



金程教育
GOLDEN FUTURE

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CFA一级培训项目

Financial Reporting and Analysis



纪慧诚 CFA

金程教育资深培训师

地点： ■ 上海 □ 北京 □ 深圳

Topic Weightings in CFA Level I

Session NO.	Content	Weightings
Study Session 1	Ethics & Professional Standards	15
Study Session 2-3	Quantitative Analysis	12
Study Session 4-6	Economics	10
Study Session 7-10	Financial Reporting and Analysis	20
Study Session 11	Corporate Finance	7
Study Session 12	Portfolio Management	7
Study Session 13-14	Equity Investment	10
Study Session 15-16	Fixed Income	10
Study Session 17	Derivatives	5
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原理前导：财务报表分析的作用

- 某上市公司拥有一间原价为500万元的旧仓库，扣除折旧后，净值为300万元，旧仓库的市场价为3000万元，该公司经营不善，有可能被ST。这时，公司CFO出手了，将旧仓库3000万元卖了，同时以3000万元购入一间类似的仓库，公司立即避免了被ST的命运。
- 某上市公司，希望自己能盈利，可是这家公司今年却亏损了，而且没少亏，亏了1个亿，这公司不想让人家知道它亏损了，它想让亏损变成盈利，那怎么办呢，它发现它在银行有1.6个亿的贷款，这家公司说虽然贷款还没提前到期，我申请提前偿还，我用什么来还呢，我用一个房子来还，这个房子呢价值3000W，今天我拿这个房子去把1.6亿的债去抵掉，明天呢我再拿1.6个亿的现金去把这个房子买回来，那大家发现其实在这个过程中房子根本没有给银行，这家公司其实最后就是拿了1.6个亿的现金还了1.6亿的贷款。但是整个过程都一样了，抵债的时候赚了1.3个亿，变成了盈利3000万，第二天是拿1.6个亿买了3000万的房子，其实这件事做的非常亏本，但是你的利润永远只跟卖东西有关系，它没有卖东西，它不会影响利润。结果就是盈利三千万，还有房子从3000万的价值变成了1.6个亿

原理前导：财务报表分析的作用

➤ 对于个人而言财务分析的意义

- 掌握财务报表分析知识更容易升职；
- 财务报表分析在运用范围极其广泛，不同工作和岗位都能用到；
- 每个创业者都必须掌握管理财务知识，不懂财务，无法管理公司；
- 一般投资做的好的，也是财务高手。

F.R.A

➤ SS7

- R22: Financial Statement Analysis: An Introduction
- R23: Financial Reporting Mechanics
- R24: Financial Reporting Standards

➤ SS8

- R25: Understanding the I/S
- R26: Understanding the B/S
- R27: Understanding the C/F
- R28: Financial Analysis Techniques

➤ SS9

- R29: Inventories
- R30: Long-Lived Assets
- R31: Income Taxes
- R32: Long-Term Liabilities and Leases

➤ SS10

- R33: Financial Reporting Quality: Red Flags and Accounting Warning Signs
- R34: Financial Statement Analysis: Applications

原理前导：财务上的“三个代表”

- 想了解企业的财务状况，就必须读懂企业的三张报表。这三张表可以说是企业管理层及外部投资者极其重要的“三个代表”。
- 资产负债表代表企业的资产、负债和所有者权益，体现其整体实力；
 - 利润表代表企业的利润来源，体现其盈利能力；
 - 现金流量表代表企业的现金流量，体现其获现能力；
 - 资产负债表是静态指标，反映企业某个时点的财务状况；利润表是动态指标，反映企业某段时期的经营成果，资产负债表未分配利润期末数等于利润表净利润本年累计数加上年初未分配利润数。资产负债表货币资金期末数减期初数，等于现金流量表现金净增加值。

The Framework of FRS

Generally
Accepted
Accounting
Principle

➤ Two systems worldwide

- The Financial Accounting Standards Board (FASB)
 - ✓ The Statement of Financial Accounting Standards (SFAS) → U.S. GAAP
- The International Accounting Standards Board (IASB)
 - ✓ The International Accounting Standards (IAS)
 - ✓ The International Financial Reporting Standards (IFRS) } → IFRS

Recognition → Measurement → Disclosure

Financial analysis

Framework

- 1. The role of financial reporting and financial statement analysis**
- 2. The resources used for financial statement analysis**
 - Key financial statements
 - Other relevant information
- 3. Auditing**
- 4. Financial statement analysis framework**

Financial reporting & analysis

➤ The role of financial reporting

- The **International Accounting Standards Board (IASB)** definition:

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



- ✓ The objective of financial statements is to provide information about the

- **Financial position**

- **Financial performance**

- **Changes in financial position of an entity** that is useful to a wide range of users in *making economic decisions*.

Financial statements

Financial position	Financial performance	Change in financial position
The balance sheet	The income statement	The cash flow statement
Assets = liabilities + owner's equity	<ul style="list-style-type: none">•Revenue•Expenses  Net income	<ul style="list-style-type: none">•Operating cash flows•Investing cash flows•Financing cash flows  Net cash inflow or outflow for the financial year

The statement of changes in owner's equity

Balance sheet

➤ Key financial statements:

● Balance sheet

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

Income statement

➤ Income statement

- The income statement (also known as the statement of operations or the profit and loss statement) reports on the financial performance of the firm **over a period of time.**
- The elements of the income statement include:
 - ✓ **Revenues** are inflows from delivering or producing goods, rendering services, or other activities that constitute the entity's ongoing major or central operations.
 - ✓ **Expenses** are outflows from delivering or producing goods or services that constitute the entity's ongoing major or central operations.
 - ✓ **Other income** includes gains that may or may not arise in the ordinary course of business.

Cash flow statement

➤ Cash flow statement

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

Financial statements

➤ Measurement of financial elements:

- **historical cost**

- ✓ the amount originally paid for the asset,

- **amortized cost**

- ✓ historical cost adjusted for depreciation, amortization, depletion, and impairment

- **current cost**

- ✓ the amount the firm would have to pay today for the same asset

- **realizable value**

- ✓ the amount for which the firm could sell the asset

- **present value**

- ✓ the discounted value of the asset's expected future cash flows

- **fair value**

- ✓ the amount at which two parties in an arm's-length transaction would exchange the asset

Financial statements

➤ The statement of comprehensive income

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

➤ The statement of changes in equity

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

Other relevant information

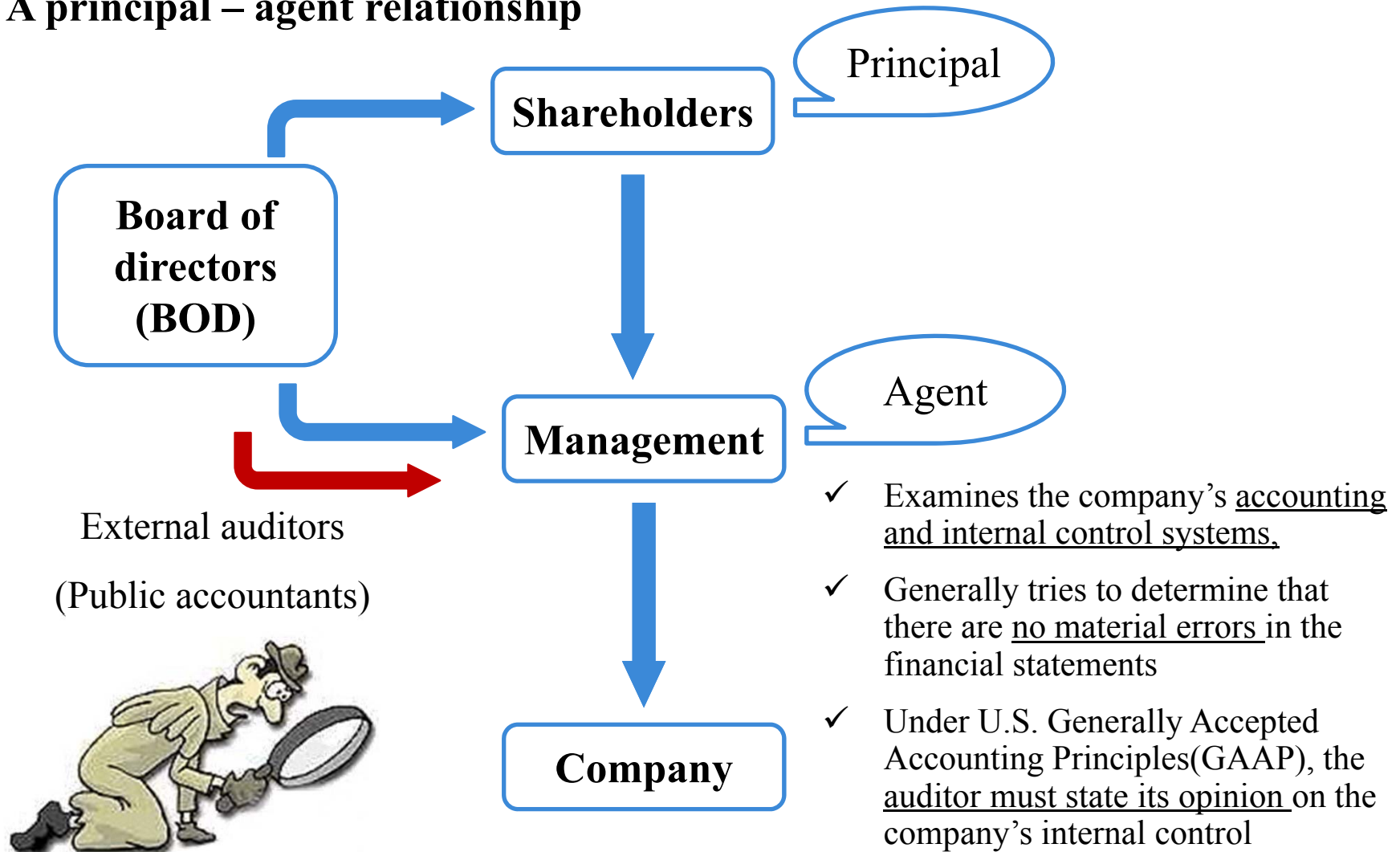
Financial statement notes (Footnotes) ★	<ul style="list-style-type: none"> • Providing information about <u>accounting methods, assumptions, and estimates</u> • Providing additional information about <u>business acquisitions or disposal, legal actions, employee benefit plans, significant customers, sales to related parties, and segments of the firm</u> • Are audited
Supplementary schedules	<ul style="list-style-type: none"> • Operating income or sales <u>by region or business segment</u> • Reserves for <u>an oil and gas company</u> • Information about <u>hedging activities and financial instruments</u>
Management's Discussion and Analysis (MD&A) ★	<p>Providing an assessment of the financial performance and condition of a company <u>from the perspective of its management</u></p> <ul style="list-style-type: none"> • Results from operations, with a discussion of <u>trends in sales and expense</u> • Capital resource and liquidity, with a discussion of <u>trends in cash flow</u> • A general <u>business overview</u> based on known trends • <u>Material events and uncertainties that may affect the future</u>

Other relevant information

Quarterly or semiannual reports	•The most <u>updated information</u> on the major financial statements and footnotes
Securities and Exchange Commission (SEC) filings	•Form 8-K <ul style="list-style-type: none">•<u>Acquisitions or disposals</u> of major assets•<u>Changes in its management</u>•Changes in <u>corporate governance</u> •Form 10-K <ul style="list-style-type: none">•<u>Annual</u> financial statements •Form 10-Q <ul style="list-style-type: none">•<u>Quarterly</u> financial statements
Proxy statements	•Issued to shareholders when there are matters that <u>require a shareholder vote</u> •Providing <u>information about the board members, managements, compensation and the issuance of stock options.</u>
Corporate reports and press releases	•Public relations
Other necessary information	•Information on economic conditions, industry and competitors.

Auditing

➤ A principal – agent relationship



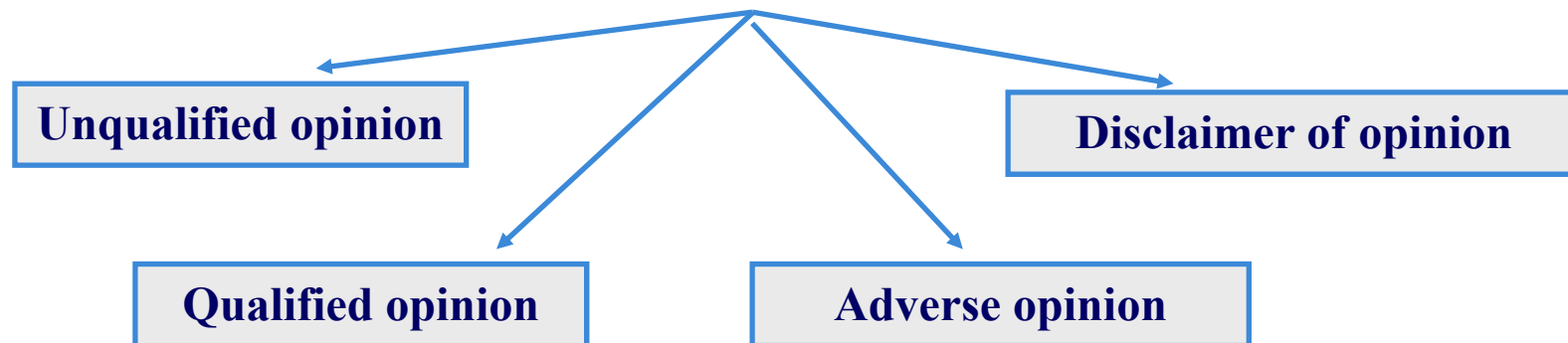
Auditing

➤ Audit

- **Definition:** Audit is independent review of an entity's financial statements by an independent accounting firm.
- **The audit process** provides a basis for the independent auditor to express an audit opinion on the fairness of the financial statements that were audited.
- **Objective:** auditor provides reasonable assurance that the financial statements are fairly presented.

Auditing

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



Auditing

➤ The standard auditor's opinion

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

➤ Internal control system

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

Auditing

审计师出具意见与其真实意思对照

标准无保留意见(Unqualified opinion)	造假迹象未被本人发现
附带说明的无保留意见	黑锅有人背，本人大胆收钱
保留意见审计报告(Qualified opinion)	假报表，别看了
无法出具意见审计报告(Disclaimer of opinion)	本人拒绝和拙劣的骗子合作
否定意见审计报告(Adverse opinion)	本人举报诈骗犯

Financial statement analysis framework

Phase	Sources of info	Output
1. Articulate the purpose and context of the analysis	<ul style="list-style-type: none">•Nature•Needs & concern•Guidelines	<ul style="list-style-type: none">•Statement of purposes and objectives•A list of specific questions•Timetable & budgeted resources
2. Collect data	<ul style="list-style-type: none">•Financial data•Discussion•Visits	<ul style="list-style-type: none">•Organized F/S•Financial data table•Complete questionnaires
3. Process data	<ul style="list-style-type: none">•Data from previous phase	<ul style="list-style-type: none">•Adjusted F/S•Common – size statements•Ratios & Forecasts
4. Analyze/interpret the processed data	<ul style="list-style-type: none">•Input data•Processed data	<ul style="list-style-type: none">•Analytical results
5. Conclusions & recommendations	<ul style="list-style-type: none">•Analytical results	<ul style="list-style-type: none">•Analytical reports•recommendation
6. Follow up	<ul style="list-style-type: none">•Periodically repeating	<ul style="list-style-type: none">•Updated reports & recommendations

Basic concepts: Example 1

➤ Example 1

A company's current financial position would best be evaluated using the

- A. balance sheet.
- B. income statement.
- C. cash flow statement

➤ Answer:

A is correct.

- ✓ The balance sheet portrays the current financial position.
- ✓ The income statement and cash flow statement present different aspects of performance.

Basic concepts: Example 2

➤ Example 2

A company's profitability for a period would best be evaluated using the

- A. balance sheet.
- B. income statement.
- C. cash flow statement.

➤ Answer:

B is correct.

- ✓ Profitability is the performance aspect measured by the income statement.
- ✓ The balance sheet portrays the current financial position.
- ✓ The cash flow statement presents a different aspect of performance.

Basic concept: Example 3

➤ Example 3

Accounting methods, estimates, and assumptions used in preparing financial statements are found

- A. in footnotes.
- B. management s discussion and analysis
- C. in the proxy statement.

➤ Answer:

A is correct.

- ✓ The footnotes disclose choices in accounting methods, estimates, and assumptions.

Basic concepts: Example 4

➤ Example 4

Information about material events and uncertainties would best be found in

- A. footnotes.
- B. the proxy statement.
- C. management's discussion and analysis

➤ Answer:

C is correct.

✓ This is a component of management's discussion and analysis.

Financial statement analysis framework: Example 5

➤ Example 5

Ratios are an input into which step in the financial analysis framework?

- A. Process data.
- B. Collect input data.
- C. Analyze/interpret the processed data.

➤ Answer:

C is correct.

- ✓ Ratios are an output of the process data step but are an input into the analyze/interpret data step.

F.R.A

➤ SS7

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➤ SS8

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➤ SS9

- R29: Inventories
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- R31: Income Taxes
- R32: Long-Term Liabilities and Leases

➤ SS10

- R33: Financial Reporting Quality: Red Flags and Accounting Warning Signs
- R34: Financial Statement Analysis: Applications

Framework

- 1. Financial Statement elements**
- 2. Flow of information in an accounting system**
- 3. Double Entry Theory**
- 4. Accounting equation**
 - Financial statement elements and relationships
 - Accrual accounting
- 5. Cash accounting & cash flow statements**

Financial Statement elements

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

Financial Statement elements

➤ Classifying Accounts Into the Financial Statement Elements

- Assets
- Liability
- Owners' equity
- Revenue
- Expenses

Financial Statement elements - Assets

- Assets are the firm's economic resources. Examples of assets include:
- **Cash and cash equivalents.** Liquid securities with maturities of 90 days or less are considered cash equivalents.
 - **Account/trade receivable.** Accounts receivable often have an "allowance for bad debt expense" or "allowance for doubtful accounts" as a contra account.
 - **Inventory.**
 - **Financial assets** such as marketable securities.
 - **Prepaid expenses.** Items that will be expenses on future income statements.
 - **Property, plant, and equipment.** Includes a contra-asset account for accumulated depreciation.
 - **Investment in affiliates** accounted for using the equity method.
 - **Deferred tax assets.**
 - **Intangible assets.** Economic resources of the firm that do not have a physical form, such as patents, trademarks, licenses, and goodwill. Except for goodwill, these values may be reduced by "accumulated amortization."

Financial Statement elements - Liabilities

➤ **Liabilities** are creditor claims on the company's resources. **Examples of liabilities include:**

- **Accounts payable** and trade payables.
- **Financial liabilities** such as short-term notes payable.
- **Unearned revenue.** (deferred revenue) Items that will show up on future income statements as revenues.
- **Income taxes payable.** The taxes accrued during the past year but not yet paid.
- **Long-term debt** such as bonds payable.
- **Deferred tax liabilities.**

Financial Statement elements - Owner's equity

- **Owners' equity (Residual claim/net asset)** is the owners' residual claim on a firm's resources, which is the amount by which assets exceed liabilities. Owners' equity includes:
- **Capital.** Par value of common stock.
 - **Additional paid-in capital.** Proceeds from common stock sales in excess of par value. (Share repurchases that the company has made are represented in the contra account treasury stock.)
 - **Retained earnings.** Cumulative net income that has not been distributed as dividends.
 - **Other comprehensive income.** Changes resulting from foreign currency translation, minimum pension liability adjustments, unrealized gains and losses from cash flow hedging derivatives, or unrealized gains and losses from available - for - sale.

Financial Statement elements - Expenses

- **Expenses** are outflows of economic resources and include:
- **Cost of goods sold.**
 - **Selling, general, and administrative expenses.** These include such expenses as advertising, management salaries, rent, and utilities.
 - **Depreciation and amortization.** To reflect the "using up" of tangible and intangible assets.
 - **Tax expense.**
 - **Interest expense.**
 - **Losses.** Decreases in assets from transactions incidental to the firm's day-to-day activities.
 - **EBIT:** Earnings before interest and tax.

Accounting Items

➤ 中文总结

- 钱压在商品里，就是存货
- 钱放在保险柜里，就是现金
- 钱在客户那里，就是应收账款
- 钱是占用供货方的，就是应付账款
- 钱用在设备、厂房里，就是固定资产
- 钱用于研发并有成果的，就是无形资产
- 钱是投入的，就是实收资本、资本公积
- 钱投到外面的子公司，就是长期股权投资
- 钱是借来的，就是短期借款、长期借款
- 钱是占用内部员工的，就是应付职工薪酬
- 钱是赚来的，就是盈余公积、未分配利润
- 钱自由自在地放在银行里，就是银行存款
- 钱已经花出去了，但在超过一个会计年度摊销就是长期待摊费用
- 钱在股市、债市里，就是交易性金融资产、持有至到期以及可供出售金融资产

5.5 Accounting Items– 中文总结

➤ 中文总结

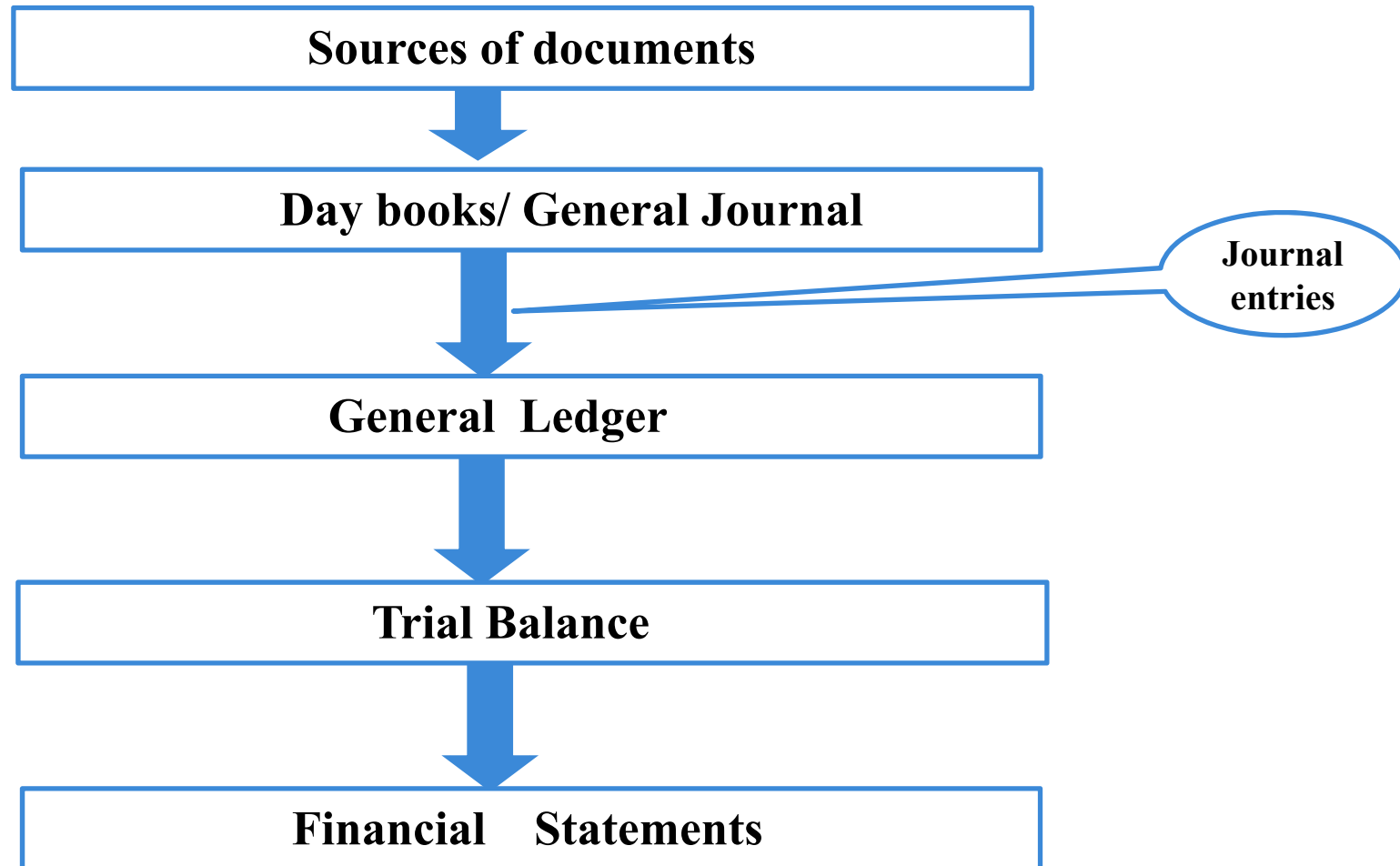
- 营业收入，就是通过销售活动而在资产负债表中增加的那些现金和应收款项
- 营业成本，就是由于销售活动而在资产负债表中转走的那些存货
- 销售费用：与销售有关的费用，比如销售人员的工资以及销售过程中发生的运输费、包装费、保险费以及广告费等。对应资产负债表的表
现就是现金的减少
- 管理费用：就是管理部门发生的所有费用，比如发工资和各种报销
- 财务费用：一般就是借钱发生的利息费用
- 所得税费用：就是赚钱后交给国家这个最大的老板的分成

Flow of information in an accounting system

➤ **Information flows through an accounting system in four steps:**

- **Journal entries** record every transaction, showing which accounts are changed and by what amounts. A listing of all the journal entries in order of their dates is called the **general journal**.(日记账)
- **The general ledger** sorts the entries in the general journal ***by account***. (分类账)
- At the end of the accounting period, an **initial trial balance** is prepared that ***shows the balances*** in each account. If any adjusting entries are needed, they will be recorded and reflected in an **adjusted trial balance**.
- The account balances from the adjusted trial balance are presented in the financial statements.

Flow of information in an accounting system



Accounting equation

➤ Accounting equation

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

✓ **Ending retained earnings** = Beginning retained earnings
+ Net income
– Dividend

■ **Net income** = Revenue – Expense

Assets = Liabilities
+ Contributed capital
+ Beginning retained earnings
+ Revenue
– Expenses
– **Dividend**

Accounting equation: Example 1

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

Liabilities at year-end €1,000

Contributed capital at year-end €500

Beginning retained earnings €600

Revenue during the year €5,000

Expenses during the year €4,300

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

A. €2,100.

B. €2,300.

C. €2,800.

Accounting equation: Example 1

➤ **Answer:**

C is correct.

$$\begin{aligned}\text{Assets} = & \text{Liabilities} + \text{Contributed capital} + \text{Beginning retained earnings} \\ & - \text{Distributions to owners} + \text{Revenues} - \text{Expenses}\end{aligned}$$

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

Accounting equation: Example 2

➤ If a company reported fictitious revenue, it could try to cover up its fraud by

- A. decreasing assets.
- B. increasing liabilities.
- C. creating a fictitious asset.

➤ Answer:

C is correct.

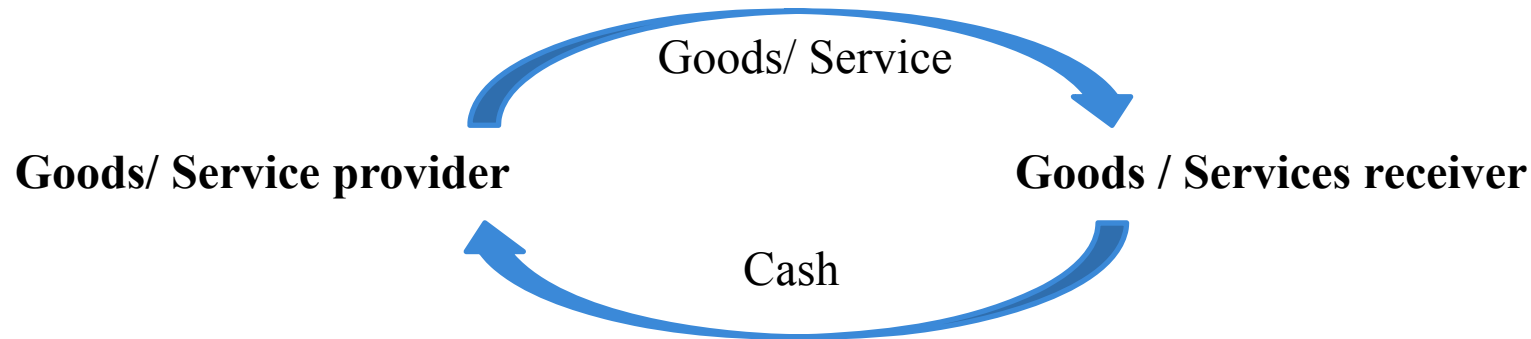
- In order to balance the accounting equation, the company would either need to increase assets or decrease liabilities. Creating a fictitious asset would be one way of attempting to cover up the fraud.

Double Entry Theory

➤ Double-entry accounting

- Keeping the accounting equation in balance requires
- in which a transaction has to be recorded in at least two accounts.
- An increase in an asset account must be balanced by a decrease in another asset account or by an increase in a liability or owners' equity account.

Accrual accounting



Cash received in advance
Unearned revenue



Cash paid in advance
Prepaid expense

Cash received in arrears
Accrued revenue



Cash paid in arrears
Accrued expense

Accrual accounting: Example


- On 30 April 2006, Pinto Products received a cash payment of \$30,000 as a deposit on production of a custom machine to be delivered in August 2006. This transaction would most likely result in which of the following on 30 April 2006?
- A. No effect on liabilities.
 - B. A decrease in assets of \$30,000.
 - C. An increase in liabilities of \$30,000

Answer:

C is correct.

- The receipt of cash in advance of delivering goods or services results in unearned revenue, which is a liability. The company has an obligation to deliver \$30,000 in goods in the future. This balances the increase in cash (an asset) of \$30,000.

Relationships among the income statement, balance sheet, statement of cash flows, and statement of owners' equity

Elements	Definition		Relationship
Assets	<ul style="list-style-type: none"> •Current assets •Non – current assets (Long-lived assets) 	The Balance sheet 	$\text{Assets} = \text{liabilities} + \text{owner's equity}$ \downarrow $\text{Owner's equity} =$ $\text{Contributed capital}$ $+ \text{Beginning retained earning}$
Liabilities	<ul style="list-style-type: none"> •Current liabilities •Non – current liabilities (Long-term liabilities) 		$+ \text{Net income (current year)}$ $- \text{Dividend (current year)}$ $+ \text{Other comprehensive income}$
Owner's equity	<ul style="list-style-type: none"> •Capital •Additional paid-in capital •Retained earnings •Other comprehensive income 		
Revenue	<ul style="list-style-type: none"> •Sales •Investment income •Gains 	The income statement	$\text{Revenue} - \text{expenses} = \text{net income (current year)}$
Expenses	<ul style="list-style-type: none"> •Cost of good sold •Other expense •losses 		

F.R.A

➤ SS7

- R22: Financial Statement Analysis: An Introduction
- R23: Financial Reporting Mechanics
- R24: Financial Reporting Standards

➤ SS8

- R25: Understanding the I/S
- R26: Understanding the B/S
- R27: Understanding the C/F
- R28: Financial Analysis Techniques

➤ SS9

- R29: Inventories
- R30: Long-Lived Assets
- R31: Income Taxes
- R32: Long-Term Liabilities and Leases

➤ SS10

- R33: Financial Reporting Quality: Red Flags and Accounting Warning Signs
- R34: Financial Statement Analysis: Applications

Financial reporting standards: Standard-setting bodies

➤ Standard-setting bodies

- Professional organizations of accountants and auditors that establish financial reporting standards

- ✓ **Financial Accounting Standards Board (FASB)**

- Sets U.S. GAAP (SFAS)

- ✓ **International Accounting Standards Board (IASB)**

- Sets International GAAP (IAS & IFRS)

➤ Regularly authorities

- Government agencies that have legal authority to enforce compliance with financial reporting standards.

- ✓ **The Securities and Exchange Commission (SEC)** in the U.S.

- ✓ **The Financial Service Authority (FSA)** in the U.K.

Financial reporting standards: Regularly authorities

- Most national authorities belong to the **International Organization of Securities Commissions (IOSCO)**. The three objectives of financial market regulation according to IOSCO1 are to:
 - ✓ protect investors;
 - ✓ ensure the fairness, efficiency, and transparency of markets; and
 - ✓ reduce systemic risk. Because of the increasing globalization of securities markets, IOSCO has a goal of uniform financial regulations across countries.

SEC filings required

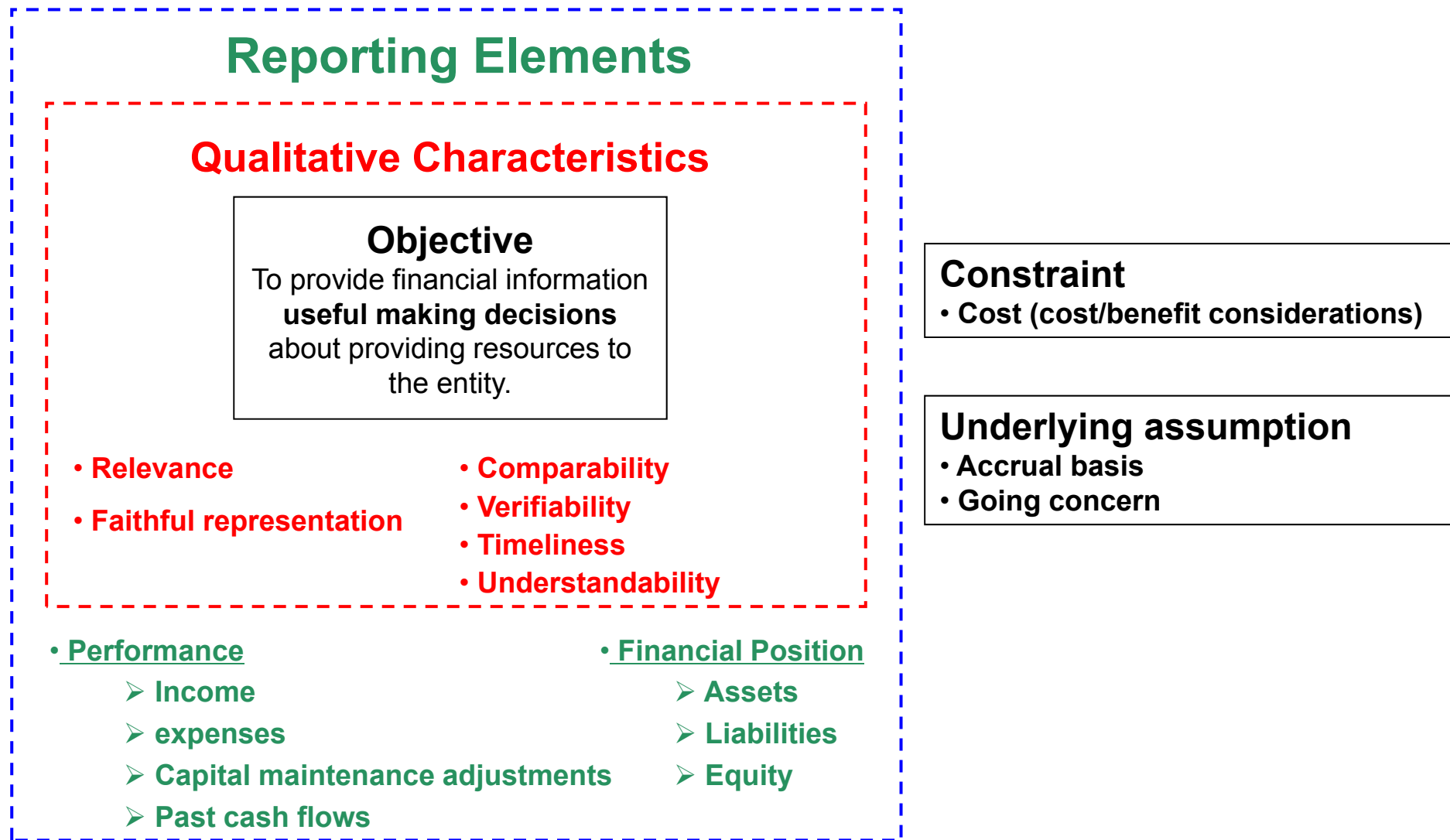
- **SEC filing requirements for publicly traded companies in the U.S.**
 - Form S-1
 - ✓ Registration statement filed prior to the sale of new securities to the public
 - Form 10-K
 - ✓ Annual financial statements
 - Form 10-Q
 - ✓ Quarterly financial statements
 - Form DEF-14A
 - ✓ Proxy statements
 - Form 8-K
 - ✓ Material events relating to
 - Significant assets acquisition and disposal
 - Changes in management or corporate governance
 - Form 144
 - ✓ Issue securities to certain qualified buyers without registering with SEC but notifying
 - Forms 3,4,5
 - ✓ The beneficial ownership of securities by a company's officers and directors

Barriers to developing one universally accept set of financial reporting standard

➤ Barriers to developing one universally accept set of financial reporting standard

- One barrier to developing one universally accepted set of accounting standards (referred to as convergence) is simply that different standard-setting bodies and the regulatory authorities of different countries can and do disagree on the best treatment of a particular item or issue.
- Other barriers result from the political pressures that regulatory bodies face from business groups and others who will be affected by changes in reporting standards.

