (1-t)
US GAAP	CFO	CFO	CFO	CFF	+ Int paid $\times$ (1-t)

## Example

### Example

#### ● Computation of FCFF based on following information

		Calculation	\$
Cash flow from operating activities	\$	CFO	2,606
Cash received from customers	23,543		
Cash paid to suppliers	(11,900)	Plus: Interest paid $\times$ (1 – income tax rate)	170
Cash paid to employees	(4,113)	{ \$258 $\times$ [1 – 0.34] }	
Cash paid for other operating expenses	(3,532)	Less: Net investments in fixed capital	(538)
Cash paid for interest	(258)	(\$1,300 – \$762)	
Cash paid for income tax	(1,134)	FCFF	2,238
Net cash provided by operating activities	2,606		
Cash flow from investing activities			
Cash received from sale of equipment	762		
Cash paid for purchase of equipment	(1,300)		
Net cash used for investing activities	(538)		

\*Income tax rate = tax expense/pre-tax income = 34%

## Summary

### Free Cash Flow

Free Cash Flow to Firm  
Free Cash Flow to Equity

# Summary

## Module: Analyzing Statements of Cash Flows II

Ratios and Common-Size Analysis

Free Cash Flow

# Module



## Analysis of Inventories

- Distinguish between Product Costs and Period Costs
- Different Inventory Valuation Methods
- Perpetual and Periodic inventory systems
- Converting LIFO to FIFO
- Inventory Valuation (IFRS vs. U.S. GAAP)

### Distinguish between Product Costs and Period Costs

- 
- ❑ Product Costs
  - ❑ Period Costs
  - ❑ Cost of Goods Sold (COGS)



## — Distinguish between Product Costs and Period Costs —

### ● Cost of inventory

- Under IFRS, the costs to include in inventories are “all costs of purchase, costs of conversion, and other costs incurred in bringing the inventories **to their present location and condition.**”
  - ✓ The costs of purchase include the purchase price, import and tax-related duties, transport, insurance during transport, handling, and **other costs directly attributable to the acquisition of finished goods**, materials, and services. **Trade discounts, rebates, and similar items reduce** the price paid and the costs of purchase.
  - ✓ The **costs of conversion** include costs directly related to the units produced, such as direct labour, and fixed and variable overhead costs, including these product-related costs in inventory (i.e., as an asset) means that they will not be recognised as an expense (i.e., as cost of sales) on the income statement until the inventory is sold.
  - ✓ US GAAP provide a similar description of the costs to be included in inventory.
- Both IFRS and US GAAP
  - ✓ **Both exclude the following costs from inventory:** abnormal costs incurred as a result of waste of materials, labour or other production conversion inputs, **any storage costs (unless required as part of the production process)**, and **all administrative overhead and selling costs**. These excluded costs are treated as expenses and recognised on the income statement in the period in which they are incurred.
  - ✓ Including costs in inventory defers their recognition as an expense on the income statement **until the inventory is sold**. Therefore, **including costs in inventory that should be expensed** will overstate profitability on the income statement (because of the inappropriate deferral of cost recognition) and create an overstated inventory value on the balance sheet.

## — Distinguish between Product Costs and Period Costs —

### ● Product costs

- The costs included in inventory are similar under IFRS and US GAAP.
- These costs, known as product costs, are **capitalized** in the Inventories account on the balance sheet and include:
  - ✓ Purchase cost less trade discounts and rebates.
  - ✓ Conversion costs including labor and overhead.
  - ✓ Other costs necessary to bring the inventory to its present location and condition.
- By capitalizing inventory cost as an asset, expense recognition is delayed until the inventory is sold and revenue is recognized.

### ● Period costs

- Not all inventory costs are capitalized; some costs are **expensed** in the period incurred. These costs, known as period costs, include:
  - ✓ Abnormal waste of materials, labor, or overhead.
  - ✓ Storage costs (unless required as part of production).
  - ✓ Administrative overhead.
  - ✓ Selling costs.

## — Distinguish between Product Costs and Period Costs —

### ● Cost of goods sold

- **Cost of goods sold (COGS)** also referred to as **cost of sales (COS)** under IFRS, is related to the beginning balance of inventory, purchases, and the ending balance of inventory.
- The relationship is summarized in the following equation:
  - ✓ **COGS = beginning inventory + purchases - ending inventory**
  - ✓ This equation can be rearranged to solve for any of the four variables:
    - $\text{Purchases} = \text{ending inventory} - \text{beginning inventory} + \text{COGS}$
    - $\text{Beginning inventory} = \text{COGS} - \text{purchases} + \text{ending inventory}$
    - $\text{Ending inventory} = \text{beginning inventory} + \text{purchases} - \text{COGS}$

# Summary

## Distinguish between Product Costs and Period Costs

Product Costs  
Period Costs  
Cost of Goods Sold (COGS)

## Different Inventory Valuation Methods

- ❑ Specific Identification
- ❑ Weighted Average Cost
- ❑ First-in, First-out (FIFO)
- ❑ Last-in, First-out (LIFO)

### — Different Inventory Valuation Methods —

- **If the cost of inventory remains constant over time, determining the firm's COGS and ending inventory is simple.**
  - To compute COGS, simply multiply the number of units sold by the cost per unit.
  - To compute ending inventory, multiply the number of units remaining by the cost per unit.
- **Since cost of purchasing or producing inventory will change over time, firms must select a cost flow method (known as the cost flow assumption under US GAAP and cost flow formula under IFRS) to allocate the inventory cost to the income statement (COGS) and the balance sheet (ending inventory).**
  - Under IFRS, the permissible methods are:
    - ✓ Specific identification.
    - ✓ First-in, first-out.
    - ✓ Weighted average cost.
  - US GAAP permits these same cost flow methods, as well as the last-in, first-out (LIFO) method. LIFO is not allowed under IFRS.
  - The firm must employ the same cost flow method for inventories of similar nature and use.

## — Different Inventory Valuation Methods —

### ● Specific identification method

- Under the specific identification method, each unit sold is matched with the unit's actual cost.
  - ✓ Specific identification is appropriate when inventory items are not interchangeable and is commonly used by firms with a small number of costly and easily distinguishable items such as jewelry.
  - ✓ Specific identification is also appropriate for special orders or projects outside a firm's normal course of business.

### ● Weighted average cost

- The average cost per unit of inventory is computed by dividing the total cost of goods available for sale (beginning inventory + purchases) by the total quantity available for sale.
  - ✓ To compute COGS, the average cost per unit is multiplied by the number of units sold.
  - ✓ Similarly, to compute ending inventory, the average cost per unit is multiplied by the number of units that remain.
- During inflationary or deflationary periods, the weighted average cost method will produce an inventory value between those produced by FIFO and LIFO.

## — Different Inventory Valuation Methods —

### ● First-in, first-out (FIFO)

- Under the first-in, first-out (FIFO) method, the first item purchased is assumed to be the first item sold.
  - ✓ The advantage of FIFO is that ending inventory is valued based on the most recent purchases, arguably the best approximation of current cost.
  - ✓ Conversely, FIFO COGS is based on the earliest purchase costs. In an inflationary environment, COGS will be understated compared to current cost. As a result, earnings will be overstated.

### ● Last-in, first-out (LIFO)

- Under the last-in, first-out (LIFO) method, the item purchased most recently is assumed to be the first item sold.
  - ✓ In an inflationary environment, LIFO COGS will be higher than FIFO COGS, and earnings will be lower. Lower earnings translate into lower income taxes, which increase cash flow.
  - ✓ Under LIFO, ending inventory on the balance sheet is valued using the earliest costs. Therefore, in an inflationary environment, LIFO ending inventory is less than current cost.

## — Different Inventory Valuation Methods —

Method	Assumption	COGS consist of...	Ending inventory consists of...
<b>FIFO</b> ( US And IFRS)	The items first purchased are the first to be sold.	First purchased	More recent purchases
<b>LIFO</b> ( US Only)	The items last purchased are the first to be sold.	Last purchased	Earliest purchases
<b>Weighted average cost</b> ( AVCO ) ( US And IFRS)	Items sold are a mix of purchases.	Average cost of all items	Average cost of all items

## — Different Inventory Valuation Methods —

- Being the time of increasing price

Jan 1 beginning inventory	2 units @\$2 each
Jan 7 purchase	3 units @ \$3 each
Jan 12 sale	4 units

- LIFO
  - ✓  $\text{COGS} = 3 \times 3 + 1 \times 2 = \$11$
  - ✓  $\text{Inv ending} = 1 \times 2 = \$2$
- FIFO
  - ✓  $\text{COGS} = 2 \times 2 + 2 \times 3 = \$10$
  - ✓  $\text{Inv ending} = 1 \times 3 = \$3$

- LIFO provides the most useful estimate of COGS
- FIFO provides the most useful estimate of Inventory value

### Example

## Different Inventory Valuation Methods

- Zimt AG uses the FIFO inventory accounting method, and Nutmeg Inc. uses the LIFO method. Compared to the cost of replacing the inventory, during periods of rising prices the cost of goods sold reported by
  - Zimt is too low.
  - Nutmeg is too low.
  - Nutmeg is too high.
- Solution: A.
  - Zimt uses the FIFO method, so its cost of goods sold represents units purchased at a (no longer available) lower price.
  - Nutmeg uses the LIFO method, so its cost of goods sold is approximately equal to the current replacement cost of inventory.

## — Different Inventory Valuation Methods —

- In periods of rising prices and stable / increasing inventory quantities

		LIFO	FIFO
I/S		Higher COGS	<b>Lower COGS</b>
		Lower EBIT	Higher EBIT
		Lower taxes	<b>Higher taxes</b>
		Lower net income(EAT)	Higher net income (EAT)
B/S		Lower inventory balances	<b>Higher inventory balances</b>
		Lower working capital	Higher working capital
CFS		Higher CFO(↓ taxes paid )	<b>Lower CFO(↑ taxes paid )</b>
Ratios	<b>Profitability</b>	Lower net/gross margins	Higher net/gross margins
	<b>Liquidity</b>	Lower current ratio	Higher current ratio
	<b>Solvency</b>	Higher D/A and D/E	Lower D/A and D/E
	<b>Activity</b>	Higher inventory turnover	<b>Lower inventory turnover</b>

# Summary

## Different Inventory Valuation Methods

Specific Identification  
Weighted Average Cost  
First-in, First-out (FIFO)  
Last-in, First-out (LIFO)

## Perpetual and Periodic Inventory System

- ❑ Perpetual Inventory System
- ❑ Periodic Inventory System

### — Perpetual and Periodic Inventory System —

Periodic	Perpetual
<ul style="list-style-type: none"><li>● Inventory value and COGS are determined at the <u>end of an accounting period</u></li><li>● Need a purchase account</li></ul>	<ul style="list-style-type: none"><li>● Inventory value and COGS are <u>updated continuously</u></li><li>● Inventory purchased and sold is recorded directly in inventory</li><li>● A purchase account is not necessary</li></ul>
<ul style="list-style-type: none"><li>● Same result for FIFO &amp; Specific identification method</li><li>● Different result for LIFO &amp; AVCO</li></ul>	

## — Perpetual and Periodic Inventory System —

- The inventory system is to determine how **the costs that are assigned to the units sold** and to the units remaining in inventory.
- **Firms account for changes in inventory using either a periodic or perpetual system.**
  - In a **periodic inventory system**, inventory values and COGS are determined at the end of the accounting period.
    - ✓ No detailed records of inventory are maintained; rather, inventory acquired during the period is reported in a Purchases account.
    - ✓ At the end of the period, purchases are added to beginning inventory to arrive at cost of goods available for sale. To calculate COGS, ending inventory is subtracted from goods available for sale.
  - In a **perpetual inventory system**, inventory values and COGS are updated continuously.
    - ✓ **Inventory purchased and sold** is recorded directly in inventory when the transactions occur.
    - ✓ Thus, a Purchases account is not necessary.
  - For the FIFO and specific identification methods, ending inventory values and COGS are **the same** whether a periodic or perpetual system is used.
  - However, **periodic and perpetual inventory systems** can produce **different values** for inventory and COGS under the LIFO and weighted average cost methods.

### Example

#### Perpetual and Periodic Inventory System

Jan 1 beginning inventory	2 units @\$2 each
Jan 7 purchase	3 units @ \$3 each
Jan 12 sale	4 units
Jan 19 purchase	5 units @ \$5each
Jan 29 sale	3 units
Calculate COGS and ending inventory under the FIFO and LIFO cost flow method using the two inventory systems	

### Example

#### Perpetual and Periodic Inventory System

- **FIFO (Periodic)\***

Jan Sale of 7 Units Consists of:			
Units	From	Costs	\$
2	Jan 1 beginning inventory	2 units @ \$2each	4
3	Jan 7 purchase	3 units @\$3 each	9
2	Jan 19 purchase	2 units @ \$5 each	10
	<b>Total</b>		<b>23</b>
Jan Ending Inventory			
Units	From	Costs	\$
3	Jan 19 purchase	3 units @\$5 each	<u>15</u>
	<b>Total</b>		<b>15</b>

## Example

### Perpetual and Periodic Inventory System

- FIFO (Perpetual)\*

Jan 12 Sale of 4 Units Consists of:			
Units	From	Costs	\$
2	Jan 1 beginning inventory	2 units @\$2 each	4
2	Jan 7 purchase	2 units @ \$3 each	<u>6</u>
	<b>Total</b>		<b>10</b>
Jan 29 Sale of 3 Units Consists of :			
Units	From	Costs	\$
1	Jan 7 purchase	1 units @ \$3 each	3
2	Jan 19 purchase	2 units @ \$5each	<u>10</u>
	<b>Total</b>		<b>13</b>
Jan Ending Inventory			
Units	From	Costs	\$
2	Jan 19 purchase	2 units @\$5 each	<u>15</u>

Same result under FIFO

## Example

### Perpetual and Periodic Inventory System

- LIFO (Periodic)\*

Jan Sale of 7 Units Consists of:			
Units	From	Costs	\$
5	Jan 19 purchase	5 units @ \$5each	25
2	Jan 7 purchase	2 units @\$3 each	6
	<b>Total</b>		<b>31</b>
Jan Ending Inventory			
Units	From	Costs	\$
2	Jan 1 beginning inventory	2 units @\$2 each	4
1	Jan 7 purchase	1 units @\$3 each	<u>3</u>
	<b>Total</b>		<b>7</b>

## Example

### Perpetual and Periodic Inventory System

- LIFO (Perpetual)\*

Jan 12 Sale of 4 Units Consists of			
Units	From	Costs	\$
3	Jan 7 purchase	3 units @\$3 each	9
1	Jan 1 beginning inventory	1 units @ \$2 each	2
	<b>Total</b>		<b>11</b>
Jan 29 Sale of 3 Units Consists of :			
Units	From	Costs	\$
3	Jan 19 purchase	3 units @ \$5each	15
	<b>Total</b>		<b>15</b>
Jan Ending Inventory			
Units	From	Costs	\$
1	Jan 1 beginning inventory	1 units @\$2 each	2
2	Jan 19 purchase	2 units @\$5 each	10
	<b>Total</b>		<b>12</b>

Different result under LIFO

## Example

### Perpetual and Periodic Inventory System

- A firm's purchases and sales during a period occur in the following order:

Beginning inventory	3 units \$ 390 per unit
Purchase	7 units \$ 385 per unit
Sale	5 units
Purchase	4 units \$ 380 per unit
Sale	8 units
Purchase	5 units \$ 370 per unit

- Using LIFO and a perpetual inventory system, the firm's cost of sales for the period is:  
A. \$4,605.  
B. \$4,995.  
C. \$5,145.

## Example

### Perpetual and Periodic Inventory System

- Solution: B.
  - Cost of sales =  $5 \times \$385 + 4 \times \$380 + 2 \times \$385 + 2 \times \$390 = \$4,995$ .
    - ✓ The cost of the first 5 units sold is \$385 per unit
    - ✓ The cost of 4 of them is \$380 per unit, 2 have a cost of \$385 per unit, and 2 have a cost of \$390 per unit.

Beginning inventory	3 units \$ 390 per unit	-2
Purchase	7 units \$ 385 per unit	-5 -2
Sale	5 units	
Purchase	4 units \$ 380 per unit	-4
Sale	8 units	
Purchase	5 units \$ 370 per unit	

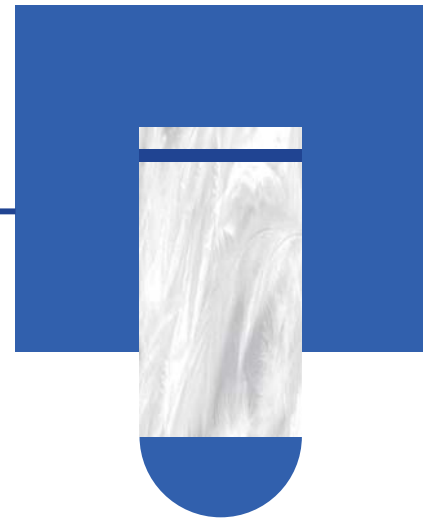
## Summary

### Perpetual and Periodic Inventory System

Perpetual Inventory System  
Periodic Inventory System

## Converting LIFO to FIFO

- ❑ Converting LIFO to FIFO
- ❑ LIFO Liquidation



## Converting LIFO to FIFO

- **LIFO reserve**
  - The difference between the reported LIFO inventory carrying amount and the inventory amount that would have been reported if the FIFO method had been used, which should be disclosed in the footnote.
  - $\text{LIFO reserve} = \text{FIFO inventory} - \text{LIFO inventory}$
- **LIFO to FIFO Conversion**
  - $\text{INV}_F = \text{INV}_L + \text{LIFO reserve}$
  - $\text{COGS}_F = \text{COGS}_L - \Delta \text{LIFO reserve}$
  - B/S:
    - ✓ Asset: +LIFO Reserve
    - ✓ +Equity (retained earnings):  $\text{LIFO Reserve}_0 \times (1 - t_{\text{past}}) + \Delta \text{LIFO Reserve} \times (1 - t_{\text{current}})$
    - ✓ - Reduction in cash:  $-\text{LIFO Reserve}_0 \times t_{\text{past}} - \Delta \text{LIFO Reserve} \times t_{\text{current}}$
  - I/S:  $+\text{NI} + \Delta \text{LIFO Reserve} \times (1 - t_{\text{current}})$ 
    - ✓  $\Delta \text{LIFO Reserve} = \text{LIFO Reserve}_1 - \text{LIFO Reserve}_0$

## Example

### Converting LIFO to FIFO

- A company uses LIFO inventory valuation and has a 40 percent marginal tax rate. The company reports an increase in the LIFO reserve of \$5,000 for the year. If the company had used FIFO instead of LIFO, the amount reported for:
  - A. net income would be \$3,000 higher.
  - B. net income would be \$5,000 higher.
  - C. cost of goods sold would be \$3,000 higher.
- Solution: A.
  - Using FIFO, cost of goods sold would be \$5,000 lower and income before taxes \$5,000 higher
  - Increase in NI FIFO =  $\$5,000 \times (1 - \text{tax rate}) = \$3,000$

## Example

### Converting LIFO to FIFO

- Sauerbraten Corp. reported 2007 sales (\$ in millions) of \$2,157 and cost of goods sold of \$1,827. The company uses the LIFO method for inventory valuation and discloses that if the FIFO inventory valuation method had been used, inventories would have been \$63.3 million and \$56.8 million higher in 2007 and 2006, respectively. If Sauerbraten used the FIFO method exclusively, it would have reported 2007 gross profit closest to:
  - A. \$324.
  - B. \$330.
  - C. \$337.
- Solution: C.
  - If under FIFO
    - ✓  $\Delta \text{LIFO Reserve} = \text{LIFO Reserve}_1 - \text{LIFO Reserve}_0 = \$63.3 - \$56.8 = \$6.5$
    - ✓  $\text{COGS FIFO} = \text{COGS LIFO} - \Delta \text{LIFO Reserve} = \$1,827 - \$6.5 = \$1,820.5$
    - ✓  $\text{Gross profit under FIFO} = \text{Sales} - \text{COGS FIFO} = \$2,157 - \$1,820.5 = \$336.5$

## Example

### Converting LIFO to FIFO

- Sauerbraten Corp. reported 2007 sales (\$ in millions) of \$2,157 and cost of goods sold of \$1,827. The company uses the LIFO method for inventory valuation and discloses that if the FIFO inventory valuation method had been used, inventories would have been \$63.3 million and \$56.8 million higher in 2007 and 2006, respectively. Given  $t_{2006}=20\%$ ,  $t_{2007}=30\%$ , Calculate the following for 2017 under the FIFO method instead of the LIFO method: net income, increase in retained earnings and reduction in cash.
- Solution:
  - $\text{LIFO NI}_{2007} = (\$2,157 - \$1,827) \times (1-30\%) = \$231$
  - $\text{FIFO NI}_{2007} = \text{LIFO NI}_{2007} + \Delta \text{LIFO Reserve} \times (1-t_{\text{current}}) = 231 + 6.5 \times (1-30\%) = \$235.55$
  - +Equity (retained earnings):  $\text{LIFO Reserve}_0 \times (1-t_{\text{past}}) + \Delta \text{LIFO Reserve} \times (1-t_{\text{current}})$   
 $= 56.8 \times (1-20\%) + 6.5 \times (1-30\%) = \$49.99$
  - Reduction in cash<sub>2007</sub>:  $-\text{LIFO Reserve}_0 \times t_{\text{past}} - \Delta \text{LIFO Reserve} \times t_{\text{current}}$   
 $= -56.8 \times 20\% - 6.5 \times 30\% = -\$13.31$

## Example

### Converting LIFO to FIFO

- Sauerbraten Corp. reported 2007 sales (\$ in millions) of \$2,157 and cost of goods sold of \$1,827. Inventories at year-end 2007 and 2006, respectively, were \$553 and \$562. The company uses the LIFO method for inventory valuation and discloses that if the FIFO inventory valuation method had been used, inventories would have been \$63.3 million and \$56.8 million higher in 2007 and 2006, respectively. Compared to the inventory turnover ratio reported, if Sauerbraten had exclusively used the FIFO method its inventory turnover ratio would have been closest to:
  - A. 2.96.
  - B. 3.28.
  - C. 3.49.
- Solution: A.
  - Under LIFO, Inventory turnover =  $\text{COGS}/\text{average inventory} = \$1,827/\$557.5 = 3.28$ .
  - Under FIFO
    - ✓  $\text{COGS FIFO} = \text{COGS LIFO} - \Delta \text{LIFO Reserve} = \$1,827 - \$6.5 = \$1,820.5$ ,
    - ✓  $\text{average inventory} = [(\$562 + \$56.8) + (\$553 + \$63.3)]/2 = (\$618.8 + \$616.3)/2 = \$617.6$
    - ✓ Adjusted inventory turnover =  $\$1,820.5/\$617.6 = 2.96$

## LIFO Liquidation

- **LIFO liquidation**

- When the number of units sold **exceeds** the number of units purchased or manufactured, the number of units in ending inventory is lower than the number of units in beginning inventory and a company using LIFO will experience a LIFO liquidation (some of the older units held in inventory are assumed to have been sold).
- Inventory profits caused by a LIFO liquidation, however, are one-time events and are not sustainable.
- LIFO liquidations can occur for a variety of reasons.
  - ✓ The reduction in inventory levels may be outside of management's control;
  - ✓ Analysts should be aware that management can potentially manipulate and inflate their company's reported gross profits and net income at critical times by intentionally reducing inventory quantities and liquidating older layers of LIFO inventory (selling some units of beginning inventory);
  - ✓ During economic downturns, LIFO liquidation may result in higher gross profit than would otherwise be realised.
- **Under LIFO liquidation, and if price is rising**
  - COGS does not reflect current costs;
  - LIFO reserve may decline;
  - An analyst should adjust COGS for decrease in LIFO reserve.

## Example

### LIFO Liquidation

- An adjustment to operating income for the effects of a change in LIFO reserves will most likely be required if the change in the LIFO reserve is the result of:
  - A. price declines.
  - B. price increases.
  - C. a decrease in the number of units held in inventory.
- Solution: C.

