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Wiley's Study Guides are written by a team of highly qualified CFA charterholders and leading CFA instructors from around the globe. Our team of CFA experts work collaboratively to produce the best study materials for CFA candidates available today.

Wiley's expert team of contributing authors and instructors is led by Content Director Basit Shajani, CFA. Basit founded online education start-up Élan Guides in 2009 to help address CFA candidates' need for better study materials. As lead writer, lecturer, and curriculum developer, Basit's unique ability to break down complex topics helped the company grow organically to be a leading global provider of CFA Exam prep materials. In January 2014, Élan Guides was acquired by John Wiley & Sons, Inc., where Basit continues his work as Director of CFA Content. Basit graduated magna cum laude from the Wharton School of Business at the University of Pennsylvania with majors in finance and legal studies. He went on to obtain his CFA charter in 2006, passing all three levels on the first attempt. Prior to Élan Guides, Basit ran his own private wealth management business. He is a past president of the Pakistani CFA Society.

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Study Session 6: Financial Reporting and Analysis: An Introduction

READING 21: FINANCIAL STATEMENT ANALYSIS: AN INTRODUCTION

LESSON 1: FINANCIAL STATEMENT ANALYSIS: AN INTRODUCTION

LOS 21a: Describe the roles of financial reporting and financial statement analysis. Vol 3, pp 6–11

Role of financial statement reporting: To provide information about a company's financial performance, financial position, and changes in financial position.

Role of financial statement analysis: To assess a company's past performance and evaluate its future prospects using financial reports along with other relevant company information. Assessments are performed prior to making an investing decision, offering any credit facilities, or making other economic decisions related to the company.

A company's performance can be examined through profitability (ability to generate profits from core business activities) and cash flow (ability to generate cash receipts in excess of cash payments) measures. A forecast of the expected amount of future cash flows is important in determining the company's ability to meet its obligations.

- Liquidity refers to a company's ability to meet its short-term obligations.
- Solvency refers to a company's ability to meet its long-term obligations.

LOS 21b: Describe the roles of the key financial statements (statement of financial position, statement of comprehensive income, statement of changes in equity, and statement of cash flows) in evaluating a company's performance and financial position. Vol 3, pp 11–24

Companies prepare financial statements to report their operating performance to investors and creditors.

Statement of Comprehensive Income (or Income Statement plus Statement of Other Comprehensive Income)

The income statement is also known as the statement of operations or profit and loss statement. It provides operating information relating to a company's business activities over a period of time (the accounting period). The income statement presents revenues earned by a company and corresponding costs. The difference between a company's total revenue and total costs equals net income.

Income statements and other comprehensive income (and the statement of comprehensive income) are discussed in more detail in Reading 24.

$$\text{Net income} = \text{Revenue} - \text{Expenses}$$

Income statements are useful in evaluating a company's profitability and therefore are an important source of information for financial statement analysis.

Balance Sheet

Balance sheets, also known as statements of financial position, present a company's assets, liabilities, and equity at a point in time. The interrelationships between these three components of the balance sheet is presented in the basic accounting equation:

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

We will learn more about balance sheets, cash flow statements, and the statement of changes in owners' equity in later readings.

Assets are the productive resources that a company owns. Liabilities are amounts that the company owes other entities. Owners' equity represents shareholders' residual claim on the company's assets after deducting liabilities.

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

The information contained in balance sheets is used to assess a company's financial position and to evaluate its ability to meet short-term and long-term obligations.

Cash Flow Statement

A cash flow statement reports the various sources of cash receipts and cash payments. The statement classifies the sources and uses of cash into operating, investing, and financing activities.

- Operating activities refer to the day-to-day core business activities of a company.
- Investing activities relate to the acquisition or disposal of long-term assets.
- Financing activities relate to the injection or repayment of capital.

Cash flow statements reflect a company's ability to generate cash from its core business activities. It is desirable that a company generates most of its cash from operating activities, as opposed to investing and financing activities. A company's sources and uses of cash provide valuable insight into its liquidity and solvency levels and its financial flexibility (ability to react and adapt to financial adversities and investment opportunities).

Statement of Changes in Owners' Equity

This statement reports any changes in owners' investment in the business. It is useful in understanding changes in the financial position of a company.

LOS 21c: Describe the importance of financial statement notes and supplementary information—including disclosures of accounting policies, methods, and estimates—and management's commentary. Vol 3, pp 24–27

Financial Notes and Supplementary Information

Financial notes are an important part of financial statements because they provide detailed explanatory information about the following:

- Accounting policies, methods, and estimates
- Business acquisitions and disposals
- Commitments and contingencies
- Legal proceedings
- Subsequent events
- Related-party transactions
- Business and geographic segments
- Financial instruments and risks arising from them

Footnotes contain important details about the accounting methods, estimates, and assumptions that have been used by the company in preparing its financial statements. For example, information about the choice of revenue recognition method used and assumptions made to calculate depreciation expense are typically found in the footnotes. The availability of such information facilitates comparisons between companies that prepare their financial statements in accordance with different accounting standards (**IFRS** vs. **U.S. GAAP**). Note that financial statement footnotes are also audited.

Management's Discussion and Analysis (MD&A)

The management discussion and analysis section (required under **U.S. GAAP**) highlights important trends and events that affect a company's liquidity, capital resources, and operations. Management also discusses prospects for the upcoming year with respect to inflation, future goals, material events, and uncertainties. The section must also discuss critical accounting policies that require management to make subjective judgments and have a material impact on the financial statements. Although it contains important information, analysts should bear in mind that the MD&A section is not audited.

IFRS is in the process of finalizing a framework to provide guidance relating to items that should be discussed in management commentary. These items include:

- The nature of the business
- Management objectives and strategies
- The company's significant resources, risks, and relationships
- Results of operations
- Critical performance measures

LOS 21d: Describe the objective of audits of financial statements, the types of audit reports, and the importance of effective internal controls. Vol 3, pp 27–30

The financial statements presented in a company's annual report must be **audited**. They must be examined by an independent accounting firm (or audit practitioner) which then states its opinion on the financial statements. Audits are required by contractual arrangement, law, or regulation.

Objective of audits: Under International Standards for Auditing, objectives of an auditor are:

1. To obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, thereby enabling the auditor to express an opinion on whether the financial statements are prepared, in all material respects, in accordance with an applicable financial reporting frame-work; and
2. To report on the financial statements, and communicate as required by the ISAs, in accordance with the auditor's findings.[1]

Types of Audit Opinions

- An unqualified opinion states that the financial statements have been presented *fairly* in accordance with applicable accounting standards.
- A qualified opinion states that the financial statements have been presented fairly, but do contain exception(s) to the accounting standards. The audit report provides further details and explanations relating to the exception(s).
- An adverse opinion states that the financial statements have *not* been presented fairly and significantly deviate from acceptable accounting standards.
- A disclaimer of opinion is issued when the auditor, for whatever reason, is not able to issue an opinion on the financial statements.

Internal controls: The internal control system of a company seeks to ensure the reliability of processes used by the company in preparing its financial statements. In the United States, management is responsible for the effectiveness of internal control, to evaluate the effectiveness of internal control, to support the evaluation, and to provide a report on internal control.

LOS 21e: Identify and describe information sources that analysts use in financial statement analysis besides annual financial statements and supplementary information. Vol 3, pp 31–32

- Interim reports are prepared either semiannually or quarterly. They contain the four financial statements and footnotes, but are not audited.
- Proxy statements are distributed to shareholders when there are matters that require a shareholder vote. They provide information about management and director compensation, company stock performance, and potential conflicts of interest between management, the board of directors, and shareholders.

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

- Press releases, in addition to a company's website and conference calls, provide current information about the company.
- External sources provide information about the economy, the industry that the company operates in, and the company's competitors. Such information is useful as it allows the analyst to place the company's performance in perspective. Examples of external sources include trade journals and government agencies.

LOS 21f: Describe the steps in the financial statement analysis framework.

Vol 3, pp 31–35

A generic framework for financial statement analysis involves the following steps:

1. Define the purpose and context of the analysis
   In cases where the task is well-defined, the purpose is governed by institutional norms. However, there are also analytical tasks that require the analyst's discretion in defining the purpose. The definition of the purpose determines the approach, tools, data sources, and the format used to present results. In this preliminary stage, the analyst is also required to define the context of the analysis, which requires understanding the audience, the time frame, and the resources available for completion of the task.

2. Collect data
   The analyst acquires the necessary information to answer the questions that were defined in the previous stage. For instance, a task with the purpose of analyzing the historical performance of a company could be carried out by understanding the financial statements alone. However, a more thorough analysis that requires understanding a company's financial performance and position relative to the industry would require collecting industry data as well.

3. Process data
   The financial information collected is converted into ratios, growth rates, common-size financial statements, charts, and regressions.

4. Analyze/interpret the processed data
   The data is interpreted and a recommendation is reached.

5. Develop and communicate conclusions
   An appropriate format for the presentation of analysis is determined. The presentation format is sometimes determined by regulatory authorities or professional standards.

6. Follow up
   Financial statement analysis does not end with the preparation of a recommendation report. When equity analysis is performed or a credit rating is assigned, periodic reviews are required to determine whether previously drawn conclusions remain valid.

See Table 1-1.

Table 1-1: Financial Statement Analysis Framework[2]

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

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

READING 22: FINANCIAL REPORTING MECHANICS

LESSON 1: CLASSIFICATION OF BUSINESS ACTIVITIES AND FINANCIAL STATEMENT ELEMENTS AND ACCOUNTS

LOS 22a: Describe how business activities are classified for financial reporting purposes. Vol 3, pp 42–43

Business activities are classified into three categories for financial reporting purposes:

Operating Activities
These are related to the day-to-day business activities of a company. Typical activities that fall into this category are:

- Sales of goods and services to customers.
- Costs associated with the provision of goods and services.
- Income tax expenses.
- Investments in working capital to support the firm's ordinary business.

Investing Activities
These are related to the acquisition and disposal of long-term assets. Examples of transactions that fall into this category include:

- Acquisition or disposal of fixed assets like property, plant, and equipment (PP&E).
- Purchase or sale of other corporations' equity and debt securities.

Financing Activities
These are related to raising and repaying capital. Examples of financing activities include:

- Issuance or repurchase of common or preferred stock.
- Issuance or redemption of debt.
- Dividend payments on common and preferred stock.

The nature of a firm's operations dictates where certain transactions fall within these classifications. For example, interest received on an investment in a debt instrument by a music store is classified as an investing activity, but interest received by a bank is classified as an operating activity. (See Table 1-1.) The sale of an oven by an oven manufacturer is an operating activity, whereas the sale of an oven by a restaurant is an investing activity.

Table 1-1: Typical Business Activities and Financial Statement Elements Affected[1]

Type	Business Activity	Elements Affected
Operating activities	• Sale of goods and services to customers	Revenue
	• Cost of providing the goods and services	Expenses
	• Income tax expense	Expenses
	• Holding short-term assets or incurring short-term liabilities directly related to operating activities	Assets, liabilities
Investing activities	• Purchase or sale of assets such as property, plant, and equipment	Assets
	• Purchase or sale of other entities' equity and debt securities	Assets
Financing activities	• Issuance or repurchase of the company's own preferred or common stock	Owners' equity Liabilities
	• Issuance or repayment of debt	
	• Payment of distributions (i.e., dividends to preferred or common stock holders)	Owners' equity

1 - Exhibit 1, Volume 3, CFA Program Curriculum 2017.

LOS 22b: Explain the relationship of financial statement elements and accounts, and classify accounts into the financial statement elements. Vol 3, pp 43–46

There are five financial statement elements:

- Assets
- Liabilities
- Owners' equity or shareholders' equity
- Revenues
- Expenses

An increase or a decrease in any of these elements is recorded in a specific account. For example, accounts receivable is an account that falls under the financial element of assets.

Each of the items that make up the elements of the balance sheet (assets, liabilities, and owners' equity) is discussed in detail in Reading 25.

Financial statements present condensed information regarding financial statement elements and accounts. The actual accounts used in a company's accounting system are listed in a chart of accounts.

Classification of Accounts into Financial Statement Elements

Assets are a company's economic resources. They include:

Current assets:

- Cash and cash equivalents.
- Accounts receivable, trade receivables.
- Prepaid expenses.
- Inventory.

Noncurrent assets:

- Property, plant, and equipment.
- Investment property.
- Intangible assets (patents, trademarks, licenses, copyrights, and goodwill).
- Financial assets, trading securities, and investment securities.
- Investments accounted for by the equity method.

Sometimes contra accounts are used to reduce the balance of certain assets. Common contra asset accounts include allowance for bad debts (offset against accounts receivable) and accumulated depreciation (offset against PP&E).

Liabilities are creditors' claims on a company's economic resources. They include:

- Accounts payable and trade payables.
- Financial liabilities such as notes payable.
- Deferred tax liabilities.
- Long-term debt.
- Unearned revenue.

Owners' equity represents owners' residual claim on a company's resources. It includes:

- Capital in the form of common and preferred stock.
- Additional paid-in capital.
- Retained earnings.
- Other comprehensive income.

Revenues represent the flow of economic resources into the company and include:

- Sales.
- Gains.
- Investment income.

Each of the items that make up the elements of the income statement (revenues and expenses) is discussed in detail in Reading 24.

Expenses represent the flow of economic resources out of the company, and include:

- Cost of goods sold.
- Selling, general, and administrative expenses.
- Depreciation and amortization expenses.
- Interest expense.
- Tax expense.
- Losses.

For presentation purposes, assets are categorized as current and noncurrent assets.

Noncurrent assets are expected to benefit the company over an extended period of time (usually over one year).

Current assets are expected to be used by the company or converted into cash in the short term (less than one year). Current assets include:

- Inventories: Unsold products on hand (also called inventory stock).
- Trade receivables: Amounts customers owe the company for products that have been sold.
- Cash on hand and at the bank.

LESSON 2: ACCOUNTING EQUATIONS

LOS 22c: Explain the accounting equation in its basic and expanded forms.
Vol 3, pp 46–51

The **basic accounting equation** is:

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

Owners' equity is the residual claim of the owners on a company's assets after all liabilities have been paid off.

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

Owners' equity can be further divided into its two components:

$$\text{Owners' equity} = \text{Contributed capital} + \text{Ending retained earnings}$$

Ending retained earnings are calculated as:

$$\text{Ending retained earnings} = \text{Beginning retained earnings} + \text{Net income} - \text{Dividends declared}$$

The equation for ending retained earnings can also be stated as:

$$\text{Ending retained earnings} = \text{Beginning retained earnings} + \text{Revenue} - \text{Expenses} - \text{Dividends declared}$$

Therefore, the basic accounting equation can be expanded into the following forms:

Assets = Liabilities + Contributed capital + Ending retained earnings

and:

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

Example 2-1

An analyst has the following information regarding XYZ Company:

	(Amounts in millions)
Net income	$225
Beginning retained earnings	$1,250
Dividends declared	$75

Calculate ending retained earnings for 2008.

Solution

Ending retained earnings = Beginning retained earnings + Net income – Dividends declared

Ending retained earnings = $1,250 + $225 – $75 = $1,400 million

Example 2-2

An analyst has the following information regarding ROB Company:

	(Amounts in millions)
Revenue earned during the year	$350
Beginning retained earnings	$90
Expenses incurred during the year	$280
Dividends declared for the year	$25
Liabilities	$120
Contributed capital	$75

Calculate ROB's total assets at the end of 2008.

Solution

Step 1:

Ending retained earnings = Beginning retained earnings + Revenues – Expenses – Dividends declared

Ending retained earnings = $90 + $350 – $280 – $25 = $135 million

Step 2:

Assets = Liabilities + Contributed capital + Ending retained earnings

Assets = $120 + $75 + $135 = $330 million

LESSON 3: THE ACCOUNTING PROCESS

LOS 22d: Describe the process of recording business transactions using an accounting system based on the accounting equation. Vol 3, pp 51–65

LOS 22f: Describe the relationships among the income statement, balance sheet, statement of cash flows, and statement of owners' equity. Vol 3, pp 65–68

Remembering the basic accounting equation and understanding which direction the financial elements will move given a certain transaction are EXTREMELY important to do well on the exam.

The process of recording business transactions is based on **double-entry accounting** (i.e., every transaction affects at least two accounts). If an asset account increases, either a liability or an equity/capital account will also increase, or another asset account will decrease to keep the accounting equation in balance.

Example 3-1 illustrates the process of recording business transactions in an accounting system.

Example 3-1: Recording Transactions in an Accounting System

Sunshine Inc. operates a shoe store. It purchases each pair of shoes for $100 and sells each pair for $150. Sunshine's activities for the month of June are listed as follows.

No.	Date	Business Activity
1	June 1	Sunshine Inc. started business by depositing $100,000 in its bank account.
2	June 3	Purchased a shop for $55,000 in cash.
3	June 7	Purchased stock of 25 pairs of shoes for $2,500 on credit from suppliers.
4	June 10	Purchased 230 more pairs of shoes on credit for $23,000.
5	June 13	Sold 50 pairs of shoes for $7,500. Received $3,000 in cash and the rest was treated as a receivable.
6	June 15	Sold 20 pairs of shoes for $3,000 cash.
7	June 18	Received $2,500 cash for shoes sold on June 13.
8	June 23	Paid $2,000 cash for shoes bought on June 7. Paid $16,500 cash for shoes bought on June 10. The balance amount is payable after a month.
9	June 30	Received $2,000 for shoes that were sold on credit on June 13.
10	June 30	Paid utility bills amounting to $950. Wages amounting to $2,000 were also paid.

Analysis of Transactions

1. Cash and owners' equity increase by $100,000. (Assets and owners' equity increase.)

2. Premises asset account increases by $55,000 and cash decreases by $55,000. (Noncurrent assets increase and current assets decrease.)

3. Inventory increases by $2,500 and accounts payable increase by $2,500. (Current assets and current liabilities increase.)

4. Inventory and accounts payable increase by $23,000. (Current assets and current liabilities increase.)

5. Cash increases by $3,000 and accounts receivable increase by $4,500. Inventory decreases by the cost of 50 units, $5,000. (Net current assets increase by $2,500.)

   Revenue increases by $7,500 and cost of goods sold (COGS) increases by $5,000. The excess of revenues over COGS contributes to net income and increases owners' equity through retained earnings. (Owners' equity increases by $2,500.)

6. Cash increases by $3,000 while inventory decreases by $2,000. (Net assets increase by $1,000.)

   Sales revenue increases by $3,000 and COGS increases by $2,000. (Owners' equity increases by $1,000.)

7. Cash increases by $2,500, and accounts receivable fall by $2,500. (Total current assets stay at the same level.)

8. Cash and accounts payable fall by $18,500. (Current assets and current liabilities decrease.)

An increase in expenses reduces net income, retained earnings, and owners' equity.

9. Cash increases by $2,000 and accounts receivable decrease by $2,000. (Total current assets stay at the same level.)

10. Cash falls and expenses (utilities) increase by the same amount ($950). Cash falls and expenses (wages) increase by the same amount ($2,000). (Owners' equity falls by $2,950.)

The following worksheet presents the effects of each transaction.

	Assets					Liabilities	Owners' Equity		
Date	**Cash**	**Accounts Receivable**	**Inventory**	**Shop Premises**	=	**Accounts Payable**	**Owners' Capital**	**Revenue**	**Expenses**
June 1	100,000				=		100,000		
June 3	(55,000)			55,000	=				
June 7			2,500		=	2,500			
June 10			23,000		=	23,000			
June 13	3,000	4,500	(5,000)		=			7,500	5,000
June 15	3,000		(2,000)		=			3,000	2,000
June 18	2,500	(2,500)			=				
June 23	(2,000)				=	(2,000)			
	(16,500)				=	(16,500)			
June 30	2,000	(2,000)			=				
June 30	(2,950)				=				2,950
Total	**34,050**	**+ 0**	**+ 18,500**	**+ 55,000**	=	**7,000**	**+ 100,000**	**+ 10,500**	**– 9,950**

A final income statement, balance sheet, cash flow statement, and statement of changes in owners' equity can now be prepared reflecting all transactions and adjustments.

Sunshine Inc.
Income Statement
For the month ended June 30, 2008

	$
Sales revenue	10,500
COGS	(7,000)
Gross Profit	3,500
Expenses	
Wages	2,000
Utility expenses	950
Total Expenses	2,950
Net Income	**550**

Notice that income statements are prepared for a period of time.

Balance sheets are prepared as of a particular point in time.

Sunshine Inc.
Balance Sheet
As of June 30, 2008

	$
Assets	
Cash	34,050
Accounts receivable	0
Inventory	18,500
Shop premises	55,000
Total Assets	107,550
Liabilities and Owners' Equity	
Liabilities	
Accounts payable	7,000
Total liabilities	**7,000**
Owners' Equity	
Contributed capital	100,000
Retained earnings (net income of June 2008)	550
	100,550
Total Liabilities and Owners' Equity	**107,550**

Cash flow statements are also prepared for a period of time.

Sunshine Inc.
Statement of Cash Flows
For the month ended June 30, 2008

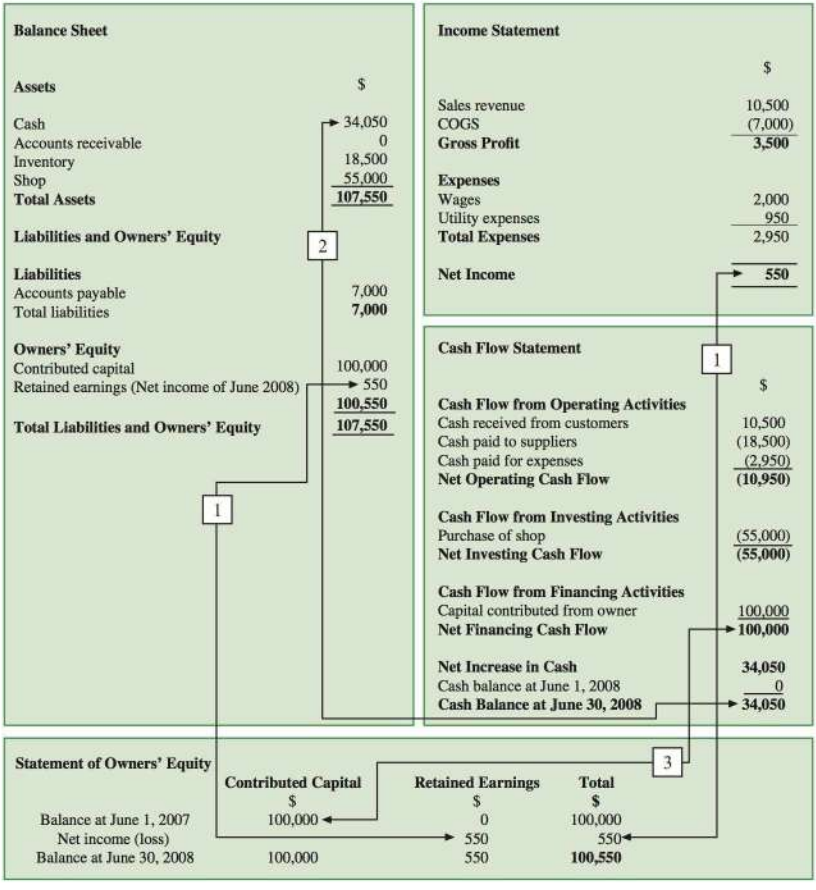
	$
Cash Flow from Operating Activities	
Cash received from customers	10,500
Cash paid to suppliers	(18,500)
Cash paid for operating expenses	(2,950)
Net Operating Cash Flow	**(10,950)**
Cash Flow from Investing Activities	
Purchase of shop premises	(55,000)
Net Investing Cash Flow	**(55,000)**
Cash Flow from Financing Activities	
Capital contributed by owners	100,000
Net Financing Cash Flow	**100,000**
Net Increase in Cash	**34,050**
Cash balance at June 1, 2008	0
Cash Balance at June 30, 2008	**34,050**

Sunshine Inc.
Statement of Changes in Owners' Equity
For the month ended June 30, 2008

	Contributed Capital	Retained Earnings	Total
	$	$	$
Balance at June 1, 2007	100,000	0	100,000
Net income (loss)		550	550
Balance at June 30, 2008	100,000	550	**100,550**

Financial statements are prepared from the data provided by the accounting system. Accounts that fall under revenues and expenses become a part of the income statement. Accounts that fall under assets, liabilities, and owners' equity are used to construct the balance sheet.

Now we will use the example of Sunshine Inc. to illustrate the relationships between different financial statements.



1. The income statement shows a net income of $550 for June 2008, which, in the absence of dividends, increases retained earnings by $550. This increase is reflected on the statement of shareholders' equity and on the balance sheet under owners' equity.
2. The cash flow statement shows that cash increases by $34,050 over the period. The increase in cash is also seen on the balance sheet under current assets.
3. The owners' capital contribution of $100,000 is listed under cash flow from financing activities. The balance sheet shows this contribution under owners' equity.

LESSON 4: ACCRUALS, VALUATION ADJUSTMENTS, ACCOUNTING SYSTEMS, AND USING FINANCIAL STATEMENTS IN SECURITY ANALYSIS

LOS 22e: Describe the need for accruals and valuation adjustments in preparing financial statements. Vol 3, pp 69–71

Accrual Entries

Accrual accounting is based on the principle that revenues should be recognized when earned and expenses should be recognized when incurred, irrespective of when the actual exchange of cash occurs. The timing difference between cash movements and recognition of revenues or expenses explains the need for accrual entries. When cash is transferred in the period that the related revenue/expense is recognized, there is no need for accrual entries. There are four types of accrual entries:

1. Unearned (or deferred) revenue arises when a company receives a cash payment before it provides a good or a service to the customer. Because the company still has to provide the good/service, unearned revenue is recognized as a *liability*. Unearned revenue is subsequently earned once the good is sold or the service is provided.

Example 4-1: Unearned Revenue

On September 30, Nicky receives $1,000 from a tenant as rent for October.

Originating Entry
September 30: Cash (asset) ↑ $1,000
Unearned rental income (liability) ↑ $1,000

Assets ↑ = Liabilities ↑ + Owners' equity

Adjusting Entry
October 31: Unearned rental income (liability) ↓ $1,000
Rent revenue (income/equity) ↑ $1,000

Assets = Liabilities ↓ + Owners' equity ↑

Rental income increases net income, retained earnings, and owners' equity.

2. Unbilled or accrued revenue arises when a company provides a good or service before receiving the cash payment. Because the company is owed money, accrued revenue is recognized as an *asset*.

Example 4-2: Accrued Revenue

Jelena Inc. provides services worth $5,500 to another company during the month of May. The payment will be received a month later.

Originating Entry
May 31: Accounts receivable (asset) ↑ $5,500
Revenue (income) ↑ $5,500

Assets ↑ = Liabilities + Owners' equity ↑

Adjusting Entry
June 30 (when payment is received): Cash (asset) ↑ $5,500
Accounts receivable (asset) ↑ $5,500

Assets ↑↓ = Liabilities + Owners' equity

3. Prepaid expenses arise when a company makes a cash payment before recognizing the expense. Expenses that have been paid in advance are an *asset* of the company.

Example 4-3: Prepaid Expenses

Aztec Inc. purchased an insurance policy for $1,200 for the year 2008. It made the entire payment on January 1, 2008.

Originating Entry
January 1: Insurance prepaid (asset) ↑ $1,200
Cash (asset) ↓ $1,200

Insurance expense reduces net income, retained earnings, and owners' equity.

Assets ↑↓ = Liabilities + Owners' equity

Every month, the company will recognize insurance expense of $100 and reduce the prepaid asset by the same amount. By the end of the year, the entire insurance prepaid asset will be written off and a total insurance expense of $1,200 will have been recognized.

Adjusting Entry
Every month: Insurance expense ↑ $100 (owners' equity ↓)
Insurance prepaid (asset) ↓ $ 100

Assets ↓ = Liabilities + Owners' equity ↓

4. Accrued expenses arise when a company recognizes an expense in its books before actually making a payment for it. Because the company owes a payment, the accrued expense is treated as a *liability*.

Example 4-4: Accrued Expenses

Prudent Inc. owes its employees $2,250 for work performed during the month of March. Wages are actually paid in May.

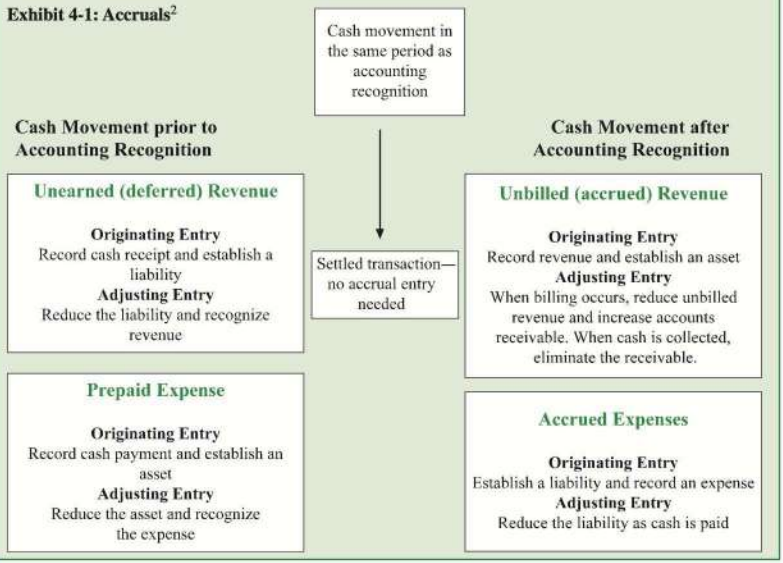
Originating Entry
March: Wages expense ↑ $2,500 (owners' equity ↓)
Wages payable (liability) ↑ $2,500

Assets = Liabilities ↑ + Owners' equity ↓

Adjusting Entry
May: Wages payable (liability) ↓ $2,500
Cash (asset) ↓ $2,500

Assets ↓ = Liabilities ↓ + Owners' equity

Exhibit 4-1: Accruals[2]



2 - Exhibit 10, Volume 3, CFA Program Curriculum 2017.

Valuation Adjustments

Most assets and liabilities are recorded on the balance sheet at their historical cost. However, accounting standards require certain items to be shown on the balance sheet at their current market values. The upward or downward adjustments to the values of these assets and liabilities are known as valuation adjustments. For example, if there is a decline in the value of an asset, the new decreased value is recorded on the balance sheet and the amount of the decrease in value is recognized as a loss either on the income statement or in other comprehensive income.

Accountants use the terms debit and credit to describe changes in accounts resulting from a transaction. For the purposes of the CFA exam, you do not need to be able to classify accounting entries in terms of debits and credits.

LOS 22g: Describe the flow of information in an accounting system. Vol 3, pg 72

In an accounting system, information flows through four stages:

- Journal entries: The amount and relevant accounts affected by transactions are chronologically recorded in journals. At the end of the accounting period, adjusting entries are made to journal entries to account for accruals that had not been recorded earlier.
- General ledger: The general ledger sorts all the entries posted in journals into accounts. For example, the general ledger contains an inventory account where all inventory-related journal entries are listed.
- Trial balance: An initial trial balance lists all the ending balances of general ledger accounts. Adjustments to record accruals and prepayments that had not been considered in constructing the initial trial balance are made in the adjusted trial balance.
- Financial statements: The account balances in the adjusted trial balance are used to construct financial statements.

LOS 22h: Describe the use of the results of the accounting process in security analysis. Vol 3, pp 73–74

Financial statements provide the basis for equity and credit analysis. However, analysts must make adjustments to reflect the effects of items not reported in the statements. Analysts must also evaluate management's assumptions regarding accruals and valuations. Information related to most of these assumptions can be found in the significant accounting policies footnote and in the management discussion and analysis (MD&A) section of the annual report.

