



金程教育
GOLDEN FUTURE

可信赖的财经培训专家

CFA一级培训项目

Corporate Finance



纪慧诚

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地点： ■ 上海 □ 北京 □ 深圳

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**

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

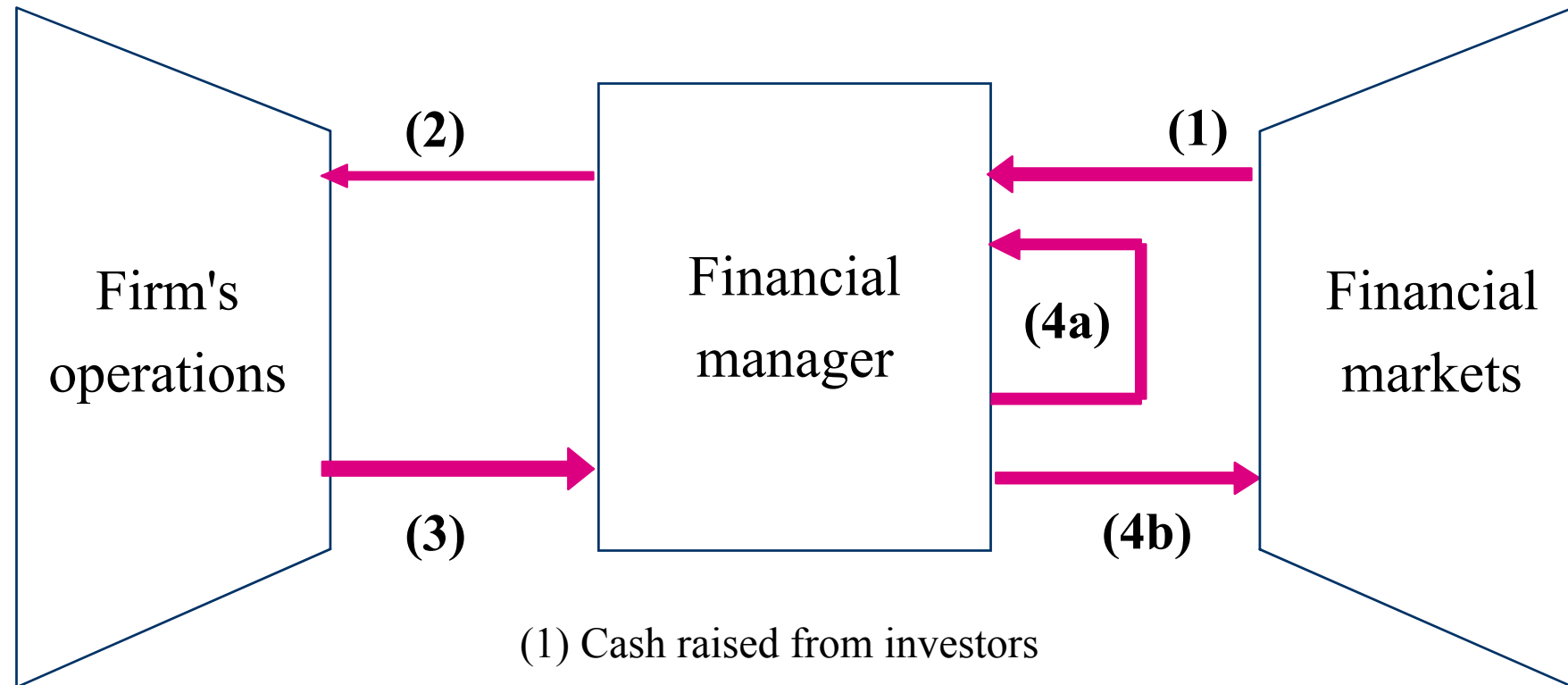
Framework

➤ 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:

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

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

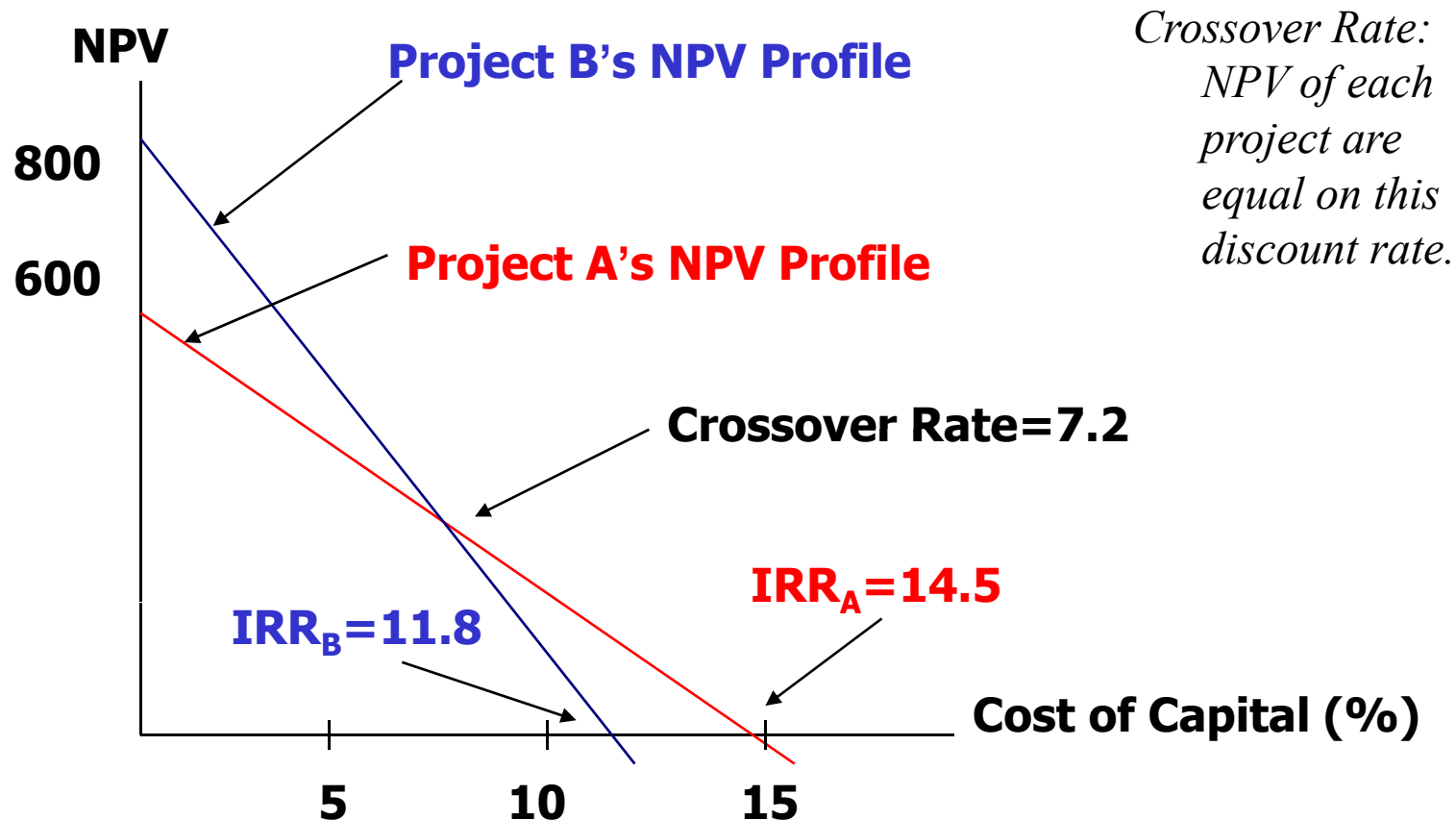
- ✓ Conventional cash flows pattern Vs. Unconventional cash flow pattern
 - Multiple IRRs or no IRR under unconventional CF
- ✓ Unrealistic reinvestment assumption