## Summary

### Converting LIFO to FIFO

Converting LIFO to FIFO  
LIFO Liquidation

## Inventory Valuation (IFRS vs. U.S. GAAP)

- ❑ Inventory Valuation under IFRS
- ❑ Inventory Valuation under U.S. GAAP
- ❑ Comparison between IFRS and U.S. GAAP



### Inventory Valuation

IFRS
<ul style="list-style-type: none"> <li>• <b>Cost</b></li> </ul> <p>Or</p> <ul style="list-style-type: none"> <li>• <b>Net realizable value</b></li> </ul> <p>NRV = selling price – estimated cost of completion – selling costs</p>
<p>If Cost &gt; NRV</p> <ul style="list-style-type: none"> <li>• The inventory should be <u>written down</u> to <b>NRV</b> on the B/S , and a loss is recognized as part of COGS <b>or separately</b>.</li> <li>• Can be reversed to its original cost and a gain is recognized in the I/S.</li> </ul>

### Inventory Valuation

US GAAP (other than LIFO & retail method)	LIFO & retail method under US GAAP
<ul style="list-style-type: none"> <li>• <b>Cost</b></li> </ul> <p>Or</p> <ul style="list-style-type: none"> <li>• <b>Net realizable value (NRV)</b></li> </ul> <p>NRV = selling price – estimated cost of completion – selling costs</p>	<ul style="list-style-type: none"> <li>• <b>Cost</b></li> </ul> <p>Or</p> <ul style="list-style-type: none"> <li>• <b>Market value</b></li> </ul> <ul style="list-style-type: none"> <li>• If replacement cost (RC) &gt; NRV Market value = NRV</li> <li>• If replacement cost (RC) &lt; NRV – normal profit margin Market value = NRV – normal profit margin</li> <li>• NRV – normal profit margin &lt; RC &lt; NRV Market value = replacement cost</li> </ul>
<p>If Cost &gt; NRV</p> <ul style="list-style-type: none"> <li>• The inventory should be <u>written down</u> to <b>NRV</b> on the B/S , and a loss is recognized as part of COGS.</li> <li>• Can <b>not</b> be reversed to its original cost and a gain is recognized in the I/S.</li> </ul>	<p>If Cost &gt; Market <b>value</b></p> <ul style="list-style-type: none"> <li>• The inventory is <u>written down</u> to <b>market value</b> on the B/S , and a loss is recognized in the COGS.</li> <li>• No subsequent reversal is allowed.</li> </ul>

## Inventory Valuation

### • Inventory Changes

- Although rare, a firm can change inventory cost flow methods. In most cases, the change is made retrospectively.
  - ✓ That is, the prior years' financial statements are recast based on the new cost flow method.
  - ✓ The cumulative effect of the change is reported as an adjustment to the beginning retained earnings of the earliest year presented.
- Under IFRS, the firm must demonstrate that the change will provide reliable and more relevant information. Under US GAAP, the firm must explain why the change in cost flow method is preferable
- An exception to retrospective application applies when a firm changes to LIFO from another cost flow method.
  - ✓ In this case, the change is applied prospectively; no adjustments are made to the prior periods.
  - ✓ With prospective application, the carrying value of inventory under the old method simply becomes the first layer of inventory under LIFO in the period of the change.

### Example

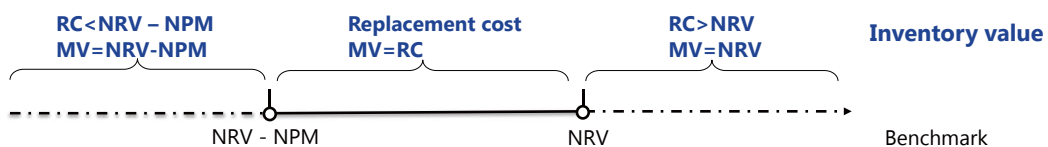
#### Inventory Valuation

- The following information relates to Zoom Inc.
  - Original cost                      \$210
  - Estimated selling price        \$225
  - Estimated selling cost         \$22
  - Replacement cost              \$197
  - Normal profit margin (NPM)   \$12
- What are the per unit carrying value of Zoom's inventory under IFRS and US GAAP (under LIFO)?
- **Solution:**
  - **Under IFRS**
    - ✓  $NRV = \$225 - 22 = \$203$
    - ✓ Original cost = \$210
    - ✓ The carrying value should be the lower, i.e. \$203 with a impairment loss of \$7 immediately recognized in I/S.

### Example

#### Inventory Valuation

- **Under US GAAP (LIFO)**
  - ✓ Replacement cost = \$197
  - ✓  $NRV - \text{normal profit margin} = \$203 - \$12 = \$191$
  - ✓  $NRV = \$203$
  - ✓  $NRV - \text{normal profit margin} < \text{Replacement cost} < NRV$
  - ✓ Market = RC = \$197
  - ✓ The carrying value should be the lower i.e. \$197 with a impairment loss of \$13 immediately recognized in I/S.



## Example

### Inventory Valuation

- Zimt AG wrote down the value of inventory in 2007 and reversed the write-down in 2008. Compared to ratios calculated if the write-down had never occurred, Zimt's reported 2007
  - A. current ratio was too high.
  - B. gross margin was too high
  - C. inventory turnover was too high.
- Solution: C.
  - The write-down reduced the value of inventory and **increased cost of goods sold** in 2007.
  - The higher numerator and lower denominator mean that the inventory turnover ratio as reported was too high.
  - Gross margin and the current ratio were both too low.

## Example

### Inventory Valuation

- Eric's Used Bookstore prepares its financial statements in accordance with US GAAP. Inventory was purchased for \$1 million and later marked down to \$550,000. However, one of the books was later discovered to be a rare collectible item, and the inventory is now worth an estimated \$3m.
- The inventory is most likely reported on the balance sheet at
  - A. \$550,000.
  - B. \$1,000,000.
  - C. \$3,000,000.
- Solution: A.
  - Under US GAAP, inventory is carried at the lower of cost or market value. After being written down a new cost basis is determined and further revisions may only reduce the value further.

## Example

### Inventory Valuation

- Fernando's Pasta purchased inventory and later wrote it down, though the current realizable value is higher than the value when written down. Fernando's inventory balance will most likely be
  - A. higher if it complies with IFRS.
  - B. higher if it complies with US GAAP.
  - C. the same under US GAAP and IFRS.
- Solution: A.
  - IFRS permit the reversal of inventory write-downs, US GAAP does not.

## Inventory Valuation

- **How effectively a firm is managing its inventory**

- Ratio analysis - Affected by the choice of inventory cost flow method
  - ✓ Inventory changes - Changes in accounting policy

From other methods to LIFO	Other changes
Prospective application	Retrospective application
Explain / Demonstrate the change is preferable (US GAAP) (result in reliable and more relevant information under IFRS)	

- Disclosure in footnotes – Useful in facilitating comparisons with other firms or industry average

## Inventory Valuation

- **Comparison**

- IFRS require the following financial statement disclosures concerning inventory:
  - ✓ a. the accounting policies adopted in measuring inventories, including the cost formula (inventory valuation method) used;
  - ✓ b. the total carrying amount of inventories and the carrying amount in classifications (for example, merchandise, raw materials, production supplies, work in progress, and finished goods) appropriate to the entity;
  - ✓ c. the carrying amount of inventories carried at fair value less costs to sell;
  - ✓ d. the amount of inventories recognised as an expense during the period (cost of sales);
  - ✓ e. the amount of any write-down of inventories recognised as an expense in the period;
  - ✓ f. the amount of any reversal of any write-down that is recognised as a reduction in cost of sales in the period;
  - ✓ g. the circumstances or events that led to the reversal of a write-down of inventories; and
  - ✓ h. the carrying amount of inventories pledged as security for liabilities.
- Inventory-related disclosures under US GAAP are very similar to the disclosures above, except that requirements (f) and (g) are not relevant because US GAAP do not permit the reversal of prior-year inventory write-downs. US GAAP also require disclosure of significant estimates applicable to inventories and of any material amount of income resulting from the liquidation of LIFO inventory.

## Inventory Valuation

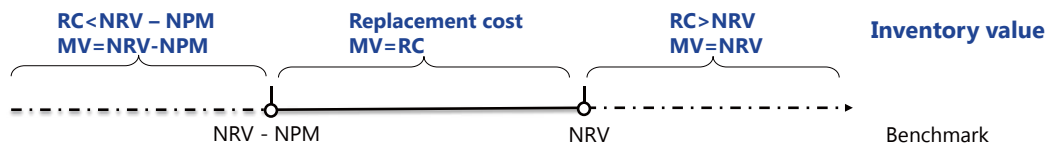
- **Agricultural inventory**

- **Inventories IAS 2** does not apply to the **inventories of producers of agricultural and forest products and minerals and mineral products, nor to commodity broker– traders**.
  - ✓ These inventories may be measured at net realisable value (=fair value - costs to sell and complete) according to well-established industry practices.
    - If an **active market exists** for these products, the quoted market price in that market is the appropriate basis for determining the fair value of that asset;
    - If an **active market does not exist**, a company may use market determined prices or values (such as the most recent market transaction price) when available for determining fair value.
  - ✓ Changes in the value of inventory (increase or decrease) are recognised in I/S in the period of the change.
- **US GAAP is similar to IFRS** in its treatment of inventories of agricultural and forest products and mineral ores.
  - ✓ **Mark-to-market inventory accounting** is allowed for bullion.

# Inventory Valuation

## • Comparison

Accounting treatment of inventory revaluation between IFRS and US GAAP		
	IFRS	US GAAP
<b>Impairment</b>	Should	Should
Reverse (value of inventory < historical cost)	Permitted	Not permit
Write up (Value of inventory > historical cost)	do not allow	do not allow
Mineral inventory	Net Realizable Value	Net Realizable Value
LIFO and retail method		Lower(cost, market)



## Summary

### Inventory Valuation (IFRS vs. U.S. GAAP)

- Inventory Valuation under IFRS
- Inventory Valuation under U.S. GAAP
- Comparison between IFRS and U.S. GAAP

## Summary

### Module: Analysis of Inventories

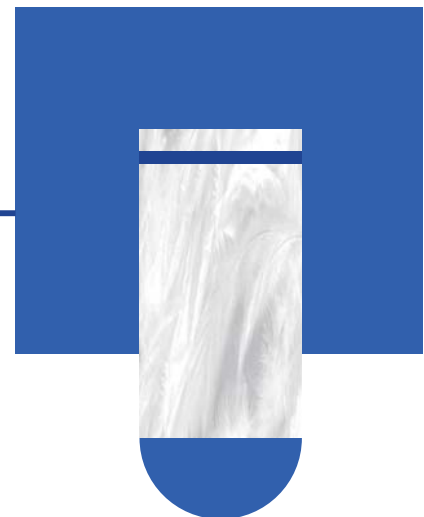
- Distinguish between Product Costs and Period Costs
- Different Inventory Valuation Methods
- Perpetual and Periodic inventory systems
- Converting LIFO to FIFO
- Inventory Valuation (IFRS vs. U.S. GAAP)

## Analysis of Long-Term Assets

- Tangible Assets
- Intangible Assets
- Depreciation Methods
- Impairment of Long-term assets
- Revaluation and Disclosure of Long-term Assets
- Investment Property

### Tangible Assets

- Measurement of Tangible Assets
- Capitalizing vs. Expensing



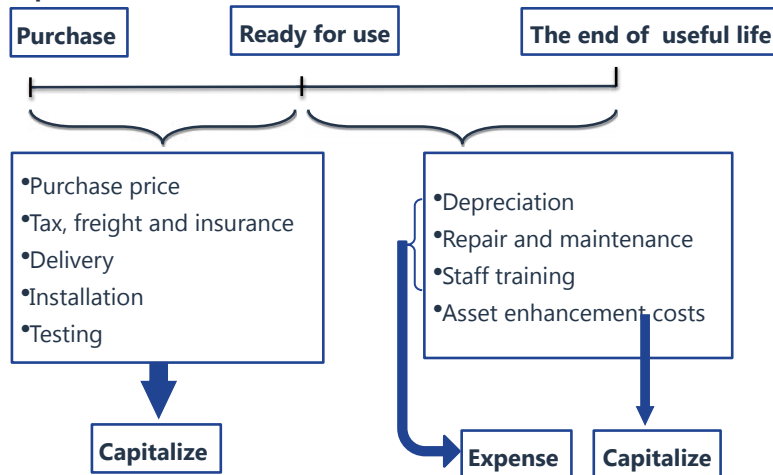
### Tangible Assets

- Acquisition of Long-Lived Assets
  - Upon acquisition, property, plant, and equipment (tangible assets **with an economic life of longer than one year and intended to be held for the company's own use**) are recorded on the balance sheet at cost, which is typically the same as their fair value.
  - Accounting for an intangible asset depends on how the asset is acquired.
    - ✓ If several assets are acquired as part of a group, the purchase price is **allocated to each asset on the basis of its fair value**. An asset's cost potentially includes expenditures additional to the purchase price.
  - A key concept in accounting for expenditures related to long-lived assets is whether and when such expenditures are **capitalised** (i.e., included in the asset shown on the balance sheet) versus **expensed** (i.e., treated as an expense of the period on the income statement).
  - After examining the specific treatment of certain expenditures, we will consider the general financial statement impact of capitalising versus expensing and two analytical issues related to the decision—namely, the effects **on an individual company's trend analysis** and **on comparability across companies**.

## Tangible Assets

### ● Tangible Assets\*

Capitalize or expense



## Tangible Assets

### ● Tangible Assets\*

	Measurement	
	Historical costs	Carrying value
Also called:	<ul style="list-style-type: none"> <li>The gross investment in the assets</li> </ul>	<ul style="list-style-type: none"> <li>The carrying amount</li> <li>The net book value</li> <li>The book value</li> <li>The ending net investment in assets</li> </ul>
Measurement	Initial measurement <b>Purchase price</b> <b>Tax, freight and insurance</b> <b>Delivery</b> <b>Installation</b> <b>Testing</b>	Subsequent measurement Equals to Historical costs → Cost model – accumulated depreciation – accumulated impairment losses or Revaluation (IFRS only) → Revaluation model

## Example

## Tangible Assets

- Example of Tangible Assets: JOOVI Inc. has recently purchased and installed a new machine for its manufacturing plant. The company incurred the following costs:

Purchase price	\$12,980
Freight and insurance	\$1,200
Installation	\$700
Testing	\$100
Maintenance staff training cost	\$500

- The total cost of the machine to be shown on JOOVI's balance sheet is closest to:
  - \$14,180
  - \$14,980.
  - \$15,480.
- Solution : B
  - Only costs necessary for the machine to be ready for use can be capitalized, therefore, total capitalized costs = 12,980 + 1,200 + 700 + 100 = \$14,980.

# Summary

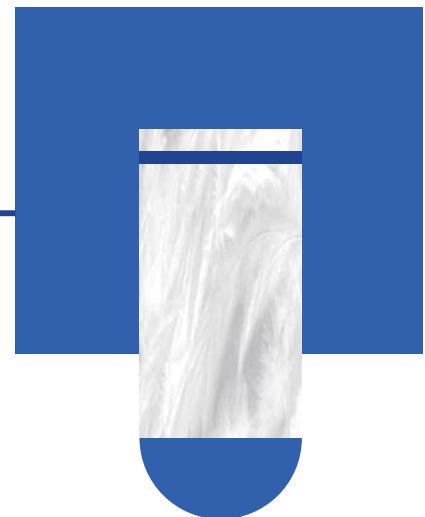
## Tangible Assets

Measurement of Tangible Assets

Capitalizing vs. Expensing

## Intangible Assets

- ❑ Measurement of Intangible Assets
- ❑ Capitalizing vs. Expensing
- ❑ Goodwill



## Intangible Assets

- **Intangible assets**
  - Intangible assets are **identifiable non-monetary assets without physical substance**. An identifiable asset can be **acquired singly** (can be separated from the entity) or is the result of **specific contractual or legal rights or privileges**.
    - ✓ Examples include patents, licenses, and trademarks. The most common asset that is not a separately identifiable asset is accounting goodwill.
  - Intangible assets are assets **lacking physical substance**. Intangible assets include items that involve exclusive rights, such as patents, copyrights, trademarks, and franchises.
  - Under IFRS, identifiable intangible assets must meet three definitional criteria.
    - ✓ They must be identifiable (either capable of being separated from the entity or arising from contractual or legal rights), under the control of the company, and expected to generate future economic benefits.
  - In addition, two recognition criteria must be met:
    - ✓ It is probable that the expected future economic benefits of the asset will flow to the company,
    - ✓ and the cost of the asset can be reliably measured.
  - Goodwill, which is **not considered an identifiable intangible asset**, arises when one company purchases another and the acquisition price exceeds the fair value of the net identifiable assets (both the tangible assets and the identifiable intangible assets, minus liabilities) acquired.

## Intangible Assets

### Long-term assets without physical substance

Identifiable IA	Unidentifiable IA	Internally generated
<ul style="list-style-type: none"> <li>Can be purchased separately</li> <li>e.g. Patents, Trademarks, Copyright purchased externally</li> <li>Some have a finite useful life and others have an indefinite useful life</li> </ul>	<ul style="list-style-type: none"> <li>Cannot be purchased separately and may have an indefinite life</li> <li>e.g. Goodwill</li> </ul>	<ul style="list-style-type: none"> <li>Cannot be capitalized on B/S</li> <li>e.g. Research and Development cost under <u>US GAAP</u></li> </ul>
Capitalized on the B/S		Expensed as incurred



IA with a finite UL – Amortization over UL (SL, Zero salvage value)  
 IA with an indefinite UL – Annual impairment test

## Intangible Assets

### Intangible assets

- Intangible assets purchased in situations other than business combinations, such as buying a patent, are treated at acquisition the same as long-lived tangible assets; they are recorded at their fair value when acquired, which is assumed to be equivalent to the purchase price.
- If several intangible assets are acquired as part of a group, the purchase price is allocated to each asset on the basis of its fair value.
- IFRS require that expenditures on research (or during the research phase of an internal project) be expensed rather than capitalised as an intangible asset.
- IFRS allow companies to recognise an intangible asset arising from development expenditures (or the development phase of an internal project) if certain criteria are met, including a demonstration of the technical feasibility of completing the intangible asset and the intent to use or sell the asset.
  - Development is defined as "the application of research findings or other knowledge to a plan or design for the production of new or substantially improved materials, devices, products, processes, systems or services before the start of commercial production or use."
- Generally, US GAAP require that both research and development costs be expensed as incurred but require capitalisation of certain costs related to software development

## Intangible Assets

### Comparison:

- IFRS provides that:
  - For internally created intangible assets, the company must separately identify the research phase (includes activities that seek new knowledge or products) and the development phase (occurs after the research phase and includes design or testing of prototypes and models).
  - Costs to internally generate intangible assets during the research phase must be expensed on I/S.
  - Costs (technological feasibility, the ability to use or sell the resulting asset, and the ability to complete the project) incurred in the development stage can be capitalized as intangible assets if certain criteria are met.
- US GAAP prohibits:
  - The capitalization as an asset of most costs of internally developed intangibles and research and development. All such costs usually must be expensed.

## Intangible Assets

Type of Expenditure	IFRS	US GAAP
Research	Expense as incurred	
Development	Capitalize if certain criteria are met	<p>Expense as incurred Except for : • Costs to develop a software</p> <div style="border: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> <li>• For sales to others <ul style="list-style-type: none"> <li>✓ Expensed as incurred.</li> <li>✓ Once economic feasibility is established, subsequent production costs can be capitalized.</li> </ul> </li> <li>• For own internal use <ul style="list-style-type: none"> <li>✓ Expense until it is probable that the project will be completed and that the software will be used as intended.</li> </ul> </li> </ul> <p>Thereafter, Capitalized</p> </div>

## Intangible Assets

	Measurement	
	Historical costs	Carrying value
Also called:	The gross investment in the assets	<ul style="list-style-type: none"> <li>• The carrying amount</li> <li>• The net book value</li> <li>• The book value</li> <li>• The ending net investment in assets</li> </ul>
Measurement	Initial measurement Equals to the original purchase price	<p>Subsequent measurement Equals to Historical costs → Cost model – accumulated amortization – accumulated impairment losses or <b>Revaluation (IFRS only) → Revaluation model</b></p>

## Intangible Assets

### ● Goodwill

- Accounting standards' requirements for **recognizing goodwill** can be summarized by the following steps:

- ✓ The total cost to purchase the target company (the acquiree) is determined.
- ✓ The acquiree's identifiable assets are measured at fair value. The acquiree's liabilities and **contingent liabilities** are measured at fair value. The difference between the fair value of identifiable assets and the fair value of the liabilities and contingent liabilities equals the **net identifiable assets acquired**.
- ✓ Goodwill arising from the purchase = the cost to purchase the target company - the net identifiable assets acquired.
- ✓ Occasionally, a transaction will involve the purchase of net identifiable assets with a value greater than the cost to purchase. Such a transaction is called a "**bargain purchase**." Any gain from a bargain purchase is recognized in profit and loss in the period in which it arises.

## Intangible Assets

- **Goodwill**

- Under both IFRS and US GAAP, accounting goodwill arising from acquisitions is capitalized.
  - ✓ Goodwill is **not amortised but is tested for impairment annually**.
  - ✓ If goodwill is deemed to be impaired, an impairment loss is charged against income in the current period. An impairment loss reduces current earnings. An impairment loss also reduces total assets, so some performance measures, such as return on assets (net income divided by average total assets), may actually increase in future periods. An impairment loss is **a non-cash item**.

## Intangible Assets

- **Goodwill**

- In addition, analysts can develop expectations about a company's performance following an acquisition by taking into account the purchase price paid **relative to the net assets and earnings prospects of the acquired company**.
- The recognition and impairment of goodwill can significantly affect the comparability of financial statements between companies. Therefore, analysts often adjust the companies' financial statements by removing the impact of goodwill. Such adjustments include:
  - ✓ **excluding goodwill** from balance sheet data used to compute financial ratios,
  - ✓ **excluding goodwill impairment losses** from income data used to examine operating trends.

## Summary

### Intangible Assets

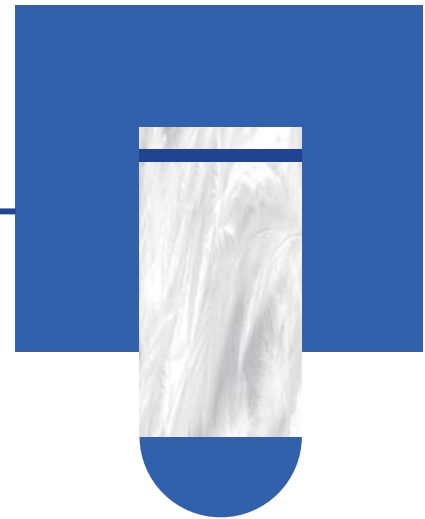
Measurement of Intangible Assets

Capitalizing vs. Expensing

Goodwill

## Depreciation Methods

- ❑ Straight-Line Method
- ❑ Accelerated Depreciation Method (Double-declining Balance)
- ❑ Units-of-Production Method
- ❑ The Choice of Useful Life and Residual Value / Salvage Value



## Depreciation Methods

- **Depreciation**
  - Depreciation is the systematic allocation of an asset's cost over time. Two important terms are:
    - ✓ **Carrying (book) value.** The net value of an asset or liability on the balance sheet. For property, plant, and equipment, carrying value equals historical cost minus accumulated depreciation.
    - ✓ **Historical cost.** The original purchase price of the asset including installation and transportation costs. Historical cost is also known as **gross investment** in the asset.
    - ✓ Depreciation is a real and significant operating expense. Even though depreciation doesn't require current cash expenditures (the cash outflow was made in the past when the asset was purchased), it is an expense nonetheless and cannot be ignored.
  - The analyst must decide whether the reported depreciation expense is **more or less than economic depreciation**, which is the actual decline in the value of the asset over the period.
  - **Depreciating the rental assets** by a greater amount during the first year would have better approximated economic depreciation and reduced reported income.

## Depreciation Methods

Depreciation	
Straight-Line	SL depreciation expense = $\frac{\text{cost} - \text{residual value}}{\text{useful life}}$
Accelerated Depreciation (Double-declining balance)	Depreciation expense = (2/asset life in years) × net book value at the beginning of year
Units-of-production	$\frac{\text{Original cost} - \text{salvage value}}{\text{Life in output units}} \times \text{Out put units in period}$

## Depreciation Methods

- **Component Depreciation**

- IFRS requires firms to depreciate the components of an asset separately, thereby requiring useful life estimates for each component.
- ✓ For example, a building is made up of a roof, walls, flooring, electrical systems, plumbing, and many other components. Under component depreciation, the useful life of each component is estimated and depreciation expense is computed separately for each.

## Depreciation Methods

Depreciation	
Estimated total useful life	Estimated total useful life = $\frac{\text{Historical cost}}{\text{annual depreciation expense}}$
Estimated age of equipment	Estimated age of equipment = $\frac{\text{Accumulated depreciation expense}}{\text{annual depreciation expense}}$
Estimated remaining life	Estimated remaining life = $\frac{\text{Net PPE}}{\text{annual depreciation expense}}$

## Example

### Depreciation Methods

- Miguel Rodriguez of MARIO S.A., an Uruguayan corporation, is computing the depreciation expense of a piece of manufacturing equipment for the fiscal year ended 31 December 2009. the equipment was acquired on 1 January 2009. Rodriguez gathers the following information:

Cost of the equipment	\$1,200
Estimated residual value	\$200
Expected useful life	8 years
Total production capacity	800 units
Production in FY2009	135 units

- Calculate the depreciation expense recognized in the income statement for FY2009 using three depreciation methods.

