金程教育
GOLDEN FUTURE

专业·领先·增值
专业来自101%的投入!

CFA一级培训项目

Corporate Finance

汤震宇 CFA FRM CTP CAIA CMA RFP
金程教育首席培训师

地点： ■ 上海 □北京 □深圳

汤震宇

- 工作职称：博士，金程教育首席培训师、上海交通大学继续教育学院客座教授、综合开发研究院（中国·深圳）培训中心副教授，南京大学中国机构投资者研究中心专家、CFA（注册金融分析师）、FRM（金融风险管理师）、CTP（国际财资管理师）、CAIA（另类投资分析师）、CMA（美国管理会计师）、RFP（注册财务策划师）、CISI会员（英国特许证券与投资协会会员）
- 教育背景：中国人民大学投资系学士，复旦大学国际金融系硕士毕业，复旦大学管理学院博士
- 工作背景：“中国CFA第一人”，国内授课时间最长、人气最高、口碑最好的CFA金牌教师。十余年CFA授课经验，为金程教育讲授CFA一级达二百多个班次、CFA二级六十多班次，CFA三级十个班次，深受学员的欢迎和赞誉。行业经验丰富，先后供职于大型企业财务公司从事投资项目评估工作，参与成立证券营业部并任部门经理；任职于某民营公司，参与海外融资和资金管理工作。
- 服务客户：上海证券交易所、深圳综合开发研究院、山东省银行同业协会、对外经济贸易大学、摩根士丹利、中国银行总行、广发证券、中国建设银行、中国工商银行总行、交通银行、招商银行、农业银行、上海银行、太平洋保险、平安证券、富国基金等。
- 主编出版：《固定收益证券定价理论》、《财务报表分析技术》、《公司财务》、《衍生产品定价理论》、《商业银行管理学》多本金融教材，备受金融学习者与从业人员好评。
- 新浪微博：汤震宇CFA_金程教育
- 微信公众号：固若金汤
- 联系方式：　电话：021－33926711　　邮箱：training@gfedu.net

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 and Wealth Planning	7
Study Session 13-14	Equity Investment	10
Study Session 15-16	Fixed Income	10
Study Session 17	Derivatives	5
Study Session 18	Alternative Investments	4

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.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 positive externalities (the product benefits sales of a firm's other product lines)
      - A negative externalities →**Cannibalization**（侵蚀效应）(New project takes sales from an existing product)
- 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
  - An 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 profitability 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

- Selection
  - For independent projects:

    Invest if NPV>0

    Reject if NPV<0
  - For mutually exclusive projects: Choose the one with the highest NPV
- Advantage
  - Shows the amount of gains as currency amount
  - The NPV of project increases the value of shareholders instead of creditors. (Creditors only gain the interest whatever project bring benefits or losses)
  - Realistic discount rate – opportunity cost of funds (the except return of stockholders)
- Disadvantage
  - Size of projects ignored

R.36.4 Project Evaluation Methods- IRR

Internal Rate of return (IRR)

$$\sum_{t=1}^{n} \frac{CF_i}{(1+IRR)^i} = CF_0 \quad \text{or} \quad NPV = 0$$

- 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 ≥ the required rate of return

    Reject if IRR < the required rate of return
  - Ranking Criteria: Choose the highest IRR
- Advantage: Reflect the profitability of the project
- 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- PBP

Payback Period (PBP)

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

- Definition: the number of years it takes to recover the initial cost of an investment
- Selection
  - Mutually Exclusive vs. Independent Project: shorter PBP
  - Minimum Acceptance Criteria:
    - ✓ VS. industry average
    - ✓ Actually, no economically meaning
- 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

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:
  - If NPV<0, what is meaning?
- Advantages
  - An indication of a project's risk and liquidity
  - Considers time value of money
- Disadvantages
  - Ignores cash flows after the payback period

R.36.4 Project Evaluation Methods- PI

Profitable Index (PI)

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

- 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: profitability of the project