- 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

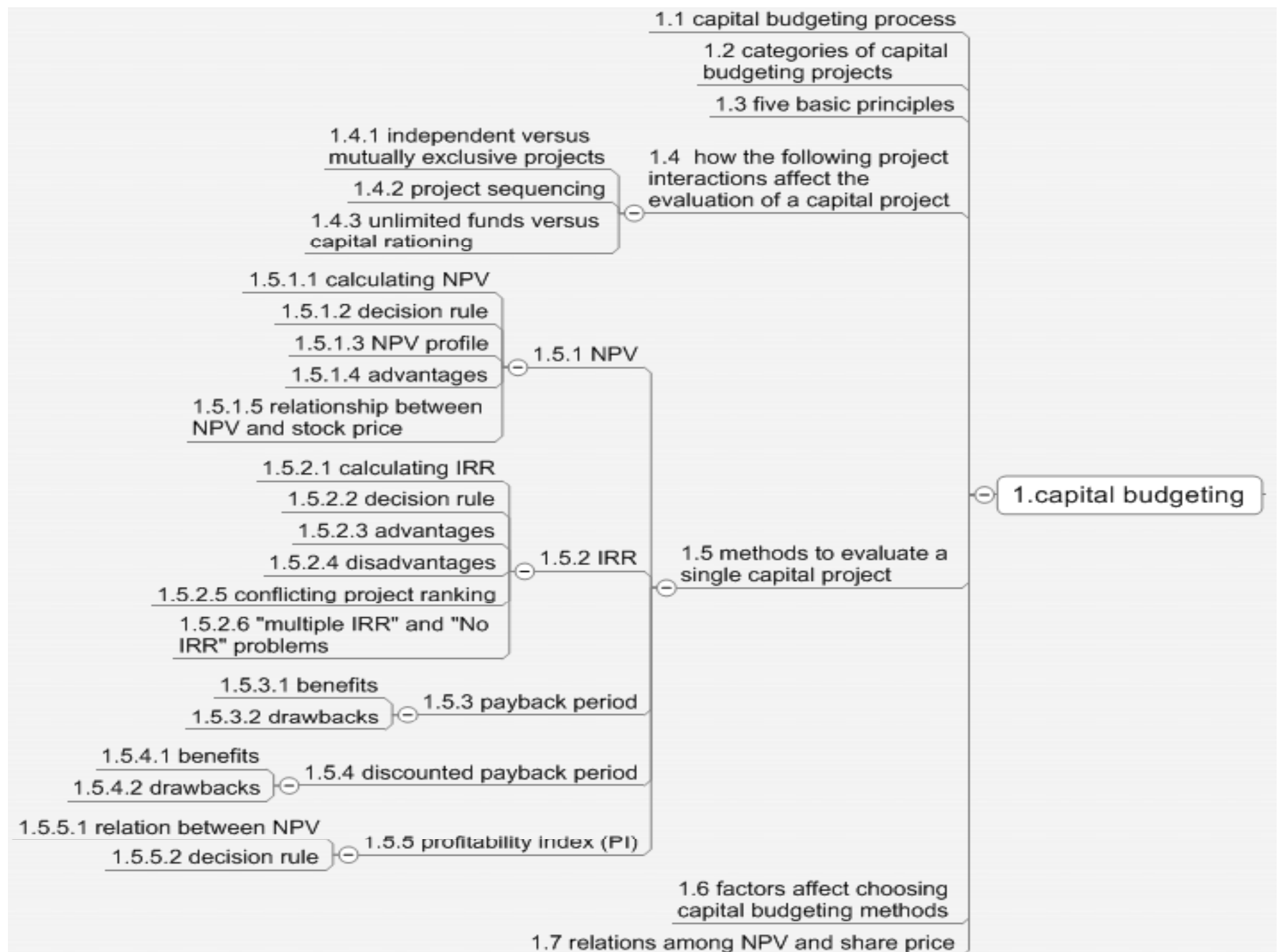
Example: Relationship between NPV and stock price

- 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

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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:

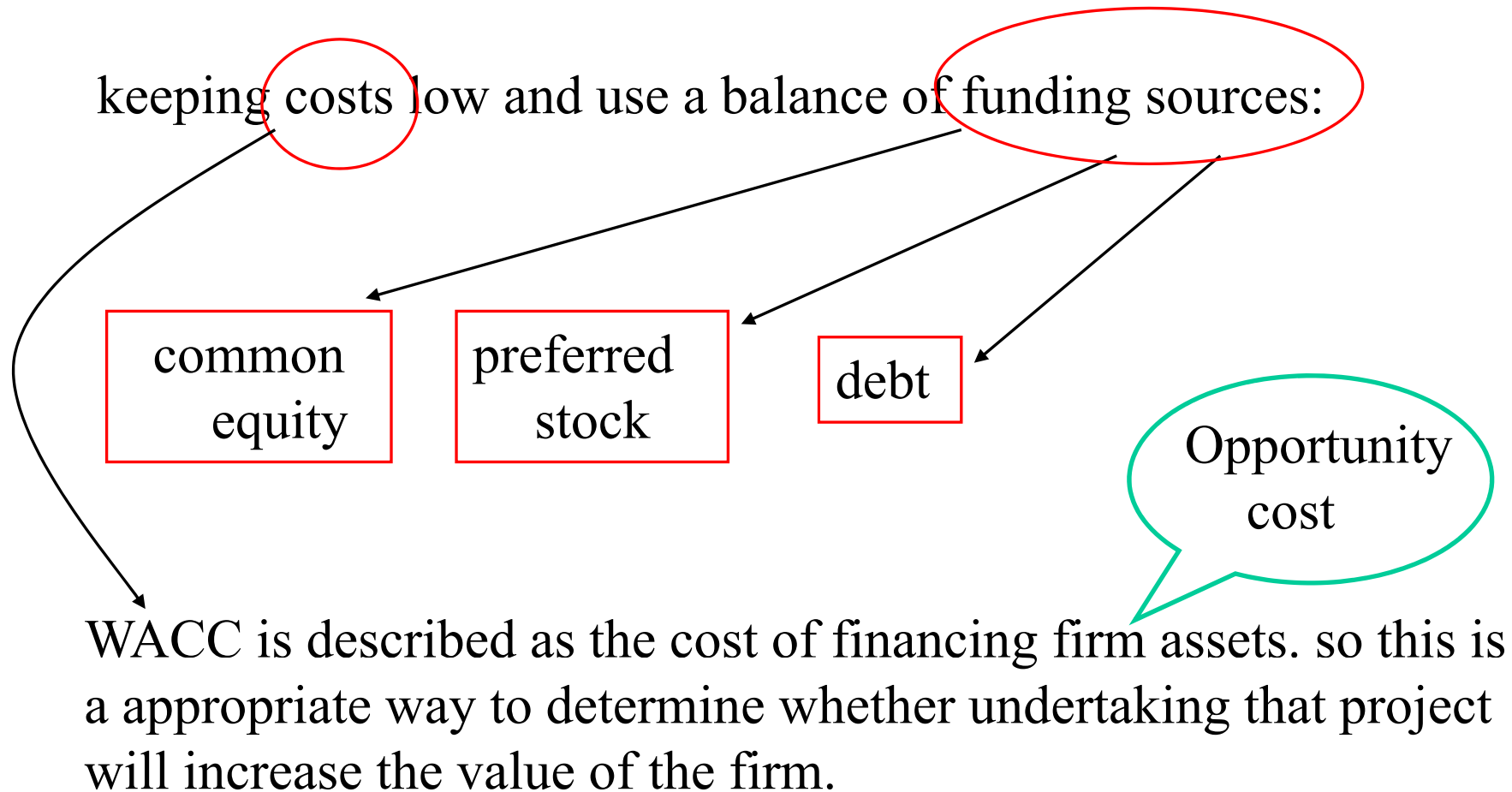
Fran McClure of Alba Advisers is estimating the cost of capital of Frontier Corporation as part of her valuation analysis of Frontier. McClure will be using this estimate, along with projected cash flows from Frontier's new projects, to estimate the effect of these new projects on the value of Frontier.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