- Solution:

Depreciation	
Straight-Line	$(\$1,200 - \$200)/8 \text{ years} = \$125 \text{ p.a.}$
DDB	$2/8 \times \$1,200 = \$300$
Units-of-production	$(\$1,200 - \$200) \times (135 \text{ units} / 800 \text{ units}) = \$168.750$

## Depreciation Methods

Early years	Straight line	Accelerated (DDB)
<b>Depreciation expense</b>	<b>Lower</b>	Reverse
Net income	Higher	
ROA	Higher	
ROE	Higher	
Assets	Higher	
Equity	Higher	
Total asset turnover ratios	Lower	
<b>Cash flow - Tax</b>	<b>Same</b>	<b>Same</b>

## Depreciation Methods

- **The choice of useful life and residual value / salvage value**
  - longer useful life & higher residual value
    - ✓ Lower depreciation expense and higher net income
  - Relevant accounting treatments

Depreciation expense can be allocated to		
Cost of goods sold (COGS)	Or	Selling , general and administration expense SG&A)
Affect GP Margin		Affect OP margin
	US GAAP	IFRS
Residual /Salvage value	Downward only	Allowed to adjust the estimated residual value either upward or down ward
Component depreciation*	Rarely used	Required

# Summary

## Depreciation Methods

Straight-Line Method  
 Accelerated Depreciation Method (Double-declining Balance)  
 Units-of-Production Method  
 The Choice of Useful Life and Residual Value / Salvage Value

## Impairment of Long-term Assets

- ❑ Impairment of Long-term Assets (IFRS vs. U.S. GAAP)
- ❑ Impairment Effects
- ❑ Recoveries of Impairment



## Impairment of Long-term Assets

Tangible assets	Intangible assets
<ul style="list-style-type: none"> <li>•Held for use</li> </ul> <p style="text-align: center;"><b>Impairment indicators</b></p> <p style="text-align: center;">↓</p> <p style="text-align: center;"><b>Impairment test</b></p> <ul style="list-style-type: none"> <li>•Held for sale</li> <li>No depreciation</li> <li>Immediate impairment test</li> <li>If <b>Carrying value &gt; NRV</b></li> </ul>	<ul style="list-style-type: none"> <li>•Held for use</li> </ul> <p style="text-align: center;"><b>Goodwill &amp; Other IA with indefinite useful life</b></p> <p style="text-align: center;">↓</p> <p style="text-align: center;"><b>Annual impairment test</b></p> <ul style="list-style-type: none"> <li>•Held for sale</li> <li>No amortization</li> <li>Immediate impairment test</li> <li>If <b>Carrying value &gt; NRV</b></li> </ul>

## Impairment of Long-term Assets

- **Impairment of Intangible Assets with a Finite Life**

- Intangible assets with a finite life are amortised (carrying amount decreases over time) and may become impaired.
- As is the case with property, plant, and equipment, the assets are not tested annually for impairment. Instead, they are tested **only when significant events suggest the need to test**.

- **Impairment of Intangibles with Indefinite Lives**

- Intangible assets with indefinite lives are not amortised.
- Instead, they are carried on the balance sheet at historical cost but are **tested at least annually for impairment**.
- Impairment exists when the carrying amount exceeds **its recoverable amount**.

## Impairment of Long-term Assets

- **Impairment of Assets – IFRS**

$$\left( \begin{array}{c} \text{carrying} \\ \text{value} \\ \text{of assets} \end{array} \right) > \left( \begin{array}{c} \text{Recoverable} \\ \text{amount} \end{array} \right)$$



The higher of	
<b>Fair value less cost to sell</b>	<b>Value in use</b> i.e. the present value of its future cash flow from continued use

## Impairment of Long-term Assets

- **Impairment of Assets – US GAAP**

- **Step1 Recoverability test / Impairment test**

$$\left( \begin{array}{c} \text{carrying} \\ \text{value} \\ \text{of assets} \end{array} \right) > \left( \begin{array}{c} \text{undiscounted} \\ \text{future cash flows} \\ \text{generated by} \\ \text{the assets} \end{array} \right)$$

- **Step2 Loss measurement**

$$\left( \begin{array}{c} \text{carrying} \\ \text{value} \\ \text{of assets} \end{array} \right) - \left( \begin{array}{c} \text{fair market value} \\ \text{or} \\ \text{PV of future CF} \end{array} \right)$$

## Example

### Impairment of Long-term Assets

- The following information is relating to the equipment owned by company B:

Original cost	\$900,000
Accumulated depreciation	\$100,000
Expected future cash flow	\$825,000
Fair value	\$790,000
Value in use	\$785,000
Selling cost	\$30,000

- Assuming company B will continue to use the equipment in the future, test the asset for impairment under US GAAP and IFRS.

## Example

### Impairment of Long-term Assets

- Solution:
  - US GAAP
    - ✓ Carrying value =  $\$900,000 - \$100,000 = \$800,000$
    - ✓ Expected future cash flow =  $\$825,000$
    - ✓ Since Carrying value < Expected future cash flow, the equipment is not impaired
    - ✓ The B/S value of the equipment remains at  $\$800,000$
  - IFRS
    - ✓ Carrying value =  $\$900,000 - \$100,000 = \$800,000$
    - ✓ Fair value less cost to sell =  $\$790,000 - \$30,000 = \$760,000$
    - ✓ Value in use =  $\$785,000$
    - ✓ Recoverable amount =  $\$785,000$
    - ✓ Since Carrying value > recoverable amount, the equipment is impaired
    - ✓ The B/S value of the equipment is reduced to  $\$785,000$  with a impairment loss of  $\$15,000$  recognized in the income statement.

### Impairment Effects

Impairment Effects	
Cash flow	No effect
Assets	Decrease
Equity	Decrease
Debt/equity ratio	Increase
Current net income, ROA, ROE	Decrease
Future depreciation expense	Decrease
Future net income, ROA, ROE	Increase
Future asset turnover ratios	Increase

## Recoveries of Impairment

- **Recoveries of impairment**
  - Once an asset is written down
    - ✓ Under US GAAP
      - Held for use → recoveries are not allowed
      - Held for sale → recoveries are allowed
    - ✓ Under IFRS, recoveries are allowed except for goodwill.
  - IFRS permit impairment losses to be reversed if the recoverable amount of an asset increases regardless of whether the asset is classified as held for use or held for sale.
    - Note that IFRS permit the reversal of impairment losses only.
    - IFRS do not permit the revaluation to the recoverable amount if the recoverable amount exceeds the previous carrying amount.
  - Under US GAAP, the accounting for reversals of impairments depends on whether the asset is classified as held for use or held for sale.
    - Under USGAAP, once an impairment loss has been recognised for assets held for use, it cannot be reversed.
    - For assets held for sale, if the fair value increases after an impairment loss, the loss can be reversed.

## Summary

### Impairment of Long-term Assets

Impairment of Long-term Assets (IFRS vs. U.S. GAAP)

Impairment Effects

Recoveries of Impairment

## Revaluation and Disclosure of Long-term Assets

- Revaluation of Long-term Assets
- Disclosure of Long-term Assets

## ● — Revaluation of Long-term Assets — ●

### ● Revaluation of Assets

- Under US GAAP, most long-lived assets are reported on the balance sheet at depreciated cost using the cost model (original cost less accumulated depreciation and impairment charges).
  - ✓ Revaluing long-lived assets upward is generally prohibited.
  - ✓ One exception relates to long-lived assets held for sale, for which prior impairment losses can be reversed.
- Under IFRS, firms can choose to use the revaluation model and report long-lived assets at their fair values.
  - ✓ Firms can choose depreciated cost for some asset classes and fair value for others.

## ● — Revaluation of Long-term Assets — ●

### ● Revaluation of Assets

- Do not confuse the revaluation model with fair-value reporting of trading securities or some types of inventory, under which all gains and losses flow through the income statement.
- Revaluing an asset's value upward will result in:
  - ✓ Higher total assets and higher shareholders equity.
  - ✓ Lower leverage ratios as measured by the debt ratio (total debt/ total assets) and the debt-to-equity ratio (higher denominators)
  - ✓ Higher depreciation expense and thus lower profitability in periods after revaluation.
  - ✓ Lower ROA and ROE in periods after revaluation (lower numerators and higher denominators).  
However, if the increase in the asset value is the result of higher operating capacity, such higher capacity should result in higher revenues and thus higher earnings.
- An analyst should check the source of the appraisal that supports the revaluation. Appraisals from independent sources are usually more reliable than appraisals by management.

## ● — Revaluation of Long-term Assets — ●

US GAAP	IFRS	
Cost model	Cost model & Revaluation model	➡ Permit upward revaluation of assets

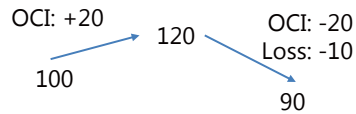
### ● Upward revaluation of assets will

- Increase assets and equity,
  - ✓ → Decrease leverage ratios (D/E)
- Increase comprehensive income in the period the revaluation occurs
- In subsequent periods,
  - ✓ Higher depreciation expense and lower profitability
  - ✓ Lower ROA and ROE

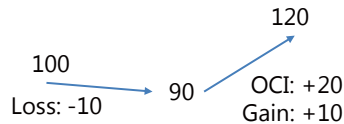
## Revaluation of Long-term Assets

### Under the revaluation model

- If the cost of an asset is 100, then increases to 120, then decreases to 90
  - ✓ First, the increase to OCI 20
  - ✓ Then, the decrease is divided into two parts: OCI -20, loss -10 in I/S



- If the cost of an asset is 100, then decreases to 90, then increases to 120
  - ✓ First, the decrease: loss -10 in I/S
  - ✓ Then, the increase is divided into two parts: , loss +10 in I/S, OCI +20



## Disclosure of Long-term Assets

### Fixed Assets Disclosures under IFRS

- Under IFRS, the firm must disclose the following for each class of property, plant, and equipment (PP&E):
  - ✓ Basis for measurement (usually historical cost);
  - ✓ Useful lives or depreciation rate;
  - ✓ Gross carrying value and accumulated depreciation;
  - ✓ Reconciliation of carrying amounts from the beginning of the period to the end of the period.
- The firm must also disclose:
  - ✓ [Restrictions on title and pledges as security](#) of PPE;
  - ✓ [Contractual agreements](#) to acquire PPE.
- If the revaluation (fair value) model is used, the firm must disclose:
  - ✓ The revaluation date;
  - ✓ How fair value was determined;
  - ✓ Carrying value using the historical cost model.

## Disclosure of Long-term Assets

### Fixed Assets Disclosures under IFRS

- Under IFRS, the disclosure requirements for intangible assets are similar to those for PP&E, except that the firm must disclose [whether the useful lives are finite or indefinite](#).
- For impaired assets, the firm must disclose
  - ✓ Amounts of impairment losses and reversals [by asset class](#)
  - ✓ Where the losses and loss reversals are recognized [in the income statement](#).
  - ✓ [Circumstances](#) that caused the impairment loss or reversal.

## Disclosure of Long-term Assets

- **Under US GAAP**

- Companies are required to disclose the gross carrying amounts and accumulated amortisation in total and by major class of intangible assets, the aggregate amortisation expense for the period, and the estimated amortisation expense **for the next five fiscal years**.
- For impaired assets, the firm must disclose
  - ✓ A description of the impaired asset
  - ✓ Circumstances that caused the impairment.
  - ✓ How fair value was determined.
  - ✓ The amount of loss.
  - ✓ Where the loss is recognized in the income statement.

## Summary

### Revaluation and Disclosure of Long-term Assets

Revaluation of Long-term Assets  
Disclosure of Long-term Assets

## Investment Property

- The Cost Model vs. The Fair Value Model
- Transfer to or from Investment Property
- Disclosure of Investment Property



## — The Cost Model vs. The Fair Value Model —

- **Investment property**

- **Under IFRS**, property that a firm owns for the purpose of collecting rental income, earning capital appreciation, or both, is classified as investment property.
  - ✓ A firm generally must use the same valuation model (cost or fair value) for all of its investment properties.
  - ✓ If a fair value for the property can be established reliably, the firm could **use a cost model or a fair value model when valuing investment property**.
- US GAAP does not distinguish investment property from other kinds of long-lived assets.

## — The Cost Model vs. The Fair Value Model —

- **The cost model**

- The cost model for investment property is the same as the cost model for valuing property, plant, and equipment,

- **The fair value model**

- The fair value model is different from the revaluation model we described earlier.
  - ✓ Under the revaluation model, any revaluation above historical cost is recognized as revaluation surplus in owners' equity.
  - ✓ For investment property, however, revaluation above historical cost is recognized as a gain on the income statement.

## — Transfer to or from Investment Property —

- **Transfer to or from Investment Property (Fair Value Model)**

Transfer From	Transfer To	Financial Statement Treatment
Owner-occupied	Investment property	Treat as revaluation: recognize gain through I/S only if it reverses previously recognized loss
Inventory	Investment property	Recognize gain or loss If fair value is different from carrying amount
Investment property	Owner-occupied or inventory	Fair value of asset at date of transfer will be its cost under new classification

## Disclosure of Investment Property

- **Disclosure of Investment Property**

- Investment property appears as a separate line item on the balance sheet. Companies are required to disclose whether they use the fair value model or the cost model for their investment property.
  - ✓ If the company uses the fair value model, it must make additional disclosures about how it determines fair value and must provide reconciliation between the beginning and ending carrying amounts of investment property.
  - ✓ If the company uses the cost model, it must make additional disclosures similar to those for property, plant, and equipment—
    - for example, the depreciation method and useful lives must be disclosed.
    - In addition, if the company uses the cost model, it must also disclose the fair value of investment property.
- Under US GAAP, there is no specific definition of investment property. Most operating companies and real estate companies in the United States that hold investment-type property use the historical cost model.

## Summary

### Investment Property

The Cost Model vs. The Fair Value Model  
Transfer to or from Investment Property  
Disclosure of Investment Property

## Summary

### Module: Analysis of Long-Term Assets

Tangible Assets  
Intangible Assets  
Depreciation Methods  
Impairment of Long-term assets  
Revaluation and Disclosure of Long-term Assets  
Investment Property

# Module

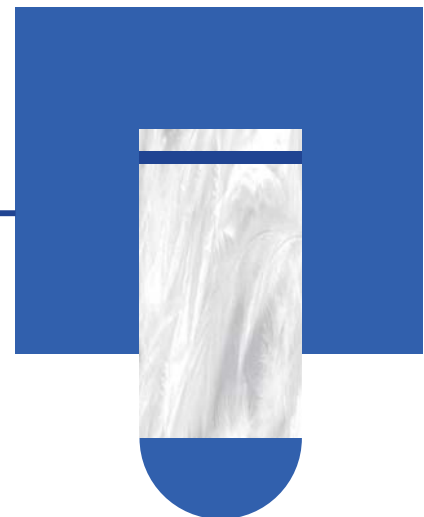


## Topics in Long-Term Liabilities and Equity

- Bond Introduction & Par, Discounted and Premium Bonds
- Issuance Costs & Fair Value Reporting Option
- Derecognition of Debt & Debt Covenants
- Classification of Leases under US GAAP & IFRS
- Lease Accounting for Lessee
- Lease Accounting for Lessor
- Framework for Pension plans
- Framework for Share-Based Compensation Plans

### Bond Introduction & Par, Discounted and Premium Bonds

- ❑ Bond Terminology
- ❑ Bonds Issued at Par, at a Discount or at a Premium
- ❑ Effective Interest Rate Method



### Bond Terminology

- **Bond Terminology**
  - The **face value** of the bonds is the amount of cash payable by the company to the bondholders when the bonds mature.
  - The **coupon rate** is the interest rate promised in a contract; this is the rate used to calculate the periodic interest payments.
  - The **coupon payments (period payments)** = **face value × coupon rate**.
  - **Effective interest rate** is the borrowing rate or market rate that a company incurs **at the time of issuance of a bond**.
    - ✓ The coupon rate (fixed).
    - ✓ The effective interest rate (changed), thus changing the price of the bond.

## Bond Terminology

- **Bond Terminology**

- **Bond payable (B/S liability of a bond)** = PV of a bond's future cash flows (coupon payments + par value), with a market rate of interest at issuance serves as the discount rate.
  - ✓ At maturity, the liability will equal the face value of the bond.
- **Interest expense** = bond payable (book value or carrying value of the bond liability) at the beginning of the period \* market rate of interest of the bond at issuance.
- At the date of issuance, the market rate of interest may be equal to, less than, or greater than the coupon rate.
  - ✓ Market rate = coupon rate, par bond (priced at face value).
  - ✓ Market rate > coupon rate, discount bond (priced below par).
  - ✓ Market rate < coupon rate, premium bond (priced above par).

## Bonds Issued at Par, at a Discount or at a Premium

- **Bonds issued at par**

- On the **balance sheet**, par value of bond (bond's proceeds) is recorded as both assets and liabilities.  
Bond liability recorded remains constant;
- On the **income statement**, interest expense = coupon payment;
- On the **cash flow statement**:
  - ✓ Face value received at issuance are recorded as CFF inflow;
  - ✓ Coupon payments are recorded as
    - CFO outflows (US GAAP);
    - CFO or CFF outflows (IFRS).
  - ✓ Repayment of the face value is recorded as CFF outflow at maturity.

## Bonds Issued at Par, at a Discount or at a Premium

- **Bonds issued at a discount or premium**

- **Bonds issued at a discount**
  - ✓ Coupon rate < market rate at issuance;
  - ✓ Discount = face value - proceeds received (price at issuance);
  - ✓ The bond value less to holders due to lower coupon rate.
- **Bonds issued at a premium**
  - ✓ Coupon rate > market rate at issuance;
  - ✓ Premium = proceeds received (price at issuance) - face value;
  - ✓ The bond value more to holders due to higher coupon rate.

## Bonds Issued at Par, at a Discount or at a Premium

### ● Effective interest rate

- The **effective interest rate method** of amortizing a discount or premium is required under IFRS.
- Under US GAAP, the effective interest rate method is preferred, but **the straight-line method is allowed if the results are not materially different.**
  - ✓ The straight-line method is similar to straight-line depreciation in that the total discount or premium at issuance is amortized by equal amounts each period over the life of the bond.
- While coupon interest is paid in cash, amortization is a noncash item.
  - ✓ When presenting the cash flow statement using the indirect method, net income must be adjusted to remove the effects of any amortization of a discount or premium in order to calculate cash flow from operations, that is, **CFO – premium amortization + discount amortization.**
- It may be necessary to reclassify interest paid when comparing firms that follow different standards.
  - ✓ Firms that follow US GAAP must report cash interest paid in the cash flow statement as an operating cash flow.
  - ✓ Firms that follow IFRS can report cash interest paid as either an operating or financing cash flow. Therefore,

## Bonds Issued at Par, at a Discount or at a Premium

### ● Bond and Cash Flows

- Two types of cash flows
  - ✓ Periodic payment of Interest/ Coupon **CFO**
    - → Cash outflow from operating activities
  - ✓ Principal **CFF**
    - Amount received at issuance
      - → Cash inflow from financing activities
    - Principal repayment at maturity
      - → Cash outflow from financing activities

#### Analysis

- Bond issue price ( par, discount or premium)
- Makes the difference on CFO & CFF

## Bonds Issued at Par, at a Discount or at a Premium

### ● Effective interest rate method

- Required under IFRS and preferred under US GAAP, since it better reflects the economic substance of the transaction.
- Interest expense = book value of bond liability (beginning period) \* market rate at issuance.
- **Term → maturity, the amortised cost → face value.**
  - ✓ Premium bond
    - **Amortization of the premium bond = interest expenses – coupon payment** (<0, since yield < coupon rate) is subtracted from the bond liability (B/S);
    - Interest expense will decrease.
  - ✓ Discount bond
    - **Amortization of the discount bond = interest expenses – coupon payment** (>0, since yield > coupon rate) is added to the bond liability;
    - Interest expense will increase.

## Example

### Bonds Issued at Par, at a Discount or at a Premium

- On 31 Dec 2002, a company issued a three – year 10% annual coupon bond with a face value of \$1000.
  - Market interest rate at issuance is 10%.
  - Market interest rate at issuance is 8%.
  - Market interest rate at issuance is 12%.
- What is the effect on B/S, I/S, CFS?

## Example

### Bonds Issued at Par, at a Discount or at a Premium

- Bond issued at par

Par	Beginning BV	Interest expense =Beginning value @ 10%	Coupon payment	Ending BV
Year 1	1000	100	(100)	1000
Year 2	1000	100	(100)	1000
Year 3	1000	100	(100)	1000

- B/S: the bond liability remains at face value over the life of the bond
- I/S: interest expense = coupon payment = \$100
- CFS
  - CFO cash outflow: \$100 p.a. = coupon payment
  - CFF cash inflow: \$1000 on 31st Dec 2002 = issuance price
  - CFF cash outflow: \$ 1000 on 31st Dec 2005 = redemption price

## Example

### Bonds Issued at Par, at a Discount or at a Premium

- Bond issued at premium

Premium	Beginning BV	Interest expense =Beginning value @ 8%	Coupon payment	Ending BV	Amortization
Year 1	1051.54	=1051.54 @ 8% = 84.12	(100)	1035.66	15.88
Year 2	1035.66	82.85	(100)	1018.52	17.15
Year 3	1018.52	81.48	(100)	1000	18.52

- B/S: Amortize the premium in issuance to zero over the life of the bond.
- I/S: (A) interest expense < coupon payment (S)
- CFS:

CFO (Accountant)		CFO for F/A		CFF for F/A
-100	=	-84.12	+	-15.88

- Without adjustment
  - ✓ CFO is understated and CFF is overstated.

## Example

### Bonds Issued at Par, at a Discount or at a Premium

- **Bond issued at discount**

Discount	Beginning BV	Interest expense =Beginning value @ 12%	Coupon payment	Ending BV	Amortization
Year 1	951.96	=951.06 @ 12% =114.24	(100)	966.20	-14.24
Year 2	966.20	115.94	(100)	982.14	-15.94
Year 3	982.14	117.86	(100)	1000	-17.86

- B/S: Amortize the discount in issuance to zero over the life of the bond.
- I/S: (A) interest expense > coupon payment (S)
- CFS:

CFO (Accountant)		CFO for F/A		CFF for F/A
-100	=	-114.24	+	+14.24

- Without adjustment
  - ✓ CFO is overstated and CFF is understated.

## Example

### Bonds Issued at Par, at a Discount or at a Premium

- **Zero-coupon bonds**

- A zero-coupon bond, also known as a **pure-discount bond**, is issued at a discount from its par value and its annual interest expense is implied, but not explicitly paid. The actual interest payment is included in the face value that is paid at maturity.
  - ✓ Zero-coupon bonds make no periodic interest payments.
  - ✓ The effects of zero-coupon bonds on the financial statements are qualitatively the same as any discount bond, but the impact is larger because the discount is larger.

## Example

### Bonds Issued at Par, at a Discount or at a Premium

- **Zero-coupon bonds**

- A zero coupon bond issued on 1 January 2001 with 3 years to maturity and a redemption price of \$1000, the market interest rate at the time of issuance is 10%.

	Beginning BV @1/1	Interest expense @8%	Coupon payment	Ending BV @12/31
Year 2001	751.31 =1000/1.1 <sup>3</sup>	75.13 =751.31×10%	0	826.44 =751.31+75.13
Year 2002	=826.44	82.64 =826.44×10%	0	909.1 =826.44+82.64
Year 2003	=909.1	90.9 =909.1×10%	0	1000 =909.1+90.9

## Example

### Bonds Issued at Par, at a Discount or at a Premium

- A zero coupon bond issued on 1 January 2001 with 2 years to maturity and a redemption price of \$1000, the market interest rate at the time of issuance is 10%.

	Beginning BV @1/1	Interest expense @8%	Coupon payment	Ending BV @12/31
Year 2001	751.31 =1000/1.1 <sup>3</sup>	75.13 =751.31×10%	0	826.44 =751.31+75.13
Year 2002	=826.44	82.64 =826.44×10%	0	909.1 =826.44+82.64
Year 2003	=909.1	90.9 =909.1×10%	0	1000 =909.1+90.9

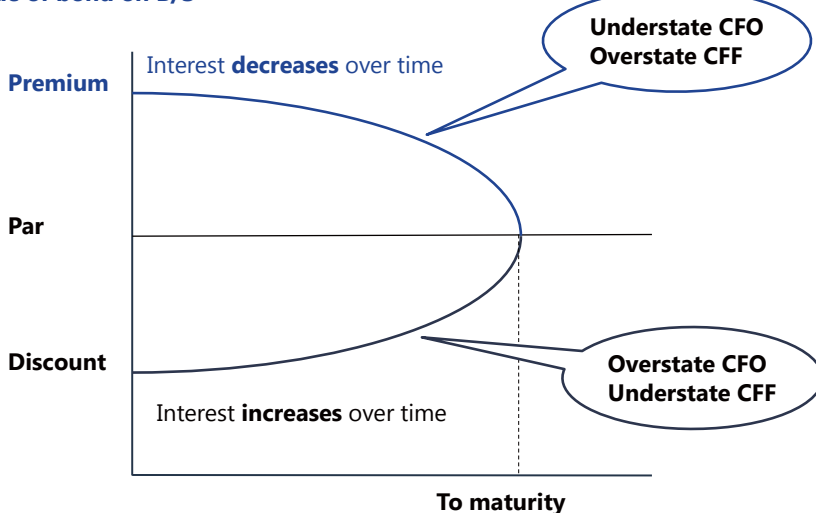
Cash inflow CFF

cash outflow CFO

Cash outflow CFF

### Bonds Issued at Par, at a Discount or at a Premium

- Carrying value of bond on B/S



### Effective Interest Rate Method

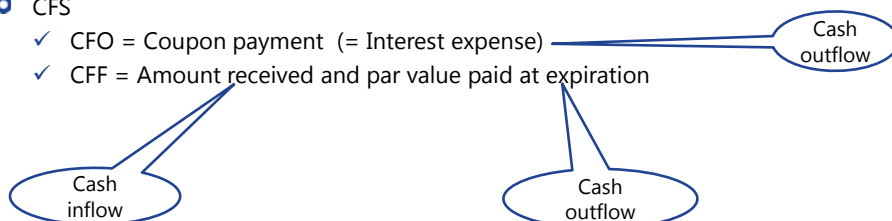
- Bonds issued at par (Coupon rate = Market interest rate at issuance)

- B/S : Bond liability = Face value / Par value of bond
- I/S : Interest expense = coupon payment

$$\text{Interest expense} = \left( \frac{\text{market rate}}{\text{at issue}} \right) \times \left( \text{balance sheet value of liability at beginning of period} \right)$$

- CFS

- ✓ CFO = Coupon payment (= Interest expense)
- ✓ CFF = Amount received and par value paid at expiration



## Effective Interest Rate Method

- **Bonds issued at premium or discount**

- B/S

$\text{liability}_0 = \text{amount received}$

$$\text{liability}_t = \sum \frac{CF_t}{(1 + MR_{\text{issue}})^t}$$

- ✓ The amount of premium and discount is amortized over the time.