- Disadvantage
  - Complex calculation
  - Benefit-cost ratio

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.*

Year	0	1	2	3	4	5
Cash flow	50,000	15,000	15,000	20,000	10,000	5,000

- NPV IRR

  A. $1,905 10.9%

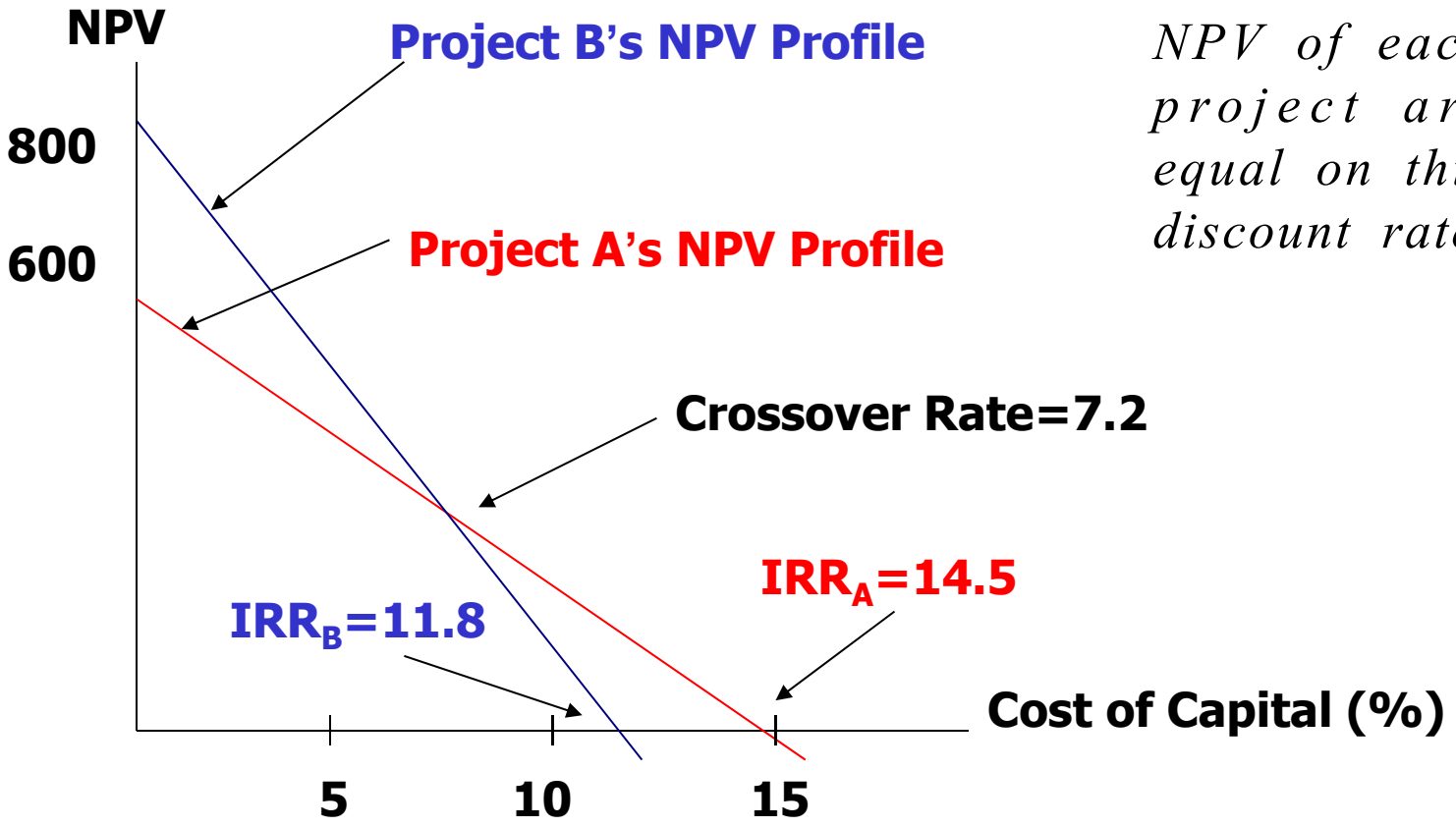
  B. $1,905 26.0%

  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 Profiles



crossover rate: the NPV of each project are equal on this discount rate.

When NPV and IRR conflicts: NPV dominates

R.36.5 NPV & IRR Calculation

➢ NPV is superior to IRR

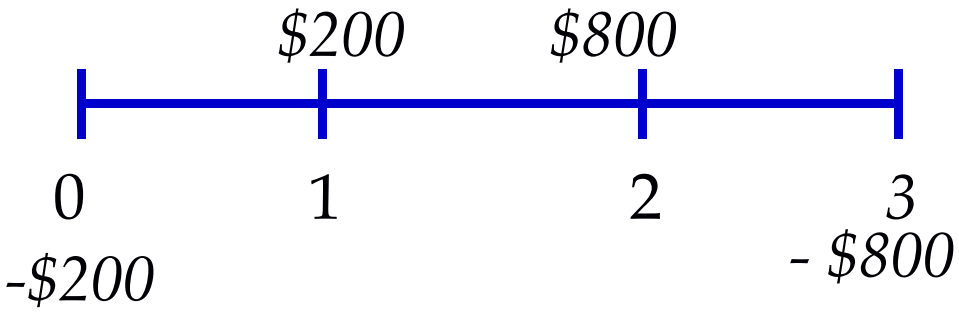
- Advantages of NPV & IRR
  - ✓ Based on *Cash flows*
  - ✓ Considering *Time value of money*
  - ✓ Take into account the cash flows generated over the *whole project life*
- Disadvantages of IRR
  - ✓ Conventional cash flows pattern Vs. Unconventional cash flow pattern
    - ■ Multiple IRRs or no IRR under unconventional CF
  - ✓ Unrealistic reinvestment assumption

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

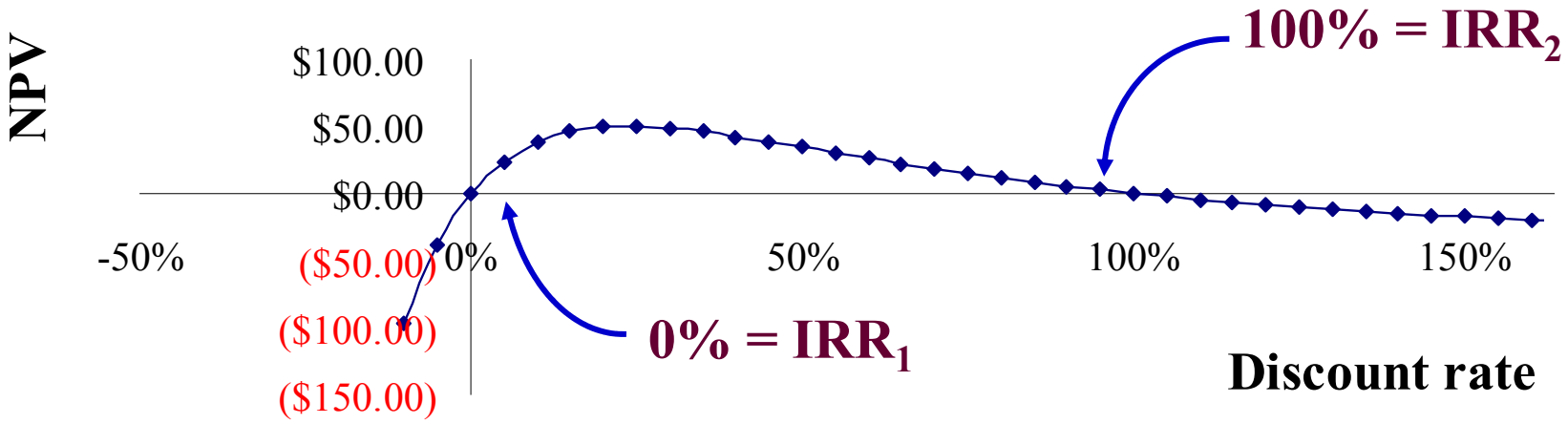
R.36.5 NPV & IRR Calculation

➢**Multiple IRRs**

There are two IRRs for this project:



Which one should we use?



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 =the change of the market value of the stocks

R.36.7 Impact of NPV Rule and Stock Price

- In theory
  - when the NPV is positive, **P_{stock} is increased**
- In reality
  - the impact of a project on the company's stock price is more complicated than the previous example.
  - A company's stock price is a function of the present value of its expected future earnings stream. As a result, changes in the stock price will result more from changes in expectations about a firm's positive NPV projects.
  - If a company announces a project for which managers expect a positive NPV but analysts expect a lower level of profitability from the project than the company does (e.g., an acquisition), the stock price may actually drop on the announcement.