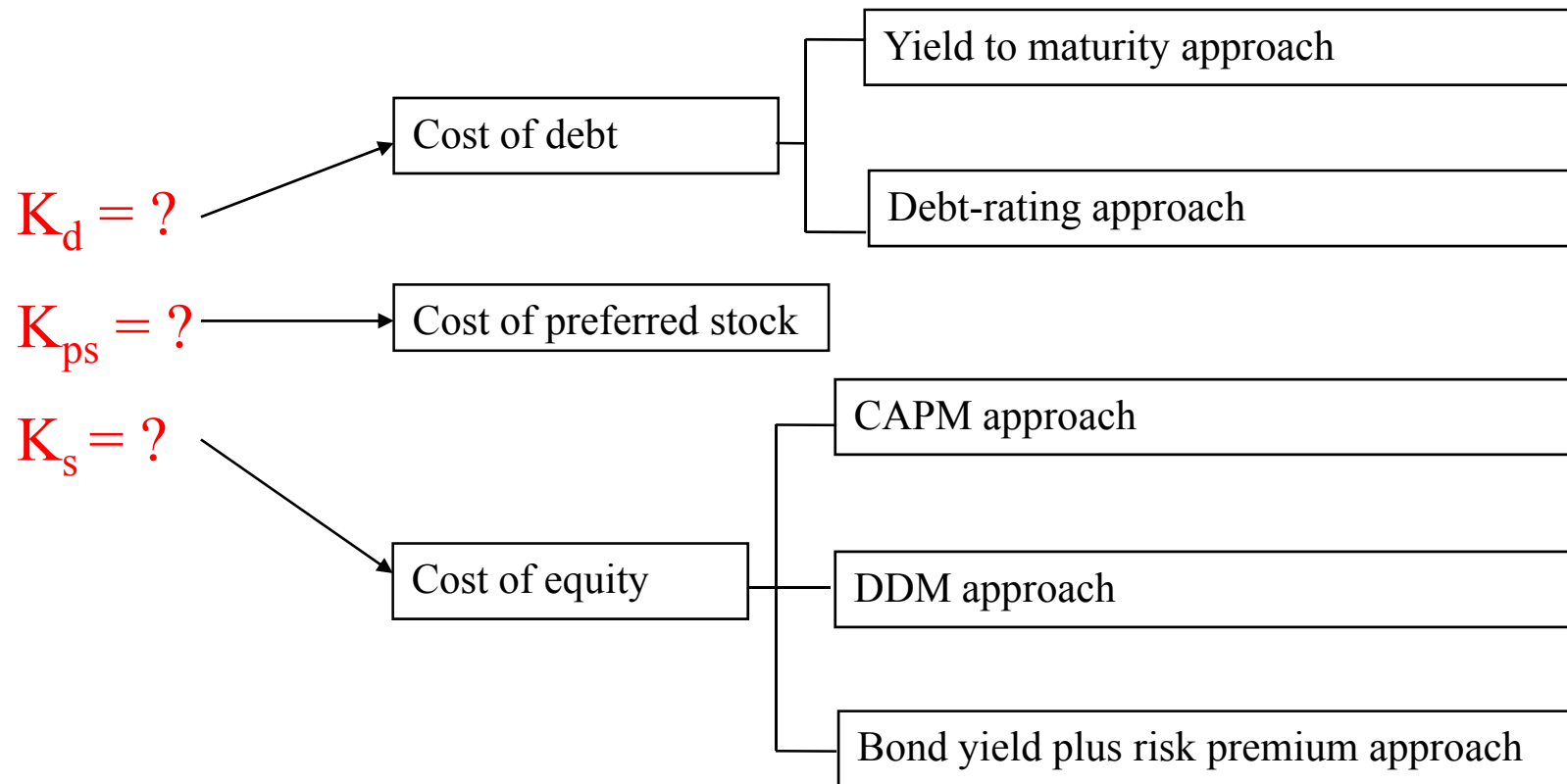
R.37.3 Cost of the different sources of capital

How a company raises capital:



R.37.3 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.37.3 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 $CF_0=-1025, C_01=100, F_01=2, C_02=1100$ IRR CPT (容易犯错)

➤ Debt-rating approach

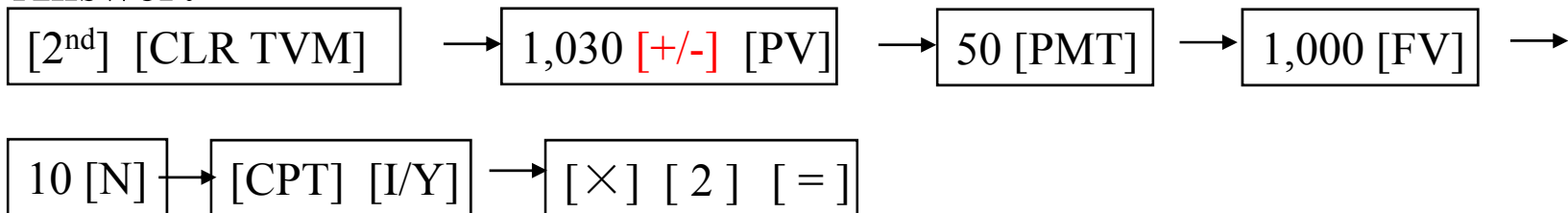
R.37.3 Cost of the different sources of capital

➤ 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.37.3 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.37.3 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.37.3 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.37.3 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.37.4 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.37.4 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.37.4 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.37.4 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.37.4 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 K_e ，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.37.4 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.37.4 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.37.5 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.37.5 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.37.6 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%

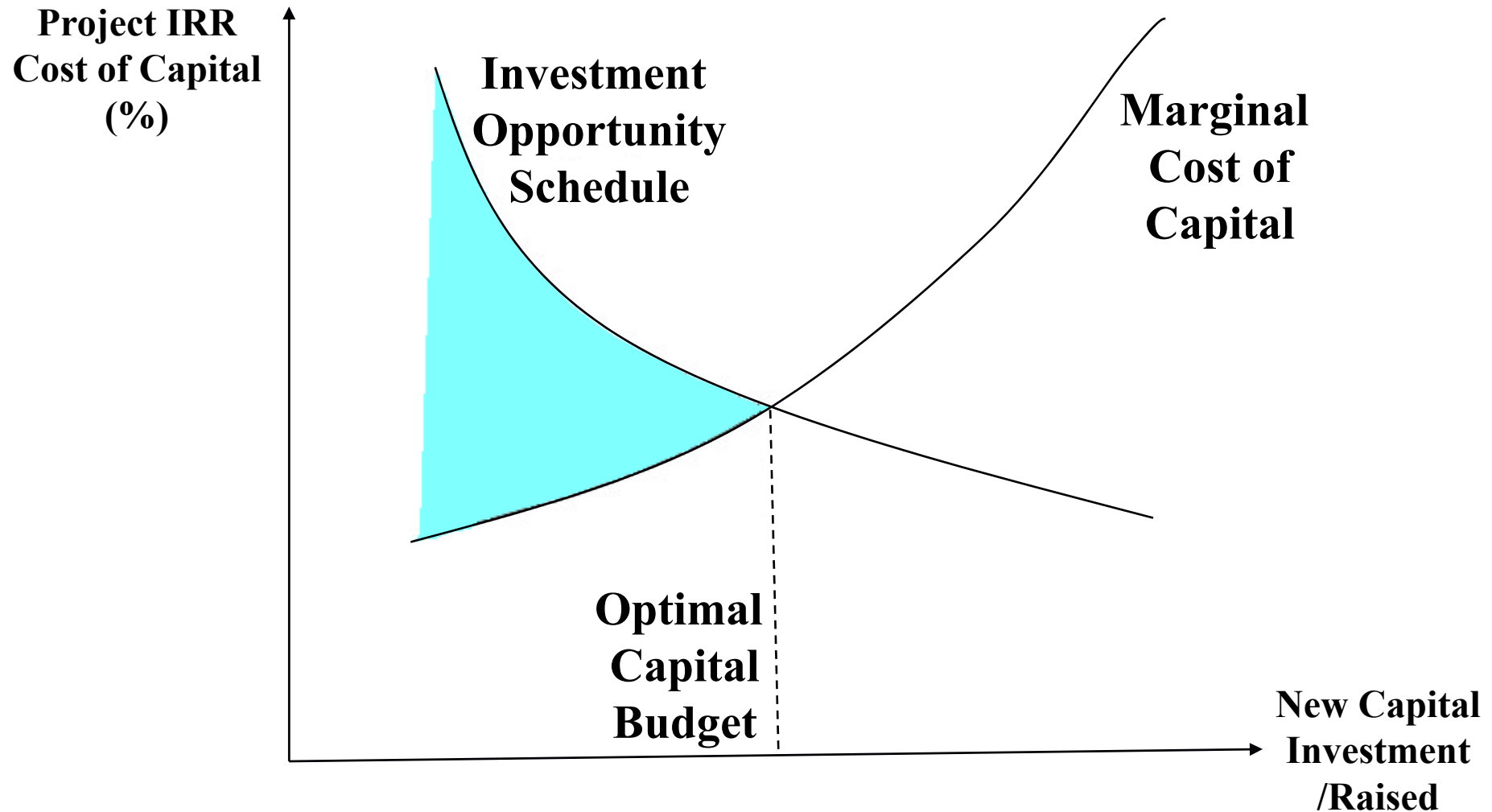
R.37.2 The Optimal Capital Budget

- 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.37.2 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.