IASB conceptual framework



IASB conceptual framework

➤ **Qualitative Characteristics:** two fundamental characteristics

- **Relevance.** Information is relevant if it would potentially affect or make a difference in user's decisions. Relevant information helps users of financial information to evaluate past, present, and future events, or to confirm or correct their past evaluations in a decision-making context. If omission or misstatement of information could influence decisions, it is considered relevant. **Materiality is an aspect of relevance.**
- **Faithful representation.** Information that *is faithfully* representative is *complete* (all information necessary is depicted), *neutral* (without bias), and *free from error* (no errors of commission or omission in the description of the economic phenomenon). Faithful representation maximizes the qualities of complete, neutral, and free from error to the extent possible.

IASB conceptual framework

➤ International Accounting Standards Board's conceptual framework

● Four characteristics that enhance relevance and faithful representation:

- ✓ **Comparability.** Financial statement presentation should be consistent among firms and across time periods.
- ✓ **Verifiability.** Independent observers, using the same methods, obtain similar results.
- ✓ **Timeliness.** Information is available to decision makers before the information is stale.
- ✓ **Understandability.** Users with a basic knowledge of business and accounting and who make a reasonable effort to study the financial statements should be able to readily understand the information the statements present. Useful information should not be omitted just because it is complicated.

IASB general requirements for financial statements

Required Financial Statements

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

General Features

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

Structure and Content

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

IAS No.1 : fundamental principles for preparing F/S

➤ General features for preparing financial statements

● Going concern basis

- ✓ Going concern basis meaning the financial statements are based on the assumption that the firm will continue to exist unless its management intends to (or must) liquidate it.

● Accrual basis of accounting

- ✓ Accrual basis of accounting is used to prepare the financial statements other than the statement of cash flows.

IAS No.1 : fundamental principles for preparing F/S

➤ General features for preparing financial statements

- **Fair presentation**

- ✓ Fair presentation defined as faithfully representing the effects of the entity's transactions and events according to the standards for recognizing assets, liabilities, revenues, and expenses.

- **Consistency**

- ✓ Consistency between periods in how items are presented and classified, with prior-period amounts disclosed for comparison.

- **Materiality**

- ✓ Materiality meaning the financial statements should be free of misstatements or omissions that could influence the decisions of users of financial statements.

- **Comparative information**

- ✓ Comparative information for prior periods should be included unless a specific standard states otherwise.

IAS No.1 : fundamental principles for preparing F/S

➤ General features for preparing financial statements

- **Aggregation**

- ✓ Aggregation of similar items and separation of dissimilar items.

- **No offsetting**

- ✓ No offsetting of assets against liabilities or income against expenses unless a specific standard permits or requires it.

- **Reporting frequency**

- ✓ Reporting frequency must be at least annually.

IAS No.1 : structure and contents of F/S

➤ The structure and content of financial statements

- **Classified balance sheet**

- ✓ Most entities should present a **classified balance sheet** showing current and non-current assets and liabilities.

- **Minimum information**

- ✓ Minimum information is required on the face of each financial statement and in the notes. For example, the face of the balance sheet must show specific items such as cash and cash equivalents, plant, property and equipment, and inventories. Items listed on the face of the comprehensive income statement must include revenue, profit or loss, tax expense, and finance costs, among others.

- **Comparative information**

- ✓ Comparative information for prior periods should be included unless a specific standard states otherwise.

Differences between IFRS and US GAAP

- Like the IASB, the FASB has a framework for preparing and presenting financial statements. The two organizations are working toward a common framework, but at present the two frameworks differ in several respects.
 - The IASB framework lists income and expenses as elements related to performance, while the FASB framework includes revenues, expenses, gains, losses, and comprehensive income.
 - The FASB defines an asset as a future economic benefit, whereas the IASB defines it as a resource from which a future economic benefit is expected to flow. Also, the FASB uses the word *probable* in its definition of assets and liabilities.
 - The FASB does not allow the upward valuation of most assets.

Differences between IFRS and US GAAP

- **A reconciliation statement**: In many cases, however, a company will present **a reconciliation statement** showing what its financial results would have been under an alternative reporting system.
- **Barriers to creating a coherent financial reporting framework include issues related to valuation, standard setting, and measurement.**
 - **Standard setting**
 - ✓ Three approaches to standard setting are a "principles-based" approach that relies on a broad framework, a "rules-based" approach that gives specific guidance about how to classify transactions, and an "objectives-oriented" approach that blends the other two approaches. IFRS is largely a principles-based approach. U.S. GAAP has traditionally been more rules-based, but the common conceptual framework is moving toward an objectives-oriented approach.

F.R.A

➤ SS7

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Income Statement Format and Components

➤ **Net income = revenues - ordinary expenses + other income - other expense + gains - losses**

- **Revenues** are the amounts reported from the sale of goods and services in the normal course of business.

- ✓ Revenue less adjustments for estimated returns and allowances is known as **net revenue**.

- **Expenses** are the amounts incurred to generate revenue and include cost of goods sold, operating expenses, interest, and taxes.

- ✓ Expenses are grouped together by their nature or function.

Expenses grouped by nature or function

➤ By nature:

- Presenting all depreciation expense from manufacturing and administration together in one line of the income statement.

➤ By function:

- Combining all costs associated with manufacturing (raw materials, depreciation, labor, etc.) as cost of goods sold.

Income Statement Format and Components

- **Gain or loss:** The difference between the sales price and book value is reported as a gain or loss on the income statement.
 - ✓ Gains and losses result in an increase (gains) or decrease (losses) of economic benefits.
 - ✓ Gains and losses may or may not result from ordinary business activities. Summarizing, net income is equal to income (revenues + gains) minus expenses (including losses).
- **Non controlling interest.** If a firm has a controlling interest in a subsidiary, the pro rata share of the subsidiary's income not owned by the parent is reported in parent's income statement as the non controlling interest (also known as minority interest or minority owners' interest).
 - ✓ The non controlling interest is subtracted in arriving at net income because the parent is reporting all of the subsidiary's revenue and expense.

Income Statement Format and Components

➤ Presentation Formats

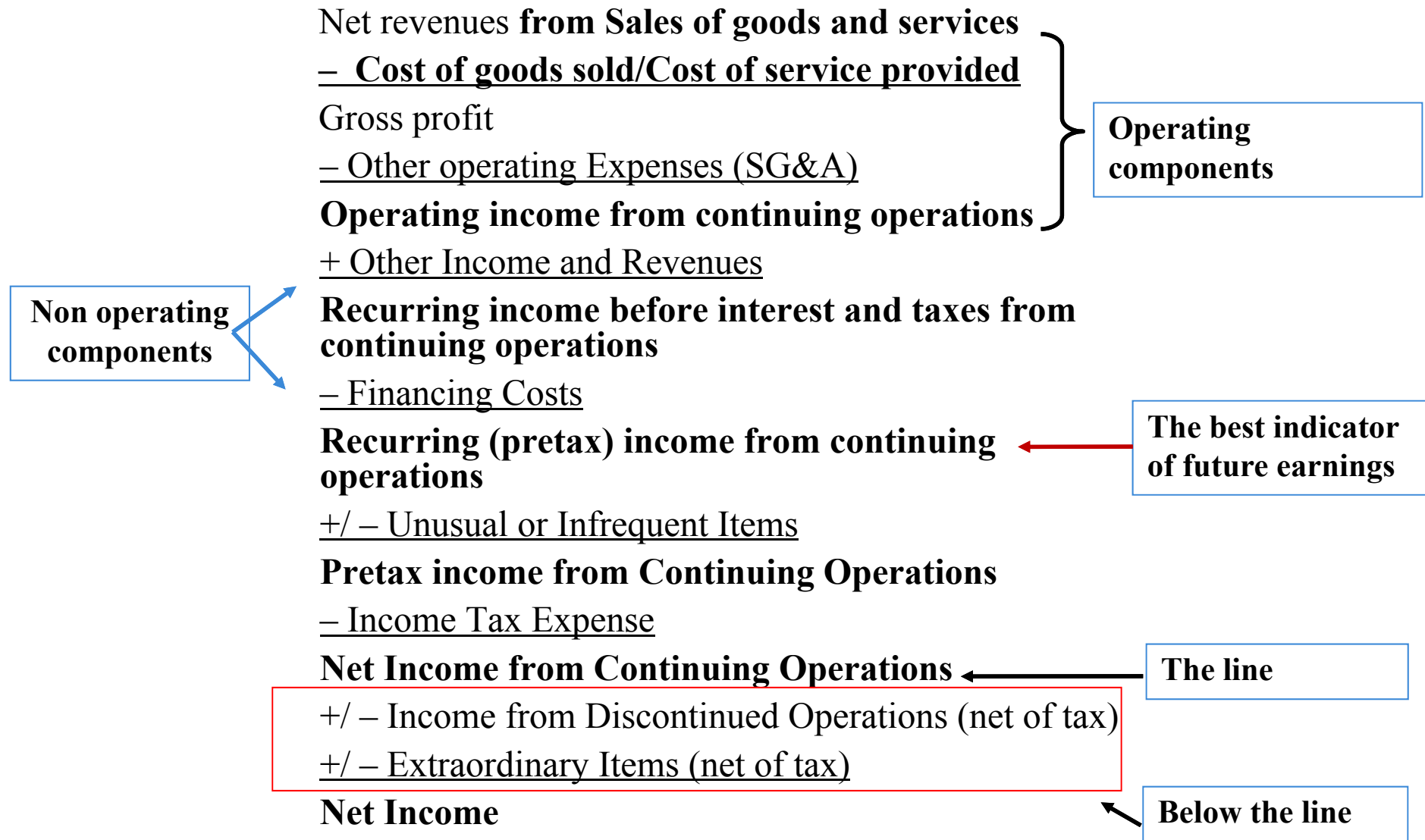
- A firm can present its income statement using a single-step or multi-step format.
 - ✓ In a single-step statement, all revenues are grouped together and all expenses are grouped together.
 - ✓ A multi-step format includes *gross profit*, revenues minus cost of goods sold.

➤ **Gross profit** is the amount that remains after the direct costs of producing a product or service are subtracted from revenue.

➤ **Operating profit or operating income:**

- Subtracting operating expenses, such as selling, general, and administrative expenses, from gross profit results in another subtotal known as **operating profit or operating income**.
- For nonfinancial firms, operating profit is profit before financing costs, income taxes, and non-operating items are considered. Subtracting interest expense and income taxes from operating profit results in the firm's net income, sometimes referred to as "**earnings**" or the "**bottom line**."

Income Statement format and components

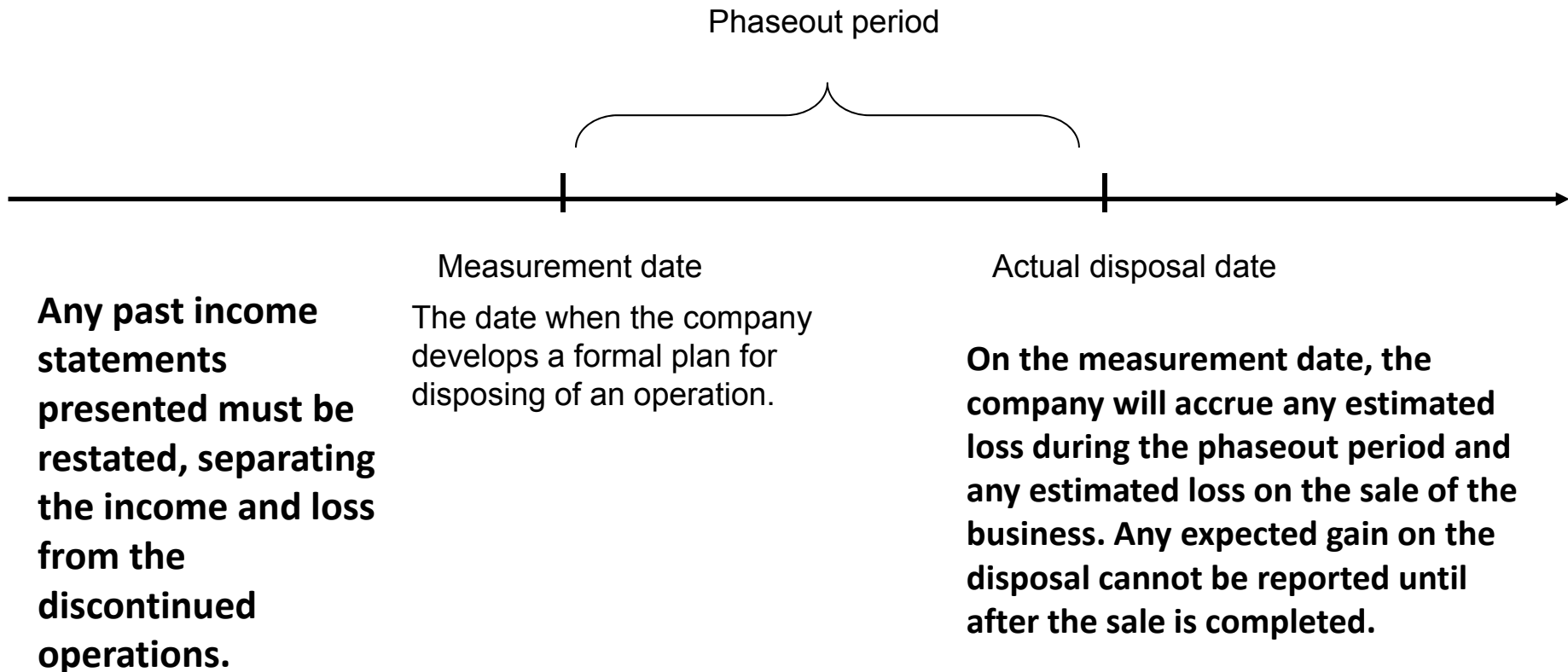


Income Statement — Format

- **Unusual or infrequent items (nonrecurring items)**
 - reported “above the line” and presented on a pretax basis
 - ✓ G/L from the sale of assets or part of a business
 - ✓ Impairments, write-offs, write-downs, and restructuring costs.
- **Extraordinary items (presented on net of tax)**
 - Loss from expropriation of assets;
 - Gains or losses from early retirement of debt;
 - Uninsured losses from natural disasters.
- **Discontinued operations (presented on net of tax)**
 - See next page.
- **Accounting changes (notes)**
 - Change in accounting principle (might be retrospective);
 - Change in accounting estimate (prospective and not a below line item).

Income Statement - Discontinued operations

Any income or loss from discontinued operations is reported separately in the income statement, net of tax, after income from continuing operations.



Income Statement Format and Components

➤ Above the line

- Unusual or infrequent items (nonrecurring items)
 - ✓ Either unusual or infrequent but not both
 - ✓ Presented on a pretax basis

➤ Below the line (presented on net of tax)

Extraordinary items	Discontinued operations	Accounting changes
<ul style="list-style-type: none"> • Both unusual and infrequent • Examples : <ul style="list-style-type: none"> • Losses from an expropriation assets • Gains or losses from early retirement of debt; • Uninsured losses from natural disasters. 	<ul style="list-style-type: none"> • The time between Measurement date and Disposal date → phase out period 	<ul style="list-style-type: none"> • Change in accounting principle → retrospective application • Change in accounting estimate → prospective application (and not a below line item). • <u>Errors</u> <ul style="list-style-type: none"> → <u>restate financial statement</u> → <u>Notes disclosure</u>

Income Statement format and components

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

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

Under the accrual basis of accounting, how much net revenue would be reported on Fairplay's 2006 income statement?

- A. \$200,000.
- B. \$800,000.
- C. \$900,000.

- **Answer: C is correct.**

- Net revenue is revenue for goods sold during the period less any returns and allowances, or \$1,000,000 minus \$100,000 — \$900,000.
- A is incorrect; this represents gross profit.
- B is incorrect; this is the cash collected that is not used under the accrual basis.

Income Statement format and components

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

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

Denali's gross profit is equal to

- A. \$280,000.
- B. \$500,000.
- C. \$1,000,000.

- **Answer: C is correct.**

- Gross margin is revenue minus cost of goods sold. A represents net income and B represents operating income.

Accrual accounting & revenue recognition

➤ Under the accrual method of accounting

- revenue is recognized when earned and expenses are recognized when incurred.
- Accrual accounting does not necessarily coincide with the receipt or payment of cash.
- Consequently, firms can manipulate net income by recognizing revenue earlier or later or by delaying or accelerating the recognition of expenses.

➤ According to the International Accounting Standards Board (IASB),

- For sale of goods, revenue is recognized when:
 - ✓ The risk and reward of ownership is transferred.
 - ✓ There is no continuing control or management over the goods sold.
 - ✓ Revenue can be reliably measured.
 - ✓ There is a probable flow of economic benefits.
 - ✓ The cost can be reliably measured.
- For services rendered, revenue is recognized when:
 - ✓ The amount of revenue can be reliably measured.
 - ✓ There is a probable flow of economic benefits.
 - ✓ The stage of completion can be measured.
 - ✓ The cost incurred and cost of completion can be reliably measured.

Accrual accounting & revenue recognition

- **According to the Financial Accounting Standards Board (FASB), revenue is recognized in the income statement when**
 - realized or realizable and
 - earned.
- **The Securities and Exchange Commission (SEC) provides additional guidance by listing four criteria to determine whether revenue should be recognized:**
 - There is evidence of an arrangement between the buyer and seller.
 - The product has been delivered or the service has been rendered.
 - The price is determined or determinable.
 - The seller is reasonably sure of collecting money.

Accrual accounting & revenue recognition

➤ Matching principle

- Revenue is recognized when **earned**
 - Expenses are recognized when **incurred**
 - Expenses the directly related to revenue generation are recognized in **the same period as the revenue**
- } **Accrual accounting**



Firms can manipulate Net income by

recognizing revenue earlier or delaying the expenses recognition

➤ Delivery Method

Revenue recognition

	Condition	Methods		Descriptions
Long-term Contract 计算	<ul style="list-style-type: none"> ✓ Projects of long-term contract. ✓ Reliable estimates of the revenues, costs and completion time. 	US-GAAP	Percentage-of-completion method	<ul style="list-style-type: none"> ✓ Revenue, expense, and profit recognized as the work is performed. ✓ Percentage of completion measured by the total cost incurred to date divided by the total expected cost of the project
		IFRS		
	<ul style="list-style-type: none"> ✓ Projects of long-term projects. ✓ Outcome of the project cannot be reliably estimated. 	US-GAAP	Completed contract method	Revenue, expense and profit are recognized only when the contract is complete.
		IFRS	<ul style="list-style-type: none"> ✓ Revenue is recognized to the extent of contract costs. ✓ Costs are expenses when incurred ✓ Profits are recognized only at completion 	

POC and CC: Example 1

- Assume that AAA construction corporation has a contract to build a ship for \$1,000 and a reliable estimate of the contract's total cost is \$800. project costs incurred by AAA are as follows:

Year	2005	2006	2007	Total
Cost incurred	\$400	\$300	\$100	\$800

Determine AAA's net income from this project for each year using the percentage – of – completion and completed contract methods

Example 1

➤ **Answer:**

● **Percentage – of – completion**

Year	2005	2006	2007	Total
Revenue	\$500	\$375	\$125	\$1,000
Expense	<u>(\$400)</u>	<u>(\$300)</u>	(\$100)	(\$800)
net income	\$100	\$75	\$25	\$200

● **Completed contract method**

Year	2005	2006	2007	Total
Revenue	-	-	\$1,000	\$1,000
Expense	-	-	<u>(\$800)</u>	<u>(\$800)</u>
net income	-	-	\$200	\$200

Revenue recognition

➤ POC vs. Completed-contract: Impact on F/S during one fiscal year

F/S	Items	POC	Completed Contract
CFS	Cash flows	Same	Same
I/S	Income Volatility	Less	Reverse
	Net Income	Greater	

Revenue recognition

Installment contract (a firm finances a sale and payments are expected to be received over an extended period)	GAAP	Collectability cannot be reasonably estimated.	Installment sales method (Similar to percentage of completion method)	<ul style="list-style-type: none"> ✓ Profit is recognized as cash is collected ✓ Profit is equal to cash collected during the period multiplied by the total expected profit as a percentage of sales ✓ Used in limited circumstances, eg. sale of estate or other firm assets
		Collectability is highly uncertain.	Cost recovery method (Similar to the completed contract method)	<ul style="list-style-type: none"> ✓ Sales are recognized when cash is received ✓ Profit is recognized only when cash collected exceeds costs incurred.
	IFRS	Outcome can be reliably estimated	<ul style="list-style-type: none"> ✓ The discounted present value of the installment payments is recognized at the time of sale. ✓ The difference between the installment payments and the discounted present value is recognized as interest over time 	
		Outcome cannot be reliably estimated	Revenue recognition under IFRS is similar to cost recovery method	

Example 2

- Assume BBB property corporation sells a piece of land for \$1,000. the original cost of the land was \$800. collections received by BBB for the sale are as follows:

Year	2005	2006	2007	Total
Collection	\$400	\$400	\$200	\$1,000

Determine BBB's profit under the installment and cost recovery methods.

Example 2

➤ Answer:

- Installment method

Year	2005	2006	2007	Total
Revenue	\$400	\$400	\$200	\$1,000
Expense	<u>(\$320)</u>	<u>(\$320)</u>	<u>(\$160)</u>	<u>(\$800)</u>
net income	\$80	\$80	\$40	\$200

- Cost recovery method

Year	2005	2006	2007	Total
Revenue	\$400	\$400	\$200	\$1,000
Expense	<u>(\$400)</u>	<u>(\$400)</u>	-	<u>(\$800)</u>
net income	-	-	\$200	\$200

Revenue recognition: barter transaction

➤ Barter Transactions

- In a **barter transaction**, two parties exchange goods or services without cash payment.
- A **round-trip transaction** involves the sale of goods to one party with the simultaneous purchase of almost identical goods from the same party. The underlying issue with these transactions is whether revenue should be recognized.

➤ According to U.S. GAAP

- revenue from a barter transaction can be recognized at fair value only if the firm has historically received cash payments for such goods and services and can use this historical experience to determine fair value.
- Otherwise, the revenue is recorded at the carrying value of the asset surrendered.

➤ Under IFRS

- revenue from barter transactions must be based on the fair value of revenue from similar nonbarter transactions with unrelated parties.

Gross vs. Net reporting of revenue

➤ Gross and Net Reporting of Revenue

- Under **gross revenue reporting**, the selling firm reports sales revenue and cost of goods sold separately.
- Under **net revenue reporting**, only the difference in sales and cost is reported. While profit is the same, sales are higher using gross revenue reporting.

➤ The following criteria must be met in order to use gross revenue reporting under U.S. GAAP.7 The firm must:

- Be the primary obligor under the contract.
- Bear the inventory risk and credit risk.
- Be able to choose its supplier.
- Have reasonable latitude to establish the price.

Implications for Financial Analysis of Revenue Reorganization

- Users of financial information must consider two points when analyzing a firm's revenue:
- how conservative are the firm's revenue recognition policies
(recognizing revenue sooner rather than later is more aggressive)
 - the extent to which the firm's policies rely on judgment and estimates.

Revenue recognition: Example

- **Example:** Consider a travel agent who arranges a first-class ticket for a customer flying to Singapore. The ticket price is \$10,000, and the travel agent receives a \$1,000 commission.
- Using gross reporting, the travel agent would report \$10,000 of revenue, \$9,000 of expense, and \$1,000 of profit.
 - Using net reporting, the travel agent would simply report \$1,000 of revenue and no expense.

Earnings per share (EPS)

➤ Earnings per share (EPS)

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

- ✓ Basic EPS

- ✓ Dilutive EPS

- Convertible debt
- Convertible preferred stock
- Stock option
- Warrants

Basic EPS

- The **basic EPS** calculation does not consider the effects of any dilutive securities in the computation of EPS.

$$\text{basic EPS} = \frac{NI - \text{div}_{\text{preferred stock}}}{\text{weighted average number of common shares outstanding}}$$

- Weighted average number of common share outstanding
- New issue, repurchase is **weighted by time (days or months)**;
 - Stock dividend & stock split
 - ✓ A stock dividend is the distribution of additional shares to each shareholder in an amount proportional to their current number of shares. If a 10% stock dividend is paid, the holder of 100 shares of stock would receive 10 additional shares.
 - ✓ A stock split refers to the division of each "old" share into a specific number of "new" (post-split) shares. The holder of 100 shares will have 200 shares after a 2-for-1 split or 150 shares after a 3-for-2 split.
 - ✓ **stock dividend/split is not weighted by time, instead it should adjust the number of common share which exist before the stock dividend or split.**

Example 3

➤ Johnson company has net income of \$10,000 and paid \$1,000 cash dividend to its preferred shareholders and \$1,750 cash dividend to its common shareholders. At the beginning of the year, there were 10,000 shares of common stock outstanding. 2,000 new shares were issued on July 1. what is johnson's basic EPS?

➤ **Answer:**

- Weighted average shares = $10,000 \times (12/12) + 2,000 \times (6/12) = 11,000$
- BEPS = $(\$10,000 - \$1,000)/11,000 = \$0.82$

Diluted EPS

➤ Dilutive securities & Antidilutive securities

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

➤ In the case of diluted EPS, if there are dilutive securities, then the numerator must be adjusted as follows:

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

Diluted EPS

➤ When the firm has dilutive securities outstanding

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

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

Diluted EPS

$$\text{diluted EPS} = \frac{\text{adjusted income available for common shares}}{\text{weighted avg. common \& potential common shares out}}$$

$$= \frac{\left[\begin{array}{c} \text{NI} \\ - \text{div}_{\text{preferred}} \end{array} \right] + \left[\begin{array}{c} \text{div}_{\text{convertible preferred}} \end{array} \right] + \left[\begin{array}{c} \text{interest}_{\text{convertible debt}} \end{array} \right] (1-t)}{WACSO + \left[\begin{array}{c} \text{shares}_{\text{conversion of conv. pfd. shares}} \end{array} \right] + \left[\begin{array}{c} \text{shares}_{\text{conversion of conv. debt}} \end{array} \right] + \left[\begin{array}{c} \text{shares}_{\text{issuable from stock opt.}} \end{array} \right]}$$

Example 5

➤ EPS with convertible preferred stock

During 2006, GF reported net income of \$115,600, and had 200,000 shares of common and 1,000 shares of preferred stock outstanding for the entire year. GF's 10%, \$100 par value preferred-stock are each convertible to 40 shares of common stock. The tax rate is 40%.

Compute diluted EPS

➤ Answer:

- $BEPS = (\$115,600 - \$100 \times 1000 \times 10\%) / 200,000 = 52.8 \text{ Cents}$
- Adjusted income available for common shares = \$115,600
- Weighted average common shares and potential shares = $200,000 + 1000 \times 40 = 240,000$
- $DEPS = \$115,600 / 240,000 = 48.2 \text{ Cents}$

Example 4

➤ EPS with convertible debt

During 2006 GF corp. reported net income of \$115,600 and had 200,000 shares of common stock outstanding for the entire year. GF also had 1,000 shares of 10%, par \$100 preferred stock outstanding during 2006. During 2005, GF issued 600, \$1,000 par, 7% bonds for \$600,000 (issued at par). Each of these bonds is convertible to 100 shares of common stock. The tax rate is 40%.

Compute the 2006 basic and diluted EPS.

➤ Answer:

- $BEPS = (\$115,600 - \$100 \times 1000 \times 10\%) / 200,000 = 52.8 \text{ Cents}$
- Adjusted income available for common shares =
 $\$115,600 - \text{pref div } \$10,000 + \text{int saving } \$600,000 \times 7\% \times (1-40\%) = \$130,800$
- Weighted average common shares and potential shares =
 $200,000 + 600 \times 100 = 260,000$
- $DEPS = \$130,800 / 260,000 = 50.3 \text{ Cents}$

Diluted EPS

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

Diluted EPS

➤ Example: Treasury stock method

- Baxter Company has 5,000 shares outstanding all year. Baxter had 2,000 outstanding warrants all year, convertible into one share each at \$20 per share. The year-end price of Baxter stock was \$40, and the average stock price was \$30. What effect will these warrants have on the weighted average number of shares?
- Answer:
 - ✓ If the warrants are exercised, the company will receive $2,000 \times \$20 = \$40,000$ and issue 2,000 new shares.
 - ✓ The treasury stock method assumes the company uses these funds to repurchase shares at the average market price of \$30.
 - ✓ The company would repurchase $\$40,000 / \$30 = 1,333$ shares.
 - ✓ Net shares issued would be $2,000 - 1,333 = 667$ shares.

Example 6

➤ EPS with Warrants/ Stock options

GF has 5000 shares outstanding all year. GF had 2000 outstanding warrants all year, convertible into one share each at \$20 per share. The year-end price of GF stock was \$40, and the average stock price was \$30. If GF had net income of \$10,000 of the year, what is GF basic and diluted EPS?

➤ Answer:

- $BEPS = \$10,000 / 5,000 = \2.00
- Adjusted income available for common shares = \$10,000
- Weighted average common shares and potential shares =
 $5,000 + 667 = 5,667$
- $DEPS = \$10,000 / 5,667 = \1.76

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

Comprehensive income

➤ Retained earnings

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

➤ Comprehensive income

- **Comprehensive income** is a more inclusive measure that includes all changes in equity except for owner contributions and distributions. That is, comprehensive income is the sum of net income and other comprehensive income. Other comprehensive income includes transactions that are not included in net income.
- Other comprehensive Income for both GAAP and IFRS
 - ✓ 1.Foreign currency translation gains and losses.
 - ✓ 2.Certain costs of a company's defined benefit post-retirement plans that are not recognized in the current period.(actuarial gains/losses)
 - ✓ 3.Unrealized gains and losses from cash flow hedging derivatives.
 - ✓ 4.Unrealized gains and losses from available-for-sale securities.
- **Under IFRS**, other comprehensive income includes certain changes in the value of long-lived assets that are measured using the revaluation model rather than the cost model

Comprehensive income

Comprehensive income	
	\$
Net income	50
Other comprehensive income:	
Foreign currency translation gains and (losses)	15
Adjustment for minimum pension liabilities	(10)
Unrealized gains and (losses) form cash flow hedging derivatives	3
Unrealized gains and (losses) form available – for –sale securities	<u>2</u>
Comprehensive income	60

F.R.A

➤ SS7

- R22: Financial Statement Analysis: An Introduction
- R23: Financial Reporting Mechanics
- R24: Financial Reporting Standards

➤ SS8

- R25: Understanding the I/S
- R26: Understanding the B/S
- R27: Understanding the C/F
- R28: Financial Analysis Techniques

➤ SS9

- R29: Inventories
- R30: Long-Lived Assets
- R31: Income Taxes
- R32: Long-Term Liabilities and Leases

➤ SS10

- R33: Financial Reporting Quality: Red Flags and Accounting Warning Signs
- R34: Financial Statement Analysis: Applications

Balance Sheet format and components

➤ Assets :

- Provide **probable future economic benefits controlled** by an entity as a result of **previous transactions**.
- Current and Non – current assets (Long – lived assets)

➤ Liabilities :

- Are **obligations owed** by an entity **from previous transactions** that are expected to result in **an outflow of economic benefits in the future**.
- Current and Non – current liabilities (Long – term liabilities)

➤ Stockholders' equity :

- Is **the residual interest in assets** that remains after subtracting a firm's liabilities.
- A financial statement item should be recognized if a future economic benefit from the item (flowing to or from the firm) is **probable** and the item's value or cost can be measured reliably.

Balance Sheet - Limitations

- Uses and limitations of the balance sheet in financial analysis.
 - The balance sheet can be used to assess a firm's liquidity, solvency, and ability to make distributions to shareholders.
 - ✓ From the firm's perspective, liquidity is the ability to meet short-term obligations
 - ✓ Solvency is the ability to meet long-term obligations.

Alternative formats of balance sheet presentation

➤ Classified balance sheet

- Both IFRS and U.S. GAAP require firms to separately report their current assets and noncurrent assets and current and noncurrent liabilities.
- The current/noncurrent format is known as a classified balance sheet and is useful in evaluating liquidity.

➤ Liquidity-based presentations

- Under IFRS, firms can choose to use a liquidity-based format if the presentation is more relevant and reliable.
- Liquidity-based presentations, which are often used in the banking industry, present assets and liabilities in the order of liquidity.

Balance Sheet format and components

➤ Account format

The balance sheet

Assets	X	Equity	X
	<hr/>	Liabilities	<hr/> X
Total assets	X	Total equity and liabilities	X

➤ Report format - Classified balance sheet

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

Balance Sheet format and components

➤ Assets :

Current assets	Cash and equivalents	Presented in the order of liquidity
	Accounts receivable	
	Inventory	
	Prepaid expenses	
	Short – term investments	
	Other current assets	
Non current assets	Property , plant and equipment (PP&E)	
	Intangible assets	
	Long – term investments	
	Deferred tax assets	
	Pension assets	

Balance Sheet format and components

➤ Liabilities :

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

Balance Sheet format and components

➤ Stockholders' equity :

Capital	Common stock , preferred stock
Additional paid-in-capital	Capital in excess of par i.e. premium
Treasury stock	Stock has been reacquired by the issuing firm but not yet retired No voting rights, no dividend
Retained earnings	Net Income – Dividend
Accumulated other comprehensive income	<ul style="list-style-type: none">• Foreign currency translation gains and losses.• Adjustments for minimum pension liability.• Unrealized gains and losses from cash flow hedging derivatives.• Unrealized gains and losses from available-for-sale securities
Minority interest / Non-controlling interest	Group accounting

Financial instruments

Category	Measurement	Unrealized/Realized Gains or Losses
Held-to-maturity	Amortized cost	Unrealized: not reported Realized: reported in income statement
Trading	Fair value	Unrealized: reported in income statement Realized: reported in income statement
Available-for-sale	Fair value	Unrealized: reported in equity Realized: reported in income statement

Financial instruments: Example 2

➤ **Example 2:** For financial assets classified as trading securities, how are unrealized gains and losses reflected in shareholders' equity?

A. They are not recognized.

B. As an adjustment to paid-in capital.

C. They flow through income into retained earnings.

➤ **Answer:**

C is correct.

- For financial assets classified as trading securities, unrealized gains and losses are reported on the income statement and flow to shareholders' equity as part of retained earnings.

Financial instruments: Example 3

➤ **Example 3: For financial assets classified as available for sale, how are unrealized gains and losses reflected in shareholders' equity?**

A. They are not recognized.

B. They flow through retained earnings.

C. As a separate line item (other comprehensive income)

➤ **Answer:**

C is correct.

- For financial assets classified as available for sale, unrealized gains and losses are not recorded on the income statement but do appear on the balance sheet. Shareholders' equity is adjusted through a separate line item for valuation gains and losses termed "other comprehensive income."

F.R.A

➤ SS7

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- R24: Financial Reporting Standards

➤ SS8

- R25: Understanding the I/S
- R26: Understanding the B/S
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➤ SS9

- R29: Inventories
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➤ SS10

- R33: Financial Reporting Quality: Red Flags and Accounting Warning Signs
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The cash flow statement

- **The cash flow statement provides information beyond that available from the income statement, which is based on accrual, rather than cash, accounting. The cash flow statement provides the following:**
 - Information about a company's cash receipts and cash payments **during an accounting period.**
 - Information about a company's operating, investing, and financing activities.
 - An understanding of the impact of accrual accounting events on cash flows.
- Items on the cash flow statement come from two sources
 - Income statement items
 - Changes in balance sheet accounts
 - Operating cash flow
 - + Investing cash flow
 - + Financing cash flow
 - = Change in cash balance for the current year
 - + Beginning cash balance
 - = Ending cash balance

Non cash activities are not reported in the cash flow statement

Types of Cash flows

➤ U.S. GAAP Cash Flow Classification

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

Type of cash flows

➤ U.S. GAAP Cash Flow Classification

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

Type of cash flows

➤ U.S. GAAP Cash Flow Classification

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

Type of cash flows

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

Direct method is encouraged

CFO calculation——Direct Method & Indirect Method

➤ **The *only* difference between the indirect and direct methods of presentation is in the cash flow from operations (CFO).**

- **Direct Method**

- Straightly begins with Revenue, and Converts an accrual-basis income statement into a cash-basis income statement.

- ✓ CFO under the direct method can be computed using a combination of

- ✓ **The income statement**

- **Indirect Method (for CFO only)**

- Net income is converted to operating cash flow by making adjustments for transactions that affect net income but are not cash transactions.
- The direct method gives the analyst more information than the indirect method. The analyst can see the actual amounts that went to each use of cash and that were received from each source of cash, which can help the analyst to better understand the firm's performance over time and to forecast future cash flows.

Cash Flow Statement — Memorizing Tips

A basic setting: To an entity

- Cash inflow: +
- Cash outflow: -

Liability

- + Δ ; Namely, + (ending – beginning)

Assets

- - Δ ; Namely, - (ending – beginning)

CFO calculation——Direct Method & Indirect Method

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

CFO calculation——Direct Method & Indirect Method

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

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

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

- A. 25.
- B. 35.
- C. 45.