Since assumptions within the accounting process are, to an extent, in the hands of management, financial statements can be manipulated to misrepresent a company's true financial performance. Companies can recognize fictitious assets and liabilities on the financial statements in an attempt to cover aggressive accounting practices or even fraud. For example, if management wanted to inflate reported revenue, it would also recognize a fictitious asset (a receivable) to balance the accounting equation. On the other hand, if the company has received cash but management does not want to recognize the related revenue, it could create a fictitious liability to keep the accounting equation in balance. We will study incentives for accounting manipulation and keys to detecting such fraudulent practices in later readings.

READING 23: FINANCIAL REPORTING STANDARDS

LESSON 1: FINANCIAL REPORTING STANDARDS

LOS 23a: Describe the objective of financial statements and the importance of financial reporting standards in security analysis and valuation. Vol 3, pp 100–102

The International Accounting Standards Board's (IASB's) objective of general purpose financial reporting, as stated in its Conceptual Framework for Financial Reporting 2010 (Conceptual Framework 2010), is to "provide financial information about the reporting entity that is useful to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity. Those decisions involve buying, selling, or holding equity and debt instruments, and providing or settling loans and other forms of credit."[1]

The process of developing financial reporting standards is quite complicated. Some transactions do not necessarily have one correct treatment, so standards are set with the aim of achieving some degree of consistency in the treatment of these transactions. Therefore, the IASB and U.S. Financial Accounting Standards Board (FASB) have developed similar frameworks for financial reporting.

Financial statements are not designed only to facilitate asset valuation; they provide information to a host of users (e.g., creditors, employees, and customers). At the same time, they do provide important inputs for the asset-valuation process. For analysts, it is extremely important to understand how and when judgments and subjective estimates affect the financial statements. Such an understanding is important to evaluate the wisdom of business decisions, and to make comparisons between companies.

LOS 23b: Describe roles and desirable attributes of financial reporting standard-setting bodies and regulatory authorities in establishing and enforcing reporting standards, and describe the role of the International Organization of Securities Commissions. Vol 3, pp 103–111

The Role of Standard-Setting Bodies and Regulatory Authorities

Standard-setting bodies, such as the IASB and FASB, are private sector organizations of accountants and auditors that *develop* financial reporting rules, regulations, and accounting standards. Regulatory authorities, like the Securities and Exchange Commission (SEC) in the United States, and Financial Standards Authority (FSA) in the United Kingdom have legal authority to *enforce* financial reporting requirements, and can overrule private sector standard-setting bodies. Standard-setting bodies have no authority unless their standards are recognized by regulatory authorities.

1 - *Conceptual Framework (2010)* Chapter 8, OB2. Under **U.S. GAAP**, the identical statement appears in Concept Statement 8, Chapter 1, OB2.

Standard-Setting Bodies

International Accounting Standards Board (IASB)

The IASB is the independent standard-setting body of the **IFRS** Foundation, which is an independent, not-for-profit private sector organization. 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 **IFRS** Interpretations Committee is responsible for reviewing accounting issues that arise in the application of **IFRS** and are not specifically addressed by **IFRS**.
- The **IFRS** Advisory Council provides advice to the IASB on agenda decisions and priorities among other items.

Financial Accounting Standards Board (FASB)

The FASB issues new and revised standards with the aim of improving standards of financial reporting so that information provided to users is useful for decision-making. The FASB standards are contained in the FASB Accounting Standard Codification™ (Codification). The Codification is the source of all authoritative U.S. generally accepted accounting principles (**U.S. GAAP**) for nongovernmental entities. **U.S. GAAP** is officially recognized as authoritative by the Securities and Exchange Commission (SEC). However, the SEC retains the authority to establish standards.

Desirable Attributes of an Accounting Standards Board

- The responsibilities of all parties involved in the standard-setting process should be clearly defined.
- All parties involved in the standard-setting process should observe high professional and ethical standards, including standards of confidentiality.
- The organization should have adequate authority, resources, and competencies.
- There should be clear and consistent processes to guide the organization and formation of standards.
- There should be a well-articulated framework with a clearly stated objective to guide the board.
- The board should seek and consider input from all stakeholders. However, it should operate independently and make decisions that are in line with the stated objective of the framework.
- The board should not succumb to pressure from external forces.
- Final decisions should be in public interest, and should lead to a set of high-quality standards that will be recognized and adopted by regulatory authorities.

Regulatory Authorities

Regulatory authorities are governmental entities that have the legal authority to enforce the financial reporting requirements set forth by the standard-setting bodies, and to exert control over entities that participate in capital markets within their jurisdiction.

IOSCO (International Organization of Securities Commission) is not a regulatory authority, but its members regulate a large portion of the world's financial capital markets. IOSCO sets out three core objectives of securities regulation:[2]

1. Protection of investors.
2. Ensuring that markets are fair, efficient, and transparent.
3. Reducing systematic risk.

IOSCO's principles are grouped into nine categories, including principles for regulators, for enforcement, for issuers, and for auditors. With increasing globalization, the organization aims to assist its members in the development of internationally comparable financial reporting standards. Further, it assists in attaining uniform regulation and cross-border cooperation in combating violations of securities and derivatives laws. Finally, it provides guidance regarding the use of Self-Regulatory Organizations (SROs) in overseeing their respective areas of expertise.

The U.S. Securities and Exchange Commission

Any company issuing securities in the United States, or otherwise involved in U.S. capital markets is subject to the rules of the SEC. The SEC requires companies to submit numerous forms periodically. These filings, which are available on the SEC website (www.sec.gov), are a key source of information for analysis of listed firms. The forms most relevant for financial analysts include:

- All companies that issue new securities are required to file a Securities Offerings Registration Statement. Required information includes disclosures about the securities, the relationship of these new securities to the issuer's other capital securities, the information typically provided in annual filings, recent audited financial statements, and risk factors involved in the business.
- Forms 10-K, 20-F, and 40-F must be filed annually. In these forms, companies provide a comprehensive business overview and disclose important financial data (historical overview of performance, management discussion & analysis (MD&A) report, and audited financial statements). This information is also available in a company's annual report. However, annual reports are prepared for shareholders and are not required by the SEC.
- Forms 10-Q and 6-K**:** U.S. companies file form 10-Q quarterly while non-U.S. firms file form 6-K semiannually. These submissions require unaudited financial statements, MD&A reports, and disclosure of any nonrecurring events.

2 - Objectives and Principles of Securities Regulation, IOSCO, June 2010.

- Proxy Statement/ Form DEF-14A: The SEC requires that shareholders of a company be sent a proxy statement before any shareholder meeting. A proxy is an authorization from a shareholder granting another party the right to vote on her behalf. The following information is contained in a proxy statement:
  - Details of proposals that require shareholder vote.
  - Ownership stakes of senior management and principal owners.
  - Director biographies.
  - Executive compensation disclosures.

  The proxy statement that is filed with the SEC is known as Form DEF-14A.

- Form 8-K: This form must be filed for significant events that include the acquisition or disposal of corporate assets, changes in management or corporate governance, changes in securities and trading markets, and matters related to accountants and financial statements.
- Form 144: This form is filed to announce a possible sale of restricted securities or the sale of securities held by affiliates of the issuer.
- Forms 3, 4, 5, and 11-K: These forms are used to examine purchases and sales of securities by management, directors, employees, and other affiliates of the company.

Capital Market Regulation in Europe: Each country in the European Union (EU) regulates its own capital market. However, certain regulations have been adopted at the EU level to achieve some consistency in securities regulation among the different member states. In 2002 the EU agreed that from January 1, 2005, listed companies would prepare their consolidated accounts in accordance with the **IFRS**.

LOS 23c: Describe the status of global convergence of accounting standards and ongoing barriers to developing one universally accepted set of financial reporting standards. Vol 3, pp 112–115

The IASB and FASB, along with other standard setters, are working to achieve convergence of financial reporting standards.

- In 2002, the IASB and FASB both acknowledged their commitment to develop high quality, compatible accounting standards that can be used for both domestic as well as cross-border financial reporting.
- In 2004, both the boards agreed to align their conceptual frameworks and to work together in developing any significant accounting standards in the future. In the short term they aimed to remove selected differences, while in the medium term they agreed to issue joint standards in areas where significant improvements were required.
- In 2009, both the boards affirmed their commitment to achieve convergence in selected major projects by June 2011. This date was later revised to late 2011.

Convergence between **U.S. GAAP** and **IFRS** is underway. Time and again, the SEC has reiterated its commitment to global accounting standards and is looking into incorporating **IFRS** into the financial reporting system for U.S. issuers. Convergence between **IFRS** and other local GAAP (e.g., Japanese GAAP) is also underway.

However, the move toward developing one set of universally accepted financial reporting standards is impeded by two factors:

- Standard-setting bodies and regulators have different opinions regarding appropriate accounting treatments due to differences in institutional, regulatory, business, and cultural environments.
- Powerful lobbyists and business groups, whose reported financial performance would be affected adversely by changes in reporting standards, exert pressure against the adoption of unfavorable standards.

LOS 23d: Describe the International Accounting Standards Board's conceptual framework, including the objective and qualitative characteristics of financial statements, required reporting elements, and constraints and assumptions in preparing financial statements.

Vol 3, pp 116–128

The IASB uses the **Conceptual Framework for Financial Reporting 2010** (Conceptual Framework 2010) to develop reporting standards. The framework assists standard setters in developing and reviewing standards, assists preparers of financial statements in applying standards, helps auditors in forming an opinion on financial statements, and aids users in interpreting financial statement information. Table 1-1 summarizes the current status of **IFRS** adoption in selected countries, while Figure 1-1 summarizes the Conceptual Framework 2010.

Table 1-1: International Adoption Status of IFRS in Selected Locations as of June 2010[3]

Europe	• The EU requires companies listed in EU countries to adopt **IFRS** beginning with their 2005 financial statements. • Switzerland requires that Swiss multinational companies listed on the main board of the Swiss Exchange must choose either **U.S. GAAP** or **IFRS**. • Some countries (for example, Georgia, Macedonia, Moldova, Serbia) use **IFRS** as adopted locally. Georgia, for example, uses the **IFRS** 2007 edition. • Some countries (for example, Czech Republic, Finland, Germany, Ireland, Lithuania, Netherlands, Norway, and Poland) permit some foreign companies listing on local exchanges to use other specified and/or well-recognised standards.
North America	• The U.S. SEC accepts **IFRS** for non-U.S. registrants and no longer requires a reconciliation to **U.S. GAAP** for filers using **IFRS**. • The U.S. FASB is engaged in numerous projects with the IASB to achieve convergence of **U.S. GAAP** and **IFRS**. • The U.S. SEC announced its intention to decide by 2011 whether to incorporate **IFRS** into financial reporting by U.S. issuers.

(Table continued on next page. . .)

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

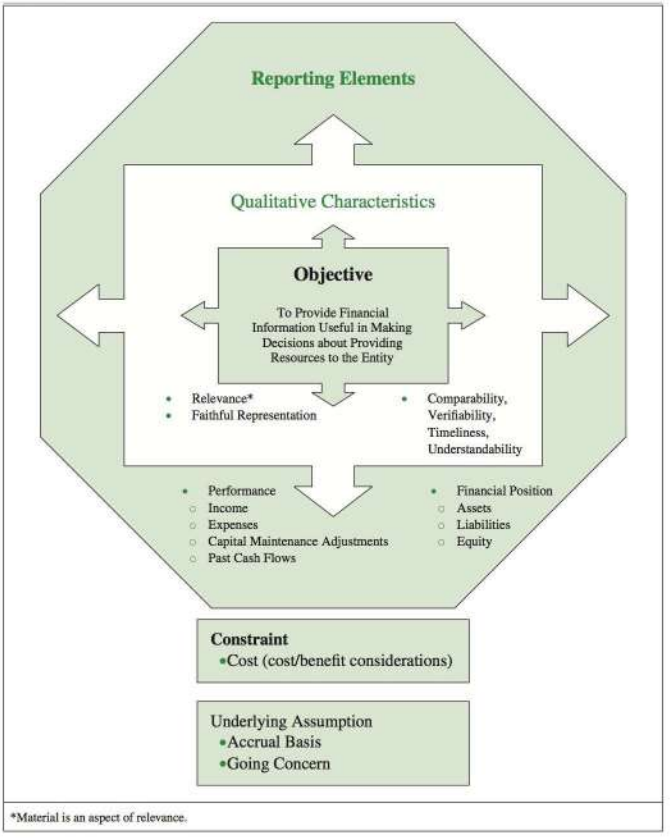
Table 1-1: (*continued*)

	• In Canada, listed companies are required to use **IFRS** beginning January 1, 2011. The year ending December 31, 2010 is the last year of reporting under current Canadian GAAP. • In November 2008, Mexico announced plans to move to **IFRS** in 2012. • Most of the island nations off the southeast coast of North America require or permit the use of **IFRS** by listed companies.
Central and South America	• Central America, Costa Rica, Honduras, and Panama require the use of **IFRS**. El Salvador, Guatemala, and Nicaragua permit the use of **IFRS**. • Brazil requires that listed companies and financial institutions use **IFRS**, starting with periods ending in 2010. Brazilian GAAP continues to converge to **IFRS**. Ecuador requires listed companies, other than financial institutions, to use **IFRS** beginning in 2010. • Chile requires major listed companies to use **IFRS** for 2009 financial statements. Other companies are permitted to use **IFRS**. • Venezuela permits listed companies to use **IFRS**. The expectation is that listed companies will be required to use **IFRS** by 2011. • Peru and Uruguay require the use of **IFRS** as adopted locally. • In Argentina, convergence of ARG GAAP to **IFRS** is in progress. Listed foreign companies are permitted to use their primary GAAP, including **IFRS**, but should also include a reconciliation to ARG GAAP. • Bolivia is moving toward convergence with **IFRS**. • In Colombia and Paraguay, the adoption of **IFRS** is in early stages of consideration.
Asia and Middle East	• Listed companies in a number of countries—including India, Indonesia, and Thailand—report under local GAAP, and plans exist to either converge with or transition to **IFRS**. • Companies in China report under Chinese accounting standards (CAS). CAS are largely converged with **IFRS** and China's November 2009 proposed Roadmap targeted 2011 as the year for completion of convergence of **IFRS** and CAS. Financial institutions are required to prepare financial statements in accordance with **IFRS** in addition to their statements prepared using CAS. • In Japan, some companies that meet certain criteria may use **IFRS**, otherwise companies report using Japanese GAAP. Japan has launched a joint project with the IASB to reduce differences between Japanese GAAP and **IFRS**. • In Malaysia, domestic listed companies report using local GAAP and foreign companies listed on Malaysian exchanges are permitted to use **IFRS**. Malaysia plans to have full convergence with **IFRS** by January 2012. • In Hong Kong, companies incorporated in Hong Kong normally report under Hong Kong FRS. These are largely converged with **IFRS**. • Korea requires the use of **IFRS** beginning 2011. Early adoption was permitted from 2009.

Table 1-1: ***(continued)***

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

Figure 1-1: IFRS Framework for the Preparation and Presentation of Financial Reports[4]



4 - Exhibit 2, Vol 3, CFA Program Curriculum 2017

Objective of Financial Statements

Under the Conceptual Framework, the objective of general purpose financial reporting is to provide financial information that is useful in making decisions about providing resources to the entity to existing and potential providers of resources (e.g., investors, lenders, and creditors) to the entity.

Qualitative Characteristics

The Conceptual Framework identifies two fundamental qualitative characteristics that make financial information useful; relevance and faithful representation:

Relevance: The information presented in the financial statements should be useful in making forecasts (have predictive value) and/or be useful to evaluate past decisions or forecasts (have confirmatory value). Further, the criterion of materiality states that information should be timely and sufficiently detailed with no material omissions or misstatements of information that could make a difference to users' decisions.

Faithful Representation: This requires that the information presented is:

- Complete (i.e., all the information necessary to understand the phenomenon is included);
- Neutral (i.e., information presented is free from any bias); and
- Free from error (i.e., there are no errors of commission or omission in the description of the economic phenomenon). Further, an appropriate process is adhered to, without error, in order to arrive at the reported information.

The Conceptual Framework also identifies four supplementary qualitative characteristics that increase the usefulness of relevant and faithfully represented financial information. These are:

- Comparability: The presentation of financial statements should be consistent over time and across firms to facilitate comparisons.
- Verifiability: Different knowledgeable and independent observers should be able to verify that the information presented faithfully represents the economic phenomena that it is supposed to represent.
- Timeliness: Information should be available to users in a timely manner.
- Understandability: Users with basic business and accounting knowledge, who are willing to make reasonable efforts to study the information presented, should be able to easily understand the information presented.

Constraints on Financial Statements

While it would be ideal for financial statements to exhibit all the desirable characteristics listed earlier, there are several constraints to achieving this goal:

- There may be a tradeoff between certain desirable characteristics. For example, companies must estimate bad debts (amount of credit sales that the company will not be able to collect) when presenting financial information so that financial statements can be released in a timely manner. However, the fact estimated expenses must be included reduces the verifiability of the statements.

- There is a cost of providing useful financial information. The benefits from information should exceed the costs of providing it.
- Intangible aspects (e.g., company reputation, brand name, customer loyalty, and corporate culture) cannot be quantified and reflected in financial statements. Unfortunately, nonquantifiable information is omitted from financial statements.

Reporting Elements

The elements of financial statements that are related to the measurement of financial position are:

- Assets: Resources owned and controlled by a company from which it expects to realize future benefits.
- Liabilities: Obligations of a company that are expected to result in future outflow of resources.
- Equity: The residual claim of owners on assets of the company after subtracting all liabilities.

Elements related to the measurement of financial performance are:

- Income: Increases in economic benefits in the form of inflows or enhancement of assets or reductions in liabilities that result in increases in equity (other than increases resulting from contributions by owners). Income includes revenues and gains. Revenue refers to income generated through ordinary activities of the business (e.g., sale of products). Gains may result from ordinary activities or other activities (e.g., sale of surplus machinery).
- Expenses: Decreases in economic benefits in the form of outflows or depletion of assets or increases in liabilities that result in reductions in equity (other than reductions due to distributions to owners). Expenses include normal expenditures that occur in day-to-day business activities (e.g., wages) and losses.

Underlying Assumptions in Financial Statements

Two important assumptions that determine how financial statement elements are recognized and measured are:

- **Accrual basis** accounting requires that transactions should be recorded on the financial statements (other than on the cash flow statement) when they actually occur, irrespective of when the related exchange of cash occurs.
- **Going concern** refers to the assumption that the company will continue operating for the foreseeable future. If this is not the case, fair representation would require all assets to be written down to their liquidation values. The value of a company's year-end stock of inventory would be higher if it were allowed to sell it over a normal period of time, compared to its value if the company were forced to liquidate it immediately.

Recognition and Measurement of Financial Statement Elements

An element should be recognized on the financial statements if the future benefit from the item (flowing into or out of the firm) is probable, and if its value/cost can be estimated with reliability. The monetary value of the item recognized on the financial statements depends on the measurement base used. The following bases of measurement are typically used:

- Historical cost: For an asset, historical cost refers to the amount that it was originally purchased for. For liabilities, it refers to the amount of proceeds that were received initially in exchange for the obligation.
- Amortized cost: Historical cost adjusted for amortization, depreciation, or depletion and/or impairment.
- Current cost: For an asset, current cost refers to the amount that the asset can be purchased for today. For liabilities, it refers to the total undiscounted amount of cash that would be required to settle the obligation today.
- Realizable (settlement) value: In reference to assets, realizable value refers to the amount that the asset can be sold for in an ordinary disposal today. For liabilities, it refers to the undiscounted amount of cash expected to be paid to settle the liability in the normal course of business.
- Present value: For assets, present value refers to the discounted value of future net cash flows expected from the asset. For liabilities, it refers to the present discounted value of future net cash outflows that are expected to be required to settle the liability.
- Fair value: This is mentioned in the Conceptual Framework, but not specifically defined. It refers to the amount that the asset can be exchanged for, or a liability can be settled for, in an arm's length transaction. Fair value may be based on market value or present value.

LOS 23e: Describe general requirements for financial statements under IFRS. Vol 3, pp 123–127

International Accounting Standard (IAS) No. 1, Presentation of Financial Statements, specifies which financial statements are mandatory and how they must be presented. (See Table 1-2.)

Required Financial Statements

- Statement of financial position (balance sheet).
- Statement of comprehensive income (in a single statement or in two separate statements, i.e., the income statement + statement of comprehensive income).
- Statement of changes in equity.
- Statement of cash flows.
- Significant accounting policies and explanatory notes to facilitate the understanding of financial statements.
- In certain cases, a statement of financial position from earliest comparative period.

General Features of Financial Statements

- Fair presentation: This requires faithful representation of transactions, in compliance with the definitions and recognition criteria for reporting elements (assets, liabilities, equity, income, and expenses) set out in the Conceptual Framework.
- Going concern: Financial statements should be prepared on a going concern basis unless management has plans to liquidate the company.
- Accrual basis: All financial statements, except the cash flow statement, should be prepared on an accrual basis.
- Materiality and aggregation: Financial statements should be free from omissions and misrepresentations that could influence decisions taken by users. Similar items should be grouped and presented as a material class. Dissimilar items, unless immaterial, should be presented separately.
- No offsetting: Assets and liabilities and income and expenses should not be used to offset each other, unless a standard requires or allows it.
- Frequency of reporting: Financial statements must be prepared at least annually.
- Comparative information: Comparative amounts should be presented for prior periods unless a specific standard permits otherwise.
- Consistency: Items should be presented and classified in the same manner in every period.

Structure and Content Requirements

- Classified statement of financial position: Current and noncurrent assets and current and noncurrent liabilities should be shown separately on the balance sheet.
- Minimum information on the face of financial statements: Certain items must be explicitly disclosed on the face of the financial statements. For example, property, plant & equipment (PP&E) must be disclosed as a separate line item on the face of the balance sheet.
- Minimum information in the notes (or on the face of financial statements): Disclosures relating to certain items must be in the notes to the financial statements (e.g., measurement bases used). (See Table 1-3.)
- Comparative information: Comparative amounts should be presented for prior periods unless a specific standard permits otherwise.

Table 1-2: IAS No. 1: Minimum Required Line Items in Financial Statements[5]

On the face of the Statement of Financial Position	• Plant, property, and equipment • Investment property • Intangible assets • Financial assets (not listed in other line items) • Investments accounted for using the equity method • Biological assets • Inventories • Trade and other receivables • Cash and cash equivalents • Total of assets classified as held for sale • Trade and other payables • Provisions • Financial liabilities (not listed in other line items) • Liabilities and assets for current tax • Deferred tax assets and deferred tax liabilities • Liabilities included in disposal groups classified as held for sale • Noncontrolling interests, presented within equity • Issued capital and reserves attributable to owners of the parent
On the face of the Statement of Comprehensive Income, presented either in a single statement or in two statements (Income statement + Statement of comprehensive income)	• Revenue • Specified gains and losses for financial assets • Finance costs • Share of the profit or loss of associates and joint ventures accounted for using the equity method • Pretax gain or loss recognized on the disposal of assets or settlement of liabilities attributable to discontinued operations • Tax expense • Profit or loss • Each component of other comprehensive income • Amount of profit or loss and amount of comprehensive income attributable to noncontrolling interest (minority interest) • Amount of profit or loss and amount of comprehensive income attributable to the parent
On the face of the Statement of Changes in Equity	• Total comprehensive income for the period attributable to noncontrolling interests, and to owners of the parent • For each component of equity, the effects of changes in accounting policies and corrections of errors • For each component of equity, a reconciliation between the beginning and ending carrying amounts, separately disclosing changes resulting from profit or loss, each item of other comprehensive income, and transactions with owners in their capacity as owners

5 - Exhibit 4, Vol 3, CFA Program Curriculum 2017

Table 1-3: Summary of IFRS Required Disclosures in the Notes to the Financial Statements[6]

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

LOS 23f: Compare key concepts of financial reporting standards under IFRS and U.S. GAAP reporting systems. Vol 3, pg 128

Most of the differences between **IFRS** and **U.S. GAAP** are discussed in the readings that follow. A brief summary of the differences regarding financial statement elements (definition, recognition, and measurement) are:

- FASB, in addition to the financial performance elements recognized under the IASB Framework (revenues and expenses), also identifies gains, losses, and comprehensive income.
- Reporting elements relating to financial position are defined differently. Under FASB, assets are the "future economic benefits" rather than "resources" from which future economic benefits are expected to flow under IASB.
- Under FASB, the word "probable" is not discussed in its revenue recognition criteria, while under IASB it is required that it is probable that a future economic benefit flow to/from the entity. FASB also has a separate recognition criterion of relevance.
- Regarding measurement of financial elements, both frameworks are broadly consistent. However, FASB does not allow upward revaluation of assets except for certain categories of financial instruments that must be reported at fair value.

6 - Exhibit 5, Vol 3, CFA Program Curriculum 2017

Companies around the world follow different frameworks in preparing their financial statements. Until recently, companies were required to report reconciliation statements and disclosures to allow construction of financial statements as they would have been under alternative reporting standards. For example, the SEC used to (but no longer does) require reconciliation for foreign private issuers that do not prepare financial statements in accordance with **U.S. GAAP**. Now that reconciliation disclosures are not required, analysts must be aware of areas where accounting standards have not yet converged.

LOS 23g: Identify characteristics of a coherent financial reporting framework and the barriers to creating such a framework. Vol 3, pp 129–130

Characteristics of an Effective Financial Reporting Framework

- Transparency: A transparent reporting framework should reflect the underlying economics of the business. Full disclosure and fair representation create transparency.
- Comprehensiveness: A comprehensive reporting framework is one that is based on universal principles that provide guidance for recording all kinds of financial transactions—those already in existence and others that emerge with time.
- Consistency: Financial transactions of a similar nature should be measured and reported in a similar manner, irrespective of industry type, geography, and time period. However, there is also a need for flexibility to allow companies discretion to be able to report results in accordance with their underlying economic activity.

Barriers to Creating a Single Coherent Framework

- Valuation: When choosing a measurement base, it is important to remember the tradeoff between reliability and relevance. Historical cost is a more reliable measure of value, but fair value is more relevant over time.
- Standard-setting approach: Reporting standards can be based on one of the following approaches:
    - A principles-based approach provides a broad financial reporting framework with limited guidance on how to report specific transactions. It requires the use of subjective judgment in financial reporting.
    - A rules-based approach provides strict rules for classifying elements and transactions.
    - An objectives-oriented approach is a combination of a principles-based and rules-based approach. This approach includes a framework of principles and appropriate levels of implementation guidance.

  IFRS has traditionally followed a principals-based approach, while U.S. GAAP has followed a rules-based approach. The common conceptual framework is likely to lean towards more of an objectives-oriented approach.
- Measurement: Reporting of financial statement elements can be based on the asset/liability approach (where the elements are properly valued at a point in time) or the revenue/expense approach (where changes in the elements are properly valued over a period of time). The former gives preference to proper valuation of the balance sheet, while the latter focuses on the income statement. The use of one of these approaches will result in more reliable information on one statement and less on the other. In recent years, standard-setters have preferred the asset/liability approach.

LOS 23h: Describe implications for financial analysis of differing financial reporting systems and the importance of monitoring developments in financial reporting standards. **Vol 3, pp 131–134**

LOS 23i: Analyze company disclosures of significant accounting policies. **Vol 3, pp 134–137**

It is important for analysts to be aware of developments in financial reporting standards and to assess their implications for security analysis and valuation. They need to understand how changes and developments affect financial reports from a user's perspective.

- New products and transactions in capital markets: Certain economic events have led to the development of new products and new transactions. For example, online stores have led to the advent of e-commerce and related transactions that did not exist earlier.

  Analysts should evaluate companies' financial reports to understand new transactions or products being used and implemented. Business journals, magazines, and capital markets can provide information on new transactions and financial instruments being used by various companies in an industry. Further information can always be obtained from company management regarding any products that they may have used or transactions that they might have undertaken during the year. As products or transactions become more common in the industry, it becomes imperative to understand their implications, usefulness, and impact on cash flows.
- Actions of standard-setting bodies, such as IASB and FASB, must be monitored because changes in regulations and financial reporting standards affect reported financial performance. Investment decision-making can be improved by keeping track of enacted and proposed changes.
- Company disclosures are a good source of information regarding the effects of financial reporting standards on a company's performance. Under **IFRS** and **U.S. GAAP**, companies are required to disclose accounting policies and estimates in the footnotes to the financial statements. Public companies also discuss accounting policies and estimates that require significant material judgment in the MD&A section.

  Companies must also disclose information relating to changes in accounting policies. **IFRS** requires discussion about pending implementation of new standards and any known or estimable information relevant to assessing the impact of those standards. Clear indications regarding the expected impact of changes in standards provide the most useful information and are very helpful to analysts. Vague statements like "management is still evaluating the impact of the standard" might be red flags that analysts should be wary of. Quantified disclosures (when companies are able to quantify the expected impact of standards that have changed but are not yet effective as of the reporting date) are extremely useful to analysts.

Study Session 7: Financial Reporting and Analysis: Income Statements, Balance Sheets, and Cash Flow Statements

READING 24: UNDERSTANDING INCOME STATEMENTS

LESSON 1: INCOME STATEMENT: COMPONENTS AND FORMAT

LOS 24a: Describe the components of the income statement and alternative presentation formats of that statement. Vol 3, pp 149–153

Under **IFRS**, the income statement may be presented as:

- A section of a single statement of comprehensive income, or
- A separate statement (showing all revenues and expenses) followed by a statement of comprehensive income (described later) that begins with net income.

Under **U.S. GAAP**, the income statement may be presented as:

- A section of a single statement of comprehensive income.
- A separate statement followed by a statement of comprehensive income that begins with net income.
- A separate statement with the components of other comprehensive income presented in the statement of changes in shareholders' equity.

Exhibits 1-1 and 1-2 show the income statements of Van Dort Inc. (a European company) and Johnson Inc. (an American company).

Exhibit 1-1: **VAN DORT INCORPORATED**
Income Statement
For the Year Ended December 31, 2008

		2007 €	2008 €
1	**Net revenue**	**55,000**	**59,250**
	Cost of goods sold	−39,000	−41,250
	Selling expenses	−6,500	−7,150
	General and administrative expenses	−2,250	−3,350
	Research and development expenses	−1,050	−1,100
	Other revenue (expense)	−675	−650
	Trading operating income	**5,525**	**5,750**
	Other operating income (expense)	−105	250
3	**Operating income**	**5,420**	**6,000**
	Interest revenue	60	85
	Interest expense	−350	−275
	Cost of net debt	−290	−190
	Other financial revenue expense	−450	−750
	Income before tax	**4,680**	**5,060**
	Income tax	−2,125	−1,950
	Income from fully consolidated companies	**2,555**	**3,110**
	Share of profits from associates	20	−50
	Net income from continuing operations	2,575	3,060
	Net income from discontinued operations	235	0
5	**Net income**	**2,810**	**3,060**
4	Attributable to the group	2,529	2,754
	Attributable to minority interests	281	306

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

Exhibit 1-2: **JOHNSON INCORPORATED**
Income Statement
For the Year Ended December 31, 2008

	2008 $	2007 $
1 **Net revenue**	**15,000**	**13,500**
Cost of sales	11,050	10,075
2 **Gross profit**	**3,950**	**3,425**
Marketing, administrative, and research expenses	975	695
Loss (gain) on sale of equipment	250	0
Impairment expense	175	105
Loss (gain) on sale of old vehicles	225	275
Amortization of intangibles	25	55
3 **Operating income**	**2,300**	**2,295**
Net interest expense	450	430
Earnings from continuing operations before income taxes	**1,850**	**1,865**
Provision for income taxes	240	135
Earnings from continuing operations	**1,610**	**1,730**
Earnings and gain from discontinued operations, net of income taxes	0	55
5 **Net earnings**	**1,610**	**1,785**
4 Noncontrolling interest	16	18
Net earnings attributable to Johnson Incorporated	**1,594**	**1,767**

1 **Revenue:** Usually reported on the first line of the income statement, revenues are amounts charged (and expected to be received) for goods and services in the ordinary activities of a business. Net revenue is total revenue adjusted for product returns and amounts that are unlikely to be collected. Other commonly used terms for revenue include sales and turnover.