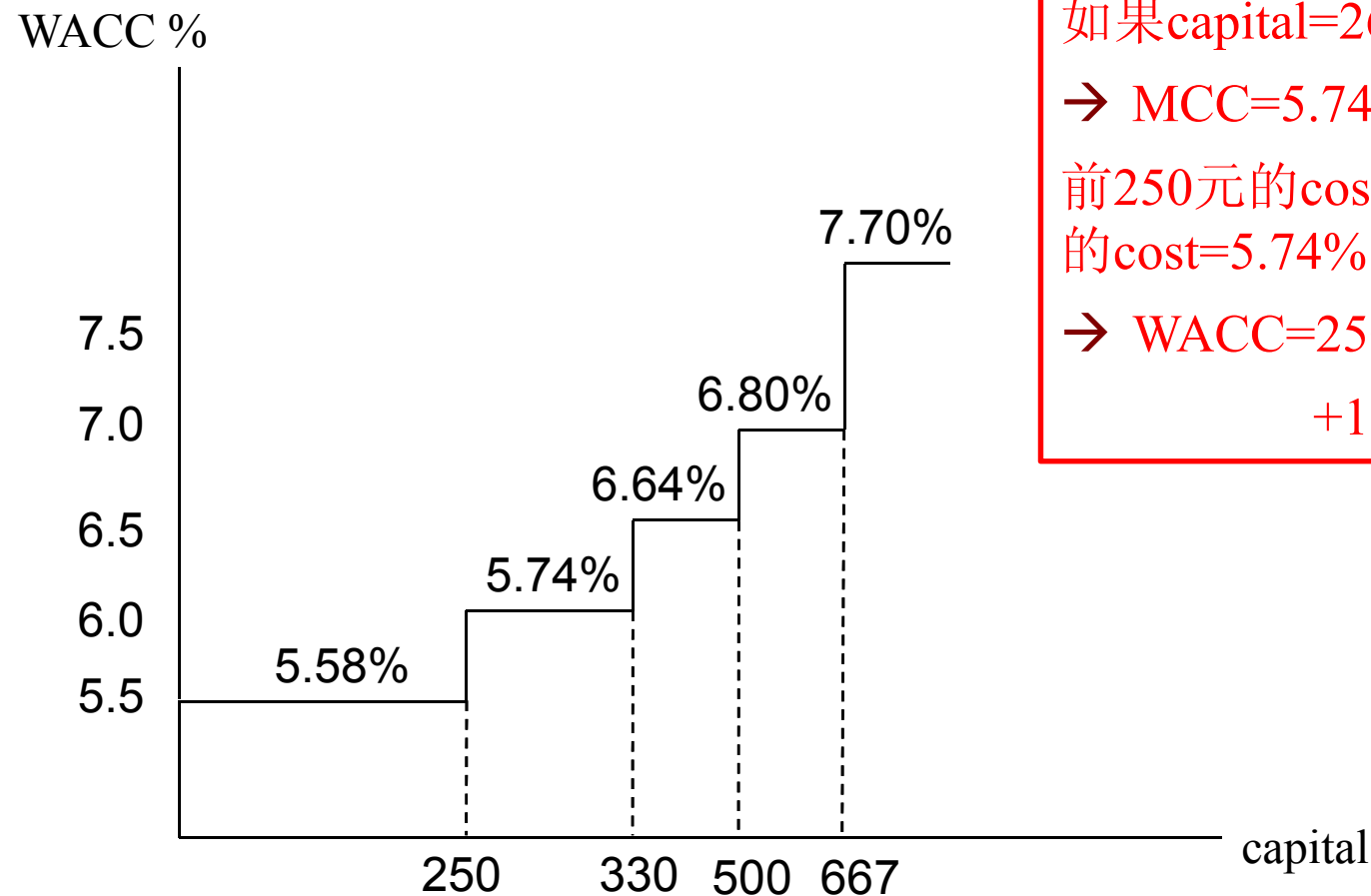
WACC for Alternative Levels of Financing

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 $\$200,000 \times 0.045 = \$9,000$

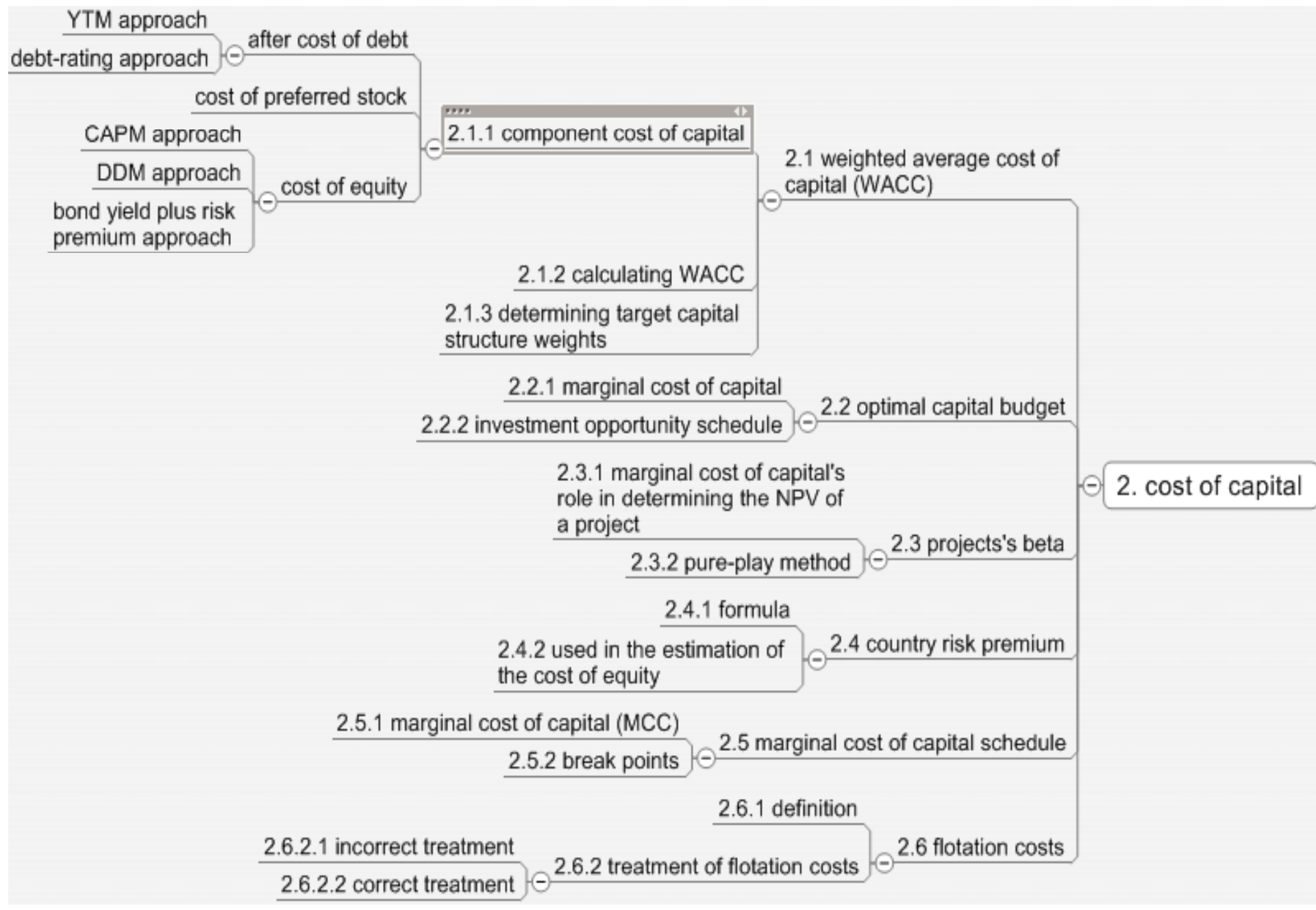
$$\begin{aligned} NPV = & -\$400,000 - \$9,000 + \frac{\$150,000}{1.0739} + \frac{\$150,000}{1.0739^2} \\ & + \frac{\$150,000}{1.0739^3} + \frac{\$150,000}{1.0739^4} = \$94,640 \end{aligned}$$