- I/S

- ✓ Premium (CR > Market rate) → Decrease over time

- Interest expense<sub>t</sub> = coupon – premium amortization<sub>t</sub>

- ✓ Discount (CR < Market rate) → Increase over time

- Interest expense<sub>t</sub> = coupon + discount amortization<sub>t</sub>

- CFS : No change for accounting / Adjust for F/A purpose

### Example

#### Effective Interest Rate Method

- Innovative Inventions, Inc. needs to raise \$10 million and typically would issue coupon-bearing bonds at par value. If the company chooses to issue zero-coupon bonds instead, its debt-to-equity ratio will:
  - A. rise as the maturity date approaches.
  - B. decline as the maturity date approaches.
  - C. remain constant throughout the life of the bond.
- Solution: A.
  - Both bonds will add \$10 million to debt and nothing to equity, and thus have the same effect on the debt/equity ratio at the time they are issued.
  - However, the value of the liability for zero-coupon bonds **increases as the discount is amortized over time** while the liability will not change for the par bonds.
  - Furthermore, **the amortized interest will reduce earnings at an increasing rate** over time as the value of the liability increases.
  - Higher relative debt and lower relative equity (through retained earnings) will cause the debt/equity ratio to increase as the zero-coupon bonds approach maturity, compared to the bonds issued at par.

### Example

#### Effective Interest Rate Method

- Comte Industries issues \$3,000,000 worth of three-year bonds dated 1 January 2015. The bonds pay interest of 5.5% annually on 31 December. The market interest rate on bonds of comparable risk and term is 5%. The sales proceeds of the bonds are \$3,040,849. Under the straight-line method, the interest expense in the first year is closest to:
  - A. \$150,000.
  - B. \$151,384.
  - C. \$152,042.
- Solution: B.
  - Under the straight-line method, the bond premium is amortized equally over the life of the bond.
  - The annual interest payment =  $3,000 \times 5.5\% = \$165$
  - Annual amortization of the premium under the straight-line method =  $(\$3,040,849 - \$3,000,000) / 3 = \$13,616$
  - The interest expense = the interest payment - the amortization of the premium =  $\$165 - \$13,616 = \$151,384$ .

# Summary

## Bond Introduction & Par, Discounted and Premium Bonds

Bond Terminology

Bonds Issued at Par, at a Discount or at a Premium

Effective Interest Rate Method

## Issuance Cost & Fair Value Reporting Option

- ❑ Issuance Cost
- ❑ Fair Value Reporting Option

### Issuance Cost

- **Issuance costs**

- Fees related with issuance of bond (e.g., legal and accounting fees, printing costs, sales commissions).
  - ✓ Under **US GAAP**
    - ❑ Capitalized in deferred charge (asset);
    - ❑ Amortized on a straight-line basis to the relevant expense (e.g., legal fees) over the life of the bonds.
  - ✓ Under **IFRS**
    - ❑ Subtracted as an unamortized discount from measurement of the liability, bonds payable.
  - ✓ Under IFRS and US GAAP, cash outflows related to bond issuance costs are included in the financing section of the statement of cash flows (usually netted against bond proceeds).

- Company C issued a \$1 million bond for \$980 with an issuance cost of \$5. (unit: K)

US GAAP	IFRS
<b>Assets:</b> Cash \$975 Deferred charge \$5	<b>Assets:</b> Cash \$975
<b>Liabilities:</b> Bond \$980	<b>Liabilities:</b> Bond \$975

### Fair Value Reporting Option

#### Fair Value Reporting Option

- Companies have the option to report financial liabilities at fair value.
  - Financial liabilities reported at fair value are designated as financial liabilities at fair value through profit or loss under IFRS, or, equivalently under US GAAP, as liabilities under the fair value option.
  - Even if a company does not opt to report financial liabilities at fair value, the availability of fair value information in the financial statements has increased. IFRS and US GAAP require fair value disclosures in the financial statements unless the carrying amount approximates fair value or the fair value cannot be reliably measured.
- A company electing to measure a liability at fair value will report decreases in the liability's fair value as income and increases in the liability's fair value as losses.
  - Because changes in a liability's fair value can result from changes in market rates and/or changes in the credit quality of the issuing company, accounting standards require companies to present separately the portion of the change resulting from changes in their own credit risk.
  - Specifically, the company will report the portion of the change in value attributable to changes in their credit risk in other comprehensive income. Only the portion of the change in value not attributable to changes in their credit risk will be recognised in profit or loss.

### Fair Value Reporting Option

#### Fair Value Reporting Option

- Recall that the book value of a bond liability is based on its market yield at issuance. As long as the bond's yield does not change, the bond liability represents fair (market) value.
- If the yield changes, the balance sheet liability is no longer equal to fair value.
- An increase in the bond's yield will result in a decrease in the fair value of the bond liability.
- Conversely, a decrease in the bond's yield increases its fair value. Changes in yield result in a divergence between the book value of the bond liability and the fair value of the bond.
- The fair value of the bond is the economic liability at a point in time.

## Fair Value Reporting Option

- **Fair Value Reporting Option**

- IFRS and US GAAP give firms the irrevocable option to report debt at fair value.
  - ✓ Under this option, gains (decreases in bond liability) and losses (increases in bond liability) that result from changes in bonds' market yields are reported in the income statement.
- For analysis, **the market value of a firm's debt may be more appropriate** than its book value.
  - ✓ For example, a firm that issued a bond when interest rates were low is relatively better off when interest rates increase.
  - ✓ This is because the firm could repurchase the bond at its now-lower market value. Decreasing the bond liability on the balance sheet to market value increases equity and decreases the debt-to-assets and debt-to-equity ratios.
  - ✓ If interest rates have decreased since issuance, adjusting debt to its market value will have the opposite effects.

## Fair Value Reporting Option

- **Fair Value Reporting Option**

- **Bond value = A present value of future cash flows**

$$BV_0 = \sum \frac{(\text{Interest} + \text{Principal})_t}{(1 + R_0)^t}$$

$$MV_t = \sum \frac{(\text{Interest} + \text{Principal})_t}{(1 + R_t)^t}$$

- **US GAAP & IFRS**

- ✓ **A option to report** debt at its market /fair value with any gains/losses reported in the Income statement.
- ✓ **For analysis**, the market value is more appropriate.

## Example

### Fair Value Reporting Option

- Fairmont Golf issued fixed rate debt when interest rates were 6 percent. Rates have since risen to 7 percent. Using only the carrying amount based on historical cost reported on the balance sheet to analyze the company's financial position would most likely cause an analyst to:
  - A. overestimate Fairmont's economic liabilities
  - B. underestimate Fairmont's economic liabilities
  - C. underestimate Fairmont's interest coverage ratio
- Solution: A.
  - When interest rate rise, bonds decline in value. Thus the carrying amount of the bonds being carried on the balance sheet is higher than the market value.
    - ✓ The company could repurchase the bonds for less than the carrying amount, so the economic liabilities are overestimated.
    - ✓ Because the bonds are issued at a fixed rate, there is no effect on interest coverage.

# Summary

## Issuance Cost & Fair Value Reporting Option

Issuance Cost  
Fair Value Reporting Option

## Derecognition of Debt & Debt Covenants

- ❑ Derecognition of Debt
- ❑ Debt Covenants
- ❑ Disclosure of Debt

### Derecognition of Debt

- **Derecognition of debt**
  - When bonds mature, no gain or loss is recognized by the issuer. At maturity, any original discount or premium has been fully amortized; thus, the book value of a bond liability and its face value are the same. The cash outflow to repay a bond is reported in the cash flow statement as a financing cash flow.
  - A firm may choose to redeem bonds before maturity because interest rates fallen, because the firm has generated surplus cash through operations, or because funds from the issuance of equity make it possible (and desirable).

## Derecognition of Debt

- **A firm may choose to redeem bonds before maturity**
  - Possible reasons
    - ✓ Interest rates reduction
    - ✓ Firm has generated surplus cash through operation
    - ✓ Funds from the issuance on the equity market is available
  - A gain or loss is recognized in I/S

### Example

#### Derecognition of Debt

- AAA Corp. used \$1,045,000 excessive cash to repurchase their bonds priced at 104.5. The carrying value of the corresponding bond is \$998,000 at the date of purchasing.
- Solution:
  - Losses = \$1,045 - \$998 = \$47 (I/S)
  - For issuance cost
    - ✓ Unamortized issuance costs must be written off and include G/L under GAAP.
    - ✓ While no write off is required under IFRS, since issuance costs have already recorded in book value of bond.

## Debt Covenants

- **Debt covenants**
  - Debt covenants are restrictions imposed by the lender on the borrower to protect the lender's position.
  - Debt covenants can reduce default risk and thus reduce borrowing costs.
  - The restrictions can be in the form of affirmative covenants or negative covenants.
  - The bondholders can demand immediate repayment of principal if the firm violates a covenant (referred to as **technical default**). Analyzing the covenants is a necessary component of the credit analysis of a bond. Bond covenants are typically discussed in the financial statement footnotes.
- With **affirmative covenants**, the borrower promises to do certain things, such as
  - Make timely payments of principal and interest.
  - Maintain certain ratios (such as the current, debt-to-equity, and interest coverage ratios) in accordance with specified levels.
  - Maintain collateral, if any, in working order.
- With **negative covenants**, the borrower promises to refrain from certain activities that might adversely affect its ability to repay the outstanding debt, such as
  - Increasing dividends or repurchasing shares.
  - Issuing more debt.
  - Engaging in mergers and acquisitions.

## Disclosure of Debt

- **Disclosure of debt**

- Firms will often report all of their outstanding long-term debt on a single line on the balance sheet. The portion that is **due within the next year is reported as a current liability**. The firm separately discloses more detail about its long-term debt in the footnotes. These disclosures are useful in determining the timing and amounts of future cash outflows. The footnote disclosure usually includes a discussion of:
  - ✓ The nature of the liabilities.
  - ✓ Maturity dates.
  - ✓ Stated and effective interest rates.
  - ✓ Call provisions and conversion privileges.
  - ✓ Restrictions imposed by creditors.
  - ✓ Assets pledged as security.
  - ✓ The amount of debt **maturing in each of the next five years**.
- A discussion of the firm's long-term debt is also found in the Management Discussion and Analysis section. This discussion is both quantitative, such as identifying obligations and commitments that are due in the future, and qualitative, such as discussing capital resource trends and material changes in the mix and cost of debt.

## Summary

### Derecognition of Debt & Debt Covenants

Derecognition of Debt

Debt Covenants

Disclosure of Debt

## Classification of Leases under US GAAP & IFRS

- Framework for Lease
- Advantage of Lease for Lessee
- Classification of Leases

## Framework for Lease

- **Framework for lease**

- **Definition**

- ✓ A lease is a contract that conveys the right to use an asset for a period of time in exchange for consideration.
    - ✓ The party who uses the asset and pays the consideration is the **lessee**, and the party who owns the asset, grants the right to use the asset, and receives consideration is the **lessor**.

- **Lease contract**

- ✓ The lease contract must
      - Identify a specific underlying asset;
      - Give the customer the right to obtain largely all of the economic benefits from the asset over the contract term;
      - Give the customer, not the supplier, the ability to direct how and for what objective the underlying asset is used.

## Advantage of Lease for Lessee

- **Advantage of lease for lessee**

- **Less cash** is needed up front.

- ✓ Leases typically require little, if any, down payment.

- **Cost effectiveness**

- ✓ Leases are a form of secured borrowing. In the event of non-payment, the lessor simply repossesses the leased asset.
    - ✓ As a result, The effective interest rate for a lease is typically lower than what the lessee would pay on an unsecured loan or bond.

- **Convenience and lower risks** associated with asset ownership, such as obsolescence.

## Classification of Leases

- **Classification of leases**

- Under IFRS, all leases, **except those that are short term (up to 12 months) or are of low value (up to \$5,000)**, require the lessee to record a **right-of-use asset and a lease liability** (both equal to the present value of the lease payments) on the balance sheet.

- ✓ The right-of-use asset is amortized over the term of the lease, with the amortization amount each period recorded on the income statement.
    - ✓ The lease liability is reduced each period by the decrease in the principal portion outstanding that results from each lease payment. So while the lease asset and the liability both begin with the same value and reach zero at the end of the lease, they can have different values during the life of the lease.

- Under US GAAP, other than these differences in cash flow classification, a finance lease (that is not short term) is reported just as under IFRS.

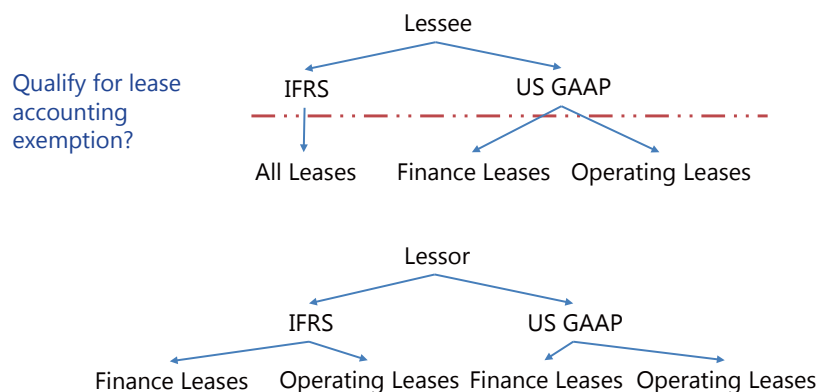
- For an operating lease (that is not short term) under US GAAP, a lease liability is also recorded and amortized as under IFRS.

- ✓ The right-of-use asset is **amortized by the same amount each period as the decrease in the lease liability**, so that **the asset and the liability are equal** in each period of the lease.
    - ✓ On the income statement, interest expense and amortization of the right-of-use asset are not reported separately as they are for a finance lease; they are **combined and reported as lease expense**.
    - ✓ On the cash flow statement, the full lease payment is **classified as an operating cash outflow**.

## Classification of Leases

### Classification of leases

#### Lease Classifications for Lessee and Lessor



## Classification of Leases

Finance lease	Operating lease
<p>A lease transaction can be classified as a Finance lease by <u>lessee</u> if it meets at least one of the following criteria</p> <ol style="list-style-type: none"> <li>① The lease transfers ownership of the underlying asset to the lessee.</li> <li>② The lessee has an option to purchase the underlying asset and is reasonably certain it will do so.</li> <li>③ The lease term is for a major part of the asset's useful life.</li> <li>④ The present value of the sum of the lease payments equals or exceeds substantially all of the fair value of the asset.</li> <li>⑤ The underlying asset has no alternative use to the lessor</li> </ol>	<p>A lease not meeting any of those criteria is classified as an <b>Operating lease</b></p>

## Summary

### Classification of Leases under US GAAP & IFRS

Framework for Lease  
 Advantage of Lease for Lessee  
 Classification of Leases

# Lease Accounting for Lessee

- ❑ Lease Accounting for Lessee
- ❑ How Lease Classification Affects Financial Ratios



## Lease Accounting for Lessee

- **Lessee Accounting - IFRS**

- At lease inception, the lessee records **a lease payable liability** and **a “right-of-use” (ROU) asset** on its balance sheet, both equal to the present value of future lease payments.
  - ✓ The discount rate used in the present value calculation is **either the rate implicit in the lease or an estimated secured borrowing rate**.
- The lease liability is subsequently reduced by each lease payment using the effective interest method.
  - ✓ Each lease payment is composed of **interest expense** and **principal repayment**
    - ❑ Interest expense is the product of the lease liability and the discount rate
    - ❑ Principal repayment is the difference between the interest expense and lease payment.
- **The ROU asset is subsequently amortized**, often on a straight-line basis, over the lease term.
  - ✓ Although the lease liability and ROU asset begin with the same carrying value on the balance sheet, they typically diverge in subsequent periods because the principal repayment that reduces the lease liability and the amortization expense that reduces the ROU asset are calculated differently.

## Lease Accounting for Lessee

- **Lessee Accounting - IFRS**

- The transaction affects the financial statements
  - ✓ The lease liability net of principal repayments and the ROU asset net of accumulated amortization are reported on the balance sheet.
  - ✓ Interest expense on the lease liability and the amortization expense related to the ROU asset are **reported separately on the income statement**.
  - ✓ The **principal repayment component** of the lease payment is reported as a cash outflow under **financing activities** on the statement of cash flows, and depending on the lessee’s reporting policies, interest expense is reported under either operating or financing activities on the statement of cash flows.

## Lease Accounting for Lessee

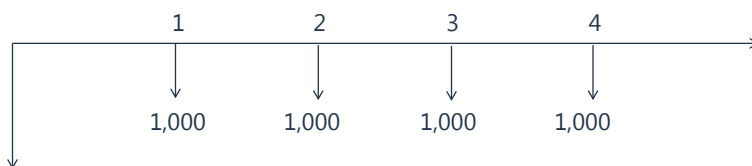
### Lessee Accounting - US GAAP

- For finance lease
  - ✓ Identical to the lessee accounting model for IFRS.
- For operating lease
  - ✓ The lease liability net of principal repayments and the ROU asset net of accumulated amortization are reported on the balance sheet.
  - ✓ Interest expense on the lease liability and the amortization expense related to the ROU asset are reported **as a single line titled "lease expense"** as an operating expense on the income statement.
    - The interest and amortization components are not reported separately, nor are they grouped with other types of interest and amortization expense (e.g., interest on a bond, amortization of an intangible asset).
  - ✓ The **entire lease payment** is reported as a cash outflow **under operating activities** on the statement of cash flows.
    - The interest and principal repayment components are not reported separately.

### Example

#### Lease Accounting for Lessee

- GF leases a machine for its own use for 4 years with annual payments of 1,000 paid in arrears; The appropriate interest rate on the lease is 10%.
- Calculate the impact of the lease on GF' balance sheet, income statement and cash flow statement for each of the 4 years, including the immediate impact.
- Assuming GF amortizes its ROU on SL basis under IFRS and US GAAP respectively.



### Example

#### Lease Accounting for Lessee

- Solution:
  - For all leases under IFRS and finance lease under US GAAP
    - ✓ B/S is affected by finance lease.
    - ✓ At the inception of the lease
      - ROU = lease liability =  $3169.8654 = 3,170$
      - $N=4, I/Y=10, PMT=1000, FV=0, CPT PV = -3,168.8654 = -3,170$
    - ✓ Over the lease term
      - ROU → Amortization (SL) =  $3170 / 4 \text{ years} = 792.5 \text{ p.a.}$
      - Lease liability → separate interest expense & lease payment

Beginning Liability	Interest expense	Repayment)	Ending Liability
$3,170 = \sum_{t=1}^4 \frac{1000}{(1+10\%)^t}$	317 $= 3,170 \times 10\%$	(1,000) $= 1,000 \times 10\%$	2,487 $= 3,170 + 317 - 1,000$
2,487	249	(1,000)	1,736
1,736	174	(1,000)	910
910	91	(1,000)	0

## Lease Accounting for Lessee

### For operating lease under US GAAP

- Balance sheet is affected by operating lease.
- At the inception of the lease
  - ✓ ROU = lease liability =  $3169.8654 = 3,170$
  - ✓  $N=4, I/Y=10, PMT=1,000, FV=0, CPT PV=-3168.8654=-3,170$
- Over the lease term
  - ✓ Amortization of ROU asset = Amortization of lease liability each year  
= principal repayment = rent - interest expense

B	A	S	E
3,170	317	(1,000)	2,487
2,487	249	(1,000)	1,736
1,736	174	(1,000)	910
910	91	(1,000)	0

- ✓ Single expense including depreciation and interest is recognized on its income statement

## Lease Accounting for Lessee

IFRS and US GAAP: Finance lease				US GAAP: Operating lease	
		ROU Asset	Lease Liability	ROU Asset	Lease Liability
B/S	Y0	3,170	3,170	3,170	3,170
	Y1	2,377.5	2,487	2,487	2,487
	Y2	1,585	1,736	1,736	1,736
	Y3	792.5	910	910	910
	Y4	0	0	0	0
I/S	Amortization expense	Interest expense	Total expense	Expense recognized	
	792.5	317	1,109.5	1,000	
	792.5	249	1,041.5	1,000	
	792.5	174	966.5	1,000	
	792.5	91	883.5	1,000	
CFS	CFO	CFF	Total CF	CFO	
	317	683	1,000	1,000	
	249	751	1,000	1,000	
	174	826	1,000	1,000	
	91	910	1,000	1,000	

## How Lease Classification Affects Financial Ratios

Ratio	Formula	Impact of Using an <b>Operating Lease</b> under US GAAP Instead of a Finance Lease
EBITDA margin	$\frac{\text{EBITDA}}{\text{Total revenue}}$	Lower: Lease expense is classified as an operating expense rather than interest and amortization.
Asset turnover	$\frac{\text{Total revenue}}{\text{Total asset}}$	Lower: Total assets are higher under an operating lease because the ROU asset is amortized at a slower pace in Years 1–3.
Cash flow per share	$\frac{\text{Cash flow from operations}}{\text{Shares outstanding}}$	Lower: Cash flow from operations is lower because the entire lease payment is included in operating activities versus solely interest expense for a finance lease.

# Summary

## Lease Accounting for Lessee

Lease Accounting for Lessee  
How Lease Classification Affects Financial Ratios

## Lease Accounting for Lessor

- ❑ Finance Lease for Lessor
- ❑ Operating Lease for Lessor

## Lease Accounting for Lessor

- **Finance lease for lessor**
  - At finance lease inception, the lessor recognizes a lease receivable asset equal to the **present value of future lease payments** and **de-recognizes the leased asset**, simultaneously recognizing any difference as a gain or loss.
    - ✓ The discount rate used in the present value calculation is the rate implicit in the lease.
    - ✓ The lease receivable is subsequently reduced by each lease payment using the **effective interest method**.
  - Each lease payment is composed of **interest income and principal proceeds**.
    - ✓ Interest income is the product of the lease receivable and the discount rate
    - ✓ The principal proceeds equals the difference between the interest income and cash receipt.
- **How the transaction affects the financial statements**
  - Lease receivable net of principal proceeds is reported on the balance sheet.
  - Interest income is reported on the income statement.
  - If leasing is a primary business activity for the entity, as it commonly is for financial institutions and independent leasing companies, it is reported as revenue.
  - The entire cash receipt is reported under operating activities on the statement of cash flows.

## Lease Accounting for Lessor

- **Operating lease for lessor**
  - Under operating lease, the contract is essentially a rental agreement
  - The lessor keeps the leased asset on its books and recognizes lease revenue on a straight-line basis.
  - Interest revenue is not recognized because the transaction is not considered a financing.
- **How the transaction affects the financial statements:**
  - The balance sheet is not affected. The lessor continues to recognize the leased asset at cost net of accumulated depreciation.
  - Lease revenue is recognized on a straight-line basis on the income statement. Depreciation expense continues to be recognized.
  - The entire cash receipt is reported under operating activities on the statement of cash flows. This is the same as a finance lease.
- **Under US GAAP**
  - For lessor, lease can be classified as "direct finance"(no Gain or Loss at outset) or "sales-type"(with G/L).

### Example

#### Lease Accounting for Lessor

- Example: GF leases a machine to an oil company for 4 years with annual lease payments of \$1,000 in arrears. The salvage value is zero. It cost GF \$3,000 to purchase the machine with 5-year life time and straight-line depreciation. The machine's fair value is 3170.
- Solution:
  - lease term ratio= $4/5=80\% > 75\%$ . Lessor shall use finance lease.
  - The implicit lease rate=10%.