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.37.1 Weight average cost of capital （WACC）

The firm's proper discount rate in discounted cash flow analysis

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

Where:

- t is the firm's *marginal* tax rate
- w is the proportion of each type of capital
  - Target/optimal capital structure
  - Market value
  - Trends in company's capital structure
  - Average of comparable company's capital structure
- k is the current cost of each type of capital (debt, preferred stock and common stock）

R.37.1 WACC: Weights

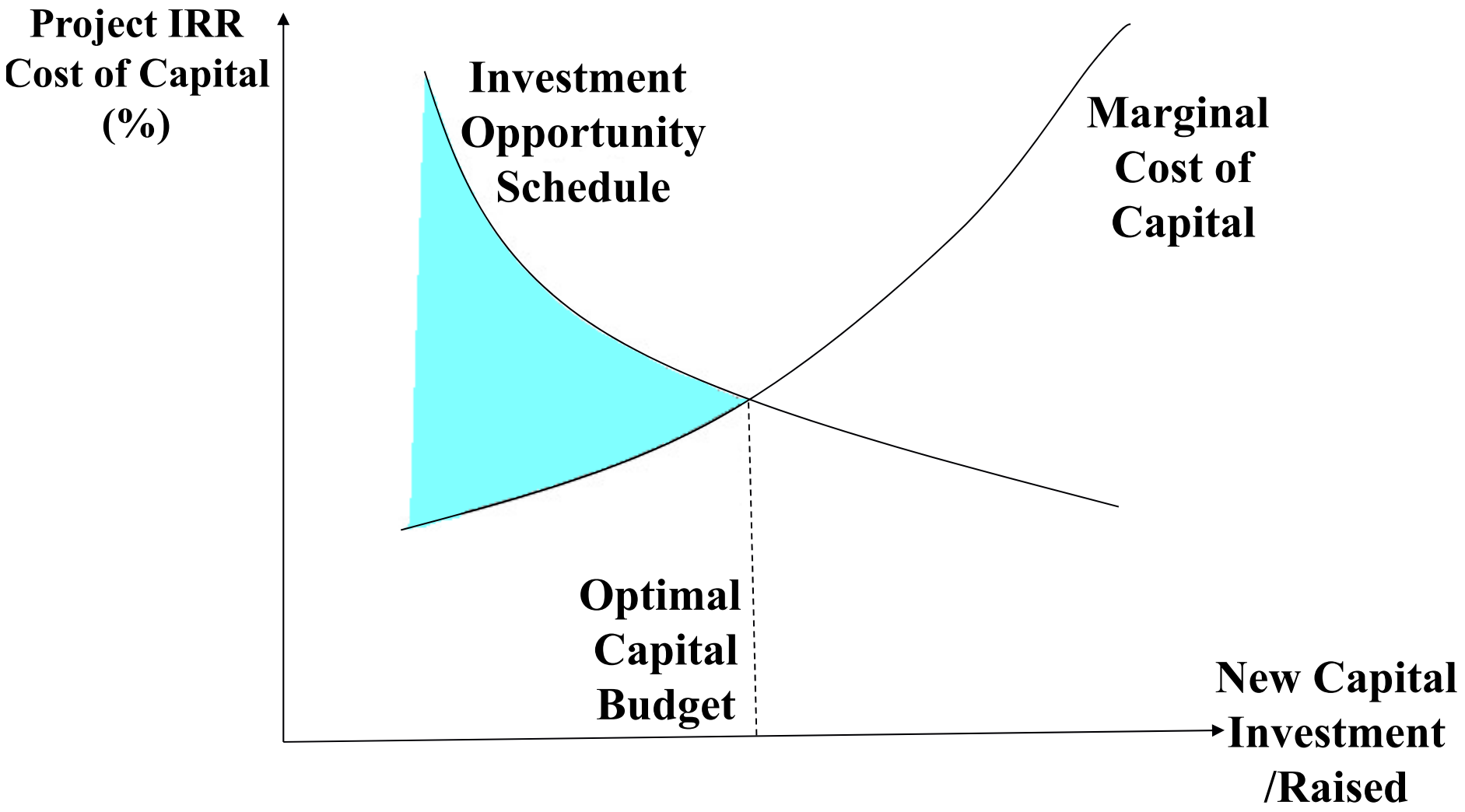
EXMAPLE:

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; We= 0.777 ,respectively

R.37.2 The Optimal Capital Budget



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.

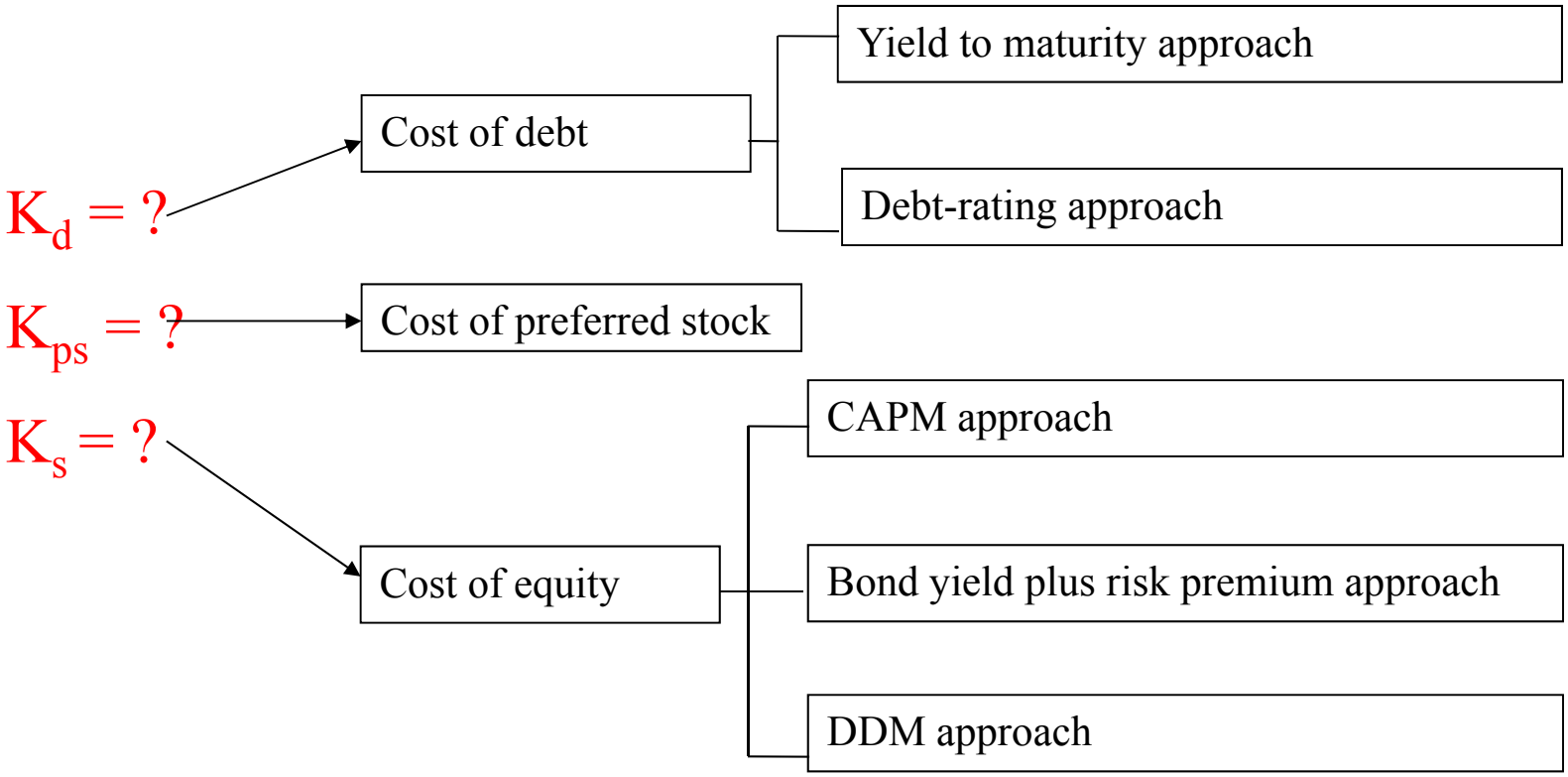
> If a project's risk >firm's risk , use a discount rate greater than WACC
>
> If a project's risk <firm's risk , use a discount rate lower than WACC