CFO calculation——Direct Method & Indirect Method

➤ **Answer:**

C is correct.

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

CFO calculation——Direct Method & Indirect Method

Calculation of CFO by Direct method	
Cash received from customers	Opening A/R + net sales – Closing A/R=Net sales- Δ A/R
- Cash paid to suppliers	Opening A/P + COGS – Closing A/P = - COGS + Δ A/P- Δ Inv+ (Depreciation included in COGS)
- Cash paid to employees	Opening wage payables + wage expense – Closing wage payables =-wage expense + Δ wage payables
- Interests paid	Opening interest payables + interest expense – Closing interest payables =- interest expense + Δ Interest payables
- Tax paid	Opening tax payables + income tax expense – Closing tax payables = - income tax expense + Δ tax payables
= CFO	

CFO calculation——Direct Method & Indirect Method

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

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

CFO calculation——Direct Method & Indirect Method

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

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

➤ **Answer:**

C is correct.

- Cash received from customers = Sales + The decrease in accounts receivable
 $= 254.6 + 4.9 = 259.5$.
- Cash paid to suppliers = Cost of goods sold + The increase in inventory - Increase in accounts payable
 $= 175.9 + 8.8 - 2.6 = 182.1$

Cash Flow Statement — Calculation

Calculation of CFO — Direct method

Cash collection = net sales

Cash inputs = — COGS

Cash expenses = — operating expenses

Cash interest = — interest expenses

Cash taxes = — income tax expenses

— $\Delta A/R + \Delta \text{unearned revenue}$

— $\Delta \text{inventories} + \Delta A/P + (\text{Dep})$

+ $\Delta O/P + \Delta \text{accrual expense}$

+ $\Delta I/P$

+ $\Delta T/P + \Delta \text{DTL} - \Delta \text{DTA}$

Net income

+ Depreciation

+/- L/G not relating to operating activities

— $\Delta \text{working capital (excluding cash, loan, dividend payables and N/P)}$

Note: Δ here means increase.

CFI Calculation

➤ Cash used in purchase of fixed assets:

- Pay attention to the movement of fixed assets.
- Book Value = Carrying value = Purchase cost – AD – Impairment
- $NBV_{end} = NBV_{Begin} + \text{Purchase} - \text{Disposal NBV} - \text{Depreciation}$

➤ Proceeds received from sale of fixed assets

- Gain or loss = proceeds received – disposal NBV
- Gain or loss resulting from disposal of PP&E or other long term assets are **NOT** presented in the CFI; instead, cash generated should be calculated based on the gain or loss.

➤ Review other non-current assets: an increase in these items using cash, and vice versa.

CFI Calculation

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

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

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

CFI Calculation

➤ **Answer:**

C is correct.

- Selling price (cash inflow) minus book value equals gain or loss on sale; therefore, gain or loss on sale plus book value equals selling price (cash inflow). The amount of loss is given, \$2 million. To calculate the book value of the equipment sold, find the historical cost of the equipment and the accumulated depreciation on the equipment.
 - Beginning balance of equipment of \$100 million plus equipment purchased of \$10 million minus ending balance of equipment of \$105 million equals the historical cost of equipment sold, or \$5 million.
 - Beginning accumulated depreciation of \$40 million plus depreciation expense for the year of \$8 million minus ending balance of accumulated depreciation of \$46 million equals accumulated depreciation on the equipment sold, or \$2 million.
 - Therefore, the book value of the equipment sold was \$5 million minus \$2 million, or \$3 million.
 - Because the loss on the sale of equipment was \$2 million, the amount of cash received must have been \$1 million.

CFF Calculations

- **All events that could have increased or decreased cash must be reconstructed.**
- **Review interest-paying debt and stock**
 - Increases supply cash and decreases use cash.
- **Dividend paid**
 - $\text{Dividend paid} = - \text{Dividend declared} + \Delta \text{dividend payables}$
 - $\text{Opening R/E} + \text{Net Income} - \text{Dividend declared} = \text{Ending R/E}$

CFF Calculation

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

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

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

- **Answer:**
A is correct.

Free Cash Flow

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

Free Cash Flow

***For firms follow IFRS that treat Dividend paid as part of CFO, the dividend paid must be added back for free cash flow calculation**

➤ FCFF

- $EBIT \times (1 - \text{tax rate}) + NCC - FCInv - WCInv$
- $NI + NCC - WCInv - FCInv + [Int \times (1 - \text{tax rate})]$
- $CFO - FCInv + [Int \times (1 - \text{tax rate})]$

➤ FCFE

- $FCFF - Int \times (1 - \text{tax rate}) + \text{Net borrowing}$
- $CFO - FCInv + \text{Net borrowing}$

Where:

- NI = net income
- NCC = noncash charges (depreciation and amortization)
- Int = interest expense
- FCInv = fixed capital investment (net capital expenditure)
- WCInv = working capital investment
- Net borrowing = debt issued – debt repaid

Free Cash Flow

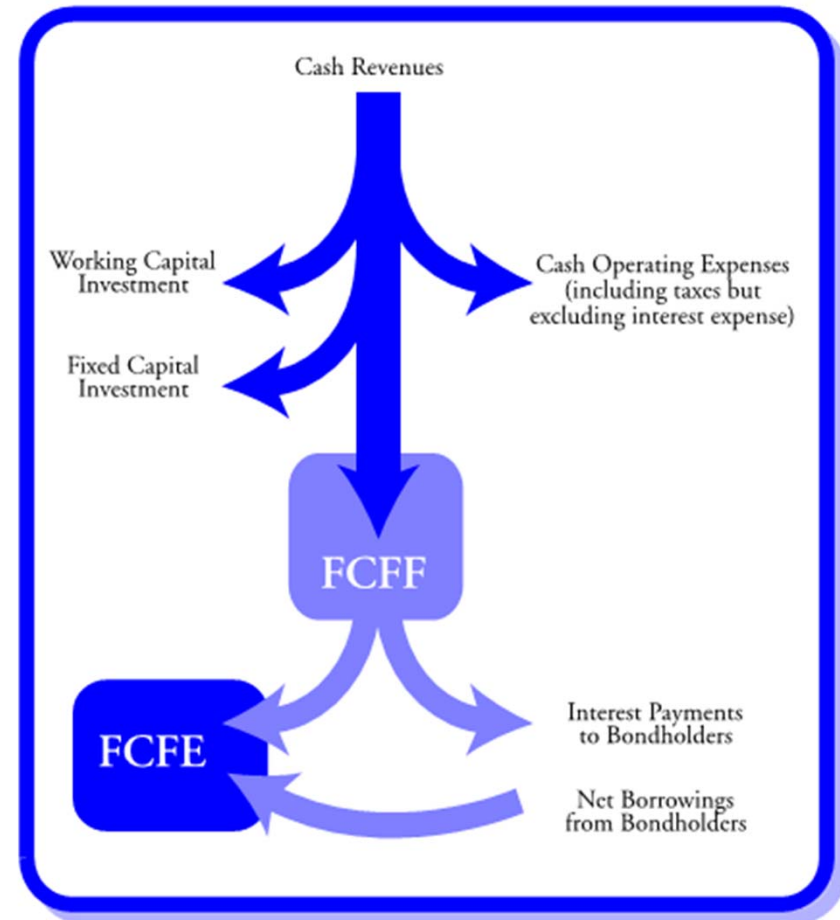
Free cash flow

- Free cash flow attempts to measure discretionary purposes.
- Two common measure:
 - Free cash flow to firm (FCFF)
 - Free cash flow to equity (FCFE)

US GAAP :

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

$$\text{FCFE} = \text{CFO} - \text{FC Inv} + \text{Net borrowing}$$



F.R.A

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➤ SS10

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Framework

- 1. Common – size analysis**
- 2. Ratios and Ratio analysis**
- 3. DuPont system of analysis**
- 4. Equity analysis, credit analysis and segment analysis**

1. Financial statement analysis framework

➤ 分析资产负债表可以全面了解公司的健康状况

- 是否“负荷过重”——欠银行和供应商太多的钱
- 是否“贫血”——账面上的现金和现金等价物是否过低
- “新陈代谢”是否正常——存货和应收账款周转是否过慢
- 进一步可分析偿债能力，包括短期、长期偿债能力；营运能力，包括总资产周转率、流动资产周转率、营业周期等

Common – size analysis

- Common – size I/S $\frac{\text{income statement account}}{\text{revenues}}$
- Common – size B/S $\frac{\text{balance sheet account}}{\text{total assets}}$
- Common – size CFS $\frac{\text{cash flow statement account}}{\text{revenues}}$

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

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

Analysis of CFS

➤ Which is an appropriate method of preparing a common-size cash flow statement?

- A. Begin with net income and show the items that reconcile net income and operating cash flows.
- B. Show each line item on the cash flow statement as a percentage of net revenue.
- C. Show each line item on the cash flow statement as a percentage of total cash outflows.

➤ Answer:

B is correct.

- Dividing each line item on the cash flow statement by net revenue is one of two acceptable approaches for preparing a common-size cash flow statement. The other acceptable approach involves expressing each line item of cash inflow (outflow) as a percentage of total inflows (outflows) of cash. Answer A is a description of the indirect method of determining cash flow from operations. Answer C is incorrect because in describing an alternative way to prepare a common-size cash flow statement it fails to distinguish between the divisor appropriate for cash outflows and cash inflows.

Ratio and Ratio analysis

➤ Categories of ratios

- **Profitability** ratio – ability to generate profit
- **Activity** ratio – efficiency in using assets to generate revenue
- **Liquidity** ratio – ability to pay short – term debt
- **Solvency** ratio – ability to pay long – tem debt
- **Valuation** ratio – analysis for investment in common equity

Profitability Ratios

➤ Profit / Net revenue

Gross profit margin = *Gross profits* / net revenue

Operating profit margin = *EBIT* / net revenue

Pretax margin = *EBT* / net revenue

Net profit margin = *NI* / net revenue

➤ Profit / Capital

Return on assets (ROA) = $[NI + \text{interest} (1-t)] / \text{average total assets}$

Operating return on assets = *EBIT* / average total assets

$[Return\ on\ total\ capital\ (ROTC) = EBIT / average\ total\ capital]$

Return on equity (ROE) = *NI* / average total equity

Return on common equity = $(NI - \text{Preferred Dividend}) / \text{average common equity}$

Activity Ratios

Inventory	A/R	A/P
Inventory turnover = COGS / average inventory	Receivables turnover = Net revenue / average A/R	Payables turnover = Purchase / average A/P
Average inventory processing period = 365 / inventory turnover	Average receivables collection period = 365 / receivables turnover	Average payment period = 365 / payables turnover
Operating cycle = collection period + inventory period		
Cash conversion cycle = collection period + inventory period - payment period.		

Corporate
finance

Activity Ratios

➤ **A firm's efficiency in using assets to generate revenue**

- Turnover = Net revenue / assets

Total asset turnover = net revenue / average total assets

Fixed asset turnover = net revenue / average net fixed assets

Working capital turnover = net revenue / average WC

Where:

Working capital = current assets – current liabilities

Liquidity Ratios

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

Current ratio = Current assets / Current liabilities

Quick ratio = [cash + marketable securities + receivable] / Current liabilities

= [current asset - inventories] / Current liabilities

Cash ratio = [cash + marketable securities] / Current liabilities

Defensive interval = (cash + marketable securities + receivables) / average daily expenditures

Solvency Ratios

➤ A firm's ability to pay long – term debt

➤ Leverage

Debt-to-equity ratio = D / E

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

Debt-to-assets = D / A

Financial leverage = A / E

➤ Coverage

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

Fixed charge coverage = $(EBIT + \text{lease payments}) / (\text{Interest} + \text{lease payments})$

Valuation Ratios

	Numerator	Denominator
P / E	Price per share	Earnings Per share
P / CF		Cash flow per share
P / S		Sales per share
P / BV		Book Value per share

	Numerator	Denominator
BEPS & DEPS		
Cash flow per share	Cash flow from operations	Weighted average number of ordinary shares outstanding
EBITDA per share	EBITDA	
Dividends per share	Common dividends declared	

2.6 Valuation Ratios — Application

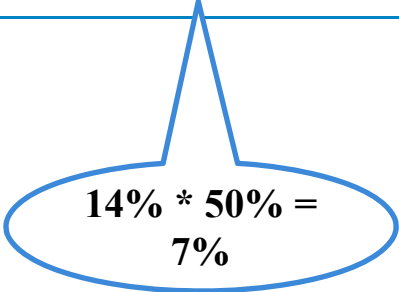
➤ 庄家如何通过财务造假的“财计”赚股民的血汗钱

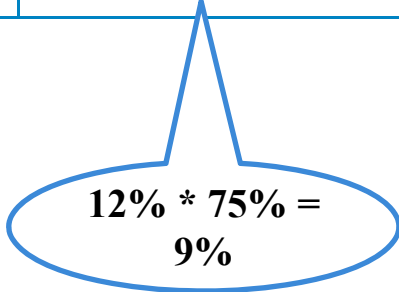
- 假设某国内上市公司，总股本1亿股，业绩较差，正常情况下可以取得每股利润0.1元，此时的每股股价4元，则市盈率40倍 ($4/0.1=40$)。此时来了一个庄家，相中了这家上市公司，并经过一段时间购买了40%的股票，即4000万股，每股4元，庄家总共投入1.6亿元 ($4000\text{万} \times 4\text{元}$)。接着，上市公司把一笔分文不值的劣质资产高价卖掉，假设劣质资产多卖了1亿元。但让上市增加了1亿元的利润，即每股利润提升了1元，使每股利润达到1.1元 ($1+0.1=1.1$)。如果上市公司的市盈率还是保持40倍不变，则股价应为44元 ($40 \times 1.1=44$)。如果庄家能在这个价位卖掉股票，减去当初投入的1.6亿元和买劣质资产损失的1亿元，庄家最终获利15亿元

Sustainable growth rate

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

	Company A	Company B
EPS	3	4
DPS	1.5	1
ROE	14%	12%


$$14\% * 50\% = 7\%$$


$$12\% * 75\% = 9\%$$

DuPont system of analysis

➤ The three-part approach

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

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

Example 1

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

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

Example 1

➤ **Answer:**

● ROE

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

● DuPont (Some rounding in values)

	2003	2004	2005
Net income/sales	7.0%	6.4%	5.3%
Sales / assets	1.33	1.21	1.17
Assets / equity	1.93	2.34	2.78

DuPont system of analysis

➤ The five-part analysis

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

- Tax burden = $1 - \text{tax rate}$
- Interest burden = $1 - \text{interest rate}$

Analysis of CFO

Other cash flow ratios	
Performance ratios	Coverage ratio
CFO/ Revenue	CFO / Total debt
CFO/ Average total assets	CFO / Cash paid for long - term assets
CFO / Average total equity	CFO / Cash long – term debt repayment
CFO/ Operating income	CFO/ dividend paid
(CFO – Preferred dividends) / Weighted average number of common shares	CFO / Cash outflows from investing and financing activities
	(CFO + interest paid + taxes paid)/ Interest paid

Equity analysis, Credit analysis and Segments analysis

- **Credit analysis – A firm's ability to service and repay its debt (Credit risk)**
 - The analysis of a company's financial reports
 - A broad assessment of a company's operations
 - ✓ Meeting with management
 - ✓ Tours of major facilities.
 - ✓ Meeting of a ratings committee after considering factors that include :
 - Business risk
 - Financial risk - Interest coverage ratio, Return on capital, Debt - to - asset ratio and Ratios of cash flow to total debt, **Z- score**.

Credit Analysis

➤ Z – score

$$Z = 1.2 A + 1.4 B + 3.3 C + 0.6 D + 1.0 E$$

Where:

$$A = WC / TA$$

$$B = RE / TA$$

$$C = EBIT / TA$$

$$D = MV \text{ of Equity} / BV \text{ of Debt}$$

$$E = \text{Revenue} / TA$$

✓ If $Z < 1.8 \rightarrow \text{Bankruptcy}$

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➤ SS7

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➤ SS10

- R33: Financial Reporting Quality: Red Flags and Accounting Warning Signs
- R34: Financial Statement Analysis: Applications

Framework

1. Inventory accounting/ The cost flow method

- Specific identification
- Last in first out (LIFO)
- First in first out (FIFO)
- Weighted average (AVCO)

2. Periodic vs. Perpetual Inventory systems*

3. Inventory valuation

- U.S. GAAP
- IFRS

4. Inventory management

5. Inventory disclosure *

Inventory accounting

➤ Cost of goods sold (COGS)

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

Inventory accounting

➤ Product costs

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

➤ Period costs

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

Inventory valuation method

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

Inventory valuation method

Method	Assumption	Cost of goods sold consist of...	Ending inventory consists of...
FIFO (U.S. and IFRS)	The items first purchased are the first to be sold.	first purchased	More recent purchases
LIFO (U.S. only)	The items last purchased are the first to be sold.	last purchased	Earliest purchases
Weighted average cost AVCO (U.S. and IFRS)	Items sold are a mix of purchases.	Average cost of all items	Average cost of all items

Inventory valuation method

➤ Being the time of raising price

	FIFO	LIFO	AVCO
B/S Ending inventory	110,000	105,000	109,091
I/S COGS	490,000	495,000	490,909

Better

Better

- LIFO provides the most useful estimate of COGS on the I/S
- FIFO provides the most useful estimate of Inventory value on the B/S

Inventory valuation method

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

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

Inventory valuation method: Example 1

➤ **Example 1: Zimt AG uses the FIFO inventory accounting method, and Nutmeg Inc. uses the LIFO method. Compared to the cost of replacing the inventory, during periods of rising prices the cost of goods sold reported by**

- A. Zimt is too low.
- B. Nutmeg is too low.
- C. Nutmeg is too high.

➤ **Answer :**

A is correct.

- Zimt uses the FIFO method, so its cost of goods sold represents units purchased at a (no longer available) lower price. Nutmeg uses the LIFO method, so its cost of goods sold is approximately equal to the current replacement cost of inventory.

Inventory systems*

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

Example 2*

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

Example 2 – FIFO (Periodic)*

Jan sale of 7 units consists of:			
Units	From	Costs	\$
2	Jan 1 beginning inventory	2 units @ \$2each	4
3	Jan 7 purchase	3 units @\$3 each	9
2	Jan 19 purchase	2 units @ \$5 each	10
	Total		23
Jan ending inventory			
Units	From	Costs	\$
3	Jan 19 purchase	3 units @\$5 each	<u>15</u>
	Total		15

Example 2 – FIFO (Perpetual)***Same result under FIFO**

Jan 12 sale of 4 units consists of:

Units	From	Costs	\$
2	Jan 1 beginning inventory	2 units @\$2 each	4
2	Jan 7 purchase	2 units @ \$3 each	<u>6</u>
	Total		10

Jan 29 sale of 3 units consists of :

Units	From	Costs	\$
1	Jan 7 purchase	1 units @ \$3 each	3
2	Jan 19 purchase	2 units @ \$5each	<u>10</u>
	Total		13

**COGS
= \$23**

Jan ending inventory

Units	From	Costs	\$
3	Jan 19 purchase	3 units @\$5 each	15

Example 2 – LIFO (Periodic)*

Jan sale of 7 units consists of:			
Units	From	Costs	\$
5	Jan 19 purchase	5 units @ \$5each	25
2	Jan 7 purchase	2 units @\$3 each	6
	Total		31
Jan ending inventory			
Units	From	Costs	\$
2	Jan 1 beginning inventory	2 units @\$2 each	4
1	Jan 7 purchase	1 units @\$3 each	<u>3</u>
	Total		7

Example 2 – LIFO (Perpetual): Different result under LIFO

Jan 12 sale of 4 units consists of:

Units	From	Costs	\$
3	Jan 7 purchase	3 units @\$3 each	9
1	Jan 1 beginning inventory	1 units @ \$2 each	2
	Total		11

Jan 29 sale of 3 units consists of :

Units	From	Costs	\$
3	Jan 19 purchase	3 units @ \$5each	15
	Total		15

COGS
= \$26

Jan ending inventory

Units	From	Costs	\$
1	Jan 1 beginning inventory	1 units @\$2 each	2
2	Jan 19 purchase	2 units @\$5 each	10
	Total		12

Inventory valuation

U.S. GAAP	IFRS
The lower of	The lower of
<ul style="list-style-type: none"> •Cost Or Market <ul style="list-style-type: none"> •If replacement cost (RC) > NRV <ul style="list-style-type: none"> ✓ Market = NRV •If replacement cost (RC) < NRV – normal profit margin <ul style="list-style-type: none"> ✓ Market = NRV – normal profit margin •NRV – normal profit margin < RC < NRV <ul style="list-style-type: none"> Market = replacement cost 	<ul style="list-style-type: none"> •Cost Or •Net realizable value <ul style="list-style-type: none"> NRV = selling price – estimated cost of completion – selling costs
<p>If Cost > Market</p> <ul style="list-style-type: none"> •The inventory is written down to market on the B/S , and a loss is recognized in the I/S •No subsequent reverse is allowed 	<p>If Cost > NRV</p> <ul style="list-style-type: none"> •The inventory should be written down to NRV on the B/S , and a loss is recognized in the I/S •Can be reverse and a gain is recognized in the I/S, no written up is allowed.

Inventory valuation: Example 3

➤ **The following information relates to Zoom Inc**

- Original cost \$210
- Estimated selling price \$225
- Estimated selling cost \$22
- Replacement cost \$197
- Normal profit margin \$12

what are the per unit carrying value of Zoom's inventory under IFRS and U.S.GAAP

➤ **Answer**

- Under IFRS

- ✓ $NRV = \$225 - 22 = \203
- ✓ Original cost = \$210
- ✓ The carrying value should be the lower, i.e. \$203 with a impairment loss of \$7 immediately recognized in I/S

- Under U.S.GAAP

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

Inventory valuation: Example 4

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

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➤ SS7

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➤ SS10

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- R34: Financial Statement Analysis: Applications

Capitalize or expense

Spending Expenditure	Future economic benefit is probable ?	Yes	Recognize assets in the balance sheet , while the effects will flow to the income statement over the asset's useful life	Inventory		Go to I/S when the inventory is sold Cost of goods sold
				Non current assets	Tangible assets	Depreciation expense over useful life
					Intangible assets	Amortization expense over useful life
		No	Recognize Expenses in the income statement when incurred	e.g. •selling expense •general expense •administrative expense		  <div style="border: 1px solid blue; border-radius: 50%; padding: 10px; display: inline-block;"> Affect NI thus R/E </div>

Capitalize or Expense

- How to treat *an expenditure* depending on the *nature of the expenditure*
 - Capitalize as an asset on the **B/S**;
 - or
 - Recognize as an expenses in the **I/S**;

- **Remember: The asset you capitalized today will be expensed in the future.**

Impact on the Cash flow statement:

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

Capitalize or Expense

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

Capitalizing Interest

➤ Under U.S.GAAP and IFRS

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

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

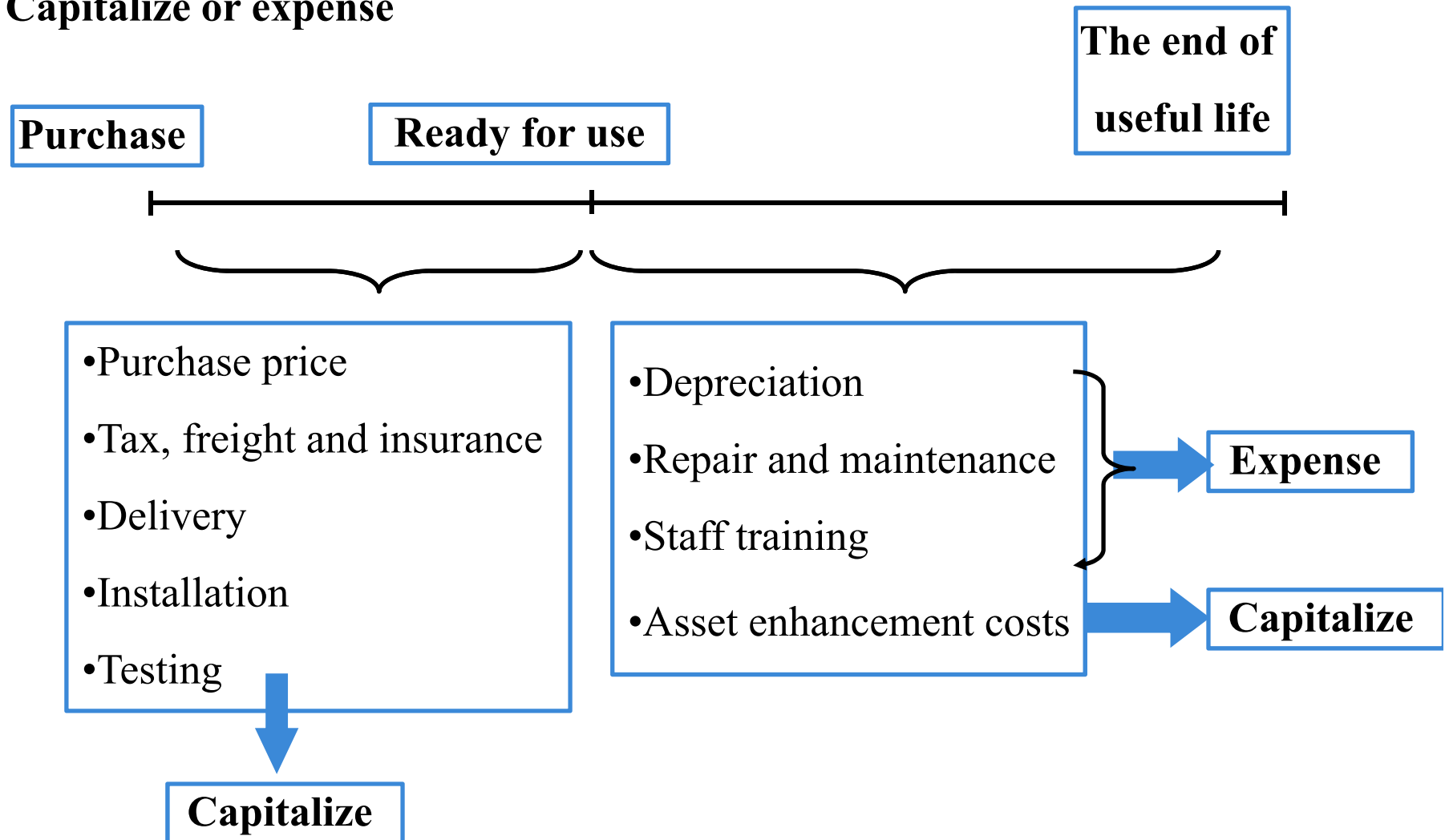
- Implications for analysis

Treat as normal interest

i.e. interest expense charged to I/S directly, and classified as part of CFO

Tangible assets*

Capitalize or expense



Tangible assets*

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

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

The total cost of the machine to be shown on JOOVI's balance sheet is closest to:

- A. \$14,180
- B. \$14,980.
- C. \$15,480.

➤ **Answer:**

- B is correct. Only costs necessary for the machine to be ready for use can be capitalized, therefore, total capitalized costs = $12,980 + 1,200 + 700 + 100 = \$14,980$.

Tangible assets

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

Depreciation

Depreciation		
Straight-Line	Accelerated Depreciation	Units – of – production
$\text{SL depreciation expense} = \frac{\text{cost} - \text{residual value}}{\text{useful life}}$	<p><i>Double – declining balance (DDB)</i></p> $\text{DDB depreciation in year X} = (2/\text{asset life in years}) \times \text{net book value at the beginning of year X}$	$\frac{\text{original cost} - \text{salvage value}}{\text{life in output units}} \times \text{output units in the period}$

Example 1

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

Cost of the equipment	\$1,200,000
Estimated residual value	\$200,000
Expected useful life	8 years
Total production capacity	800,000 units
Production in FY2009	135,000 units

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

- **Answer:**

Depreciation		
Straight-Line	DDB	Units – of – production
$\frac{\$1,200,000 - \$200,000}{8 \text{ years}}$ $= \$125,000 \text{ p.a.}$	$\frac{2}{8} \times \$1,200,000$ $= \$300,000$	$(\$1,200,000 - \$200,000) \times$ $(135,000 \text{ units} / 800,000 \text{ units})$ $= \$168,750$

Depreciation

➤ Depreciation impacts in early years

	Straight line	Accelerated (DDB)
Depreciation expense	Lower	Reverse
Net income	Higher	
Assets	Higher	
Equity	Higher	
ROA	Higher	
ROE	Higher	Higher
Total asset turnover ratios	Lower	
Cash flow – Tax	Same	Same

Depreciation

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

Depreciation expense can be allocated to		
Cost of goods sold (COGS)	Or	Selling , general and administration expense (SG&A)
Affect GP Margin		Affect OP margin

	U.S. GAAP	IFRS
Residual /Salvage value	Down ward only	Allowed to adjust the estimated residual value either upward or down ward
Component depreciation*	Rarely used	Required

Intangible Assets

➤ Long – term assets without *physical substance*

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



IA with a finite UL – Amortization over UL (SL, Zero salvage value)

IA with an indefinite UL - Annual impairment test

Intangible Assets

Type of Expenditure	IFRS	U.S.GAAP
Research	Expense as incurred	
Development	Capitalize if certain criteria are met	<p>Expense as incurred</p> <p>Except for :</p> <ul style="list-style-type: none"> •Costs to develop a software <div style="border: 1px solid pink; padding: 10px;"> <ul style="list-style-type: none"> •For sales to others <ul style="list-style-type: none"> •Expensed as incurred. •Once economic feasibility is established, subsequent production costs can be capitalized. •For own internal use <ul style="list-style-type: none"> •Expense until it is probable that the project will be completed and that the software will be used as intended. Thereafter, Capitalized </div>

Impairment of assets

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

Impairment of assets – IFRS*

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



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

Impairment of assets – U.S. GAAP

➤ Step1 Recoverability test / Impairment test

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

➤ Step2 Loss measurement

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

Example 2*

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

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

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

Example 2*

➤ Answer

● U.S.GAAP

- ✓ Carrying value = $\$900,000 - \$100,000 = \$800,000$
- ✓ Expected future cash flow = $\$825,000$
- ✓ Since Carrying value < Expected future cash flow, the equipment is not impaired
- ✓ The B/S value of the equipment remains at $\$800,000$

● IFRS

- ✓ Carrying value = $\$900,000 - \$100,000 = \$800,000$
- ✓ Fair value less cost to sell = $\$790,000 - \$30,000 = \$760,000$
- ✓ Value in use = $\$785,000$
- ✓ Recoverable amount = $\$785,000$
- ✓ Since Carrying value > recoverable amount, the equipment is impaired
- ✓ The B/S value of the equipment is reduced to $\$785,000$ with a impairment loss of $\$15,000$ recognized in the income statement.

Impairment of assets (Cost model)

➤ **Once an asset is written down**

- **Under U.S.GAAP**

- ✓ Held for use → recoveries are not allowed

- ✓ Held for sale → recoveries are allowed

- **Under IFRS**, recoveries are allowed except for goodwill, but still no allowance for written up.

Impairment of assets

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

Revaluation of assets

U.S. GAAP	IFRS
Cost model	Cost model & Revaluation model



Permit upward revaluation of assets

➤ Upward revaluation of assets will

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

De-recognition of assets

- long-lived asset is sold: difference between the sale proceeds and the carrying value of the asset is reported as a G/L, included in income statement
- long-lived asset is abandoned: carrying value is removed from the B/S, loss is recognized in income statement
- long-lived asset is exchanged: G/L is computed by comparing the book value of the old asset with the fair value of the old asset (or fair value of new asset).

Investment property

➤ Investment property

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

Investment property

➤ The cost model

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

➤ The fair value model

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

F.R.A

➤ SS7

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➤ SS9

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➤ SS10

- R33: Financial Reporting Quality: Red Flags and Accounting Warning Signs
- R34: Financial Statement Analysis: Applications

Current and deferred tax

➤ Example 1

A firm may use different depreciation methods for:

- Financial reporting

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

- Tax reporting

	year 1	2	3	4	5	total
revenue	600,000	600,000	600,000	600,000	600,000	3,000,000
other expense	-300,000	-300,000	-300,000	-300,000	-300,000	-1,500,000
tax depreciation	-220,000	-132,000	-80,000	-50,000	-18,000	-500,000
taxable profit	80,000	168,000	220,000	250,000	282,000	1,000,000
tax payable 30%	24,000	50,400	66,000	75,000	84,600	300,000
net profit	56,000	117,600	154,000	175,000	197,400	700,000

Temporary
difference

Current and deferred tax

➤ Example 1 (Continued)

I/S		Year 1	Year 2	Year 3	Year 4	Year 5
Tax department	Income tax expense	60,000 =	60,000 =	60,000 =	60,000 =	60,000 =
	Current tax expense	24,000 +	50,400 +	66,000 +	75,000 +	84,600 +
	Deferred tax expense / (Income)	36,000	9,600	(6,000)	(15,000)	(24,600)
B/S		Year 1	Year 2	Year 3	Year 4	Year 5
B/S Deferred tax liability	Deferred tax liability	36,000	(36,000 + 9,600) 45,600	(45,600 - 6,000) 39,600	(39,600 - 15,000) 24,600	(24,600 - 24,600) -

Tax Return Terminology

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

Financial Reporting Terminology

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

Terminology

➤ Timing difference

● Temporary difference

✓ Difference will reverse

Deferred tax assets	Deferred tax liabilities
B/S amounts that result from an excess of tax payable over income tax expense that are expected to be recovered from future operations.	B/S amounts that result from an excess of income tax expense over taxes payable that are expected to result in future cash outflows.
$\left(\begin{array}{c} \text{taxes} \\ \text{payable} \end{array} \right) > \left(\begin{array}{c} \text{income tax} \\ \text{expense} \end{array} \right)$	$\left(\begin{array}{c} \text{taxes} \\ \text{payable} \end{array} \right) < \left(\begin{array}{c} \text{income tax} \\ \text{expense} \end{array} \right)$

● Permanent difference

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

B/S approach to Deferred tax issue

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

B/S approach to Deferred tax issue

➤ Two steps for Deferred tax

- Step 1 Identify DTL and DTA through a B/S approach,
- Step 2 Calculate deferred tax expense

➤ B/S approach

- Identify *Accounting base* and *Tax base* for every asset and liability item on B/S

- Calculate the difference between two bases

- For assets =

accounting base – tax base

• Positive figure * tax rate = DTL

• Negative figure * tax rate = DTA

- For liabilities =

(- accounting base) – (- tax base)

Accounting Base & Tax Base - Assets

➤ Example 2

Assets with and original Cost of \$1,000,000

Accounting depreciation (depreciation expense) = \$100,000 p.a.

Tax depreciation = \$ 200,000 p.a.

	Accounting base	-	Tax base	=	Temporary difference	×	Tax rate	=	DTL in B/S
Year 1	900,000	-	800,000	=	100,000	×	30%	=	30,000
Year 2	800,000		600,000		200,000	×	30%	=	60,000

I/S income tax expense		B/S DTL	
Year 1	Year 2	Year 1	Year 2
30,000	30,000	30,000	60,000

Accounting Base & Tax Base - Assets

- An asset's tax base is the amount that will be deducted (expensed) on the tax return in the future as the economic benefits of the asset are realized.
- **Depreciable NCA**
 - Accounting base → Original cost – accumulated accounting depreciation
 - Tax base → Original cost – accumulated tax depreciation
- **R&D**
 - Accounting base (Expensed as incurred) → Zero
 - Tax base (Capitalized) → Original cost - accumulated amortization
- **A/R**
 - Accounting base → Invoiced amount – allowance for bad debt
 - Tax base → Invoiced amount (do not recognize allowance)
- **Financial assets (for Trading and AFS financial assets held at Fair value)**
 - Accounting base → Fair value
 - Tax base → Amortized cost

Accounting Base & Tax Base - Liabilities

➤ Example 3

Customer advanced = 10,000 → Dr Cash 10,000

Cr Unearned revenue 10,000

Accounting base	-	Tax base	=	Temporary difference	×	Tax rate	=	DTA in B/S
-10,000	-	0	=	-10,000	×	30%	=	3,000

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

Accounting Base & Tax Base - Liabilities

➤ Customer advance

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

➤ Warranty liability

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

➤ Financial liabilities – Note payable (for Trading and AFS financial liability held at Fair value)

- Accounting base → Fair value
- Tax base → Amortized cost

Deferred tax

➤ **Example 4: A company incurs a capital expenditure that may be amortized over five years for accounting purposes, but over four years for tax purposes. The company will most likely record**

- A. a deferred tax asset.
- B. a deferred tax liability.
- C. no deferred tax asset or liability.

➤ **Answer:**

B is correct.

- The difference is temporary, and the tax base will be lower (because of more rapid amortization) than the carrying value of the asset. The result will be a deferred tax liability.

Deferred tax

➤ **Example 5: When accounting standards require an asset to be expensed immediately but tax rules require the item to be capitalized and amortized, the company will most likely record**

- A. a deferred tax asset.
- B. a deferred tax liability.
- C. no deferred tax asset or liability.