Year	Beginning lease receivable	Lease Payment Received	Interest income 10%	Reduction of Lease Receivable	Lease Receivable
1	3,170 =fair value	1,000	317 =3170×10%	683 =1000-317	2,487
2	2,487	1,000	249	751	1,736
3	1,736	1,000	173	827	909
4	909	1,000	91	909	0
<b>Total</b>		<b>4,000</b>	<b>830</b>		

### Example

#### Lease Accounting for Lessor

- Example: GF leases a machine to an oil company for 4 years with annual lease payments of \$1,000 in arrears. The salvage value is zero. It cost GF \$3,000 to purchase the machine with 8-year life time and straight-line depreciation.
- Solution:
  - lease term ratio= $4/8=50\% < 75\%$ . Lessor shall use operating lease.

Finance lease		Operating lease		
Year	Interest Income	Rental Income	Depreciation Expense	Rental Income Net of Depreciation Expense
1	317	1,000	375	625
2	249	1,000	375	625
3	173	1,000	375	625
4	91	1,000	375	625

# Summary

## Lease Accounting for Lessor

- Finance Lease for Lessor
- Operating Lease for Lessor

## Framework for Pension Plan

- Introduction to Pension Plans
- Accounting Treatment for Pension Plans

## Introduction to Pension Plans

### ● Introduction

- A pension is a form of **deferred compensation** earned over time through **employee service**.
  - ✓ Companies may offer various types of benefits to **their employees** following retirement, such as pension plans, health care plans, medical insurance, and life insurance.
  - ✓ Pension plans often are the most significant post-employment benefits provided to retired employees.
- **Types of pension plan**
  - ✓ **Defined contribution pension plans (DC plan)**
    - A company contributes **an agreed-upon (defined) amount** into the plan.
  - ✓ **Defined benefit pension plans (DB plan)**
    - A company makes **promises of future benefits** to be paid to the employee during retirement.
    - For example, a company could promise an employee annual pension payments equal to 70 percent of his final salary at retirement until death.

## — Accounting Treatment for Pension Plans —

- **Accounting Treatment for Pension Plan**

- **Defined contribution pension plans**

- ✓ The agreed-upon amount is the pension expense (income statement).
- ✓ The amount the company contributes to the plan is treated as an operating cash outflow (cash flow statement).
- ✓ The only impact on assets and liabilities is a decrease in cash, although if some portion of the agreed-upon amount has not been paid by fiscal year-end, a liability would be recognized on the balance sheet (balance sheet).

- **Defined benefit pension plans**

- ✓ Assumptions made to estimating eventual amount of the obligation
  - Employee's expected salary at retirement
  - The number of years the employee is expected to live beyond retirement
- ✓ The company estimates the future amounts to be paid and discounts the future estimated amounts to a present value (using a rate reflective of a high-quality corporate bond yield) to determine the pension obligation.
- ✓ The pension obligation is allocated over the employee's employment as part of pension expense.

## — Accounting Treatment for Pension Plans —

- **Defined benefit pension plans**

- **Basic accounting treatment**

- ✓ Most defined-benefit pension plans are funded through a separate legal entity, typically a pension trust fund. A company makes payments into the pension fund, and retirees are paid from the fund.
- ✓ The payments that a company makes into the fund are invested until they are needed to pay the retirees.
- ✓ A company reports either a net pension asset or a net pension liability in its balance sheet
  - If the fair value of **the fund's assets** > **the present value of the estimated pension obligation**, the plan has a **surplus** and the company's balance sheet will reflect a net pension asset.
  - If the present value of the **estimated pension obligation** > **the fund's assets**, the plan has a **deficit** and the company's balance sheet will reflect a net pension liability.
- ✓ Each period, the change in the net pension asset or liability is recognized either in profit or loss or in other comprehensive income.

## — Accounting Treatment for Pension Plans —

- **Defined benefit pension plans**

- **Under IFRS**

- ✓ The change in the net pension asset or liability **recognized as pension expense in profit and loss**
  - Employees' service costs
    - The **service cost** during the period for an employee is the present value of the increase in the pension benefit earned by the employee as a result of providing one more year of service, discounted at a rate reflective of a high-quality corporate-bond yield.
    - The service cost also includes **past service costs**, which are changes in the present value of the estimated pension obligation related to employees' service in prior periods, such as might arise from changes in the plan.
  - Net interest expense (accrued in beginning pension liability) or income (accrued in the beginning pension asset).
    - The net interest expense or income represents the change in value of the net defined benefit pension asset or liability.
    - It is calculated as the net pension asset or liability **multiplied by the discount rate** used in estimating the present value of the pension obligation.

## — Accounting Treatment for Pension Plans —

- **Defined benefit pension plans**

- Under IFRS

- ✓ The change in the net pension asset or liability recognized in OCI: **remeasurement**.
- Remeasurements are not amortized into profit or loss over time.

Remeasurements include	Actuarial gains and losses	Actuarial gains and losses can occur when changes are made to the assumptions on which a company bases its estimated pension obligation	
		The assumptions include	<ul style="list-style-type: none"> <li>• employee turnover</li> <li>• mortality rates</li> <li>• retirement ages</li> <li>• compensation increases</li> </ul>
	The actual return on plan assets less any return included in the net interest expense or income.	The actual return on plan assets includes interest, dividends and other income derived from the plan assets, including realized and unrealized gains or losses.	
		The actual return typically differs from the amount included in the net interest expense or income.	

## — Accounting Treatment for Pension Plans —

- **Defined benefit pension plans**

- Under US GAAP

- ✓ The change in net pension asset or liability recognized in profit and loss in the period includes
  - Employees' service costs for the period;
  - Interest expense accrued on the beginning pension obligation;
  - Expected return on plan assets, which is a reduction in the amount of expense recognized.

## — Accounting Treatment for Pension Plans —

- **Defined benefit pension plans**

- Under US GAAP

- ✓ The change in the net pension asset or liability recognized in OCI include
  - Past service costs
    - Recognized in the period in which they arise.
    - Then subsequently amortized into pension expense over the future service period of the employees covered by the plan.
  - Actuarial gains and losses
    - Recognized in other comprehensive income in the period in which they occur.
    - Amortized into pension expense over time.
  - This treatment allows companies to "smooth" the effects on pension expense over time for these two components.
  - US GAAP does permit companies to immediately recognize actuarial gains and losses in profit and loss.

## Example

### Accounting Treatment for Pension Plans

- **Accounting Treatment for Pension Plan**

- Jupiter Inc. reported the following disclosures related to retirement pension obligations in its 2011 annual report. The company follows IFRS.

(\$ in Millions)	2011	2010
Retirement obligation	2,980	2,510
Plan assets	1,055	985

- Determine the pension-related amount that would be reported on Jupiter's balance sheet for the year 2011.

## Example

### Accounting Treatment for Pension Plans

- **Accounting Treatment for Pension Plan**

- **Solution:**

(\$ in Millions)	2011	2010
Retirement obligation	2,980	2,510
Plan assets	(1,055)	(985)
Deficit/(surplus)	1,925	1,525

- ✓ The positive funded status of \$1,925 for 2011 indicates that the company's pension plan is **underfunded** (retirement obligations exceed the value of assets that have been reserved for them). This is the amount that would be reported as a liability in Jupiter's 2011 balance sheet.

### — Accounting Treatment for Pension Plans —

- **Pension expenses is not directly reported on the income statement**

- Pension expense related to production employees is added to inventory and expensed through cost of sales (cost of goods sold).
- For employees not involved directly in the production process, the pension expense is included with salaries and other administrative expenses.
- Extensive disclosures are included in the notes to the financial statements.

# Summary

## Framework for Pension Plan

Introduction to Pension Plans  
Accounting Treatment for Pension Plans  
Leverage Ratios & Coverage Ratios

## Framework for Share-Based Compensation

- ❑ Stock Grants
- ❑ Stock Options
- ❑ Accounting for Stock Options
- ❑ Other Types of Share-Based Compensation

### — Framework for Share-Based Compensation —

- **Share-based compensation**
  - Share-based compensation is intended to align employees' interests with those of the shareholders and is another common type of deferred compensation.
- **Stock compensation plan takes many forms:**
  - Stock grants;
  - Stock options;
  - Stock appreciation rights;
  - Phantom shares.

} Equity settled

} Cash settled, like cash bonus plan.
- **Advantages of share-Based compensation**
  - Aligning the interests of employees with shareholders.
- **Disadvantages of share-Based compensation**
  - May dilute the shareholders' interests.
  - Do not provide desired incentives as the managers may have limited influence over the market value.
  - Lead managers to be risk averse or excessive risk-taking as they care about the market value.

## Stock Grants

### • Stock grants

- Outright stock grant
  - ✓ Compensation expense is reported on the **fair value** (generally the market value) of the stock on the grant date.
  - ✓ Compensation expense is **allocated over the service period**.
- Restricted stock grant
  - ✓ Employee should return those shares to the company if certain conditions are not met.
  - ✓ Compensation is measured as the **fair value** (usually market value) of the shares issued at the grant date.
  - ✓ This compensation expense is **allocated over the employee's service period**.
- Performance shares
  - ✓ Shares granted contingent on meeting performance goals.
  - ✓ Compensation expense is equal to the **fair value** (usually market value) of the shares issued at the grant date.
  - ✓ This compensation expense is **allocated over the employee service period**.

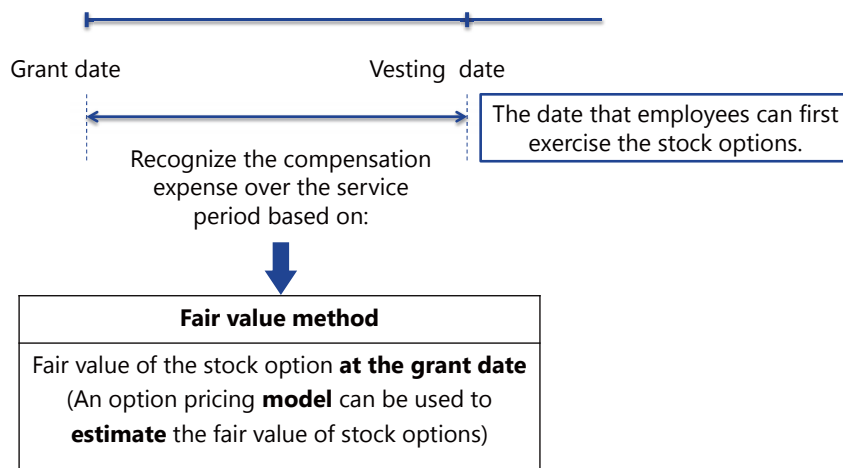
## Stock Options

### • Stock options

- Compensation expense is based on the fair value.
- Decrease net income and retained earnings.
- Paid-in capital is increased by an identical amount. No changes to total equity.

## Accounting for Stock Options

### • Accounting for Stock Options



## Accounting for Stock Options

- **Vesting date**
  - The vesting date is the date that employees can **first exercise the stock options**.
  - The vesting can be immediate or over a future period. If the share-based payments vest immediately (i.e., no further period of service is required), then expense is recognized on the grant date.
- **Exercise date**
  - The exercise date is the date when employees **exercise the options** and convert them to stock.
  - Upon exercise, the company increases its cash for the exercise price of the option (paid by the option holder) and credits common stock for the par value of the stock issued.
  - Additional paid-in capital is increased by the difference between the par value of the stock and the sum of the fair value of the option at the grant date and the cash received.
- **The recognition of option expense has no net impact on total equity.**

## Other Types of Shared-Based Compensation

- **Other Types of Shared-Based Compensation (Cash-settled share-based compensation)**
  - Stock appreciation rights (SARs)
    - ✓ The potential for risk aversion is limited because employees have limited downside risk and unlimited upside potential similar to employee stock options.
    - ✓ Shareholder ownership is not diluted.
    - ✓ Valued at fair value and compensation expense is allocated over the service period of the employee.
  - Phantom stock
    - ✓ Unlike SARs, phantom shares can be used by private companies or business units within a company that are not publicly traded or by highly illiquid companies.

## Summary

### Framework for Share-Based Compensation

Stock Grants  
Stock Options  
Accounting for Stock Options  
Other Types of Shared-Based Compensation

# Summary

## Module: Topics in Long-Term Liabilities and Equity

- Bond Introduction & Par, Discounted and Premium Bonds
- Issuance Costs & Fair Value Reporting Option
- Derecognition of Debt & Debt Covenants
- Classification of Leases under US GAAP & IFRS
- Lease Accounting for Lessee
- Lease Accounting for Lessor
- Framework for Pension plans
- Framework for Share-Based Compensation Plans

# Module

## Analysis of Income Taxes

- Key Terminology : Accounting Profit & Taxable Income
- Temporary & Permanent Differences
- DTA & DTL
- Tax Rate Change & Effective Tax Rate

### Key Terminology : Accounting Profit & Taxable Income

- ❑ Financial Reporting Terminology
- ❑ Tax Return Terminology
- ❑ Two Approaches to Deferred Tax Issue
- ❑ Treatment for Analytical Purposes

## Example

### Accounting Profit & Taxable Income

- **Current and Deferred Tax example:** a firm may use different depreciation methods for reporting.

- Financial reporting

	year 1	2	3	4	5	total
revenue	600	600	600	600	600	3,000
other expense	-300	-300	-300	-300	-300	-1,500
depreciation expense	-100	-100	-100	-100	-100	-500
profit before tax	200	200	200	200	200	1,000
income tax expense 30%	60	60	60	60	60	300
profit for the year	140	140	140	140	140	700

- Tax reporting

	year 1	2	3	4	5	total
revenue	600	600	600	600	600	3,000
other expense	-300	-300	-300	-300	-300	-1,500
tax depreciation	-220	-132	-80	-50	-18	-500
taxable profit	80	168	220	250	282	1,000
tax payable 30%	24	50	66	75	85	300
net profit	56	118	154	175	197	700

Temporary difference

## Example

### Accounting Profit & Taxable Income

- **Current and Deferred Tax example**

	I/S	Year 1	Year 2	Year 3	Year 4	Year 5
	Income tax expense	60	60	60	60	60
Tax department	Current tax expense	24	50.4	66	75	84.6
B/S deferred tax liability	Deferred tax expense / (Income)	36	9.6	(6)	(15)	(24.6)



	B/S	Year 1	Year 2	Year 3	Year 4	Year 5
	Deferred tax liability	36	(36+9.6) = 45.6	(45.6-6) = 39.6	(39.6-15) = 24.6	(24.6-24.6) = 0

## Financial Reporting Terminology

- **Financial Reporting Terminology**

- **Accounting profit** (income before tax and earnings before tax): Pretax financial income based on financial accounting standards.
- **Income tax expense:** Expense recognized in the income statement that includes taxes payable and changes in deferred tax assets and liabilities (which are related to tax expenses).
  - ✓ **Income tax expense = taxes payable + ΔDTL - ΔDTA**
- **Deferred tax liabilities (DTL):** Balance sheet amounts that result from an excess of income tax expense over taxes payable that are expected to result in future cash outflows.
- **Deferred tax assets (DTA):** Balance sheet amounts that result from an excess of taxes payable over income tax expense that are expected to be recovered from future operations.
  - ✓ Can also result from tax loss carryforwards.
- **Valuation allowance:** Reduction of deferred tax assets based on the likelihood the assets will not be realized.
- **Carrying value:** Net balance sheet value of an asset or liability.

## Tax Return Terminology

- **Tax Return Terminology**
  - **Taxable income:** Income subject to tax based on the tax return.
  - **Taxes payable:** The tax liability on the balance sheet caused by taxable income.
    - ✓ This is also known as **current tax expense**, but do not confuse this with income tax.
  - **Income tax paid:** The actual cash flow for income taxes including payments or refunds from other years.
  - **Tax loss carry forward:** A current or past loss that can be used to reduce taxable income (thus, taxes payable) in the future.
    - ✓ Can result in a deferred tax asset.
  - **Tax base :** Net amount of an asset or liability used for tax reporting purposes.

## Example

### Two Approaches to Deferred Tax Issue

- A company reports \$100 revenue in current year and its book value of property, plant, and equipment (PP&E) is \$60. Assume that accounting standards permit PP&E to be depreciated on a straight-line basis over a 3-year period, whereas the tax standards in the jurisdiction specify that PP&E should be depreciated on a straight-line basis over a 2-year period. Accounting depreciation (AD) is \$20 and tax depreciation (TD) is \$30 in each year. If the tax rate is 20%, calculate the deferred tax liability for the first year.
- **Income Statement approach**
  - Tax payable = taxable income  $(100-30) \times 20\% = 14$
  - Tax expense = accounting profit  $(100-20) \times 20\% = 16$
  - $\Delta DTL = \text{Tax expense} - \text{Tax payable} = 2$
  - Income Statement  $\rightarrow \Delta DTL \rightarrow \text{Liability (B/S)}$
- **Balance sheet approach**
  - B/S under accounting standards: Asset  $\rightarrow \text{PPE: } 60-20=40$ , AD=20, Book value=40.
  - B/S under tax standards : Asset  $\rightarrow \text{PPE: } 60-30=30$ , AD=30, **Tax base**=30.
  - $DTL_1 = \text{BV}(\text{accounting base}) - \text{tax base} = (40-30) \times 20\% = 10 \times 20\% = 2$ ,  $DTL_0 = 0$ ,  $\Delta DTL = 2-0 = 2$
  - Tax expense = tax payable +  $\Delta DTL = 14 + 2 = 16$ .
  - B/S  $\rightarrow DTL \rightarrow \Delta DTL \rightarrow \text{deferred tax expense (I/S)}$

## Treatment for Analytical Purposes

- **Treatment for Analytical Purposes**
  - If deferred tax liabilities are expected to reverse in the future, they are best classified by an analyst as liabilities.
  - If, however, they are not expected to reverse in the future, they are best classified as equity with DTL decreased and equity increased by the same amount.
  - The key question is, "When or will the total deferred tax liability be reversed in the future?"
    - ✓ In practice, the treatment of deferred taxes for analytical purposes varies. An analyst must decide on the appropriate treatment on case-by-case basis.

# Summary

## Key Terminology : Accounting Profit & Taxable Income

Financial Reporting Terminology  
Tax Return Terminology  
Two Approaches to Deferred Tax Issue  
Treatment for Analytical Purposes

## Temporary & Permanent Differences

- ❑ Permanent Differences
- ❑ Temporary Differences
- ❑ Treatment of Revaluation
- ❑ Disclosure of Deferred Tax

## Permanent Differences

- **Permanent Differences**

- Permanent differences are differences between tax and financial reporting of revenue (expenses) that *will not* be reversed at some future date. Because they will not be reversed at a future date, these differences do not give rise to deferred tax. These items typically include
  - ✓ Income or expense items not allowed by tax legislation, and
  - ✓ Tax credits for some expenditures that directly reduce taxes.

## Permanent Differences

- **Permanent Difference**

- A **permanent difference** is a difference between taxable income and pretax income that will not reverse in the future.
  - ✓ Permanent differences do not create deferred tax assets or deferred tax liabilities.
  - ✓ Permanent differences can be **caused by revenue that is not taxable, expenses that are not deductible, or tax credits that result in a direct reduction of taxes.**
    - For example, in the United States, interest received on municipal bonds is typically not taxable (but appears on the financial statements as pretax income), and the cost of life insurance on key company officers is typically not tax-deductible (but appears on the financial statements as a pretax expense).
- Permanent differences will cause the firm's effective tax rate to differ from the statutory tax rate.
  - ✓ The statutory rate is the tax rate of the jurisdiction where the firm operates. The effective tax rate is derived from the income statement.
  - ✓  $\text{Effective tax rate} = \text{income tax expense} \div \text{pretax income}$
  - ✓ The statutory rate and effective rate may also differ if the firm is **operating in more than one tax jurisdiction.**

## Temporary Differences

- **Temporary Differences**

- A temporary difference refers to a difference between the tax base and **the carrying value of an asset or liability that will result in taxable amounts or deductible amounts in the future.**
- If the temporary difference is expected to reverse in the future and the balance sheet item is expected to provide future economic benefits, a DTA or DTL is created.
  - ✓ Temporary differences can be **taxable temporary differences** that result in expected future taxable income or **deductible temporary differences** that result in expected future tax deductions.
- Temporary differences leading to DTLs can arise from an investment in another firm (e.g, subsidiaries, affiliates, branches, and joint ventures) when the parent company **recognizes earnings from the investment before dividends are received.**
  - ✓ However, if the parent company can control the timing of the future reversal and it is probable the temporary difference will not reverse, no DTL is reported.
- A temporary difference from an investment will result in a DTA only if the temporary difference is expected to reverse in the future, and sufficient taxable profits are expected to exist when the reversal occurs.

## Temporary Differences

- **Temporary Differences**

- Neither **deferred tax assets nor deferred tax liabilities** are carried on the balance sheet at their discounted present value.
- However, deferred tax assets are assessed at each balance sheet date to determine the likelihood of sufficient future taxable income to recover the tax assets.
  - ✓ Without future taxable income, a DTA is worthless.
- According to US GAAP, if it is more likely than not (greater than a 50% probability) that some or all of a DTA will not be realized (insufficient future taxable income to recover the tax asset), then the DTA must be reduced by a valuation allowance.
  - ✓ The valuation allowance is a contra account that reduces the net balance sheet value of the DTA.
  - ✓ Increasing the valuation allowance will decrease the net balance sheet DTA, increasing income tax expense and decreasing net income.
- Under IFRS, a similar calculation is made but only the net amount of the DTA is presented on the balance sheet. The amount of the valuation allowance is **not separately disclosed.**

## Applicable Tax Rate

### ● Applicable Tax Rate

- The measurement of deferred tax items depends on the tax rate expected to be in force when the underlying temporary difference reverses.
  - ✓ We previously noted the effects of a change in the income tax rate on deferred tax assets and liabilities.
  - ✓ In some circumstances, the applicable tax rate will depend on **how the temporary difference will be settled**.
    - As an example, consider a tax jurisdiction that has a capital gains tax rate that is lower than the marginal tax rate.
    - If, given its tax base, the currently unrealized gains on an asset will be taxed at the capital gains rate when the asset is disposed of, that rate should be used to calculate the deferred tax liability.

## Treatment of Revaluation

### ● Treatment of Revaluation

- Another issue with the measurement of deferred tax items is whether a change in asset value is **recorded on the income statement or taken directly to equity**.
  - ✓ In a case where the change that leads to a deferred tax item is taken directly to equity, the deferred tax item should also be taken directly to equity.
- Under IFRS that revalues PP&E upward.
  - ✓ Because the revaluation gain is taken directly to equity, the related future tax liability should be taken to equity as well.
    - The adjustment is to reduce the amount of the gain added to revaluation surplus by the amount of the future tax liability on the revaluation gain.

## Treatment of Revaluation

### ● Treatment of Revaluation

- The upward revaluation of the asset on the balance sheet will increase depreciation in subsequent periods, and the depreciation will decrease the deferred tax liability.
  - ✓ In each subsequent period, the depreciation of revaluation will decrease NI and the associated DTL will decrease as the portion of depreciation of revaluation.
  - ✓ In each subsequent period, an amount equal to the additional depreciation from the upward revaluation of the asset, less the tax liability on that portion of the revaluation, is **transferred from revaluation surplus to retained earnings**.
  - ✓ The previously unrealized gain in the asset's value is realized over time through use of the asset. The addition to retained earnings just offsets the after-tax decrease in net income (and retained earnings) from the additional depreciation resulting from the upward revaluation of the asset's carrying value.

## Disclosure of Deferred Tax

- Typically, the following deferred tax information is disclosed:
  - Deferred tax liabilities, deferred tax assets, any valuation allowance, and the net change in the valuation allowance over the period.
  - Any unrecognized deferred tax liability for undistributed earnings of subsidiaries and joint ventures.
  - Current-year tax effect of each type of temporary difference.
  - Components of income tax expense.
  - Reconciliation of reported income tax expense and the tax expense based on the statutory rate.
  - Tax loss carryforwards and credits.