- An implicit assumption

  Capital structure of the firm will remain at the target capital structure over the life of the project.

R.37.3Cost of the different sources of capital

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



R.37.3 Cost of the different sources of capital

- **After-Tax Cost of Debt**

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

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

- Yield to maturity approach (annual return)
- Debt-rating approach

More Complex cases:

- Debt with floating-rate
- The company has never issued bond
- Debt with option
- Leases exist.
- How to figure out the debt cost?

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:

[2nd] [CLR TVM] → 1,030 [+/-] [PV] → 50 [PMT] → 1,000 [FV] →

10 [N] → [CPT] [I/Y] → [×] [2] [=]

So: I/Y = 4.62, and then, 4.62×2=9.24

The after-tax cost of debt is: rd = 9.24% X (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 AAA and the yield on a debt with same rating and 10 year's maturity is 10%.

Answer:

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

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-payout rate) (ROE)
  - Bond yield plus risk premium approach
    - ✓ k_s= bond yield + 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)

- Beta and cost of capital
  - Beta is affected by the systematic components of business and financial risks.
  - Business risk
    - ✓ Sales risk from the uncertainty of revenues
    - ✓ Operating risk from the company's operating cost structure.
  - Financial risk
    - ✓ Fixed cost from using debt and leases brings uncertainty to net income and net cash flows.
  - A project's beta is a measure of its systematic or market risk
  - Beta can be observed from firms in the same investment class as the proposed investment.

R.37.4 Capital Asset Pricing Model (CAPM)

- Beta and cost of capital 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

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

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

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

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

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

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:

CRP = (0.086-0.048)(0.32/0.22) = 0.038(0.32/0.22)

=0.0553, or 5.53%

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

$= 0.042+1.25(0.104-0.042+0.0553)$

$= 0.042+1.25*0.1173$

$= 0.1886$, or 18.86%

R.37.5 Dividend Discount Model Approach

- Gordon growth model
  - $P_0 = D_1 / (K_{ce}-g)$
  - Assumption
    - ✓ Kce>g
- $K_{ce} = D_1 / P_0 + g$
  - D_1 / P_0: dividend yield
  - g = (retention rate) (ROE) = (1-payout rate) (ROE)
  - Payout rate = D/EPS

R.37.5 Dividend Discount Model Approach

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%

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}= bond yield + risk premium

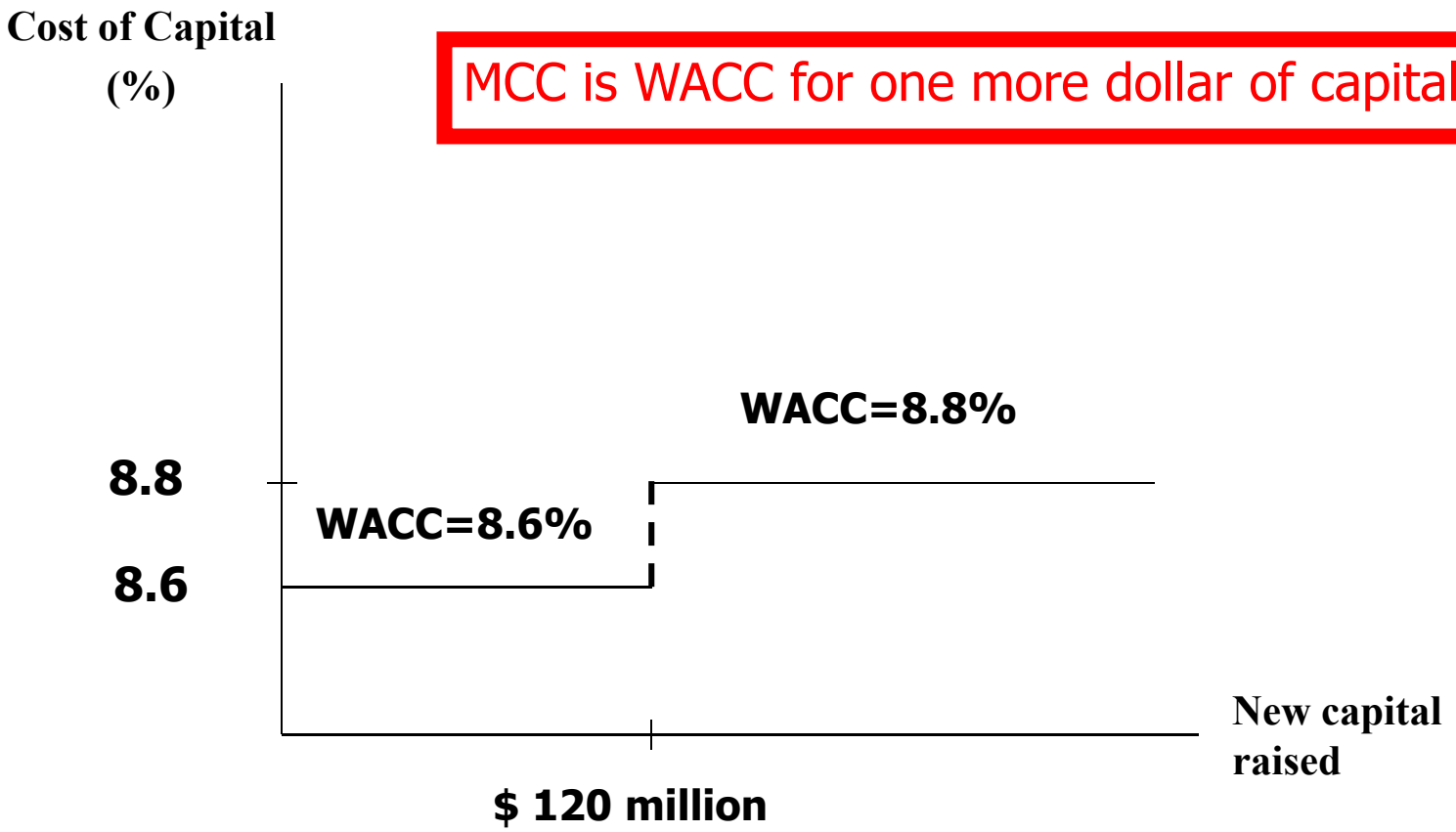
  Where

  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.37.7 Marginal Cost of Capital (MCC)