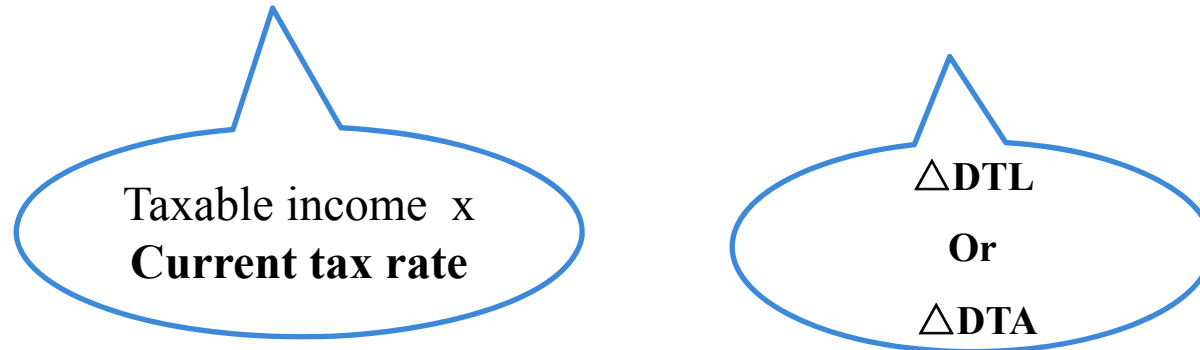
➤ **Answer:**

A is correct.

- The capitalization will result in an asset with a positive tax base and zero carrying value. The amortization means the difference is temporary. Because there is a temporary difference on an asset resulting in a higher tax base than carrying value, a deferred tax asset is created.

Measurement

➤ $\text{Income tax expense} = \text{Current tax expense} + / - \text{Deferred tax expense} / \text{income}$



- **The ending balance of DTL or DTA** is calculated at the end of each fiscal year, the net Δ amount during current fiscal year
 - ✓ **Tax rate applicable to the periods in which the DTA and DTL will be reversed (*forecast*).**
 - ✓ **Usually the current tax rate**

Tax rate changes

➤ If tax rate changes:

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

A change in accounting estimate

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

Tax rate changes

- **Example 6:** Carnation Corporation had a deferred tax liability of \$30,000 on January 1, 2002 that is expected to reverse in 2004. In 2002, Carnation generated pretax financial income of \$300,000 and taxable income of \$150,000 due to a difference in depreciation. The tax rate for 2002 is 30% but Congress enacted a reduction in tax rates effective January 1, 2003 to 25%, Carnation's income tax expense for 2002 is closest to:

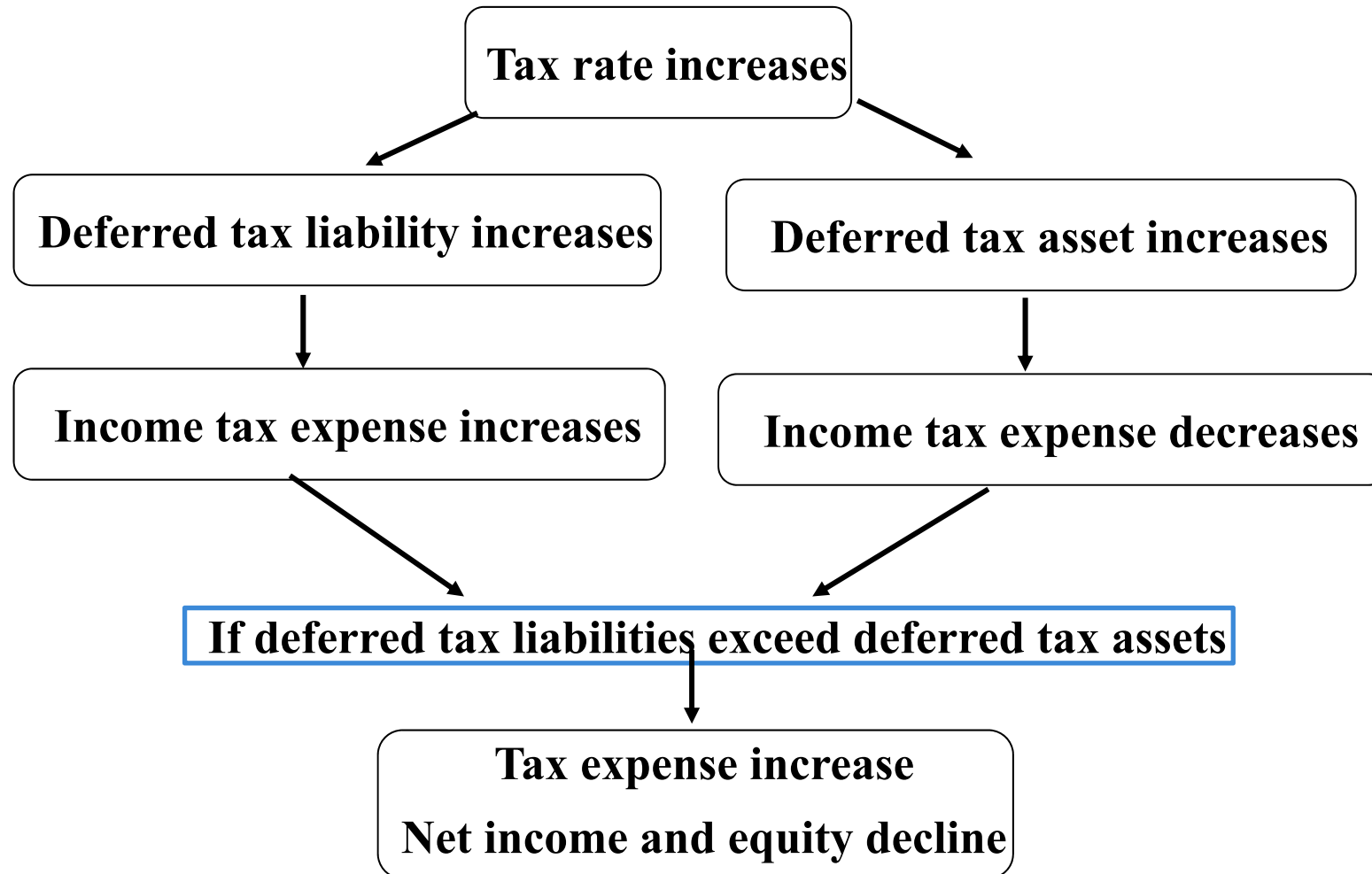
- A. \$75,000.
- B. \$77,500.
- C. \$82,500.

➤ **Answer**

B is correct

- Current tax expense = $150,000 \times 30\% = 45,000$
- Temporary difference balance at the end of 2002
$$= 30,000 / 30\% + (300,000 - 150,000) = 250,000$$
- Deferred tax expense = $250,000 \times 25\% - 30,000 = 62,500 - 30,000 = 32,500$
- Income tax expense = $45,000 + 32,500 = 77,500$

Tax rate changes



Reversal of temporary difference

➤ Analyst's Treatment of DTL

- If unlikely to be reversed
 - ✓ Treated as equity
- If to be reversed
 - ✓ Treated as true liability
- If non-reversal/ reversal is uncertain
 - ✓ Ignored

➤ Treatment of DTA

- If <50% probability to be reversed
 - ✓ Valuation allowance is created

$$DTA' = DTA - \left(\begin{array}{c} \text{valuation} \\ \text{allowance} \end{array} \right)$$

asset ↓ & income ↓

Compare a company's deferred tax items.

- A **deferred tax liability** results from using accelerated **depreciation** for tax purposes and straight-line depreciation for the financial statements. The analyst should consider the firm's growth rate and capital spending levels when determining whether the difference will actually reverse.
- **Impairments** generally result in a **deferred tax asset** since the writedown is recognized immediately in the income statement, but the deduction on the tax return is generally not allowed until the asset is sold or disposed of.
- **Restructuring** generates a **deferred tax asset** because the costs are recognized for financial reporting purposes when the restructuring is announced, but not deducted for tax purposes until actually paid. Note that restructuring usually results in significant cash outflows (net of the tax savings) in the years after the restructuring costs are reported.

Compare a company's deferred tax items.

- In the United States, firms that use LIFO for their financial statements are required to use LIFO for tax purposes, so **no temporary differences result**. However, in countries where this is not a requirement, temporary differences can result from the choice of inventory cost-flow method.
- **Post-employment benefits** and deferred compensation are both recognized for financial reporting when earned by the employee but not deducted for tax purposes until actually paid. These can result in a **deferred tax asset** that will be reversed when the benefits or compensation are paid.
- A deferred tax adjustment is made to stockholders' equity to reflect the future tax impact of unrealized gains or losses on available-for-sale marketable securities that are taken directly to equity. No DTL is added to the balance sheet for the future tax liability when gains/losses are realized.

Effective tax rates

$$\text{effective tax rate} = \frac{\text{income tax expense}}{\text{pre - tax income (EBT)}}$$

Analyzing the Effective Tax Rate Reconciliation

- **Some firms' reported income tax expense differs from the amount based on the statutory income tax rate. The differences are generally the result of:**
- Different tax rates in different tax jurisdictions (countries).
 - Permanent tax differences: tax credits, tax-exempt income, nondeductible expenses, and tax differences between capital gains and operating income.
 - Changes in tax rates and legislation.
 - Deferred taxes provided on the reinvested earnings of foreign and unconsolidated domestic affiliates.
 - Tax holidays in some countries (watch for special conditions such as termination dates for the holiday or a requirement to pay the accumulated taxes at some point in the future).

F.R.A

➤ SS7

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➤ SS10

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Bond

➤ Bond Terminology

- The **face value**, also known as the maturity value or par value, is the amount of principal that will be paid to the bondholder at maturity. The face value is used to calculate the coupon payments.
- The **coupon rate** is the interest rate stated in the bond that is used to calculate the coupon payments.
- The **coupon payments** are the periodic interest payments to the bondholders and are calculated by multiplying the face value by the coupon rate.
- The **effective rate of interest** is the interest rate that equates the present value of the future cash flows of the bond and the issue price.
 - ✓ The coupon rate is typically fixed for the term of the bond.
 - ✓ The market rate of interest on a firm's bonds, however, will likely change over the bond's life, which changes the bond's market value as well.

Bond

➤ Bond Terminology

- The **balance sheet liability** of a bond is equal to the present value of its remaining cash flows (coupon payments and face value), discounted at the market rate of interest at issuance.
 - ✓ At maturity, the liability will equal the face value of the bond.
- The **interest expense** (also known as the book value or carrying value of the bond) reported in the income statement is calculated by multiplying the book value of the bond liability at the beginning of the period by the market rate of interest of the bond when it was issued.
- At the date of issuance, the market rate of interest may be equal to, less than, or greater than the coupon rate.
 - ✓ When the market rate is equal to the coupon rate, the bond is a par bond (priced at face value).
 - ✓ When the market rate is greater than the coupon rate, the bond is a discount bond (priced below par).
 - ✓ When the market rate is less than the coupon rate, the bond is a premium bond (priced above par).

Bond

➤ Bonds Issued at Par

- When a bond is issued at par, the bond's yield at issuance is equal to the coupon rate. In this case, the present value of the coupon payments plus the present value of the face amount is equal to the par value. The effects on the financial statements are straightforward:
 - ✓ **On the balance sheet**, assets and liabilities increase by the bond proceeds (face value). The book value of the bond liability will not change over the term of the bond.
 - ✓ **On the income statement**, interest expense for the period is equal to the coupon payment because the yield at issuance and the coupon rate are the same.
 - ✓ **On the cash flow statement**, the issue proceeds are reported as a cash inflow from financing activities and the coupon payments are reported as cash outflows from operating activities (under U.S. GAAP; they may be reported as CFO or CFF outflows under IFRS). At maturity, repayment of the face value is reported as a cash outflow from financing activities.

Bond

➤ Bonds Issued at a Discount or Premium

- When the bond's yield at issuance is not equal to the coupon rate, the proceeds received (the present value of the coupon payments plus the present value of the face value) are not equal to par value. In this case, the bond is issued at a premium or a discount. The premium or discount at the issue date is usually relatively small for coupon bonds.
 - ✓ If the coupon rate is less than the bond's yield, the proceeds received will be less than the face value. The difference is known as a discount. The coupon rate is lower than the coupon rate that would make the market price of the bond equal to its par value. Investors will pay less than face value because of the lower coupon rate. Such bonds are known as discount bonds.
 - ✓ If the coupon rate is greater than the bond's yield, the bond price and the proceeds received will be greater than face value. We refer to such bonds as premium bonds. In this case, investors will pay more for the above-market coupon payments.

Bond

➤ Bond

- Two types of cash flows

- ✓ Periodic payment of Interest/ Coupon **CFO**

- *Cash outflow* from operating activities

- ✓ Principal **CFF**

- Amount received at issuance

- *Cash inflow* from financing activities

- Principal repayment at maturity

- *Cash outflow* from financing activities

Analysis :

- Bond issue price (par, discount or premium)

- Makes the difference on CFO & CFF

Example 1

- A zero coupon bond issued on 1 Janurary 2001 with 4 years to maturity and a redemption price of \$100, the market interest rate at the time of issuance is 8%.

	Beginning Book value 1 st Jan	Interest expense 8%	Coupon payment	Ending Book valu 31 st Dec
Year 2001	73.5030	5.8802	0	79.3832
Year 2002	79.3832	6.3507	0	85.7339
Year 2003	85.7339	6.8587	0	92.5926
Year 2004	92.5926	7.4074	0	100

$\frac{\$100}{1.08^4}$
 $\$73.5030 \times 8\%$
 $\frac{\$100}{1.08^3} = \$73.5030 + \$5.8802$

Example 1

	Beginning Book value 1 st Jan	Interest expense 8%	Coupon payment	Ending Book value 31 st Dec
Year 2001	73.5030	5.8802	0	79.3832
Year 2002	79.3832	6.3507	0	85.7339
Year 2003	85.7339	6.8587	0	92.5926
Year 2004	92.5926	7.4074	0	100

Cash inflow CFF

?

Cash outflow CFF

Example 1

	Beginning Book value 1 st Jan	Interest expense 8%	Coupon payment	Ending Book value 31 st Dec
Year 2001	73.5030	5.8802	0	79.3832
Year 2002	79.3832	6.3507	0	85.7339
Year 2003	85.7339	6.8587	0	92.5926
Year 2004	92.5926	7.4074	0	100

Cash inflow CFF

CFO cash outflow

Cash outflow CFF

Example 2

- **On 31 Dec 2002, a company issued a three – year 10% annual coupon bond with a face value of \$1000**
- Market interest rate at issuance is 10%
 - Market interest rate at issuance is 8%
 - Market interest rate at issuance is 12%

What is the effect on B/S, I/S, CFS?

Example 2

- Market interest rate at issuance is 10% = Coupon rate → Issue at **par**

	Beginning BV 1 st Jan	Interest expense 10%	Coupon	Ending BV 31 st Dec
Year 2003	1000	100	(100)	1000
Year 2004	1000	100	(100)	1000
Year 2005	1000	100	(100)	1000

- ✓ **B/S:** The bond liability **remains at face value** over the life of the bond
- ✓ **I/S:** Interest expense = Coupon payment = \$100
- ✓ **CFS:** CFO **cash outflow** → \$100 p.a. = Coupon payment
 CFF **cash inflow** → \$1000 on 31st Dec 2002 = Issue price
cash outflow → \$ 1000 on 31st Dec 2005 = Redemption price

Example 2

- Market interest rate at issuance is 8% < Coupon rate 10% → Issue at **premium**

	Beginning BV 1 st Jan	Interest expense @ 8%	Coupon @ 10%	Ending BV 31 st Dec
Year 2003	1051.54	84.12	(100)	1035.66
Year 2004	1035.66	82.85	(100)	1018.52
Year 2005	1018.52	81.48	(100)	1000

- ✓ **B/S:** the bond liability will **decrease towards the face value** over the life of the bond
i.e. **Amortize the premium** in issuance **to zero** over the life of the bond
- ✓ **I/S:** Interest expense < Coupon payment
i.e. The amortization of premium will reduce the interest expense shown on I/S
$$\text{int. expn}_t = \text{coupon} - \text{prem. amortization}_t$$

Example 2

- CFS: CFO Cash outflow = Coupon payment \rightarrow \$100 p.a.
 - ✓ **For analysis purpose**, the interest expense and the amortization of the premium should be separated

e.g. Year 2003

Cash outflow	Original CFO		CFO for F/A		CFF for F/A
	100	=	84.12	+	15.88

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

Example 3

- CFS: CFO Cash outflow = Coupon payment \rightarrow \$100 p.a.

✓ **For analysis purpose**, the interest expense and the amortization of the discount should be separated

■ Year 2003

Cash outflow/ inflow	Original CFO		CFO for F/A		CFF for F/A
	100	=	114.24	-	14.24

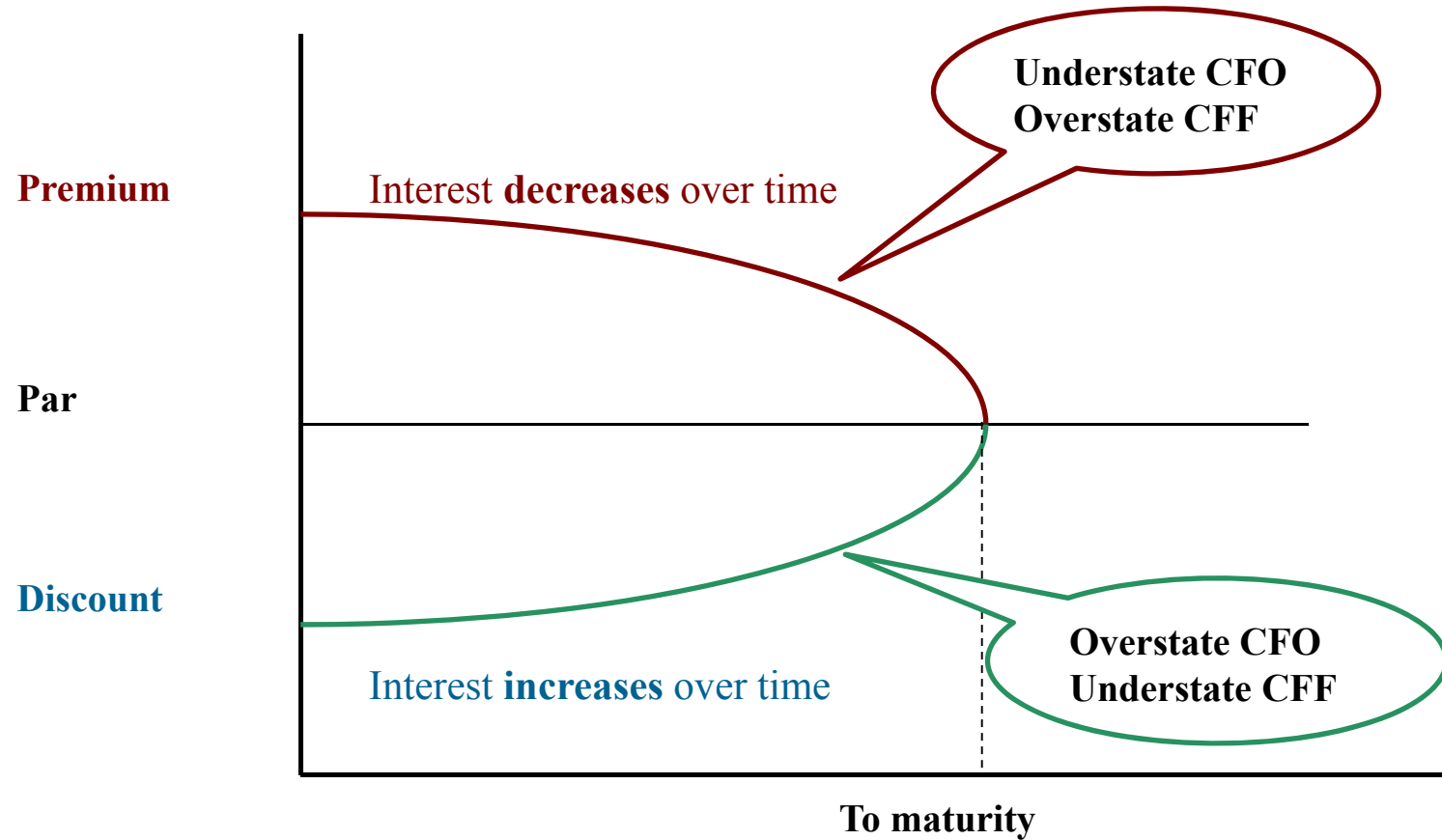
Cash
inflow

✓ **Without adjustment**

■ CFO is **overstated** and CFF is **understated**

Summary

Carrying value of bond on
B/S



Summary

➤ Premium or discount bond

● B/S

liability₀ = amount received

$$\text{liability}_t = \sum \frac{\text{all pay}_t}{\text{MR}_{\text{issue}}}$$

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

● I/S

✓ Premium (Coupon rate > Market rate) → **Decrease over time**

$$\text{int. expn}_t = \text{coupon-prem. amortization}_t$$

✓ Discount (Coupon rate < Market rate) → **Increase over time**

$$\text{int. expn}_t = \text{coupon+disc. amortization}_t$$

● CFS : **No change** for accounting / **Adjust** for F/A purpose

Bond

- **Example 4: Innovative Inventions, Inc. needs to raise \$10 million and typically would issue coupon-bearing bonds at par value. If the company chooses to issue zero-coupon bonds instead, its debt-to-equity ratio will**
- A. rise as the maturity date approaches.
 - B. decline as the maturity date approaches.
 - C. remain constant throughout the life of the bond.
- **Answer:**
- A is correct.
- Both bonds will add \$10 million to debt and nothing to equity, and thus have the same effect on the debt/equity ratio at the time they are issued.
 - However, the value of the liability for zero-coupon bonds increases as the discount is amortized over time while the liability will not change for the par bonds.
 - Furthermore, the amortized interest will reduce earnings at an increasing rate over time as the value of the liability increases.
 - Higher relative debt and lower relative equity (through retained earnings) will cause the debt/equity ratio to increase as the zero-coupon bonds approach maturity, compared to the bonds issued at par.

Issuance costs*

➤ Effective interest rate method

- Using the effective interest rate method, interest expense is equal to the book value of the bond liability at the beginning of the period, multiplied by the bond's yield at issuance.
 - ✓ For a **premium bond**, interest expense is less than the coupon payment ($\text{yield} < \text{coupon rate}$). The difference between interest expense and the coupon payment is the **amortization of the premium**. The premium amortization is subtracted each period from the bond liability on the balance sheet. Thus, interest expense will decrease over time as the bond liability decreases.
 - ✓ For a **discount bond**, interest expense is greater than the coupon payment ($\text{yield} > \text{coupon rate}$). The difference between interest expense and the coupon payment is the **amortization of the discount**. The amortization of the discount each period is added to the bond liability on the balance sheet. Therefore, interest expense will increase over time as the bond liability increases.

Fair value reporting option*

➤ Fair Value Reporting Option

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

Issuance costs*

➤ Zero-coupon bonds

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

➤ Issuance Costs

- Issuing a bond involves legal and accounting fees, printing costs, sales commissions, and other fees.
 - ✓ Under U.S. GAAP, issuance costs are capitalized as an asset (deferred charge) and allocated to the income statement as an expense over the term of the bond.
 - ✓ Under IFRS, the initial bond liability on the balance sheet is reduced by the amount of issuance costs, increasing the bond's effective interest rate. In effect, issuance costs are treated as unamortized discount.
 - ✓ Under both U.S. GAAP and IFRS, bond issuance costs are usually netted against the bond proceeds and reported on the cash flow statement as a financing cash flow.

Issuance costs*

➤ Example 5

Company C issued a \$1 million bond for \$980,000 with an issuance cost of \$5,000.

U.S.GAAP	IFRS
Assets: Cash \$975,000 Deferred charge \$5,000	Assets: Cash \$975,000
Liabilities: Bond \$980,000	Liabilities: Bond \$975,000

Fair value reporting option*

➤ **Example 6: Fairmont Golf issued fixed rate debt when interest rates were 6 percent. Rates have since risen to 7 percent. Using only the carrying amount based on historical cost reported on the balance sheet to analyze the company's financial position would most likely cause an analyst to:**

- A. overestimate Fairmont's economic liabilities
- B. underestimate Fairmont's economic liabilities
- C. underestimate Fairmont's interest coverage ratio

➤ **Answer**

A is correct

- When interest rate rise, bonds decline in value. Thus the carrying amount of the bonds being carried on the balance sheet is higher than the market value. The company could repurchase the bonds for less than the carrying amount, so the economic liabilities are overestimated. Because the bonds are issued at a fixed rate, there is no effect on interest coverage.

Derecognition of Debt

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

Derecognition of Debt

➤ Example 7

A firm reacquires \$1 million face value bonds at 102% of par when the carrying value of the bond liability is \$995,000

➤ Answer

Losses = \$1,020,000 - \$995,000 = \$25,000 recognize in I/S

Under U.S. GAAP, any unamortized issuance costs must be written off and included in the gain or loss calculation

Debt Covenant

➤ Debt covenants

- **Debt covenants** are restrictions imposed by the lender on the borrower to protect the lender's position.
- Debt covenants can reduce default risk and thus reduce borrowing costs.
- The restrictions can be in the form of affirmative covenants or negative covenants.
- With affirmative covenants, **the borrower promises to do certain things, such as:**
 - Make timely payments of principal and interest.
 - Maintain certain ratios (such as the current, debt-to-equity, and interest coverage ratios) in accordance with specified levels.
 - Maintain collateral, if any, in working order.
- With negative covenants, **the borrower promises to refrain from certain activities that might adversely affect its ability to repay the outstanding debt, such as:**
 - Increasing dividends or repurchasing shares.
 - Issuing more debt.
 - Engaging in mergers and acquisitions.

Framework for Lease

- 1. Classification of leases under U.S. GAAP & IFRS***
- 2. Lease accounting**
 - Lessee
 - Lessor
- 3. Disclosure of lease***
- 4. Solvency ratio**

Classical example of lease

- A four-year financial lease, with the annual payment of \$1000, interest rate is 10%. How to report the financial lease when
- a. the rental is paid in the beginning of the year
 - b. the rental is paid in the end of the year

Classification of leases

- A lease is a contractual arrangement where by the lessor , the owner of the asset , allows the lessee to use the asset for a specified period of time (*lease term*) in return for periodic *lease payment*.
 - Two parties involved in leases
 - ✓ Lessee: use the asset (majority)
 - ✓ Lessor: owner of the asset
- Two types of leases (Classification)
 - Operating lease
 - ✓ An operating lease is essentially a rental arrangement. No asset or liability is reported by the lessee and the periodic lease payments are simply recognized as rental expense in the income statement.
 - Finance lease / Capital lease (U.S.)
 - ✓ A finance lease is, in substance, a purchase of an asset that is financed with debt. Accordingly, at the inception of the lease, the lessee will add equal amounts to both assets and liabilities on the balance sheet. Over the term of the lease, the lessee will recognize depreciation expense on the asset and interest expense on the liability.

Classification of leases – IFRS*

Finance lease	Operating lease
<p>Transfers from lessor to lessee substantially all the risks and rewards incidental to ownership of an asset. No specific condition for finance lease, but use finance lease when meeting one of the following conditions:</p> <ul style="list-style-type: none">① Title transfer② Bargain purchase option③ The lease term is for the major part of the economic life of the asset④ At the inception of the lease the present value of the minimum lease payments amounts to at least substantially all of the fair value of the leased asset⑤ A specialized nature	<p>A lease other than a finance lease.</p>

Classification of leases – U.S.GAAP*

Finance lease	Operating lease
<p>A lease transaction can be classified as a Finance lease <u>by lessee</u> if meet <i>at least one of the following criteria</i>:</p> <ul style="list-style-type: none">①The title to the leased asset is transferred to the lessee at the end of the lease period.②A bargain purchase option exists.③The lease period is at least 75% of the asset's economic life.④The present value of the lease payments is equal to or greater than 90% of the fair value of the leased asset.	<p>A lease not meeting any of those criteria is classified as an Operating lease</p>

Accounting for lease - Lessee

	Finance Lease	Operating Lease
B/S-inception	Leased asset = Lease liability = PV of Minimal lease payment (MLP) •MLP = Future lease payment over lease term	
B/S-periodic payment	Leased asset → Depreciation over lease term Lease liability → interest expense & principal repayment	No effect
I/S	An interest expense is separated from the lease payment and recognized in the income statement & Depreciation	Lease payment is recognized as a rental expense in I/S
Cash Flow	Principal repayment – CFF Interest expense - CFO	CFO

Example 7

- **GF leases a machine for its own use for 4 years with annual payments of 1000 paid in arrears ; The appropriate interest rate on the lease is 10%.**

Calculate the impact of the lease on GF' balance sheet and income statement for each of the 4 years, including the immediate impact.

Assuming GF depreciates all assets on SL basis.

Example 7

➤ **B/S is affected by Finance lease only**

➤ **At the inception of the lease**

- Leased asset = lease liability = 3169.8654 = 3170

N=4, I/Y=10, PMT=1000, FV=0, CPT PV -3168.8654 -3170

➤ **Over the lease term**

- Leased asset → annual depreciation (SL) i.e. $3170 / 4\text{years} = 792.5 \text{ p.a.}$
- Lease liability → separate Interest expense & Lease payment

Accounting for finance lease of lessee

T=0		B/S			
Asset leased 3170		Lease obligation			
		Current 683			
		Long-term 2487			
T=1		B/S		I/S	
Asset leased 3170		Lease obligation			
		Current 683			
		Long-term 2487			
A.D.	-792.50			Depr. Exps.	-792.50
Cash	-1000.00	Amortization	-683	Interest Exps.	-317

$$\text{Interest Exps.} = \text{BV}_0 \times \text{interest rate} = 3167 \times 10\% = 317$$

$$\text{Amortization} = \text{Payment} - \text{Interest Exps.} = 1000 - 317 = 683$$

Comparison between finance and operating lease

Capital lease			Operating lease
Depreciation expense	Interest expense	Total expense	Lease expense
792.50	317	1109.5	1000
792.50	249	1041.5	1000
792.50	174	966.5	1000
792.50	91	883.5	1000
3170	830.00 =4000-3170	4000	4000

Comparison of CF between finance and operating

	Operating lease	Finance lease		
Year	CFO	CFO	CFF	Total CF
1	1,000	317	683	1,000
2	1,000	249	751	1,000
3	1,000	174	826	1,000
4	1,000	91	910	1,000
Total	4,000			4,000
	Rental Stable p.a.	Interest expense Decreasing	Lease payment - interest expense Increasing	Rental Stable p.a.

Effect on Financial statements

		Finance lease	Operating lease
B/S	Assets	Higher	Reverse
	Liabilities	Higher	
I/S	EBIT	Higher	
	Net income in early years	Lower	
	Net income in later years	Higher	
	Total net income	Same	Same
CFS	CFO	Higher	Reverse
	CFF	Lower	
	Total CF	Same	Same

Effect on ratios

	Finance lease	Operating lease
Current ratio (\uparrow Current liab)	Lower	Reverse
Working capital (\uparrow Current liab)	Lower	
Asset turnover (\uparrow Asset)	Lower	
ROA (in early years) (\downarrow Net income)	Lower	
ROE	Lower	
Debt/asset (\uparrow Liab)	Higher	
Debt/equity(\uparrow Liab)	Higher	

Classification of lease - Lessor

Lessee		Lessor
•Operating lease	→	•Operating lease
•Finance lease	Two additional conditions are not satisfied →	•Operating lease
	Two additional conditions are satisfied →	•Capital lease •If manufacturer, sales-type lease •If for financing, direct-financing lease

➤ From the lessor's perspective

● Under U.S. GAAP, a capital lease is treated as either a *sales-type* lease or a *direct financing* lease.

- ✓ If the present value of the lease payments exceeds the carrying value of the asset, the lease is treated as a *sales-type lease*.
- ✓ If the present value of the lease payments is equal to the carrying value, the lease is treated as a *direct financing lease*.

● Under IFRS, does not distinguish between a sales-type lease and a direct financing lease.

- ✓ However, similar treatment to a sales-type lease is allowed under IFRS for finance leases originated by manufacturers or dealers. In this case, the present value of the lease payments likely exceeds the carrying value of the asset.

Classification of lease - Lessor

➤ **Two conditions to be satisfied:**

- The collectivity of lease payments is reasonably certain.
- The lessor has substantially completed performance.

Example 8 – Sales-type lease with salvage

- GF leases a machine to an oil company for 4 years with annual lease payments of 1,000 in arrears. It cost GF \$3,000 to **produce** the machine.
- At the end of the lease, the lessor regains possession of the asset, which will be sold for scrap value of \$600. The collectability of the lease payments is predictable, and there are no significant uncertainties about GF' unreimbursable costs. The implicit rate on the lease is 10%.

PV of the lease payments	?
PV of salvage value	?
COGS	?
Profit for the sale	?
Lease receivable	?

Example 8 – Sales-type lease with salvage

➤ The PV of lease payment = 3,170 (previous example) = FV of leased asset

➤ The PV of salvage value = $600/1.1^4=410$

➤ The Cost of goods sold = $3,000 - 410 = 2,590$

➤ The profit on the sales = $3,170 - 2,590 = 580$

➤ Lease receivable = $3,170+410 = 3,580$

Both use
10% as
discount rate

I/S
CFO ↑
CFI ↓

Asset on the B/S
i.e. lease receivable

Example 8 – Sale-type lease with salvage

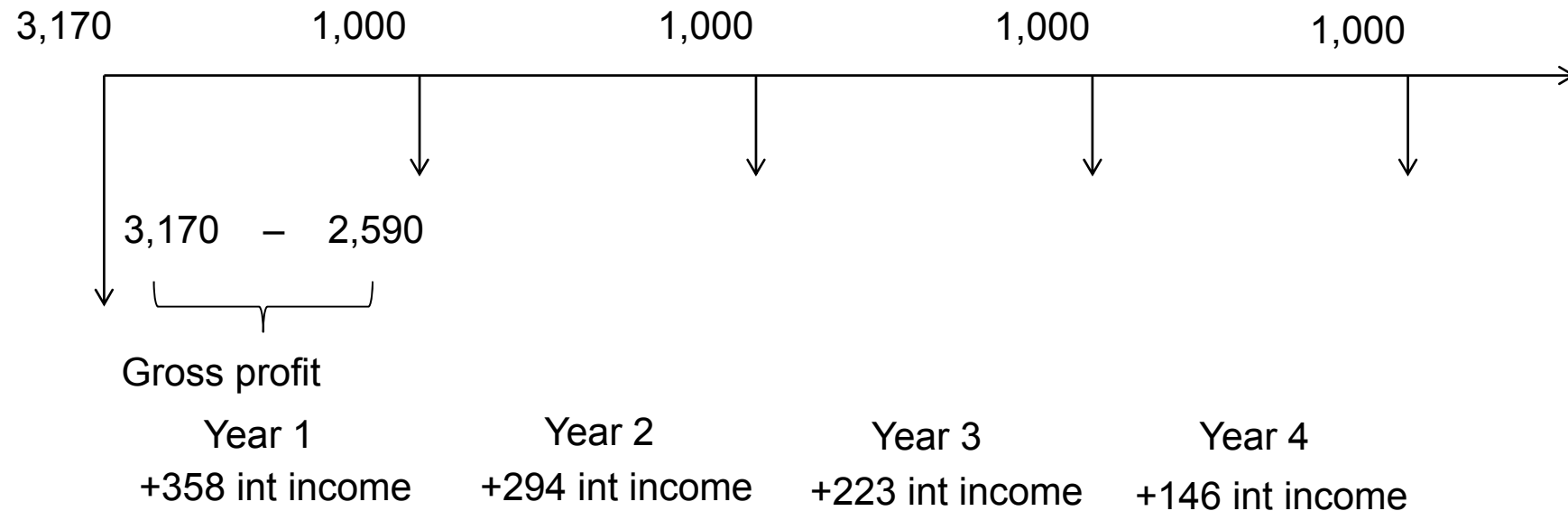
Year	Beginning	Interest income 10%	Lease Payment Received	Lease Receivable
1	3,580	358	1,000	2,938
2	2,938	294	1,000	2,232
3	2,232	223	1,000	1,455
4	1,455	146	1,000	600
Total		1,020	4,000	

PV of future lease payment
and salvage value at the end
of year 1

$$= 3,580 - (1,000 - 3,580 \times 10\%)$$

Salvage
value

Example 8 – Sales-type lease with salvage



➤ For sales-type lease

- Only the first year recognized a 580 gross profit
- The following years only have interest income
- So, total income is 1,600, which consists of 580 gross profit and 1,020 interest income, but if we exclude salvage value 600...

Direct financing lease

➤ Direct financing lease

- In a direct financing lease, no gross profit is recognized by the lessor at the inception of the lease.

➤ At the inception of the lease

- the lessor removes the asset from its balance sheet and creates a lease receivable in the same amount. As the lease payments are received, the principal portion of each payment reduces the lease receivable.