Expenses reflect outflows, depletions of assets, and incurrences of liabilities in the course of the activities of a business.

2 **Gross profit or gross margin** is the difference between revenues and cost of goods that were sold. When an income statement explicitly calculates gross profit, it uses a multi-step format as opposed to a single-step format. Van Dort uses a single-step format, while Johnson uses a multi-step format.

3 **Operating income** is calculated after subtracting all direct and indirect (period) costs from revenues. It represents the profit earned by a company from its ordinary business activities before accounting for taxes and, in the case of nonfinancial companies, before deducting interest expense. Operating profits are useful in evaluating the profitability of individual businesses as they are not affected by financing decisions of the firm. Exhibits 1-1 and 1-2 contain income statements of nonfinancial companies. For financial firms, interest income and expense are part of ordinary business activities, so they are included in operating profits.

Operating income is sometimes referred to as EBIT (earnings before income and taxes). However, they are not always equal.

Net income is the "bottom line" of the income statement. It includes profits earned from ordinary business activities as well as gains and losses (increases and decreases in economic benefits) from nonoperating activities. → 5

> Net income = Revenue – Expenses in the ordinary activities of the business + Other income – Other expenses + Gains – Losses

If a company owns the majority of the shares of a subsidiary, it must present consolidated financial statements. Consolidation requires the parent to combine all the revenues and expenses of the subsidiary with its own and present the combined results on its income statement. If the subsidiary is not wholly owned, the share of noncontrolling interests in net income is deducted from total income, as it represents the proportionate share in the subsidiary's net income that belongs to minority shareholders. → 4

Some subtotals are required by **IFRS** (especially nonrecurring items), while others are not explicitly required. Examples of items that are required to be separately stated on the face of the income statement are revenues, finance cost, and taxes.

Under **IFRS**, revenue from rendering of services is recognized when:

1. The amount of revenue can be measured reliably;
2. It is probable that the economic benefits associated with the transaction will flow to the entity;
3. The stage of completion of the transaction at the balance sheet date can be measured reliably; and
4. The costs incurred for the transaction and the costs to complete the transaction can be measured reliably.

IFRS permits the grouping of expenses by nature or by function. An example of grouping by nature would be combining depreciation of factory equipment with depreciation of transport vehicles and stating a single aggregate amount for depreciation on the income statement. An example of grouping by function would be combining direct product costs (raw material costs and freight charges) under cost of goods sold.

Income statement presentation formats: Van Dort's and Johnson's income statements also highlight the following differences that we might run into when analyzing financial statements of various companies:

- Van Dort presents the latest year in the extreme right column, while Johnson presents the most recent year on the extreme left.
- Van Dort presents expense items (e.g., cost of goods sold and interest expense) with negative signs to show that they are being deducted. In contrast, Johnson does not present its expenses in parentheses or with negative signs. It assumes that users know that expense items are subtracted from revenues.
- Van Dort deducts cost of goods sold from sales, whereas Johnson deducts cost of sales. Such differences in terminology are common across sets of financial statements.

When solving questions related to financial statement reporting and analysis, make sure you make a note of whether the most recent year is given in the rightmost column or in the leftmost. The convention used in exam questions can be different from what some of you are used to. Making an arrow indicating the movement from the oldest to the most recent accounting period will help you avoid careless mistakes in answering questions related to changes in accounting elements over the period.

LESSON 2: REVENUE AND EXPENSE RECOGNITION

LOS 24b: Describe general principles of revenue recognition and accrual accounting, specific revenue recognition applications (including accounting for long-term contracts, installment sales, barter transactions, gross and net reporting of revenue), and implications of revenue recognition principles for financial analysis. **Vol 3, pp 153–169**

LOS 24c: Calculate revenue given information that might influence the choice of revenue recognition method. **Vol 3, pp 153–169**

In this lesson, we will primarily discuss revenue recognition under **IFRS** and **U.S. GAAP** prior to the application of the converged standards issued in May 2014. In May 2014, the IASB and FASB each issued a nearly identical new standards for revenue recognition aimed at achieving convergence, consistency, and transparency in revenue recognition globally. We will describe these converged standards in the last part of this lesson.

The IASB Conceptual Framework defines income as "increases in economic benefits during the accounting period in the form of inflows or enhancements of assets, or decreases in liabilities that result in increases in equity, other than those relating to contributions from equity participants."[1] Income includes revenues and gains. Revenues arise from ordinary, core business activities, whereas gains arise from noncore or peripheral activities. For example, for a software development company the sale of software to customers is considered revenue, but the profit on the sale of some old office furniture is classified as a gain.

The most important principle of revenue recognition is accrual accounting, which requires that revenues and costs are recognized independently of the timing of related cash flows. For example, under accrual accounting, rent expense is recognized in the month that a company uses the premises for its operations, not when the actual cash payment for rent is made. Accrual accounting allows firms to manipulate net income by recognizing revenue earlier or later, or by accelerating or deferring recognition of expenses.

Under **IFRS**, revenue is recognized for a sale of goods when:[2]

1. Significant risks and rewards of ownership are transferred to the buyer.
2. The entity retains no managerial involvement or effective control over the goods sold.
3. The amount of revenue can be measured reliably.
4. It is probable that the economic benefits from the transaction will flow to the entity.
5. Costs incurred or to be incurred for the transaction can be measured reliably.

IFRS specify similar criteria for recognizing revenue for the rendering of service. Revenue can be estimated reliably when all the following conditions are met:[3]

1. The amount of revenue can be measured reliably.
2. It is probable that the economic benefits associated with the transaction will flow to the entity.

1 - IASB, *International Framework for the Preparation and Presentation of Financial Statements*, paragraph 70.
2 - IASB, IAS No. 18, *Revenue*, paragraph 14.
3 - IAS No. 18, *Revenue*, paragraph 20.

3. The stage of completion of the transaction at the balance sheet date can be measured reliably.
4. The costs incurred for the transaction and the costs to complete the transaction can be measured reliably.

IFRS also specifies the criteria for recognizing interest, royalties, and dividends. These may be recognized when it is probable that the economic benefits associated with the transaction will flow to the entity and that the amount of the revenue can be measured reliably.

Under **U.S. GAAP**, revenue is recognized on the income statement when it is "realized or realizable and earned."[4] The SEC provides specific guidelines to determine when these two conditions are met:[5]

1. There is evidence of an arrangement between the buyer and seller.
2. The product has been delivered or the service has been rendered.
3. The price is determined or determinable.
4. The seller is reasonably sure of collecting money.

Revenue Recognition in Special Cases

The principles of revenue recognition listed earlier cater to most cases. However, there are some special circumstances in which revenue may be recognized *prior* to the sale of a good/service or even *after* the sale.

Long-Term Contracts

Long-term contracts are contracts that extend over more than one accounting period, such as construction projects. In long-term contracts, questions arise as to how revenues and expenses should be allocated to each accounting period. The treatment of these items depends on how reliably the outcome of the project can be measured.

Under both **IFRS** and **U.S. GAAP**, if the outcome of the contract can be measured *reliably*, the percentage of completion revenue recognition method is used. Under this method, revenues, costs, and profits are allocated to each accounting period in proportion to the percentage of the contract completed during the given period. The percentage that is recognized during a period is calculated by dividing the total cost incurred during the period by the estimated total cost of the project.

Under **U.S. GAAP**, the completed contract method is also appropriate when the contract is not a long-term contract. Note, however, that when a contract is started and completed in the same period, there is no difference between the percentage of completion and completed contract methods.

If the outcome *cannot be measured reliably*, the completed contract method is used under **U.S. GAAP**. Under this method, no revenues or costs are recognized on the income statement until the project is substantially finished. In the meantime, billings and costs are accumulated on the balance sheet (under a construction-in-progress asset), rather than expensed on the income statement.

Under **IFRS**, when the outcome *cannot be measured reliably*, revenue is recognized on the income statement to the extent of costs incurred during the period. No profits are recognized until all costs have been recovered.

Example 2-1 illustrates the differences between the percentage of completion method and the completed contract method.

4 - See Statement of Financial Accounting Concepts No. 5, paragraph 83(b).
5 - See SEC Staff Accounting Bulletin 101.

Example 2-1: Revenue Recognition for Long-Term Contracts

Paxel Construction Company has a $30 million contract to construct a building. It estimates that it will take three years to complete the project. The estimated cost of the project is $21 million. Paxel incurs costs amounting to $10.5 million in Year 1, $7.35 million in Year 2, and $3.15 million in Year 3. Determine the amount of revenue and profit that the company will recognize each year under **IFRS** and **U.S. GAAP** if:

1. The outcome of the contract can be reliably measured.
2. The outcome of the contract cannot be reliably measured.

Solution

Under both **IFRS** and **U.S. GAAP**, if the outcome of the contract can be measured *reliably*, the percentage of completion revenue recognition method is used.

Percentage of Completion Method

First we calculate the percentage of total costs incurred in each year.

	Year 1	Year 2	Year 3
Cost incurred	$10.50	$7.35	$3.15
Total cost	$21.00	$21.00	$21.00
Percentage of total cost incurred	**50%**	**35%**	**15%**

Then we multiply the percentage of total costs incurred each year by the total revenue earned over the term of the project to determine the amount of revenue recognized each year.

	Year 1	Year 2	Year 3
Percentage of total cost incurred	50%	35%	15%
Total revenue	$30	$30	$30
Revenue recognized	**$15**	**$10.5**	**$4.5**

Net income equals revenues recognized minus costs recognized:

	Year 1	Year 2	Year 3	Total
Revenue	$15	$10.5	$4.5	$30
Costs	$10.5	$7.35	$3.15	$21
Net income	$4.5	$3.15	$1.35	$9

Under **IFRS**, if the outcome of the contract cannot be measured reliably and it is probable that costs will be recovered, revenue may only be recognized to the extent of contract costs incurred.

Year 1: The company will recognize construction costs amounting to $10.5 million as well as revenue of $10.5 million and hence $0 income.
Year 2: The company will recognize construction costs amounting to $7.35 million as well as revenue of $7.35 million and hence $0 income.
Year 3: The company will recognize construction costs amounting to $3.15 million. Further, since the contract is complete, the company will also recognize the remaining revenue of $12.15 million, and therefore report $9 million in net income.

	Year 1	Year 2	Year 3
Revenue	$10.5	$7.35	$12.15
Costs	$10.5	$7.35	$3.15
Net income	$0.0	$0.00	$9.00

Completed Contract Method

Under this method, no revenues or costs are recognized until the contract is completed. Therefore, for the first two years, Paxel will not recognize any revenues and costs. The entire amount of revenues, costs, and net income will be recognized in Year 3 on the income statement. On the balance sheet, for Years 1 and 2, Paxel would report all incurred costs under a "Construction-in-progress" head, which would be eliminated in Year 3.

	Year 1	Year 2	Year 3
Revenue	$0	$0	$30
Costs	$0	$0	$21
Net income	$0	$0	$9

The percentage of completion method is a more aggressive (less conservative) approach to revenue recognition. It is also more subjective, as it depends on management estimates and judgment relating to the reliability of estimates. However, the percentage of completion method matches revenues with costs over time and provides smoother, less volatile earnings. Remember, cash flows are exactly the same under both methods.

Important: Under **IFRS** and **U.S. GAAP**, if a loss is expected on the contract, the loss must be recognized immediately, regardless of the revenue recognition method used.

Installment Sales

An installment sale occurs when a company finances a customer's purchase of its products and customers make payments (installments) to the company over an extended period.

Under **IFRS**, installment sales are separated into the selling price (discounted present value of installment payments) and an interest component. Revenue attributable to the sale (selling) price is recognized at the date of sale, while the interest component is recognized over time.[6] However, the standards provide that revenue should be recognized in light of local laws regarding the sale of goods. For transactions that require deferral of revenue and profit recognition (like sales of real estate on an installment basis), revenue recognition depends on specific aspects of the transaction.

Under **U.S. GAAP**, a sale of real estate is reported at the time of sale using the normal revenue recognition conditions if the seller:[7]

- Has completed the significant activities in the earnings process, and
- Is either assured of collecting the selling price or able to estimate amounts that will not be collected.

When these two conditions are not fully met, some of the profit must be deferred and one of the following two methods may be used.

6 - IAS No. 18 IE, *Illustrative Examples*, paragraph 8.
7 - FASB ASC Section 360-20-55 [Property, Plant, and Equipment—Real Estate Sales—Implementation Guidance and Illustrations].

Installment method: This method is used when collectability of revenues *cannot be reasonably estimated.* Under this method, profits are recognized as cash is received. The percentage of profit recognized in each period equals the proportion of total cash received in the period.

Profit for the period = (Cash collected in the period/Selling price) × Total profit

Cost-recovery method: This method is used when collectability of revenues is *highly uncertain*. Under this method, profits are recognized only once total cash collections (including principal and interest on any financing provided to the buyer) exceed total costs. The revenue recognition method under international standards is similar to the cost recovery method, but the term "cost recovery method" is not used.

Installment sales and cost recovery treatment of revenue recognition are rare for financial reporting purposes, especially for assets other than real estate.

Example 2-2: The Installment Sales and Cost Recovery Methods of Revenue Recognition

Bingo Inc. sold property worth $500,000 and allowed the buyer to make the payment in installments. The cost of the property sold is $300,000. The first installment of $250,000 has been received in Year 1, while the rest of the payment is expected to be received in Year 2. Calculate the amount of profit that will be recognized each year using the:

1. Installment sales method.
2. Cost-recovery method.

Solution

Installment Sales Method

Profit for the period = (Cash collected in the period/Selling price) × Total profit

Profit (Year 1) = (250,000/500,000) × 200,000 = $100,000.

Profit (Year 2) = (250,000/500,000) × 200,000 = $100,000.

Cost-Recovery Method

Under the cost-recovery method, the company will not recognize any profits in Year 1 because total cash received from the buyer ($250,000) does not exceed the cost of the property ($300,000). If the second installment of $250,000 is received in Year 2, Bingo will recognize a profit of $200,000 in Year 2.

Barter Transactions

In barter transactions, goods are exchanged between two parties and there is no exchange of cash. One form of barter transaction is a *round-trip* transaction, in which a good is sold by one party in exchange for the purchase of an identical good. The issue with these transactions is whether revenue should be recognized.

- Under **IFRS**, revenue from barter transactions can be reported on the income statement based on the fair value of revenues from similar *nonbarter* transactions with *unrelated parties.*
- Under **U.S. GAAP**, revenue from barter transactions can be reported on the income statement at fair value only if the company has a history of making or receiving cash payments for such goods and services and hence can use its historical experience to determine fair value. Otherwise, revenue should be reported at the carrying amount of the asset surrendered.

Gross versus Net Reporting

Under gross revenue reporting, sales and cost of sales are reported separately, whereas under net reporting only the difference between sales and cost of sales is reported on the income statement. Under **U.S. GAAP**, only if the following conditions are met can a company recognize revenue based on gross reporting:

- The company is the primary obligor under the contract.
- The company bears inventory and credit risk.
- The company can choose its suppliers.
- The company has reasonable latitude to establish price.

Example 2-3: Gross versus Net Reporting of Revenues

A travel agent purchases discounted tickets and sells them to customers. The agent pays only for the tickets that she manages to sell to customers. She purchases a ticket for $1,000 and sells it for $1,100. Assume that there are no other revenues and expenses involved. Demonstrate the reporting of revenues under gross and net reporting.

Solution

	Gross Reporting	Net Reporting
Revenues	$1,100	$100
Cost of sales	−$1,000	$0
Gross margin	**$100**	**$100**

The travel agent should report revenue on a *net basis* because:

- She pays only for tickets that she is able to sell to customers. Therefore, she does not bear any inventory risk.
- The airline, not the travel agent, is the primary obligator under the contract.

Implications for Financial Analysis

Companies are required to disclose their revenue recognition policies in the footnotes to their financial statements. The impact of a chosen policy on financial analysis depends on how conservative and objective the revenue recognition policy is. A conservative policy would recognize revenue later rather than sooner, and an objective policy would not leave too many estimates to management discretion. While it is difficult to attach a monetary value to differences in revenue recognition policies, analysts should be able to assess qualitative differences between sets of financial statements and evaluate how these differences affect important financial ratios.

LOS 24d: Describe key aspects of the converged accounting standards issued by the International Accounting Standards Board and Financial Accounting Standards Board in May 2014. Vol 3, pp 166–169

Revenue Recognition Accounting Standards Issued in May 2014

By now, it should be clear to you that the different revenue recognition practices around the globe can make revenue comparisons across companies in different parts of the world quite problematic. Fortunately, in May 2014, the IASB and FASB issued a set of **converged standards** that look to make such comparisons easier. Under **IFRS**, these converged standards are effective for reporting periods beginning after January 1, 2018, while under **U.S. GAAP**, they are effective for reporting periods beginning after December 15, 2017. Further, **IFRS** permits early adoption of the standards, while **U.S. GAAP** only allows application as early as the original effective date (December 15, 2016).

Prior to the issuance of the converged standards, there were substantial differences between **IFRS** and **U.S. GAAP** when it came to revenue recognition (as we saw under the previous LOS). Generally speaking, **IFRS** offered limited guidance on the subject, while **U.S. GAAP** contained extensive guidance with several requirements. The converged standards provide a principles-based approach to revenue recognition that can be applied to different types of revenue-generating activities.

We now describe key aspects of the converged standards.

Core Principle

The **core principle** of the converged standards is that revenue should be recognized in order 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." In order to attain this core principle, the standards describe five steps in recognizing revenue:

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

A **contract** is an agreement and commitment, with commercial substance, between the contacting parties. It establishes each party's obligations and rights, including payment terms. In addition, a contract exists only if collectability is **probable**. While **IFRS** and **U.S. GAAP** use the same word (probable), they apply a different threshold for probable collectability. Under **IFRS**, probable means more likely than not, whereas under **U.S. GAAP**, it means likely to occur. This subtle difference can result in economically similar contracts being treated differently under the two standards.

Performance obligations represent promises to transfer **distinct** good(s) or service(s). A good or service is distinct if (1) the customer can benefit from it on its own or in combination with readily available resources and (2) 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 the amount that the seller estimates it will receive in exchange for transferring the good(s) or service(s) identified in the contract to the buyer. The transaction price is then allocated to each identified performance obligation. 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.

Accounting Treatment

- When revenue is recognized, a **contract asset** is presented on the balance sheet.
- If all performance obligations have been satisfied but payment has not been received, a **receivable** appears on the seller's balance sheet.
- If payment is received in advance of transferring good(s) or service(s), the seller presents a **contract liability**.

For a simple contract with only one deliverable at a single point in time, completing the five steps is straightforward. Examples of more complex contracts include:

- Contracts where performance obligations are met over time.
- Multiperiod contracts where terms are modified.
- Contracts where the performance obligation includes various components of goods and services, or when the compensation is variable (e.g., bonuses for timely completion).

The examples that follow illustrate how such complex contracts are dealt with under the converged standards. As you go through these cases, notice how the end result/treatment does not deviate substantially from that under the old revenue recognition standards; instead it is just the conceptual approach and, in some cases, the terminology that differs.

Example 2-4

A construction company, ABC Inc., enters into a contract with XYZ Inc. to construct a commercial building. The two parties identify several goods and services that must be provided, including pre-construction engineering, construction of the building's individual components, plumbing, electrical works, and interior finishing.

Question: When it comes to "identifying the performance obligation," can ABC treat each specific item as a separate performance obligation to which revenue can be allocated?

Solution

The converged standards state that in order to determine whether a good or service is distinct for purposes of identifying performance obligations, (1) the customer should be able to benefit from the good or service either on its own or together with other readily available resources, and (2) the seller's promise to transfer the good or service to the customer must be separately identifiable from other promises in the contract. In this case, the second criterion is not met because the seller has been contracted to construct the building, not the separate goods and services. Therefore, when it comes to recognizing revenue, ABC cannot treat each good or service as a distinct source of revenue. Construction of the building is the single performance obligation in this contract.

Example 2-5

ABC's building construction contract with XYZ specifies consideration of $2 million. ABC expects to incur costs amounting to $1,700,000 to satisfy the terms of the contract. During Year 1, ABC incurs $1,190,000 in costs.

Question: Given that costs incurred accurately reflect the completion status of the contract, how much revenue should ABC recognize for Year 1?

Solution

The converged standards state that when performance obligations will be satisfied over multiple accounting periods, revenue must be recognized over time based on progress made toward satisfying the obligation. Since ABC has incurred 70% (= 1,190,000/1,700,000) of total expected contract costs, it will recognize $1,400,000 (70% of $2 million) in revenue in Year 1.

Note that this is the same amount of revenue that would be recognized using the percentage-of-completion method. However, the converged standards do not make specific use of that term. They simply require that revenue be recognized based on relative completion of the performance obligation.

Example 2-6

Now assume that ABC's building construction contract with XYZ is worth $2 million plus a bonus payment of $300,000 if the project is completed within two years. ABC has limited experience with similar types of contracts, and many factors outside its control (e.g., weather, regulatory reforms, availability of materials) could delay completion. ABC expects to incur $1,700,000 worth of costs to complete the building. It incurs $1,190,000 in costs Year 1.

Question: Given that costs incurred provide an appropriate measure of progress toward contract completion, how much revenue should ABC recognize in Year 1?

Solution

This example illustrates the treatment of **variable consideration** under the converged standards. Variable consideration may be recognized as revenue only if the company can conclude that it will not have to reverse the cumulative revenue in the future. In this example, ABC is unable to reach this conclusion due to (1) its limited experience, and (2) the various factors outside its control that could delay the project. Therefore, it cannot recognize any of the bonus as revenue in Year 1.

Example 2-7

Continuing from Example 2-6, now assume that at the beginning of Year 2 the two parties to the contract agree to change the building floor plan and modify the contract. As a result, the contract will now be worth $2.2 million, and the $300,000 bonus will now be paid out as long as the project is completed in another 1.5 years (2.5 years from initiation). The changes will result in an increase in ABC's costs amounting to $150,000, but now, with an additional six months to earn the bonus, ABC believes that it does meet the criteria for being able to recognize the bonus as revenue.

Question: How should ABC account for the changes in the contract?

Solution

First of all, you should note that previous standards did not provide a general framework for accounting for contract modifications, while the converged standards do provide guidance on whether a change in a contract is a new contract or just a modification of an existing contract. In order 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 example, the changes do not meet the criteria for a new contract, so we are dealing with a modification of the contract. This requires the company to reflect the impact on a **cumulative catch-up basis**, where it must update the transaction price and measure of progress.

ABC's expected total revenue from the project is now $2.5 million ($2 million original amount + $200,000 new consideration + $300,000 completion bonus).

Its completion status is now at 64.32% ($1,190,000 costs incurred/total expected costs of $1,700,000 + $150,000).

Based on the updated completion status and expected total revenue, ABC must recognize a total amount of $1,608,108 (calculated as 64.32% of $2.5 million) in revenue.

ABC has already recognized $1,400,000 worth of revenue (from Example 2-5), so it must now recognize an additional $208,108 of revenue as a **cumulative catch-up adjustment** on the date of the contract modification.

The converged standards also lay down specific accounting treatments for certain related costs. For example, incremental costs of obtaining a contract and certain costs incurred to fulfill a contract must be capitalized (i.e., reported as an asset on the balance sheet rather than as an expense on the income statement). All other factors remaining the same, if a company had expensed these incremental costs in the years prior to adopting the converged standards, its profitability will initially improve under the converged standards.

Further, the converged standards lay down rather extensive disclosure requirements:

- Companies are required to disclose information about contracts with customers classified into different categories of contracts. Categories might be based on the type of product, the geographic region, the type of customer or sales channel, the type of contract pricing terms, the contract duration, or the timing of transfers.
- Companies are also required to disclose balances of any contract-related assets and liabilities and significant changes in those balances, remaining performance obligations and transaction prices allocated to those obligations, and any significant judgments and changes in judgments related to revenue recognition. Significant judgments are those used in determining timing and amounts of revenue to be recognized.

The converged standards will affect some industries more than others. The impact will be felt more by industries where bundled sales are common, such as telecommunications and software.

LOS 24e: Describe general principles of expense recognition, specific expense recognition applications, and implications of expense recognition choices for financial analysis. Vol 3, pp 170–180

The IASB framework defines expenses as "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."[8]

IFRS does not specifically refer to a "matching principle," but rather to a "matching concept," or to a process resulting in "matching of costs with revenues."

Expenses also include losses, which may or may not result from the ordinary activities of the business. The most important principle of expense recognition is the matching principle, which requires that expenses be matched with associated revenues when recognizing them on the income statement. If goods bought in the current year remain unsold at the end of the year, their cost is not included in the cost of goods sold for the current year to calculate current period profits.

Instead, the cost of these goods will be subtracted from next period's revenues once they are sold. Certain expenses (e.g., administrative costs) cannot be directly linked to the generation of revenues. These expenses are called **period costs** and are allocated systematically with the passage of time.

8 - IASB, *Framework for the Preparation and Presentation of Financial Statements*, paragraph 70.

Example 2-8: Matching of Inventory Costs with Revenues

In its first year of business (2008), Brainiac Inc. made the following purchases:

	Units Purchased	Cost per Unit	Total Cost
First Quarter	2,500	$20	$50,000
Second Quarter	3,550	$22	$78,100
Third Quarter	4,200	$25	$105,000
Fourth Quarter	3,500	$26	$91,000
TOTAL	**13,750**		**$324,100**

A detailed discussion of the various inventory accounting methods is presented in Reading 28.

Brainiac sold 9,100 units during 2008 at a price of $30 per unit. Ending inventory consists of 4,650 units from the most recent purchases. Calculate total revenue and the cost of goods sold during the year.

Solution

Total revenue = 9,100 × $30 per unit = **$273,000**

The cost of the 9,100 units sold during 2008 will be expensed (included in COGS and matched against 2008 revenues). The cost of the remaining 4,650 units will remain in inventory.

Calculation of cost of goods sold:

	Units Purchased	Cost per Unit	Total Cost
First Quarter	2,500	$20	$50,000
Second Quarter	3,550	$22	$78,100
Third Quarter	3,050	$25	$76,250
TOTAL	**9,100**		**$204,350**

Calculation of ending inventory:

	Units	Cost per Unit	Total Cost
Third Quarter	1,150	$25	$28,750
Fourth Quarter	3,500	$26	$91,000
TOTAL	**4,650**		**$119,750**

To confirm that all costs ($324,100) are accounted for, we add the cost of inventory apportioned to COGS and the cost allocated to ending inventory.

$204,350 + $119,750 = $324,100

In 2008, cost of goods sold will be matched against revenues as follows:

Total revenue	$273,000
Cost of goods sold	$(204,350)
Gross profit	$68,650

Ending inventory ($119,750) will be matched against revenues in 2009 when these units are sold.

Inventory Methods

If a company can specifically identify which units of inventory have been sold over the year and which ones remain in stock, it can use the specific identification method for valuing its inventory. Automobiles, for example, can be valued using this method. However, if sales are composed of identical units that are sold in high volumes (e.g., pencils), the separate identification method becomes difficult to administer. In such situations, the following methods of inventory valuation can be used:

The various inventory cost flow assumptions are demonstrated in Reading 28.

First-in, first-out (FIFO): This method assumes that items purchased first are sold first. Therefore, ending inventory is composed of the most recent purchases. FIFO is an appropriate method for valuing inventory that has a limited shelf life. For example, older food products will be sold first to ensure that available stock is fresh.

All three methods are allowed under **U.S. GAAP**. **IFRS** allows FIFO and weighted-average cost methods, but does not permit use of LIFO.

Last-in, first-out (LIFO): This method assumes that items purchased most recently are sold first. Therefore, ending inventory is composed of the earliest purchases. The LIFO method is suitable when the physical flow of the item is such that the latest item must be sold first, for example, stacks of lumber in a lumberyard. This method is popular in the United States because of its income tax benefits.

Weighted-average cost: Under this method, total inventory costs are allocated evenly across all units. Inventory valuation and analysis are covered in detail in Reading 28.

Inventory Costing Methods

Method	Description	Cost of Goods Sold	Ending Inventory
FIFO	Costs of the earliest items purchased are included in cost of goods sold first.	Earliest purchases	Most recent purchases
LIFO	Costs of the most recent purchases are included in cost of goods sold first.	Most recent purchases	Earliest purchases
Weighted-average cost	Distributes total costs over total units available for sale.	Average cost	Average cost

Issues in Expense Recognition

Doubtful Accounts

When sales are made on credit, there is a possibility that some customers will not be able to meet their payment obligations. Companies can choose to wait for actual customer defaults to recognize these losses (direct write-off method). However, the matching principle requires companies to estimate bad debts at the time of revenue recognition. These estimated uncollectable amounts are expensed on the income statement for the period during which the related sales were made (they are not directly adjusted to revenues).

Warranties

When companies provide warranties for their products, there is a possibility that they might have to pay for repairing or replacing defective products in the future. Rather than recognizing these expenses only when they are actually incurred (when warranty claims are made), the matching principle requires companies to estimate future warranty-related expenses and recognize these amounts on the income statement in the period of sale, and to update this amount to bring in line with actual expenses incurred over the life of the warranty.

Depreciation

Depreciation and amortization are covered in detail in Reading 29.

Companies incur significant costs to acquire long-lived assets that provide economic benefits over an extended period of time. Under **IFRS**, long-lived assets may be valued using either the cost model or the revaluation model. In contrast, **U.S. GAAP** permits only the use of the cost model.

Under the cost model, the asset is reported at a cost less than any accumulated depreciation. Depreciation is the process of allocating the cost of long-lived assets across the accounting periods for which they provide economic benefits. The allocation of costs to several periods matches these costs with associated revenues. With regard to depreciation, **IFRS** requires the following:

Note that these are not required under **U.S. GAAP**.

- Each component of an asset should be depreciated separately.
- Estimates of residual value and useful life should be reviewed annually.

The choice of depreciation method depends on how a company expects to utilize the benefits from a long-lived asset over time.

Under the **straight-line** method, the cost of the asset less its estimated residual value is spread evenly over the estimated useful life of the asset. This method requires estimates of residual value and useful life. Residual value is the amount that the company expects to receive upon sale of the asset at the end of its useful life.

Under **accelerated methods** of recording depreciation, a greater proportion of the asset's cost is allocated to the initial years of its use and a lower proportion of the cost is allocated to later years. Accelerated methods are used when the asset is expected to be utilized more heavily in the years immediately following its purchase.

Accelerated methods of depreciation result in higher depreciation expense and lower net income in the early years of an asset's life. In later years, accelerated methods recognize less depreciation expense in every accounting period, resulting in higher net income.

Amortization

Amortization refers to the allocation of the cost of an intangible asset over its useful life.

- Intangible assets with identifiable useful lives are amortized evenly over their lives in the same way as long-term assets are depreciated using the straight-line method. However, there are no estimates for residual value involved in the calculation.

- Intangible assets with indefinite lives (e.g., goodwill) are not amortized; instead they are tested annually for impairment. An asset is impaired when its current value is lower than its book value. If an asset is deemed impaired, an impairment charge (expense) is made on the income statement to bring its value down to its true current value.

Demonstration of Depreciation Methods

A variety of methods can be used to calculate depreciation expense. While annual depreciation expense might vary from method to method, total depreciation expense over the life of the asset will be the same under all methods.