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

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:

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

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

Break point $_{\textbf{Debt>\$100million}}$ = \$100million/0.4 = \$250million
Break point $_{\textbf{Debt>\$200million}}$ = \$200million/0.4 = \$500million
Break point $_{\textbf{Equity>\$200million}}$ = \$200million/0.6 = \$333million
Break point $_{\textbf{Equity>\$400million}}$ = \$400million/0.6 = \$667million

R.37.7 Marginal Cost of Capital (MCC)

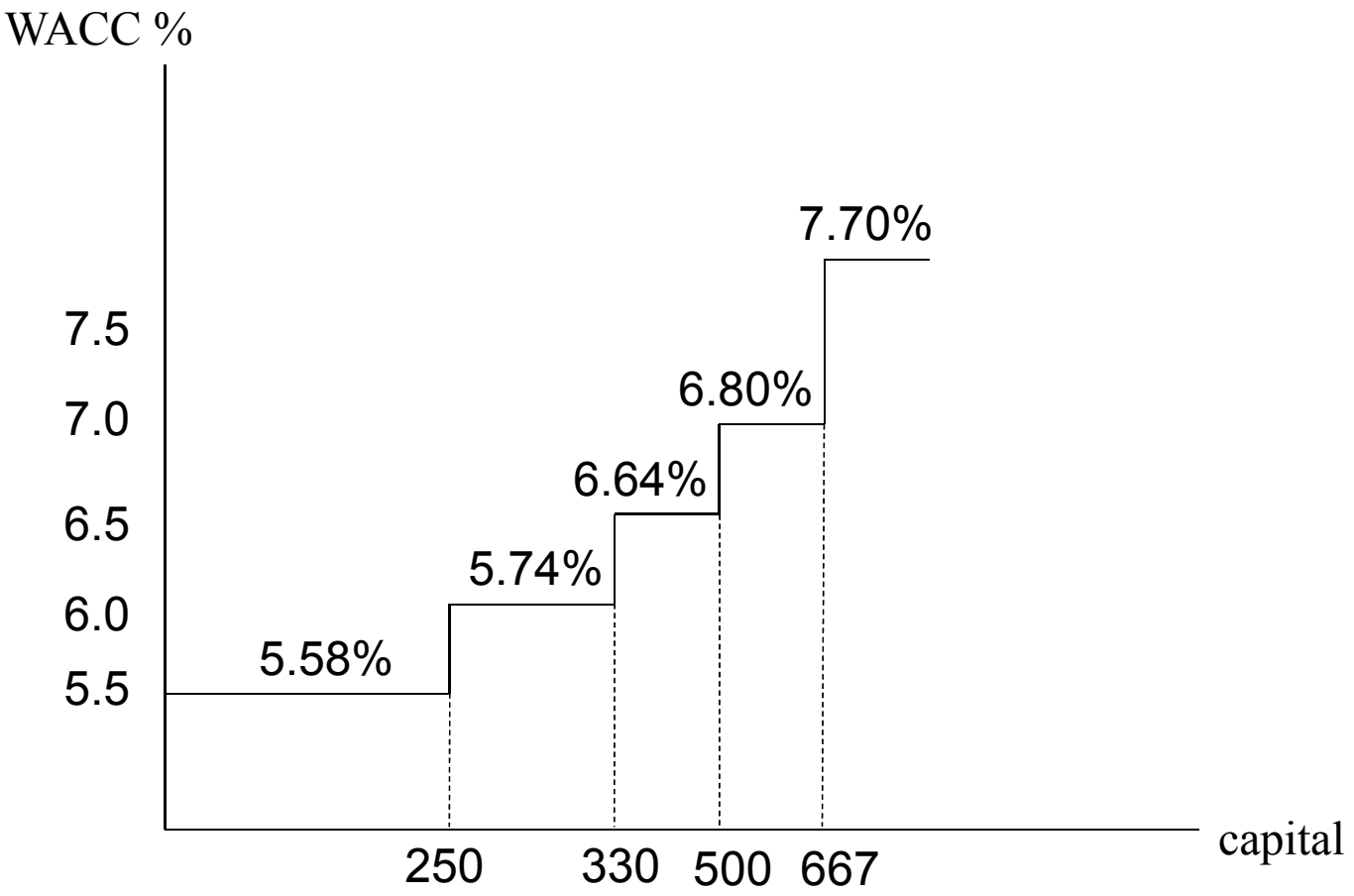
The table shows Omni Corporation's WACC for the different break points.

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%

R.37.7 Marginal Cost of Capital (MCC)

The figure shows Omni Corporation's MCC schedule



R.37.8 Cost of CS & PS—Flotation Cost

- Floatation 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:

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

- Method 2
  - In fact, floatation 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 : *correctly 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×$400,000=$200,000.

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

$$NPV = -\$400,000 - \$9,000 + \frac{\$150,000}{1.0739} + \frac{\$150,000}{1.0739^2} + \frac{\$150,000}{1.0739^3} + \frac{\$150,000}{1.0739^4}$$

$$=\$94640$$

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.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

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

elasticity

  - Equation:

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

  - ***Derivation?***

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

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

  - Equation:

