CORPORATE FINANCIAL MANAGEMENT

PART IV CAPITAL STRUCTURE AND DIVIDEND POLICY

(chapter 12-14)

对外经济贸易大学
UNIVERSITY OF INTERNATIONAL BUSINESS AND ECONOMICS

Chapter 12

CAPITAL STRUCTURE CONCEPTS

Introduction

1. Concepts
2. Capital structure Theory

1. Concepts

- Capital Structure Vs. Financial Structure

Capital Structure	Financial Structure
Permanent s-t debt	Total current liabilities
L-T debt	L-T debt
P/S	P/S
C/S	C/S

Continued…

- Capital Structure Terminology
  - Optimal capital structure
    - Minimizes a firm's weighted cost of capital
    - Maximizes the value of the firm
  - Target capital structure
    - Capital structure at which the firm plans to operate
  - Debt capacity
    - Amount of debt in the firm's optimal capital structure

Continued…

- Capital Structure Assumptions
  - Firm's investment policy is held constant
  - Capital structure changes the distribution of the firm's EBIT among the firm's claimants

    Debtholders Preferred stockholders Common stockholders
  - Constant investment policy leaving the debt capacity of the firm unchanged

2. Capital Structure Theory

- 问题的提出：资本结构——企业面临的财务决策，研究资本结构（债务/资产）与资本成本（企业价值）之间的关系

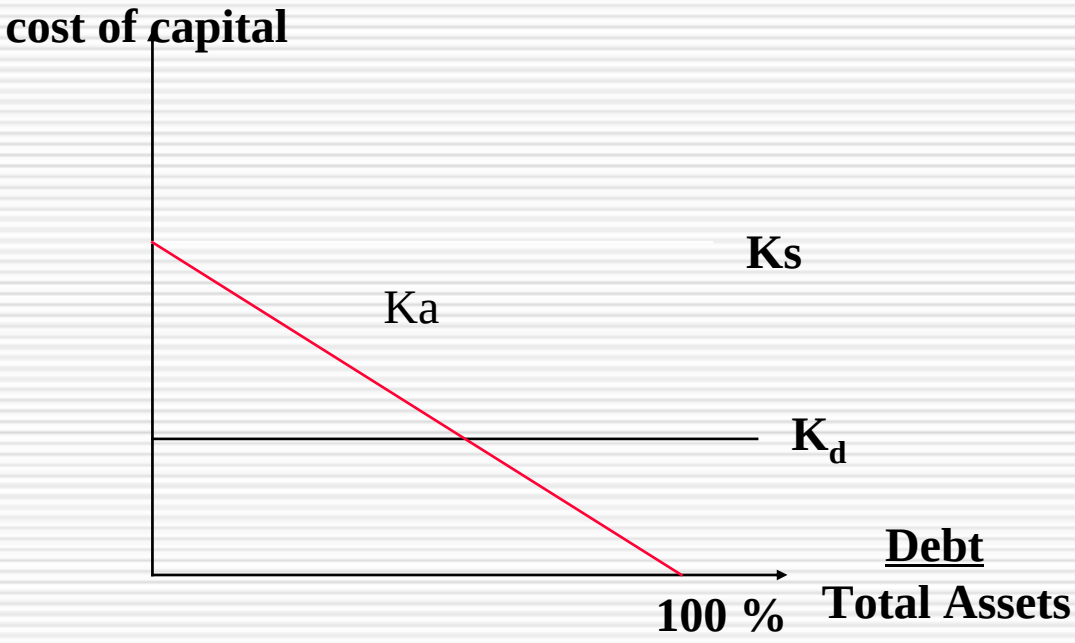
课堂案例分析讨论

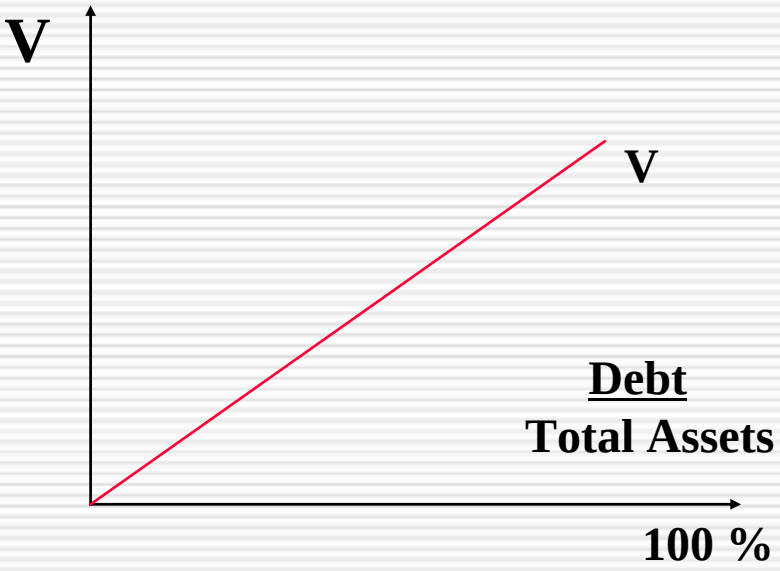
9： 美国航空和皇冠公司

Continued

- 理论指导实践：资本结构——一个颇有争议的论题
  - Theoretical Perspectives on Capital Structure and Firm Valuation （早期资本结构理论，1958年前）
    - Net Income Theory
    - Net Operating Income Theory
    - Tradition Theory

Net Income Theory (NI)