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:

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

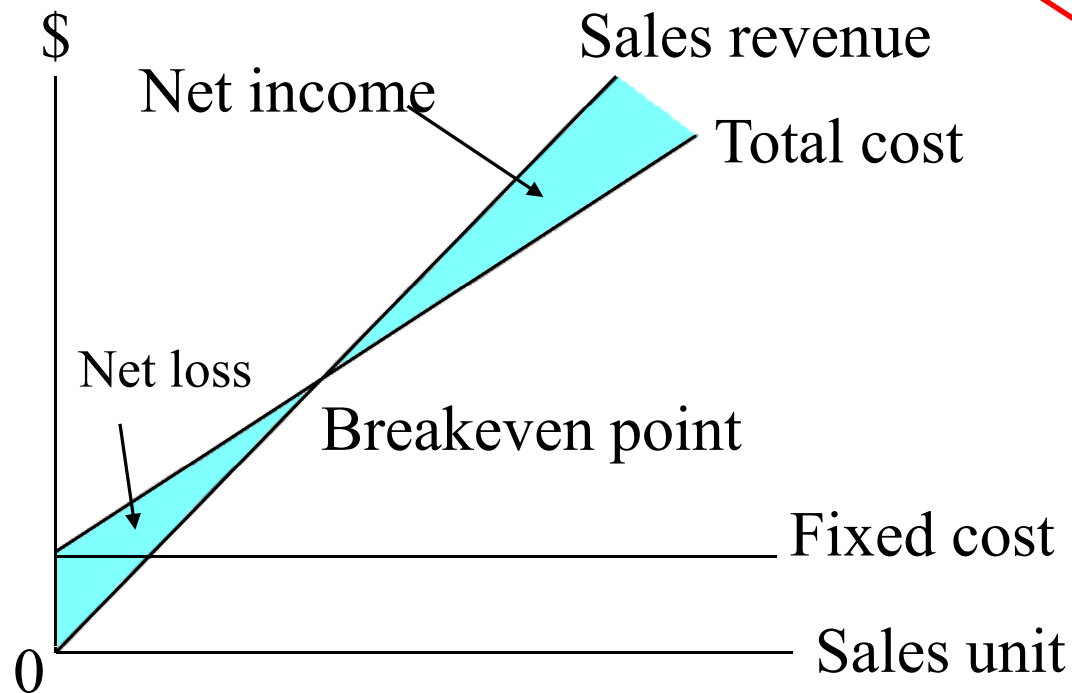
R.38.4 Leverage and risk

- 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:*

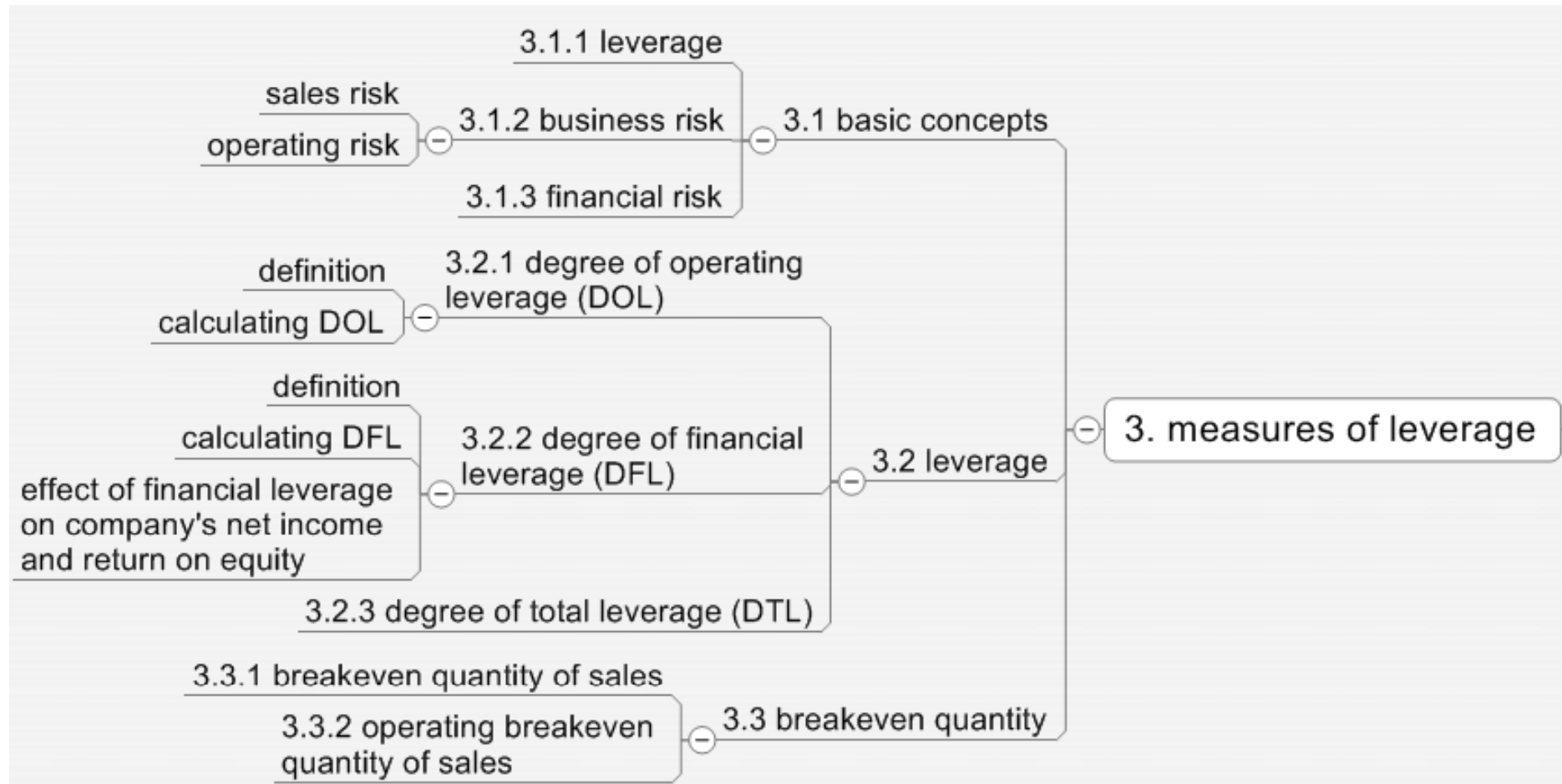
Price	4
Variable costs	3
Fixed operating costs	10,000
Fixed financing costs	30,000

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

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



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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.39.1 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.39.3 Stock splits