Straight-line depreciation: An equal amount of depreciation expense is charged every year during the asset's useful life. Annual depreciation expense is calculated as:

$$(\text{Cost} - \text{Residual value})/\text{Useful life}$$

Declining balance depreciation: This is an accelerated method of depreciation, which applies a constant rate of depreciation to a declining book value. To compute depreciation expense, we must determine the *straight-line rate*, which equals 100% divided by the number of years that the asset is expected to remain in use. For example, if the asset's useful life is five years, the straight-line rate would be 20% (100/5). Next, we must determine the acceleration factor, which is multiplied by the straight-line rate. The product of the two is then applied to the net book value of the asset to determine depreciation expense.

The double-declining balance (DDB) method uses an acceleration factor of 200 (it depreciates the asset at a rate that is two times the straight-line rate). Depreciation expense under the DDB method is calculated as:

$$(2/\text{Useful life}) \times (\text{Cost} - \text{Accumulated depreciation})$$

Unlike straight-line depreciation, the declining balance method does not explicitly take into account the residual value of the asset in determining depreciation expense each year. Under the declining balance method, the asset is depreciated only until its net book value equals its residual value.

Example 2-9 demonstrates the depreciation of long-term assets under the straight-line and double-declining balance methods.

Example 2-9: Depreciation Methods

A company purchases a new generator for its factory. The following data is available:

Cost of the generator	$38,000
Estimated useful life	5 years
Residual value	$3,000

Calculate the annual depreciation expense under the straight-line method and the double-declining balance method.

Solution

1. Straight-line depreciation = (38,000 – 3,000)/5 = $7,000

2. Double-declining balance depreciation

DDB Depreciation = (2/Useful life) × (Cost – Accumulated depreciation)

Every year, a 40% (2/5) depreciation rate is applied to the declining book value to determine depreciation expense.

In year 5 only $1,925 of depreciation is charged against the generator even though 4,925 × 40% equals 1,970. This is because under DDB depreciation, the asset is depreciated only until its book value equals its residual value.

Net book value =
Historical cost – Accumulated depreciation

Net book value at the end of Year 1
= $38,000 – $15,200 = $22,800

DDB Depreciation Schedule

Year	Calculation $	Depreciation Expense $	Accumulated Depreciation $	Net Book Value $
				38,000
1	38,000 × 40%	15,200	15,200	22,800
2	22,800 × 40%	9,120	24,320	13,680
3	13,680 × 40%	5,472	29,792	8,208
4	8,208 × 40%	3,283	33,075	4,925
5	4,925 – 3,000	1,925	35,000	3,000
Total		**$35,000**		

Depreciation expense for Year 2
= (2/5) × ($38,000 – $15,200) = $9,120

Accumulated depreciation equals total depreciation expense charged against the asset to date.

Accumulated depreciation at the end of Year 2 = $15,200 + $9,120 = $24,320

Annual depreciation expense is sensitive to two estimates—residual value and useful life. An increase in the value of these two estimates would decrease yearly depreciation expense and increase reported net income. Let's tweak the information provided in Example 2-5 to illustrate this. If the residual value of the generator is increased to $6,000 (from $3,000) and the useful life is increased to 8 years (from 5 years), annual depreciation expense under the straight-line method would equal $4,000 [(38,000 – 6,000)/8]. The increase in residual value and useful life estimates leads to a reduction in depreciation expense (from $7,000 to $4,000).

Implications for Financial Analysis

A company's estimates for doubtful accounts and warranties and its estimates of useful lives and salvage values of long-lived assets directly affect net income. The subjective nature of these estimates allows management to manipulate reported financial statements. Therefore, when analyzing financial statements, analysts must carefully scrutinize the validity of used estimates. For example, if a company reports lower warranty expense in the current year compared to the previous year, an analyst should consider whether this is due to better and more reliable products, or because management had recognized an artificially high warranty expense in the previous period to inflate net income in the current period.

Accounting estimates should also be compared to those of other companies that operate in the same industry to check their validity and evaluate management integrity. If a company has a lower provision for doubtful accounts compared to a peer company, an analyst should assess whether this is because of stricter credit policies or because the company has a more aggressive accounting approach. As with revenue recognition, relative conservatism in expense recognition has a direct impact on reported financial ratios.

Accounting policies and estimates are disclosed in the footnotes to the financial statements and the management discussion and analysis (MD&A) section of the annual report.

LESSON 3: NON-RECURRING ITEMS, NON-OPERATING ITEMS

LOS 24f: Describe the financial reporting treatment and analysis of non-recurring items (including discontinued operations, extraordinary items, unusual or infrequent items) and changes in accounting standards.
Vol 3, pp 179–185

In order to forecast a company's future earnings, analysts must project the company's revenues and expenses into the future. The most popular way of doing this is to use prior years' income and expense items as base figures, and to separate revenues and expenses that are likely to continue in the future from those that are not as likely to occur in the future (non-recurring items). Two examples of non-recurring items are discontinued operations and extraordinary items.

Discontinued Operations

Under both **IFRS** and **U.S. GAAP**, the income statement must separately report an operation as a "discontinued operation" when the company disposes of, or decides to dispose of, one of its component operations, and the component is operationally and physically separable from the rest of the firm.

- Discontinued operations are reported *net of tax* as a *separate* line item *after* income from continuing operations (this treatment is permitted under **IFRS** and **U.S. GAAP**).

- *As the disposed operation will not earn revenue for the company going forward, it will not be taken into account when formulating expectations regarding the future performance of the company.*

Extraordinary Items

IFRS does not allow any items to be classified as extraordinary. **U.S. GAAP** defines extraordinary items as being **both** unusual in nature **and** infrequent in occurrence. A significant degree of judgment is involved in classifying an item as extraordinary. For example, losses caused by Hurricane Katrina in the Unites States were not classified as extraordinary items because natural disasters could reasonably be expected to reoccur.

- Extraordinary items are reported *net of tax* and as a *separate* line item *after* income from continuing operations (below discontinued operations).
- *Analysts can eliminate extraordinary items from expectations about a company's future financial performance unless there is an indication that these extraordinary items may reoccur.*
- For fiscal periods beginning after December 15, 2015, **U.S. GAAP** will no longer include the concept of extraordinary items. Under the new guidance, items will simply be classified as unusual, infrequent, or unusual and infrequent.

The likelihood of certain other items continuing in the future is not as clear and requires analysts to make judgments regarding their impact on future profits. Two examples of such items are unusual or infrequent items and changes in accounting standards.

Unusual or Infrequent Items

IFRS requires that income and expense items that are material and/or relevant to the understanding of a company's financial performance should be disclosed separately. Unusual or infrequent items meet these criteria.

These items are **either** unusual in nature **or** infrequent in occurrence. Examples of such items include restructuring charges and gains and losses arising from selling an asset for more or less than its carrying value.

- These items are listed as separate line items on the income statement but are *included* in income from continuing operations and hence reported *before-tax.*
- *Analysts should not ignore all unusual items. When forecasting future profits, analysts should assess whether each of them is likely to reoccur.*

Changes in Accounting Policies

- A change in accounting policy could be required by standard setters or be decided on by management to provide a better reflection of the company's performance. An example of change in accounting policy is moving away from LIFO to the FIFO method of inventory valuation. Changes in accounting policies are applied *retrospectively*, unless it is impractical to do so. This means that financial data for all periods shown in the financial report must be presented as if the new principle were in use through the entire period. This retrospective change facilitates comparisons across reporting periods. Further, a description of and justification for the change are provided in the footnotes to the financial statements.
- A change in an accounting estimate (e.g., a change in the residual value of an asset), is applied *prospectively* and affects financial statements for only the current and future periods. No adjustments are made to prior statements and the adjustment is not shown on the face of the income statement. Significant changes in accounting estimates should be disclosed in the footnotes.
- A correction of prior-period errors is made by restating all prior-period financial statements presented in the financial report. In addition, disclosure about the error is required in the footnotes. Analysts should carefully assess these disclosures, as they may point to weaknesses in the company's accounting system or financial controls.

LOS 24g: Distinguish between the operating and non-operating components of the income statement. Vol 3, pp 184–185

IFRS does not define operating activities. Therefore, companies that choose to report operating income or the results of operating activities need to ensure that such activities would normally be regarded as operating.

On the other hand, **U.S. GAAP** defines operating activities as those that 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.[9]

For example, a cloth manufacturer might receive dividend and interest income from investments in securities issued by other entities. These sources of income do not relate to the core business operations of the manufacturer and will be listed under non-operating components of net income. Interest payments on loans taken by the manufacturer are also non-operating items because interest expense is incurred due to a financing decision. Analysts typically use a firm's earnings before interest and taxes (EBIT) as a measure of its operating income. For financial services companies, however, interest expense and income are related to their core businesses and constitute operating components of their business.

LESSON 4: EARNINGS PER SHARE, ANALYSIS OF THE INCOME STATEMENT, AND COMPREHENSIVE INCOME

LOS 24h: Describe how earnings per share is calculated and calculate and interpret a company's earnings per share (both basic and diluted earnings per share) for both simple and complex capital structures. Vol 3, pp 185–195

LOS 24i: Distinguish between dilutive and antidilutive securities, and describe the implications of each for the earnings per share calculation. Vol 3, pp 185–195

Earnings per share is one of the most important profitability measures for publicly listed firms. Earnings refer to the share of net income of a company that is owned by common shareholders only.

A firm can have a simple capital structure or a complex capital structure. A company has a simple capital structure when it does not have any financial instruments outstanding that can be converted into common stock. Firms with simple capital structures are required to report basic earnings per share (EPS) only.

$$\text{Basic EPS} = \frac{\text{Income available to common shareholders}}{\text{Weighted average number of shares outstanding}}$$

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

Preferred dividends are subtracted from net income to calculate earnings available to common shareholders. This is because preferred dividends are not included in expenses on the income statement in the calculation of net income.

9 - FASB ASC Master Glossary.

The weighted average number of shares outstanding refers to the number of shares that were outstanding over the year (adjusted for stock splits and stock dividends), weighted according to the proportion of the year that they were outstanding.

Example 4-1: Basic EPS

The information provided here pertains to Liu Plc. for the year ended December 31, 2008. Calculate basic EPS for the company.

Net income for 2008	$2,625,000
Preferred dividends for the year	$420,000
Weighted average number of common shares outstanding	600,000

Solution

$$\text{Basic EPS} = (\$2{,}625{,}000 - \$420{,}000)/600{,}000$$
$$= \$3.68$$

Stock repurchases result in a *decrease* in the number of shares outstanding. Therefore, reacquired shares are excluded from the computation of weighted average number of shares from the date of repurchase. For example, if a company had 1,000 shares outstanding at the start of the year and repurchased 100 shares in July, the weighted average number of shares outstanding would be calculated as:

Weighted average number of shares = $(1{,}000 \times 12/12) - (100 \times 6/12) = 950$

We multiply the 100 repurchased shares by (6/12) because they were repurchased in July and were not a part of the company's outstanding capital for 6 months.

In contrast, stock splits and stock dividends (stock bonuses) result in an *increase* in the number of shares outstanding.

- In a stock split, existing shares in a company are "split" into more shares. A 2-for-1 stock split will increase the number of shares held by a holder of 1,000 shares by 1,000 shares to 2,000 shares. After a 3-for-2 stock split, the owner of 1,000 shares will see her shareholding increase by 500 shares to 1,500 shares.
- A stock dividend is a dividend paid as additional shares of stock rather than cash. These additional shares are granted to each shareholder in proportion to her current holding. After a 25% stock dividend, the holder of 1,000 shares will get 250 (25%) more shares to take her total shareholding to 1,250 shares.

Important: If a company declares a stock split or a stock dividend, the weighted average number of shares outstanding should be calculated based on the assumption that the additional (newly granted) shares have been outstanding since the date that the original shares were outstanding. Example 4-2 will clarify this important point.

Example 4-2: Basic EPS Calculation

LEM Company has reported net income of $1,850,000 for the year ended December 31, 2008. The company declared preferred dividends of $150,000. The following information regarding shares outstanding is available:

Shares issued during the year enter the computation from the date of issuance.

Shares outstanding at January 1, 2008	1,000,000
2-for-1 stock split on April 1, 2008	
Shares issued on June 30, 2008	500,000
10% stock dividend on September 1, 2008	
Shares repurchased on October 1, 2008	150,000
Shares outstanding on December 31, 2008	2,600,000

The stock split and stock dividend are applied to all shares outstanding *prior* to the split or dividend announcement. They are *not* applied to any shares issued or repurchased *after* the announcement. The stock split applies only to the 1 million shares outstanding at January 1. The stock dividend applies to the 1 million shares outstanding since January 1, the additional shares issued on those 1 million shares in the stock split, and the 500,000 shares that were issued on June 30.

Calculate 2008 basic EPS for LEM.

Solution

Shares outstanding on January 1	**1,000,000**
2-for-1 stock split	1,000,000
	2,000,000
10% stock dividend	200,000
Shares outstanding since January 1 (for 12 months)	2,200,000
Shares issued on June 30	**500,000**
10% stock dividend	50,000
Shares outstanding since June 30 (for 6 months)	550,000
Shares repurchased on October 1	
Not outstanding for 3 months	150,000

VERY IMPORTANT

When weighting the shares, assume that the new shares issued from the stock split or stock dividend were outstanding NOT since date of split or stock dividend declaration, but from the date from which the original shares were outstanding.

Weighted average number of shares outstanding

$= (2{,}200{,}000 \times 12/12) + (550{,}000 \times 6/12) - (150{,}000 \times 3/12) = \mathbf{2{,}437{,}500}$

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

Basic EPS = ($1,850,000 − $150,000)/2,437,500 = **$0.70**

The if-converted method is used to calculate diluted EPS when the company has convertible securities outstanding.

A **complex capital structure** is one that contains certain financial instruments that can be converted into common stock (e.g., convertible bonds, convertible preferred stock, warrants, and options). These financial instruments are potentially dilutive, so companies with complex capital structures are required to report basic and diluted EPS. A dilutive security is one whose conversion into shares of common stock would result in a reduction in EPS. EPS calculated after taking into account all dilutive financial instruments in the capital structure is known as diluted EPS. Financial instruments that can be converted into common stock, but whose conversion does not reduce EPS below basic EPS, are antidilutive. Antidilutive financial instruments are not considered in the calculation of diluted EPS. Accounting standards require companies to disclose diluted EPS because this information is important for existing common shareholders.

Diluted EPS When a Company Has Convertible Preferred Stock Outstanding

If convertible preferred shares were converted into common shares:

- We would add back dividends paid to convertible preferred shareholders to our numerator (earnings available to common shareholders). This is because the company would not be required to pay any preferred dividends on convertible preferred shares if these shares were converted into ordinary shares.
- We would increase the number of shares outstanding by the number of common shares that would be issued to convertible preferred shareholders upon conversion.

$$\text{Diluted EPS} = \frac{\text{Net income} - \text{Preferred dividends} + \text{Convertible preferred dividends}}{\text{Weighted average number of shares outstanding} + \text{New common shares issued upon conversion}}$$

Example 4-3: Diluted EPS

Xingia Inc. earns profits of $2,500,000 for the year ended December 31, 2008. Xingia has 1,000,000 weighted average shares outstanding during the year and pays taxes at the rate of 40%. Xingia also has 1,000 convertible preferred shares outstanding, which pay a dividend of $50 per share every year. Each convertible preferred share can be converted into 100 common shares. Calculate Xingia's basic and diluted EPS for 2008.

Solution

Basic EPS = ($2,500,000 – $50,000)/1,000,000 = **$2.45**

Each preferred share can be converted into 100 shares of common stock. Therefore:

Number of common shares issued upon conversion = 100 × 1,000 = **100,000**

Diluted EPS = ($2,500,000 – $50,000 + $50,000)/(1,000,000 + 100,000) = **$2.27**

Since basic EPS equals $2.45 and EPS assuming that convertible preferred shares are converted is lower ($2.27), the convertible preferred shares are dilutive. If EPS after conversion were greater than basic EPS, these shares would be antidilutive and would not be included in the calculation of diluted EPS.

A quick way to determine whether convertible preferred shares are dilutive is by calculating:

$$\frac{\text{Convertible preferred dividends}}{\text{New shares issued upon conversion}}$$

If this per share figure is lower than basic EPS, the convertible preferred shares are dilutive, and should be included in the calculation of diluted EPS. If this figure is greater than basic EPS, the convertible preferred shares are antidilutive and should be ignored in the calculation of diluted EPS.

Diluted EPS When a Company Has Convertible Debt Outstanding

If convertible bonds were converted into ordinary shares:

- We would add interest payments that were made to bondholders back to the numerator. This is because the company would not be required to make any interest payments to holders of convertible bonds if these bonds were converted to ordinary shares. However, the increase in earnings available to common shareholders is not the entire amount of interest savings from inversion. Recall that interest expense is deducted from operating profits before the calculation of net income before tax, so interest expense results in a tax shield for the company. Interest savings adjusted for the tax shield benefits that have already been realized will be added to the numerator.
- The number of shares outstanding will increase by the number of common shares that would be issued to convertible debt holders upon conversion.

$$\text{Diluted EPS} = \frac{\text{Net income} - \text{Preferred dividends} + \text{Convertible debt interest} \times (1 - t)}{\text{Weighted average number of shares outstanding} + \text{New common shares issued upon conversion}}$$

Example 4-4: Diluted EPS

Xingia Inc. earns profits of $2,500,000 for the year ended December 31, 2008. Xingia has a weighted average of 1,000,000 shares outstanding during the year and pays taxes at the rate of 40%. Xingia has 1,000 preferred shares outstanding, which offer a dividend of $50 per share every year. Xingia also has $75,000 par of 10% convertible bonds outstanding, which are convertible into 7,000 shares of common stock. Calculate Xingia's basic and diluted EPS for 2008.

Solution

Basic EPS = ($2,500,000 – $50,000)/1,000,000 shares = **$2.45**

To determine diluted EPS, we must first calculate the after-tax interest on convertible debt.

After-tax interest on convertible debt = $7,500 (1 – 0.40) = **$4,500**

The convertible bonds can be converted into **7,000** shares of common stock.

Diluted EPS = ($2,500,000 – $50,000 + $4,500)/(1,000,000 + 7,000) = **$2.43**

Since basic EPS is $2.45 and EPS assuming that convertible bonds are converted is lower ($2.43), the company's outstanding convertible bonds are dilutive, and diluted EPS for 2008 equals $2.43.

The preference shares in this example cannot be converted into ordinary shares, so they are not considered in the calculation of diluted EPS.

A quick way to determine whether convertible bonds are dilutive is by calculating:

$$\frac{\text{Convertible bond interest } (1-t)}{\text{New shares issued upon conversion}}$$

If this per share figure is lower than basic EPS, the convertible bonds are dilutive and should be included in the calculation of diluted EPS. If this figure is greater than basic EPS, the convertible bonds are antidilutive and should be ignored in the calculation of diluted EPS.

Diluted EPS When a Company Has Stock Options, Warrants, or Their Equivalents Outstanding

In the calculation of diluted EPS, stock options and warrants are accounted for using the treasury stock method (required under **U.S. GAAP**). The treasury stock method assumes that all the funds received by the company from the exercise of options and warrants are used by the company to repurchase shares at the average market price for the period. The resulting net increase in number of shares outstanding equals the increase in shares from the exercise of options and warrants minus the number of shares repurchased.

Stock options and warrants are assumed to be exercised if the strike or exercise price is lower than the average market price during the year. The proceeds to the company from the exercise of the options equal the exercise price multiplied by the number of options. These proceeds are used to repurchase shares at the average market price. In calculating diluted EPS:

Year-end stock prices do NOT matter in determining whether options and warrants are exercised.

- No adjustment must be made to the numerator because the exercise of options or warrants has no impact on income available to common shareholders.
- The number of shares outstanding increases by the number of shares issued upon exercise of options minus the number of shares repurchased with the proceeds of option exercise. A shortcut for calculating the net increase in the number of shares is:

$$\frac{\text{Market price} - \text{Exercise price}}{\text{Market price}} \times \text{Number of shares created from the exercise of options}$$

IFRS requires the use of a similar method, but does not refer to it as the treasury stock method. The proceeds of option exercise are assumed to be used to repurchase shares at the average market price and these shares are known as inferred shares. The excess of new issued shares over inferred shares is added to the weighted average number of shares outstanding.

$$\text{Diluted EPS} = \frac{\text{Net income}}{\text{Weighted average number of shares outstanding} + \text{New shares issued at option exercise} - \text{Shares repurchased from proceeds of option exercise}}$$

Example 4-5: Diluted EPS

Xingia Inc. earns profits of $2,500,000 for the year ended December 31, 2008. Xingia has 1,000,000 shares outstanding during the year and pays taxes at the rate of 40%. Xingia paid preference dividends amounting to $50,000 in 2008. The average market price of Xingia's stock over the year was $50. Xingia has 10,000 stock options outstanding, which have an exercise price of $30. Calculate Xingia's diluted EPS for 2008.

Solution

Since the average market price exceeds the exercise price of the options, they should be assumed to have been exercised.

Number of common shares issued to option holders = **10,000**

Cash proceeds from exercise of options = **$300,000** (10,000 shares × $30)

Number of shares that can be purchased at average market price with these funds = $300,000/$50 = **6,000**

Net increase in common shares outstanding from the exercise of options = 10,000 – 6,000 = **4,000**

Diluted EPS = $2,500,000 – $50,000/(1,000,000 + 10,000 – 6,000) = **$2.44**

Diluted EPS ($2.44) is lower than basic EPS ($2.45). Therefore, the options are dilutive and should be considered in the calculation of diluted EPS.

When options/warrants are exercised (average market price is greater than exercise price) they result in an increase in the number of shares outstanding. Because their exercise has an impact on only the denominator of the EPS formula, options and warrants are always dilutive if exercised.

Now let's calculate diluted EPS for Xingia assuming that all three types of potentially dilutive financial instruments are present in its capital structure.

Important: In determining which potentially dilutive financial instruments should be included in the diluted EPS calculation, each of the financial instruments must be evaluated individually and independently to determine whether they are dilutive. If there are any antidilutive financial instruments, they must be ignored in the diluted EPS calculation.

Example 4-6: Diluted EPS

Xingia Inc. earns profits of $2,500,000 for the year ended December 31, 2008. Xingia has 1,000,000 weighted average shares outstanding during the year and pays taxes at the rate of 40%. The average market price of Xingia's stock over the year was $50. Xingia has 1,000 convertible preferred shares outstanding, with each share convertible into 100 shares of common stock. It pays a dividend of $50 per share on these shares. Xingia also has $75,000 par of 10% convertible bonds outstanding, which are convertible into 7,000 shares of common stock. Further, it has 10,000 stock options outstanding, which have an exercise price of $30. Calculate Xingia's basic and diluted EPS for 2008.

Solution

Basic EPS = ($2,500,000 − $50,000)/1,000,000 shares = **$2.45**

Diluted EPS

In Examples 4-3, 4-4, and 4-5, we have already determined that all three potentially dilutive financial instruments are, in fact, dilutive. Xingia's diluted 2008 EPS is calculated as:

$$\text{Diluted EPS} = \frac{\left[\text{Net income} - \text{Preferred dividends}\right] + \text{Convertible preferred dividends} + \left[\text{Convertible debt interest} \times (1-t)\right]}{\text{Weighted average shares} + \text{Shares from conversion of convertible preferred shares} + \text{Shares from conversion of convertible debt} + \text{Shares issuable from stock options}}$$

$$\text{Diluted EPS} = \frac{2{,}500{,}000 - 50{,}000 + 50{,}000 + 7{,}500(1-0.4)}{1{,}000{,}000 + 100{,}000 + 7{,}000 + 4{,}000} = \mathbf{\$2.25}$$

Example 4-7: Antidilutive Financial Instruments

Acme Inc. reported a net income of $2,500,000 over the year. During the year its weighted average number of common shares outstanding was 1,000,000. Acme also had 25,000 convertible preferred shares outstanding on which it paid a dividend of $7 per share. Each of these shares are convertible into 2 shares of common stock. Calculate basic EPS and diluted EPS for Acme for the year.

Solution

Basic EPS = [(2,500,000 – 175,000)/1,000,000] = **$2.33**

Diluted EPS

If the convertible preferred shares were converted into common shares, EPS would equal:

($2,500,000 – $175,000 + $175,000)/(1,000,000 + 50,000) = **$2.38**

EPS assuming the convertible preferred shares are converted into common stock ($2.38) is greater than basic EPS ($2.33). The convertible preferred shares are antidilutive, and should not be included in the calculation of diluted EPS. The firm's diluted EPS is therefore the same as its basic EPS of $2.33.

One final note: If dilutive financial instruments were issued during the year, the denominator of the diluted EPS formula would increase by the number of shares issued upon conversion/exercise multiplied by the proportion of the year for which they were outstanding. For example, if dilutive convertible preferred shares that can be converted into 10,000 shares of common stock were issued after 9 months of the accounting year had passed, the denominator of the diluted EPS formula would be increased by 10,000 × (3/12) = 2,500.

*Note: Both **U.S. GAAP** and **IFRS** require the presentation of EPS (basic EPS and diluted EPS) on the face of the income statement.*

LESSON 5: ANALYSIS OF THE INCOME STATEMENT AND COMPREHENSIVE INCOME

LOS 24j: Convert income statements to common-size income statements.
Vol 3, pp 195–199

LOS 24k: Evaluate a company's financial performance using common-size income statements and financial ratios based on the income statement.
Vol 3, pp 195–199

Analysis of the Income Statement

Common-size income statements present each line item on the income statement as a percentage of *sales*. The standardization of each item removes the effect of company size and facilitates financial statement analysis, as the data can be used to conduct time-series (across time periods) and cross-sectional (across companies) analysis.

While common-size income statements present most items as a percentage of sales, it is more appropriate to present income taxes as a percentage of pre-tax income. This ratio is known as the company's effective tax rate. In cross-sectional analysis, effective tax rates are compared across companies and sources of any differences are analyzed in detail.

Exhibit 5-1 presents common-size income statement of Liuson Company. Notice that the provision for income taxes has been expressed as a percentage of income before tax.

Exhibit 5-1: Common-Size Income Statement

Liuson Company
Common-Size Income Statement
For the year ended 2006 and 2007

	2006 $	2006 %	2007 $	2007 %
Total revenue	400,000	100.00	500,000	100.00
Cost of goods sold	(320,000)	80.00	(380,000)	76.00
Gross profit	80,000	20.00	120,000	24.00
Operating expenses				
General expenses	(28,000)	7.00	(29,000)	5.80
Depreciation	(8,000)	2.00	(12,000)	2.40
Operating income	44,000	11.00	79,000	15.8
Interest income	3,000	0.75	2,000	0.40
Interest expense	(400)	0.10	(1,800)	0.36
Other losses	(1,800)	0.45	(4,200)	0.84
Income before income taxes	44,800	11.20	75,000	15.00
Provision for income taxes	(16,000)	35.71	(21,000)	28.00
Net income	28,800	7.20	54,000	10.80

The things that stand out in Liuson's common-size statements are that:

- Cost of goods sold has decreased from 80% to 76% of sales, so the gross margin has increased.
- General expenses decreased from 7% to 6% of sales.
- The net profit margin has increased significantly from 7% to 11%.

This implies that management is effectively controlling costs in order to boost profitability. Common-size income statements are discussed in detail in Reading 27.

Income Statement Ratios

Items listed on the income statement are used to calculate ratios to evaluate a company's profitability. Gross profit margin and net profit margin are the two most commonly used indicators of profitability.

- Net profit margin = Net income/Revenue
- Gross profit margin = Gross profit/Revenue

Any subtotal on the income statement can also be expressed as a margin ratio by dividing it by total revenue. For example, operating margin is calculated as operating income (EBIT) divided by sales, and pre-tax margin is calculated as earnings before tax (EBT) divided by total revenue.

Income statement ratios are discussed in more detail in Reading 28.

LOS 24l: Describe, calculate, and interpret comprehensive income. Vol 3, pp 199–202

LOS 24m: Describe other comprehensive income, and identify the major types of items included in it. Vol 3, pp 199–202

Most revenues, gains, expenses, and losses are reported on the income statement to determine a company's net income. However, there are certain income and expense items that are excluded from the income statement; instead these items are reported directly in shareholders' equity (**U.S. GAAP** only), or in a separate statement of comprehensive income (**IFRS** and **U.S. GAAP**) as a part of **other comprehensive income**.

IFRS defines total comprehensive income as "the change in equity during a period resulting from transactions and other events, other than those changes resulting from transactions with owners in their capacity as owners."[10]

Under **U.S. GAAP**, comprehensive income is defined as "the change in equity (net assets) of a business enterprise during a period from transactions and other events and circumstances from nonowner sources. It includes all changes in equity during a period except those resulting from investments by owners and distributions to owners."[11]

Comprehensive income = Net income plus other comprehensive income

Comprehensive income includes both net income and *other* revenues and expenses that are excluded from the net income calculation (other comprehensive income). Both net income and other comprehensive income have an impact on retained earnings.

$$\text{Ending shareholders' equity} = \begin{matrix}\text{Beginning shareholders' equity} + \text{Net income} + \\ \text{Other comprehensive income} - \text{Dividends declared}\end{matrix}$$

Suppose a company's beginning shareholders' equity was $100 million. Its net income for the period was $10 million, and it declared $1 million as dividends. There was no repurchase or issuance of common stock during the year and the company's year-end shareholders' equity stood at $130 million. The company's other comprehensive income will be calculated as:

Other comprehensive income = $130m − 100m − 10m + 1m = $21 million

Also note that the "available-for-sale" classification no longer appears in IFRS as of 2010, although the relevant standard (IFRS 9 Financial Instruments) is not effective until 2018. However, although the available-for-sale category will not exist, IFRS will still permit certain equity investments to be measured at fair value with any unrealized holding gains or losses recognized in other comprehensive income if they are classified as financial assets measured at fair value through other comprehensive income.

Items Classified as Other Comprehensive Income

Four types of items are classified as other comprehensive income under both **IFRS** and **U.S. GAAP**:

1. Foreign currency translation adjustments.
2. Certain costs relating to the company's defined benefit post-retirement plans.
3. Unrealized gains or losses on derivatives contracts, accounted for as hedges.
4. Unrealized holding gains and losses on available-for-sale securities.

Under **IFRS**, certain changes in the value of long-lived assets that are measured using the revaluation model (as opposed to the cost model) at fair value are also included in other comprehensive income.

10 - IAS 1, *Presentation of Financial Statements*, paragraph 7.
11 - FASB ASC Section 220-10-05 [Comprehensive Income—Overall—Overview and Background].

Example 5-1: Calculating Comprehensive Income

Company XYZ – Selected Financial Statement Data

Net income	$1,000
Dividends received from available-for-sale securities	60
Unrealized gain from foreign currency translation adjustment	20
Dividends paid	(100)
Reacquisition of common stock	(300)
Unrealized loss on derivatives (those considered as hedges)	(20)
Unrealized gain on available-for-sale securities	15
Realized loss on sale of machinery	(50)

Comprehensive income equals net income plus other comprehensive income

Net income	$1,000
Unrealized gain from foreign currency adjustment	20
Unrealized loss on derivatives considered as hedges	(20)
Unrealized gain on available-for-sale securities	15
Comprehensive Income	**$1,015**

Other comprehensive income = $15

Important points:

- We do not include dividends from available-for-sale securities and the realized loss on machinery in other comprehensive income because they are already included in net income.
- We do not include reacquisition of common stock and dividends paid in the calculation because they are transactions that relate to owners. Other comprehensive income does not include the effect of investments by owners and distributions to owners. These transactions are accounted for in the statement of changes in shareholders' equity.