➤ In the income statement

- the lessor recognizes interest income over the term of the lease. The interest portion of each lease payment is equal to the lease receivable at the beginning of the period multiplied by the interest rate.

➤ In the cash flow statement

- the interest portion of the lease payment is reported as an inflow from operating activities and the principal reduction is reported as an inflow from investing activities.

Example 10 – Direct financing lease

- Follow the example 9, however, the GF leases a machine to an oil company for 4 years with annual lease payments of \$1,000 in arrears. The salvage value is zero. It cost GF \$3,170 to **purchase** the machine.
- At the end of the lease, the lessor regains possession of the asset .The collectability of the lease payments is predictable, and there are no significant uncertainties about GF' unreimbursable costs. The implicit rate on the lease is 10%.

PV of the lease payments	?
PV of salvage value	?
COGS	?
Profit for the sale	?
Lease receivable	?

Example 10 – Direct financing lease

➤ Lease receivable: IRR=10%

Year	Beginning	Interest Income 10%	Lease Payment Received	Lease Receivable
1	3,170	317	1,000	2,487
2	2,487	249	1,000	1,736
3	1,736	173	1,000	909
4	909	91	1,000	0
Total		830	4,000	

PV of future lease payment and
salvage value at the end of year 1
= $3,170 - (1000 - 3170 \times 10\%)$

Salvage
value

Accounting for lease - Lessor

	Sales-type lease	Direct-financing lease
At inception- I/S	<ul style="list-style-type: none"> • Sales = PV of MLP (lease receivable) <ul style="list-style-type: none"> • Discount rate • = The interest rate implicit in the lease • COGS = Cost of assets – PV of salvage • Profit = Sales – COGS 	<p>No Sales No COGS No profit is recognized.</p>
At inception- B/S	<p>Lease receivable = PV of MLP + PV of salvage value</p>	<p>Lease receivable = cost of assets</p>
Periodic - I/S	<p>Interest revenue = $r * \text{Lease receivable at the beginning of the period}$</p>	
At inception- Cash Flow	<p>No effect</p>	
Periodic - Cash Flow	<p>CFO – inflow CFI – inflow</p>	

Operating Lease

➤ Operating lease

- If the lease is treated as an operating lease, the lessor simply recognizes the lease payment as rental income.
- the lessor will keep the leased asset on its balance sheet and depreciate it over its useful life.

➤ **Total income over the life of the lease is the same for an operating lease and a direct financing lease.**

- However, in the early years of the lease, the income reported from the direct financing lease is higher than the income reported from the operating lease.

Direct financing lease vs. operating Lease—Lessor

- Example
- If the lease is treated as an operating lease.

Direct financing lease		Operating lease		
year	Interest income	Rental income	Depreciation expense	Rental income net of depreciation expense
1	317	1,000	792.5	207.5
2	249	1,000	792.5	207.5
3	173	1,000	792.5	207.5
4	91	1,000	792.5	207.5
	\$830			\$830

Operating Lease—Lessor

➤ **Example:**

	Direct Financing Lease		Operating Lease
Year	CFO	CFI	CFO
1	\$317	\$683	\$1,000
2	249	751	1,000
3	173	827	1,000
4	91	909	1,000

- **Total cash flow is the same for an operating lease and a direct financing lease. However, cash flow from operations is higher with the operating lease. With a direct financing lease, the lease payment is separated into the interest portion (CFO) and principal portion (CFI).**

Off-balance sheet financing

➤ **Following is information for ABC Corp. in 20X1:**

- Total assets \$40 million
- Total debt \$20 million
- Capital lease liability \$3 million

	Capital Lease Payments	Operating Lease Payments
20X2	\$2 million	\$1.5 million
20X3	\$2 million	\$1.5 million
20X4	\$2 million	\$1.5 million
20X5	\$2 million	\$1.5 million
20X6	\$2 million	\$1.5 million
Beyond 20X6	\$8 million	\$4 million

- **Present value of capital leases: \$7.184 million**
- **Estimate the present value of ABC's operating leases?**

Off-Balance Sheet Financing

➤ *Method 1: Assume operating leases have the same ratio of PV to payments as the firm's capital leases.*

- A total of \$18 million in capital lease payments and \$11.5 million in operating lease payments are due in the future.
- The ratio of the PV of ABC capital leases to its total future lease payments is $\$7.184 \text{ million} / \$18 \text{ million} = 0.399$.
- Using this ratio, we can estimate the PV of their operating leases as $0.399 \times \$11.5 \text{ million} = \4.589 million .

Off-Balance Sheet Financing

➤ *Method 2: Estimate discount rate for capital leases and apply it to operating leases.*

- To calculate a single discount rate that would produce the reported PV of capital leases, we must make an assumption about the timing of capital lease payments beyond 20X6. The annual payments, together with the reported PV, can be used to estimate a discount rate to use when calculating the PV of the operating lease payments.
- Some alternatives are as follows: all paid at the end of Year 6, or payments at the average of the prior five years until the obligation for future payments beyond 20X6 is met, spread evenly over some specific number of years.
- All paid at the end of Year 6 (\$8 million in Year 6)
 $CF_0 = -7.184; C_{01} = 2; F_{01} = 5; C_{02} = 8, F_{02} = 1; \text{CPT IRR} = 26.43\%.$
- Payments at the average of the prior five years (\$2 million in Years 6 to 9):
 $CF_0 = -7.184; C_{01} = 2; F_{01} = 9; \text{CPT IRR} = 23.75\%.$
- Spread evenly over five years (\$1.6 million in Years 6 to 10):
 $CF_0 = -7.184; C_{01} = 2; F_{01} = 5; C_{02} = 1.6; F_{02} = 5; \text{CPT IRR} = 23.08\%.$

Off-Balance Sheet Financing

- Note that the further in the future we assume the payments are made, the lower their discount rate given the PV.
- If we choose to assume that capital lease payments beyond 20X6 are spread evenly over five years (\$1.6 million per year), we will use the discount rate 23.08%.
- Making the same assumption about lease payments beyond 20X6 for the operating leases (\$800,000 per year for five years), we can calculate the PV of these payments, and, thus, the operating lease liability:
$$I/Y = 23; CF_0 = 0; C_{01} = 1,500; F_{01} = 5; C_{02} = 800; F_{02} = 5; CPT NPV = 5,001.85$$
- This amount, \$5.0 million, should be added to the firm's liabilities and assets (equity need not be adjusted) to better reflect the use of off-balance-sheet financing and to calculate solvency ratios such as debt-to-equity and debt-to-assets.

Solvency Ratios

➤ A firm's ability to pay long – term debt

➤ **Leverage**

Debt-to-equity ratio = D / E

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

Debt-to-assets = D / A

Financial leverage = A / E

➤ **Coverage**

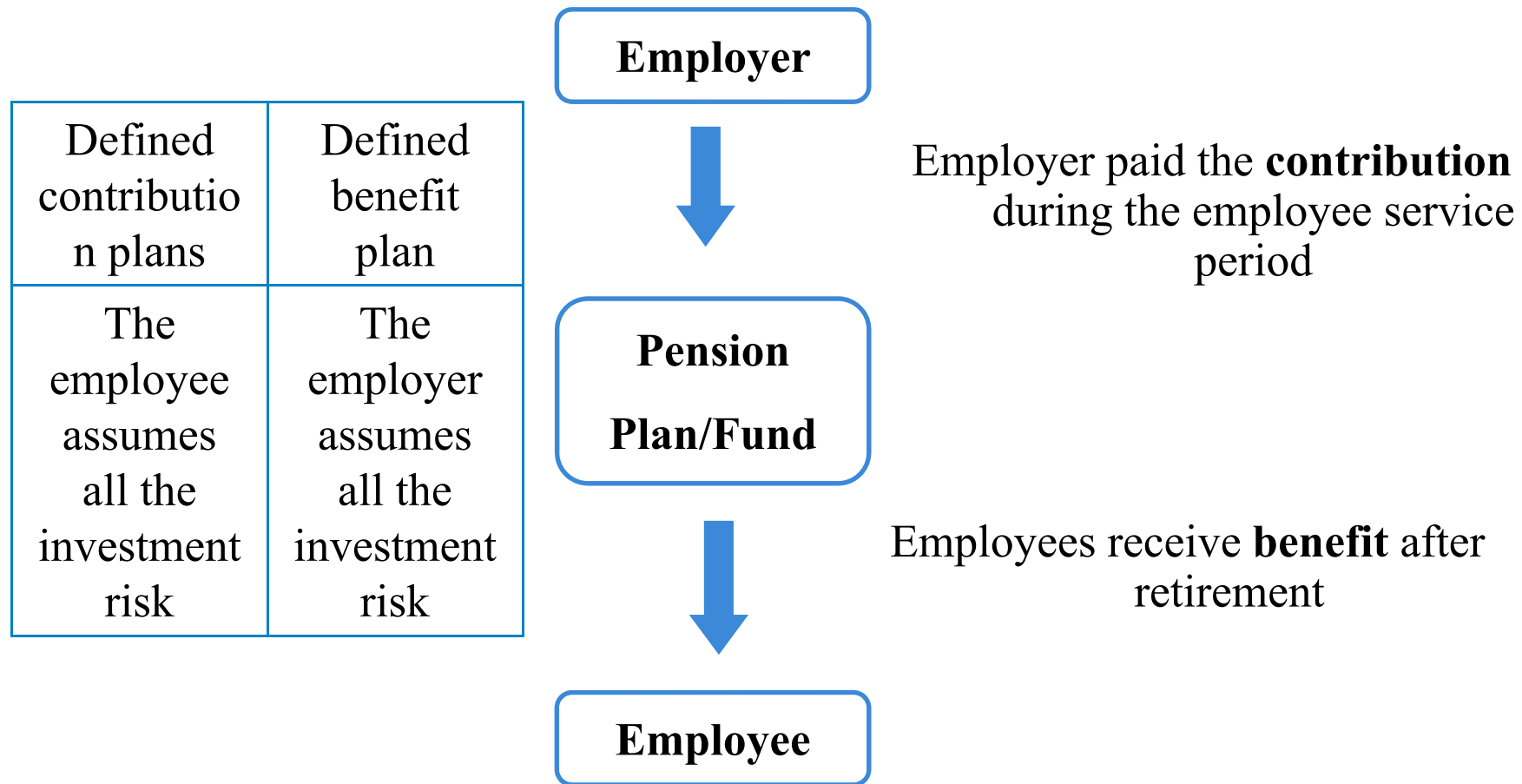
Interest coverage = $EBIT / \text{Interest}$

Fixed charge coverage = $(EBIT + \text{lease payments}) / (\text{Interest} + \text{lease payments})$

Framework for Pension plans*

- **A pension is a form of deferred compensation earned over time through employee service. The most common pension arrangements are defined contribution plans and defined benefit plans.**
 - **Defined contribution plan**
 - ✓ A defined contribution plan is a retirement plan in which the firm contributes a sum each period to the employee's retirement account.
 - ✓ The firm's contribution can be based on any number of factors, including years of service, the employee's age, compensation, profitability, or even a percentage of the employee's contribution.
 - **Defined benefit plan**
 - ✓ In a defined benefit plan, the firm promises to make periodic payments to employees after retirement.
 - ✓ The benefit is usually based on the employee's years of service and the employee's compensation at, or near, retirement.

Pension plans*



Defined benefit plan*

- Pehben corporation has a defined benefit pension plan. At 31 December, its pension obligation is \$10 million , pension assets are \$9 million and actuarial loss of \$0.4 million. If Penben chooses to report under a method consistent with both IFRS and U.S. GAAP , the reporting on the balance sheet would be closest to which of the following?
- A. \$10 million is shown as a liability and \$9 million appears as an asset
 - B. \$1 million is shown as a net pension obligation.
 - C. \$ 0.6 million is shown as a net pension obligation
- **Answer:**
- B is correct.
- Under both IFRS and U.S. GAAP, a company can choose to report net pension obligation or asset.

F.R.A

➤ SS7

- R22: Financial Statement Analysis: An Introduction
- R23: Financial Reporting Mechanics
- R24: Financial Reporting Standards

➤ SS8

- R25: Understanding the I/S
- R26: Understanding the B/S
- R27: Understanding the C/F
- R28: Financial Analysis Techniques

➤ SS9

- R29: Inventories
- R30: Long-Lived Assets
- R31: Income Taxes
-

➤ SS10

- R33: Financial Reporting Quality: Red Flags and Accounting Warning Signs
- R34: Financial Statement Analysis: Applications

The quality of financial reports



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

The quality of financial reports

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

Quality Spectrum of Financial Reports	Quality
GAAP, decision-useful, sustainable, and adequate returns	HIGH
GAAP, decision-useful, not sustainable, Low “earnings quality”	↓
Within GAAP, but biased choices	
Within GAAP, but “earnings management” (Real EM, Accounting EM)	
Non-compliant Accounting	
Fictitious transactions	
	LOW

Aggressive and conservative accounting

- Conservative accounting: tend to decrease the company's reported earnings and financial position for the current period.
- Aggressive accounting: tend to increase the company's reported earnings and financial position for the current period.

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

Motivation for manipulation

➤ Firms are motivated to manage

● Earnings / Net income

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

● Balance sheet

- ✓ Overstating Assets or understating Liabilities to appear *more solvent*

e.g. Lower D/E ratio

- ✓ Understating Assets or overstating Liabilities to *enhance its performance ratios*

e.g. Higher ROA, ROE, Asset turnover ratio

Motivation for manipulation

➤ Manipulation → A low quality earnings

- Selecting acceptable accounting principles that misrepresent the economics of transaction

e.g. Using inappropriate depreciation method to enhance NI

- Using aggressive or unrealistic estimate& assumption

e.g. Lengthening the lives of depreciable assets or increasing the residual value

- Structuring transactions to achieve a desired outcome

e.g. Structuring the terms of lease to avoid capital lease recognition

- Exploiting the intent of an accounting principle

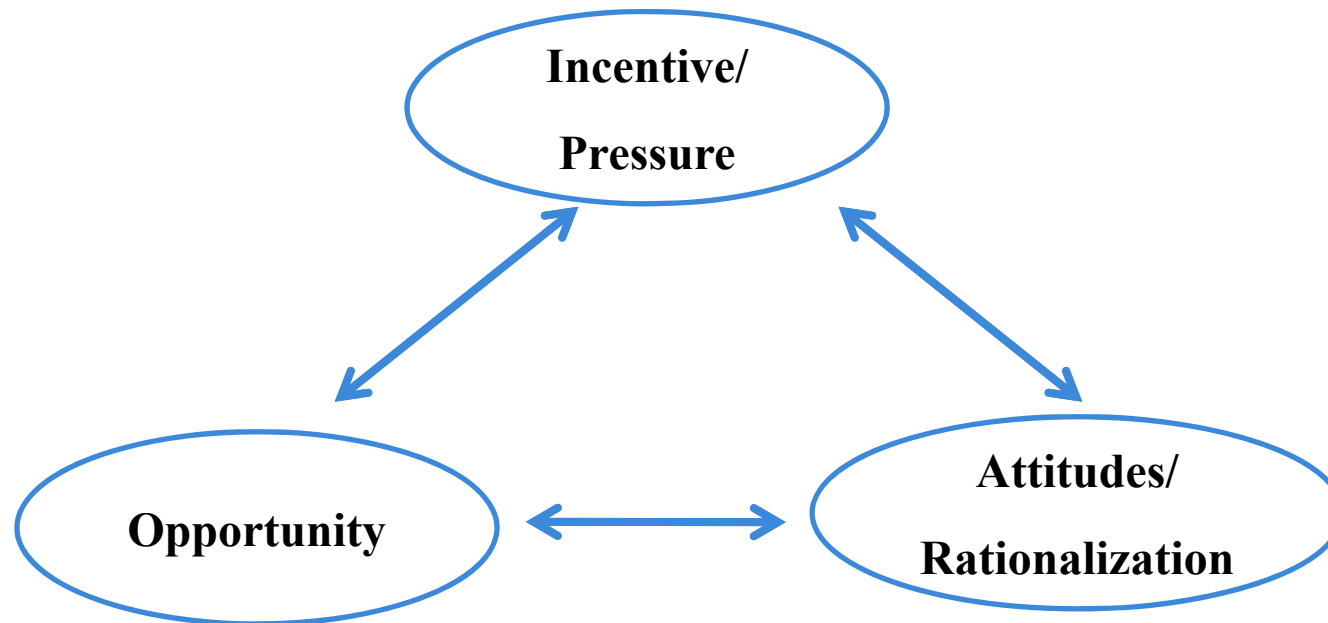
e.g. Applying a narrow rule to a board range of transaction

(Unconsolidated special purpose entities SPE)

Level II

Fraud Triangle

Statement on Auditing Standards No. 99, *Consideration of Fraud in a Financial Statement Audit*



Incentives/Pressures 1/2

1. Threats to financial stability or profitability as a result of economic, industry, or firm conditions such as:
 - Intense competition or market saturation, along with declining margins.
 - Vulnerability to rapid changes in technology, rates of product obsolescence, or interest rates.
 - Declining customer demand or increasing business failures.
 - Operating losses that may result in bankruptcy, foreclosure, or a hostile takeover.
 - Recurring negative operating cash flow or inability to generate positive cash flow while reporting earnings or earnings growth.
 - Rapid growth or unusual profitability.
 - New accounting standards, laws, or regulatory requirements.

Incentives/Pressures 2/2

2. Excessive third-party pressures on management from:
 - Aggressive or unrealistic profitability or trend expectations.
 - Debt or equity financing requirements in order to stay competitive.
 - Stock exchange listing requirements.
 - Debt covenants and repayment requirements.
 - Impact of real or perceived effects of poor financial performance on a pending transaction, such as a business acquisition.
3. Personal net worth of management or the board of directors is threatened because of:
 - A significant financial interest in the firm.
 - A significant amount of contingent compensation based on achieving aggressive targets for stock price, operating profit, or cash flow.
 - Personal guarantees of the firm's debt.
4. Excessive pressure on management or operating personnel to meet internal financial goals, including sales and profitability targets.

Opportunities for fraud 1/2

- The nature of the firm's industry or operations might involve:
 - Significant related-party transactions, particularly when those parties are unaudited, or audited by another firm.
 - Ability to dictate terms and conditions to suppliers and customers that may result in transactions that are not at arm's length.
 - Significant estimates and judgments in accounting for assets, liabilities, revenues, and expenses.
 - Unusual or complex transactions, especially near year-end, such as transactions that present "substance over form" issues.
 - Operations that exist or transactions that occur internationally where cultures and business practices may differ.
 - Bank accounts or operations located in tax-havens without clear business justification.
- Ineffective management monitoring as a result of:
 - Management being dominated by a single person or small group.
 - Ineffective oversight by the board of directors or audit committee.

Opportunities for fraud 2/2

- A complex or unstable organizational structure as evidenced by:
 - Difficulty in determining who is in control.
 - Organizational structure that involves unusual legal entities or unusual lines of authority.
 - High turnover among management, legal counsel, or board members.
- Deficient internal controls that can result from:
 - Inadequate monitoring controls.
 - High turnover rates of accounting and information technology personnel.
 - Ineffective accounting and information systems.

Attitudes/Rationalizations 1/2

1. Inappropriate ethical standards or failure to effectively communicate or support a firm's ethical standards.
2. Excessive participation by nonfinancial management in the selection of accounting standards and the determination of estimates.
3. Known history or allegations of violations of laws and regulations by management or board members.
4. A management obsession with maintaining or increasing the firm's stock price or earnings trend.
5. Making commitments to third parties to achieve aggressive results.
6. Failing to correct known reportable conditions in a timely manner.

Attitudes/Rationalizations 2/2

7. Inappropriately minimizing earnings for tax purposes.
8. Management's continued use of materiality as a basis to justify inappropriate or questionable accounting methods.
9. A strained relationship between management and the current or previous auditor as evidenced by any of the following:
 - Frequent disputes on accounting, auditing, and reporting issues.
 - Unreasonable demands on the auditor, such as unreasonable time constraints.
 - Restricting the auditor's access to people and information.
 - Limiting the auditor's ability to effectively communicate with the board of directors and audit committee.
 - Domineering management behavior toward the auditor.

Manipulation of earnings

Revenue recognition

Issues	Range of problems	Warning sign
Revenue misstatement	Bring forward or delay the revenue recognition	Large changes in account associated with A/R, unearned revenue, etc. (large increases in A/R, large decreases in unearned revenue)
Accelerating revenue	Accelerate the recognition of revenue by reporting revenue in current period that should be reported in future when it's hard to assess the progress of earning. To analyze the ratio of revenue to cash collected from customers is a good way to detect acceleration of revenue recognition.	<ul style="list-style-type: none"> ▪ Significant revenue without cash collection; ▪ Seeking for additional financing; ▪ Significant options vested by management. ▪ Maintain its track record of successively meeting analyst forecasts
Nonrecurring or non-operating as revenue	Report the non-recurring items or non-operating gain as revenue.	Temporal inconsistency with respect to the included revenues and expenses in a company's definition of operating income

Manipulation of earnings

Expense recognition

Issues	Range of problems	Warning sign
Understating expenses(see example 4)	<ul style="list-style-type: none"> Aggressive depreciation or amortization method and assumptions; Un-recorded allowance for obsolete inventories 	<ul style="list-style-type: none"> Ratios of depreciation; Inventory turnover ratios;
Deferring expenses	Improper capitalization of cost which should be expensed.	<ul style="list-style-type: none"> Track growth in net non-current assets
Ordinary as nonrecurring or non-operating (see example 5 and 6)	Report the ordinary expenses or cost as non-recurring items or non-operating losses.	Check ratio: $(\text{sales} - \text{COGS} - \text{SG\&A}) / \text{sales}$

Manipulation of Cash flows

- **Management may manipulate cash flows to inflate sustainable CFO**
 - Misclassification
 - ✓ Classifying CFF as CFO and vice versa
 - Timing of cash flows

Manipulation of Cash flows

➤ **Stretching Accounting payable:**

- Delay payment to suppliers → CFO↑

➤ **Financing Accounts payable:**

- Manage timing of CFO

➤ **Securitizing Accounts receivable:**

- Sale A/R → CFO↑

➤ **Repurchasing stock to offset dilution:**

- Option exercise → CFF↑
- Repurchase to offset dilution → CFF
- There is a **tax benefit when options are exercised, which ↑ CFO**; and employee stock options are part of compensation, **the outflow of CFF should be reclassified as CFO for analysis purpose.**

Accounting warning signs

- Aggressive revenue recognition.
 - Bill-and-hold arrangements whereby revenue is recognized before the goods are shipped.
 - Sales-type leases whereby the lessor recognizes a sale, and profit, at the inception of the lease, especially when the lessee does not capitalize the lease.
 - Recognizing revenue before fulfilling all of the terms and conditions of sale.
 - Recognizing revenue from swaps and barter transactions with third parties.
- Different growth rates of operating cash flow and earnings. Over time, there should be a fairly stable relationship between the growth of operating cash flow and earnings. If not, earnings manipulation may be occurring.

Accounting warning signs

- Abnormal sales growth as compared to the economy, industry, or peers.
- Abnormal inventory growth as compared to sales growth.
- Boosting revenue with nonoperating income and nonrecurring gains.
- Delaying expense recognition.
- Abnormal use of operating leases by lessees.
- Hiding expenses by classifying them as extraordinary or nonrecurring.
- LIFO liquidations.
- Abnormal gross margin and operating margin as compared to industry peers.
- Extending the useful lives of long-term assets.
- Aggressive pension assumptions.
- Year-end surprises.
- Equity method investments and off-balance-sheet special purpose entities.
- Other off-balance-sheet financing arrangements including debt guarantees.

F.R.A

➤ SS7

- R22: Financial Statement Analysis: An Introduction
- R23: Financial Reporting Mechanics
- R24: Financial Reporting Standards

➤ SS8

- R25: Understanding the I/S
- R26: Understanding the B/S
- R27: Understanding the C/F
- R28: Financial Analysis Techniques

➤ SS9

- R29: Inventories
- R30: Long-Lived Assets
- R31: Income Taxes
-

➤ SS10

- R33: Financial Reporting Quality: Red Flags and Accounting Warning Signs
- R34: Financial Statement Analysis: Applications

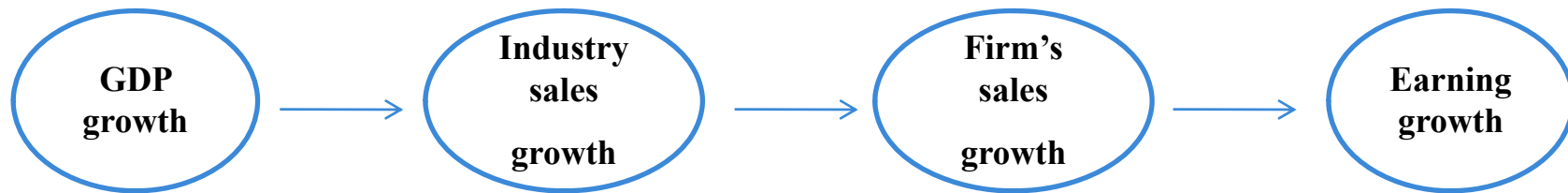
Important to understand business strategy

- Premium products are usually sold at higher gross margins than less differentiated commodity-like products, so we should expect cost of goods sold to be a higher proportion of sales for the latter.
- We might also expect the company with cutting-edge features and high quality to spend a higher proportion of sales on research and development, which may be quite minimal for a firm purchasing improved components from suppliers rather than developing new features and capabilities in-house.
- The ratio of gross profits to operating profits will be larger for a firm that spends highly on research and development or on advertising.

Financial statement analysis in assessing credit quality

➤ Ratio analysis for evaluation of past financial performance Forecasting

- A company's future income and cash flow can be projected by forecasting future sales



➤ Credit analysis uses a firm's financial statement to assess its credit quality

- Character
 - Collateral
 - Capacity to pay
- Types of items considered can be separated into four general categories: Scale and diversification, Operational efficiency (operating ROA, operating margins, and EBITDA margins), Margin stability, Leverage)

Adjustments for comparison

- **Companies must adjust the financial statements for comparability when they use different accounting methods or estimates**
 - ✓ Different **accounting methods** between companies
 - ✓ Different **accounting standards** crossing countries

Appropriate adjustments to facilitate comparison

➤ Investments in Securities.

- differences in classifications
- Under IFRS, unrealized gains and losses on available-for-sale debt securities that result from exchange rate fluctuations are recorded on the income statement. Because they are not recorded as income under U.S. GAAP, an analyst should subtract (add) this component of unrealized gains (losses) from the net income of the IFRS firm to improve comparability.

➤ Inventory Accounting Differences

- The LIFO reserve, which all LIFO firms must report, can be used to adjust LIFO cost of goods and inventory to their FIFO-equivalent values.

Appropriate adjustments to facilitate comparison

➤ Differences in Depreciation Methods and Estimates

- Over an asset's life, differences between depreciation methods, estimates of useful lives, and estimates of salvage values used by otherwise comparable firms can lead to significant differences in reported income and balance sheet asset values.
- Note as well that upward revaluation of fixed asset values is permitted under IFRS but not under U.S. GAAP.

➤ Off-Balance-Sheet Financing

- Debt ratios should include liabilities for both capital (finance) leases and operating leases.

Appropriate adjustments to facilitate comparison

➤ Goodwill

- First, goodwill should be subtracted from assets when calculating financial ratios.
- Second, any income statement expense from impairment of goodwill in the current period should be reversed, increasing reported net income.

➤ Other Intangible Assets

- Additional adjustment may be required for IFRS firms that revalue intangible assets upward, which is not permitted under U.S. GAAP.
- Analysts should also note that a firm's pre-and post-acquisition financial statements may lack comparability when the acquisition method is used. The acquisition method combines fair value estimates of identifiable assets with historical asset costs on the balance sheet and adds the earnings of the purchased firm with no restatement of prior results.

It's not the end but just beginning.

“别人喜欢看《花花公子》杂志，而我喜欢看公司财务报告。”

——沃伦·巴菲特



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Topic Weightings in CFA Level I

Session NO.	Content	Weightings
Study Session 1	Ethics & Professional Standards	15
Study Session 2-3	Quantitative Analysis	12
Study Session 4-6	Economics	10
Study Session 7-10	Financial Reporting and Analysis	20
Study Session 11	Corporate Finance	8
Study Session 12	Portfolio Management and Wealth Planning	5
Study Session 13-14	Equity Investment	10
Study Session 15-16	Fixed Income	12
Study Session 17	Derivatives	5
Study Session 18	Alternative Investments	3

Summary of Readings & Framework

➤ Study Session 11

- **R36: Capital Budgeting**
- **R37: Cost of Capital**
- **R38: Measures of leverage**
- **R39: Dividends and Share Repurchases: Basics**
- **R40: Working Capital Management**
- **R41: The Corporate Governance of Listed Companies: A Manual for Investors**

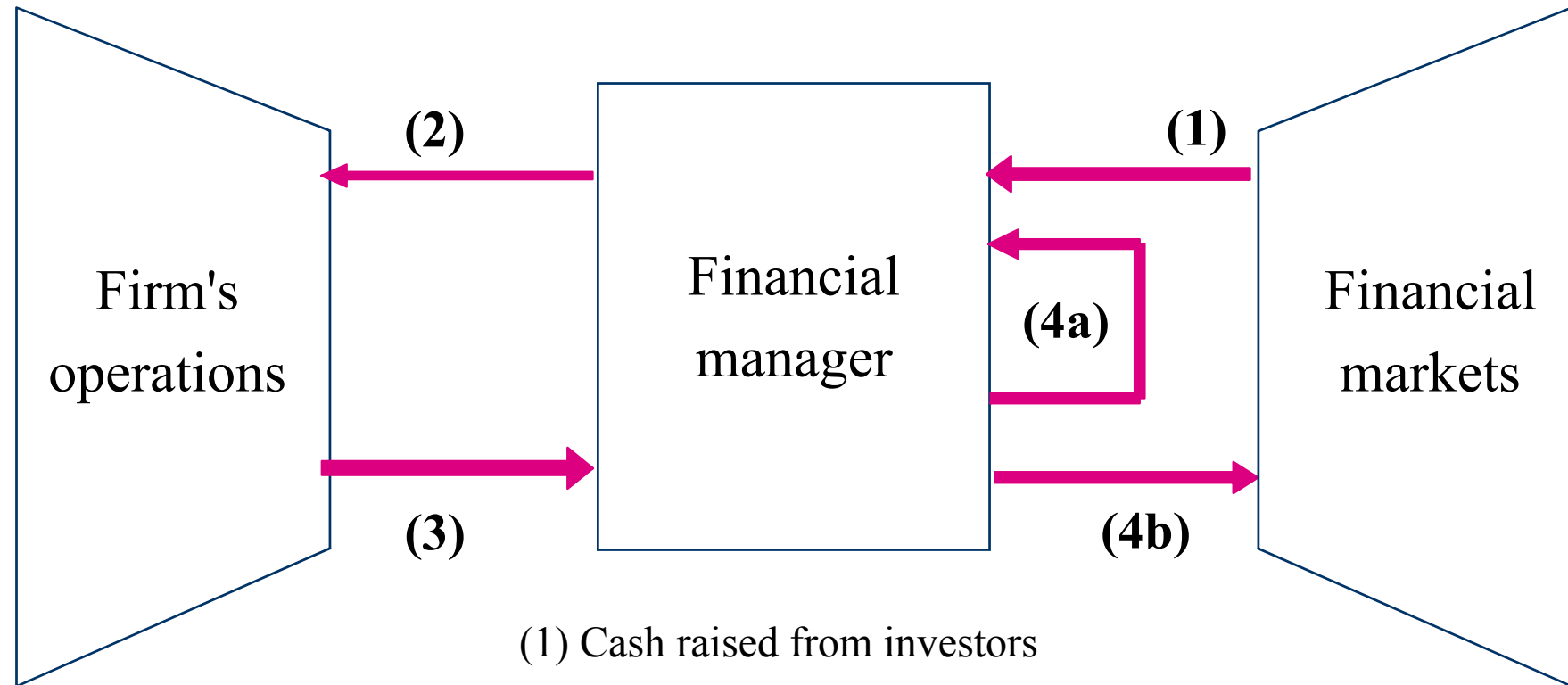
Framework

➤ R36: Capital Budgeting

1. Capital budgeting process
2. Categories of capital budgeting projects ★
3. Five basic principles ★
4. Evaluation and selection between capital projects
5. Methods to evaluate a single capital project ★
 - NPV ★★
 - IRR ★★
 - Payback period
 - Discounted payback period
 - Profit index (PI)
6. Factors affect choosing capital budgeting methods
7. Relations among NPV and share price

R.36.1 The Basic of Capital Budgeting

➤ Role of The Financial Manager



(1) Cash raised from investors

(2) Cash invested in firm

(3) Cash generated by operations

(4a) Cash reinvested

(4b) Cash returned to investors

R.36.1 The Basic of Capital Budgeting

- **Capital budgeting** is the process of determining and selecting the most profitable long-term projects
 - Idea generation:
 - ✓ Generating good investment ideas from a number of resources
 - Analyzing project proposals:
 - ✓ Gathering the information → Cash flow forecasting → Evaluating project's profitability
 - Create the firm-wide capital budget:
 - ✓ The timing of project's cash flows
 - ✓ The availability of company's resources
 - ✓ Fit the company's overall strategies
 - Monitoring decisions and conducting a post-audit
 - ✓ Comparing the actual result with the projected and explain the reasons

R.36.1 The Basic of Capital Budgeting

➤ Capital projects can be classified as

- Replacement projects
 - ✓ Replacement decision to maintain the business
 - ✓ Replacement decision for cost reduction purpose
- Expansion projects
 - ✓ Expansion projects for existing product
 - ✓ Expansion projects for new product or new services
- Mandatory investment: regulatory, safety, and environmental project
- Other projects: projects are not easily analyzed through the capital budgeting process

Detailed
analysis
required

R.36.2 Basic Principles of Capital Budgeting

- Decision are based on **Cash flows**, not accounting income
 - **Incremental cash flows**: Cash flows will change if the project is undertaken.
 - **Ignore**:
 - ✓ **Sunk costs** (any costs that cannot be avoided, even if the project is not undertaken, consulting fee, advertisement costs).
 - ✓ **Financing costs / interest cost** (financing costs are included in the project cost of capital or WACC).
 - **Include**:
 - ✓ **Externalities**
 - A negative externalities → **Cannibalization** (New project takes sales from an existing product)
 - A positive externalities (the product benefits sales of a firm's other product lines)
 - ✓ Cash flows are based on **Opportunity costs**
 - **Opportunity cost** (cash flows that a firm will lose by undertaking the project, generally an asset the firm already owns)

R.36.2 Basic Principles of Capital Budgeting

- The **timing** of cash flows is important → **Time value of money**
 - Cash flows received earlier are worth more than cash flows to be received (accelerated depreciation).
- Cash flow are analyzed on an **after tax basis**
 - A decision should consider the impact of taxes. The value of an firm is none of government's business.
- Financing costs are reflect in the project's **required rate of return**
 - Only projects that are excepted to return more than the cost of the capital needed to fund them will increase the value of the firm.

R.36.3 Mutually Exclusive vs. Independent Project

➤ Independent Projects

- Projects **are unrelated to each other** and allow for each project to be evaluated based on its own profitability

➤ Mutually Exclusive Projects

- Only one of several potential projects can be chosen.
- Rank all alternatives and select the best one.

➤ Project Sequencing

- Some projects must be undertaken in **a certain order**, so that investing in a project today creates the opportunity to invest in other projects in the future.

➤ Unlimited Funds vs. Capital Rationing

- Unlimited funds: company can raise the funds it wants for all profitability projects
- Many firms have constraints on the amount of capital they can raise, and must use **capital rationing** (choose more profitable projects).