➤ Increase

- Number of shares outstanding

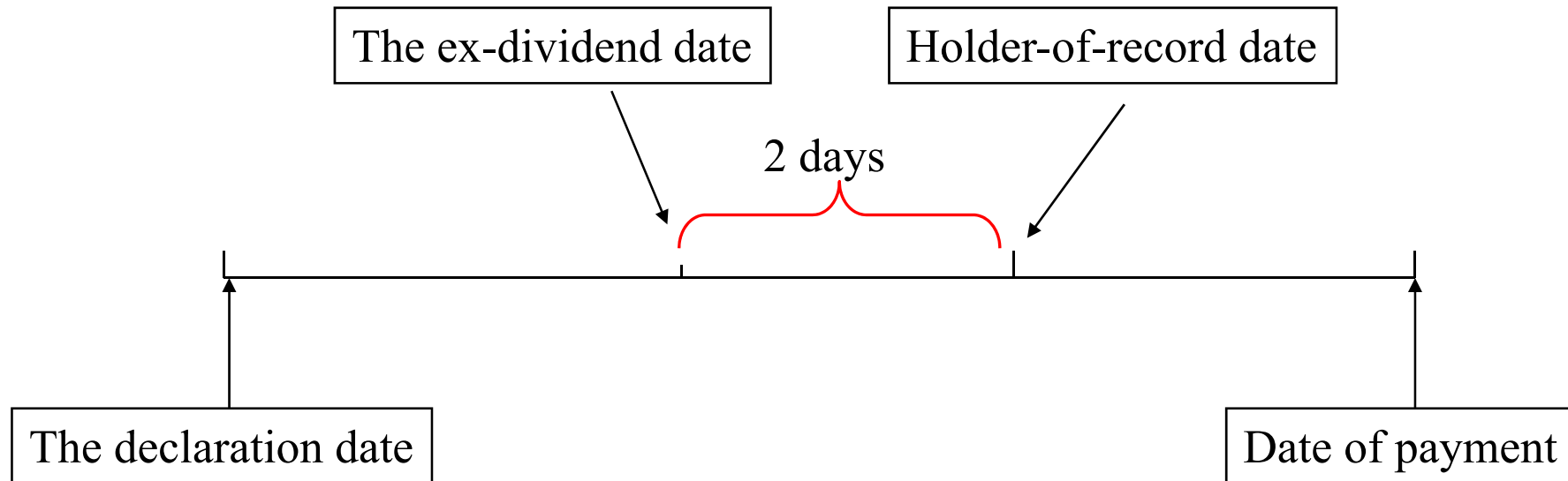
➤ Decrease

- 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.39.2 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.39.3 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.39.3 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.39.3 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.39.3 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 = $\$10 \text{ million} / \$25 \text{ per share} = 400,000$ shares.
- Remaining shares for both companies = $20 \text{ million} - 400,000 = 19.6 \text{ million}$.
- Blue, Inc.'s current BVPS = $\$300 \text{ million} / 20 \text{ million} = \15 .

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

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

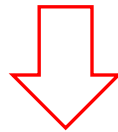
R.39.4 Effects of Share Repurchase on total wealth

➤ 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



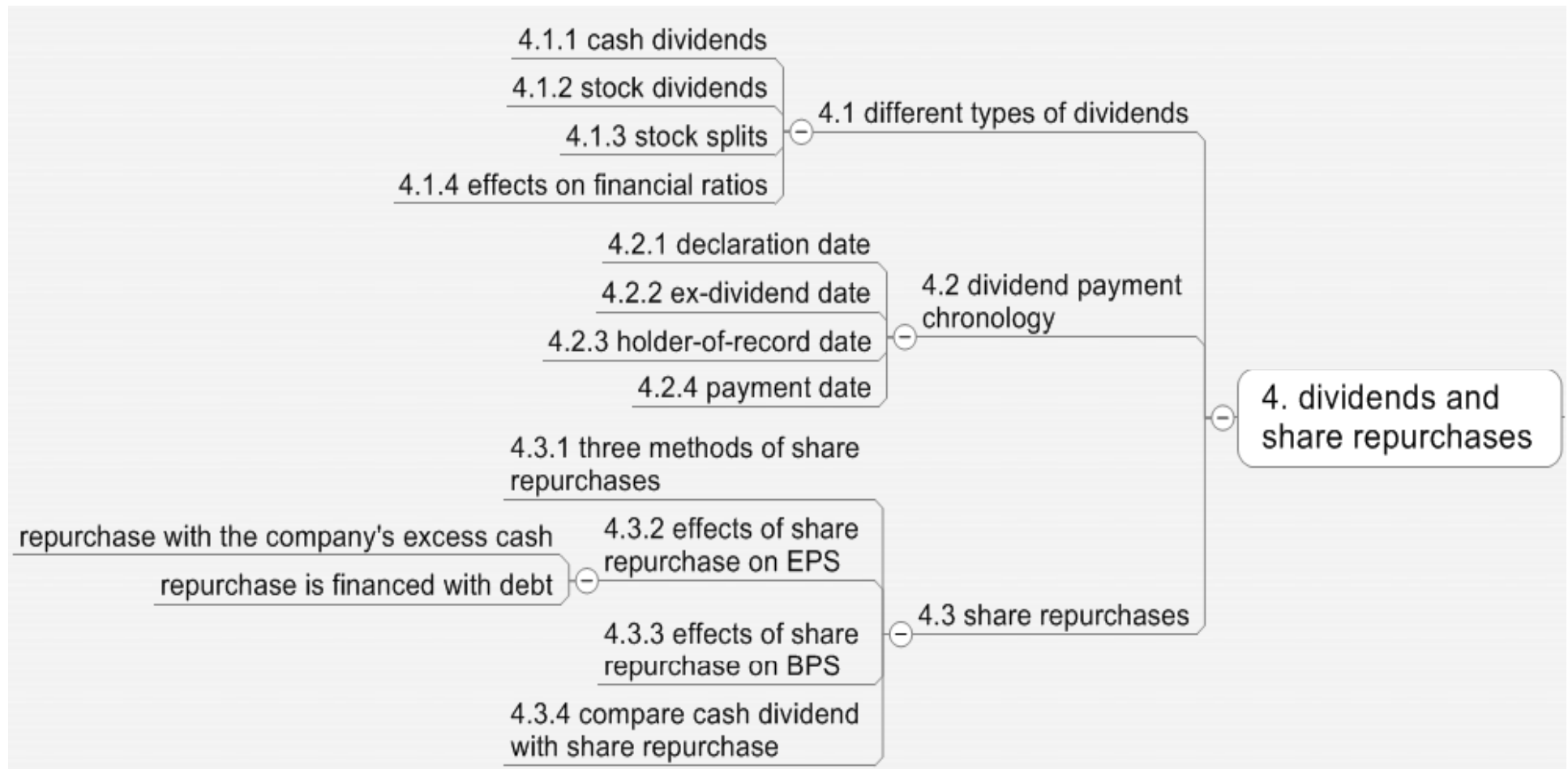
Cash dividend = share repurchase,
in terms of the effect on
shareholders' wealth