When comparing the financial performances of companies, it is very important for analysts to examine significant differences in overall comprehensive income (as opposed to simply focusing on net income).

READING 25: UNDERSTANDING BALANCE SHEETS

LESSON 1: BALANCE SHEET: COMPONENTS AND FORMAT

The balance sheet (also called the statement of financial position or statement of financial condition) provides users with information regarding a company's assets, liabilities, and equity at a specific point in time. It also provides insights into the future earnings capacity of the company as well as indications regarding expected cash flows.

LOS 25a: Describe the elements of the balance sheet: assets, liabilities, and equity. Vol 3, pp 212–213

Assets

Assets are resources under a company's control as a result of past transactions that are expected to generate future economic benefits for the company.

Liabilities

Liabilities are a company's obligations from previous transactions that are expected to result in outflows of economic benefits in the future.

Assets and liabilities may arise from business transactions (e.g., the purchase of a piece of equipment) or as a result of accrual accounting. Differences between the timing of revenue and expense recognition (based on accrual accounting) and the timing of related cash flows give rise to current assets and liabilities.

Assets and liabilities should only be recognized on the financial statements if it is probable that the future economic benefits associated with them will flow to or from the firm, and that the item's cost or value can be measured with reliability.

Equity

Equity represents the residual claim of shareholders on a company's assets after deducting all liabilities. Other terms commonly used for shareholders' equity include stockholders' equity, net assets, and owners' equity. Equity can be created as a result of operating activities (business transactions that yield operating profits) and financing activities (issuance of common stock).

LOS 25b: Describe the uses and limitations of the balance sheet in financial analysis. Vol 3, pg 213

The balance sheet provides useful information regarding a company's financial position to both investors and lenders. However, balance sheet information should be interpreted carefully. Analysts should be careful not to view equity reported on the balance sheet as either the market or intrinsic value of a company's net assets because of the following reasons:

- Under current accounting standards, measurement bases of different assets and liabilities may vary considerably. For example, some assets and liabilities may be measured at historical cost, while others may be measured at current value. These differences can have a significant impact on reported figures.

- The value of items reported on the balance sheet reflects their value at the end of the reporting period, which may not necessarily remain "current" at a later date.
- The balance sheet does not include qualitative factors (e.g., reputation, management skills, etc.) that have an important impact on the company's future cash-generating ability and therefore, its overall value.

Latter sections of this reading and other subsequent readings will comprehensively illustrate the use of balance sheets in evaluating the financial strength of a company.

LOS 25c: Describe alternative formats of balance sheet presentation.

Vol 3, pp 213–214

Balance sheets may be presented in any of the following formats:

- Report format: Assets, liabilities, and equity are presented in a single column. This format is the most commonly used balance sheet presentation format.
- Account format: Assets are presented on the left-hand side of the balance sheet, with liabilities and equity on the right-hand side.
- Classified balance sheet: Different types of assets and liabilities are grouped into subcategories to give a more effective overview of the company's financial position. Classifications typically group assets and liabilities into their current and non-current portions.
- Liquidity-based presentation: **IFRS** allows the preparation of a balance sheet using a liquidity-based presentation format (rather than a current/non-current format), if such a format provides more reliable and relevant information. In a liquidity-based presentation, all assets and liabilities are broadly presented in order of liquidity. This format is typically used by banks.

For a company, liquidity refers to the company's ability to meet short-term cash requirements. For an individual asset, liquidity refers to how quickly the asset can be converted to cash at a price close to its fair market value.

We will use the balance sheet of Nexen Company (Exhibit 1-1) to describe current and non-current assets and liabilities that are typically found on balance sheets.

Exhibit 1-1: Sample Balance Sheet

Nexen Company
Balance Sheet

	2008 $	2007 $
ASSETS		
1 **Current Assets**	**22,000**	**18,500**
Cash and cash equivalents 1a	6,000	4,500
Marketable securities 1b	5,000	6,000
Trade receivables 1c	4,000	2,000
Inventories 1d	6,000	5,500
Other current assets 1e	1,000	500
2 **Noncurrent Assets**	**81,000**	**57,500**
Property, plant, and equipment 2a	50,000	40,000
Goodwill 2b	10,000	8,000
Other intangible assets	6,000	2,000
Non-current investments (subsidiaries)	15,000	7,500
TOTAL ASSETS	**103,000**	**76,000**
LIABILITIES AND EQUITY		
3 **Current Liabilities**	**24,500**	**14,000**
Trade and other payables 3a	7,000	3,000
Current borrowings 3b	6,000	2,000
Current portion of non-current borrowings 3c	3,000	2,000
Current taxes payable 3d	4,000	4,000
Accrued liabilities 3e	2,500	1,500
Unearned revenue 3f	2,000	1,500
4 **Non-current Liabilities**	**37,000**	**25,000**
Non-current borrowings	25,000	15,000
Deferred taxes	10,000	8,000
Noncurrent provisions	2,000	2,000
TOTAL LIABILITIES	**61,500**	**39,000**
5 **EQUITY**	**41,500**	**37,000**
Common stock	25,000	25,000
Preferred shares 5a	5,000	5,000
Reserves	2,000	0
Retained earnings 5b	12,500	9,000
Shares repurchased (Treasury stock) 5c	(3,000)	(2,000)
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY	**103,000**	**76,000**

Nexen uses the title Balance Sheet. Other companies use "Statement of Financial Position."

LESSON 2: ASSETS AND LIABILITIES: CURRENT VERSUS NON-CURRENT

LOS 25d: Distinguish between current and non-current assets and current and non-current liabilities. Vol 3, pp 215–217

IFRS and U.S. GAAP Balance Sheet Presentation

Both **IFRS** and **U.S. GAAP** require that assets and liabilities be grouped separately into their current and non-current portions, which makes it easier for analysts to examine the company's liquidity position as of the balance sheet date. However, it is not required that current assets be presented before non-current assets, or that current liabilities be presented before non-current liabilities (even though this is the case in Nexen's balance sheet). Further, under **IFRS**, the current/non-current classifications are not required if a liquidity-based presentation provides more relevant and reliable information.

1 ← **Current assets:** These are liquid assets that are likely to be converted into cash or realized within one year or one operating cycle, whichever is longer. The operating cycle is the average time taken by a company to convert the funds used to purchase inventory or raw materials into cash proceeds from sales to customers. Current assets may be listed in order of liquidity, with cash being the first item listed.

2 ← **Non-current assets (also known as long-term or long-life assets):** These are less liquid assets and are not expected to be converted into cash within one year or within one operating cycle. They represent the infrastructure that the firm uses in its operations and other investments made from a strategic or long-term perspective.

3 ← **Current liabilities:** These are obligations that are likely to be settled within one year or one operating cycle, whichever is longer. Specifically, a liability may be classified as a current liability if:

- It is expected to be settled in the entity's normal operating cycle;
- It is primarily held for the purpose of trading;
- It is due to be settled within one year after the balance sheet date; or
- The entity does not have an unconditional right to defer settlement of the liability for at least one year after the balance sheet date.[1]

IFRS allow some liabilities such as trade payables and accruals for employees to be classified as current liabilities even though they might not be settled within one year.

4 ← **Non-current liabilities:** These liabilities are not expected to be settled within a year or within one operating cycle. Non-current liabilities are a source of long-term finance for a company.

We shall study working capital management in greater detail in Reading 39.

Working capital: The difference between current assets and current liabilities is known as working capital. Working capital is necessary for the smooth functioning of a firm's daily operations. Low working capital levels suggest that the company might be unable to meet its short-term obligations. Excessively high levels of working capital indicate that the company is not utilizing its resources efficiently.

1 - IAS 1, Presentation of Financial Statements, paragraph 69.

LOS 25e: Describe different types of assets and liabilities and the measurement bases of each. Vol 3, pp 217–241

Individual assets and liabilities are reported on the balance sheet using different measurement bases. The challenge for analysts lies in understanding how the reported values of assets and liabilities relate to *economic reality* and to each other. As stated previously, balance sheet values should not be assumed to be accurate measures of the value of a company. For example, land is usually presented at its historical cost. If prices have increased significantly since the date of acquisition, the total value of assets is understated on the balance sheet. The balance sheet provides important information about the value of certain assets and information about expected future cash flows, but does not always accurately represent the value of the company as a whole.

Current Assets

These are assets that can be liquidated or consumed by the company within one year, or one operating cycle, whichever is greater. Accounting standards require that certain specific line items must be shown on a balance sheet if they are material (e.g., cash and cash equivalents, trade and other receivables, inventories, and financial assets [with short maturities]). → 1

Cash and cash equivalents → 1a

Cash equivalents are highly liquid securities that usually mature in less than 90 days. Since they are so close to maturity, there is minimal risk of any change in their value due to changes in interest rates. Since cash equivalents are financial assets, they may be measured at amortized cost or fair value.

- Amortized cost equals historical cost adjusted for amortization and impairment.
- Fair value under **IFRS** equals the amount at which the asset can be exchanged in an arm's length transaction between willing and informed parties. Under **U.S. GAAP**, fair value is based on exit price—the price received to sell an asset.

The amortized cost and fair values of cash equivalents are usually very similar.

Marketable securities → 1b

These are also financial assets and include investments in debt and equity securities that are traded on public markets. Their balance sheet values are based on market price.

Trade receivables → 1c

Also considered financial assets, trade receivables represent amounts owed to the company by customers to whom sales have been made. These amounts are usually reported at net realizable value (an estimate of fair value based on the company's expectations regarding collectability).

The provision for doubtful accounts is called a contra-asset account as it is netted against accounts receivable (an asset account).

- The relation between accounts receivable and sales is important. A significant increase in accounts receivable relative to sales may imply that the company is having problems collecting cash from customers.
- An increase in the allowance for doubtful accounts (the company's estimate of uncollectable amounts) results in a lower value reported under trade receivables (assets), and bad debts (expense) being reported on the income statement.
- The more diversified the customer base, the lower the credit risk of accounts receivable.

1d ← Inventories

Inventory valuation methods, write-downs, and analysis are covered in depth in Reading 28.

These are physical stocks held by the company in the form of finished goods, work-in-progress, or raw materials. Measurement of inventory differs under **IFRS** and **U.S. GAAP**.

- Under **IFRS**, inventory is reported at the lower of cost and net realizable value (NRV).
- Under **U.S. GAAP**, inventory is reported at the lower of cost and market.

NRV is calculated as selling price minus selling costs, while cost is determined by the cost flow assumption (LIFO, FIFO, or average cost) that is used. Market value (under **U.S. GAAP**) equals the current replacement cost of inventory, which must lie between NRV minus the normal profit margin and NRV.

Inventory costs should include direct materials, direct labor, and overheads. However, the following amounts should not be included when calculating inventory cost:

- Abnormal amounts of wasted materials, labor, and overheads.
- Storage costs incurred after the production process is complete.
- Administrative overheads.
- Selling costs.

In limited cases, standard cost or the retail method can be used for valuing inventory. Standard cost should take into account normal levels of materials, labor, and actual capacity. The retail method reduces selling price by gross profit margin to determine the cost of inventory.

Once inventory is sold, its cost is reported as an expense in the income statement under "cost of goods sold."

1e ← Other current assets

Items that are not material enough to be reported as a separate line item on the balance sheet are aggregated into a single amount and reported as "other current assets." These may include the following:

Prepaid expenses are normal operating expenses that have been paid in advance, so they are recognized as assets on the balance sheet. Over time, they are expensed on the income statement and the value of the asset is reduced. For example, suppose that at the beginning of the year a company makes a payment of $60,000 as advance payment for a year's rent. This results in reduction in cash of $60,000 and a corresponding increase in prepaid expenses (asset). At the end of the first quarter, three months rent of $15,000 will be expensed and the prepaid rent asset will be decreased by $15,000. By the end of the year, the entire $60,000 would have been charged as an expense on the income statement and the balance of the prepaid rent asset account will be zero.

Deferred tax assets (DTA) usually arise when a company's taxes payable exceed its income tax expense. They represent a kind of prepayment of taxes and therefore, count as assets. DTA will be discussed in more detail in Reading 30.

Current Liabilities

→ 3

These are a company's obligations that are expected to be settled within one year or one operating cycle, whichever is greater. Current liabilities that are typically found on the balance sheet include the following:

Trade payables (accounts payable)

→ 3a

These are amounts owed by the business to its suppliers for purchases on credit. Analysts are usually interested in examining the trend in the levels of trade payables relative to purchases to gain insight into the company's relationships with its suppliers.

Notes payables (current borrowings)

→ 3b

These financial liabilities are borrowings from creditors that are documented by a loan agreement. Depending on the agreed repayment date, notes payable may also be included in non-current liabilities.

Current portion of long-term liabilities

→ 3c

These represent portions of long-term debt obligations that are expected to be paid within a year of the balance sheet date or within one operating cycle, whichever is greater.

Income taxes payable

→ 3d

These are taxes (based on taxable income) have not actually been paid yet.

Accrued liabilities

→ 3e

These are expenses that have been recognized on the income statement but have still not been paid for as of the balance sheet date.

Unearned revenue (deferred revenue or deferred income)

→ 3f

This arises when a company receives cash in advance for goods and services that are still to be delivered. The company is obligated to either provide the goods or services or to return the cash received.

Non-Current Assets

→ 2

Non-current assets typically include the following:

Property, plant, and equipment (PP&E)

→ 2a

These are long-term assets that have physical substance. Examples of tangible assets treated as PP&E include land, plant, machinery, equipment, and any natural resources owned by the company.

Under **IFRS**, PP&E may be valued using either the cost model or the revaluation model. However, companies need to ensure that the chosen method is applied to all the assets within a particular class of assets. **U.S. GAAP** only allows the cost model for reporting PP&E.

The cost and revaluation models for PP&E along with impairment and investment property are discussed in more detail in Reading 29.

Investment property

IFRS defines investment property as property that is owned (or leased under a finance lease) for rental income and/or capital appreciation. Under **IFRS**, investment property may be valued using the cost model or the fair value model. The chosen model must be applied to all investment properties held by the company. Further, a company may only use the fair value model if it is able to determine the fair value of the investment property on a continuing basis with reliability. **U.S. GAAP** does not include a specific definition for investment property.

We will study the accounting standards related to intangible assets in detail in Reading 29.

Intangible assets

These are identifiable, non-monetary assets that lack physical substance. Under **IFRS**, intangible assets may be reported using either the cost model or the revaluation model. However, the revaluation model can only be selected if there is an active market for the asset. **U.S. GAAP** only allows the cost model.

- Intangible assets with finite useful lives are amortized systematically over their lives and may also be impaired depending on circumstances. Impairment principles for these assets are the same as those that apply to PP&E.
- Intangible assets with indefinite useful lives are not amortized, but are tested for impairment at least annually.

Financial statement disclosures provide important information (e.g., useful lives, amortization rates and methods) regarding a company's intangible assets.

Identifiable intangible assets can be acquired singly and are usually related to rights and privileges that accrue to the their owners over a finite period. Under **IFRS**, identifiable intangible assets may only be recognized if it is probable that future economic benefits will flow to the company and the cost of the asset can be measured reliably. A company may develop intangible assets internally, but such assets can only be recognized under certain circumstances. Under both **IFRS** and **U.S. GAAP**, costs related to the following are usually expensed:

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

Acquired intangible assets may be reported as separately identifiable intangibles (rather than goodwill) if:

- They arise from contractual rights (e.g., licensing agreements), or other legal rights (e.g., patents); or
- Can be separated and sold (e.g., customer lists).

2b ← Goodwill (an example of an asset that is not separately identifiable) is the excess of the amount paid to acquire a business over the fair value of its net assets. The purchase price may exceed the fair value of the target company's identifiable (tangible and intangible) net assets because of the following reasons:

- Certain items of value (e.g., reputation, brand) are not recognized in a company's financial statements.
- The target company may have incurred research and development expenditures that may have not been recognized on its financial statements but do hold value for the acquirer.
- The acquisition may improve the acquirer's position against a competitor or there may be possible synergies.

Note that goodwill is only created (recognized) in a purchase acquisition. Internally generated goodwill is expensed.

Analysts must understand the difference between accounting and economic goodwill. Accounting goodwill is based on accounting standards and is only reported for acquisitions when the purchase price exceeds the fair value of the acquired company's net assets. Economic goodwill, which is not reflected on the balance sheet, is based on a company's performance and its future prospects. Analysts are more concerned with economic goodwill as it contributes to the value of the firm and should be reflected in its stock price.

Under **U.S. GAAP** and **IFRS**, accounting goodwill resulting from acquisitions is capitalized. Further, under both sets of standards, goodwill is not amortized, but is tested for impairment annually. An impairment charge reduces net income and decreases the carrying value of goodwill to its actual value. Impairment of goodwill is a non-cash expense and therefore does not affect cash flows.

Goodwill can significantly affect the comparability of financial statements of companies. When performing ratio analysis, income statement values should be adjusted by removing impairment expense (so that operating trends can be identified), and balance sheet values should be adjusted by excluding goodwill when computing financial ratios. Analysts should evaluate future acquisitions of a company in light of the price paid relative to net assets and earnings prospects of the acquired company (economic goodwill).

Companies are required to disclose information that assists users in evaluating the nature and financial impact of business combinations. Information such as the purchase price paid relative to the fair value of a company's net assets and earnings prospects of the acquired company help analysts to develop expectations about the company's performance following an acquisition.

Financial assets

Under **IFRS**, a financial instrument is defined as a contract that gives rise to a financial asset for one entity, and a financial liability or equity instrument for another entity.[2] Financial assets include investments in securities (e.g., stocks and bonds) and receivables, while financial liabilities include bonds payable and notes payable. A derivative is a complex financial instrument that derives its value from some underlying factor (e.g., interest rate, exchange rate, underlying asset price) and requires little or no initial investment. As we shall learn later, derivatives may be used for hedging purposes or for speculation.

Mark-to-market is a process of adjusting the values of trading assets and liabilities to reflect their current market values. These adjustments are usually made on a daily basis. Assets that are classified as held for trading and available for sale are subject to mark-to-market adjustments. Exhibit 2-1 breaks down various marketable and non-marketable financial instruments according to the measurement base used to value them.

Exhibit 2-1: Measurement Bases of Various Financial Assets[3]

Measured at Fair Value	Measured at Cost or Amortized Cost
Financial Assets Financial assets held for trading (stocks and bonds). Available-for-sale financial assets (stocks and bonds). Derivatives. Non-derivative instruments with face value exposures hedged by derivatives.	**Financial Assets** Unlisted instruments. Held-to-maturity investments. Loans and receivables.

2 - IAS 32, Financial Instruments: Presentation, paragraph 11.
3 - Exhibit 10, Volume 3, CFA Program Curriculum 2017.

Marketable investment securities can be classified under the following categories:

Available-for-sale securities: These are debt or equity securities that are neither expected to be traded in the near term, nor held till maturity. They may be sold to address the liquidity needs of the company. These securities are reported at fair market value on the balance sheet. While dividend income, interest income, and realized gains and losses on AFS securities are reported on the income statement, unrealized gains and losses are reported in other comprehensive income as a part of shareholders' equity.

The "available-for-sale" classification no longer appears in **IFRS** as of 2010, even though "IFRS 9: Financial Instruments" will be effective from 2013. However, even though the available-for-sale category will not exist, **IFRS** will still permit certain equity investments to be measured at fair value with any unrealized gains and losses recognized in other comprehensive income. This classification will be known as financial assets measured at fair value through other comprehensive income.

Held-to-maturity securities: These are debt securities that are purchased with the intent of holding them till maturity. Held-to-maturity securities are carried at amortized cost (Amortized cost = Face value – Unamortized discount + Unamortized premium). For these securities, unrealized gains or losses from changes in market value are ignored and not recognized on the financial statements. Only interest income and realized gains and losses (gains and losses when these securities are sold) are recognized on the income statement. See Exhibit 2-2.

Trading securities: These are debt and equity securities (e.g., stocks and bonds) that are acquired with the intent of earning trading profits over the near term. These securities are measured at fair market value on the balance sheet. Dividend income, interest income, realized gains and losses, and unrealized gains and losses are all reported on the income statement.

Exhibit 2-2: Accounting for Gains and Losses on Marketable Securities

	Held-to-Maturity Securities	Available-for-Sale Securities	Trading Securities
Balance Sheet	Reported at cost or amortized cost.	Reported at fair value. Unrealized gains or losses due to changes in market value are reported in other comprehensive income.	Reported at fair value.
Items recognized on the income statement	Interest income. Realized gains and losses.	Dividend income. Interest income. Realized gains and losses.	Dividend income. Interest income. Realized gains and losses. Unrealized gains and losses due to changes in market value.

Example 2-1 will help us understand the accounting of gains and losses on marketable securities under each of the different classifications.

Example 2-1: Marketable Securities

Panorama Inc. invests $5,000,000 in a 10% semiannual coupon fixed-income security. After six months, Panorama receives the first coupon payment of $250,000. Additionally, interest rates have declined over the period, and the value of the securities has increased by $1,000,000. Illustrate how ownership of this bond will affect Panorama's financial statements under each of the three classifications of marketable securities.

Solution

	Trading $	Available for Sale $	Held to Maturity $
Balance Sheet			
Assets			
Cash	250,000	250,000	250,000
Cost of securities	5,000,000	5,000,000	5,000,000
Unrealized gains (losses)	1,000,000	1,000,000	
	6,250,000	**6,250,000**	**5,250,000**
Liabilities			
Equity			
Paid-in-capital	5,000,000	5,000,000	5,000,000
Retained earnings	→1,250,000	→ 250,000	→ 250,000
Other comprehensive income		1,000,000	
	6,250,000	**6,250,000**	**5,250,000**
Income Statement			
Interest income	250,000	→ 250,000	→ 250,000
Unrealized gains (losses)	1,000,000		
	→**1,250,000**	**250,000**	**250,000**

Non-Current Liabilities

Non-current liabilities include the long-term financial liabilities and deferred tax liabilities.

Long-term financial liabilities

These may either be measured at fair value or amortized cost. Exhibit 2-3 lists some financial liabilities along with their measurement basis.

Exhibit 2-3: Measurement Basis of Various Financial Liabilities

Measured at Fair Value	Measured at Cost or Amortized Cost
Financial Liabilities Derivatives. Financial liabilities held for trading. Non-derivative instruments with face value exposures hedged by derivatives.	**Financial Liabilities** All other liabilities (bonds payable and notes payable).

We shall study the accounting of financing liabilities in greater detail in Reading 31.

Deferred tax liabilities

These usually arise when a company's income tax expense exceeds taxes payable. The company pays less taxes based on its tax return than it should pay according to its financial statements. These unpaid taxes will be paid in future periods and are therefore a liability for the company. Deferred tax liabilities have current and non-current portions. These items will be discussed in more detail in Reading 30.

LESSON 3: EQUITY

LOS 25f: Describe the components of shareholders' equity. Vol 3, pp 241–244

5 ← **U.S. GAAP** and **IFRS** define equity as the owners' residual claim on the assets of an entity after deducting all liabilities. Various components of the owners' equity are described below.

The first five components represent equity attributable to owners of the parent company, while the sixth component represents equity attributable to non-controlling interests.

- **Capital contributed by owners (common stock or issued capital):** Owners contribute capital to an entity by investing in common shares. Common shares have par (stated) values that are required to be listed separately in owners' equity. Required disclosures also include the number of authorized, issued, and outstanding shares for each class of stock issued by the company. Authorized shares are the maximum number of shares that can be sold under the company's Articles of Incorporation. Issued shares are the total number of shares that have been sold to shareholders. Outstanding shares equal the number of shares that were issued less the number of shares repurchased (treasury stock).

5a ←
- **Preferred shares:** Preferred shareholders receive dividends (at a specified percentage of par value) and have priority over ordinary shareholders in the event of liquidation. Preferred shares may either be classified as equity or financial liabilities depending on their characteristics. For example, perpetual, non-redeemable preferred shares are classified as equity, while preferred shares with mandatory redemption are classified as financial liabilities.

5c ←
- **Treasury shares:** These are shares that have been bought back by the company. Share repurchases result in a reduction in owners' equity and in the number of shares outstanding. These shares do not receive dividends and do not have voting rights. While Treasury shares may be reissued at a later date, no gain or loss is recognized when they are reissued.

5b ←
- **Retained earnings:** These are the cumulative earnings (net income) of the firm over the years that have not been distributed to shareholders as dividends.

- **Accumulated other comprehensive income:** This represents cumulative other comprehensive income.
- **Non-controlling interest (minority interest):** This is the minority shareholders' pro rata share of the net assets of a subsidiary that is not wholly owned by the company.

Statement of Changes in Owners' Equity

This statement presents the effects of all transactions that increase or decrease a company's equity over the period. Under **IFRS**, the following information should be included 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.[4]

Under **U.S. GAAP**, companies are required to provide an analysis of changes in each component of stockholders'equity that is shown in the balance sheet.[5]

Exhibit 3-1 provides an example of a typical statement of changes in stockholders' equity.

Exhibit 3-1: Statement of Changes in Shareholders' Equity

Abel Company
Statement of Changes in Stockholders' Equity

	Common Stock $	Retained Earnings $	Accumulated Other Comprehensive Income $	Total $
Beginning balance	30,000	22,000	–3,000	**49,000**
Components of comprehensive income				
Net income		4,000		4,000
Unrealized loss on AFS Securities			–100	–100
Unrealized loss on cash flow hedge			–150	–150
Minimum pension liability adjustment			–75	–75
Translation adjustment			90	90
Comprehensive income				**3,765**
Issuance of common stock	3,000			**3,000**
Repurchases of common stock	–8,000			**–8,000**
Dividends		–2,500		**–2,500**
Ending balance	**25,000**	**23,500**	**–3,235**	**45,265**

4 - IAS 1, Presentation of Financial Statements, paragraph 80.
5 - FASB ASC 505–10–S99 [Equity-Overall-SEC materials] indicates that a company can present the analysis of changes in stockholders' equity in the notes or in a separate statement.

Uses and Analysis of Balance Sheets

Analysts can gain information regarding a company's liquidity, solvency, and the economic resources controlled by the company by examining its balance sheet.

- Liquidity refers to a company's ability to meet its short-term financial obligations.
- Solvency refers to a company's ability to meet its long-term financial obligations.

Two of the techniques that may be used to analyze a company's balance sheet are common-size analysis and ratio analysis.

LESSON 4: ANALYSIS OF THE BALANCE SHEET

LOS 25g: Convert balance sheets to common-size balance sheets and interpret common-size balance sheets. Vol 3, pp 246–254

LOS 25h: Calculate and interpret liquidity and solvency ratios. Vol 3, pg 254

Common-Size Balance Sheets

A vertical common-size balance sheet expresses each balance sheet item as a percentage of total assets. This allows an analyst to perform historical analysis (time-series analysis) and cross-sectional analysis across firms within the same industry.

Exhibit 4-1 illustrates the construction of a common-size balance sheet.

Exhibit 4-1: The Construction of a Common-Size Balance Sheet

	Company A ('000)	Company B ('000)
ASSETS		
Current assets		
Cash and cash equivalents	400	3,000
Short-term marketable securities	200	1,300
Accounts receivable	500	1,000
Inventory	100	300
Total current assets	1,200	5,600
Property, plant, and equipment, net	2,050	2,650
Intangible assets	500	–
Goodwill	–	1,000
Total assets	**3,750**	**9,250**
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities		
Accounts payable	800	600
Total current liabilities	800	600
Long-term bonds payable	10	8,500
Total liabilities	810	9,100
Total shareholders' equity	2,940	150
Total liabilities and shareholders' equity	**3,750**	**9,250**

Exhibit 4-1: (*continued*)

	Company A (%)	Company B (%)
ASSETS		
Current assets		
Cash and cash equivalents	10.7%	32.4%
Short-term marketable securities	5.3%	14.1%
Accounts receivable	13.3%	10.8%
Inventory	2.7%	3.2%
Total current assets	32.0%	60.5%
Property, plant, and equipment, net	54.7%	28.6%
Intangible assets	13.3%	0.0%
Goodwill	0.0%	10.8%
Total Assets	**100.0%**	**100.0%**
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities		
Accounts payable	21.3%	6.5%
Total current liabilities	21.3%	6.5%
Long-term bonds payable	0.3%	91.9%
Total liabilities	21.6%	98.4%
Total shareholders' equity	78.4%	1.6%
Total Liabilities and Shareholders' Equity	**100.0%**	**100.0%**

The following important points should be noted:

- Company A has 16% of its assets in cash and short-term marketable securities, while Company B has 46.5% of its assets in cash and short-term marketable securities. Therefore Company B is more liquid than Company A.
- Company A's current liabilities exceed its cash on hand by $400,000. This means that Company A might need to raise cash through some other means (e.g., by selling inventory or collecting accounts receivable) to meet its short-term liabilities. On the other hand, Company B has sufficient cash on hand ($3 million) to meet its short-term liabilities ($600,000).
- The presence of goodwill on Company B's balance sheet shows that the company has grown via acquisitions. In contrast, Company A seems to have pursued a strategy of internal growth as evidenced by the lack of goodwill on its balance sheet.
- Company B has financed 98.4% of its total assets with liabilities. In contrast, Company A finances only 21.6% of its assets with liabilities. Therefore, Company A is more solvent than Company B. If Company B sees significant volatility in cash flows, it may struggle to meet its debt-servicing obligations.

Balance Sheet Ratios

These are ratios that have balance sheet items in the numerator and the denominator. The two main categories of balance sheet ratios are liquidity ratios, which measure a company's ability to settle short-term obligations, and solvency ratios, which evaluate a company's ability to settle long-term obligations.

The *higher* a company's liquidity ratios, the *greater* the likelihood that the company will be able to meet its short-term obligations.

Table 4-1: Liquidity Ratios

	Numerator	Denominator
Current ratio	Current assets	Current liabilities
Quick ratio (acid test ratio)	Cash + marketable securities + receivables	Current liabilities
Cash ratio	Cash + marketable securities	Current liabilities

Higher solvency ratios, on the other hand, are *undesirable* and indicate that the company is highly leveraged and risky.

Table 4-2: Solvency Ratios

	Numerator	Denominator
Long-term debt-to-equity ratio	Total long-term debt	Total equity
Debt-to-equity ratio	Total debt	Total equity
Total debt ratio	Total debt	Total assets
Financial leverage ratio	Total assets	Total equity

Ratio analysis is covered in detail in Reading 27. We also discuss the uses and limitations of ratio analysis in that reading.

READING 26: UNDERSTANDING CASH FLOW STATEMENTS

LESSON 1: THE CASH FLOW STATEMENT: COMPONENTS AND FORMAT

LOS 26a: Compare cash flows from operating, investing, and financing activities and classify cash flow items as relating to one of those three categories given a description of the items. Vol 3, pp 267–268

Under both **IFRS** and **U.S. GAAP**, cash flows are classified into the following categories (see Table 1-1):

Cash flow from operating activities (CFO): These are inflows and outflows of cash related to a firm's day-to-day business activities.

Cash flow from investing activities (CFI): These are inflows and outflows of cash generated from the purchase and disposal of long-term investments. Long-term investments include plant, machinery, equipment, intangible assets, and nontrading debt and equity securities.

Note: Investments in securities that are considered highly liquid (cash equivalents) are not included in investing activities. Neither are securities held for trading. Cash flows associated with the purchase and sale of highly liquid cash equivalents and of securities for trading purposes are classified under cash flow from operating activities.

Cash flow from financing activities (CFF): These are cash inflows and outflows generated from issuance and repayment of capital (interest-bearing debt and equity).

Note: Indirect short-term borrowings from suppliers that are classified as accounts payable, and changes in receivables from customers are not considered financing activities; they are classified as operating activities.