R.36.4 Project Evaluation Methods

1. Net present value (**NPV**)
2. Internal rate of return (**IRR**)
3. Payback period (**PBP**)
4. Discount payback period (**DBP**)
5. Profitability index (**PI**)

R.36.4 Project Evaluation Methods- NPV

The Net Present Value (NPV)

$$NPV = CF_0 + \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \dots + \frac{CF_n}{(1+k)^n}$$

➤ Definition: PV of the future after-tax cash flows minus the investment outlay

➤ Net Present Value (NPV) = Total PV of future CF's + Initial Investment

EXAMPLE: Assume that the firm's cost of capital is 10% (*Use your calculator*)

Year (t)	0	1	2	3	4
Net cash flow	-2,000	1,000	800	600	200
Discounted NCF	-2,000	909	661	451	137

$$NPV = -2000 + \frac{1000}{(1+10\%)^1} + \frac{1000}{(1+10\%)^2} + \dots + \frac{1000}{(1+10\%)^4}$$

$$=(-2000) + 909 + 661 + 451 + 137 = \mathbf{158}$$

R.36.4 Project Evaluation Methods- NPV

➤ Selection

- For independent projects:
 - ✓ If $NPV > 0$, increase wealth, Accept!
 - ✓ If $NPV < 0$, decrease wealth, Reject!
- For mutually exclusive projects: Choose the one with **highest** NPV

➤ Advantage

- Shows the amount of gains as currency amount
- Positive NPV of project adds value to the firm (or to shareholders) rather than creditors. (Creditors only gain the interest whatever project bring benefits or losses)
- Realistic discount rate – Included opportunity cost of funds (the expected return of stockholders)

➤ Disadvantage

- Size of projects ignored

R.36.4 Project Evaluation Methods- IRR

Internal Rate of return (IRR)

$$CF_0 + \frac{CF_1}{(1+IRR)^1} + \frac{CF_2}{(1+IRR)^2} + \dots + \frac{CF_n}{(1+IRR)^n} = 0 \quad NPV = 0$$

- Definition: discount rate that makes the PV of the future after-tax cash flows equal that investment outlay (NPV=0)
- Decision making:
 - Minimum Acceptance Criteria:

Invest if $IRR \geq$ the required rate of return
Reject if $IRR <$ the required rate of return

- Ranking Criteria: Choose the **highest** IRR
- Advantage: Reflect the profitability (not reflect absolute amount of profit gain)
- Disadvantage
 - Assume the reinvestment rate is IRR
 - No IRR & multiple IRR
 - Conflicting ranking results of mutually exclusive projects with NPV

R.36.4 Project Evaluation Methods- PB

Payback Period:

$$PBP = \text{full years until recovery} + \frac{\text{unrecovered cost at the beginning of last year}}{\text{cash flow during the last year}}$$

Year (t)	0	1	2	3	4
Net cash flow	-2,000	1,000	800	600	200
Cumulative NCF	-2,000	-1,000	-200	400	600

$$\text{payback period} = 2 + \frac{200}{600} = 2.33 \text{ years}$$

R.36.4 Project Evaluation Methods- PBP

Payback Period (PBP)

- Definition: the number of years it takes to recover the initial cost of an investment
- Selection
 - Mutually Exclusive vs. Independent Project:
 - ✓ Mutually exclusive: Invest the one with **shorter** PBP;
 - ✓ Independent project: If project PBP < benchmark PBP, Accept!
- Advantages
 - Simple
 - An indication of a project's risk and liquidity
- Disadvantages
 - Ignores the time value of money
 - Ignores cash flows after the payback period
 - Ignores the profitability of the project

R.36.4 Project Evaluation Methods- DPB

EXMAPLE:

Assume that the firm's cost of capital is 10% and the firm's maximum discounted payback period is 4 years.

Year (t)	0	1	2	3	4
Net cash flow	-2,000	1,000	800	600	200
Discounted NCF	-2,000	909	661	451	137
Cumulative NCF	-2,000	-1,091	-430	21	158

$$\text{Discounted payback} = 2 + \frac{430}{451} = 2.95 \text{ years}$$

The Net Present Value

R.36.4 Project Evaluation Methods- DPB

Discounted Payback Period (DPB)

- Definition: the number of years it takes for the cumulative discounted cash flows from a project to equal the original investment.
- Minimum Acceptance Criteria:
 - Mutually exclusive: Invest the one with shorter PBP;
 - Independent project: If project PBP < benchmark PBP, Accept!
- Advantages
 - An indication of a project's risk and liquidity
 - Considers time value of money
- Disadvantages
 - Ignores cash flows after the payback period. Also the drawback of PBP.
 - ✓ Even if we choose the shortest DPB, the NPV could still be negative.

R.36.4 Project Evaluation Methods- PI

Profitable Index (PI)

$$PI = \frac{PV \text{ of future cash flow}}{CF_0} = 1 + \frac{NPV}{CF_0}$$

- Definition: the PV of a project's future cash flows divided by the initial investment
- Minimum Acceptance Criteria:

Invest if $PI > 1.0$

Reject if $PI < 1.0$

- Advantage
 - Measures profitability of the project
- Disadvantage
 - Not reflect the absolute amount of profit gain of the project

R.36.5 NPV & IRR Calculation

- Q1. Given the following cash flows for a capital project, calculate the NPV and IRR. The required rate of return is 8 percent.

<i>Year</i>	0	1	2	3	4	5
<i>Cash flow</i>	-50,000	15,000	15,000	20,000	10,000	5,000

- NPV IRR
- A. \$1,905 10.9%
- B. \$1,905 26.0%
- C. \$3,379 10.9%

- Solution: C is correct.

- $NPV = -50,000$
 $+15000/1.08+15000/1.08^2+20000/1.08^3+10000/1.08^4+5000/1.08^5$
 $= -50,000 + 13,888.89 + 12,860.08 + 15,876.64 + 7,350.30 + 3,402.92$
 $= -50,000 + 53,378.83 = 3,378.83$
- The IRR, found with a financial calculator, is 10.88 percent.

R.36.5 NPV & IRR Calculation

➤ NPV is superior to IRR

- Advantages of NPV & IRR

- ✓ Based on *Cash flows*
- ✓ Considering *Time value of money*——*Opportunity cost*
- ✓ Take into account the cash flows generated over the *whole project life*

- Disadvantages of IRR

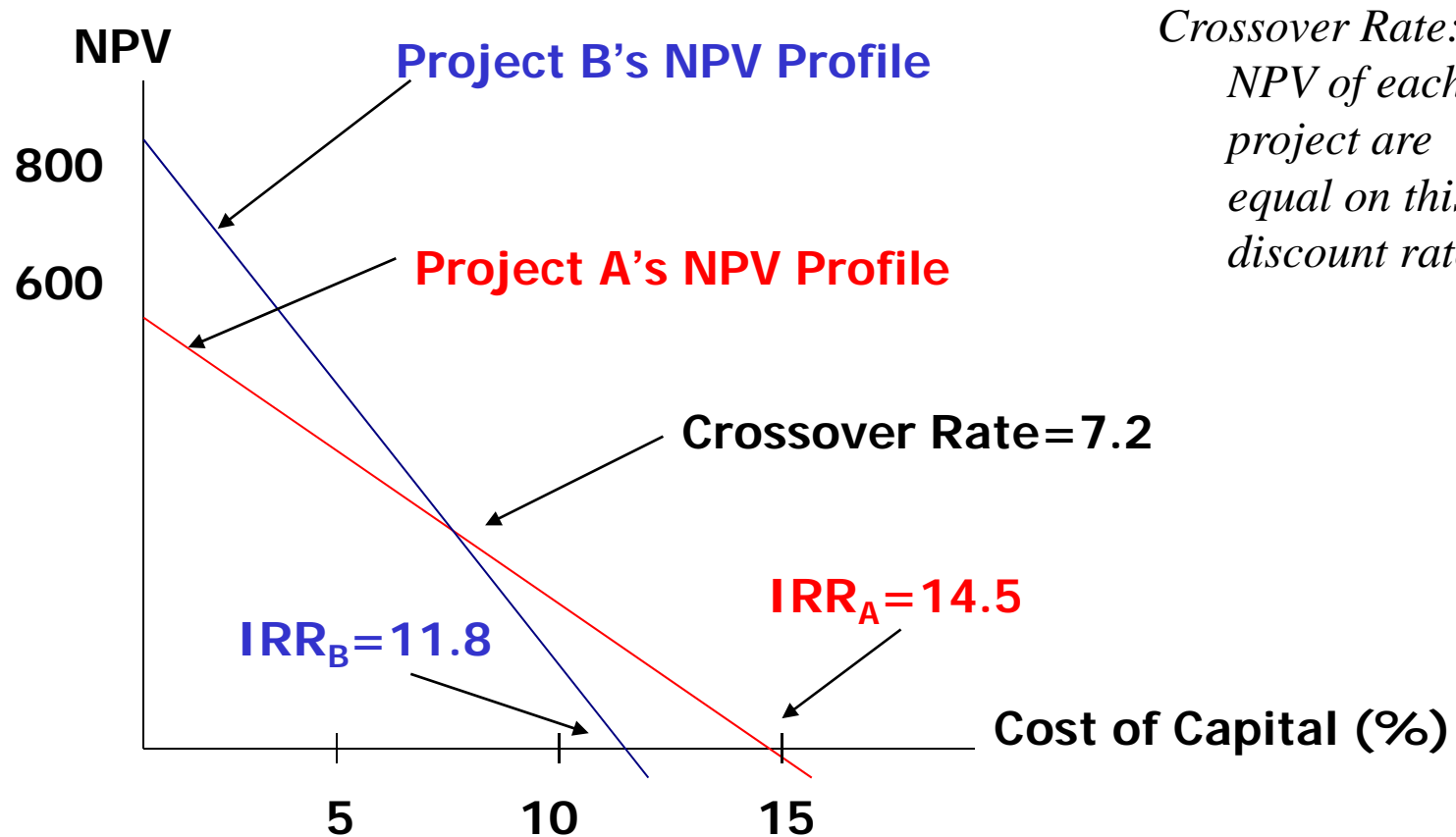
- ✓ Conventional cash flows pattern Vs. Unconventional cash flow pattern
 - Multiple IRRs or no IRR under unconventional CF
- ✓ Unrealistic reinvestment assumption

- Disadvantage of NPV

- ✓ Size of project ignored

Key advantage of NPV: Consistent with the goal of shareholders wealth maximization

R.36.5 NPV Profiles



When NPV and IRR conflicts: NPV dominates

R.36.6 Popularity of Capital Budgeting Methods

- **Location:** European countries use the payback period method as much as or more than NPV and IRR methods.
- **Size of the company:** Larger companies tended to prefer the NPV and IRR over the payback period.
- **Public and Private:** Private companies used the payback period more often than did public ones.
- **Management education:** The higher the level of education (i.e., MBA), the more likely the company was to use discounted cash flow methods such as the NPV and IRR.

R.36.7 Impact of NPV Rule and Stock Price

- When the NPV is **positive**, firm value is increased and shareholder wealth is **increased**
- An NPV of **zero** means the project does **not increase** shareholder wealth
- A **negative** NPV means **decrease** shareholder wealth
- The NPV of the project = change of the market value of the stocks
 - In theory, when the NPV is **positive**, **P_{stock} is increased**, vice versa.
See next example

R.36.7 Impact of NPV Rule and Stock Price

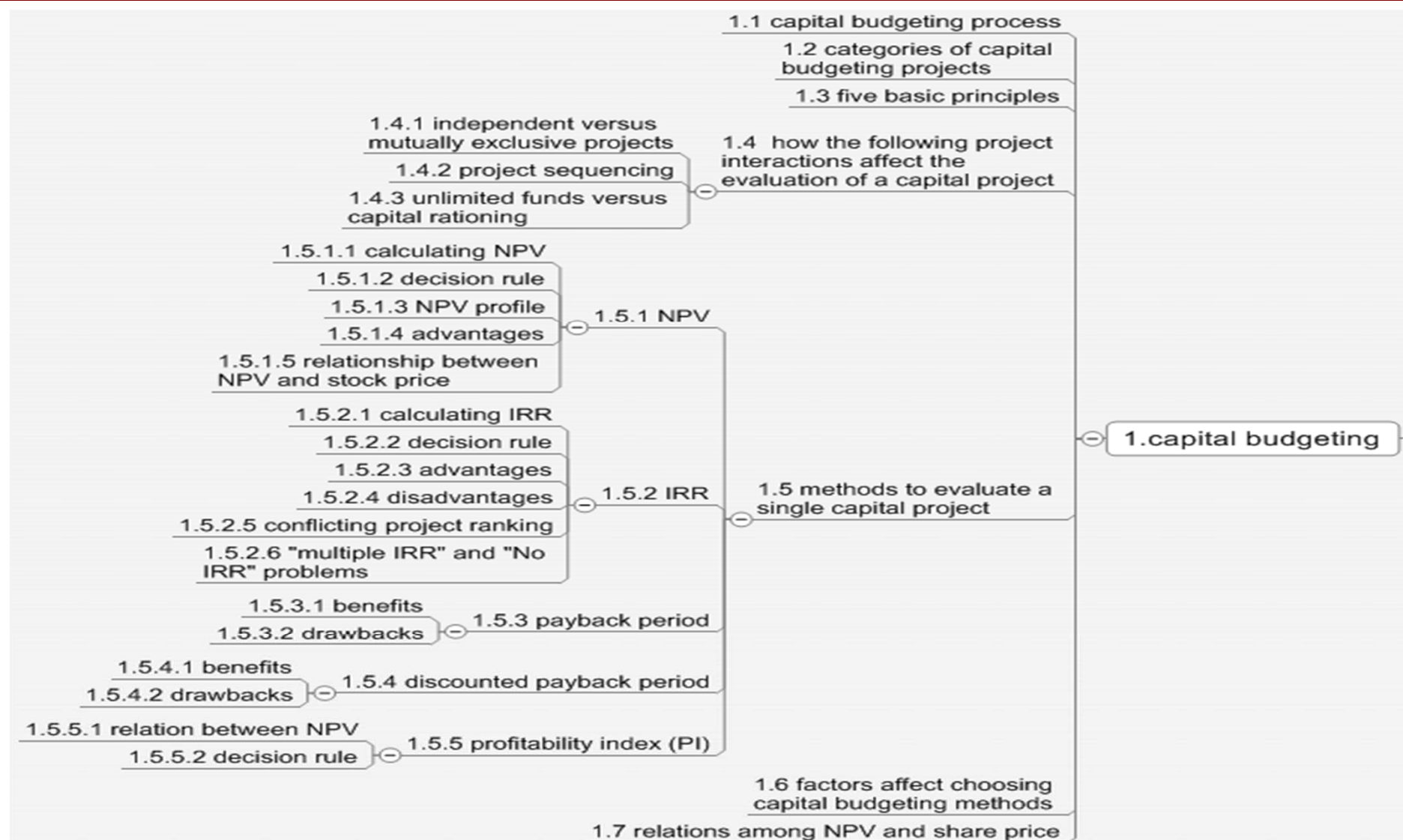
Example: Relationship between NPV and stock price

- Presstech is investing \$500 million in new printing equipment. The present value of the future after-tax cash flows resulting from the equipment is \$750 million. Presstech currently has 100 million shares outstanding, with a current market price of \$45 per share. Assuming that this project is new information and is independent of other expectations about the company, calculate the effect of the new equipment on the value of the company and the effect on Presstech's stock price.
- Answer:
- $NPV = 750 - 500 = 250 \text{ million}$
 - $\text{New value} = 45 + 250/100 = 47.5\$$

R.36.7 Impact of NPV Rule and Stock Price

➤ In reality

- the impact of a project on the company's stock price is **more complicated** than previous example.
- The impact of an investment on the stock price will depend on whether the investment's profitability is more or less than expected.
- An analyst could learn of a positive NPV project, but if the profitability is **less than expectation**, stock may **drop in price** on the news.
- A project that by itself might add \$2.5 to the value of the stock might signal the existence of other profitable projects, thus **increase the stock price** by far more than \$2.5



Summary of Readings & Framework

➤ Study Session 11

- R36: Capital Budgeting
- R37: Cost of Capital
- R38: Measures of leverage *
- R39: Dividends and Share Repurchases: Basics *
- R40: Working Capital Management
- R41: The Corporate Governance of Listed Companies: A Manual for Investors

Framework

➤ R37: Cost of Capital

1. Weighted average cost of capital (WACC) ★★
 - Component cost of capital
 - Calculating WACC and it's components
 - Target capital structure weights
2. Project's and non-public company's beta ★
3. Country risk premium ★
4. Optimal capital budget
5. Floatation cost

R.37.1 Weight average cost of capital (WACC)

$$WACC = (w_d)[k_d(1-t)] + (w_{ps})(k_{ps}) + (w_{ce})(k_s)$$

Where:

- t is the firm's *marginal* tax rate
- w is the proportion of each type of capital, all the components are using **market value** when computing weightings.
- Outside analysts can estimate target capital structure using one of the approaches:
 - Assume the company's current capital structure
 - Use the company's target capital structure
 - Examine trends in capital structure to infer the target structure.
 - Use average of comparable company's capital structure as the target structure
- k is the current cost of each type of capital (debt, preferred stock and common stock)

R.37.1 WACC: How to determine weights?

EXMAPLE:

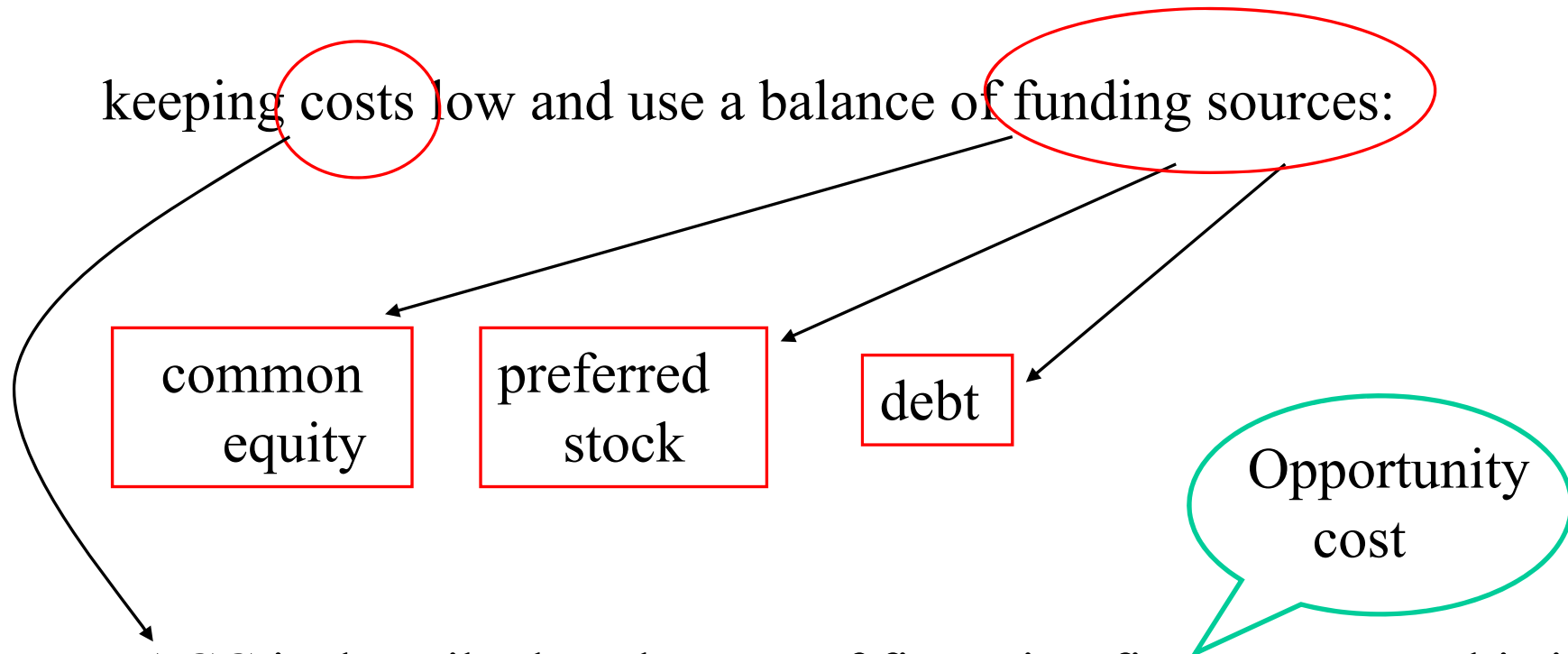
Fran McClure of Alba Advisers is estimating the cost of capital of Frontier Corporation as part of her valuation analysis of Frontier. McClure will be using this estimate, along with projected cash flows from Frontier's new projects, to estimate the effect of these new projects on the value of Frontier. McClure has gathered the following information on Frontier Corporation

	Current Year	Forecasted for Next Year
Book value of debt	\$50	\$50
Market value of debt	\$62	\$63
Book value of shareholders' equity	\$55	\$58
Market value of shareholders' equity	\$210	\$220

The weights that McClure should apply in estimating Frontier's cost of capital for debt and equity are, $W_d = 0.223$; $W_e = 0.777$, respectively

R.37.2 Cost of the different sources of capital

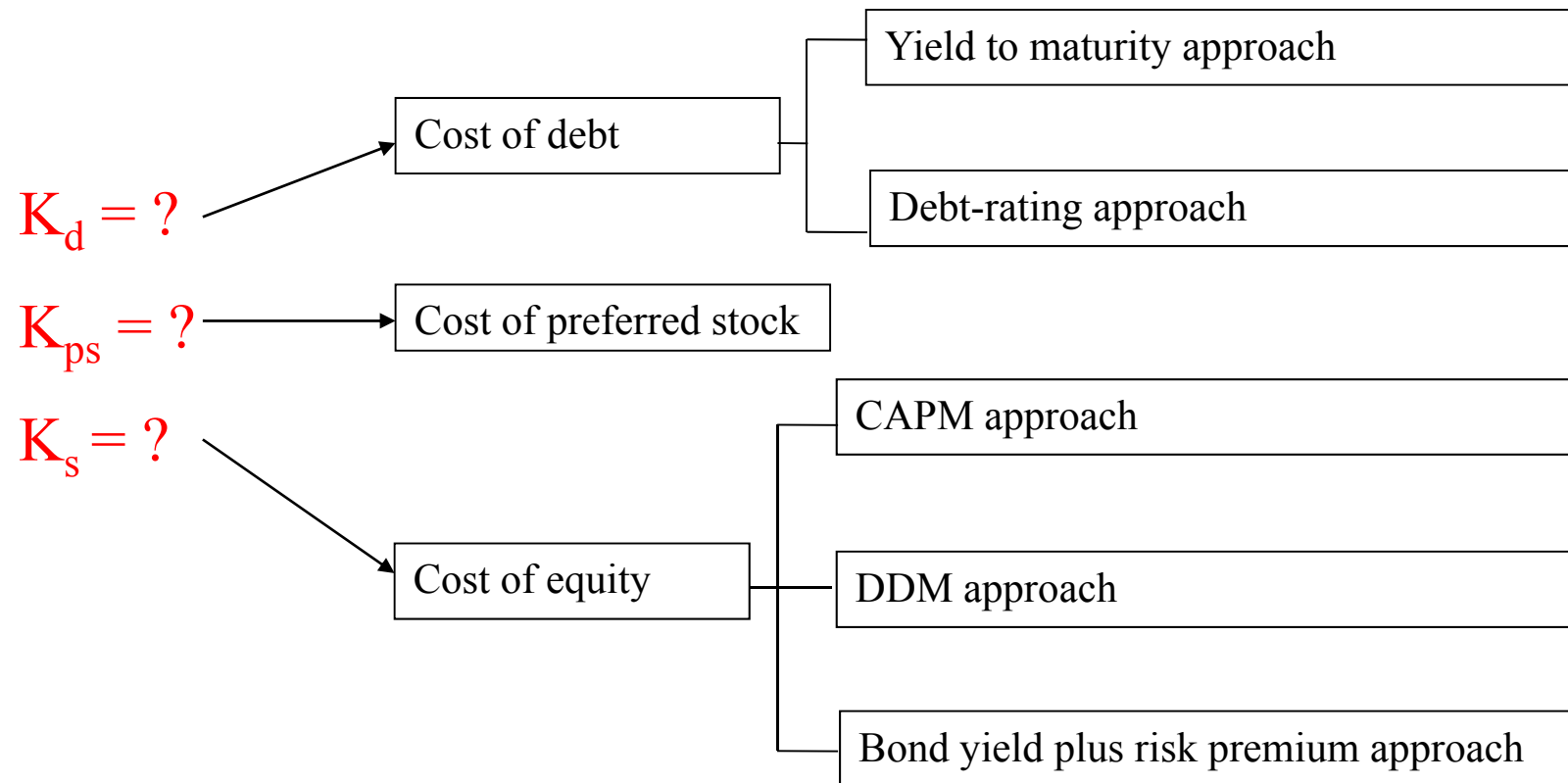
How a company raises capital:



WACC is described as the cost of financing firm assets. so this is a appropriate way to determine whether undertaking that project will increase the value of the firm.

R.37.2 Cost of the different sources of capital

The weights in the calculation of WACC should be based on the firm's target capital structure.



R.37.2 Cost of the different sources of capital

➤ After-Tax Cost of Debt

$$K_d (1-t) = \text{interest rate} - \text{tax saving}$$

Use the *market interest rate* on new debt, **not the coupon rate**

➤ Yield to maturity approach (annual return)

- N=3, PV=-1025, PMT= 100, FV=1000 CPT I/Y
- CF CF0=-1025, C01=100, F01=2, C02=1100 IRR CPT (容易犯错)

➤ Debt-rating approach

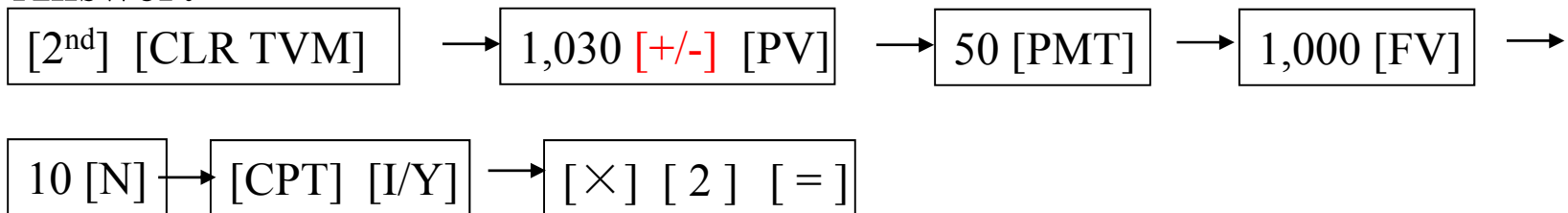
R.37.2 Cost of the different sources of capital

➤ After-Tax Cost of Debt

Example 1 (YTM approach):

Smith Inc's bond with remaining 5 years is sold at \$1,030, par value is \$1,000 and coupon rate 10% and the coupon is **paid semiannually**. The marginal tax rate of Smith Inc is 30%, calculate the after-tax component cost of debt of Smith Inc.?

Answer:



So: $I/Y = 4.62$, and then, $4.62 \times 2 = 9.24$

The after-tax cost of debt is: $K_d (1-t) = 9.24\% * (1-30\%) = 6.47\%$

R.37.2 Cost of the different sources of capital

➤ After-Tax Cost of Debt

Example 2 (debt rating approach):

If the Smith Inc's capital structure includes the debt with an average maturity of 5 years and the firm's marginal tax rate is 30%. If the Smith Inc's rating AA and the yield on a debt with same rating and 10 year's maturity is 10%.

Answer:

$$10\% \times (1-30\%) = 7\%$$

R.37.2 Cost of the different sources of capital

➤ Cost of Preferred Stock

$$k_{ps} = \frac{D_{ps}}{P}$$

Where:

- D: preferred dividends
- P: market price of preferred stock

- If the preferred stock has option features like convertible or callable, how to figure out its cost?

R.37.2 Cost of the different sources of capital

➤ Cost of Preferred Stock

Morgan Insurance Ltd. issued a fixed-rate **perpetual** preferred stock three years ago and placed it privately with institutional investors. The stock was issued at \$25 per share with a 1.75 dividend. If the company were to issue preferred stock today, the yield would be 6.5 percent. The stock's current value is

Answer: The company can issue preferred stock at 6.5%.

$$P = \$1.75 / 0.065 = \$26.92$$

R.37.2 Cost of the different sources of capital

➤ Cost of Equity

- CAPM approach

- ✓ $k_s = r_f + \beta(r_m - r_f)$

- Discounted cash flow approach

- ✓ $k_s = (D_1/P_0) + g$

- ✓ $g = (1 - \text{payout rate}) (\text{ROE})$

- Bond yield plus risk premium approach

- ✓ $k_s = \text{bond yield} + \text{risk premium}$

R.37.3 Capital Asset Pricing Model (CAPM)

- Step 1: Estimate the risk free rate, RFR
- Step 2: Estimate the stock's beta
- Step 3: Estimate the expected rate of return on the market, or market risk premium
- Step 4: Use CAPM

- $k_s = r_f + \beta(r_m - r_f)$

R.37.3 Capital Asset Pricing Model (CAPM)

Example :An analyst gathered the following information about a company and the market:

Current market price per share of common stock	\$28.00
Most recent dividend per share paid on common stock (D_0)	\$2.00
Expected dividend payout rate	40%
Expected return on equity (ROE)	15%
Beta for the common stock	1.3
Expected rate of return on the market portfolio	13%
Risk-free rate of return	4%

Using the Capital Asset Pricing Model (CAPM) approach, the cost of retained earnings for the company is closest to:

A. 13.6%.

B. 15.7%.

C. 16.1%.

R.37.3 Capital Asset Pricing Model (CAPM)

➤ How to estimate beta of a **non-public** company?

- A two-step process is used (pure-play method)

- ✓ Step 1: Convert the observed, equity beta of the comparable public company, into an asset beta, or pure project beta, β_u . **Removing the effects of financial leverages**

$$\beta_{asset}^* = \beta_{equity} \left[\frac{1}{1 + (1-t) \frac{D}{E}} \right]$$

- ✓ Step 2: Calculate the new equity beta of this non-public company for the proposed capital structure of the new line of business

$$\beta_{equity} = \beta_{asset}^* \left[1 + (1-t') \frac{D'}{E'} \right]$$

R.37.3 Capital Asset Pricing Model (CAPM)

➤ Pure-Play Method Derivation

- Company's risk is shared by both share holders and creditors

$$\beta_{asset} = \beta_{debt} \omega_{debt} + \beta_{equity} \omega_{equity}$$

- The burden of debt financing is actually less due to interest deductibility.

$$\omega_{debt} = \frac{(1-t)D}{(1-t)D + E}$$

$$\omega_{equity} = \frac{E}{E + (1-t)D}$$

- Returns on debt do not vary with returns on market.

$$\beta_{debt} = 0$$

Pay predetermined INT and PRN without regard to market

- Then we have:

$$\beta_{asset} = \beta_{equity} \left(\frac{1}{1 + (1-t) \frac{D}{E}} \right)$$

R.37.3 Capital Asset Pricing Model (CAPM)

➤ Country equity risk premium in developing market

- $K_{ce} = R_f + \beta[E(R_{mkt}) - R_f + CRP]$

✓ CRP: country risk premium

求Ke，考虑的是股票市场，所以equity在分子上

$$CRP = \text{Sovereign yield spread} \times \left(\frac{\text{Annualized standard deviation of equity index of developing country}}{\text{Annualized standard deviation of sovereign bond market in terms of the developing market currency}} \right)$$

where:

Sovereign yield spread= difference between the yield of government bonds in the developing country and Treasury bonds of similar maturities

R.37.3 Capital Asset Pricing Model (CAPM)

Example: Country Risk Premium

Robert Rodriguez, an analyst with Omni Corporation, is estimating a country risk Premium to include in his estimate of the cost of equity for a project Omni is Starting in Venezuela . Rodriguez has compiled the following information for his analysis, then calculate the country risk premium and the cost of equity for Omni's Venezuelan project.

- Venezuelan 10-year government bond yield = 8.6%
- 10-year U.S. treasury bond yield = 4.8%
- Annualized standard deviation of Venezuelan stock index = 32%
- Annualized standard deviation of Venezuelan U.S. dollar-denominated 10-year government bond = 22%
- Project beta = 1.25
- Expected market return = 10.4%
- Risk-free rate = 4.2%

R.37.3 Capital Asset Pricing Model (CAPM)

Answer:

Country risk premium:

$$\begin{aligned}\text{CRP} &= (0.086 - 0.048)(0.32/0.22) = 0.038(0.32/0.22) \\ &= 0.0553, \text{ or } 5.53\%\end{aligned}$$

$$\begin{aligned}\text{Cost of equity: } K_{ce} &= R_f + \beta[E(R_{mkt}) - R_f + \text{CRP}] \\ &= 0.042 + 1.25(0.104 - 0.042 + 0.0553) \\ &= 0.042 + 1.25 * 0.1173 \\ &= 0.1886, \text{ or } 18.86\%\end{aligned}$$

R.37.4 Dividend Discount Model Approach

➤ Gordon growth model

- $P_0 = D_1 / (K_{ce} - g)$

- Assumption

- ✓ $K_{ce} > g$

➤ $K_{ce} = D_1 / P_0 + g$

- D_1 / P_0 : dividend yield

- $g = (\text{retention rate}) (\text{ROE}) = (1 - \text{payout rate}) (\text{ROE})$

- Payout rate = D/EPS

R.37.4 Dividend Discount Model Approach

Example:

Current market price per share of common stock	\$28.00
Most recent dividend per share paid on common stock (D_0)	\$2.00
Expected dividend payout rate	40%
Expected return on equity (ROE)	15%

Using the dividend discount model (DDM) approach, the cost of retained earnings for the company is closest to:

- A. 15.7%.
- B. 16.1%.
- C. 16.8%.

➤ Solution: C is correct.

- The expected return is the sum of the expected dividend yield plus expected growth. The expected growth is $(1 - 0.4)15\% = 9\%$.
- The expected dividend yield is $\$2.18/\$28 = 7.8\%$.
- The sum is 16.8%.

R.37.5 Bond Yield Plus Risk Premium Approach

- $k_{ce} = \text{bond yield} + \text{risk premium}$

Where

Bond yield = market yield on the firm's long-term bond

Risk premium = historical spreads between bond yield and stock yield

- Emerging market, risk premium should be 3-5%

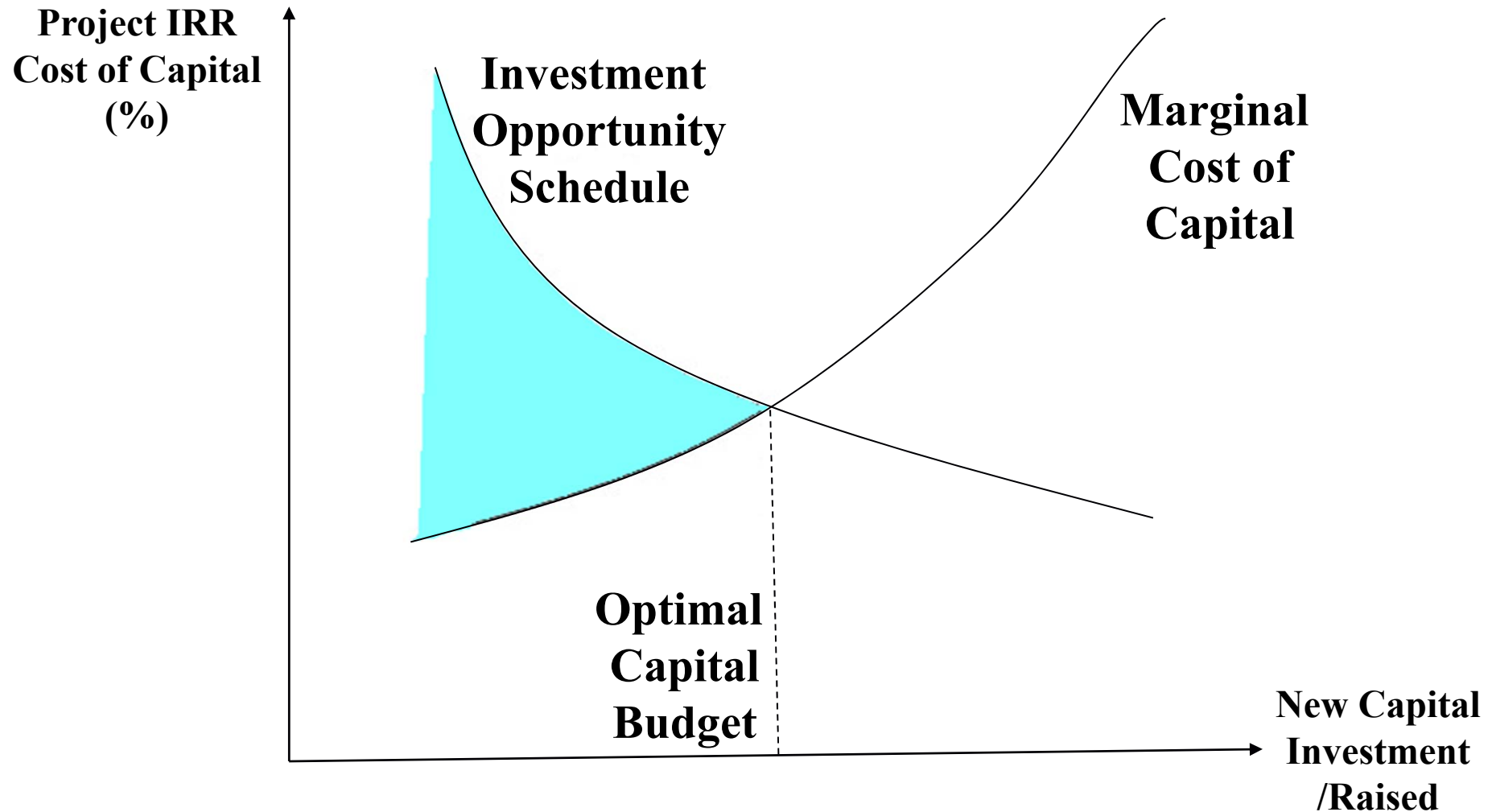
R.37.6 The Optimal Capital Budget

- The WACC is the appropriate discount rate for projects that have approximately the same level of risk as the firm's existing projects.