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

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Framework

➤ R37: 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

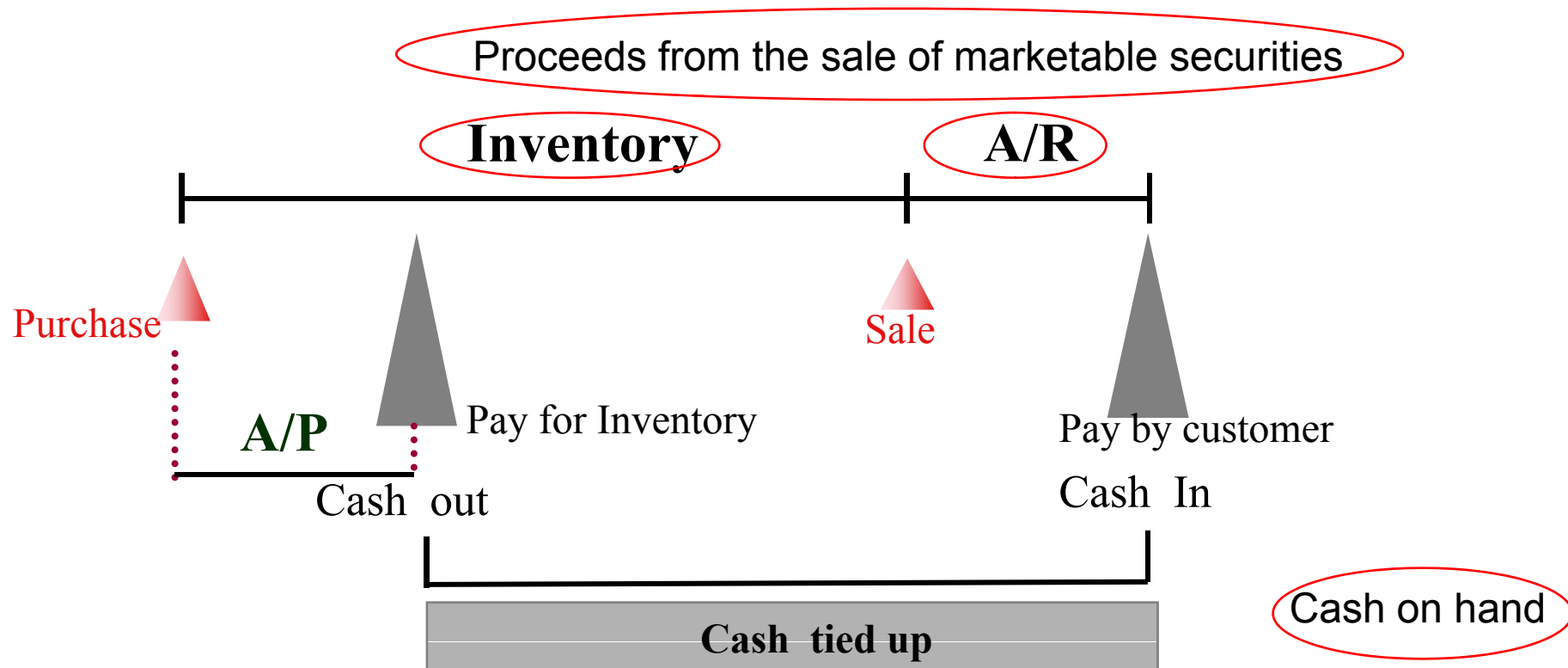
R.40.1 Liquidity measures

- **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

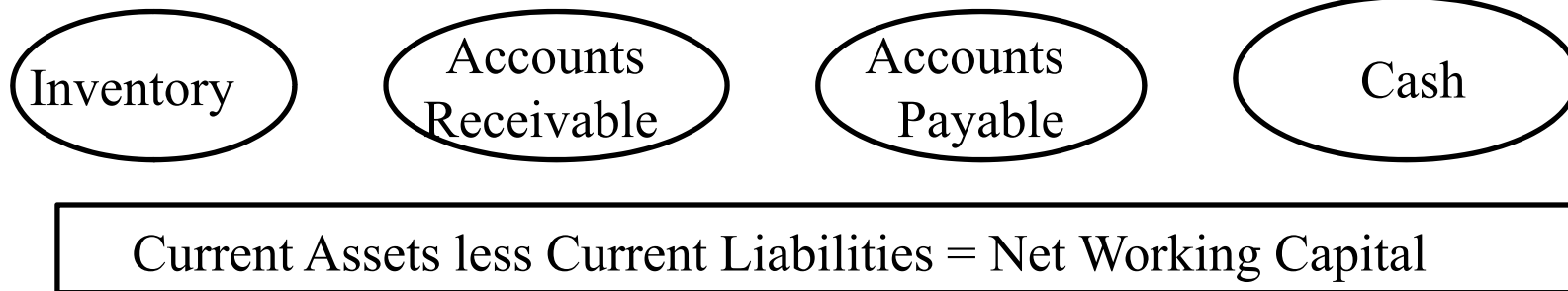
If lack liquidity → financial distress → extreme: insolvency or bankruptcy

➤ 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.

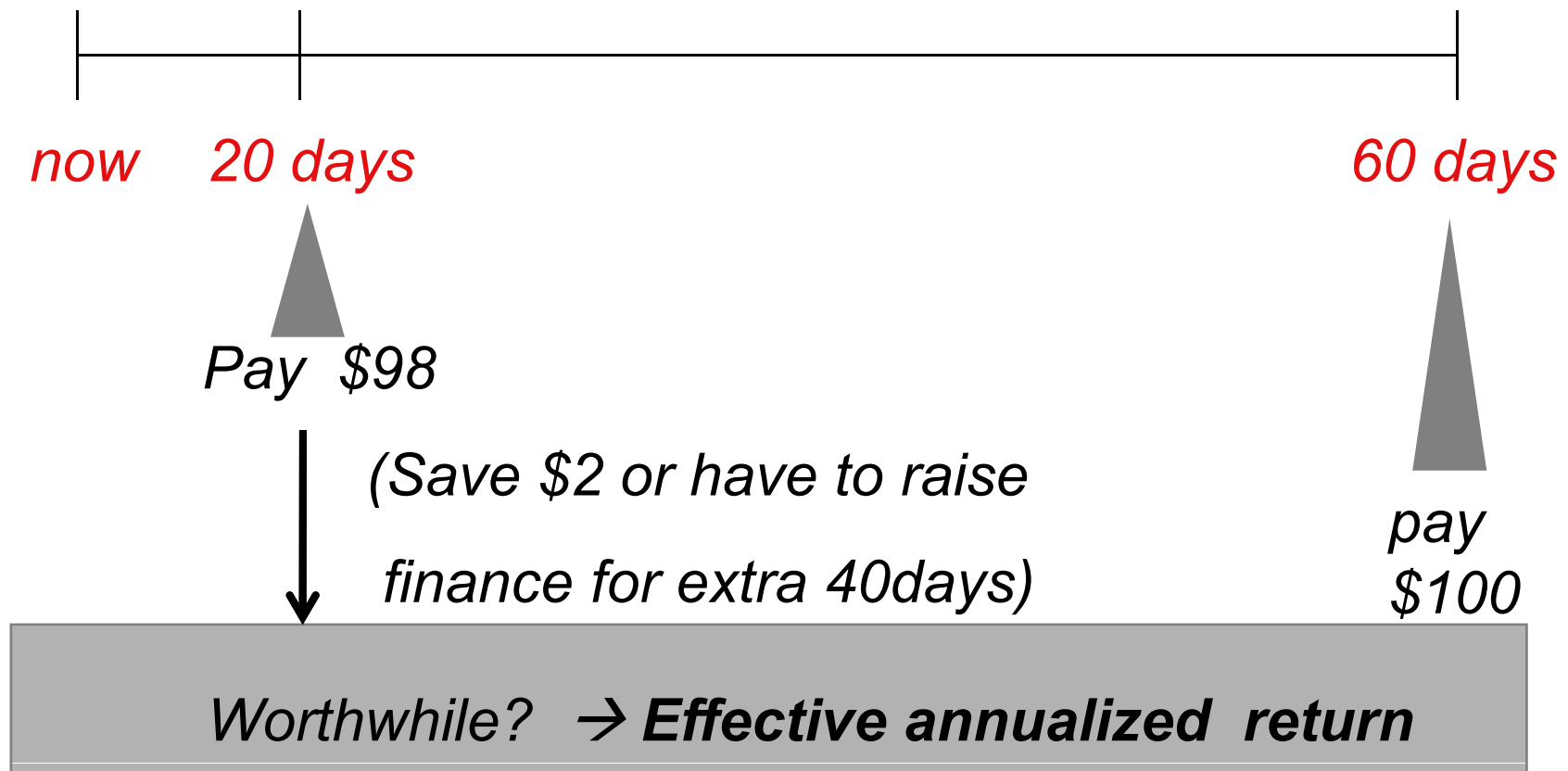
$$\text{cost of trade credit} = \left(1 + \frac{\text{discount}}{1 - \text{discount}}\right)^{365/t} - 1$$

$$\text{cost of trade credit if paid on day 60} = \left(1 + \frac{2\%}{1 - 2\%}\right)^{365/(60-10)} - 1$$

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:

Quantitative
method

$$\% \text{discount} = \left(\frac{FV - P}{FV} \right)$$

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).