Table 1-1: Cash Flow Classification Under U.S. GAAP

CFO	
Inflows	**Outflows**
Cash collected from customers.	Cash paid to employees.
Interest and dividends received.	Cash paid to suppliers.
Proceeds from sale of securities held for trading.	Cash paid for other expenses.
	Cash used to purchase trading securities.
	Interest paid.
	Taxes paid.
CFI	
Inflows	**Outflows**
Sale proceeds from fixed assets.	Purchase of fixed assets.
Sale proceeds from long-term investments.	Cash used to acquire LT investment securities.
CFF	
Inflows	**Outflows**
Proceeds from debt issuance.	Repayment of LT debt.
Proceeds from issuance of equity instruments.	Payments made to repurchase stock.
	Dividends payments.

*Note: There is a difference in how some cash flows are classified under **IFRS** and **U.S. GAAP**. These differences are discussed in LOS 26c and are very important from the examination perspective.*

LOS 26b: Describe how non-cash investing and financing activities are reported. Vol 3, pp 267–269

Noncash investing and financing activities are not reported on the cash flow statement because these transactions do not involve any receipt or payment of cash. Examples of noncash investing and financing activities include:

- Barter transactions where one nonmonetary asset is exchanged for another.
- Issuance of common stock for dividends or when holders of convertible bonds or convertible preferred stock convert their holdings into ordinary shares of the company.
- Acquisition of real estate with financing provided by the seller.

Remember that companies are required to disclose any significant noncash investing and financing activities in a separate note or a supplementary schedule to the cash flow statement.

LOS 26c: Contrast cash flow statements prepared under International Financial Reporting Standards (IFRS) and US generally accepted accounting principles (US GAAP). Vol 3, pp 269–270

Cash flow statements prepared under **IFRS** and **U.S. GAAP** differ along the following lines:

- Classification of cash flows: Certain cash flows are classified differently under **IFRS** and **U.S. GAAP**. **IFRS** offers more flexibility regarding the classification of certain cash flows.
- Presentation format: There is a difference in the presentation requirements for cash flow from operating activities.

Table 1-2 highlights important differences between **IFRS** and **U.S. GAAP** with respect to cash flow statements.

Table 1-2: Cash Flow Statements: Differences Between IFRS and U.S. GAAP[1]

Topic	IFRS	U.S. GAAP
Classification of cash flows:		
Interest received	Operating or investing	Operating
Interest paid	Operating or financing	Operating
Dividends received	Operating or investing	Operating
Dividends paid	Operating or financing	Financing
Bank overdrafts	Considered part of cash equivalents	Not considered part of cash and cash equivalents and classified as financing
Taxes paid	Generally operating, but a portion can be allocated to investing or financing if it can be specifically identified with these categories	Operating
Format of statement	Direct or indirect; direct is encouraged	Direct or indirect; direct is encouraged. A reconciliation of net income to cash flow from operating activities must be provided regardless of method used

LOS 26d: Distinguish between the direct and indirect methods of presenting cash from operating activities and describe arguments in favor of each method. Vol 3, pp 270–280

Under both **IFRS** and **U.S. GAAP**, there are two acceptable formats for presenting the cash flow statement—the direct method and the indirect method. These methods differ only in the *presentation* of the *CFO* section of the cash flow statement; calculated values for CFO are the same under both. Further, the presentation of CFF and CFI are exactly the same under both formats.

Direct method: Under the direct method, income statement items that are reported on an accrual basis are all converted to cash basis. All cash receipts are reported as inflows, while cash payments are reported as outflows. Exhibit 1-1 illustrates the presentation of CFO under the direct method.

1 - Sources: IAS 7; FASB ASC Topic 230; and "**IFRS** and **U.S. GAAP**: Similarities and Differences," PricewaterhouseCoopers (September 2009), available at www.pwc.com.

Exhibit 1-1	
Company XYZ	
Cash Flow from Operating Activities	
Cash collected from customers	$100,000
Cash paid to suppliers	(30,000)
Cash paid to employees	(12,000)
Cash paid for interest	(5,000)
Cash paid for taxes	(3,000)
Operating cash flow	$50,000

Presentation of CFO under the direct method has similarities with the presentation of the income statement. The income statement starts with total sales and deducts direct and indirect costs to arrive at net income. The direct method of calculating CFO starts with cash sales and deducts all cash payments for direct and indirect costs to arrive at cash flow from operations.

Indirect method: Under the indirect method, cash flow from operations is calculated by applying a series of adjustments to net income. These adjustments are made for noncash items (e.g., depreciation), nonoperating items (e.g., gains on sale of noncurrent assets), and changes in working capital accounts resulting from accrual accounting. Exhibit 1-2 illustrates the presentation of CFO under the indirect method.

Exhibit 1-2	
Company ABC	
Cash Flow from Operating Activities	
Net income	$120,000
Adjustments:	
Depreciation	10,000
Gain on sale of machinery	(1,000)
Increase in inventory	(2,000)
Decrease in accounts receivable	3,000
Decrease in accounts payable	(1,000)
Operating cash flow	$129,000

The Direct Method Versus Indirect Method

- The direct method explicitly lists the actual sources of operating cash inflows and outflows, whereas the indirect method only provides net results for these inflows and outflows. The argument is similar to the one for having an income statement that lists all revenue and expense items, as opposed to one that only provides the end result (i.e., net income). The information provided in the direct format is very useful in evaluating past performance and making projections of future cash flows.
- The indirect method provides a list of items that are responsible for the difference between net income and operating cash flow. These differences can then be used when estimating future operating cash flows. The indirect method facilitates forecasting of future cash flows since forecasts of future net income simply have to be adjusted for changes in balance sheet accounts that are caused by differences between accrual and cash accounting.

LESSON 2: THE CASH FLOW STATEMENT: LINKAGES AND PREPARATION

LOS 26e: Describe how the cash flow statement is linked to the income statement and the balance sheet. Vol 3, pp 280–294

Links Between the Cash Flow Statement and the Income Statement and Balance Sheet

The sum of cash flow from operating, investing, and financing activities equals the change in cash over the year.

CFO + CFI + CFF = Change in cash
Year-end cash balance – Beginning-of-year cash balance = Change in cash

Previous year's balance sheet
Current year's balance sheet

Operating income and expense items are recognized on the income statement on an accrual basis, which means that revenues and expenses are recognized when incurred, irrespective of when the associated cash flows occur. When the timing of an expense or revenue item differs from the associated cash flow, it is reflected in changes in balance sheet accounts. For example, if revenue is recognized prior to the receipt of cash, accounts receivable will increase.

Beginning accounts receivable + Revenues – Cash received from customers
= Ending accounts receivable

Previous year's balance sheet
Current year's income statement
Current year's cash flow statement

If an expense is incurred but not paid for, it is charged on the income statement and accounts payable increase.

Beginning accounts payable + Purchases – Cash paid to suppliers
= Ending accounts payable

Purchases = COGS + Ending inventory – Beginning inventory

These changes in current assets and current liabilities are then used to reconcile net income to operating cash flows under the indirect method.

CFI is calculated from changes in asset balances under the noncurrent assets section of the balance sheet.

CFF is calculated from changes in the equity and noncurrent debt sections of the balance sheet.

A company's retained earnings (on the balance sheet) represent cumulative net income that has not been distributed to shareholders. Every year, if the company makes a profit, some of it may be distributed to shareholders as dividends, while the rest is added to retained earnings.

Beginning retained earnings + Net income – Dividends declared
= Ending retained earnings.

Previous year's balance sheet
Current year's income statement
Notes to the financial statements

Understanding these links between the balance sheet, income statement, and statement of cash flows facilitates the evaluation of a company's financials and the detection of accounting irregularities.

LOS 26f: Describe the steps in the preparation of direct and indirect cash flow statements, including how cash flows can be computed using income statement and balance sheet data. Vol 3, pp 280–294

Sources Versus Uses of Cash

Let's consider an **asset** account, inventory.

- If inventory levels have *increased* from the previous year, *more* liquidity of the firm is tied up in inventories. This is a *use of cash* for the firm.
- If inventory levels have *decreased* over the year, *less* of the firm's cash is tied up in inventory. This is a *source of cash* for the firm.

Increases in current assets are *uses* of cash and *decreases* in current assets are *sources* of cash. Changes in asset balances and cash are *negatively* related.

Now let's move on to a **liability** account, accounts payable.

- If the total amount due to the firm's creditors has *increased* over the year, it implies that the firm has borrowed *more* money. This represents a *source of cash* to the firm.
- If the amount payable to creditors has *fallen* over the year, some creditors have been paid back, which is a *use of cash* for the firm.

Increases in current liabilities are *sources* of cash, while *decreases* in current liabilities are *uses* of cash. Changes in liability balances and cash are *positively* related.

The Direct Method

Step 1: Start with sales on the income statement. Go through each income statement account and adjust it for changes in related working capital accounts on the balance sheet. This serves to remove the effects of the timing difference between the recognition of revenues and expenses and the actual receipt or payment of cash.

Step 2: Determine whether changes in these working capital accounts indicate a source or use of cash. Make sure you put the right sign in front of the income statement item. Sales are an inflow item so they have a *positive* effect on cash flow, while COGS, wages, taxes, and interest expense are all outflow items that have *negative* effects on cash flow.

Step 3: Ignore all nonoperating items (e.g., gain/loss on sale of plant and equipment) and noncash charges (e.g., depreciation and amortization).

The Indirect Method

Step 1: Start with net income. Go up the income statement and remove the effects of all noncash expenses and gains from net income. For example, the *negative* effect of depreciation is removed from net income by *adding* depreciation back to net income. Cash-based net income will be higher than accrual-based net income by the amount of noncash expenses.

Step 2: Remove the effects of all nonoperating activities from net income. For example, the *positive* effect of a gain on sale of fixed assets on net income is removed by *subtracting* the gain from net income.

Step 3: Make adjustments for changes in all working capital accounts. Add all sources of cash (increases in current liabilities and declines in current assets) and subtract all uses of cash (decreases in current liabilities and increases in current assets).

The income statement and balance sheet for ABC Company are presented below. We will use these statements to construct the cash flow statement for the company using the direct and indirect methods.

LEGEND
Amounts used in calculating CFO are filled with color.
Amounts used in calculating CFI are written in color.
Amounts used in calculating CFF are boxed in color.

INCOME STATEMENT
Year ended Dec 31 2008

Revenues		23,000
Cost of goods sold		11,500
Gross profit		**11,500**
Salary and wages expense	4,000	
Depreciation expense	1,000	
Other operating expenses	3,500	
Total operating expenses		8,500
Operating profit		**3,000**
Other revenues (expenses)		
Gain on sale of equipment		200
Interest expense		(300)
Income before tax		**2,900**
Income tax expense		(1,400)
Net income		**1,500**

BALANCE SHEET
As at Dec 31 2008

	2008	2007	Net Change
Cash	2,300	1,150	1,150
Accounts receivable	1,000	950	50
Inventory	3,900	3,250	650
Prepaid expenses	100	250	(150)
Total current assets	**7,300**	**5,600**	**1,700**
Land	500	500	
Buildings	3,600	3,600	
Equipment	7,700	8,500	**(800)**
Less accumulated depreciation	(3,400)	(2,900)	500
Total long-term assets	**8,400**	**9,700**	**(1,300)**
Total assets	**15,700**	**15,300**	**400**
Accounts payable	3,500	3,300	200
Salary and wages payable	80	70	10
Interest payable	60	85	(25)
Income tax payable	60	45	15
Other accrued liabilities	1,200	1,100	100
Total current liabilities	**4,900**	**4,600**	**300**
Long-term debt	3,000	3,600	(600)
Common stock	4,550	4,850	(300)
Retained earnings	3,250	2,250	1,000
Total liabilities and equity	**15,700**	**15,300**	**400**

Note: The book value of the equipment sold was $300.

The Direct Method to Compute CFO

Accounts receivable is an asset. An increase in an asset is a use of cash.

Total sales adjusted for changes in related working capital accounts are known as cash collections from customers:

Cash collections = Sales – Increase in accounts receivable = +23,000 – 50 = **$22,950**

Sales result in an inflow of cash so we put a positive sign before the sales figure

Cost of goods sold adjusted for changes in related working capital items is known as cash payments to suppliers:

Cash paid to suppliers = –COGS – Increase in inventory + Increase in A/C payable
= –11,500 – 650 + 200 = **–$11,950**

Accounts payable is a liability. An increase in liability is a source of cash

Salaries and wages adjusted for related working capital accounts:

COGS, salaries, wages, taxes, interest expense, and other expenses are outflows of cash, so we put a negative sign before them.

Cash salaries and wages = –Wages and salaries + Increase in wages and salaries payable
= –4,000 + 10 = **–$3,990**

Depreciation is a noncash expense so it is ignored altogether.

Other operating expenses adjusted for changes in related working capital accounts:

Other operating expenses (cash) = –Other operating expenses (accrual basis) + Decrease in prepaid expenses + Increase in other accrued liabilities
= –3,500 + 150 + 100 = **–$3,250**

Gain on sale of equipment relates to the sale of a long-lived asset. The proceeds from this transaction are classified under investing activities and ignored in the calculation of CFO.

Interest expense adjusted for related working capital accounts:

Cash interest paid = –Interest expense – Decrease in interest payable
= –300 – 25 = **–$325**

Income tax expense adjusted for related working capital accounts:

Cash taxes paid = –Income tax expense + Increase in taxes payable
= –1,400 + 15 = **–$1,385**

Cash flow from operating activities under the direct method:

Cash received from customers	22,950
Cash paid to suppliers	–11,950
Cash paid to employees	–3,990
Cash paid for other operating expenses	–3,250
Cash paid for interest	–325
Cash paid for income taxes	–1,385
Net cash flow from operating activities	**$2,050**

Calculating CFO Using the Indirect Method:

On the income statement, the only noncash expense is depreciation expense of $1,000, and the only nonoperating income/expense is the gain on sale of equipment of $200. We start by removing the effects of these two items from net income:

Net income	1,500
Add: Depreciation expense	1,000
Less: Gain on sale of equipment	–200
	2,300

Next, we adjust the figure calculated above for changes in all working capital accounts, adding sources of cash and subtracting uses of cash.

	2,300
Increase in accounts receivable (use)	–50
Increase in inventory (use)	–650
Decrease in prepaid expenses (source)	150
Increase in accounts payable (source)	200
Increase in salaries and wages payable (source)	10
Decrease in interest payable (use)	–25
Increase in income tax payable (source)	15
Increase in accrued liabilities (source)	100
Net cash flow from operating activities	2,050

Notice that we obtain the same answer for CFO under both methods.

Exhibit 2-1: Adjustments to Net Income Using the Indirect Method

Additions	• Noncash items
	  ○ Depreciation expense of tangible assets
	  Amortisation expense of intangible assets
	  Depletion expense of natural resources
	  Amortisation of bond discount
	• Nonoperating losses
	  ○ Loss on sale or write-down of assets
	  ○ Loss on retirement of debt
	  ○ Loss on investments accounted for under the equity method
	• Increase in deferred income tax liability
	• Changes in working capital resulting from accruing higher amounts for expenses than the amounts of cash payments or lower amounts for revenues than the amounts of cash receipts
	  ○ Decrease in current operating assets (e.g., accounts receivable, inventory, and prepaid expenses)
	  ○ Increase in current operating liabilities (e.g., accounts payable and accrued expense liabilities)

(Exhibit continued on next page . . .)

Exhibit 2-1: *(continued)*

Subtractions	• Noncash items (e.g., amortisation of bond premium)
	• Nonoperating items
	  ○ Gain on sale of assets
	  ○ Gain on retirement of debt
	  ○ Income on investments accounted for under the equity method
	• Decrease in deferred income tax liability
	• Changes in working capital resulting from accruing lower amounts for expenses than for cash payments or higher amounts for revenues than for cash receipts
	  ○ Increase in current operating assets (e.g., accounts receivable, inventory, and prepaid expenses)
	  ○ Decrease in current operating liabilities (e.g., accounts payable and accrued expense liabilities)

Calculating CFI and CFF:

Calculating cash flow from investing activities requires us to consider the effects of transactions relating to long-lived assets and long-term investments on cash.

Before we get into calculating cash flow from investing activities, let's go through some fundamental accounting:

The value of **gross fixed assets** indicates the *historical cost* of the fixed assets owned by the company at the balance sheet date. If the figure for gross fixed assets changes from one year to the next, there has been an investing activity. If gross fixed assets increase, there has been a fixed asset purchase, and if gross fixed assets decrease, there has been a fixed asset disposal.

> Beginning gross fixed assets + Purchase price of new fixed assets – Historical cost of disposed fixed assets = Ending gross fixed assets.

Net fixed assets equal gross fixed assets minus accumulated depreciation.

Going back to our example, the gross amounts recorded for land and for buildings are the same across both years ($500 and $3,600, respectively). Therefore, we conclude that there have been no purchases or sales of land and buildings during the year.

However, the gross amount recorded for equipment has decreased by **$800**. This suggests that there has been a sale of equipment over the year. Our belief is confirmed by the fact that the company also recognized a gain of sale of equipment on its income statement.

Calculation of historical cost of sold equipment:

> Beginning gross fixed assets + Purchase price of new fixed assets – Historical cost of disposed fixed asset = Ending gross fixed assets.
>
> $8,500 + 0 – Historical cost of sold equipment = $7,700
>
> Historical cost of sold equipment = **$800**

The historical cost and accumulated depreciation of a long-lived asset is removed from the balance sheet once it is sold.

Calculation of accumulated depreciation on sold equipment:

Beginning accumulated depreciation + Current year's depreciation on all assets – Accumulated depreciation on sold asset = Ending accumulated depreciation.

$2,900 + $1,000 – Accumulated depreciation on sold equipment = **$3,400**

Accumulated depreciation on sold equipment = **$500**

Calculation of book value of sold equipment:

Book value of sold equipment = Historical cost – Accumulated depreciation

Book value of sold equipment = $800 – $500 = **$300**

Calculation of proceeds from sale of equipment:

Selling price – Book value = Gain/loss on sale of equipment

Selling price – $300 = $200

Cash proceeds from the sale of equipment equal $500. These proceeds are classified as inflows from investing activities.

Cash flow from investing activities:

Cash received from sale of equipment	500
Net cash flow from investing activities	**500**

Calculating CFF

Cash flow from financing activities is generated from the issuance and repayment of capital (long-term debt and equity) and distributions in the form of dividends to shareholders.

Long-term debt: An increase in long-term debt from one year to the next implies cash inflows from new borrowings. A decrease implies debt repayment and an outflow of cash.

Over the course of the year, ABC's long-term debt fell by $600. This implies that $600 was *used* by the company to retire debt.

Equity: An increase in common stock from one year to the next implies cash inflows from issuance of new shares. A decrease implies a share repurchase that results in a cash outflow.

ABC has repurchased $300 of common stock over the year, which *reduces* cash flow from financing activities.

Dividends: Cash dividends paid out can be computed from the following relationship:

Cash dividends paid out = Beginning dividends payable + Dividends declared – Ending dividends payable.

Dividends declared = Beginning retained earnings + Net income – Ending retained earnings.

Notice that ABC's retained earnings increased by only $1,000 even though income was $1,500. This implies that $500 of net income was appropriated to the company's shareholders as dividends. Even though our example never explicitly mentions dividends, we must ensure that net income reconciles with the change in retained earnings. ABC declared $500 of dividends and paid them out as well. If the company had not paid them, we would have seen an increase in dividends payable of $500 over the year.

Cash flow from financing activities	
Cash paid to retire long-term debt	−600
Repurchase of common stock	−300
Cash paid as dividends	−500
Net cash flow from financing activities	**−1,400**

Combining the effects of CFO, CFI, and CFF gives us change in cash and cash equivalents over the year:

Net cash provided by operating activities	2,050
Net cash provided by investing activities	500
Net cash used for financing activities	−1,400
Net change in cash over the year	**1,150**

The net increase in cash on the cash flow statement must equal the difference between the cash balances for 2007 and 2008. The company's cash balance in 2007 was $1,150, and in 2008 was $2,300. Notice that the difference between the two amounts ($1,150) is also the net increase in cash calculated on the cash flow statement.

LOS 26g: Convert cash flows from the indirect to the direct method.
Vol 3, pp 293–294

There is a three-step process for converting an indirect cash flow statement into a direct statement.

Step 1: Aggregate all revenues and all expenses

- Aggregate all operating and nonoperating revenues and gains such as sales and gains from sale of assets.
- Aggregate all operating and nonoperating expenses such as wages, depreciation, interest, and taxes.

Step 2: Remove the effect of noncash items from aggregated revenues and expenses and separate the adjusted revenues and expenses into their respective cash flow items.

- Deduct noncash revenue items such as gain on sales of assets from total revenue.
- Deduct noncash expense items such as depreciation from total expenses.
- Break down the adjusted expenses into cash outflow items, such as cost of goods sold, wages, interest expense, and tax expense.

Step 3: Convert the accrual-based items into cash-based amounts by adjusting for changes in corresponding working accounts.

An increase (decrease) in an asset account is a cash outflow (inflow). An increase (decrease) in a liability account is a cash inflow (outflow).

- Convert revenue into cash receipts from customers by adjusting for accounts receivable and unearned revenue.
- Convert COGS into cash payments to suppliers by adjusting for inventory and accounts payable.
- Convert wages, interest, and tax expenses into cash amounts by adjusting for wages payable, interest payable, taxes payable, and deferred taxes.

Conversion from Indirect to the Direct Method

Step 1

Aggregate all revenue and all expenses:

Total revenues (23,000 + 200)	$23,200
Total expenses (11,500 + 8,500 + 300 + 1,400)	$21,700
Net income	$1,500

Step 2

Remove all noncash items from aggregated revenues and expenses and break out remaining items into relevant cash flow items:

Total revenue less noncash item revenues: (23,200 – 200)	$23,000
Total expenses less noncash item expenses: (21,700 – 1,000)	$20,700
Cost of goods sold	$11,500
Salary and wage expenses	$4,000
Other operating expenses	$3,500
Interest expense	$300
Income tax expense	$1,400
Total	**$20,700**

Step 3

Convert accrual amounts to cash flow amounts by adjusting for working capital changes:

Cash received from customers	$22,950
Cash paid to suppliers	($11,950)
Cash paid to employees	($3,990)
Cash paid for other operating expenses	($3,250)
Cash paid for interest	($325)
Cash paid for income tax	($1,385)
CFO	**$2,050**

LESSON 3: CASH FLOW STATEMENT ANALYSIS

LOS 26h: Analyze and interpret both reported and common-size cash flow statements. Vol 3, pp 296–302

Cash flow analysis helps us evaluate how well a business is being run and to estimate its future cash flows. The analysis begins with understanding the sources and uses of cash and determining which components of the cash flow statement these sources and uses can be attributed to. The analysis also includes an evaluation of the determinants of each of the components.

Major Sources and Uses of Cash

Sources and uses of cash depend upon the company's stage of growth.

- Companies in the early stages of growth may have negative operating cash flows as cash is used by the company to finance inventory rollout and receivables. These negative operating cash flows are supported by financing inflows from issuance of debt or equity.
- Inflows of cash from financing activities are not sustainable. Over the long term, a company must generate positive cash flows from operating activities that exceed capital expenditures and payments to providers of debt and equity capital.
- Companies in the mature stage of growth usually have positive cash flows from operating activities. These inflows can be used for debt repayment and stock repurchases. They can also be used by the company to expand its scale of operations (investing activities).

Operating Cash Flow

- Changes in relevant asset and liability accounts should be used to determine whether business operations are a source or use of cash.
- Operating cash flow should be compared to net income. If high net income is not being translated into high operating cash flow, the company might be employing aggressive revenue recognition policies.
- Companies should ideally have operating cash flows that exceed net income.
- The variability of operating cash flow and net income is an important determinant of the overall risk inherent in the company.

Investing Cash Flow

- Changes in long-term asset and investment accounts are used to determine sources and uses of investing cash flows.
- Increasing outflows may imply capital expenditures. Analysts should then evaluate how the company plans to finance these investments (i.e., with excess operating cash flow or by undertaking financing activities).

Financing Cash Flow

- Changes in interest-bearing debt and equity are used to determine sources and uses of financing cash flow.
- If debt issuance contributes significantly to financing cash flow, the repayment schedule must be considered.
- Increasing use of cash to repay debt, repurchase stock, or make dividend payments might indicate a lack of lucrative investment opportunities for the company.

Common-size analysis: There are two ways to construct common-size cash flow statements:

1. Express each item as a percentage of net revenues. This is the most commonly used format.
2. Express each cash inflow item as a percentage of total cash inflows, and each cash outflow item as a percentage of total cash outflows.

Common-size cash flow statements make it easier to identify trends in cash flows, and help in forecasting future cash flows as individual items are expressed as a percentage of revenues.

Exhibit 3-1 contains Rhodson Company's common-size cash flow statement:

Exhibit 3-1: Common-Size Cash Flow Statement

Rhodson Company
Cash Flow Statement
Percent of Revenues

	2008 $	2008 %	2007 $	2007 %
Net income	55,000	18.33	45,000	18.00
Depreciation	10,000	3.33	10,000	4.00
Increase in accounts receivable	–5,000	–1.67	–4,000	–1.60
Increase in inventory	–3,000	–1.00	–2,000	–0.80
Decrease in prepaid expenses	1,500	0.50	3,000	1.20
Increase in accrued expenses	2,000	0.67	2,500	1.00
Operating cash flow	**60,500**	**20.17**	**54,500**	**21.80**
Cash from sale of fixed assets	12,000	4.00	5,000	2.00
Purchase of plant and equipment	–10,000	–3.33	0	0.00
Investing cash flow	**2,000**	**0.67**	**5,000**	**2.00**
Sale of bonds	7,500	2.50	5,000	2.00
Cash dividends	–2,000	–0.67	–2,000	–0.80
Financing cash flow	**5,500**	**1.83**	**3,000**	**1.20**
Total cash flows	**68,000**	**22.67**	**62,500**	**25.00**

Net revenue in 2008 = $300,000
Net revenue in 2007 = $250,000

Brief Analysis

- CFO has *fallen* as a percentage of revenues in 2008.
- CFI is *lower* in 2008 due to the purchase of plant and equipment.
- CFF has contributed more significantly to total cash flow in 2008. The company has issued more debt.
- Total cash flow has decreased as a percentage of sales.

LOS 26i: Calculate and interpret free cash flow to the firm, free cash flow to equity, and performance and coverage cash flow ratios. Vol 3, pp 302–305

Free cash flow is the excess of a company's operating cash flows over capital expenditure undertaken during the year. Free cash flow to the firm and free cash flow to equity are more precise measures of free cash flow as they identify specifically whom the cash is available to.

Free cash flow to the firm (FCFF) is cash that is available to equity and debt holders after the company has met all its operating expenses and satisfied its capital expenditure and working capital requirements.

$$FCFF = NI + NCC + [Int \times (1 - \text{tax rate})] - FCInv - WCInv$$

where:
NI = net income
NCC = noncash charges
FCInv = fixed capital investment (net capital expenditure)
WCInv = working capital investment
Int = Interest expense

Notice that net income that has been adjusted for noncash charges and changes in working capital accounts equals the company's operating cash flows. Therefore:

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

Example 3-1: Calculating FCFF

Continuing from our previous example of ABC Company and assuming a tax rate of 40%, calculate FCFF.

Solution

Recall the following information regarding ABC Company:

- CFO = $2,050
- Interest expense = $300
- Fixed capital investment = –$500 (the company sold noncurrent assets for $500)

Therefore:

$$FCFF = CFO + \text{Interest expense } (1 - \text{Tax rate}) - FCInv$$

$$FCFF = 2{,}050 + 300\ (1 - 0.4) - (-500) = \$2{,}730$$

*Note: Under **IFRS**, if the company has classified interest and dividends received as investing activities, they should be added to CFO to determine FCFF. If dividends paid were deducted from CFO, they should be added back to CFO to calculate FCFF. Dividends must not be adjusted for taxes as dividends paid are not tax-deductible.*

Free cash flow to equity (FCFE) refers to cash that is available only to common shareholders.

$$\text{FCFE} = \text{CFO} - \text{FCInv} + \text{Net borrowing}$$

Example 3-2: Calculating FCFE

Continuing from our previous example of ABC Company and assuming a tax rate of 40%, calculate FCFE.

Solution

Recall the following information regarding ABC Company:

- CFO = $2,050
- Fixed capital investment = –$500 (the company sold noncurrent assets for $500)
- Net borrowing = –$600 (the company repaid $600 worth of debt)

Therefore:

$$\text{FCFE} = \text{CFO} - \text{FCInv} + \text{Net borrowing}$$

$$\text{FCFE} = 2{,}050 - (-500) + (-600) = \$1{,}950$$

A positive FCFE suggests that the company has operating cash flows available after payments have been made for capital expenditure and debt repayment. This excess belongs to common shareholders.

Note: Under **IFRS**, if the company has deducted dividends paid in calculating CFO, dividends must be added back to calculated FCFE.

Cash Flow Ratios

The information available on cash flow statements can be used to compute cash flow ratios. These ratios, like income statement and balance sheet ratios, can be used for comparing the company's performance over time (time-series analysis) or against other companies within the same industry (cross-sectional analysis). Cash flow ratios can be categorized as performance (profitability) ratios and coverage (solvency) ratios. See Table 3-1.

Table 3-1: Cash Flow Ratios[2]

Performance Ratio	Formula	What it Measures
Cash flow to revenue	CFO / Net revenue	Cash generated per unit of revenue.
Cash return on assets	CFO / Average total assets	Cash generated from all resources, equity, and debt.
Cash return on equity	CFO / Average shareholders' equity	Cash generated from owner resources.
Cash to income	CFO / Operating income	The ability of business operations to generate cash.
Cash flow per share	(CFO – Preferred dividends) / Number of common shares outstanding	Operating cash flow available for each shareholder.
Coverage Ratios	**Formula**	**What it Measures**
Debt coverage	CFO / Total debt	Leverage and financial risk.
Interest coverage	(CFO + Interest paid + Taxes paid) / Interest paid	Ability to satisfy interest obligations.
Reinvestment	CFO / Cash paid for long-term assets	Ability to buy long-term assets with operating cash flows.
Debt payment	CFO / Cash paid for long-term debt repayment	Ability to meet debt obligations with operating cash flows.
Dividend payment	CFO / Dividends paid	Ability to make dividend payments with operating cash flows.
Investing and financing	CFO / Cash outflows for investing and financing activities	Ability to buy long-term assets, settle debt obligations and make dividend payments from operating cash flows.

2 - Exhibit 15, Volume 3, CFA Program Curriculum 2017

READING 27: FINANCIAL ANALYSIS TECHNIQUES

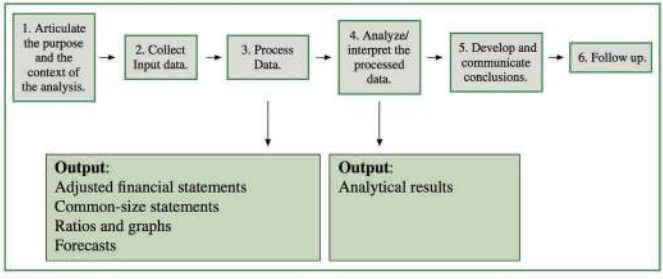
LESSON 1: ANALYTICAL TOOLS AND TECHNIQUES

Financial statement analysis applies analytical tools to financial statements and related data to make investment decisions. It involves transforming accounting data into information useful for analysis, forecasting, and decision-making.

Financial statement analysis reduces reliance on hunches and guesses in decision-making. It does not lower the need for expert judgment, but provides an effective and systematic basis for making investment decisions.

It is important for an analyst to understand the financial analysis process. A general framework for financial statement analysis is presented in Exhibit 1-1.

Exhibit 1-1: Framework for Financial Statement Analysis



The primary focus of this reading is on Steps 3 and 4, processing and analyzing data.