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

  - 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

$$DTL = DOL \times DFL$$

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

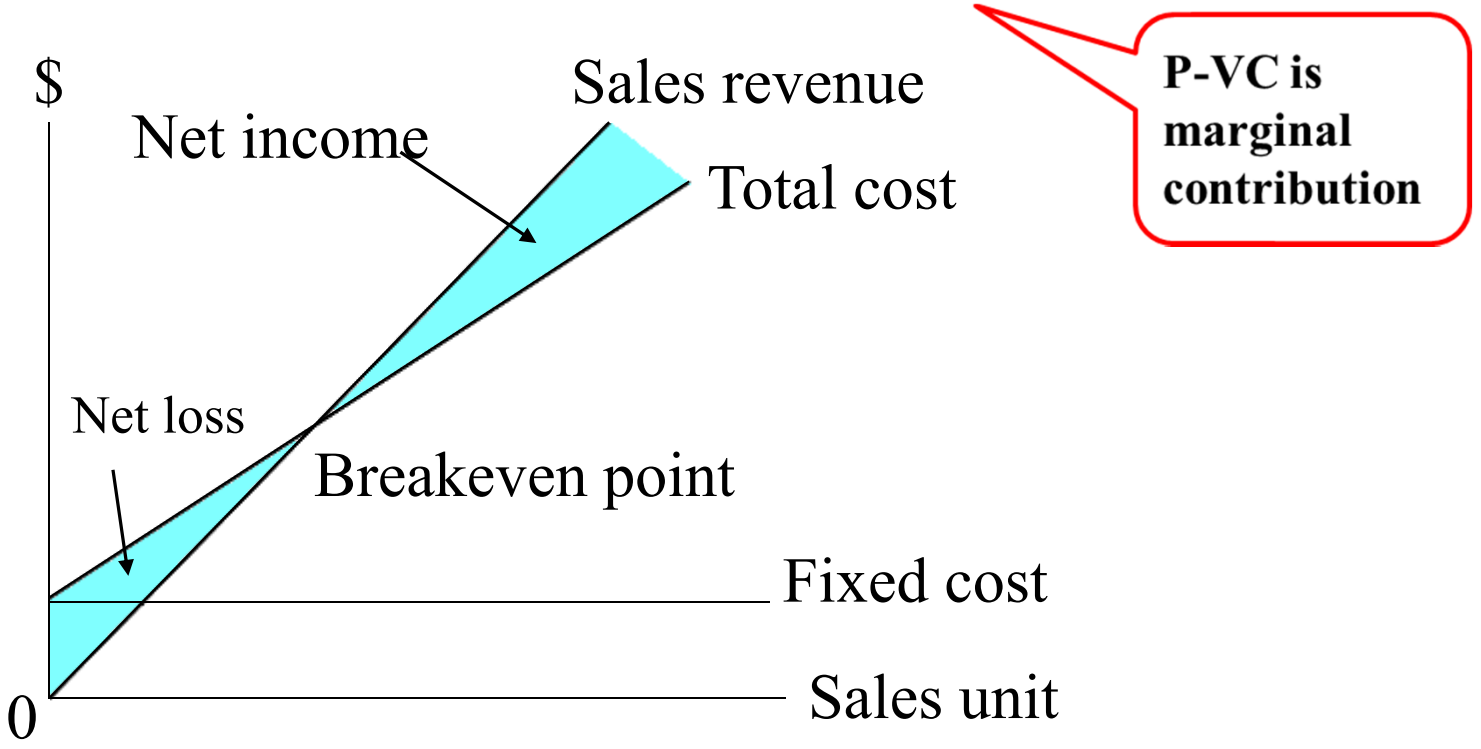
  - Equation:

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

R.38.5 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.

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



101% Contribution Breeds Professionalism

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

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

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

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

$$Q_{BE} = \frac{10{,}000 + 30{,}000}{4.00 - 3.00} = 40{,}000\ units \qquad Q_{OBE} = \frac{10{,}000}{4.00 - 3.00} = 10{,}000\ units$$

Summary of Readings & Framework

➢ Study Session 11

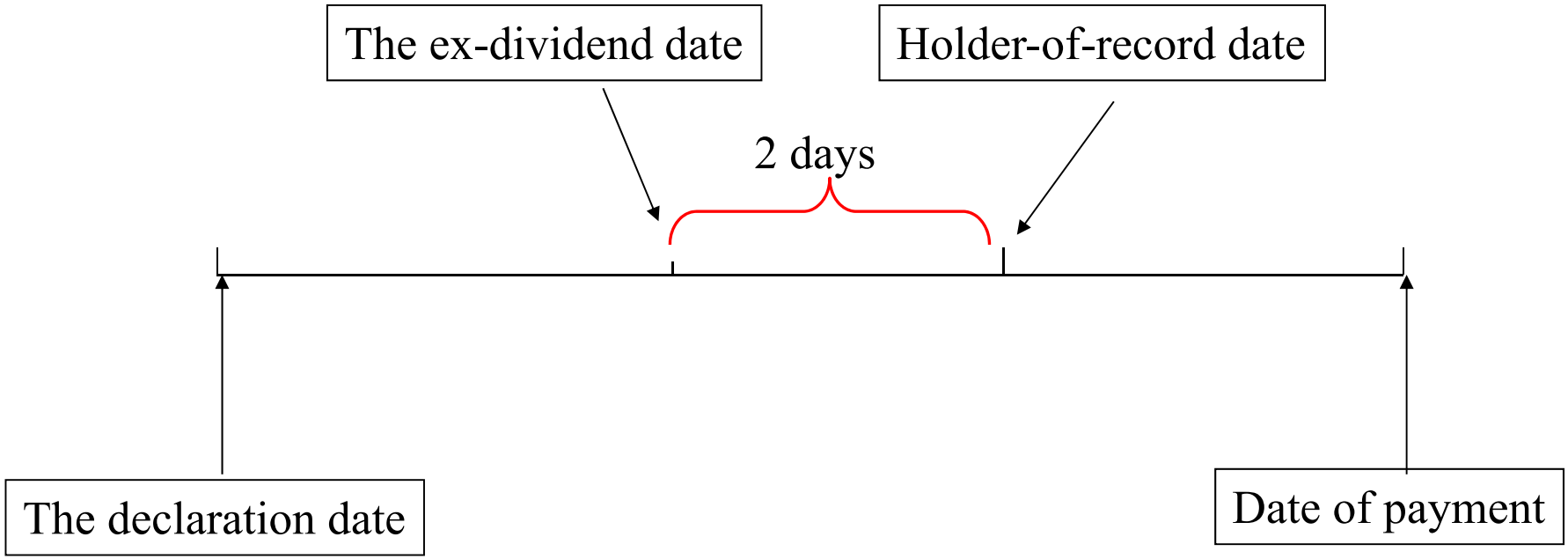
- **R36: Capital Budgeting**
- **R37: Cost of Capital**
- **R38: Measures of leverage ***
- **R39: Dividends and Share Repurchases: Basics ***
- **R40: Working Capital Management**
- **R41: The Corporate Governance of Listed Companies: A Manual for Investors**

R.39.1 Dividends

- Cash dividends
  - reduces both the value of the company's assets and the market value of equity.
  - Comes in the form of:
    - ✓ Regular dividends (a portion of profits on a consistent schedule)
    - ✓ Special dividends (a one-time cash payment)
    - ✓ 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.39.2 Dividend Payment Chronology