## Temporary & Permanent Difference

- Timing difference
  - Temporary difference
    - ✓ Difference will reverse

Deferred tax assets	Deferred tax liabilities
<u>B/S amounts</u> that result from an excess of tax payable over income tax expense that are expected to be recovered from future operations.	<u>B/S amounts</u> that result from an excess of income tax expense over taxes payable that are expected to result in future cash outflows.
Taxes payable > income tax expense	Taxes payable < income tax expense

- Permanent difference
  - ✓ Difference will not reverse, thus **no deferred tax** issues

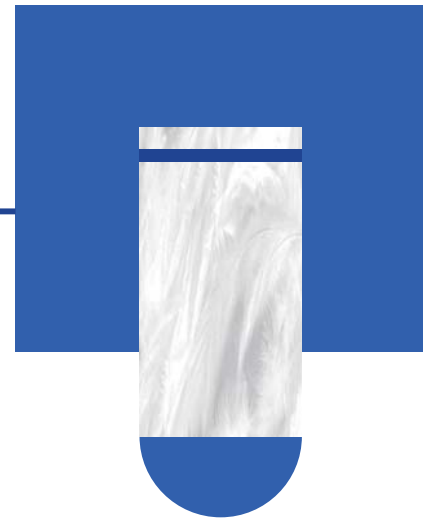
## Summary

### Temporary & Permanent Differences

Permanent Differences  
Temporary Differences  
Treatment of Revaluation  
Disclosure of Deferred Tax

## DTA & DTL

- ❑ B/S Approach
- ❑ Differences Resulting in Deferred Taxes
- ❑ Specific Issues in Deferred Taxes



### B/S Approach

- **B/S Approach to Deferred Tax Issue**
  - **Two steps for Deferred tax**
    - ✓ Step 1 Identify DTL and DTA through a B/S approach
    - ✓ Step 2 Calculate deferred tax expense
  - **B/S approach**
    - ✓ Identify Accounting base and Tax base for **every asset and liability item on B/S**.
    - ✓ Calculate the difference between two bases.
      - ❑ For assets
        - $BV(\text{accounting base}) > \text{tax base}$ , DTL.
      - ❑ For liabilities
        - $BV(\text{accounting base}) > \text{tax base}$ , DTA
        - Tax base of liability =  $BV - \text{deductible permitted by TAX}$
        - $BV(\text{accounting base}) - \text{tax base} = BV - (BV - \text{deductible permitted by TAX}) = \text{deductible permitted by TAX}$

### B/S Approach

- **Accounting Base & Tax Base - Assets**
  - An asset's tax base is the amount that will be deducted (expensed) on the tax return in the future as the economic benefits of the asset are realized.
  - Depreciable NCA (non-current Asset)
    - ✓ Accounting base → Original cost – accumulated accounting depreciation-accumulated impairment
    - ✓ Tax base → Original cost – accumulated tax depreciation
  - R&D
    - ✓ Accounting base (Expensed as incurred) → Zero
    - ✓ Tax base (Capitalized) → Original cost – accumulated amortization
  - A/R
    - ✓ Accounting base → Invoiced amount – allowance for bad debt
    - ✓ Tax base → Invoiced amount (do not recognize allowance)

## Example

### B/S Approach

- **Accounting Base & Tax Base - Assets**

- Example Information

- ✓ Assets with and original Cost of \$1,000
- ✓ Revenue is \$500 p.a. and no other expense
- ✓ Accounting depreciation (depreciation expense) = \$100 p.a.
- ✓ Tax depreciation = \$ 200 p.a.

- For Y1:

- ✓ Tax payable=taxable income  $\times$  t=(500-200)  $\times$  30%=\$90
- ✓  $DTL_1=(\text{Accounting Base}_1 - \text{tax base}_1) \times t=(900-800) \times 30\%=\$30$ ,  $\Delta DTL_1=30-0=\$30$
- ✓ Tax expense=tax payable +  $\Delta DTL_1=90+30=\$120$

- For Y2:

- ✓ Tax payable=taxable income  $\times$  t=(500-200)  $\times$  30%=\$90
- ✓  $DTL_2=(800-600) \times 30\%=\$60$ ,  $\Delta DTL_2=60-30=\$30$
- ✓ Tax expense=tax payable +  $\Delta DTL_2=90+30=\$120$

### B/S Approach

- **Accounting Base & Tax Base - Liabilities**

- **Customer advance**

- ✓ Accounting base (accrual accounting)→ Unearned revenue treat as a Liability
- ✓ Tax base (cash accounting) →Revenue is recognized no liability arise → Zero

- **Warranty liability**

- ✓ Accounting base (accrual accounting) →A liability is recognized for future obligation
- ✓ Tax base (cash accounting) → Recognize a expense when a cash outflow incurred → Zero

## Example

### B/S Approach

- **Accounting Base & Tax Base - Liabilities**

- Example information

- ✓ Contract liability = 10,000 → Dr. Cash 10,000  
Cr. contract liability 10,000
- ✓ Tax base of liability=book value of liability – deductible permitted by tax authority  
=10000-10000=0

A/C base	-	Tax base	=	Temporary difference $\times$ tax rate	=	DTA in B/S
-10,000	-	0	=	-10,000 $\times$ 30%	=	3,000

I/S income tax expense	B/S DTA
(3,000)	3,000

## Example

### DTA & DTL

- An analyst is comparing a firm to its competitors. The firm has a deferred tax liability that results from accelerated depreciation for tax purposes. The firm is expected to continue to grow in the foreseeable future. How should the liability be treated for analysis purposes?  
A. It should be treated as equity at its full value.  
B. It should be treated as a liability at its full value.  
C. The present value should be treated as a liability with the remainder being treated as equity.
- Solution: A.
  - The liability should be treated as equity at its full value.
    - ✓ The DTL is not expected to reverse in the foreseeable future because a growing firm is expected to continue to increase its investment in depreciable assets, and accelerated depreciation for tax on the newly acquired assets delays the reversal of the DTL.

## Example

### DTA & DTL

- A company incurs a capital expenditure that may be amortized over five years for accounting purposes, but over four years for tax purposes. The company will most likely record.  
A. a deferred tax asset.  
B. a deferred tax liability.  
C. no deferred tax asset or liability.
- Solution: B.
  - The difference is temporary, and the tax base will be lower (because of more rapid amortization) than the carrying value of the asset.
  - The result will be a deferred tax liability.

## Example

### DTA & DTL

- When accounting standards require an asset to be expensed immediately but tax rules require the item to be capitalized and amortized, the company will most likely record.  
A. a deferred tax asset.  
B. a deferred tax liability.  
C. no deferred tax asset or liability.
- Solution: A.
  - The capitalization will result in an asset with a positive tax base and zero carrying value. The amortization means the difference is temporary.
  - Because there is a temporary difference on an asset resulting in a higher tax base than carrying value, a deferred tax asset is created.

## — Differences Resulting in Deferred Taxes —

### ● Differences Resulting in Deferred Taxes

- Differences between the treatment of an accounting item for tax reporting and for financial reporting can occur when:
  - ✓ The timing of revenue and expense recognition in the income statement and the tax return differ.
  - ✓ Certain revenues and expenses are recognized in the income statement but never on the tax return or vice-versa.
  - ✓ Assets and/or liabilities have different carrying amounts and tax bases.
  - ✓ Gain or loss recognition in the income statement differs from the tax return.
  - ✓ Tax losses from prior periods may offset future taxable income.
  - ✓ Financial statement adjustments may not affect the tax return or may be recognized in different periods.

## — Specific Issues in Deferred Taxes —

### ● Specific Issues in Deferred Taxes

- Business Combinations and Deferred Taxes
  - ✓ The fair value of assets and liabilities acquired in a business combination is determined on the acquisition date and may differ from the previous carrying amount.
  - ✓ It is highly probable that the values of acquired intangible assets, including goodwill, would differ from their carrying amounts.
  - ✓ This temporary difference will affect deferred taxes as well as the amount of goodwill recognized as a result of the acquisition.

## — Specific Issues in Deferred Taxes —

### ● Specific Issues in Deferred Taxes

- Investments in subsidiaries, branches, associates and interests in joint ventures
  - ✓ Investments in subsidiaries, branches, associates and interests in joint ventures may lead to temporary differences on the consolidated versus the parent's financial statements.
  - ✓ The related deferred tax liabilities as a result of temporary differences will be recognized **unless both of the following criterion are satisfied**:
    - The parent is in a position to control the timing of the future reversal of the temporary difference, and
    - It is probable that the temporary difference will not reverse in the future.
  - ✓ With respect to deferred tax assets related to subsidiaries, branches, and associates and interests, deferred tax assets will only be recognized **if the following criteria are satisfied**:
    - The temporary difference will reverse in the future, and
    - Sufficient taxable profits exist against which the temporary difference can be used.

## Specific Issues in Deferred Taxes

- **Specific Issues in Deferred Taxes**

- A deferred tax liability will also **not be recognized at the initial recognition of goodwill**.
- Although goodwill may be treated differently across tax jurisdictions, which may lead to differences in the carrying amount and tax base of goodwill, IAS 12 does **not allow the recognition of such a deferred tax liability**.
- Any impairment that an entity should, for accounting purposes, impose on goodwill will again result in a temporary difference between its carrying amount and tax base.
- Any impairment that an entity should, for accounting purposes, impose on goodwill and if part of the goodwill is related to the initial recognition, that part of the difference in tax base and carrying amount should **not result in any deferred taxation** because the initial deferred tax liability was not recognized.

## Summary

DTA & DTL

B/S Approach

Differences Resulting in Deferred Taxes

Specific Issues in Deferred Taxes

## Tax Rate Change & Effective Tax Rate

- Measurement of Deferred Tax
- Tax Rate Change
- Effective Tax Rate

## Measurement of Deferred Tax

### Measurement of Deferred Tax

- Deferred taxes as well as income taxes should **always be recognized on the income statement** of an entity unless it pertains to:
  - ✓ Taxes or deferred taxes charged directly to equity, or
  - ✓ A possible provision for deferred taxes relates **to a business combination**.
- The carrying amount of the deferred tax assets and liabilities should also be assessed. The carrying amounts may change even though there may have been no change in temporary differences during the period evaluated. This can result from:
  - ✓ Changes in tax rates;
  - ✓ Reassessments of the recoverability of deferred tax assets; or
  - ✓ Changes in the expectations for how an asset will be recovered and what influences the deferred tax asset or liability.

## Measurement of Deferred Tax

### Measurement of Deferred Tax

- In general, IFRS and US GAAP require that the recognition of deferred tax liabilities and current income tax should be treated **similarly to the asset or liability** that gave rise to the deferred tax liability or income tax based on accounting treatment.
  - ✓ Should an item that gives rise to a deferred tax liability be taken directly to equity, the same should hold true for the resulting deferred tax.
- The following are examples of such items:
  - ✓ Revaluation of property, plant, and equipment (revaluations are not permissible under US GAAP);
  - ✓ Long-term investments at fair value;
  - ✓ Changes in accounting policies;
  - ✓ Errors corrected against the opening balance of retained earnings;
  - ✓ Initial recognition of an equity component related to complex financial instruments; and
  - ✓ Exchange rate differences arising from the currency translation procedures for foreign operations.

## Tax Rate Change

### Income tax expense

- Income tax expense = tax payable + Deferred tax expense
  - ✓ Tax payable = taxable income  $\times$  t
  - ✓ Deferred tax expense =  $\Delta$ DTL -  $\Delta$ DTA (related to the items in I/S rather than directly into equity)
- The ending balance of DTL or DTA is calculated at the end of each fiscal year, the net  $\Delta$  amount during current fiscal year.
  - ✓ Tax rate applicable to the periods in which the DTA and DTL will be reversed (forecast).
  - ✓ Usually the current tax rate.

### If tax rate changes:

- New DTL =  $old\ DTL \times \frac{new\ tax\ rate}{old\ tax\ rate}$
- New DTA =  $old\ DTA \times \frac{new\ tax\ rate}{old\ tax\ rate}$

### A change in accounting estimate

- The change in DTA and DTL due to the tax rate changes will be part of the current year  $\Delta$ DTA and  $\Delta$ DTL, and will impact the income tax expense for the year the changes take place.

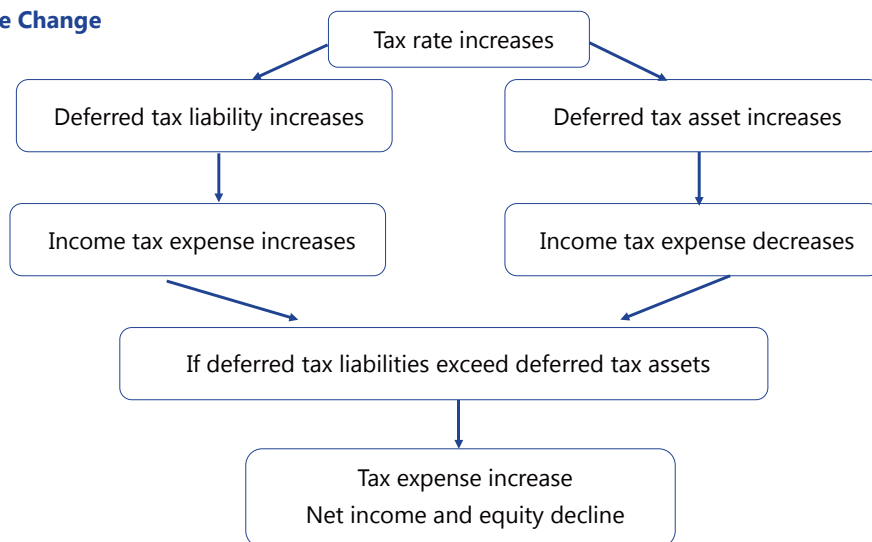
## Example

### Tax Rate Change

- Carnation Corporation had a deferred tax liability of \$30,000 on January 1, 2002 that is expected to reverse in 2004. In 2002, Carnation generated pretax financial income of \$300,000 and taxable income of \$150,000 due to a difference in depreciation. The tax rate for 2002 is 30% but Congress enacted a reduction in tax rates effective January 1, 2003 to 25%, Carnation's income tax expense for 2002 is closest to:
  - A. \$75,000.
  - B. \$77,500.
  - C. \$82,500.
- Solution: B.
  - Current tax expense =  $150 \times 30\% = 45$
  - Temporary difference balance at the end of 2002  
=  $30 / 30\% + 150 = 250$
  - $\Delta\text{DTL} = 250 \times 25\% - 30 = 62.5 - 30 = 32.5$
  - Income tax expense =  $45 + 32.5 = 77.5$

### Tax Rate Change

#### • Tax Rate Change



### Effective Tax Rate

#### • Effective tax rate

- Effective tax rate =  $\frac{\text{income tax expense}}{\text{pretax income (EBT)}}$
- Understanding the differences between **reported income tax expense** and the **amount based on the statutory income tax rate** will enable the analyst to better estimate future earnings and cash flow.
- When estimating future earnings and cash flows, the analyst should understand **each element of the reconciliation**, including its relative impact, how it has changed with time, and how it is likely to change in the future.
- In analyzing trends in tax rates, it is important to only include reconciliation items that are **continuous in nature** rather than those that are sporadic.
  - ✓ Items including different rates in different countries, tax-exempt income, and non-deductible expenses tend to be continuous.
  - ✓ Other items are almost always sporadic, such as the **occurrence of large asset sales and tax holiday savings**.
  - ✓ The disclosures of each financial statement should be reviewed **based on the footnotes and management discussion and analysis**.

## Effective Tax Rate

- **Statutory tax rate**

- The corporate income tax rate in the country in which the company is domiciled.

- **Cash tax rate**

- Cash Tax Rate =  $\frac{\text{cash tax}}{\text{pretax income (EBT)}}$

- The cash tax rate is used for forecasting cash flows, and the effective tax rate is relevant for projecting earnings on the income statement.

## Summary

### Tax Rate Change & Effective Tax Rate

Measurement of Deferred Tax

Tax Rate Changes

Effective Tax Rate

## Summary

### Module: Analysis of Income Taxes

Key Terminology : Accounting Profit & Taxable Income

Temporary & Permanent Differences

DTA & DTL

Tax Rate Change & Effective Tax Rate

# Module

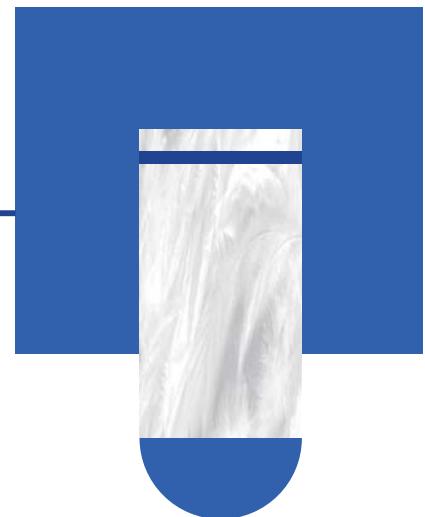


## Financial Reporting Quality

- Financial Reporting Quality

### Financial Reporting Quality

- ❑ Financial Reporting Quality & Quality of Earnings
- ❑ Quality Spectrum of Financial Reports
- ❑ Aggressive & Conservative Accounting
- ❑ Motivation for Manipulation
- ❑ Fraud Triangle
- ❑ Requirements of Regulations
- ❑ Accounting Choices and Estimates
- ❑ Warning Signs



### Financial Reporting Quality

- The quality of financial reports

{ Financial reporting quality  
Earnings (results) quality

	Financial Reporting Quality <b>Low</b>	Financial Reporting Quality <b>High</b>
Earnings Quality <b>High</b> (Results)	LOW financial reporting quality impedes assessment of earnings	HIGH financial reporting quality enables assessment. HIGH earnings quality increases company value.
Earnings Quality <b>Low</b> (Results)	quality and impedes valuation.	HIGH financial reporting quality enables assessment. LOW earnings quality decreases company value.

## Financial Reporting Quality

- **Financial reporting quality** refers to the characteristics of financial statements.
  - The **primary criterion** for judging financial reporting quality is adherence to generally accepted accounting principles (GAAP) in the jurisdiction in which the firm operates.
    - ✓ However, given that **GAAP provide choices** of methods, estimates, and specific treatment of many items, compliance with GAAP by itself does **not necessarily** result in financial reporting of the highest quality.
  - High quality financial reporting **must be decision useful**. Two characteristics of decision-useful financial reporting are **relevance** and **faithful representation**.
- **The quality of earnings**
  - The quality of reported earnings (not the quality of earnings reports) can be judged based on **the sustainability of the earnings** as well as **on their level**. At the same time, we need to consider the higher probability that high-quality earnings.
    - ✓ Sustainability can be evaluated by determining **the proportion of reported earnings** that can be **expected to continue in the future**.
      - **Changes in exchange rates** → Increases in reported earnings, not typically sustainable;
      - **Increased efficiency or increasing market share**, generally be considered sustainable.

## Quality of Earnings

- **The quality of earnings**
  - The importance of the level of earnings is that reported earnings must be **high enough** to sustain the company's operations and existence over time, as well as high enough to **provide an adequate return** to the company's investors.
  - Both of these concerns are important in determining the quality of a company's reported earnings.
    - ✓ **Sustainability of reported cash flows** is also a consideration in determining the quality of reported earnings, as are the value of items reported on the balance sheet.
    - ✓ **Inadequate accruals for probable liabilities and overstatement of asset values** can both decrease the quality of reported earnings and bring sustainability into question.
  - It is quite possible that a firm has **high financial reporting quality** but a **low quality of reported earnings**.
    - ✓ Reported earnings may be GAAP-compliant and relevant, represent the company's economic activities **faithfully**, and be decision useful as a result, but have **low sustainability or be low enough** in amount that the provision of adequate investor returns or the sustainability of the company itself are called into question.

## Quality Spectrum of Financial Reports

- **Two basic points** provide a basic conceptual framework to assess the quality of a company's financial reports and to locate the company's financial reports along the quality spectrum.
  - The financial reports are GAAP-compliant and decision-useful.
  - The results (earnings) are high quality (adequate level of return).

Quality Spectrum of Financial Reports	Quality
GAAP, decision-useful, sustainable, and adequate returns	<div style="text-align: center;">           HIGH            ↓            LOW         </div>
GAAP, decision-useful, not sustainable, Low "earnings quality"	
Within GAAP, but biased choices	
Within GAAP, but "earnings management" (Real EM, Accounting EM)	
Non-compliant Accounting	
Fictitious transactions	

## — Aggressive & Conservative Accounting —

- **Conservative accounting:** tend to **decrease** the company's reported **earnings** and financial position **for the current period**.
- **Aggressive accounting:** tend to **increase** the company's reported **earnings** and financial position **for the current period**.
- **Earnings smoothing** is accomplished through adjustment of accrued liabilities that are based on management estimates.

<b>Aggressive</b>	<b>Conservative</b>
Capitalizing current period costs	Expensing current period costs
Longer estimates of the lives of depreciable assets	Shorter estimates of the lives of depreciable assets
Higher estimates of salvage values	Lower estimates of salvage values
Straight-line depreciation	Accelerated depreciation
Delayed recognition of impairments	Early recognition of impairments
Less accrual of reserves for bad debt	More accrual of reserves for bad debt
Smaller valuation allowances on deferred tax assets	Larger valuation allowances on deferred tax assets

## — Aggressive & Conservative Accounting —

- **Aggressive and Conservative Accounting**
  - Sometimes GAAP themselves can **introduce conservatism** by imposing a higher standard of verification for revenue and profit than for expenses and accrual of liabilities. For example:
    - ✓ **Research costs** are typically expensed in the period incurred because of the **uncertainty** about the future benefits to be provided from research activities, while the associated revenue is **not recognized until some future period**.
    - ✓ **Accruals for legal liabilities** are recorded when a future payment **becomes "probable"**, while the standard for recognizing increasing accrued asset value is **stricter**.
    - ✓ Under US GAAP, **write-downs of inventory values** are required when their future value is likely impaired but increases in inventory value **may not be recorded until the inventory is actually sold**.

## — Motivation for Manipulation —

- **Motivation for manipulation**
  - Firms are **motivated** to manage
    - ✓ Earnings / Net income

<b>Overstate NI</b>	<b>Understate NI</b>
<ul style="list-style-type: none"> <li>• Meet earnings expectation</li> <li>• Remain in compliance with debt covenants</li> <li>• Receive higher incentive compensation</li> </ul>	<ul style="list-style-type: none"> <li>• Obtain trade relief</li> <li>• Negotiate favorable repayment term from creditors</li> <li>• Negotiate favorable labor union contracts</li> </ul>

- ✓ Balance sheet
  - Overstating Assets or understating Liabilities to appear more solvent;
    - e.g. Lower D/E ratio
  - Understating Assets or overstating Liabilities to enhance its performance ratios.
    - e.g. Higher ROA, ROE, Asset turnover ratio

## Fraud Triangle

- **Conditions to Issuing Low-Quality Financial Reports**

- Typically, three conditions exist when low-quality financial reports are issued: opportunity, motivation, and rationalization.
  - ✓ Opportunity can be the result of internal conditions, such as poor internal controls or an ineffective board of directors, or external conditions, such as accounting standards that provide scope for divergent choices or minimal consequences for an inappropriate choice.
  - ✓ Motivation can result from pressure to meet some criteria for personal reasons, such as a bonus, or corporate reasons, such as concern about financing in the future.
  - ✓ Rationalization is important because if an individual is concerned about a choice, he or she needs to be able to justify it to him- or herself.

## Requirements of Regulations

- Each country has its own regulatory body responsible for publicly traded securities and the markets in which they trade.
- **Securities regulations typically require:**
  - A registration process for the issuance of new publicly traded securities
  - Specific disclosure and reporting requirements, including periodic financial statements and accompanying notes.
  - An independent audit of financial reports.
  - A statement of financial condition made by management.
  - A signed statement by the person responsible for the preparation of the financial reports.
  - A review process for newly registered securities and periodic reviews after registration.
- Enforcement actions by securities regulators may include fines, suspension of participation in issuance and trading of securities, and public disclosure of the results of disciplinary proceedings.

## Requirements of Regulations

- **Presentation choice for non-GAAP measures to influence an analyst's opinion**
  - Firms will sometimes report accounting measures that are not defined or required under GAAP.
    - ✓ Such non-GAAP measures typically exclude some items in order to make the firm's performance look better than it would using measures defined and required by GAAP.
  - US GAAP, companies that report non-GAAP measures in their financial statements are required to:
    - ✓ Display the most comparable GAAP measure with equal prominence.
    - ✓ Provide an explanation by management as to why the non-GAAP measure is thought to be useful.
    - ✓ Reconcile the differences between the non-GAAP measure and the most comparable GAAP measure.
    - ✓ Disclose other purposes for which the firm uses the non-GAAP measure
    - ✓ Include, in any non-GAAP measure, any items that are likely to recur in the future even those treated as nonrecurring, unusual, or infrequent in the financial statements.
  - IFRS require that firms using non-IFRS measures in financial reports must:
    - ✓ Define and explain the relevance of such non-IFRS measures.
    - ✓ Reconcile the differences between the non-IFRS measure and the most comparable IFRS measure
  - Overall, the supposition is that firms use non-GAAP measures in an attempt to control the metrics on which they are evaluated and to reduce the focus of analysts and investors on GAAP measures.

## Accounting Choices and Estimates

- Accounting choices and estimates

- Revenue Recognition

- ✓ One example of how a firm's choices affect the timing of revenue recognition is the choice of where in the shipping process the customer actually takes title to the goods.
    - ✓ Firms manage the timing of revenue recognition by accelerating or delaying the shipment of goods.
    - ✓ In a bill-and-hold transaction, the customer buys the goods and receives an invoice but requests that the firm keep the goods at their location for a period of time.

- Estimates of Credit Losses

- ✓ The estimation of losses from uncollectable customer credit accounts.
    - ✓ A firm that simply underestimates the percentage of receivables that will be uncollectible will report higher receivables and higher net income as a result.
    - ✓ Management can adjust the bad-debt reserve in order to smooth earnings.
    - ✓ Other reserves recorded by a company, such as a reserve for warranty expense, can also be changed to manage reported earnings.