LOS 27a: Describe the tools and techniques used in financial analysis, including their uses and limitations. Vol 3, pp 322–338

A **ratio** expresses a mathematical relationship between two quantities in terms of a percentage or a proportion. Ratios may be computed using data directly from companies' financial statements or from other available databases. Computation of a ratio is a simple arithmetic operation but its interpretation may not be that simple. To be meaningful, a ratio must refer to an economically important relation.

The value of ratio analysis lies in its ability to assist an equity or credit analyst in the evaluation of a company's past performance, assessment of its current financial position, and forecasting its future cash flows and profitability trends.

Uses of Ratio Analysis

Financial ratios provide insights into:

- Microeconomic relationships within the company that are used by analysts to project the company's earnings and cash flows.
- A company's financial flexibility.
- Management's ability.
- Changes in the company and industry over time.
- How the company compares to peer companies and the industry overall.

Common-Size Analysis

Common-size statements allow analysts to compare a company's performance with that of other firms and to evaluate its performance over time.

Common-Size Income Statements

A common-size income statement expresses all income statement items as a percentage of revenues. Common-size income statements are extremely useful in identifying trends in costs and profit margins. Further, certain financial ratios are explicitly stated on these statements (e.g., the gross profit margin and the net profit margin).

$$\text{Vertical common-size income statement percentage} = \frac{\text{Income statement account}}{\text{Revenue}} \times 100$$

Common-Size Balance Sheets

Common-size balance sheets express each item as a percentage of total assets. Common-size balance sheets are prepared to highlight changes in the mix of assets, liabilities, and equity.

$$\text{Vertical common-size balance sheet percentage} = \frac{\text{Balance sheet account}}{\text{Total assets}} \times 100$$

Exhibit 1-2 contains the income statement and balance sheet of XYZ Company in terms of dollar amounts and common-size percentages.

Exhibit 1-2: Vertical Common-Size Income Statement and Balance Sheet for XYZ

Income Statement

	2006 $	2006 %	2007 $	2007 %	
Sales	400,000	100.0	475,000	100.0	
Cost of goods sold (COGS)	320,000	80.0	377,625	79.5	
Gross profit	80,000	20.0	97,375	20.5	
Selling, general, & administrative expenses (SG&A)	28,000	7.0	30,875	6.5	2
Depreciation	20,000	5.0	7,125	1.5	3
Interest expense	20,000	5.0	33,250	7.0	4
	68,000		71,250		
Profit before taxes	12,000	3.0	26,125	5.5	
Income taxes (30% of pretax profits)	3,600	0.9	7,838	1.7	
Net income	8,400	2.1	18,288	3.9	1

Exhibit 1-2: (continued)

Balance Sheet

	2006 $	2006 %	2007 $	2007 %	
Assets					
Current Assets					
Cash	21,000	8	10,000	3	6
Short-term investments	15,000	5	12,000	4	
Accounts receivable	27,000	10	34,000	11	
Inventories	44,000	16	33,000	11	
Prepaid expenses	2,500	1	3,500	1	
Other current assets	19,000	7	24,000	8	
Total Current Assets	128,500	46	116,500	39	8
Fixed Assets					
Net property and equipment	110,000	40	110,000	37	
Long-term investments	10,000	4	4,000	1	
Intangible assets	16,000	6	56,000	19	7
Other long-term assets	12,000	4	12,000	4	
Total Fixed Assets	148,000	54	182,000	61	
Total Assets	**276,500**	**100**	**298,500**	**100**	
Liabilities					
Current Liabilities					
Accounts payable	27,000	10	20,000	7	
Accrued expenses	12,700	5	17,000	6	
Total Current Liabilities	39,700	14	37,000	12	
Long Term Debt	21,800	8	21,800	7	5
Shareholders Equity					
Common stock	120,000	43	135,000	45	
Accumulated other comprehensive income	500	0	–300	0	
Retained earnings*	95,000	34	100,000	34	
Other equity	–500	0	5,000	2	
Total Shareholders' Equity	215,000	78	239,700	80	
Total Liabilities and Shareholders' Equity	**276,500**	**100**	**298,500**	**100**	

*The company paid out $13,288 in dividends for the year 2007.

Analysis of the common-size income statement for ABC Company indicates that:

1. The profitability of the company has improved.
2. Decrease in COGS and SG&A as a percentage of sales only explain a small proportion of the improvement in profit margins.
3. Reduction in depreciation has contributed significantly to the improvement in profitability.
4. The drastic reduction in depreciation has masked the effect of a significant increase in interest expense over the period.
5. Interest expense has risen despite the fact that the long-term liabilities of the firm have remained constant. This tells us that the company has probably issued floating-rate bonds and is now paying a higher effective interest rate on its loans.
6. Although the income statement shows improved profitability, the firm might run into some cash flow issues going forward. Higher interest expense has drained cash from the firm. On the income statement, the effect of higher interest expense is offset by significantly lower depreciation. While it helps reported profits, lower depreciation does not bring in any cash.
7. The company's intangible assets now form a more significant proportion of its total assets. These must be scrutinized in detail.
8. More of the company's assets are now concentrated in long-term assets. Current assets' share of total assets has declined significantly.

While common-size analysis does not tell us the entire story behind the company's financials, it does lead us in the right direction and prompt us to ask relevant questions in assessing the company's operating performance over the period, and evaluating its prospects going forward.

Cross-Sectional Analysis

Cross-sectional analysis, also known as relative analysis, compares a specific metric for one company with the same metric for another company or group of companies over a period of time. This allows comparisons even though the companies might be of significantly different sizes and/or operate in different countries. Consider two companies from the same industry. If one of them has accounts receivable representing 20% of its total assets, while the other has 40% of its assets in the form of accounts receivable, we might conclude that the latter has a greater proportion of credit sales or that it uses aggressive accounting policies for revenue recognition.

Trend Analysis

Trend analysis provides important information about a company's historical performance. It can also offer assistance in forecasting the financial performance of a company. When looking for trends over time, horizontal common-size financial statements are often prepared. Dollar values of accounts are divided by their base-year values to determine their common-size values. Horizontal common-size statements can also help identify structural changes in the business.

Example 1-1: Relationships Among Financial Statements

Consider the following information:

	2011 ($)	2010 ($)	2009 ($)
Revenue	7,604,186	6,336,822	5,510,280
Net income	1,260,477	1,008,381	826,542
Operating cash flow	942,258	1,046,953	1,102,056
Total assets	10,637,596	7,879,700	6,061,308

Based on the given information, comment on the financial performance of the company.

Solution

We can use horizontal common-size analysis to evaluate the financial performance of the company. The year-on-year percentage changes for various financial variables are calculated below:

	2011	2010
Revenue	20.00%	15.00%
Net income	25.00%	22.00%
Operating cash flow	−10.00%	−5.00%
Total assets	35.00%	30.00%

The percentage growth figures allow us to draw the following conclusions:

- *Net income is growing faster than revenue.* This indicates increasing profitability. However, the analyst should dig deeper and identify the source of this higher net income (i.e., whether it results from continuing operations, or from nonoperating, nonrecurring items).
- *The company's operating cash flow is decreasing.* This is a cause for concern and requires further investigation. The fact that operating cash flow is declining in spite of the positive growth in revenues may indicate a problem with the company's earnings quality (e.g., aggressive recognition of revenue).
- *Total assets are growing faster than revenue.* This suggests that the company's efficiency levels are declining. The analyst should look to identify the reason for the high growth rate in assets and also examine the composition of the increase in assets.

Uses of Charts in Financial Analysis

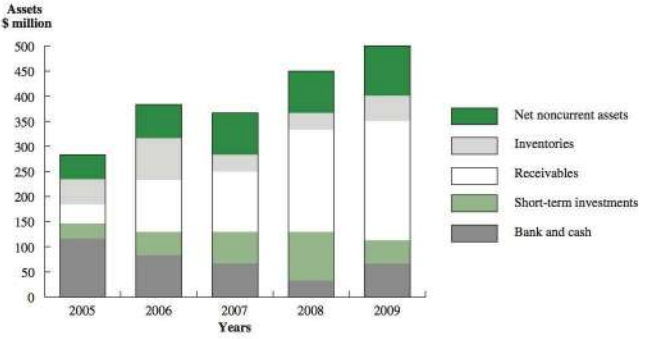
Graphs facilitate comparisons of firm performance and financial structure over time, highlighting changes in significant aspects of business operations. They may also be used to communicate important conclusions of financial analysis.

Pie charts are most useful in illustrating the composition of a total value. For example, a pie chart should be used when presenting the components of total expenses for the year (COGS, SG&A, depreciation).

Line graphs help identify trends and detect changes in direction or magnitude. For example, a line graph that illustrates a marked increase in accounts receivable while cash balances are falling indicates that the firm might have problems managing its working capital going forward.

A stacked common graph illustrates the changes in various items over the period in graphical form. Figure 1-1 illustrates the asset mix of Bilan Company. It is quite clear from this graph that while total assets are generally increasing over the 5-year period, an increasing proportion of the company's assets are composed of receivables.

Figure 1-1: Stacked Column Graph



Regression analysis can help identify relationships between variables (e.g., between sales and inventory) over time and assist analysts in making forecasts (e.g., the relationship between GDP and sales can be used to make revenue forecasts).

Limitations of Ratio Analysis

- Companies may have divisions that operate in different industries. This can make it difficult to find relevant industry ratios to use for comparisons.
- One set of ratios may suggest that there is a problem, but another set may indicate that the potential problem is only short term.
- There are no set ranges within which particular ratios for a company must lie. An analyst must use her own judgment to evaluate the implications of a given value for a ratio. This usually involves examining the operations of a company, the external, industry and economic scenario before interpreting results and drawing conclusions.

- Firms enjoy significant latitude in the choice of accounting methods that are acceptable given the jurisdiction in which they operate. For example, under **U.S. GAAP**, companies can:
  - Use the FIFO, AVCO, or LIFO inventory cost flow assumption.
  - Choose from a variety of depreciation methods.
- Comparing ratios of firms across international borders is even more difficult in that most countries use **IFRS**. Despite the growing convergence between **IFRS** and **U.S. GAAP**, significant differences remain, which make it very difficult for analysts to compare ratios of firms that use different accounting standards.

It is also important to understand that the exact definitions of certain ratios vary across the analyst community. For example, in measuring leverage, some analysts use total liabilities, while others using only interest-bearing debt.

LESSON 2: COMMON RATIOS USED IN FINANCIAL ANALYSIS

LOS 27b: Classify, calculate, and interpret activity, liquidity, solvency, profitability, and valuation ratios. Vol 3, pp 338–359

Research has shown that in addition to being useful in evaluating the past performance of a company, ratios can be useful in predicting future earnings and equity returns.

Ratios are typically classified into the following categories:

Activity ratios measure how productive a company is in using its assets and how efficiently it performs its everyday operations.

Liquidity ratios measure the company's ability to meet its short-term cash requirements.

Solvency ratios measure a company's ability to meet long-term debt obligations.

Profitability ratios measure a company's ability to generate an adequate return on invested capital.

Valuation ratios measure the quantity of an asset or flow (e.g., earnings) associated with ownership of a specific claim (e.g., common stock).

These categories are not mutually exclusive. Some ratios are useful in evaluating multiple aspects of the business. Certain profitability ratios, for example, also reflect the operating efficiency of the business.

Interpretation and Context

The financial ratios of a company are compared to those of its major competitors in cross-sectional analysis. A company's ratios for a given year can also be compared to its own prior period ratios to identify trends. The goal of ratio analysis is to understand the causes of material differences in ratios of a company compared to its peers. An analyst should evaluate financial ratios based on the following:

- Actual ratios should be compared to the company's stated objectives. This helps in determining whether the company's operations are moving in line with its strategy.

- A company's ratios should be compared with those of others in the industry. When comparing ratios between firms from the same industry, analysts must be careful because:
  - Not all ratios are important to every industry.
  - Companies may have several lines of business, which can cause aggregate financial ratios to be distorted. In such a situation, analysts should evaluate ratios for each segment of the business in relation to relevant industry averages.
  - Companies might be using different accounting standards.
  - Companies could be at different stages of growth or may have different strategies. This can result in different values for various ratios for firms in the same industry.
- Ratios should be studied in light of the current phase of the business cycle.

Exhibit 2-1 contains the financial statements of ABC Company, which we will use to calculate and interpret various financial ratios.

Exhibit 2-1: Financial Statements for ABC Company

Income Statement

	2006 $	2007 $
Total revenue	400,000	500,000
Cost of goods sold (COGS)	(320,000)	(380,000)
Gross profit	80,000	120,000
General expenses	(28,000)	(29,000)
Depreciation	(8,000)	(12,000)
Operating income	44,000	79,000
Interest income	3,000	2,000
Interest expense	(400)	(1,800)
Other losses	(1800)	(4,200)
Income before income taxes	44,800	75,000
Provision for income taxes	(16,000)	(21,000)
Net income	**28,800**	**54,000**

Exhibit 2-1: (continued)

Balance Sheet

	2006 $	2007 $
Assets		
Current Assets		
Cash	21,000	32,000
Short-term investments	15,000	22,000
Accounts receivable	27,000	34,000
Inventories	16,000	34,000
Prepaid expenses	21,500	27,500
Total Current Assets	**100,500**	**149,500**
Fixed Assets		
Property and equipment	110,000	180,000
Long-term investments	13,000	4,000
Intangible assets	16,000	56,000
Other long-term assets	12,000	14,000
Total Fixed Assets	**151,000**	**254,000**
Total Assets	**251,500**	**403,500**
Liabilities		
Current Liabilities		
Accounts payable	27,000	20,000
Accrued expenses	12,700	17,000
Total Current Liabilities	**39,700**	**37,000**
Long-Term Debt	**21,800**	**83,000**
Shareholders' Equity		
Common stock	120,000	180,000
Accumulated other comprehensive income	0	−1,500
Retained earnings	70,000	100,000
General reserves	0	5,000
Total Shareholders' Equity	**190,000**	**283,500**
Total Liabilities and Shareholders' Equity	**251,500**	**403,500**

Activity Ratios

Activity ratios are also known as **asset utilization ratios** or **operating efficiency** ratios. They measure how well a company manages its operations and particularly how efficiently it manages its assets—working capital and long-lived assets. See Table 2-1.

$$\textbf{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

Table 2-1: Definitions of Commonly Used Activity Ratios[1]

The ratios calculated here are for 2007.

Activity Ratios	Numerator	Denominator
Inventory turnover	Cost of goods sold	Average inventory
Days of inventory on hand (DOH)	Number of days in period	Inventory turnover
Receivables turnover	Revenue	Average receivables
Days of sales outstanding (DSO)	Number of days in period	Receivables turnover
Payables turnover	Purchases	Average trade payables
Number of days of payables	Number of days in period	Payables turnover
Working capital turnover	Revenue	Average working capital
Fixed asset turnover	Revenue	Average net fixed assets
Total asset turnover	Revenue	Average total assets

This ratio is used to evaluate the effectiveness of a company's inventory management. Generally, this ratio is benchmarked against the industry average.

- A high inventory turnover ratio relative to industry norms might indicate highly effective management. Alternatively, it could also indicate that the company does not hold adequate inventory levels, which can hurt sales incase shortages arise. A simple comparison of the company's sales growth to the industry's growth in sales can indicate whether sales are suffering because too little stock is available for sale at any given point in time.
- A low inventory turnover relative to the rest of the industry can be an indicator of slow moving or obsolete inventory. It suggests that the company has too many resources tied up in inventory.

$$\textbf{Inventory turnover of ABC Company} = \frac{380{,}000}{(16{,}000 + 34{,}000)/2} = \textbf{15.2}$$

$$\textbf{Days of inventory on hand (DOH)} = \frac{365}{\text{Inventory turnover}}$$

1 - Exhibit 10, Volume 3, CFA Program Curriculum 2017

This ratio is *inversely* related to inventory turnover.

- The *higher* the inventory turnover ratio, the *shorter* the length of the period that inventory is held on average.

Days of Inventory on hand of ABC Company $= \frac{365}{15.2} =$ **24.0 days**

$$\textbf{Receivables turnover} = \frac{\text{Revenue}}{\text{Average receivables}}$$

- A high receivables turnover ratio might indicate that the company's credit collection procedures are highly efficient. However, a high ratio can also result from overly stringent credit or collection policies, which can hurt sales if competitors offer more lenient credit terms to customers.
- A low ratio relative to industry averages will raise questions regarding the efficiency of a company's credit or collection procedures.
- As with the inventory turnover ratio, a simple comparison of the company's sales growth with industry sales growth can help determine whether the reason behind a high receivables turnover ratio is strict credit terms or efficient receivables management.
- Analysts can also compare current estimates of the company's bad debts and credit losses with its own past estimates and peer companies' estimates to assess whether low receivables turnover is the result of credit management issues.

Receivables turnover of ABC Company $= \frac{500{,}000}{(27{,}000 + 34{,}000)/2} =$ **16.4**

$$\textbf{Days of sales outstanding (DSO)} = \frac{365}{\text{Receivables turnover}}$$

- The receivables turnover ratio and days of sales outstanding are *inversely* related.
- The *higher* the receivables turnover ratio, the *lower* the DSO.

DSO of ABC Company $= \frac{365}{16.4} =$ **22.3 days**

$$\textbf{Payables turnover} = \frac{\text{Purchases}}{\text{Average trade payables}}$$

The amount for purchases over the year is usually not explicitly stated on the income statement; it is typically only disclosed in the footnotes to the financial statements. You might be expected to calculate purchases using the following formula:

$$\text{Purchases} = \text{Ending inventory} + \text{COGS} - \text{Opening inventory}$$

Payables turnover measures how many times a year the company theoretically pays off all its creditors.

- A high ratio can indicate that the company is not making full use of available credit facilities and repaying creditors too soon. However, a high ratio could also result from a company making payments early to avail early payment discounts.
- A low ratio could indicate that a company might be having trouble making payments on time. However, a low ratio can also result from a company successfully exploiting lenient supplier terms. If the company has sufficient cash and short-term investments, the low payables turnover ratio is probably not an indication of a liquidity crisis. It is probably a result of lenient supplier credit and collection policies.

$$\textbf{Payables turnover of ABC Company} = \frac{34{,}000 + 380{,}000 - 16{,}000}{(27{,}000 + 20{,}000)/2} = \textbf{16.9}$$

$$\textbf{Number of days of payables} = \frac{365}{\text{Payables turnover}}$$

- The number of days of payables is *inversely* related to the payables turnover ratio.
- The *higher* the payables turnover, the *lower* the number of days of payables.

$$\textbf{Number of days of payables of ABC Company} = \frac{365}{16.9} = \textbf{21.6 days}$$

$$\textbf{Working capital turnover} = \frac{\text{Revenue}}{\text{Average working capital}}$$

Working capital turnover indicates how efficiently the company generates revenue from its working capital. Working capital equals current assets minus current liabilities

- A higher working capital turnover ratio indicates higher operating efficiency.

For 2007, ABC's opening working capital equals $60,800 ($100,500 – $39,700), and ending working capital equals $112,500 ($149,500 – $37,000). Therefore, average working capital for 2007 equals $86,650.

$$\textbf{Working capital turnover of ABC Company} = \frac{\$500{,}000}{\$86{,}650} = \textbf{5.77}$$

$$\textbf{Fixed asset turnover} = \frac{\text{Revenue}}{\text{Average fixed assets}}$$

This ratio measures how efficiently a company generates revenues from its investments in long-lived assets.

- A higher ratio indicates more efficient use of fixed assets in generating revenue.
- A low ratio could be an indicator of operating inefficiency. However, a low fixed asset turnover can also be the result of a capital intensive business environment. Companies that have recently entered a new business that is not fully operational also report low fixed asset turnover ratios.
- The fixed asset turnover ratio will be lower for a firm whose assets are newer than for a firm whose assets are relatively older. The older-asset firm will have depreciated its assets for a longer period so the book value of its fixed assets will be lower.

$$\textbf{Fixed asset turnover of ABC Company} = \frac{500{,}000}{(151{,}000 + 254{,}000)/2} = \mathbf{2.47}$$

$$\textbf{Total asset turnover} = \frac{\text{Revenue}}{\text{Average total assets}}$$

Total asset turnover measures the company's overall ability to generate revenues with a given level of assets.

- A high ratio indicates efficiency, while a low ratio can be an indicator of inefficiency or the level of capital intensity of the business.
- This ratio also identifies strategic decisions by management. For example, a business that uses highly capital-intensive techniques of production will have a lower total asset turnover compared to a business that uses labor-intensive production methods.

$$\textbf{Total asset turnover of ABC Company} = \frac{500{,}000}{(251{,}500 + 403{,}500)/2} = \mathbf{1.53}$$

Liquidity Ratios

Analysis of a company's liquidity ratios aims to evaluate a company's ability to meet its short-term obligations. Liquidity measures how quickly a company can convert its assets into cash at prices that are close to their fair values. See Table 2-2.

$$\textbf{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

- A higher ratio is desirable because it indicates a higher level of liquidity.
- A current ratio of 1.0 indicates that the book value of the company's current assets equals the book value of its current liabilities.
- A low ratio indicates less liquidity and implies a greater reliance on operating cash flow and outside financing to meet short-term obligations.
- The current ratio assumes that inventory and accounts receivable can readily be converted into cash at close to their fair values.

$$\textbf{Current ratio of ABC Company} = \frac{149{,}500}{37{,}000} = \textbf{4.04}$$

$$\textbf{Quick ratio} = \frac{\text{Cash} + \text{Short-term marketable investments} + \text{Receivables}}{\text{Current liabilities}}$$

Table 2-2: Definitions of Commonly Used Liquidity Ratios[2]

Liquidity Ratios	Numerator	Denominator
Current ratio	Current assets	Current liabilities
Quick ratio	Cash + Short-term marketable investments + Receivables	Current liabilities
Cash ratio	Cash + Short-term marketable investments	Current liabilities
Defensive interval ratio	Cash + Short-term marketable investments + Receivables	Daily cash expenditures
Additional Liquidity Measure		
Cash conversion cycle (net operating cycle)	DOH + DSO – Number of days of payables	

The quick ratio recognizes that certain current assets (such as prepaid expenses) represent costs that have been paid in advance in the current year and cannot usually be converted into cash. This ratio also considers the fact that inventory cannot be immediately liquidated at its fair value. Therefore, these current assets are excluded from the numerator in the calculation of the quick ratio. When inventory is illiquid, this ratio is a better indicator of liquidity than current ratio.

- A high quick ratio indicates greater liquidity.

$$\textbf{Quick ratio of ABC Company} = \frac{32{,}000 + 22{,}000 + 34{,}000}{37{,}000} = \textbf{2.38}$$

$$\textbf{Cash ratio} = \frac{\text{Cash} + \text{Short-term marketable investments}}{\text{Current liabilities}}$$

The cash ratio is a very reliable measure of an entity's liquidity position in the event of an unforeseen crisis. This is because it only includes cash and highly liquid short-term investments in the numerator.

$$\textbf{Cash ratio of ABC Company} = \frac{54{,}000}{37{,}000} = \textbf{1.46}$$

$$\textbf{Defensive interval ratio} = \frac{\text{Cash} + \text{Short-term marketable investments} + \text{Receivables}}{\text{Daily cash expenditures}}$$

2 - Exhibit 12, Volume 3, CFA Program Curriculum 2017

This ratio measures how long the company can continue to meet its daily expense requirements from its existing liquid assets without obtaining any additional financing. A defensive interval of 40 indicates that the company can pay its operating expenses for 40 days by liquidating its quick assets.

- A high defensive interval ratio is desirable as it indicates greater liquidity.
- If a company's defensive interval ratio is very low compared to the industry average, the analyst might want to determine whether significant cash inflows are expected in the near future to meet expense requirements.

$$\textbf{Cash conversion cycle} = \text{DSO} + \text{DOH} - \text{Number of days of payables}$$

The cash conversion cycle (also known as net operating cycle) measures the length of the period between the point that a company invests in working capital and the point that the company collects cash proceeds from sales. Specifically, it is the time between the outlay of cash (to pay off accounts payable for credit purchases) and the collection of cash (from accounts receivable for goods sold on credit).

- A shorter cycle is desirable, as it indicates greater liquidity.
- A longer cash conversion cycle indicates lower liquidity. It implies that the company has to finance its inventory and accounts receivable for a longer period of time.

Cash conversion cycle of ABC Company = 24 + 22.3 − 21.6 = **24.7 days**

Solvency Ratios

Solvency refers to a company's ability to meet its long-term debt obligations. Solvency ratios measure the relative amount of debt in a company's capital structure and the ability of earnings and cash flows to meet debt-servicing requirements. The amount of debt in the capital structure is important to assess a company's degree of financial leverage (its financial risk). If the company can earn a return on borrowed funds that is greater than interest costs, the inclusion of debt in the capital structure will increase shareholder wealth. See Table 2-3.

$$\textbf{Debt-to-assets ratio} = \frac{\text{Total debt}}{\text{Total assets}}$$

Table 2-3: Definitions of Commonly Used Solvency Ratios[3]

Solvency Ratios	Numerator	Denominator
Debt Ratios		
Debt-to-assets ratio	Total debt	Total assets
Debt-to-capital ratio	Total debt	Total debt + Total shareholders' equity
Debt-to-equity ratio	Total debt	Total shareholders' equity
Financial leverage ratio	Average total assets	Average total equity
Coverage Ratios		
Interest coverage	EBIT	Interest payments
Fixed charge coverage	EBIT + Lease payments	Interest payments + Lease payments

"Total debt ratio" is another name sometimes used for the debt-to-assets ratio.
In this reading, we take total debt in this context to be the sum of interest-bearing short-term and long-term debt.

When evaluating a company's solvency ratios, it is important to consider the volatility of the company's cash flows. Companies with stable cash flow streams are typically able to take on more debt.

Important: In this reading, we take total debt in this context to be the sum of interest-bearing short-term and long-term debt. The debt-to-asset ratio measures the proportion of the firm's total assets that have been financed by debt.

- A higher D/A ratio is undesirable because it implies higher financial risk and a weaker solvency position.

ABC has no short-term debt.

$$\textbf{Debt to assets ratio of ABC Company} = \frac{83{,}000}{403{,}500} = \mathbf{0.21}$$

$$\textbf{Debt-to-capital ratio} = \frac{\text{Total debt}}{\text{Total debt} + \text{Shareholders' equity}}$$

This ratio measures the proportion of a company's total capital (debt plus equity) that is composed of debt.

- A higher ratio indicates higher financial risk and is undesirable.

$$\textbf{Debt to capital ratio of ABC Company} = \frac{83{,}000}{83{,}000 + 283{,}500} = \mathbf{0.23}$$

$$\textbf{Debt-to-equity ratio} = \frac{\text{Total debt}}{\text{Shareholders' equity}}$$

3 - Exhibit 14, Volume 3, CFA Program Curriculum 2017

This ratio measures the amount of debt capital relative to a firm's equity capital.

- A higher ratio is undesirable and indicates higher financial risk.
- A ratio of 1.0 indicates equal amounts of debt and equity in the company's capital structure.

Debt to equity ratio of ABC Company $= \dfrac{83{,}000}{283{,}500} = \mathbf{0.29}$

$$\textbf{Financial leverage ratio} = \frac{\text{Average total assets}}{\text{Average total equity}}$$

This ratio measures the amount of total assets supported by each money unit of equity. For example, a leverage ratio of 2 means that each dollar of equity supports $2 worth of assets. This ratio uses *average* values for total assets and total equity and plays an important role in Dupont decomposition, which we study later in this reading.

- The higher the leverage ratio, the more leveraged (dependent on debt for finance) the company.

Financial leverage ratio of ABC Company $= \dfrac{(403{,}500 + 251{,}500)/2}{(483{,}500 + 190{,}000)/2} = \mathbf{1.38}$

$$\textbf{Interest coverage ratio} = \frac{\text{EBIT}}{\text{Interest payments}}$$

This ratio measures the number of times a company's operating earnings (earnings before interest and tax, or EBIT) cover its annual interest payment obligations. This very important ratio is widely used to gauge how comfortably a company can meet its debt-servicing requirements from operating profits.

- A higher ratio provides assurance that the company can service its debt from operating earnings.

Interest coverage ratio of ABC Company $= \dfrac{79{,}000}{1{,}800} = \mathbf{44\ times}$.

$$\textbf{Fixed charge coverage ratio} = \frac{\text{EBIT} + \text{Lease payments}}{\text{Interest payments} + \text{Lease payments}}$$

This ratio relates the fixed charges or obligations of the company to its earnings. It measures the number of times a company's operating earnings can cover its interest and lease payments.

- A higher ratio suggests that the company is comfortably placed to service its debt and make lease payments from the earnings it generates from operations.

Fixed charge coverage ratio for ABC Company $= \dfrac{79{,}000}{1{,}800} = \mathbf{44\ times}$.

ABC has no lease payments.

Profitability Ratios

The ability of a company to generate profits is a key driver of the company's overall value and the value of the securities it issues. Therefore, many analysts consider profitability to be the focus of their analysis.

Before moving on to any profitability ratios, you should be familiar with a few terms, such as gross profit, operating profit, net profit, and so on. These are linked in the income statement as follows:

	Net sales
–	Cost of goods sold
=	Gross profit
–	Operating expenses
=	Operating profit (EBIT)
–	Interest
=	Earnings before tax (EBT)
–	Taxes
=	Earnings after tax (EAT)
+/–	Below the line items adjusted for tax
=	Net income
–	Preferred dividends
=	Income available to common shareholders

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

The gross profit margin tells us the percentage of a company's revenues that are available to meet operating and nonoperating expenses. A high gross profit margin can be a combination of high product prices (reflected in high revenues) and low product costs (reflected in low COGS).

$$\textbf{Gross profit margin of ABC Company} = \frac{120{,}000}{500{,}000} = \textbf{24\%}$$

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

Operating profits are calculated as gross profit minus operating costs.

- An operating profit margin that is increasing at a higher rate than the gross profit margin indicates that the company has successfully controlled operating costs.
- A decreasing operating profit margin when gross profit margins are rising indicates that the company is not efficiently controlling operating expenses.

$$\textbf{Operating profit margin of ABC Company} = \frac{79{,}000}{500{,}000} = \textbf{15.8\%}$$

$$\textbf{Pretax margin} = \frac{\text{EBT(earnings before tax, but after interest)}}{\text{Revenue}}$$

Pretax income is also called earnings before tax (EBT). It is calculated as operating income minus nonoperating expenses plus nonoperating income.

- If a company's pretax margin is rising primarily due to higher nonoperating income, the analyst should evaluate whether this source of income will continue to bring in significant earnings going forward.

$$\textbf{Pretax margin of ABC Company} = \frac{75{,}000}{500{,}000} = \textbf{15\%}$$

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

Net profit margin shows how much profit a company makes for every dollar it generates in revenue.

- A low net profit margin indicates a low margin of safety. It alerts analysts to the risk that a decline in the company's sales revenue will lower profits or even result in a net loss (reduction in shareholder wealth).

$$\textbf{Net profit margin of ABC Company} = \frac{54{,}000}{500{,}000} = \textbf{10.8\%}$$

$$\textbf{ROA} = \frac{\text{Net income}}{\text{Average total assets}}$$

Return on assets measures the return earned by the company on its assets.