If a project's risk $>$ firm's risk , use a discount rate greater than WACC \rightarrow NPV overestimated if using WACC

If a project's risk $<$ firm's risk , use a discount rate lower than WACC \rightarrow NPV underestimated if using WACC

R.37.6 The Optimal Capital Budget



R.37.7 Marginal Cost of Capital (MCC)

Example: Calculating break points

The Omni Corporation has a target capital structure of 60% equity and 40% debt.

The schedule of financing costs for the Omni Corporation is shown in the figure below.

Schedule of Capital Cross for Omni:

Amount of New Debt (in millions)	After-tax Cost of Debt	Amount of New Equity (in million)	Cost of Equity
\$0 to \$99	4.2%	\$0 to \$199	6.5%
\$100 to \$199	4.6%	\$200 to \$399	8.0%
\$200 to \$ 299	5.0%	\$400 to \$599	9.5%

Calculate the break points for Omni Corporation and Graph the marginal cost of capital schedule.

R.37.7 Marginal Cost of Capital (MCC)

Answer:

$$\text{Break point} = \frac{\text{amount of capital at which the component's cost of capital changes}}{\text{weight of the component in the capital structure}}$$

Omni will have a break point each time a component cost of capital changes, for a total of four break points.

$$\text{Break point}_{\text{Debt} > \$100\text{million}} = \$100\text{million} / 0.4 = \$250\text{million}$$

$$\text{Break point}_{\text{Debt} > \$200\text{million}} = \$200\text{million} / 0.4 = \$500\text{million}$$

$$\text{Break point}_{\text{Equity} > \$200\text{million}} = \$200\text{million} / 0.6 = \$333\text{million}$$

$$\text{Break point}_{\text{Equity} > \$400\text{million}} = \$400\text{million} / 0.6 = \$667\text{million}$$

R.37.7 Marginal Cost of Capital (MCC)

The table shows Omni Corporation's WACC for the different break points.

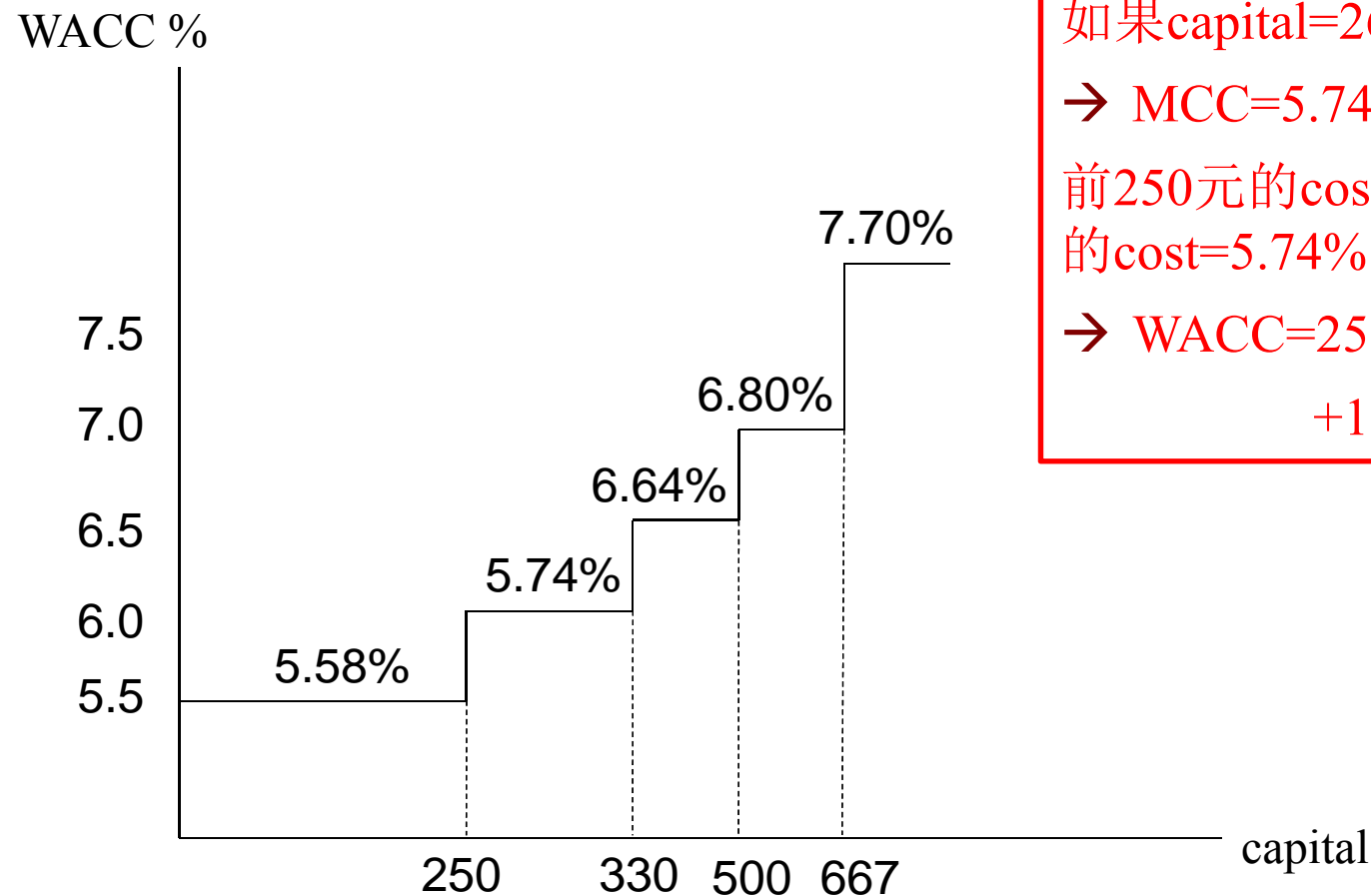
WACC for Alternative Levels of Financing

Capital (in millions)	Equity (60%)	Cost of Equity	Debt (40%)	Cost of Debt	WACC
\$50	\$30	6.5%	\$20	4.2%	5.58%
\$250	\$150	6.5%	\$100	4.6%	5.74%
\$333	\$200	8.0%	\$133	4.6%	6.64%
\$500	\$300	8.0%	\$200	5.0%	6.80%
\$667	\$400	9.5%	\$267	5.0%	7.70%

* Keeping the original capital structure

R.37.7 Marginal Cost of Capital (MCC)

The figure shows Omni Corporation's MCC schedule



如果capital=260, D=104, E=156

→ MCC=5.74%

前250元的cost=5.58%, 后10元的cost=5.74%

→ $WACC = 250/260 * 5.58\% + 10/260 * 5.74\%$

R.37.8 Cost of CS & PS—Flotation Cost

- Flotation cost: the costs associated with the issuance of new securities
 - Charged by investment bank, while based on the size and type of offering
 - Preferred stock & debt: do not usually incorporate flotation costs in the estimated cost of cost of capital because this cost is quite small < 1%
 - Common stock: should be considered (about 5%)
- Method 1:

$$r_e = \frac{D_1}{P_0 - F} + g \quad \text{OR} \quad r_e = \left[\frac{D_1}{P_0(1 - f)} \right] + g$$

➤ Method 2

- In fact, flotation costs are a cash flow at the initiation of the project

Consider as CF_0

R.37.8 Cost of CS & PS—Flotation Cost

Example : correct accounting for flotation costs

Omni corporation is considering a project that requires a \$400,000 cash outlay and is expected to produce cash flow of \$150,000 per year for the next four years. Omni's tax rate is 35%, and the before tax cost of debt is 6.5%.the current share price Omni's stock is \$36 per share, and the expected dividend next year is \$2.00per share . Omni's expected growth rate is 5%.

Assume that Omni finances the project with 50% debt and 50% equity capital, and that flotation costs for equity are 4.5%. The appropriate discount rate for the project is the WACC.

Calculate the NPV of the project using the correct treatment of flotation costs, and discuss how the result of this method differs from result obtained from the incorrect treatment of flotation costs?

R.37.8 Cost of CS & PS—Flotation Cost

Answer:

After-tax cost of debt = $6.5\%(1 - 0.35) = 4.23\%$

Cost of equity = $(\$2/\$36) + 0.05 = 0.1055$, or 10.55%

WACC = $0.50(0.0423) + 0.50(0.1055) = 7.39\%$

Since the project is financed with 50% equity, the amount of equity capital raised is $0.5 \times \$400,000 = \$200,000$.

Flotation costs are 4.5%, which equates to a dollar cost of $\$200,000 \times 0.045 = \$9,000$

$$\begin{aligned} NPV = & -\$400,000 - \$9,000 + \frac{\$150,000}{1.0739} + \frac{\$150,000}{1.0739^2} \\ & + \frac{\$150,000}{1.0739^3} + \frac{\$150,000}{1.0739^4} = \$94,640 \end{aligned}$$

R.37.8 Cost of CS & PS—Flotation Cost

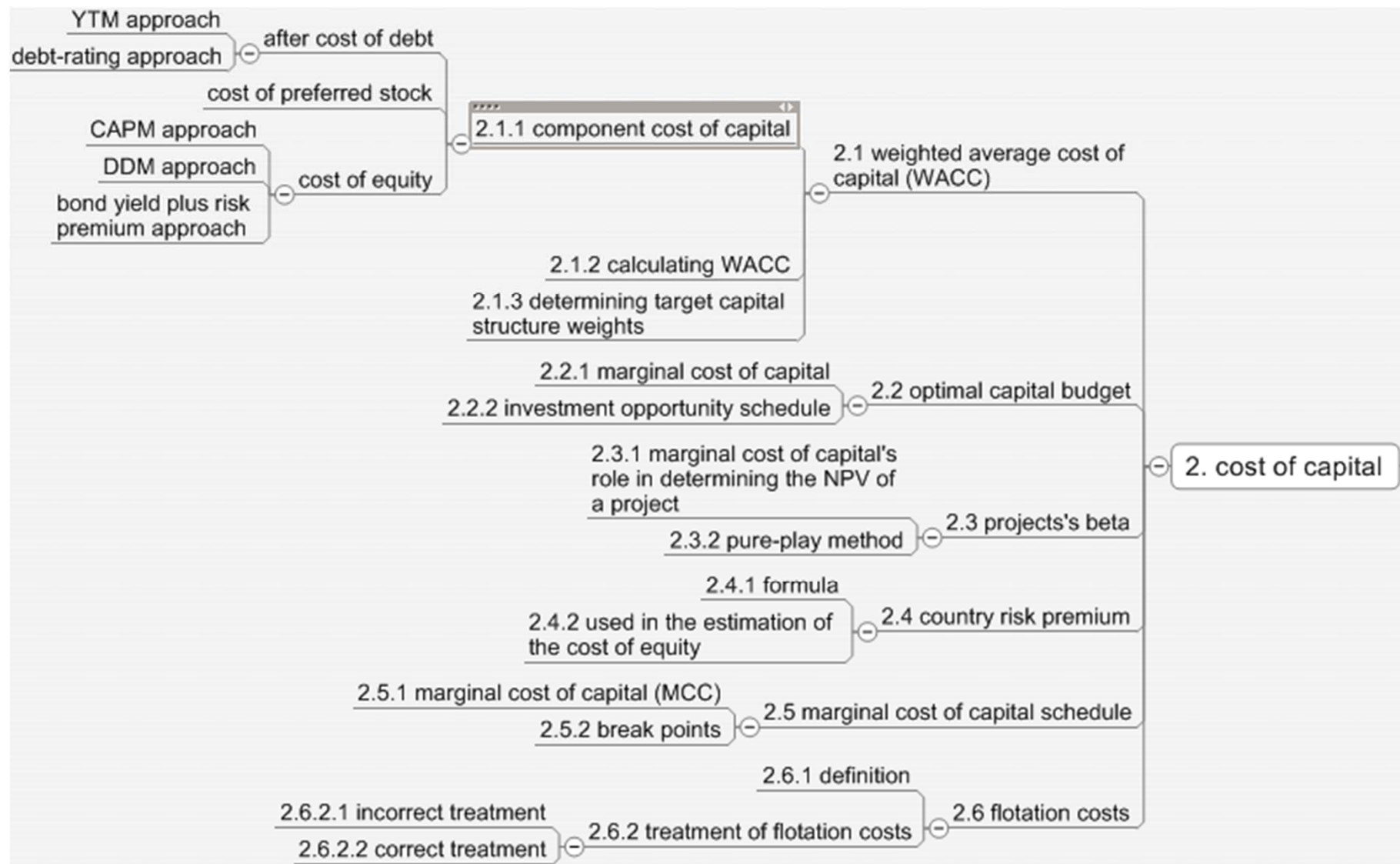
➤ For comparison, if we use method 1

- After-tax cost of debt = $6.5\%(1-0.35) = 4.23\%$

- cost of equity = $\frac{\$2}{\$36(1-0.045)} + 0.05 = 10.82\%$

- WACC = $0.50(0.0423) + 0.50(0.1082) = 7.53\%$

$$\begin{aligned} NPV &= -\$400,000 + \frac{\$150,000}{1.0753} + \frac{\$150,000}{1.0753^2} + \frac{\$150,000}{1.0753^3} + \frac{\$150,000}{1.0753^4} \\ &= \$102,061 \end{aligned}$$



Summary of Readings & Framework

➤ Study Session 11

- R36: Capital Budgeting
- R37: Cost of Capital
- R38: Measures of leverage *
- R39: Dividends and Share Repurchases: Basics *
- R40: Working Capital Management
- R41: The Corporate Governance of Listed Companies: A Manual for Investors

Framework

➤ R37: Measures of Leverage

1. Basic concept of leverage
2. Leverage ★★
 - Degree of operating leverage (DOL)
 - Degree of financial leverage (DFL)
 - degree of total leverage (DTL)
3. Breakeven quantity ★★
 - Breakeven quantity of sales
 - Operating breakeven quantity of sales

R.38.1 Leverage and risk

- **Leverage** is the use of fixed costs, operating or financial, in a company's structure. It increases the risk and potential return of a firm's earnings and cash flows.
 - Operating leverage results from fixed operating cost.
 - Financial leverage results from the use of debt financing and its associated fixed costs.
- **Business risk** is the risk associated with operating earnings (EBIT) and results from a combination of sales risk and operating risk.
 - **Sales risk:** the uncertainty with respect to the price and quantity of goods and services;
 - **Operating risk:** risk attributed to the operating cost structure, the greater the fixed costs relative to variable costs, the greater the operating risk.
- Financial risk is reflected in the greater variability of EPS compared to the variability of operating earnings (EBIT) as a result of using debt in the firm's capital structure.

R.38.2 Operating Leverage

➤ Degree of operating leverage (DOL)

- Definition: the percentage change in operating income (EBIT) that results from a given percentage change in sales

$$DOL = \frac{\text{percentage change in EBIT}}{\text{percentage change in sales}} = \frac{\frac{\Delta EBIT}{EBIT}}{\frac{\Delta Q}{Q}}$$

elasticity

- Equation:

$$DOL = \frac{Q(P - VC)}{Q(P - VC) - FC} = \frac{S - TVC}{S - TVC - FC}$$

R.38.3 Financial Leverage

➤ Degree of financial leverage (DFL)

- Definition: the ratio of the percentage change in the net income (EPS) to the percentage change in EBIT

$$DFL = \frac{\text{percentage change in EPS}}{\text{percentage change in EBIT}} = \frac{\frac{\Delta EPS}{EPS}}{\frac{\Delta EBIT}{EBIT}}$$

- Equation:

$$DFL = \frac{EBIT}{EBIT - \text{Interest}}$$

- When interest is zero, DFL=1. There is no financial leverage.

R.38.3 Financial Leverage

➤ Degree of total leverage (DTL)

- Definition: this ratio combines the degree of DOL and DFL and measures the sensitivity of EPS to change in sales

$$DTL = DOL \times DFL$$

$$DTL = \frac{\% \Delta EBIT}{\% \Delta sales} \times \frac{\% \Delta EPS}{\% \Delta EBIT} = \frac{\% \Delta EPS}{\% \Delta sales}$$

- Equation:

$$DTL = \frac{Q(P - VC)}{Q(P - VC) - FC - I} = \frac{S - TVC}{S - TVC - FC - I}$$

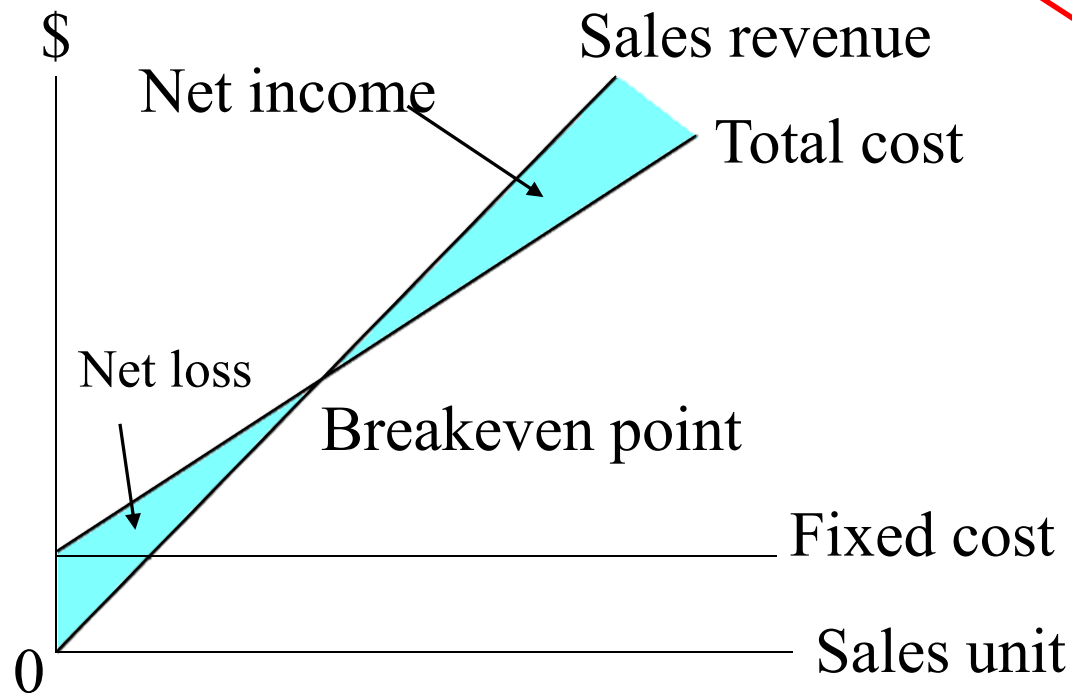
R.38.4 Leverage and risk

- The use of debt in a company's capital structure :
 - reduces net income due to the added interest expense
 - increase equity owner's ROE
 - increase **the rate of change (risk)** for ROE.
- Whether to use leverage depends on:
 - Profitability
 - Cost of the funds

R.38.5 Breakeven Analysis

- Breakeven quantity of sales (Q_{BE}): the level of sales that a firm must generate to cover all of its fixed and variable costs.

$$Q_{BE} = \frac{\text{fixed operating costs} + \text{fixed financial costs}}{\text{Price} - \text{Variable cost per unit}}$$



P-VC is
marginal
contribution

R.38.5 Breakeven Analysis

- Operating breakeven quantity of sales (Q_{OBE}): calculate as Breakeven quantity of sales but only consider fixed operating costs and ignore fixed financing cost

$$Q_{OBE} = \frac{\text{Fixed operating costs}}{\text{Price-Variable cost per unit}}$$

EXAMPLE: *Operating costs for A company described as follow:*

Price	4
Variable costs	3
Fixed operating costs	10,000
Fixed financing costs	30,000

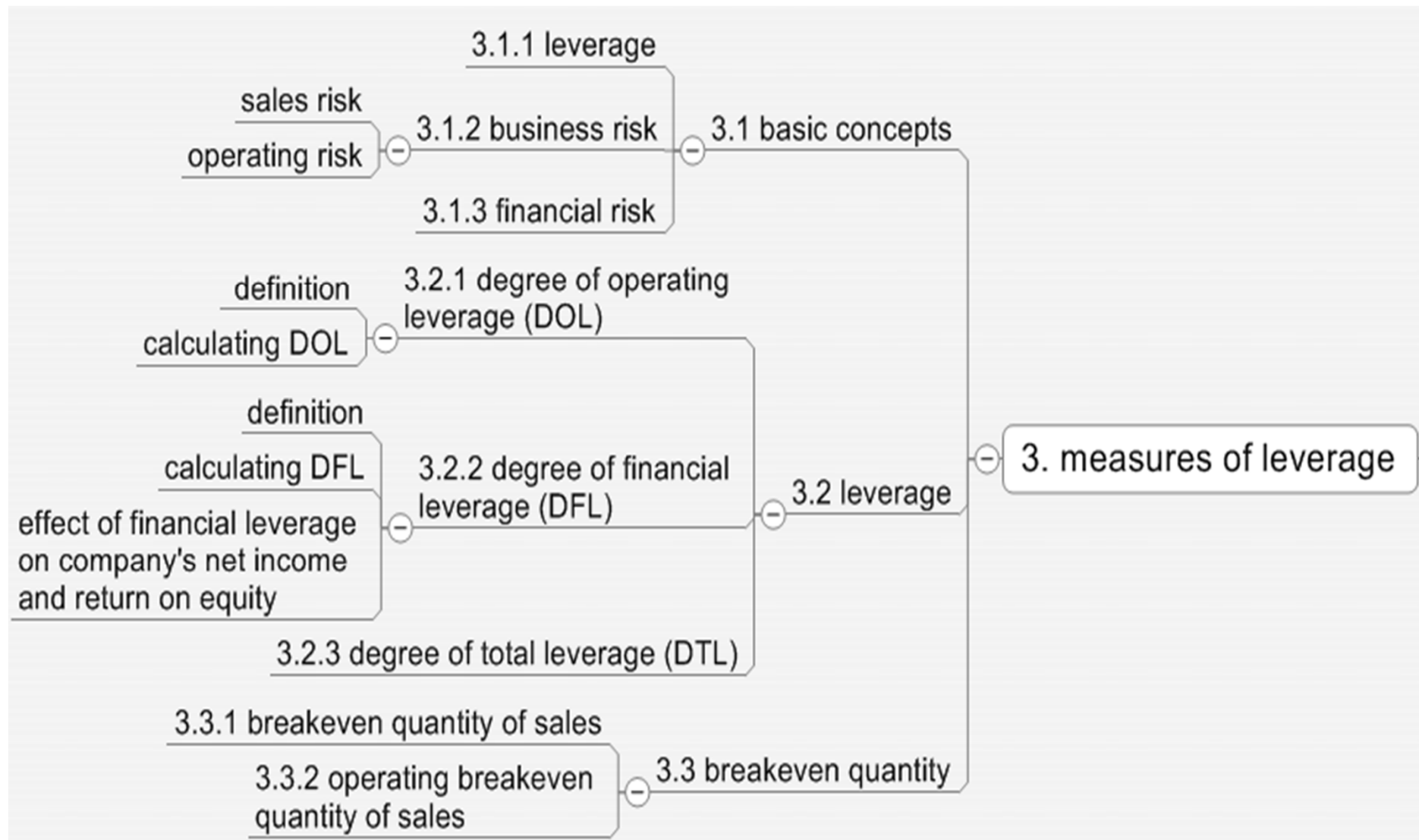
$$Q_{BE} = \frac{10000 + 30000}{4.00 - 3.00} = 40000 \text{ units} \quad Q_{OBE} = \frac{10000}{4.00 - 3.00} = 10000 \text{ units}$$

R.38.5 Breakeven Analysis

➤ The effects of leverage on net income

- Other things equal, a firm that chooses operating and financial structures that result in greater total fixed costs will have a higher breakeven quantity of sales.
- Leverage of either type magnifies the effects of changes in sales on net income.
- The further a firm's sales are from its breakeven level of sales, the greater the magnifying effects of leverage on net income.

Summary



Summary of Readings & Framework

➤ Study Session 11

- R36: Capital Budgeting
- R37: Cost of Capital
- R38: Measures of leverage
- R39: Dividends and Share Repurchases: Basics
- R40: Working Capital Management
- R41: The Corporate Governance of Listed Companies: A Manual for Investors

Framework

➤ R37: Dividends and Share Repurchases: Basics

1. Different types of dividends

- Cash dividend
- Stock dividend and stock split
- Reverse stock splits
- Effects on financial ratios ★

2. Dividend payment chronology ★

3. Share repurchase

- Types
- Effects on EPS ★
- Effects on BVPS

R.39.1 Dividends

➤ Cash dividends

- Reduces both the value of the company's assets and the market value of equity. And no effect on shareholder wealth
- Comes in the form of:
 - ✓ Regular dividends (a portion of profits on a consistent schedule)
 - ✓ Special dividends (a one-time cash payment, irregular)
 - ✓ Liquidating dividends (distributes the proceeds when a company goes out)

➤ Stock dividends & stock splits

- Both create more shares
- A proportionate drop in the price per share
- No effect on shareholder wealth

➤ Reverse stock splits

- Fewer shares outstanding
- Higher stock prices
- Shareholder wealth unchanged

R.39.1 Stock Dividends

Example - Impact of 20% stock dividend on shareholders

	Before Stock Dividend	After Stock Dividend
Shares outstanding	1,000,000	$1,000,000 \times 1.2 = 1,200,000$
Earnings per share	\$1.50	$\$1.50 / 1.20 = \1.25
Stock price	\$30.00	$\$30.00 / 1.20 = \25.00
P/E	$30 / 1.50 = 20$	$25 / 1.25 = 20$
Total market value	$1,000,000 \times \$30 =$ \$30,000,000	$1,200,000 \times \$25 =$ \$30,000,000
Shares owned	100	$100 \times 1.20 = 120$
Ownerships value	$100 \times \$30 = \$3,000$	$120 \times \$25 = \$3,000$
Ownership stake	$100 / 1,000,000 = 0.01\%$	$120 / 1,200,000 = 0.01\%$

R.39.2 Stock splits

EXAMPLE : Stock splits

Carson Construction Company declares a 3-for-2 stock split. The current stock price is \$30, earnings for last year were \$1.50, dividends were \$0.60 per share, and there are 1 million shares outstanding. What is the impact on Carson's shares outstanding, stock price, EPS, dividends per share, dividend yield, P/E, and market value?

	Before Stocks Split	After Stocks Split
Shares outstanding	1,000, 000	$1,000,000 * (3/2) = 1,500,000$
Stock price	\$30.00	$\$30.00 / (3/2) = \20.00
Earnings per share	\$1.50	$\$1.50 / (3/2) = \1.00
Dividends per share	\$0.60	$\$0.60 / (3/2) = \0.40
Dividend yield	$\$0.60 / \$30.00 = 2.0\%$	$\$0.40 / \$20.00 = 2.0\%$
P/E ratio	$\$30.00 / \$1.50 = 20$	$\$20.00 / \$1.00 = 20$
Total market value	$1,000,000 * \$30 = \$30,000,000$	$1,500,000 * \$20 = \$30,000,000$

R.39.2 Stock splits

➤ Increase

- Number of shares outstanding

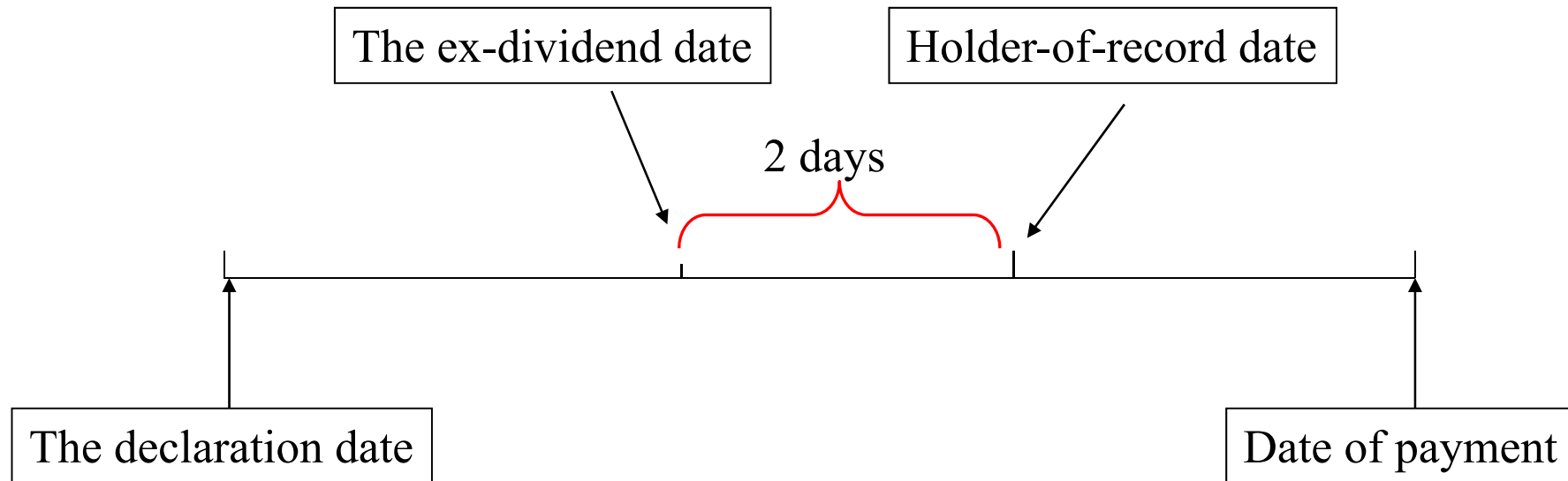
➤ Decrease

- Stock price, EPS, and dividends per share by a pro rata amount
 - ✓ Because number of shares outstanding increases

➤ Constant

- Dividend yield
 - ✓ Because price decreases, dividend per share decreases
- P/E ratio
 - ✓ Because price decreases, EPS decreases
- Total market value of the firm
- Ownership value and stake are unchanged

R.39.3 Dividend Payment Chronology



- Once the company sets the record date, the stock exchanges fix the ex-dividend date.
 - Ex-dividend date is normally set for stocks **two business days before** the record date.

R.39.4 Share Repurchase Methods

➤ Four methods for share repurchase:

- Buy in the open market.
 - ✓ Most common, buy own shares as conditions warrant in the open market.
 - ✓ Give the company max flexibility to choose the timing of the transaction.
- Buy a fixed number of shares at a fixed price.
 - ✓ Fixed price tender offer, repurchase at a premium to the current price.
- Repurchase by direct negotiation.
 - ✓ Negotiate with a major shareholder, at a premium to the market price.
 - ✓ Keep a large block of shares from coming into the market and reducing the stock price
 - ✓ Repurchase shares from a potential acquirer after an unsuccessful takeover attempt

➤ In shareholders' minds, the announcement of repurchase policy provides support for the share price.

R.39.4 Financial statement effects of repurchases

- Repurchased with excess cash (internal financing)
 - I/S:
 - ✓ EPS will increase (fewer shares outstanding)
 - ✓ EPS will decrease (lost interest income and earnings)
 - ✓ Compare earnings yield and after-tax yield of company fund
 - B/S:
 - ✓ Assets and equity will decline
 - ✓ Leverage (D/E) will increase
- Repurchased with debt (external financing)
 - I/S:
 - ✓ EPS will increase (fewer shares outstanding)
 - ✓ EPS will decrease (Incur interest cost and reduce earnings)
 - ✓ Compare earnings yield and after-tax cost of debt
 - B/S:
 - ✓ Assets and equity will decline
 - ✓ Leverage (D/E) will increase even more

R.39.4 Effects of Share Repurchase on EPS

EXAMPLE: Share repurchase when after-tax cost of debt is less than earnings yield

Spencer Pharmaceuticals, Inc., (SPI) plans to borrow \$30 million that it will use to repurchase shares. SPI's chief financial officer has compiled the following information

- Share price at the time of buyback = \$50.
- Shares outstanding before buyback = 20,000,000.
- EPS before buyback = \$5.00.
- Earnings yield = $\$5.00 / \$50 = 10\%$
- After-tax cost of borrowing = 8%.
- Planned buyback = 600,000 shares.

Calculate the EPS after the buyback.

R.39.4 Effects of Share Repurchase on EPS

Answer:

$$\text{Total earnings} = \$5.00 \times 20,000,000 = \$100,000,000$$

$$\begin{aligned}\text{EPS after buyback} &= \frac{\text{total earnings - after-tax cost of fund}}{\text{shares outstanding after buyback}} \\ &= \frac{\$100,000,000 - (600,000 \text{ shares} \times \$50 \times 0.08)}{(20,000,000 - 600,000) \text{ shares}} \\ &= \frac{\$100,000,000 - \$2,400,000}{19,400,000 \text{ shares}} \\ &= \$5.03\end{aligned}$$

Because the 8% after-tax cost of borrowing is less than the 10% earnings yield (E/P) of the shares, the share repurchase will increase the company's EPS

R.39.4 Effects of Share Repurchase on EPS

➤ A share repurchase may:

- Increase EPS

1. With cash: Earnings yield (E/P) $>$ after tax cost of fund
2. With debt: Earnings yield (E/P) $>$ after tax cost of debt

- Constant EPS

1. With cash: Earnings yield (E/P) = after tax cost of fund
2. With debt: Earnings yield (E/P) = after tax cost of debt

- Decrease EPS

1. With cash: Earnings yield (E/P) $<$ after tax cost of fund
2. With debt: Earnings yield (E/P) $<$ after tax cost of debt

R.39.4 Effects of Share Repurchase on BVPS

➤ A share repurchase may:

- Increase BVPS

- ✓ Market price (repurchase price) < original BVPS

- Constant BVPS

- ✓ Market price (repurchase price) = original BVPS

- Decrease BVPS

- ✓ Market price (repurchase price) > original BVPS

R.39.4 Effects of Share Repurchase on BVPS

EXAMPLE: Effect of a share repurchase on book value per share

- The share prices of Blue, Inc., and Red Company are both \$25 per share, and each company has 20 million shares outstanding. Both companies have announced a \$10 million stock buyback. Blue, Inc., has a book value of \$300 million, while Red Company has a book value of \$700 million.
 - Calculate the book value per share (BVPS) of each company after the share repurchase.

R.39.4 Effects of Share Repurchase on BVPS

Answer:

- Share buyback for both companies = \$10 million / \$25 per share = 400,000 shares.
- Remaining shares for both companies = 20 million - 400,000 = 19.6 million.
- Blue, Inc.'s current BVPS = \$300 million / 20 million = \$15.

The market price per share of \$25 is greater than the BVPS of \$15.

- Book value after repurchase: \$300 million - \$10 million = \$290 million
- BVPS = \$290 million / 19.6 million = \$14.80
- BVPS decreased by \$0.20
- Red Company's current BVPS = \$700 million / 20 million = \$35. The market price per share of \$25 is less than the BVPS of \$35.
 - Book value after repurchase: \$700 million - \$10 million = \$690 million
 - BVPS = \$690 million / 19.6 million = \$35.20
 - BVPS increased by \$0.20

R.39.4 Effects of Share Repurchase on BVPS

- Exercise: A company with 20 million shares outstanding decides to repurchase 2 million shares at the prevailing market price of €30 per share. At the time of the buyback, the company reports total assets of €850 million and total liabilities of €250 million. As a result of the buyback, that company's book value per share will most likely:
- A. increase.
 - B. decrease.
 - C. remain the same.

R.39.4 Effects of Share Repurchase on total wealth

EXAMPLE: Impact of share repurchase and cash dividend of equal amounts

➤ Spencer Pharmaceuticals, Inc., (SPI) has 20,000,000 shares outstanding with a current market value of \$50 per share. SPI made \$100 million in profits for the recent quarter, and because only 70% of these profits will be reinvested back into the company, SPI's Board of Directors is considering two alternatives for distributing the remaining 30% to shareholders:

- Pay a cash dividend of $\$30,000,000 / 20,000,000 \text{ shares} = \1.50 per share
- Repurchase \$30,000,000 worth of common stock.

Assume that dividends are received when the shares go ex-dividend, the stock can be repurchased at the market price of \$50 per share, and there are no differences in tax treatment between the two alternatives. How would the wealth of an SPI shareholder be affected by the board's decision on the method of distribution?