## Accounting Choices and Estimates

- Accounting choices and estimates

- Valuation Allowance

- ✓ The valuation allowance can be understated to show higher asset values and it can also be adjusted over time to smooth earnings.

- Depreciation Methods and Estimates

- ✓ Compared to straight-line depreciation, using an accelerated method of depreciation increases expenses, and decreases net income, in the early years of an asset's life.
    - ✓ Estimates of the useful life of a depreciable asset and its salvage value upon disposal can also affect net income and the carrying value of the asset.

- Amortization and Impairment

- ✓ Management choices and estimates regarding amortization of purchased intangible assets are similar to those for depreciation of tangible assets. The intangible asset goodwill is not amortized but is subject to a test for impairment. By ignoring or delaying recognition of an impairment charge for goodwill, management can increase earnings in the current period.

## Accounting Choices and Estimates

- Accounting choices and estimates

- Inventory Method

- ✓ The choice of inventory cost methods can have significant effects on both reported earnings and the balance sheet value of inventory. FIFO, LIFO, weighted-average method.

- Related-Party Transactions

- ✓ If a public firm does business with supplier that is private and controlled by management, adjusting the price of goods supplied can shift profits either to or from the private company to manage the earnings reported by the public company.

- Capitalization

- ✓ Any expense that can be capitalized creates an asset on the balance sheet, and the impact of the expense on net income can be spread over many years.

- Other Cash Flow Effects

- ✓ Management can affect the classification of cash flows through other methods, primarily with the goal of increasing reported cash flow from operations.
    - ✓ Capitalizing interest expense will decrease cash flow from investing and increase cash flow from operations, along with its effects on the pattern of earnings from depreciating the interest expense over time rather than expensing it all in the current period.

## Warning Signs

- **Warning signs**
  - **Revenue Recognition**
    - ✓ Changes in **revenue recognition methods**.
    - ✓ Use of **bill-and-hold transactions**.
    - ✓ Use of **barter transactions**.
    - ✓ Use of **rebate programs** that require estimation of the impact of rebates on net revenue.
    - ✓ **Lack of transparency** with regard to how the various components of a customer order are recorded as revenue.
    - ✓ **Revenue growth out of line** with peer companies.
    - ✓ **Receivables turnover is decreasing** over multiple periods.
    - ✓ **Decreases in total asset turnover**, especially when a company is growing through acquisition of other companies.
    - ✓ **Inclusion** of nonoperating items or significant one-time sales in revenue.

## Warning Signs

- **Warning signs**
  - **Inventories**
    - ✓ Declining inventory turnover ratio.
    - ✓ **LIFO liquidations-drawing down inventory levels** when LIFO( U. S. GAAP only) Inventory costing is used so that COGS reflects the lower costs of items acquired in past periods, which increases current period earnings.
  - **Capitalization Policies**
    - ✓ Firm **capitalizes costs** that are not typically capitalized by firms in their industry.
  - **Relationship of Revenue and Cash Flow**
    - ✓ The ratio of operating cash flow to net income is **persistently less** than one or declining over time.

## Warning Signs

- **Warning signs**
  - **Others**
    - ✓ **Fourth-quarter earnings** show a pattern (either high or low) compared to the seasonality of earnings in the industry or seasonality of revenue for the firm.
    - ✓ The firm has **significant transactions with related parties** (entities controlled by management).
    - ✓ Certain expenses are classified as **nonrecurring** but appear regulatory in financial reports.
    - ✓ Gross or operating profit margins are **noticeably higher** than are typical for the industry and peer companies.
    - ✓ Management typically provides **only minimal financial reporting information and disclosure**.
    - ✓ Management typically **emphasizes non-GAAP earnings measures** and uses special or nonrecurring designations aggressively for charges.
    - ✓ **Growth by purchasing a large number of businesses** can provide many opportunities to manipulate asset values and future depreciation and amortization and make comparisons to prior period earnings problematic.

# Summary

## Module: Financial Reporting Quality

Financial Reporting Quality & Quality of Earnings

Quality Spectrum of Financial Reports

Aggressive & Conservative Accounting

Motivation for Manipulation

Fraud Triangle

Requirements of Regulations

Accounting Choices and Estimates

Warning Signs

# Module



## Financial Analysis Techniques

- Common-Size Analysis
- Ratio Analysis
- Other Analysis Techniques

### Common-Size Analysis

- 
- ❑ Common-size I/S
  - ❑ Common-size B/S
  - ❑ Common-size CF/S



## Common-Size Analysis

- Common-size statements **normalize balance sheets and income statements** and allow the analyst to **more easily compare performance** across firms and for a single firm over time.
  - ✓ A vertical common-size balance sheet expresses all balance sheet accounts as a percentage of total assets.
  - ✓ A vertical common-size income statement expresses all income statement items as a percentage of sales.
- In addition to comparisons of financial data across firms and time, common-size analysis is appropriate for **quickly viewing certain financial ratios**.
  - ✓ For example, **the gross profit margin, operating profit margin, and net profit margin** are all clearly indicated within a common-size income statement. Vertical common-size income statement ratios are especially useful for studying **trends in costs and profit margins**.
- Balance sheet accounts can also be converted to common-size ratios by dividing each balance sheet item by total assets.

## Common-Size Analysis

- Common-size I/S**
  - $$\frac{\text{income statement account}}{\text{revenues}}$$
- Common-size B/S**
  - $$\frac{\text{balance sheet account}}{\text{total assets}}$$
- Common-size CF/S**
  - $$\frac{\text{cash flow statement account}}{\text{revenues}}$$
  - $$\frac{\text{cash outflow}}{\text{total cash outflows}} \quad \frac{\text{cash inflow}}{\text{total cash inflows}}$$

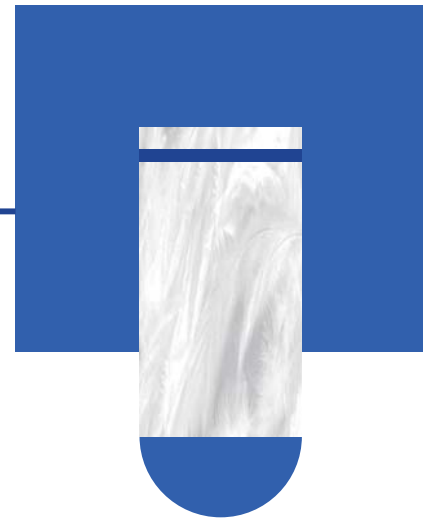
## Summary

### Common-Size Analysis

Common-size I/S  
Common-size B/S  
Common-size CF/S

## Ratio Analysis

- ❑ Profitability Ratios
- ❑ Activity Ratios
- ❑ Liquidity Ratios
- ❑ Solvency Ratios
- ❑ Cash flow Ratios
- ❑ Valuation Ratios



## Ratio Analysis

### ● Ratio Analysis

- Ratios are useful tools for expressing relationships among data that can be used for internal comparisons and comparisons across firms. They are often most useful in identifying questions that need to be answered, rather than answering questions directly. Specifically, ratios can be used to do the following:
  - ✓ Project future earnings and cash flow.
  - ✓ Evaluate a firm's flexibility (the ability to grow and meet obligations even when unexpected circumstances arise).
  - ✓ Assess management's performance.
  - ✓ Evaluate changes in the firm and industry over time.
  - ✓ Compare the firm with industry competitors.

## Ratio Analysis

- Analysts must also be aware of the limitations of ratios, including the following:
  - ✓ Financial ratios are not useful when viewed in isolation. They are only informative when compared to those of other firms or to the company's historical performance.
  - ✓ Comparisons with other companies are made more difficult by different accounting treatments. This is particularly important when comparing US firms to non-US firms.
  - ✓ It is difficult to find comparable industry ratios when analyzing companies that operate in multiple industries.
  - ✓ Conclusions cannot be made by calculating a single ratio. All ratios must be viewed relative to one another.
  - ✓ Determining the target or comparison value for a ratio is difficult, requiring some range of acceptable values.
- It is important to understand that the definitions of ratios can vary widely among the analytical community.
  - ✓ For example, some analysts use all liabilities when measuring leverage, while other analysts only use interest-bearing obligations. Consistency is paramount.
  - ✓ Analysts must also understand that reasonable values of ratios can differ among industries.

## Ratio Analysis

### Categories of ratios

- **Profitability** ratio – ability to generate profit from sales.
- **Activity** ratio – efficiency in using assets to generate revenue.
- **Liquidity** ratio – ability to pay short-term debt.
- **Solvency** ratio – ability to pay long-term debt.
- **Cash Flow** ratio – ability to generate cash flow.
- **Valuation** ratio – analysis for investment in common equity.
- These categories are not mutually exclusive.
  - ✓ An activity ratio such as payables turnover may also provide information about the liquidity of a company, for example. There is **no one standard set of ratios** for financial analysis.
  - ✓ Different analysts **use different ratios and different calculation methods for similar ratios**. Some ratios are so commonly used that there is very little variation in how they are defined and calculated.
  - ✓ There are **some alternative treatments and alternative terms** for single ratios as we detail the commonly used ratios in each category.

## Profitability Ratios

### Profitability Ratios

- A firm's ability to generate profits

Net revenue
Less: COGS
<b>Gross profit</b>
Less: operating expense
<b>Operating profit(EBIT)</b>
Less: interest
<b>Earnings before tax</b>
Less: tax
<b>Earnings after tax</b>
Plus/less: below the line items adjusted for tax
<b>Net income</b>
Less: preference dividend
<b>Income available to common shareholders</b>

Total capital  
 = average short-term debt  
 + long-term debt  
 + common equity  
 + preferred equity

## Profitability Ratios

### Profitability Ratios

- Profit/Net revenue

Gross profit margin =  $\frac{\text{Gross profits}}{\text{net revenue}}$   
 Operating profit margin =  $\frac{\text{EBIT}}{\text{net revenue}}$   
 Pretax margin =  $\frac{\text{EBT}}{\text{net revenue}}$   
 Net profit margin =  $\frac{\text{NI}}{\text{net revenue}}$

- Profit/Capital

Return on assets (ROA) =  $\frac{\text{NI}}{\text{average total assets}}$   
 $= \frac{[\text{NI} + \text{int.}(1-t)]}{\text{average total assets}}$   
 Operating return on assets =  $\frac{\text{EBIT}}{\text{average total assets}}$   
 Return on total capital (ROTC) =  $\frac{\text{EBIT}}{\text{average total capital}}$   
 Return on equity (ROE) =  $\frac{\text{NI}}{\text{average total equity}}$   
 Return on common equity =  $\frac{(\text{NI} - \text{Preferred Dividend})}{\text{average common equity}}$

## Activity Ratios

### Activity Ratios

- A firm's efficiency in using assets to generate revenue
  - ✓ Turnover = Net revenue/ assets (usually average)

Total asset turnover = net revenue/ average total assets

Fixed asset turnover = net revenue / average net fixed assets

Working capital turnover = net revenue / average **WC**

**Where:**

Working capital = current assets – current liabilities

## Activity Ratios

### Activity Ratios

Inventory	Account receivable (A/R)	Account payable (A/P)
Inventory turnover = Cost of sales or cost of goods sold (COGS) / average inventory	Receivables turnover = revenue / average receivables	Payables turnover = Purchase / trade payables
Average inventory processing period = 365 / inventory turnover	Average receivables collection period = 365 / receivables turnover	Average payment period = 365 / payables turnover
Days of inventory on hand (DOH) = Number of days in period / inventory turnover	Days of sales outstanding (DSO) = Number of days in period / Receivables turnover	Number of days of payables = Number of days in period / Payables turnover
<b>Operating cycle</b> = collection period + inventory period		
Cash conversion cycle ( <b>net operating cycle</b> ) = collection period + inventory period - payment period		

## Activity Ratios

### Activity Ratios

- Inventory Turnover and DOH (Days of inventory On Hand)
  - ✓ Inventory turnover lies at the heart of operations for many entities. It indicates the resources tied up in inventory (i.e., the carrying costs) and can, therefore, be used to indicate inventory management effectiveness.
  - ✓ A higher inventory turnover ratio implies a shorter period that inventory is held, and thus a lower DOH.
  - ✓ In general, inventory turnover and DOH should be benchmarked against industry norms.
- Receivables Turnover and DSO (Days of Sales Outstanding)
  - ✓ The number of DSO represents the elapsed time between a sale and cash collection, reflecting how fast the company collects cash from customers to whom it offers credit.
  - ✓ A relatively high receivables turnover ratio (and commensurately low DSO) might indicate
    - highly efficient credit and collection.
    - that the company's credit or collection policies are too stringent, suggesting the possibility of sales being lost to competitors offering more lenient terms.

## Activity Ratios

- **Activity Ratios**

- Total asset turnover

- ✓ Different types of industries might have **considerably different turnover ratios**.
- ✓ Manufacturing businesses that are capital-intensive might have asset turnover ratios near one, while retail businesses might have turnover ratios near 10.
- ✓ As was the case with the current asset turnover ratios, it is desirable for the total asset turnover ratio to **be close to the industry norm**.
- ✓ **Low asset turnover ratios** might mean that the company has too much capital tied up in its asset base. A **turnover ratio** that is too high might imply that the firm has **too few assets for potential sales**, or that **the asset base is outdated**.

## Activity Ratios

- **Activity Ratios**

- As was the case with the total asset turnover ratio, it is desirable to have a fixed asset turnover ratio close to the industry norm.

- ✓ **Low fixed asset turnover** might mean that the company has too much capital tied up in its asset base or is using the assets it has inefficiently.
- ✓ A **turnover ratio that is too high** might imply that the firm has obsolete equipment, or at a minimum, that the firm will probably have to incur capital expenditures in the near future to increase capacity to support growing revenues.
- ✓ Since "net" here refers to net of accumulated depreciation, firms with **more recently acquired assets** will typically have lower fixed asset turnover ratios.

## Liquidity Ratios

- **Liquidity Ratios**

- A firm's ability to pay short – term debt

**Current ratio** = Current assets / Current liabilities

**Quick ratio**

= (cash + short-term marketable securities + receivable) / Current liabilities  
≈ [current asset - inventories] / Current liabilities

**Cash ratio**

= (cash + short-term marketable securities) / Current liabilities

**Defensive interval ratio**

= (cash + short-term marketable securities + receivables) / daily cash expenditures

- ✓ Expenditures here include cash expenses for costs of goods, SG&A, and research and development.
- ✓ If these items are taken from the income statement, **noncash charges such as depreciation should be subtracted**.

## Liquidity Ratios

- **Defensive interval ratio**

- The **defensive interval ratio** measures how long a company can pay its daily cash expenditures using only its existing liquid assets, without additional cash flow coming in. This ratio is similar to the “**burn rate**” often computed for start-up internet companies or for biotechnology companies.
  - ✓ **Defensive interval ratio** = (cash + short-term marketable securities + receivables) / daily cash expenditures
    - Daily cash expenditures = Total of cash expenditures for the period / Number of days in the period
    - Total of cash expenditures for the period
      - ≈ All expense on the income statement - Non-cash expenses
      - ≈ cost of goods sold + Selling, general, and administrative expenses + Research and development expenses - Depreciation and amortization (Typically, taxes are not included.)

- **The cash conversion cycle**

- The **cash conversion cycle**, a financial metric not in ratio form, measures the length of time required for a company to go from cash paid (used in its operations) to cash received (as a result of its operations).
- The cash conversion cycle is sometimes expressed as the length of time funds are tied up in working capital. During this period of time, the company needs to finance its investment in operations through other sources (i.e., through debt or equity).

## Solvency Ratios

- **Solvency Ratios**

- A firm's ability to pay long-term debt

- **Leverage**

Debt-to-equity ratio =  $D / E$

Debt-to-capital =  $D / (D + E)$

Debt-to-assets =  $D / A$

**Financial leverage** =  $A / E$

- **Coverage**

Interest coverage =  $EBIT / \text{interest}$

Debt-to-EBITDA ratio =  $\text{Debt} / EBITDA$

Fixed charge coverage

=  $(EBIT + \text{lease payments}) / (\text{interest} + \text{lease payments})$

## Solvency Ratios

- **Fixed Charge Coverage**

- This ratio relates fixed charges, or obligations, to the cash flow generated by the company.
  - ✓ It measures the number of times a company's earnings (before interest, taxes, and lease payments) can cover the company's interest and lease payments.
  - ✓ Similar to the interest coverage ratio, a higher **fixed charge coverage** ratio implies stronger solvency, offering greater assurance that the company can service its debt (i.e., bank debt, bonds, notes, and leases) from normal earnings.
  - ✓ The ratio is sometimes used as an indication of the quality of the preferred dividend, with a higher ratio indicating a more secure preferred dividend.
- For computing this ratio, an assumption sometimes made is that **one-third** of the lease payment amount represents interest on the lease obligation and that the rest is a repayment of principal on the obligation.
  - ✓ Variant of the fixed charge coverage ratio =  $(EBIT + 1/3 \text{ lease payments}) / (\text{interest payments} + 1/3 \text{ lease payments})$

## Cash Flow Ratios

Cash flow ratios		
Performance ratios	Calculation	What it measures
Cash flow to revenue	$\text{CFO} \div \text{net revenue}$	Operating cash generated per dollar of revenue
Cash return on assets	$\text{CFO} \div \text{Average total assets}$	Operating cash generated per dollar of asset investment
Cash return on equity	$\text{CFO} \div \text{Average shareholders' equity}$	Operating cash generated per dollar of owner Investment
Cash to income	$\text{CFO} \div \text{Operating income}$	Cash generating ability of operations
Cash flow per share	$(\text{CFO} - \text{Preferred dividends}) \div \text{Number of common shares outstanding}$	Operating cash flow on a per-share basis

## Cash Flow Ratios

Cash flow ratios		
Coverage ratios	Calculation	What it measures
Debt coverage	$\text{CFO} \div \text{Total debt}$	Financial risk and financial leverage
Interest coverage	$(\text{CFO} + \text{Interest paid} + \text{Taxes paid}) \div \text{Interest paid}$	Ability to meet interest obligations
Reinvestment	$\text{CFO} \div \text{Cash paid for long-term assets}$	Ability to acquire assets with operating cash flows
Debt payment	$\text{CFO} \div \text{Cash paid for long-term debt repayment}$	Ability to pay debts with operating cash flows
Dividend payment	$\text{CFO} \div \text{Dividends paid}$	Ability to pay dividends with operating cash flows
Investing and financing	$\text{CFO} \div \text{Cash outflows for investing and financing activities}$	Ability to acquire assets, pay debts, and make distributions to owners

## Valuation Ratios

### Equity analysis – valuation ratios

Valuation ratios are used in analysis for investment in common equity.

- ✓ The most widely used valuation ratio is the price-to-earnings (P/E) ratio, the ratio of the current market price of a share of stock divided by the company's earnings per share.
- ✓ Related measures based on price per share are the price-to-cash flow, the price-to-sales, and the price-to-book value ratios.

## Valuation Ratios

### Valuation ratios

	Numerator	Denominator
<b>P / E</b>	Price per share	Earnings per share
<b>P / CF</b>		Cash flow per share
<b>P / S</b>		Sales per share
<b>P / BV</b>		Book value per share

	Numerator	Denominator
<b>BEPS &amp; DEPS</b>	NI attributable to common shares	Weighted average number of ordinary shares outstanding
<b>Cash flow per share</b>	Cash flow from operations	
<b>EBITDA per share</b>	EBITDA	
<b>Dividends per share</b>	Common dividends declared	

## Valuation Ratios

### Dividend-related quantities

- The calculation of the retention rate is:

$$\text{retention ratio}(b) = \frac{\text{net income available to common} - \text{dividends declared}}{\text{net income available to common}}$$

$$= 1 - \text{dividend payout ratio}$$

where:

$$\text{dividend payout ratio} = \frac{\text{dividends declared}}{\text{net income available to common}}$$

- Sustainable growth rate =  $b \times \text{ROE}$

## Valuation Ratios

### Clean surplus relationship:

- Assume changes in equity only relate to changes in retained earnings
- No changes in capital and OCI

$$✓ \quad g = \text{ROE} \times \text{RR} = \text{ROE} \times \left( 1 - \frac{\text{dividend declared}}{\text{operating income after taxes}} \right)$$

	Company A	Company B
<b>EPS</b>	3	4
<b>DPS</b>	1.5	1
<b>ROE</b>	14%	12%

$$14\% \times 50\% = 7\%$$

$$12\% \times 75\% = 9\%$$

# Summary

## Ratio Analysis

Profitability Ratios  
Activity Ratios  
Liquidity Ratios  
Solvency Ratios  
Cash Flow Ratios  
Valuation Ratios

## Other Analysis Techniques

- ❑ DuPont System of Analysis
- ❑ Industry-specific Financial Ratios
- ❑ Segment Analysis
- ❑ Model Building and Forecasting

## DuPont System of Analysis

### ● Relationship between ROA and ROE

$$\text{ROE} = \frac{\text{NI}}{\text{Equity}} = \left( \frac{\text{net income}}{\text{average total assets}} \right) \times \left( \frac{\text{average total assets}}{\text{average shareholders' equity}} \right)$$
$$= \text{ROA} \times (\text{leverage ratio})$$

- ROE is a function of a company's ROA and its use of financial leverage ("leverage" for short).
  - ✓ A company can improve its ROE by improving ROA or making more effective use of leverage. As a company takes on liabilities, its leverage increases.
  - ✓ If a company had no leverage (no liabilities), its leverage ratio would equal 1.0 and ROE would exactly equal ROA.
  - ✓ As long as a company is able to **borrow at a rate lower than the marginal rate** it can earn investing the borrowed money in its business, the company is making an effective use of leverage and ROE would increase as leverage increases.
  - ✓ If a company's borrowing cost **exceeds the marginal rate** it can earn on investing in the business, ROE would decline as leverage increased because the effect of borrowing would be to depress ROA.

## DuPont System of Analysis

- **The three-part approach**

- It is not for the purpose of computing ROE, but for the purpose of decomposing the known ROE.

$$\begin{aligned} \text{ROE} &= \left( \frac{\text{net income}}{\text{sales}} \right) \left( \frac{\text{sales}}{\text{assets}} \right) \left( \frac{\text{assets}}{\text{equity}} \right) \\ &= \left( \frac{\text{net profit}}{\text{margin}} \right) \left( \frac{\text{asset}}{\text{turnover}} \right) \left( \frac{\text{leverage}}{\text{ratio}} \right) \end{aligned}$$

- Net profit margin, an indicator of profitability: how much income a company derives per one monetary unit (e.g., euro or dollar) of sales.
- The asset turnover ratio, an indicator of efficiency: how much revenue a company generates per one money unit of assets.
- The financial leverage, an indicator of solvency: the total amount of a company's assets relative to its equity capital.

### Example

#### DuPont System of Analysis

- Start Inc. has maintained a stable and relatively high ROE of approximately 18% over the last three years. Use traditional DuPont analysis to decompose this ROE into its three components and comment on trends in company performance (\$'million).

	2003	2004	2005
<b>Net income</b>	21.5	22.3	21.9
<b>Sales</b>	305	350	410
<b>Equity</b>	119	124	126
<b>Assets</b>	230	290	350

- Solution:

	2003	2004	2005
<b>Net income</b>	21.5	22.3	21.9
<b>Equity</b>	119	124	126
<b>ROE</b>	18.1%	18.0%	17.4%

### Example

#### DuPont System of Analysis

- Solution:
  - DuPont (Some rounding in values)

	2003	2004	2005
<b>Net income/sales</b>	7.0%	6.4%	5.3%=21.9/410
<b>Sales / assets</b>	1.33	1.21	1.17=410/350
<b>Assets / equity</b>	1.93	2.34	2.78=350/126

	2003	2004	2005
<b>Net income</b>	21.5	22.3	21.9
<b>Sales</b>	305	350	410
<b>Equity</b>	119	124	126
<b>Assets</b>	230	290	350

## DuPont System of Analysis

### • The five-part analysis

$$\begin{aligned}
 ROE &= \left( \frac{\text{net income}}{\text{EBT}} \right) \left( \frac{\text{EBT}}{\text{EBIT}} \right) \left( \frac{\text{EBIT}}{\text{revenue}} \right) \left( \frac{\text{revenue}}{\text{assets}} \right) \left( \frac{\text{assets}}{\text{equity}} \right) \\
 &= \left( \text{tax burden} \right) \times \left( \text{interest burden} \right) \times \left( \text{EBIT margin} \right) \times \left( \text{asset turnover} \right) \times \left( \text{leverage ratio} \right)
 \end{aligned}$$

- Tax burden = 1 – tax rate
- Interest burden = 1 – interest ratio
  - ✓ Interest burden = EBT/EBIT = (EBIT - Interest)/EBIT = 1 - Interest/EBIT
  - ✓ Interest coverage ratio = EBIT/interest

## Example

### DuPont system of analysis

- Example: An analyst has gathered data from two companies in the same industry. Calculate the ROE for both companies and use the extended DuPont analysis to explain the critical factors that account for the differences in the two companies' ROEs.