Dividend payment chronology



R.39.3 Share Repurchase Methods

- Three share repurchase methods:
  - Buy in the open market. （give the company the flexibility to choose the timing of the transaction)
  - Buy a fixed number of shares at a fixed price. (need to pay a premium)
  - Repurchase by direct negotiation. (need to pay a premium)
- Repurchase financed with company's excess cash
  - Reduce number of shares outstanding→ increase EPS
  - Reduce interest income and earnings→decrease EPS
  - Compare earning yield and after-tax yield of company fund
- Repurchase financed with debt
  - Reduce number of shares outstanding->increase EPS
  - Incur interest cost and reduce earnings->decrease EPS
  - Compare earning yield and after-tax cost of debt

R.39.4 Effects of Share Repurchase Methods EPS

- 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 or invariant
EPS	No change	Decrease	Decrease	Increase
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 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**

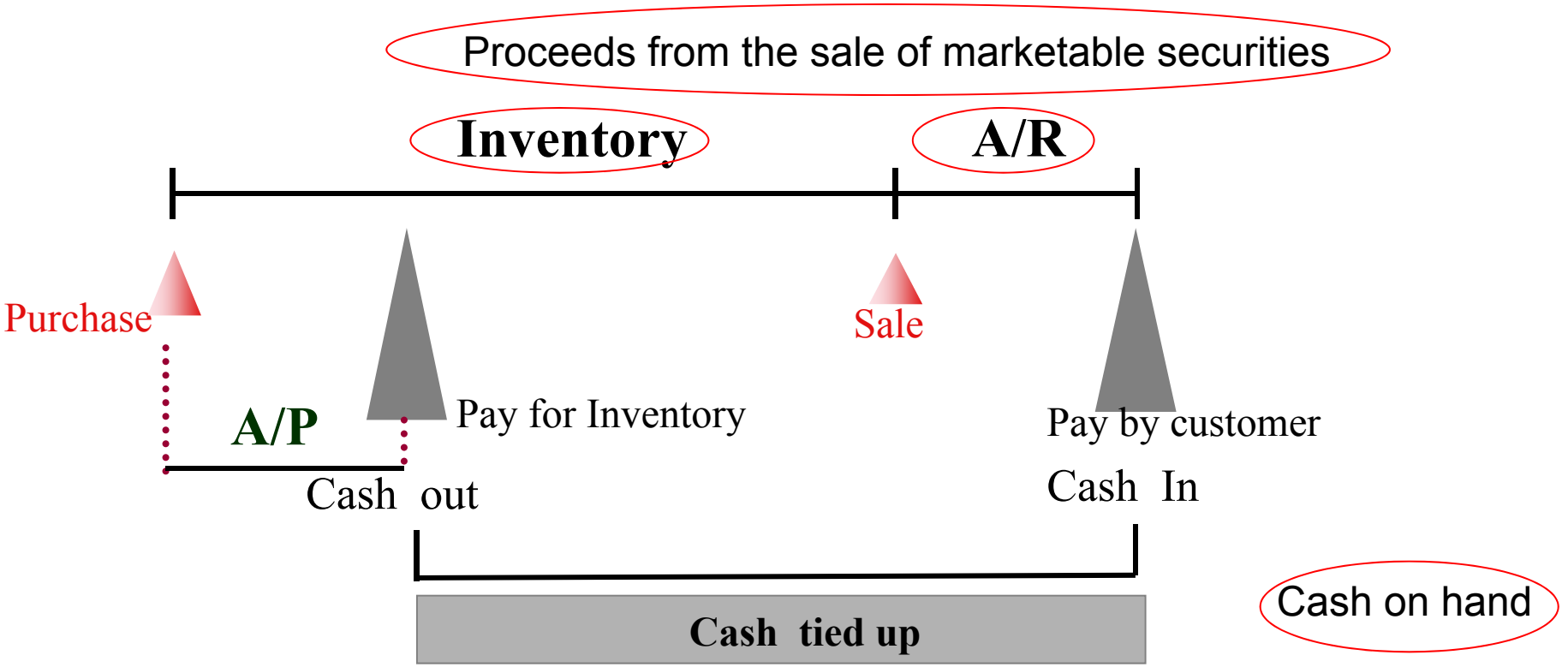
R.40.1 Liquidity measures

- **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

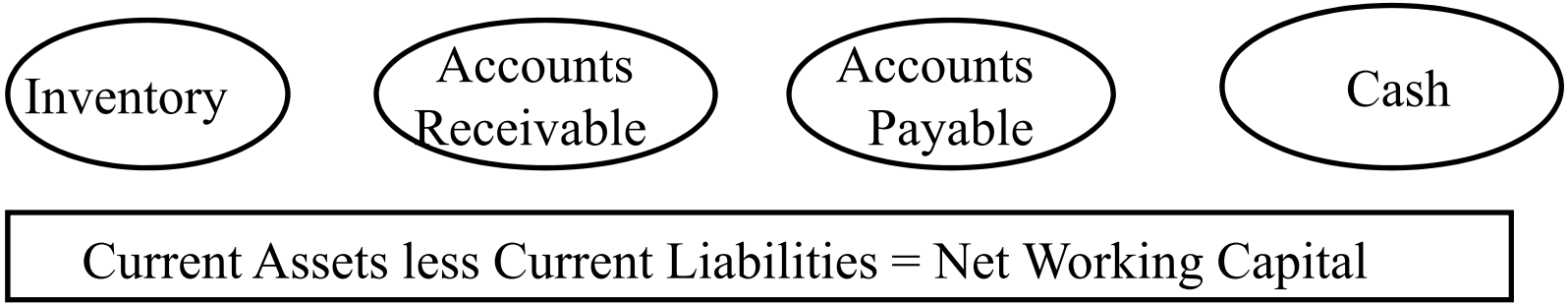
If lack liquidity ⟶ financial distress ⟶ extreme: insolvency or bankruptcy

- 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

- Drags and Pulls on Liquidity
  - Drags on liquidity-delay or reduce cash inflows.
    - ✓ Uncollected receivables
    - ✓ Obsolete inventory
    - ✓ Tight credit
  - Pulls on liquidity-accelerate cash outflows.
    - ✓ Making payment early
    - ✓ Reduced credit limits
    - ✓ Limits on short-term lines of credit
    - ✓ Low liquidity positions

R.40.1 Liquidity measures

Operating cycle: The average number of days that it takes to turn raw materials into cash proceeds forms

operating cycle=days of inventory + days of receivables

Cash conversion cycle

= days of inventory + days of receivables - 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.
- Term s 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 60days from the date of the invoice.