R.39.4 Effects of Share Repurchase on total wealth

➤ Answer:

➤ Share repurchase

- With \$30,000,000, SPI could repurchase $\$30,000,000 / \$50 = 600,000$ shares of common stock. The share price after the repurchase is calculated as the market value of equity after the \$30,000,000 repurchase divided by the shares outstanding after the repurchase:

$$\frac{(20,000,000)(\$50) - \$30,000,000}{20,000,000 - 600,000} = \frac{\$970,000,000}{19,400,000} = \$50$$

- total wealth from the ownership of one share = \$50

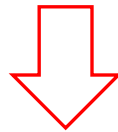
R.39.4 Effects of Share Repurchase on total wealth

➤ Cash dividend

- After the shares go ex-dividend, a shareholder of a single share would have \$1.50 in cash and a share worth $\$50 - \$1.50 = \$48.50$
- The ex-dividend value of \$48.50 can also be calculated as the market value of equity after the distribution of the \$30 million, divided by the number of shares outstanding after the dividend payment:

$$\frac{(20,000,000)(\$50) - \$30,000,000}{20,000,000} = \$48.50$$

- total wealth from the ownership of one share = \$48.50 + \$1.50 = \$50



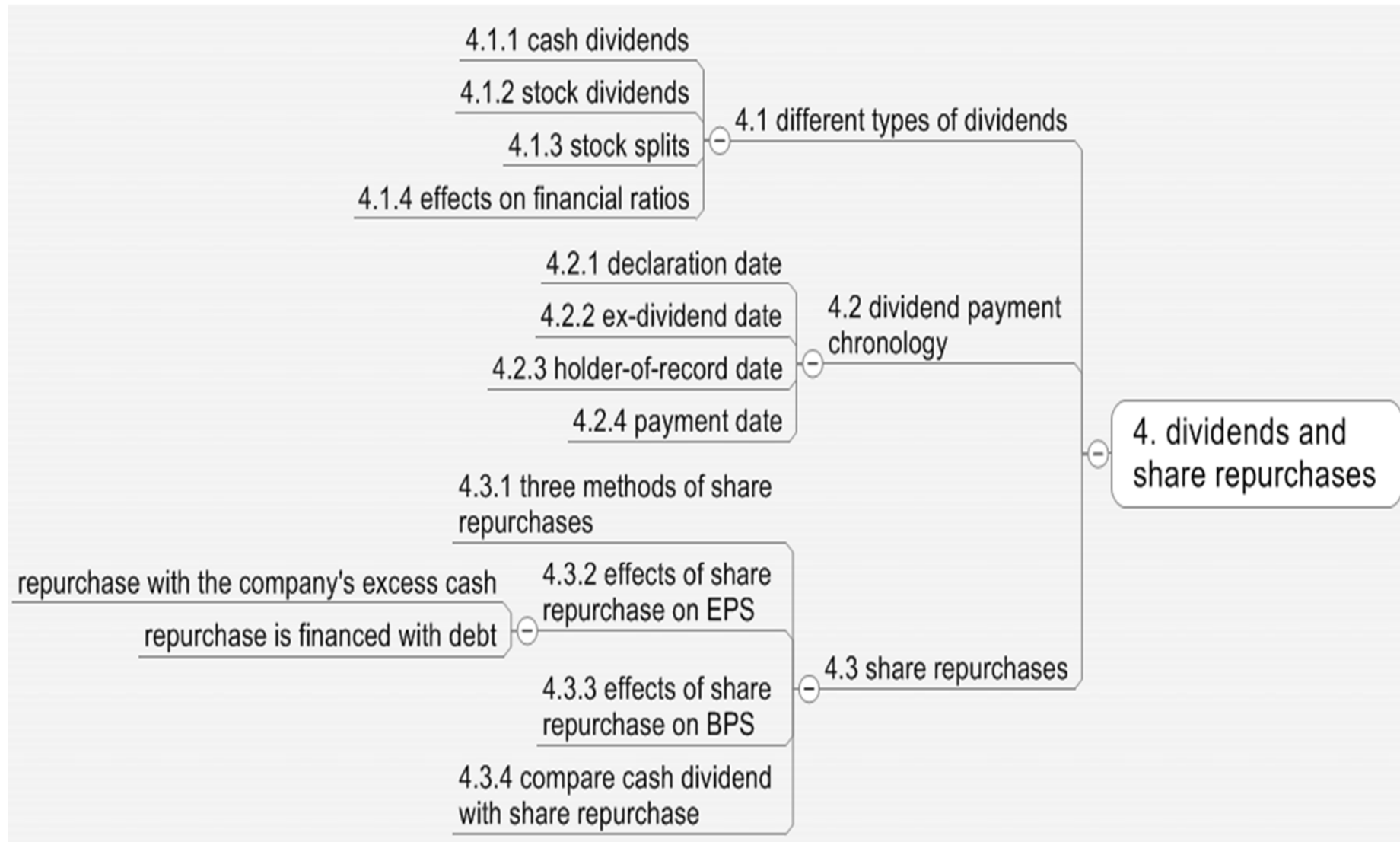
Cash dividend = share repurchase,
in terms of the effect on
shareholders' wealth

R.39.4 Summary

- The impact on the indicators due to cash dividend, stock dividend, stock split and repurchase (**post vs. pre**)

Indicator	Cash div.	Stock div.	Stock split	Repurchase
No. of shares	No changes	Increase	Increase	Decrease
Stock price	Ex-div	Ex-div (pro-rata)	Pro-rata decrease	Increased if signal is positive
EPS	No change	Decrease	Decrease	Uncertain
P/E	Decrease	No change	No change	Uncertain
Market value	Decrease by cash paid	No change	No change	Decreased by cash paid
Share owned by individual	No changes	Increase	Increase	Depends
Ownership value	Decrease in value but same in % of ownership	No changes	No change	Increase

Summary



Summary of Readings & Framework

➤ Study Session 11

- R36: Capital Budgeting
- R37: Cost of Capital
- R38: Measures of leverage *
- R39: Dividends and Share Repurchases: Basics *
- R40: Working Capital Management
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Framework

➤ R40: Working Capital Management

1. Liquidity Measures

- Operating cycle and cash conversion cycle
- Liquidity ratios and turnover ratios

2. Liquidity Management

- Account receivable management ★
- Inventory management
- Payable management ★★

3. Cash Management

- Short-term cash investment
- Short-term cash funding

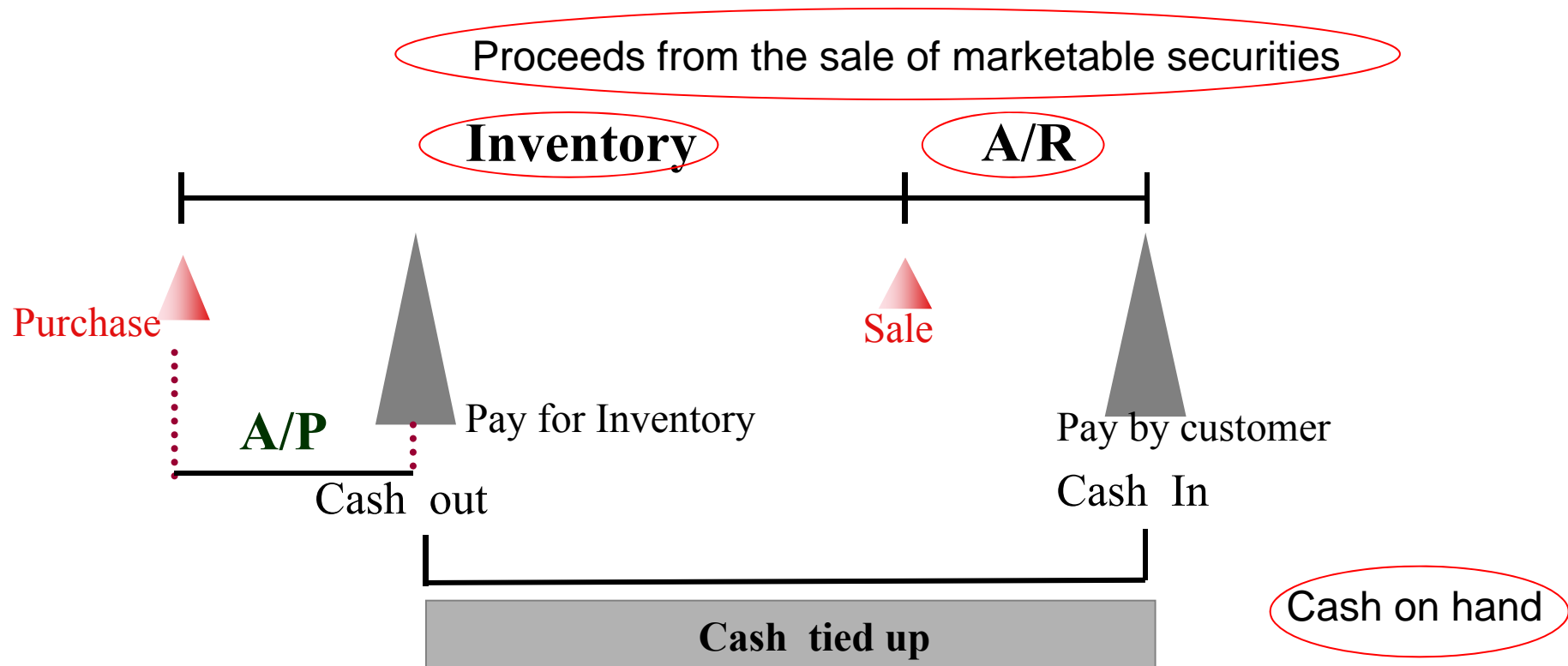
R.40.1 Liquidity measures

- **Primary sources of liquidity** are the sources of cash it uses in its normal day-to-day operations. E.g., selling goods and services, collecting receivables, and generating cash from other sources such as short-term investments such as trade credit from vendors and lines of credit from banks, effective cash flow management of a firm's collections and payments .
- **Secondary sources of liquidity** include liquidating short-term or long-lived assets, negotiating debt agreements (i.e., renegotiating), or filing for bankruptcy and reorganizing the company.
- **While using its primary sources of liquidity is unlikely to change the company's normal operations, resorting to secondary sources of liquidity such as these can change the company's financial structure and operations significantly and may indicate that its financial position is deteriorating.**

R.40.1 Liquidity measures

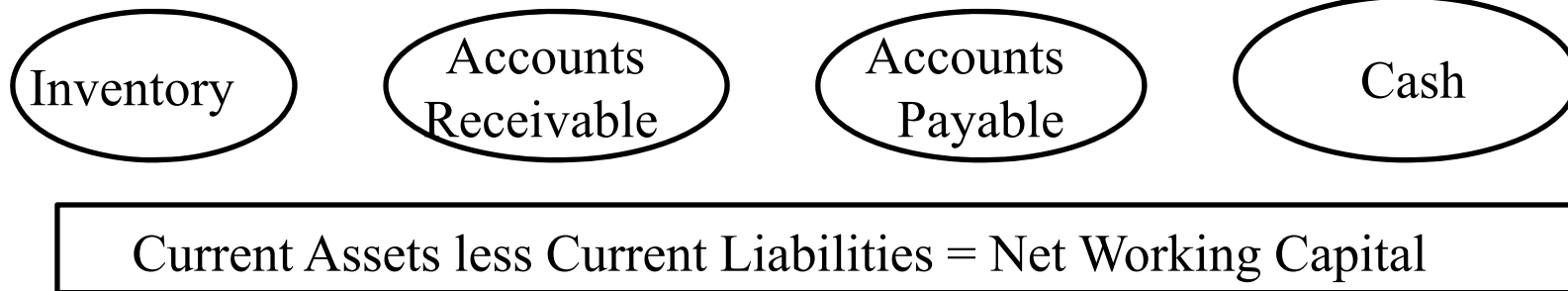
If lack liquidity \longrightarrow financial distress \longrightarrow extreme: insolvency or bankruptcy

➤ Working Capital Turnover



R.40.1 Liquidity measures

➤ Working capital



Working capital management is a concern regarding **Firm liquidity**

- **Drags** on liquidity: when **receipts lag**, creating pressure from the decreased available funds.
- **Pulls** on liquidity: disbursements are **paid too quickly** or trade credit availability is limited, requiring companies to expand fund before the sales fund comes to cover the liability.

R.40.1 Liquidity measures

Liquidity ratios

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

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

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

The higher the liquidity ratio, the more likely it is the company will be able to pay its short-time bills

R.40.1 Liquidity measures

Receivable turnover: A measure of accounts receivable liquidity

$$\text{receivables turnover} = \frac{\text{credit sales}}{\text{average receivables}}$$

$$\text{number of days receivable} = \frac{365}{\text{receivable turnover}}$$

R.40.1 Liquidity measures

Inventory turnover: A measure of a firm's efficiency with respect to its processing and inventory management

$$\text{inventory turnover} = \frac{\text{cost of goods sold}}{\text{average inventory}}$$

$$\text{number of days inventory} = \frac{365}{\text{inventory turnover}}$$

R.40.1 Liquidity measures

Payables turnover: A measure of the use of credit by the firm

$$\text{payables turnover ratio} = \frac{\text{purchases}}{\text{average trade payables}}$$

$$\text{number of days of payables} = \frac{365}{\text{payables turnover ratio}}$$

$$* \text{ purchase} = \text{inventory}_1 - \text{inventory}_0 + \text{COGS}$$

R.40.1 Liquidity measures

Operating cycle: The average number of days that it takes to turn raw materials into cash proceeds forms

$$\text{operating cycle} = \text{days of inventory} + \text{days of receivables}$$

Cash conversion cycle

$$= \text{days of inventory} + \text{days of receivables} - \text{days of payable}$$

R.40.2 Accounts Receivable Management

➤ Accounts receivable management:

- Calculating *Average days of A/R* based on *Receivable aging schedule*
- Make comparison with *Historical trends & Other firms*

Receivables Aging				
Days outstanding	March \$ 000's	Weighted	Average Collection Days	Days * Weight
<31 days	200	40%	22	8.8
31-60 days	150	30%	44	13.2
61-90 days	100	20%	74	14.8
>90 days	50	10%	135	13.5
Weighted Average Collection Period				50.3 days

R.40.3 Inventory management

➤ Inventory management

- Calculating *Average days of inventory* and *Inventory turnover* ratios
- Make comparison

✓ Within the **same industry and business strategies**

■ Example: Grocery business → high inventory turnover

An auto parts firm → low inventory turnover

In any business, inventory management is an important component of
effective overall financial management

R.40.4 Payable Management

- Typical terms on payables (trade credit) contain a discount available to those who pay quickly as well as a due date.
- Terms of “2/10 net 60” mean that the invoice is paid within 10 days, the company gets a 2% discount on the invoiced amount and that if the company does not take advantage of the discount, the net amount is due 60 days from the date of the invoice.

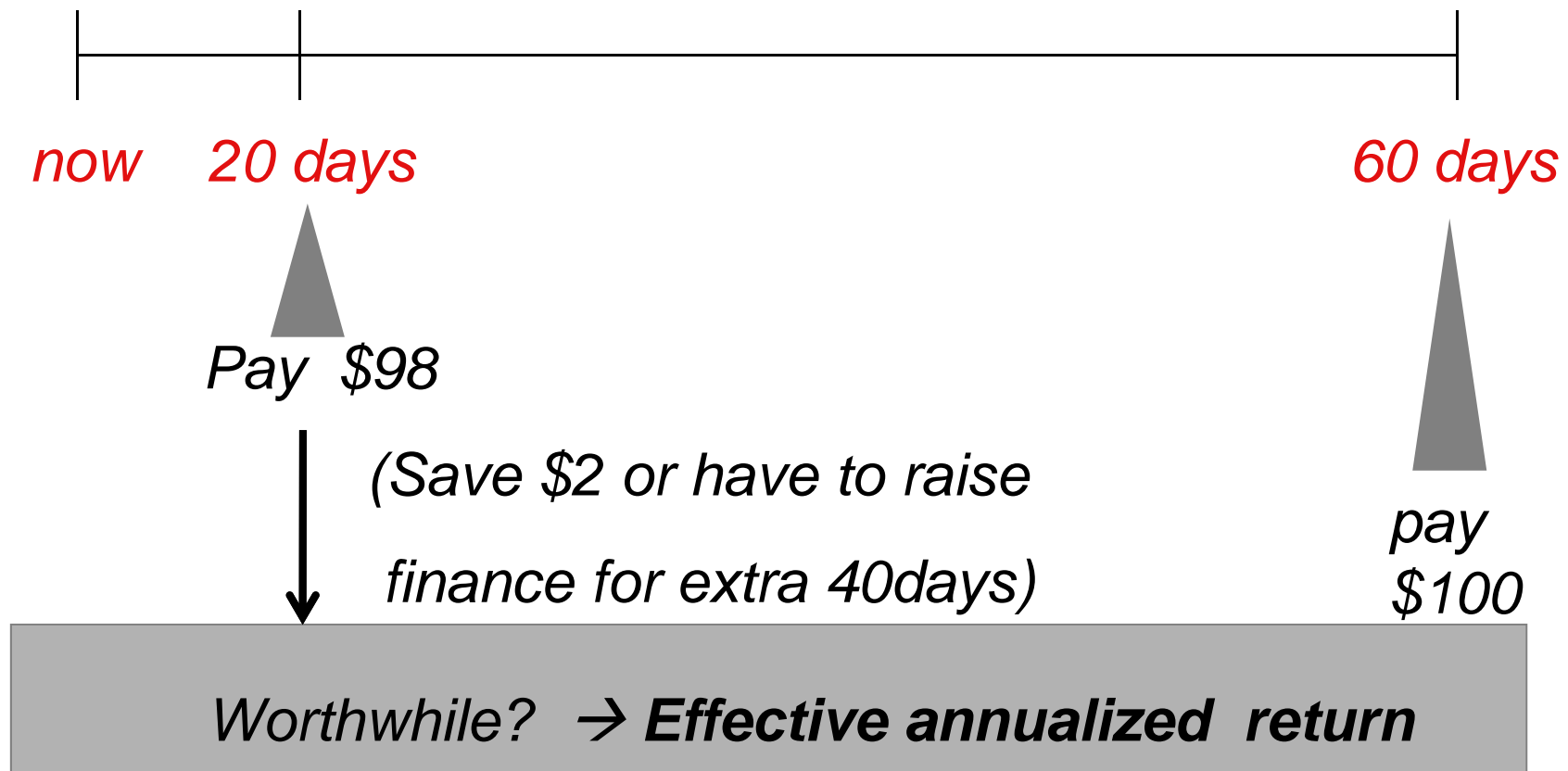
$$\text{cost of trade credit} = \left(1 + \frac{\text{discount}}{1 - \text{discount}}\right)^{365/t} - 1$$

$$\text{cost of trade credit if paid on day 60} = \left(1 + \frac{2\%}{1 - 2\%}\right)^{365/(60-10)} - 1$$

R.40.4 Payable Management

EXAMPLE *2/20 net 60*

On a purchase of \$100...



R.40.4 Payable Management

➤ Answer

$$\text{cost of trade credit} = \left(1 + \frac{\text{discount}}{1 - \text{discount}}\right)^{365/\text{No. of days beyond discount period}} - 1$$

$$\left(1 + \frac{2\%}{1 - 2\%}\right)^{\frac{365}{40}} - 1 = EAR$$

or

$$0.98 \times (1 + EAR)^{\frac{40}{365}} = 1$$

$$EAR = 20.40\%$$

VS

The cost of debt of the customer

R.40.5 Cash Management

- What is daily cash position?
 - uninvested cash balances a firm has available to make routine purchases and pay expenses as they come due.
- Why do we care about daily cash position?
 - Keep sufficient cash on hand and avoid keeping excess cash because of the interest income foregone by not investing the cash.

R.40.5 Cash Management

The percentage discount from face value is:

$$\% \text{discount} = \left(\frac{FV - P}{FV} \right)$$

Quantitative
method

The discount-basis yield (bank discount yield or BDY) is:

$$\begin{aligned} \text{discount basis yield} &= \left(\frac{FV - P}{FV} \right) \left(\frac{360}{t} \right) \\ &= \% \text{ discount} \times \left(\frac{360}{t} \right) \end{aligned}$$

R.40.5 Cash Management

➤ The money market yield is:

$$R_{mm} = \left(\frac{F-P}{P} \right) \left(\frac{360}{t} \right) = HPR \times \left(\frac{360}{t} \right)$$

➤ The bond equivalent yield is:

$$BEY = \left(\frac{F-P}{P} \right) \left(\frac{365}{t} \right) = HPR \times \left(\frac{365}{t} \right)$$

R.40.6 Short Term Funding

➤ Short term investment policy

- The risk of company's short-term investment

- ✓ Credit risk

- refers to the risk that a borrower will default on any type of debt by failing to make payments which it is obligated to do

- ✓ Market risk

- is the risk that the value of a portfolio, either an investment portfolio or a trading portfolio, will decrease due to the change in value of the market risk factors.

- ✓ Liquidity risk

- is the risk that a given security or asset cannot be traded quickly enough in the market to prevent a loss (or make the required profit).

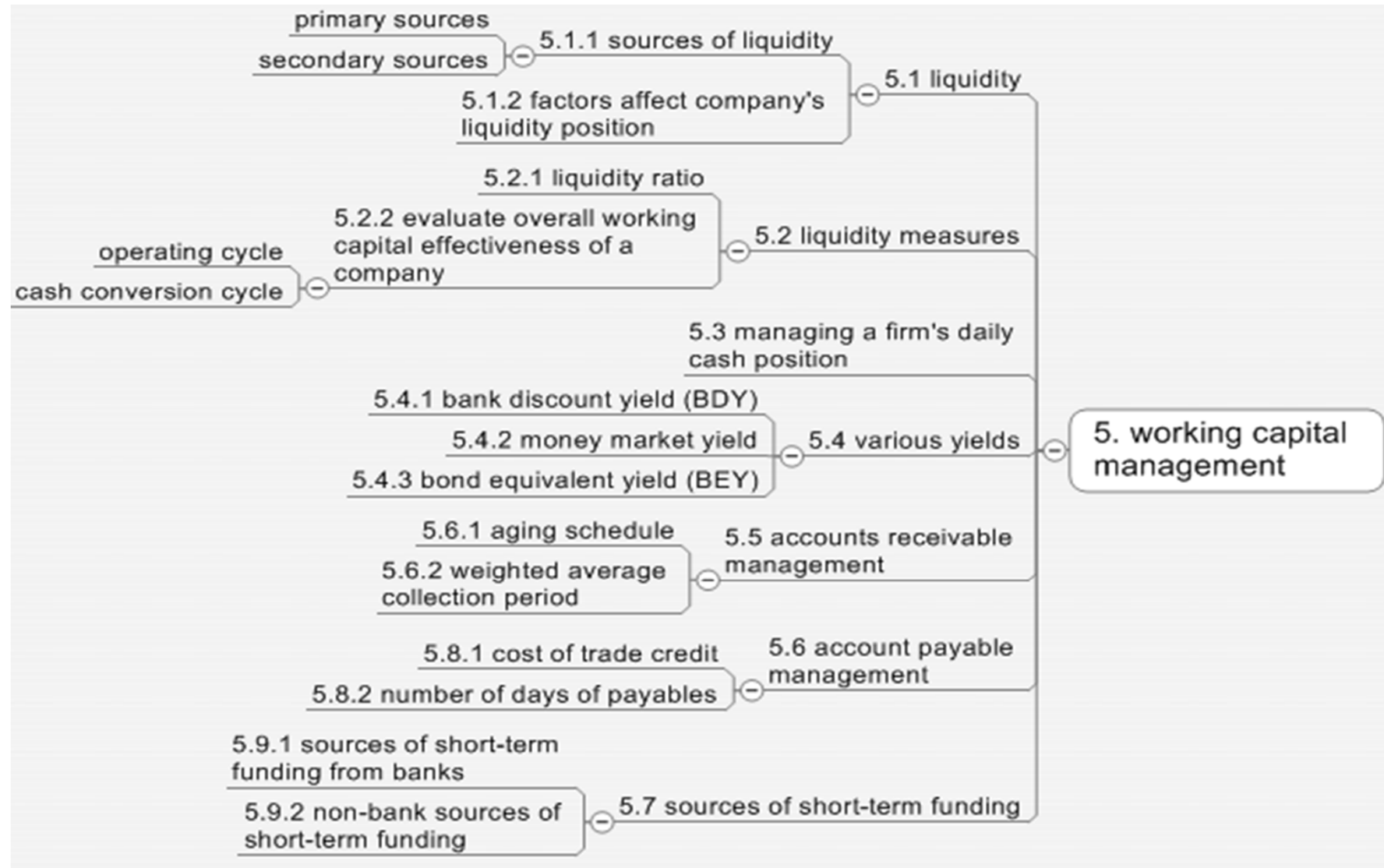
- ✓ Foreign exchange risk

- is a financial risk posed by an exposure to unanticipated changes in the exchange rate between two currencies.

R.40.6 Short Term Funding

- Short term deficient in cash balance can be managed by the following ways:
- Sources of Short-term Funding from Banks
 - **Lines of credit:** for large, financially sound companies
 - ✓ *Uncommitted Line of credit:* bank may refuse to extend an offer of credit
 - *Committed Line of credit:* bank charges a fee for making a commitment for short term lending, more reliable
 - ✓ *A revolving line of credit:* a commitment for longer term lending, more reliable than Committed term lending
 - **Pledge assets as collateral for bank borrowings**
 - **Banker's acceptances:** mainly used by firms that export goods, who get guarantee from the buyer's bank
 - **Factoring:** sale A/R to bank
- Non-Bank Sources of Short-term Funding
 - Expensive for smaller firms and firms with poor credit
 - **Commercial paper:** Large and creditworthy companies can issue short-term debt securities

Summary



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R.41.1 Principal – agent relationship

- **Corporate governance** is the set of internal controls, processes, and procedures by which firms are managed.
- **A principal – agent relationship**
 - An individual, who is referred to as the **agent**, act on behalf of another individual, who is referred to as the **principal**.



A principal-agent problem

The agent may act for his own well being rather than that of the principal.



For listed companies, there are **Board of Directors** to ensure that **management** is acting in the best interest of **shareholders**

R.41.1 Principal – agent relationship

- For listed companies, there are potential conflicts between:

Managers and shareholders	Directors and shareholders
Management may act for their own interests rather than those of shareholders	<ul style="list-style-type: none">•Directors should help ensure that management is acting in shareholders' best interest.•Directors may align more with management interests rather those of shareholders

Corporate governance deals with the relationship among
Management, Board of directors, and Shareholders

Corporate governance
<ul style="list-style-type: none">•The system of <i>internal controls, processes, and procedures</i> by which individual Companies are managed•Provides a framework that <i>defines the rights, roles and responsibilities</i> of management , the board of directors , and shareholders within an organization.

R.41.2 Corporate Governance

- Good corporate governance practices seek to ensure that:
- The firm acts lawfully and ethically in dealing with shareholders
 - Shareholders have a voice in governance
 - The Board of directors protects shareholder interests
 - The board acts independently from management
 - Proper procedures and controls cover management's day-to-day operations
 - The firm's financial, operating and governance activities are reported to shareholders in a fair, accurate and timely manner

R.41.2 Corporate Governance

➤ Contents

- Board of directors
 - ✓ Independence & Qualification
 - ✓ Board committees
- Management
- Shareholder rights

R.41.2 Corporate Governance

➤ Board of directors

- The duty of board is to protect the long – term interests of shareholders
- An effective board needs to have the independence, experience, and resources necessary to perform the duty
 - ✓ There is a need for specific, specialized, independent advice on various firm issues or risks
 - ✓ The independent board will have the ability to hire external consultants without management approval, this enables the board to receive specialized advice and provide independent advice without the influence by management interests.



The **Independence** and **Qualification** of board is essential

R.41.2 Corporate Governance

➤ Independence

- A **majority** of the board of directors is comprised of **independent** members (not management).
- The board **meets regularly** outside the presence of management.
- Board members are not closely aligned with a firm supplier, customer, share-option plan or pension adviser.
- Segregation of duty – the chairman of the board is not the CEO or former CEO of the firm
 - ✓ Otherwise, impair the ability & willingness of the board to express opinions contrary to those of the management
- Independent board members have a primary or leading board member in cases where the chairman is not independent

R.41.2 Corporate Governance

➤ Independence

● Considering the Frequency of Board Elections

- ✓ Whether there are **annual elections** or **staggered multiple-year terms** (a classified board).
 - A classified board may serve another purpose—to act as a takeover defense.
- ✓ Whether the board filled a vacant position for a remaining term without shareholder approval.
- ✓ Whether shareholders can remove a board member.
- ✓ Whether the board is the proper size for the specific facts and circumstances of the firm.

R.41.2 Corporate Governance

➤ Independence

- **Considering other policies to ensure independence**

- ✓ Discourage board members from receiving consulting fees for work done on the firm's behalf
- ✓ Discourage board members from receiving finders' fees for bringing merger/acquisitions, and sales to management attention
- ✓ Limit board members' ability to receive compensation beyond the scope of their board responsibilities
- ✓ Disclose all material related – party transactions or commercial relationship with board members

R.41.2 Corporate Governance

➤ Qualification

- Board members without the **requisite skills and experience** are more likely to defer to management when making decisions. This can be a threat to shareholder interests.
 - When considering the qualifications of board members, consider whether board members:
 - ✓ Can make informed decisions about the firm's future.
 - ✓ Can act with care and competence as a result of their *experience* with:
 - Technologies, products, services which the firm offers.
 - Financial operations and accounting and auditing topics.
 - Legal issues.
 - Strategies, planning.
 - Business risks the firm faces.
 - Have *necessary experience and qualifications*
 - Have *other board experience*.

R.41.2 Corporate Governance

- Have *served on board for more than 10 years*.
- While this adds experience, these board members may be too closely allied with management.
- Have made any public statement indicating their *ethical stances*.
- Have had any *legal or regulatory problems* as a result of working for or serving on the firms' board or the board of another firm.
- *Regularly attend meetings*.
- *Are committed to shareholders*.
 - ✓ Do they have significant stock positions?
 - ✓ Have they eliminated any conflicts of interest?

R.41.2 Corporate Governance

➤ Management -Code of Ethics

- A code of ethics for a firm sets the standard for basic principals of integrity, trust and honesty.
- It gives the staff behavior standards and addresses conflicts of interest.
- Having an ethical code can mitigate ethical breaches which can lead to big problems for firms, resulting in sanctions, fines, management turnover, and unwanted negative publicity.

R.41.2 Corporate Governance

➤ Management - Code of ethics

A code of ethics for a firm sets the standard for basic principles of integrity, trust, and honesty. Make sure the board of directors receives relevant corporate information in a timely manners.

- The ethical code should be in compliance with the corporate governance laws of the location country and local stock exchange.
- The ethical code should prohibit advantages to the firm's insiders that are not offered to shareholders.
- A person should be designated to be responsible for corporate governance. Give reasons to waivers from the ethical code received by selected management personnel.
- Explain the reasons for any recent waivers of the ethical code. The firm's ethical code should be audited and improved periodically.

R.41.2 Corporate Governance

➤ Board committee

➤ Audit committee

- ✓ Committee Member independence
- ✓ Committee Member qualification
- ✓ Independent auditor (Internal & External)

➤ Remuneration / Compensation committee

- ✓ Committee Member Independence
- ✓ Appropriate Executive Compensation Packages
- ✓ Reasonable option schemes

➤ Nominations Committee

- ✓ Committee Member Independence
- ✓ Creating nomination procedures and policies
- ✓ Recruiting qualified board members
- ✓ Regularly reviewing performance, independence skills, and experience of existing board members

R.41.2 Corporate Governance

➤ Shareholder rights

- The ability to vote is a fundamental shareholder right
- Investors should consider whether their ability is limited by the firm, which makes them difficult to vote
- **Voting rules**
 - ✓ Proxy voting
 - Increase the probabilities to represent the shareholders' right.
 - ✓ Confidential Voting
 - Ensure all votes are counted equally and less influenced by insiders
 - ✓ Cumulative Voting
 - Enhance the likelihood that shareholders' interest are represented on the Board
 - ✓ Voting for other corporate Changes
 - The ability of shareholders to approve changes to the company's corporate structure and policies

R.41.2 Corporate Governance

➤ Shareholder rights

● Shareowner Proposals

✓ Shareowner-Sponsored Board Nominations

- Whether the shareholders have the power to put forth an independent Board nominee

✓ Shareowner-Sponsored Resolutions

- The right to propose initiatives for consideration at the annual meeting

✓ Advisory or Binding Shareowner Proposals

- Whether the Board or Management are required to actually implement any shareholder – approved proposal

✓ Shareowner Legal Rights

- Whether the shareholders have the legal right to enforce and protect shareholder rights

R.41.2 Corporate Governance

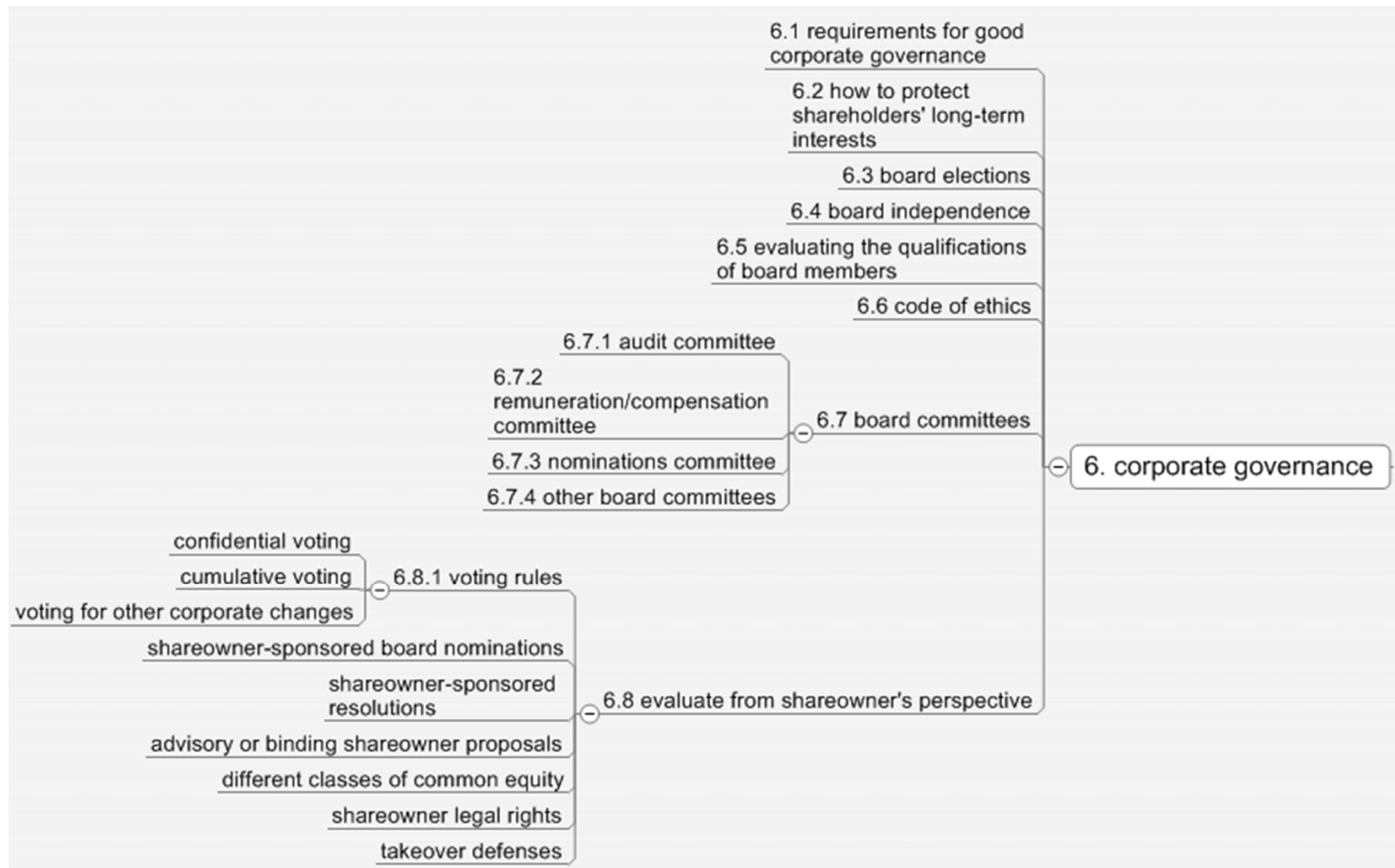
➤ Shareholder rights

● Takeover Defenses

- ✓ Provisions are designed to make a company less attractive to a hostile bidder
 - Golden parachutes → rich compensation package to target's top managers who lose their jobs as a result of takeover
 - Poison pills → give right to target's shareholders to buy the target's shares at a discount
 - Greenmail → allow the target to buy back its shares from the bidder at a premium to the market price
- ✓ Whether the firm requires shareholders' approval to implement such Takeover defenses

● Different Classes of Common Equity

Summary



Summary for Calculations

- NPV/IRR/PBP/DPB/PI
- NPV impact on stock price
- Cost of capital
 - Cost of debt
 - Cost of equity: CAPM/DDMM/Bond yield plus premium
 - β adjustment for non-public companies
 - Country risk premium
 - Break point of capital cost
 - Flotation cost
- Leverage measures
 - DOL/DFL/DTL
 - Breakeven analysis
- Effect of Share repurchase on EPS/BVPS/total wealth
- Work capital management
 - Liquidity ratios and turnovers
 - Receivable and Payable management
 - Cash management(Quantitative Methods)

It's not the end but just the beginning.

By training your thoughts to concentrate on the bright side of things, you are more likely to have the incentive to follow through on your goals. You are less likely to be held back by negative ideas that might limit your performance.

试着训练自己的思想朝好的一面看，这样你就会汲取实现目标的动力，而不会因为消极沉沦停滞不前。