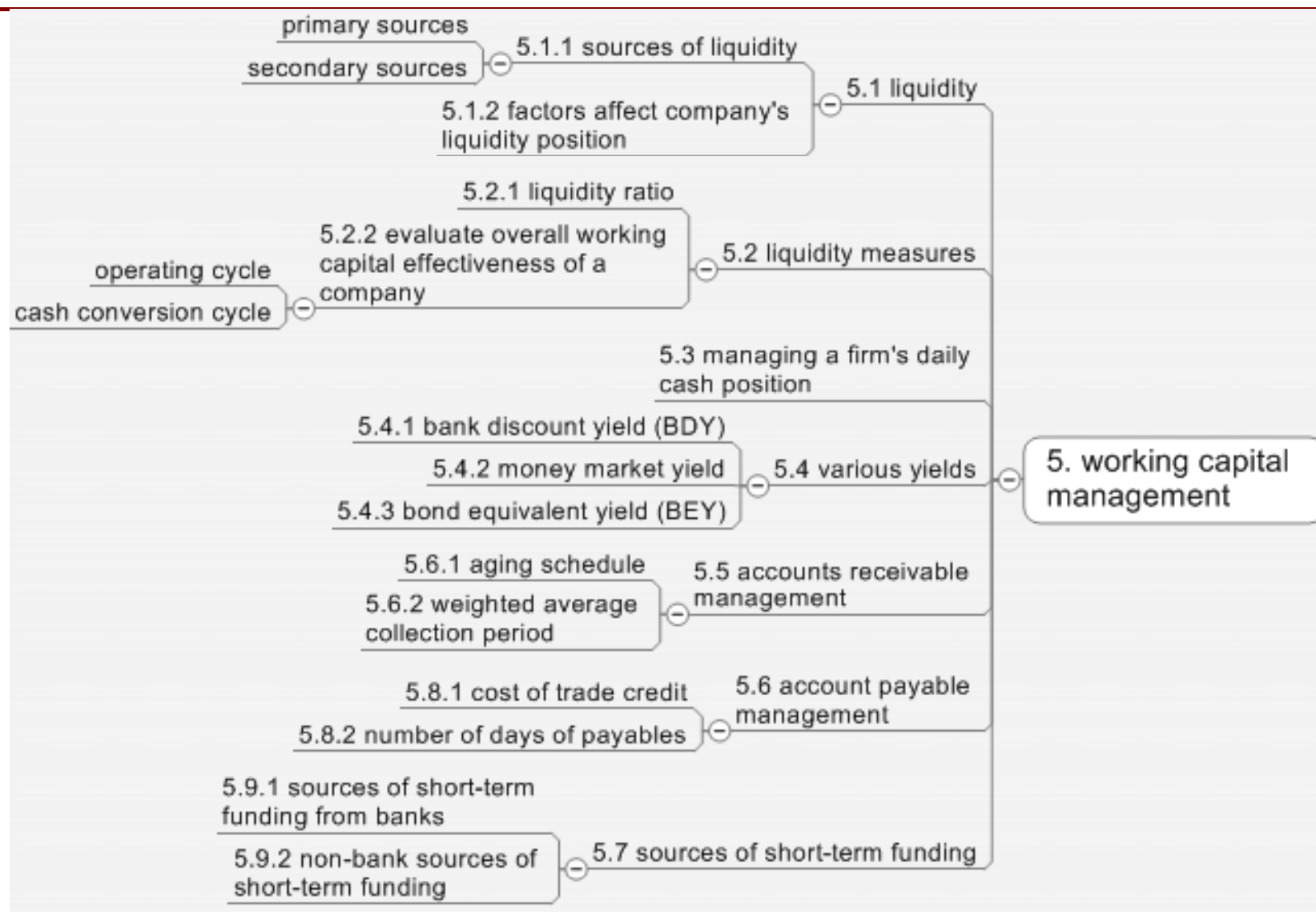
- ✓ Foreign exchange risk

- 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



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

R.42.1 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.42.1 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.42.2 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.42.2 Corporate Governance

➤ Contents

- Board of directors
 - ✓ Independence & Qualification
 - ✓ Board committees
- Management
- Shareholder rights

R.42.2 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.42.2 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.42.2 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.42.2 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.42.2 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.42.2 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.42.2 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.42.2 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.42.2 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.42.2 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.42.2 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.42.2 Corporate Governance

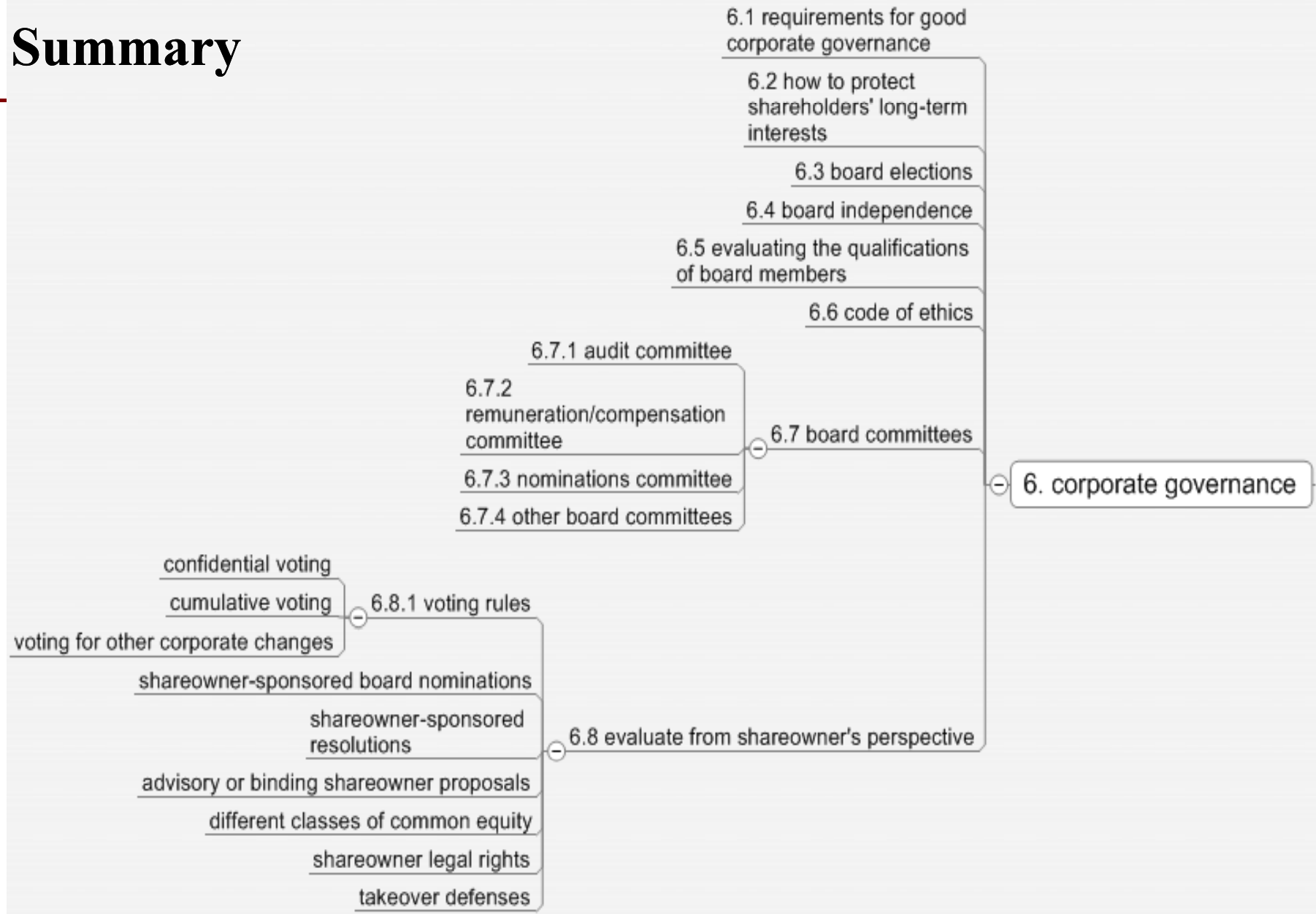
➤ Shareholder rights

● 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。