	A	B
Revenue	\$500	\$900
EBIT	35	100
Interest expense	(5)	(0)
EBT	30	100
Tax	(10)	(40)
<b>Net income</b>	<b>20</b>	<b>60</b>
<b>Total assets</b>	<b>250</b>	<b>300</b>
<b>Total debt</b>	<b>100</b>	<b>50</b>
<b>Owners' equity</b>	<b>150</b>	<b>250</b>

	A	B
<b>Tax burden</b>	66.7%	60.0% = 1 - 40/100
<b>Interest burden</b>	85.7%	1 = 1 - 0/100
<b>EBIT margin</b>	7.0%	11.1% = 100/900
<b>Asset turnover</b>	2.0	3.0 = 900/300
<b>Financial leverage</b>	1.67	1.20 = 300/250
<b>ROE</b>	13.4%	24.0% = 60/250

## Industry-specific Financial Ratios

### • Industry-specific financial ratios

#### ○ Banking

Financial Ratios	Numerator	Denominator
Capital adequacy	Various components of capital	Various measures such as risk-weighted assets, market risk exposure, or level of operational risk assumed
Monetary reserve requirement (Cash reserve ratio)	Reserves held at central bank	Specified deposit liabilities
Liquid asset requirement	Approved "readily marketable" securities	Specified deposit liabilities
Net interest margin	Net interest income	Total interest-earning assets

## Industry-specific Financial Ratios

### Industry-specific financial ratios

#### Retail

- ✓ **Growth in same-store sales** is used in the restaurant and retail industries to indicate growth without the effects of new locations that have been opened. It is a measure of how well the firm is doing at attracting and keeping existing customers and, in the case of locations with overlapping markets, may indicate that new locations are taking customers from existing ones.
- ✓ **Sales per square foot** is another metric commonly used in the retail industry.

Financial Ratios	Numerator	Denominator
Same (or comparable) store sales	Average revenue growth year over year for stores open in both periods	Not applicable
Sales per square meter (or square foot)	Revenue	Total retail space in square meters (or square feet)

## Industry-specific Financial Ratios

### Industry-specific financial ratios

#### Service and consulting

- ✓ **Net income per employee and sales per employee** are used in the analysis and valuation of service and consulting companies.

Service Companies	Numerator	Denominator
Revenue per employee	Revenue	Total number of employees
Net income per employee	Net income	Total number of employees

#### Hotel

Hotel	Numerator	Denominator
Average daily rate	Room revenue	Number of rooms sold
Occupancy rate	Number of rooms sold	Number of rooms available

## Industry-specific Financial Ratios

### Industry-specific financial ratios

#### Business risk

- ✓ Certainly, different industries have different levels of uncertainty about revenues, expenses, taxes, and nonoperating items.
- ✓ Comparing coefficients of variation for a firm across time, or among a firm and its peers, can aid the analyst in assessing both the relative and absolute degree of risk a firm faces in generating income for its investors.

$$\square \text{ CV sales} = \frac{\text{standard deviation of sales}}{\text{mean sales}} = \frac{\sigma_s}{\bar{s}}$$

$$\square \text{ CV operating income} = \frac{\text{standard deviation of operating income}}{\text{mean operating income}} = \frac{\sigma_{OP}}{\bar{OP}}$$

$$\square \text{ CV net income} = \frac{\text{standard deviation of net income}}{\text{mean net income}} = \frac{\sigma_{NI}}{\bar{NI}}$$

## Credit Analysis

- **Credit analysis** is the evaluation of credit risk.
  - **Credit risk**
    - ✓ caused by a counterparty's or debtor's failure to make a promised payment.
  - Approaches to credit analysis vary and depend on the **purpose of the analysis** and **context**.
    - ✓ Acquisition and other highly leveraged financing: projection of cash flow as equity valuation
    - ✓ Credit analysis may relate to the borrower's credit risk in a particular transaction or to its overall creditworthiness. In assessing overall creditworthiness, one general approach is **credit scoring**, a statistical analysis of the determinants of credit default.
    - ✓ Another general approach to credit analysis is the **credit rating process** that is used, for example, by credit rating agencies to assess and communicate the probability of default by an issuer on its debt obligations (e.g., commercial paper, notes, and bonds).
      - A credit rating can be either long term or short term and is an indication of the rating agency's opinion of the creditworthiness of a debt issuer with respect to a specific debt security or other obligation. Where a company has no debt outstanding, a rating agency can also provide an issuer credit rating that expresses an opinion of the issuer's overall capacity and willingness to meet its financial obligations.

## Credit Analysis

- **Credit rating process**
  - ✓ The credit rating process involves both the analysis of a company's financial reports as well as a broad assessment of a company's operations. In assigning credit ratings, rating agencies emphasize the importance of the relationship between a company's business risk profile and its financial risk.
  - ✓ For corporate entities, credit ratings typically reflect a combination of qualitative and quantitative factors.
    - **Qualitative factors** generally include an industry's growth prospects, volatility, technological change, and competitive environment. At the individual company level, qualitative factors may include operational effectiveness, strategy, governance, financial policies, risk management practices, and risk tolerance.
    - In contrast, **quantitative factors** generally include profitability, leverage, cash flow adequacy, and liquidity.
  - ✓ When analyzing financial ratios, rating agencies normally investigate deviations of ratios from the median ratios of the universe of companies for which such ratios have been calculated and also use the median ratings as an indicator for the ratings grade given to a specific debt issuer.
  - ✓ International ratings include the influence of country and economic risk factors.

## Credit Analysis

- **Credit Ratios selected from Standard & Poor's**

Credit Ratio	Numerator	Denominator
EBITDA interest coverage	EBITDA	Interest expense, including <u>non-cash interest on conventional debt instruments</u>
FFO (Funds from operations) to debt	FFO	Total debt
Free operating cash flow to debt	<u>CFO (adjusted) minus capital expenditures</u>	Total debt
EBIT margin	EBIT	Total revenues
EBITDA margin	EBITDA	Total revenues
Debt to EBITDA	Total debt	EBITDA
Return on capital	EBIT	Average beginning-of-year and end-of-year capital

## Credit Analysis

### ● Historical research on ratios in credit analysis

- Z – score
  - ✓  $Z = 1.2 (\text{Current assets} - \text{Current liabilities}) / \text{Total assets} + 1.4 (\text{Retained earnings} / \text{Total assets}) + 3.3 (\text{EBIT} / \text{Total assets}) + 0.6 (\text{Market value of stock} / \text{Book value of liabilities}) + 1.0 (\text{Sales} / \text{Total assets})$
  - ✓ In Altman (1968) initial study, a **Z-score of lower than 1.81 predicted failure** and the model was able to accurately classify 95 percent of companies studied into a failure group and a non-failure group. The original model was designed for manufacturing companies.
  - ✓ Generally, the variables found to be useful in prediction include profitability ratios, coverage ratios, liquidity ratios, capitalization ratios, and **earnings variability**.
- Similar research has been performed on the ability of ratios to predict **bond ratings and bond yields**.
  - ✓ For example, Ederington, Yawtitz, and Roberts (1987) found that a small number of variables (total assets, interest coverage, leverage, variability of coverage, and **subordination status**) were effective in explaining bond yields.
- Similarly, Ederington (1986) found that nine variables in combination could correctly classify more than 70 percent of **bond ratings**.
  - ✓ These variables included ROA, long-term debt to assets, interest coverage, cash flow to debt, variability of coverage and cash flow, total assets, and **subordination status**. These studies have shown that ratios are effective in evaluating credit risk, bond yields, and bond ratings.

## Segment Analysis

### ● Segment

- A **business segment** is a portion of a larger company that accounts for more than 10% of the company's revenues, assets, or income and is **distinguishable from the company's other lines of business** in terms of the risk and return characteristics of the segment.
- **Geographic segments** are also identified when they meet the size criterion given previously and the geographic unit has a business environment that is different from that of other segments or the remainder of the company's business.

### ● Segment Reporting Requirements

- An operating segment is defined as a component of a company:
  - ✓ a) that engages in activities that may generate revenue and create expenses, including a start-up segment that has yet to earn revenues,
  - ✓ b) whose results are regularly reviewed by the company's senior management, and
  - ✓ c) for which discrete financial information is available.
- A company must disclose separate information about any operating segment which meets certain quantitative criteria—namely, the segment constitutes 10 percent or more of the combined operating segments' revenue, assets, or profit (**ratio to the higher of combined profit or absolute combined loss**).

## Segment Analysis

### ● Segment Ratios

- The **segment margin** measures the operating profitability of the segment relative to revenues, whereas the **segment ROA** measures the operating profitability relative to assets.
  - ✓  $\text{Segment margin} = \text{Segment profit (loss)} / \text{Segment revenue}$
  - ✓  $\text{Segment ROA} = \text{Segment profit (loss)} / \text{Segment assets}$
- **Segment turnover** measures the overall efficiency of the segment: how much revenue is generated per unit of assets.
  - ✓  $\text{Segment turnover} = \text{Segment revenue} / \text{Segment assets}$
- The **segment debt ratio** examines the level of liabilities (hence solvency) of the segment. Example 17 demonstrates the evaluation of segment ratios.
  - ✓  $\text{Segment debt ratio} = \text{Segment liabilities} / \text{Segment assets}$

## Model Building and Forecasting

- **Forecasting future performance and presentations to credit analysts & others in obtaining external financing.**
  - Analysts can build a model (earnings model)
    - ✓ E.g., forecasts of B/S and CF/S can be derived from expected ratio data, such as DSO.
  - Companies (senior executives & boards of directors) use **pro forma financial statements**.
    - ✓ E.g., based on a revenue forecast, an analyst may budget expenses based on expected common-size data.
- **Forecasts are not limited to a single point estimate but should involve a range of possibilities. This can involve several techniques:**
  - **Sensitivity analysis** is based on “what if” questions such as: What will be the effect on net income if sales increase by 3% rather than the estimated 5%?
  - **Scenario analysis** is based on specific scenarios (a specific set of outcomes for key variables) and will also yield a range of values for financial statement items.
  - **Simulation** is a technique in which probability distributions for key variables are selected and a computer is used to generate a distribution of values for outcomes based on repeated random selection of values for the key variables.

## Summary

### Other Analysis Techniques

DuPont System of Analysis  
Industry-specific Financial Ratios  
Segment Analysis  
Model Building and Forecasting

## Summary

### Module: Financial Analysis Techniques

Common-Size Analysis  
Ratio Analysis  
Other Analysis Techniques

# Module

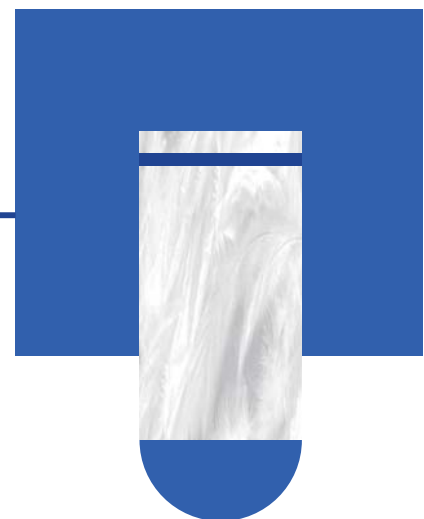


## Introduction to Financial Statement Modeling

- Building a Financial Statement Model
- Behavioral Finance and Analyst Forecasts
- Competitive Position Analysis

### Building a Financial Statement Model

- ❑ Pro Forma Income Statement
- ❑ Pro Forma Statement of Cash Flows
- ❑ Forecasted Balance Sheet



### ———— Building a Financial Statement Model ————

- A **financial statement model** is the starting point for most valuation models, and valuation estimates can be made based on a variety of metrics, including free cash flow, EPS, EBITDA, and EBIT.
  - We will focus primarily on the mechanics of constructing pro forma **income statements, statements of cash flows, and balance sheets**.
  - Construction of pro forma income statements is composed of four forecasting steps: revenue, COGS, other operating expenses, and, finally, non-operating items.
  - The forecast statements of cash flows begin with forecasted net income and other amounts from the forecast income statement, and then typically require estimates for capital expenditures, depreciation and amortization, working capital, share-based compensation, dividends, and share repurchases.
  - The forecasted balance sheet is based on the combination of the projected income statement, the projected statement of cash flows, and the historical starting balance sheet.

## ●—— Building a Financial Statement Model ——●

### ● Forecast Revenue

- The change in revenue is driven by volume, price, and foreign currency estimates that are based on historical trends as adjusted for expected deviations from trend.
- Changes in revenue attributable to volume or price/mix are organic growth.
  - ✓  $\text{organic growth} = (1 + \text{volume growth}) \times (1 + \text{price growth}) - 1$
- Changes in revenue are shown separately from
  - ✓ the impact of acquisitions and divestitures (scope change),
  - ✓ and foreign exchange (forex impact in the model).

### ● Forecast COGS

- Estimate gross margin based on assumptions and forecasts.
- $\text{Forecast COGS} = (1 - \text{gross margin}) \times \text{estimate of future revenue}$

## ●—— Building a Financial Statement Model ——●

### ● Forecast Selling General & Administrative Costs

- SG&A operating expenses have less of a direct relationship with the revenue of a company.
    - ✓ **Fixed component**
      - Research and development expense
        - Fluctuate less than sales.
      - Overhead costs majorly determined by
        - Number of employees at the head office;
        - Supporting it and administrative operations.
    - ✓ **Variable component:** selling and distribution expenses often have a large variable component and can be estimated.
  - Certain expenses within SG&A are more variable than others. Selling and distribution expenses often have a large variable component and can be estimated as a percentage of revenue.
- ### ● Operating Profit by Segment
- Alternatively, we can estimate operating profit and margin using a segment approach based on operating profit for each of its segments as well as an operating cost.

## ●—— Building a Financial Statement Model ——●

- Three types of **non-operating line** items are included in the model: finance expenses (i.e., interest expenses), income taxes, and shares outstanding.
  - Forecasting net finance cost requires estimating the debt and cash positions and interest rates paid and earned.
    - ✓ Net debt: gross debt Less cash, cash equivalents, and short-term deposits;
    - ✓ Net interest expense: Interest expense minus interest income.
  - Effective tax rate is used in the forecast period.
  - Shares outstanding is used to compute earnings per share (EPS).
    - ✓ If shares outstanding have not changed materially, and management has not disclosed an intention to repurchase shares in the near term. The model can assume that weighted average basic and diluted shares outstanding on the income statement remain flat.

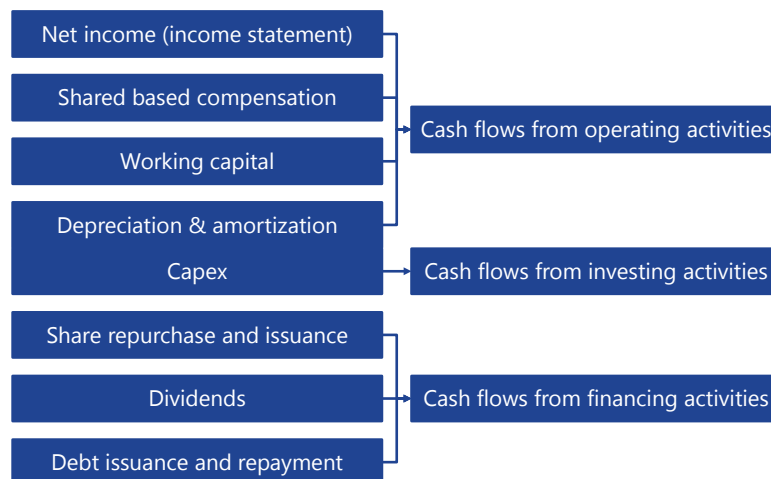
## ● Building a Financial Statement Model ●

### ● Pro Forma Statement of Cash Flows

- The forecast statements of cash flows begin with forecasted net income and other amounts **from the forecast income statement**, and then typically require estimates for
  - ✓ capital expenditures,
    - e.g. Capital investment, or capex, can be forecasted as a percentage of revenue.
  - ✓ depreciation and amortization,
    - e.g. Depreciation and amortization can be forecasted based on past D&A as a percentage of fixed assets.
  - ✓ working capital,
    - e.g. Working capital can be forecasted by projecting working capital ratios (days of inventory, days sales outstanding, days payable outstanding).
  - ✓ share-based compensation,
  - ✓ dividends,
  - ✓ share repurchases.

## ● Building a Financial Statement Model ●

### ● Forecasted Cash Flow Statement



## ● Building a Financial Statement Model ●

### ● Forecasted Balance Sheet

- The forecasted balance sheet is based on the combination of the
  - ✓ projected income statement,
  - ✓ the projected statement of cash flows,
  - ✓ historical starting balance sheet.

# Summary

## Building a Financial Statement Model

Pro Forma Income Statement  
Pro Forma Statement of Cash Flows  
Forecasted Balance Sheet

## Behavioral Finance and Analyst Forecasts

- ❑ Overconfidence bias
- ❑ Illusion of Control
- ❑ Conservatism Bias
- ❑ Representativeness Bias
- ❑ Confirmation Bias

### — Behavioral Finance and Analyst Forecasts —

- **Overconfidence bias** occurs when people demonstrate **unwarranted faith** in their own abilities.
  - To mitigate overconfidence bias, analysts should record and share their forecasts and review them regularly, identifying both the correct and incorrect forecasts they have made.
- **Illusion of Control** is a tendency to **overestimate the ability to control** what cannot be controlled and to take ultimately fruitless actions in pursuit of control.
  - Analysts having this bias believe that forecasts can be rendered more by acquiring more information and opinions from experts and by creating more granular and complex models.
  - Illusion of control can be mitigated by
    - ✓ restricting modeling variables,
    - ✓ focusing on the most important or impactful variables,
    - ✓ and speaking only with people having unique or significant perspectives.

## — Behavioral Finance and Analyst Forecasts —

- **Conservatism Bias** means that people **maintain their prior views** or forecasts by inadequately incorporating new information.
  - This often happens in forecasting when an analyst does not update their forecasting after receiving conflicting information.
  - Conservatism bias can be mitigated by reviews of forecasts and models by an investment team at a regular interval, and by creating flexible models with fewer variables, to make changing assumptions easier.
  - Conservatism bias is related to overconfidence and the illusion of control, mitigating those biases can also serve to mitigate conservatism.
- **Representativeness Bias** refers to the tendency to **classify information** based on **past experiences** and **known classifications**.
  - Base-rate neglect is a common form of representativeness bias in forecasting.
    - ✓ Considering the base rate is sometimes known as the “outside view.”
      - E.g. use industry or sector averages
    - ✓ While the situation-specific is known as the “inside view.”
      - E.g. consider company-specific factors
  - Neither the outside nor inside view is superior; what makes for a superior forecast is considering both.

## — Behavioral Finance and Analyst Forecasts —

- **Confirmation Bias** is the tendency to look for and notice what **confirms** prior beliefs and to **ignore or undervalue** whatever **contradicts** them.
  - A common manifestation of this bias among investment analysts is to structure the research process in pursuit of only positive news or certain criteria, or with a narrow scope.
  - Approaches to mitigating confirmation bias:
    - ✓ Speak to or read research from analysts with a negative opinion on the security under scrutiny.
    - ✓ Seek perspectives from colleagues who are not economically or psychologically invested in the subject security.

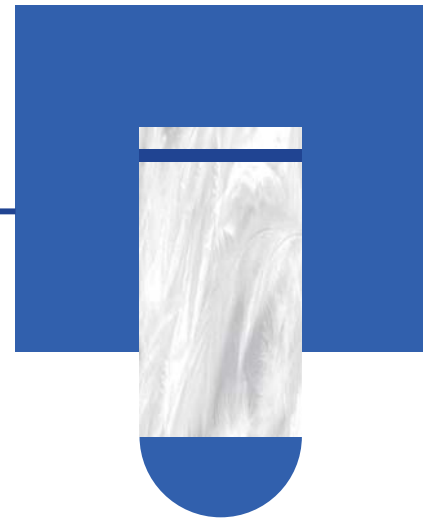
## Summary

### Behavioral Finance and Analyst Forecasts

Overconfidence bias  
Illusion of Control  
Conservatism Bias  
Representativeness Bias  
Confirmation Bias

# Competitive Position Analysis

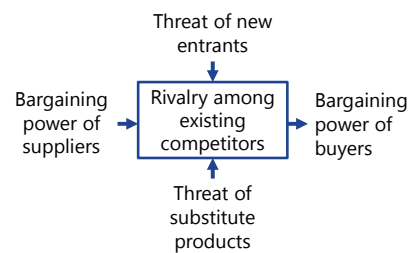
- ❑ The Impact of Competitive Factors in Prices and Costs
- ❑ Modeling Inflation and Deflation
- ❑ Forecast Horizon and Long-Term Forecasting



## — The Impact of Competitive Factors —

### ● The Impact of Competitive Factors in Prices and Costs

- The companies have limited pricing power if
  - ✓ **Numerous** substitutes exist
  - ✓ Switching costs are **low**
  - ✓ The industries are **fragmented**
  - ✓ **Limited** growth
  - ✓ **High** exit barriers, **high** fixed costs
  - ✓ **Identical** product offerings
- The companies face downward pressure on profitability if
  - ✓ The bargaining power of suppliers are **high**
  - ✓ The customers have **greater** ability to demand lower prices and/or control the quality and quantity of end products
  - ✓ The threat of new entrants is **high**



## — Modeling Inflation and Deflation —

- Inflation and deflation: can significantly affect the accuracy of forecasts for a company's future revenue, profit, and cash flow.
- Industry sales and inflation or deflation
  - Most increases in the cost of inputs;
    - ✓ Commodities or labor.
  - Result in higher prices for end products.
  - Industry structure can be an important factor in determining the relationship between increases in input costs and increases in the price of end products.
  - In the highly competitive consumer goods market, pricing is strongly influenced by movements in input prices, which can account for half of the cost of goods sold.

## Modeling Inflation and Deflation

- **Company sales and inflation or deflation**
  - Forecasting revenue for a company faced with inflation in input costs requires some understanding of the price elasticity of the products.
  - The impact of higher prices on volume depends on the price elasticity of demand
    - ✓ If demand is relatively price inelastic, revenues will benefit from inflation;
    - ✓ If demand is relatively price elastic, revenue can decline even if unit prices are raised.
- **Industry costs and inflation or deflation**
  - Familiarity with the specific purchasing characteristics of an industry can also be useful in forecasting costs;
  - Monitoring the underlying drivers of input prices can be useful in forecasting costs;
  - Understand how inflation or deflation affects an industry's cost structure depends on its competitive environment.
- **Company costs and inflation or deflation**
  - In forecasting a company's costs, it is often helpful to segment the cost structure by category and geography.
    - ✓ For each item of cost, an assessment should be made about the impact of potential inflation and deflation on input prices.

## Forecast Horizon and Long-Term Forecasting

- The choice of the forecast time horizon may be influenced by certain factors.
  - The investment strategy for which the stock is being considered;
  - Cyclicity of the industry;
  - Company specific factors;
  - And the analyst's employer's preferences.
- Most professionally managed equity investment strategies describe the average holding period for a stock in the stated investment objectives of the strategy.
- Cyclicity of the industry may also influence the analyst's choice of timeframe
  - Forecast period should be long enough to allow the business to reach an expected mid-cycle level. (normalize earnings).
- **Normalized earnings**
  - Normalize earnings are the expected level of mid-cycle earnings for a company in the absence of any unusual or temporary factors that impact profitability;
  - By extending the forecast period, an analyst is able to adjust for these unusual or temporary factors.

## Summary

### Competitive Position Analysis

The Impact of Competitive Factors in Prices and Costs

Modeling Inflation and Deflation

Forecast Horizon and Long-Term Forecasting

# Summary

## Module: Introduction to Financial Statement Modeling

Building a Financial Statement Model  
Behavioral Finance and Analyst Forecasts  
Competitive Position Analysis

### Financial Statement Analysis

1. Introduction to Financial Statement Analysis
2. Analyzing Income Statements
3. Analyzing Balance Sheets
4. Analyzing Statements of Cash Flows I
5. Analyzing Statements of Cash Flows II
6. Analysis of Inventories
7. Analysis of Long-Term Assets
8. Topics in Long-Term Liabilities and Equity
9. Analysis of Income Taxes
10. Financial Reporting Quality
11. Financial Analysis Techniques
12. Introduction to Financial Statement Modeling

### 中文精读

1. 财务报告分析介绍
2. 利润表分析
3. 资产负债表分析
4. 现金流量表分析1
5. 现金流量表分析2
6. 存货分析
7. 长期资产分析
8. 长期负债和权益专题
9. 所得税分析
10. 财务报告质量
11. 财务报表分析方法
12. 财务报表建模导论

## Framework

### 问题反馈

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- 如何告诉我们？
  - 将您发现的问题通过电子邮件告知我们，具体的内容包含：
    - ✓ 您的姓名或网校账号
    - ✓ 所在班级
    - ✓ 问题所在科目(若未知科目，请提供章节、知识点和页码)
    - ✓ 您对问题的详细描述和您的见解
  - 请发送电子邮件至: [academic.support@gfedu.net](mailto:academic.support@gfedu.net)
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