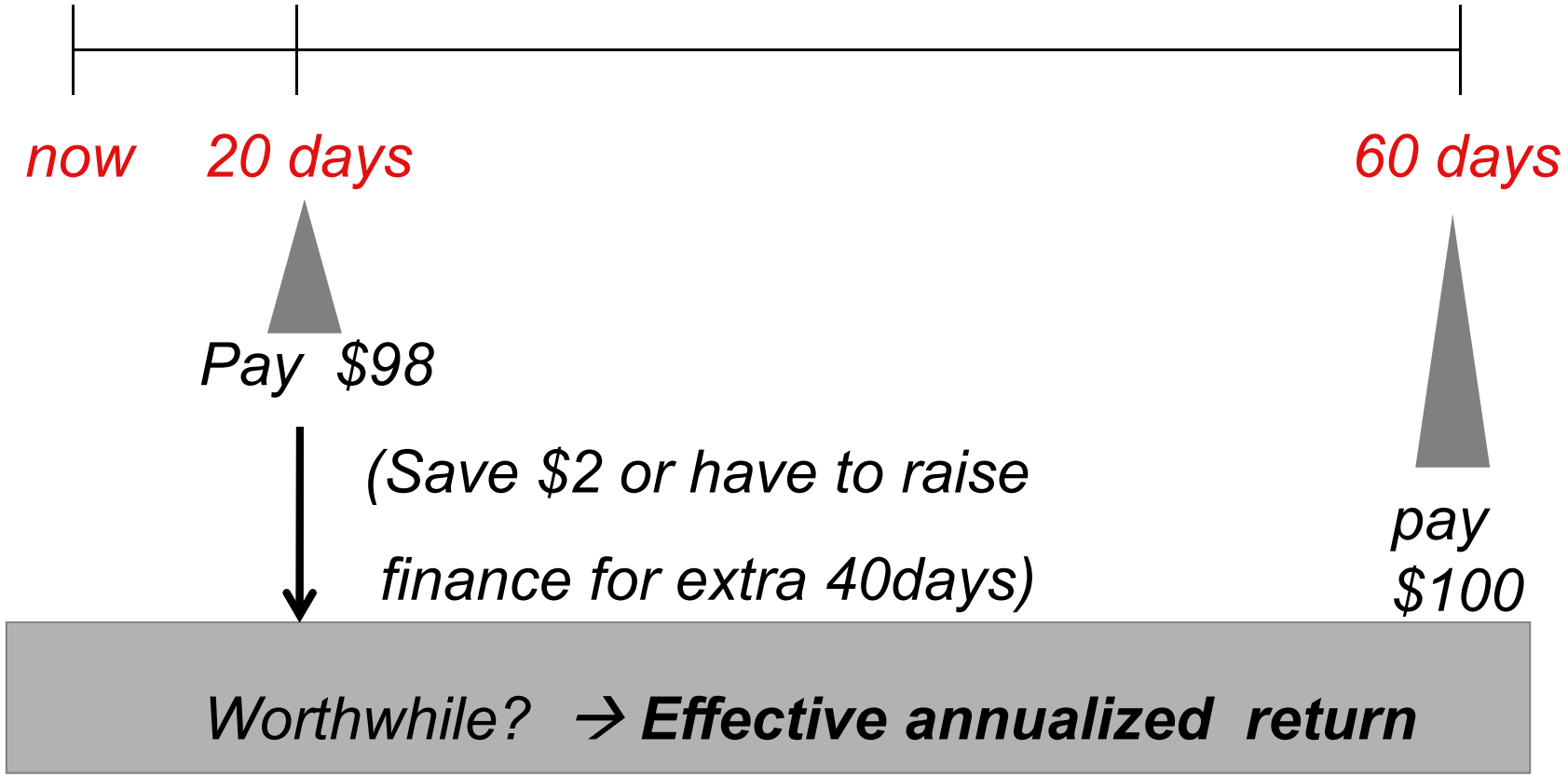
$$\text{cost of trade credit}=\left(1+\frac{\text{discount}}{1\text{-discount}}\right)^{365/t}-1$$

if cost of trade credit if paid on day 20 = $\left(1+\frac{2\%}{1-2\%}\right)^{365/(20-10)}-1$

R.40.4 Payable Management

EXAMPLE ***2/20 net 60***

On a purchase of $100…



R.40.4 Payable Management

- Answer

$$\text{cost of trade credit}=\left(1+\frac{\text{discount}}{\text{1-discount}}\right)^{\text{365/No. of days beyond discount period}}-1$$

$$\left(1+\frac{2\%}{1-2\%}\right)^{\frac{365}{40}}-1=EAR \qquad \text{or} \qquad 0.98\times(1+EAR)^{\frac{40}{365}}=1$$

EAR = 20.40%

VS

The cost of debt of the customer

R.40.5 Cash Management

- The purpose of managing a firm's daily cash position is to make sure there is sufficient cash ,but to avoid keeping excess cash balances.
  - U.S. Treasury bills
  - Short-term federal agency securities
  - Bank certificates of deposit
  - Banker's acceptances
  - Time deposits
  - Repurchase agreements
  - Commercial paper
  - Money market mutual funds
  - Adjustable-rate preferred stock

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:

$$\text{discount basis yield}=\left(\frac{FV - P}{FV}\right)\left(\frac{360}{t}\right)$$

$$=\%\ \text{discount}\times\left(\frac{360}{t}\right)$$

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 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 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	•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
•The system of *internal controls, processes, and procedures* by which individual Companies are managed
•Provides a framework that *defines the rights, roles and responsibilities* 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 form 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

➢ 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 bring mergers, 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

- **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**
  - ✓ 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 Sponsored 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 form 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

It’s not the end but just beginning.

Always believe that good things are possible, and remember that mistakes can be lessons that lead to discoveries. Take your fear and transform it into trust; learn to rise above anxiety and doubt. Turn your "worry hours" into "productive hours". Take the energy that you have wasted and direct it toward every worthwhile effort that you can be involved in. You will see beautiful things happen when you allow yourself to experience the joys of life. You will find happiness when you adopt positive thinking into your daily routine and make it an important part of your world.

请坚信，美好的降临并非不可能，失误也许是成功的前奏。将惶恐化作信任，学会超越担忧和疑虑。让“诚惶诚恐”的时光变得“富有成效”。不要挥霍浪费精力，将它投到有意义的事情中去。当你下意识品尝生命的欢愉时，美好就会出现。当你积极地看待生活，并以此作为你的日常准则时，你就会找到快乐的真谛。

与我互动

- 如果你在学习过程中有任何问题需要我的帮助，或者有什么想要告诉我的，请扫描以下二维码给我留言，我会在第一时间回复你！

微信号：tang-zhen-yu

金程学习互动平台

金程官方微信

金程CFA微信

CFA考友社区微信

金程全年招聘：全/兼培训讲师

应聘简历可直接投递至：academy@gfedu.net

或致电 021-55221491 詹老师

101% Contribution Breeds Professionalism