- The higher the ROA, the greater the income generated by the company given its total assets.

$$\textbf{ROA of ABC Company} = \frac{54{,}000}{(251{,}500 + 403{,}500)/2} = \textbf{16.5\%}$$

The problem with this calculation of ROA (net income/average total assets) is that it uses only the return to equity holders (net income) in the numerator. Assets are financed by both equity holders and bond holders. Therefore, some analysts prefer to add interest expense back to net income in the numerator. However, interest expense must be adjusted for the tax shield that it provides. The adjusted ROA is computed as:

$$\textbf{Adjusted ROA} = \frac{\text{Net income} + \text{Interest expense}(1 - \text{Tax rate})}{\text{Average total assets}}$$

Some analysts choose to calculate ROA on a pre-interest and pre-tax basis as:

$$\textbf{Operating ROA} = \frac{\text{Operating income or EBIT}}{\text{Average total assets}}$$

- This ratio reflects the return on all assets used by the company, whether financed with debt or equity.

$$\textbf{Operating ROA of ABC Company} = \frac{79{,}000}{(251{,}500 + 403{,}500)/2} = \textbf{24.1\%}$$

Note: Whichever formula is used to calculate ROA, the analyst must use it consistently in cross-sectional analysis and trend analysis.

$$\textbf{Return on total capital} = \frac{\text{EBIT}}{\text{Short-term debt} + \text{Long-term debt} + \text{Equity}}$$

This ratio measures the profits that a company earns on all sources of capital that it employs—short-term debt, long-term debt, and equity. Once again, returns are measured prior to deducting interest expense.

$$\textbf{Return on total capital of ABC Company} = \frac{79{,}000}{(83{,}000 + 283{,}500)} = \textbf{21.6\%}$$

$$\textbf{Return on equity} = \frac{\text{Net income}}{\text{Average total equity}}$$

ABC pays no preferred dividends.

This ratio measures the rate of return earned by a company on its equity capital. Equity capital includes minority equity, preferred equity, and common equity. It measures a firm's efficiency in generating profits from every dollar of net assets (assets minus liabilities), and shows how well a company uses its investment dollars to generate earnings. ROE is commonly used to compare the profitability of a company to that of other firms in its industry.

ABC pays no preferred dividends.

$$\textbf{ROE of ABC Company} = \frac{54{,}000}{(190{,}000 + 283{,}500)/2} = \textbf{22.8\%}$$

$$\textbf{Return on common equity} = \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common equity}}$$

This ratio measures the return earned by a company only on its common equity.

$$\textbf{Return on common equity of ABC Company} = \frac{54{,}000}{(120{,}000 + 180{,}000)/2} = \textbf{36\%}$$

See Table 2-4.

Table 2-4 Definitions of Commonly Used Profitability Ratios[4]

Profitability Ratios	Numerator	Denominator
Return on Sales		
Gross profit margin	Gross profit	Revenue
Operating profit margin	Operating income	Revenue
Pre-tax margin	EBT (earnings before tax but after interest)	Revenue
Net profit margin	Net income	Revenue
Return on Investment		
Operating ROA	Operating income	Average total assets
ROA	Net income	Average total assets
Return on total capital	EBIT	Short– and long-term debt and equity
ROE	Net income	Average total equity
Return on common equity	Net income – Preferred dividends	Average common equity

4 - Exhibit 15, Volume 3, CFA Program Curriculum 2017

LOS 27c: Describe the relationships among ratios and evaluate a company using ratio analysis. Vol 3, pp 359–361

Example 2-1: Evaluating a Company Using a Combination of Ratios

An analyst obtains the following liquidity ratios of a Taiwanese manufacturing company:

	2008	2007	2006
Current ratio	2.2	2.0	1.7
Quick ratio	0.7	0.8	0.9

- The increase in the current ratio over the years, from 1.7 to 2.2, suggests that the company's liquidity position has strengthened.
- However, the decline in the quick ratio over the years, from 0.9 to 0.7, suggests that the liquidity position of the company has deteriorated.
- Both ratios have current liabilities as the denominator. Therefore, the difference must be due to the changes in certain current assets that are not included in the quick ratio (e.g., inventories).

To evaluate the disconnect between the suggestions offered by the trend in current and quick ratios regarding the company's liquidity position, the analyst obtains the following DOH and DSO figures for the company:

	2008	2007	2006
DOH	56	46	31
DSO	25	29	51

- The company's DOH has increased from 31 days to 56, which implies that the company is holding higher levels of inventory.
- The decrease in DSO indicates that the company is collecting on its receivables more quickly than before.
- Taking all these ratios together, we can reach the conclusion that although the company is collecting on its receivables more quickly than before, the proceeds from sales are being used to purchase inventory which is not being sold as quickly. Therefore, the company's quick ratio is suffering, but not its current ratio.

Example 2-2: Comparing Two Companies Using Ratios

An analyst is given the following information about two companies that operate in the same industry:

Company A	2008	2007	2006	2005
Inventory turnover	75.59	87.08	149.29	188.74
DOH	5.67	5.01	3.74	2.59
Receivables turnover	11.57	9.66	12.41	8.45
DSO	34.67	40.31	33.23	49.89
Accounts payable turnover	5.52	5.26	5.74	5.12
Days payable	79.87	84.88	76.29	87.78
Cash from operations/Total liabilities	41.31%	21.34%	9.89%	18.67%
ROE	7.56%	2.91%	2.82%	–0.54%
ROA	4.70%	2.05%	2.05%	–0.34%
Net profit margin	3.95%	2.47%	2.49%	–0.56%
Total asset turnover	1.19	0.83	0.82	0.60
Leverage (Average assets/Average equity)	1.61	1.42	1.38	1.61

Company B	2008	2007	2006	2005
Inventory turnover	11.29	11.07	9.23	16.18
DOH	40.12	41.23	49.11	26.45
Receivables turnover	7.98	6.76	5.34	4.21
DSO	44.32	53.26	60.98	70.59
Accounts payable turnover	6.78	6.98	7.45	6.81
Days payable	55.76	54.23	48.13	54.98
Cash from operations/Total liabilities	14.31%	17.34%	16.89%	12.67%
ROE	9.53%	6.85%	–4.07%	–6.60%
ROA	4.72%	3.55%	–1.95%	3.13%
Net profit margin	4.63%	3.45%	–1.43%	–2.63%
Total asset turnover	1.02	1.03	1.36	1.19
Leverage (Average assets/Average equity)	2.02	1.93	2.09	2.11

Which of the following choices best describes a reasonable conclusion that an analyst might make about the companies' efficiency levels?

A. Over the 4-year period, Company A has shown greater improvement in efficiency than Company B, as indicated by its total asset turnover ratio increasing from 0.60 to 1.19.
B. In 2007, Company A's DOH of only 5.01 indicates that it was less efficient at inventory management than Company B, which had a DOH of 41.23.

C. In 2008, Company B's receivables turnover of 7.98 indicates that it was more efficient at receivables management than Company A, which had a receivables turnover of 11.57.
D. Over the 4 years, Company B has shown greater improvement in efficiency than Company A, as indicated by its net profit margin of 4.62%.

Comments

- Choice A is correct because over the given period, Company A has shown greater improvement in efficiency than Company B. Company A's total asset turnover (a measure of operating efficiency) has almost doubled from 0.60 to 1.19. Over the same period, Company B total asset turnover has declined from 1.19 to 1.05.
- Choice B is incorrect because it misinterprets DOH. All other factors constant, a lower DOH indicates better inventory management.
- Choice C is incorrect because it misinterprets receivables turnover. All other factors constant, a higher receivables turnover indicates greater efficiency in receivables management.
- Choice D is incorrect because net profit margin is not an indicator of efficiency. It is an indicator of profitability.

LESSON 3: DUPONT ANALYSIS, EQUITY ANALYSIS, CREDIT ANALYSIS, AND BUSINESS AND GEOGRAPHIC SEGMENTS

LOS 27d: Demonstrate the application of DuPont analysis of return on equity and calculate and interpret effects of changes in its components.
Vol 3, pp 362–366

ROE measures the return a company generates on its equity capital. Decomposing ROE into its components through DuPont analysis has the following uses:

- It facilitates a meaningful evaluation of the different aspects of the company's performance that affect reported ROE.
- It helps in determining the reasons for changes in ROE over time for a given company.
- It also helps us understand the reasons for differences in ROE for different companies over a given time period.
- It can direct management to areas that it should focus on to improve ROE.
- It shows the relationship between the various categories of ratios and how they all influence the return that owners realize on their investment.

Decomposition of ROE

$$\text{ROE} = \frac{\text{Net income}}{\text{Average total equity}}$$

Two-Way DuPont Decomposition

This decomposition breaks ROE down into two components.

$$\text{ROE} = \frac{\text{Net income}}{\text{Average total assets}} \times \frac{\text{Average total assets}}{\text{Average shareholder's equity}}$$

ROA Leverage

The two-way breakdown of ROE illustrates that ROE is a function of company's return on assets (ROA) and financial leverage ratio. A company can improve its ROE by improving ROA or by using leverage (debt) more extensively to finance its operations. As long as a company is able to borrow at a rate lower than the marginal rate it can earn by investing the borrowed money in its business, taking on more debt will result in an increase in ROE. However, if a company's borrowing costs exceed its marginal return, taking on more debt would depress ROA and ROE as well. Table 3-1 decomposes the ROE for Company A in Example 2 into two components:

Table 3-1: Company A 2–Way DuPont Decomposition

	ROE	=	ROA	×	Leverage
2008	7.56%		4.70%		1.61
2007	2.91%		2.05%		1.42
2006	2.82%		2.05%		1.38
2005	–0.54%		–0.34%		1.61

Analysis: Over the period, the company's financial leverage ratio was relatively stable. The increase in the company's ROE was primarily due to an increase in profitability (ROA).

Three-Way DuPont Decomposition

This decomposition expresses ROE as a product of three components.

$$\text{ROE} = \frac{\text{Net income}}{\text{Revenue}} \times \frac{\text{Revenue}}{\text{Average total assets}} \times \frac{\text{Average total assets}}{\text{Average shareholders' equity}}$$

Net profit margin Asset turnover Leverage

This decomposition illustrates that a company's ROE is a function of its net profit margin, asset turnover ratio, and financial leverage ratio.

- Net profit margin is an indicator of profitability. It shows how much profit a company generates from each money unit of sales.
- Asset turnover is an indicator of efficiency. It tells us how much revenue a company generates from each money unit of assets.
- ROA is a function of its profitability (net profit [NP] margin) and efficiency (asset turnover [TO]).
- Financial leverage is an indicator of solvency. It reflects the total amount of a company's assets relative to its equity capital.

Table 3-2 breaks down the ROE for Company A from Example 2-1 into three components:

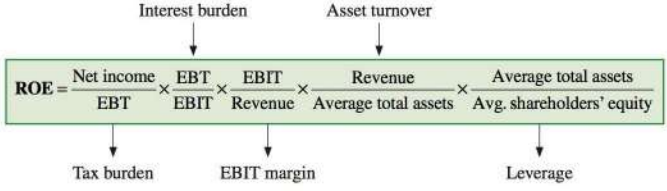
Table 3-2: Company A Three-Way DuPont Decomposition

	ROE	=	NP margin	×	Asset TO	×	Leverage
2008	7.56%		3.95%		1.19		1.61
2007	2.91%		2.47%		0.83		1.42
2006	2.82%		2.49%		0.82		1.38
2005	–0.54%		–0.56%		0.60		1.61

The increase in Company A's ROE is a result of better NP margins (improved profitability) *and* higher asset turnover (improved efficiency), which improved its ROA and its ROE.

Five-Way DuPont Decomposition

To separate the effects of taxes and interest, we can further decompose ROE into five components.

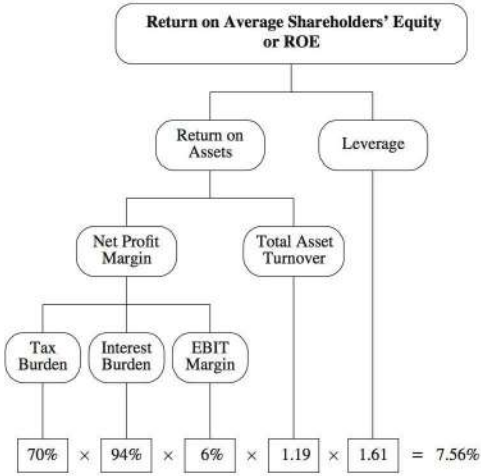


Some candidates get confused as to how a higher tax or interest "burden" ratio can improve the ROE. The key is not to focus on the English. The ratios are just called burden ratios, but a higher ratio does not mean that there is literally more of a tax or interest "burden" on the company. In fact, it is the opposite. A higher tax and interest burden ratio is actually better for the company. Focus on the math behind the ratio, not the English behind its name.

This decomposition shows that ROE is a function of the company's tax burden, interest burden, operating profitability, efficiency, and leverage. See Exhibit 3-1.

- The tax burden ratio equals one minus the average tax rate. It basically measures the proportion of its pretax profits that a company gets to keep. A *higher* tax burden ratio implies that the company can keep a *higher* percentage of its pretax profits. A decrease in the tax burden ratio implies the opposite.
- The interest burden ratio captures the effect of interest expense on ROE. High borrowing costs reduce ROE. As interest expense rises, EBT will fall as a percentage of EBIT, the interest burden ratio will fall, and ROE will also fall.
- The EBIT margin captures the effect of operating profitability on ROE.
- We already know that the asset turnover ratio is an indicator of the overall efficiency of the company, while the leverage ratio measures the total value of a company's assets relative to its equity capital.

Exhibit 3-1: Company A Five-Way DuPont Decomposition for 2008



The calculated value for ROE will be the same under every kind of decomposition. DuPont analysis is a way of decomposing ROE to see more clearly the underlying changes in the company's operations that drive changes in its ROE.

In general, higher profit margins, asset turnover, and leverage will lead to higher ROE. However, the five-way decomposition shows that an increase in leverage will not always increase ROE. This is because as the company takes on more debt, its interest costs rise and the interest burden ratio falls. The reduction in interest burden ratio (as the difference between EBT and EBIT increases) offsets the effect of the increase in the financial leverage ratio.

Example 3-1: Five-Way Decomposition of ROE

Consider the following information:

	2011	2010	2009	2008	2007
ROE	9.47%	15.00%	24.31%	25.82%	24.07%
Tax burden	64.85%	59.37%	63.24%	58.20%	62.58%
Interest burden	92.58%	92.45%	92.74%	92.85%	92.61%
EBIT margin	8.63%	10.41%	13.24%	15.69%	14.35%
Asset turnover	0.85	1.21	1.47	1.44	1.58
Leverage	2.15	2.17	2.13	2.19	2.18

Based on this information, comment on the negative trend in the company's ROE.

Solution:

The following conclusions may be drawn from the given information:

- *The tax burden ratio has varied with no obvious trend over the years.* The recent increase in tax burden ratio (from 59.37% in 2010 to 64.85% in 2011) indicates that taxes declined as a percentage of pre-tax profits. Average tax rates may have declined as a result of (1) new legislation or (2) greater revenue generated in lower tax jurisdictions.
- *The interest burden ratio remained fairly constant over the period,* which suggests that the company's capital structure has remained fairly constant.
- *The EBIT margin declined over the period,* indicating that the company's operations were less profitable.
- *The company's asset turnover declined over the period,* which suggests that the company is becoming increasingly inefficient.
- *The financial leverage ratio remained fairly constant over the period,* which is consistent with the stable interest burden ratio.

Overall, the decline in the company's ROE is mainly caused by a decline in the EBIT margin (profitability) and asset turnover (efficiency).

LOS 27e: Calculate and interpret ratios used in equity analysis and credit analysis. Vol 3, pp 366–378

Equity Analysis

Analysts use a variety of methods to value a company's equity. One of the most common method involves the use of valuation ratios.

Valuation Ratios

Price-to-Earnings Ratio

$$\text{P/E} = \frac{\text{Price per share}}{\text{Earnings per share}}$$

The P/E ratio expresses the relationship between the price per share of common stock and the amount of earnings attributable to a single share. It basically tells us how much a share of common stock is currently worth per dollar of earnings of the company.

Other commonly used valuation ratios include:

Price to Cash Flow

$$\text{P/CF} = \frac{\text{Price per share}}{\text{Cash flow per share}}$$

Price to Sales

$$\text{P/S} = \frac{\text{Price per share}}{\text{Sales per share}}$$

Price to Book Value

$$\text{P/BV} = \frac{\text{Price per share}}{\text{Book value per share}}$$

Per Share Quantities that are Important in Equity Analysis

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

Basic EPS are the earnings of a company attributable to each share of common stock. The weighted average number of shares consists of the number of ordinary shares outstanding at the beginning of the period, adjusted for those bought back or issued during the period, weighted by the length of time that they were outstanding during the relevant period.

$$\text{Diluted EPS} = \frac{\text{Adjusted income available for ordinary shares reflecting conversion of dilutive securities}}{\text{Weighted average number of ordinary and potential ordinary shares outstanding}}$$

Diluted EPS includes the effects of all outstanding securities whose conversion or exercise will result in a reduction in EPS. Dilutive securities include convertible debt, convertible preference shares, warrants, and options.

$$\text{Cash flow per share} = \frac{\text{Cash flow from operations}}{\text{Average number of shares outstanding}}$$

$$\text{EBITDA per share} = \frac{\text{EBITDA}}{\text{Average number of shares outstanding}}$$

$$\text{Dividends per share} = \frac{\text{Common dividends declared}}{\text{Weighted average number of ordinary shares}}$$

Dividend Related Quantities

$$\textbf{Dividend payout ratio} = \frac{\text{Common share dividends}}{\text{Net income attributable to common shares}}$$

The dividend payout ratio measures the percentage of earnings that a company pays out as dividends to shareholders. The per-share dividend paid by companies is typically fixed, so this ratio fluctuates as a percentage of earnings. Therefore, conclusions about a company's dividend payout policy should be based on examination of the payout ratio over a number of periods.

$$\textbf{Retention rate} = \frac{\text{Net income attributable to common shares} - \text{Common share dividends}}{\text{Net income attributable to common shares}}$$

This ratio measures the percentage of earnings that a company retains and reinvests in the business.

Retention rate = (1 – Dividend payout ratio)

$$\textbf{Sustainable growth rate} = \text{Retention rate} \times \text{ROE}$$

A company's sustainable growth rate is a function of its profitability (ROE) and its ability to finance its operations from internally generated funds (measured by the retention rate). Higher ROE and higher retention rates result in a higher sustainable growth rates.

Example 3-2: Calculating the Sustainable Growth Rate

The following data is available for Sedag Inc. Calculate its sustainable growth rate

EPS	$3
Dividends per share	$1
Return on equity	10%

Solution

Dividend payout ratio = $1/$3 = 0.33
Retention Ratio = 1 – 0.33 = 0.67
Sustainable growth rate (g) = 0.67 × 10% = 6.7%

See Table 3-3 for definitions of selected valuation ratios and related quantities.

Table 3-3: Definitions of Selected Valuation Ratios and Related Quantities[5]

	Numerator	Denominator
Valuation ratios		
P/E	Price per share	Earnings per share
P/CF	Price per share	Cash flow per share
P/S	Price per share	Sales per share
P/BV	Price per share	Book value per share
Pre-share quantities		
Basic EPS	Net income minus preferred dividends	Weighted average number of ordinary shares outstanding
Diluted EPS	Adjusted income available for ordinary shares, reflecting conversion of dilutive securities	Weighted average number of ordinary and potential ordinary shares outstanding
Cash flow per share	Cash flow form operations	Average number of shares outstanding
EBITDA per share	EBITDA	Average number of shares outstanding
Dividends per share	Common dividends declared	Weighted average number of ordinary shares outstanding
Dividend-related quantities		
Dividend payout ratio	Common share dividends	Net income attributable to common shares
Retention rate (b)	Net income attributable to common shares – common share dividends	Net income attributable to common shares
Sustainable growth rate	b × ROE	

Studies have shown that, in addition to being useful in evaluating the past performance of a company, ratios and comon-size metrics from accounting data are useful in forecasting earnings and stock returns.

Industry-Specific Ratios

Aspects of performance that are deemed relevant in one industry may be irrelevant in another. Industry-specific ratios reflect these differences.

- For companies in the retail industry, changes in same store sales should be tracked. This is because it is important to distinguish between sales growth generated from opening new stores and sales growth resulting from higher sales at existing stores.
- Regulated industries are required to adhere to specific regulatory ratios. The banking sector has liquidity and cash reserve ratio requirements. Banking capital adequacy requirements relate banks' solvency to their specific levels of risk exposure.

Table 3-4 lists some industry-specific ratios.

5 - Exhibit 18, Volume 3, CFA Program Curriculum 2017

Table 3-4: Definitions of Some Common Industry and Task-Specific Ratios[6]

Ratios	Numerator	Denominator
Business Risk		
Coefficient of variation of operating income	Standard deviation of operating income	Average operating income
Coefficient of variation of net income	Standard deviation of net income	Average net income
Coefficient of variation of revenues	Standard deviation of revenues	Average revenue
Financial Sector Ratios		
Capital adequacy—Banks	Various components of capital	Risk weighted assets, market risk exposure, and level of operational risk assumed
Monetary reserve requirement	Reserves held at central bank	Specified deposit liabilities
Liquid asset requirement	Approved "readily marketable securities"	Specified deposit liabilities
Net interest margin	Net interest income	Total interest-earning assets
Retail Ratios		
Same store sales	Average revenue growth year on year for stores open in both periods	Not applicable
Sales per square foot (meter)	Revenue	Total retail space in feet or meters
Service Companies		
Revenue per employee	Revenue	Total number of employees
Net income per employee	Net income	Total number of employees
Hotels		
Average daily rate	Room revenue	Number of rooms sold
Occupancy rate	Number of rooms sold	Number of rooms available

6 - Exhibit 19, Volume 3, CFA Program Curriculum 2017

Credit Analysis

Credit risk is the risk of loss that is caused by a debtor's failure to make a promised payment. Credit analysis is the evaluation of credit risk.

The Credit-Rating Process

The credit-rating process involves the analysis of a company's financial reports and a broad assessment of a company's operations. It includes the following procedures:[7]

- Meetings with management.
- Tours of major facilities, if time permits.
- Meetings of ratings committees where the analyst's recommendations are voted on, after considering factors that include:
    - **Business Risk**, including the evaluation of:
        - Operating environment.
        - Industry characteristics.
        - Success areas and areas of vulnerability.
        - Company's competitive position, including size and diversification.
    - **Financial risk**, including:
        - The evaluation of capital structure, interest coverage, and profitability using ratio analysis.
        - The examination of debt covenants.
    - **Evaluation of management**
- Monitoring of publicly distributed ratings, including reconsideration of ratings due to changing conditions.

In assigning credit ratings, rating agencies emphasize the importance of the relationship between a company's business risk profile and its financial risk.

7 - Based on Standard & Poor's Corporate Ratings Criteria (2006).

Table 3-5: Selected Credit Ratios Used by Standard & Poor's[8]

Credit Ratio	Numerator[a]	Denominator[b]
EBIT interest coverage	EBIT	Gross Interest (prior to deductions for capitalized interest or interest income)
EBITDA interest coverage	EBITDA	Gross Interest (prior to deductions for capitalized interest or interest income)
Funds from operations to total debt	FFO (net income adjusted for noncash items)[c]	Total debt
Free operating cash flow to total debt	CFO (adjusted) less capital expenditures[d]	Total debt
Return on capital	EBIT	Capital = Average equity (common and preferred equity) and short-term portions of debt, noncurrent deferred taxes, minority interest
Total debt to total debt plus equity	Total debt	Total debt plus equity

[a]Numerator: Emphasis is on earnings from continuing operations.
[b]Denominator: Both numerator and denominator definitions are adjusted from ratio to ratio and may not correspond to the definitions used in this reading.
[c]FFO: Funds from operations.
[d]CFO: Cash flow from operations.

Source: Based on data from Standard and Poor's Corporate Ratings Criteria 2006.

Studies have shown that ratios like the ROA, long-term D/A, interest coverage, and cash flow to debt are very useful in evaluating credit risk, bond yields, and bond ratings.

LOS 27f: Explain the requirements for segment reporting and calculate and interpret segment ratios. Vol 3, pp 376–379

Segment Analysis

Analysts often need to analyze the performance of underlying business segments to understand the company as a whole. These segments may include subsidiary companies, operating units, or simply operations in different geographical areas.

A business segment is a separately identifiable component of a company that is engaged in providing an individual product or service or a group of related products or services. It is subject to risks and returns that are different from those of other business segments of the company.

A geographical segment is a distinguishable component of a company that is engaged in providing an individual product or service within a particular region.

8 - Exhibit 20, Volume 3, CFA Program Curriculum 2017

Table 3-6: Segment Ratios[9]

Segment Ratios	Numerator	Denominator	Measures
Segment margin	Segment profit (loss)	Segment revenue	Operating profitability relative to sales.
Segment turnover	Segment revenue	Segment assets	Overall efficiency—how much revenue is generated per dollar of assets.
Segment ROA	Segment profit (loss)	Segment assets	Operating profitability relative to assets.
Segment debt ratio	Segment liabilities	Segment assets	Solvency of the segment.

Example 3-3: Evaluation of Segment Ratios

Tiara Corp. divides its operations in three geographical segments. Selected financial information is provided in the following table:

(in $'000)	2011			2010		
	Revenue	Operating Income	Assets	Revenue	Operating Income	Assets
Australia	272,310	39,485	231,464	210,258	29,436	189,232
Asia Pacific	668,484	60,164	534,787	581,290	61,035	494,097
Europe	144,085	25,215	100,860	115,268	18,443	86,451
Total	1,084,879	124,863	867,110	906,816	108,914	769,780

Comment on the relative performance of the three segments.

Solution:

To compare the relative significance and performance of the three segments, we compute segment margin, segment ROA, and segment turnover in the table below:

(in $'000)	2011				2010			
	Segment Revenue as Percent of Total	Segment Margin	Segment ROA	Segment Turnover	Segment Revenue as Percent of Total	Segment Margin	Segment ROA	Segment Turnover
Australia	25.10%	14.50%	17.06%	1.2	23.19%	14.00%	15.56%	1.1
Asia-Pacific	61.62%	9.00%	11.25%	1.3	64.10%	10.50%	12.35%	1.2
Europe	13.28%	17.50%	25.00%	1.4	12.71%	16.00%	21.33%	1.3

9 - Exhibit 21, Volume 3, CFA Program Curriculum 2017

The following conclusions can be drawn from the table:

- Asia-Pacific is the company's largest segment, as highlighted by its share of total revenue (61.62%). However, the segment has the lowest profit margin (9%). Further, the relative size of the segment has decreased over the year (share of revenues down from 64.10% to 61.62%).
- Europe has the highest profit margin (17.5%) and is the most efficient segment as well (it has the highest ROA and asset turnover).
- Australia's profit margin is also relatively high.
- Europe and Australia have improved in terms of both profitability and efficiency. It bodes well for the company that the relative size of these two segments is increasing (in terms of the share of total revenue).

LOS 27g: Describe how ratio analysis and other techniques can be used to model and forecast earnings. Vol 3, pp 379–380

In forecasting future earnings of companies, analysts use data about the economy, industry, and company itself. The results of financial analysis, which includes common-size and ratio analysis, are integral to this process.

Analysts also develop models and pro forma financial statements to forecast future performance. They are constructed using past trends and relationships and also account for expected future events and changes. Pro forma income statements are usually prepared by using the historical relationship between a company's income statement items and sales to project the nature of the relationship going forward. Items that are not sales-driven can be assumed fixed, or assumed to vary with a balance sheet item (e.g., interest expense varies with the amount of long-term liabilities). Some balance sheet items also vary with sales, especially working capital accounts. As the company's scale of operations increases, the firm has to increase its investment in working capital to ensure the smooth running of day-to-day operations. Further, investments in long-lived assets will also be required to expand the scale of the business.

Some other techniques that are used in making forecasts are:

Sensitivity Analysis, which shows the range of possible outcomes as underlying assumptions are altered.

Scenario Analysis, which shows the changes in key financial quantities that result from given events such as a loss of supply of raw materials or a reduction in demand for the firm's products.

Simulations are computer-generated sensitivity or scenario analyses based on probability models for the factors that drive outcomes.

Study Session 8: Financial Reporting and Analysis: Inventories, Long-lived Assets, Income Taxes, and Non-current Liabilities

READING 28: INVENTORIES

LESSON 1: COST OF INVENTORIES AND INVENTORY VALUATION METHODS

LOS 28a: Distinguish between costs included in inventories and costs recognized as expenses in the period in which they are incurred. Vol 3, pp 397–398

Cost of Inventories

IFRS and **U.S. GAAP** suggest a similar treatment of various expenses in the determination of inventory cost. The following items are capitalized inventory costs, which are included in the cost or carrying value of inventories on the balance sheet.

- Costs of purchase, which include the purchase price, import duties, taxes, insurance, and other costs that are directly attributable to the acquisition of finished goods, trade discounts, and other rebates that reduce costs of purchase.
- Costs of conversion, which include direct labor and other (fixed and variable) direct overheads.

Capitalization of these costs results in a buildup of asset balances and delays recognition of these costs (in COGS) until inventory is sold.

The following items are *not* capitalized as inventory costs; they are expensed on the income statement as incurred under **IFRS** and **U.S. GAAP**.

- Abnormal costs from material wastage.
- Abnormal costs of labor or wastage of other production inputs.
- Storage costs that are not a part of the normal production process.
- Administrative expenses.
- Selling and marketing costs.

Capitalization of costs that should be expensed results in **overstatement** of net income for the year (due to the deferral of recognition of costs) and an **overstatement** of inventory value on the balance sheet. See Example 1-1.

Example 1-1: Determination of Inventory Costs

ABC Company manufactures a single product. Various costs incurred during the year 2009 are listed here:

Cost of raw materials	$12,000,000
Direct labor conversion costs	$25,000,000
Production overheads	$5,000,000
Freight charges for raw materials	$2,000,000
Storage costs for finished goods	$800,000
Abnormal wastage	$80,000
Freight charges for finished goods	$100,000

Given that there is no work-in-progress inventory at the end of the year:

1. What costs should be included in inventory for 2009?
2. What costs should be expensed during 2009?

Solution

1. Capitalized inventory costs include raw material costs, labor conversion costs, production overheads, and freight charges on raw materials.

Cost of raw materials	$12,000,000
Direct labor conversion costs	$25,000,000
Production overheads	$5,000,000
Freight-in charges	$2,000,000
Total capitalized costs	**$44,000,000**

2. Costs that should be expensed on the income statement (and not included in the value of inventory on the balance sheet) include storage costs of finished goods, abnormal wastage, and freight on finished goods.

Storage costs of finished goods	$800,000
Abnormal wastage	$80,000
Freight on finished goods	$100,000
Total expensed costs	**$980,000**

Please note that LOS 28d is also covered in the last lesson of this reading.

LOS 28b: Describe different inventory valuation methods (cost formulas). **Vol 3, pp 398–400**

LOS 28c: Calculate cost of sales and ending inventory using different inventory valuation methods and explain the effect of the inventory valuation method choice on gross profit. **Vol 3, pp 400–402**

LOS 28d: Calculate and explain how inflation and deflation of inventory costs affect the financial statements and ratios of companies that use different inventory valuation methods. **Vol 3, pp 404–406**

Inventory Valuation Methods

Let's work with an example of a trading company that purchases and retails coffee tables. At any point in time, the number of tables that the company has available for sale equals the total number of tables that it had in its inventory at the beginning of the period plus the number of tables it has purchased since then. In order to prepare its financial statements for the period, the company must allocate the cost of all units available for sale between ending inventory (EI) and cost of goods sold (COGS).

"Cost of sales" (IFRS) is also referred to as "cost of goods sold" (U.S. GAAP).

"Cost formulas" (IFRS) are also referred to as "cost flow assumptions" (U.S. GAAP).

Opening inventory + Purchases = Cost of goods sold + Ending inventory ... (Equation 1)

Inventory Valuation Methods (Cost Formulas)

Separate Identification

- COGS reflects actual costs incurred to purchase or manufacture the specific units that have been sold over the period.