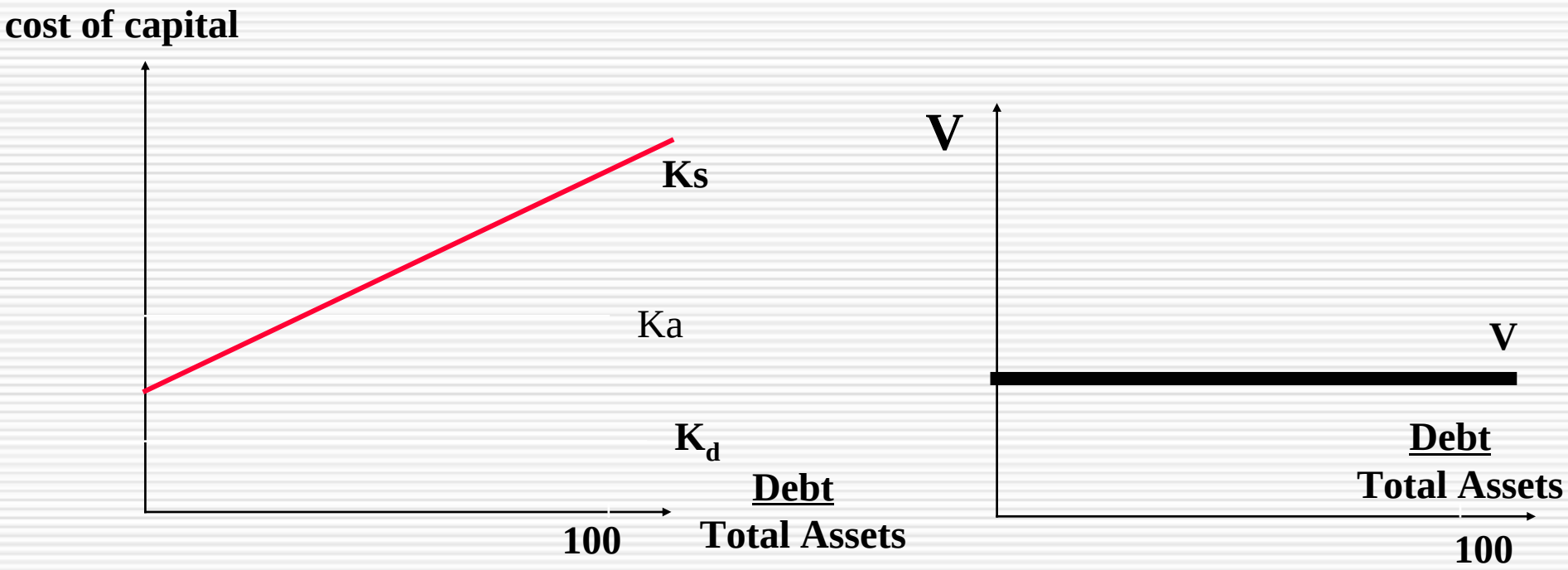




该图表明NI理论揭示了这种关系：

当企业的负债由零趋于100%时，其资本总成本持续下降，企业价值持续上升。所以，若NI的假设是正确的，为使企业价值最大化，企业应使用几乎100%的债务。

Net Operating Income Theory (NOI)



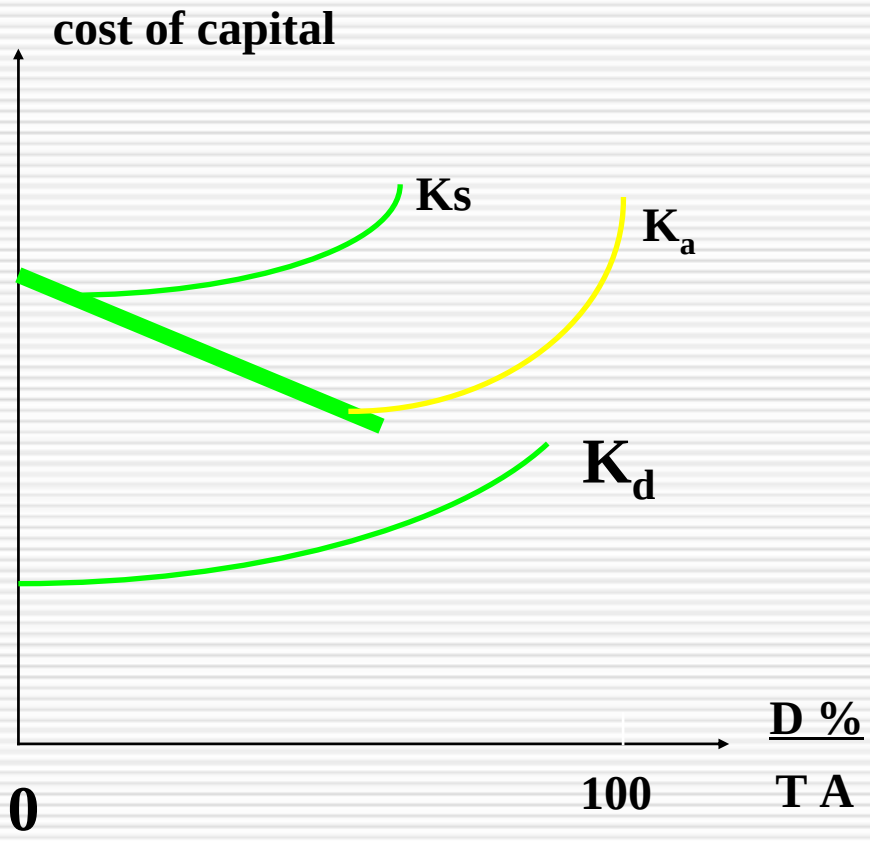
该图表明了NOI的假设及结果：

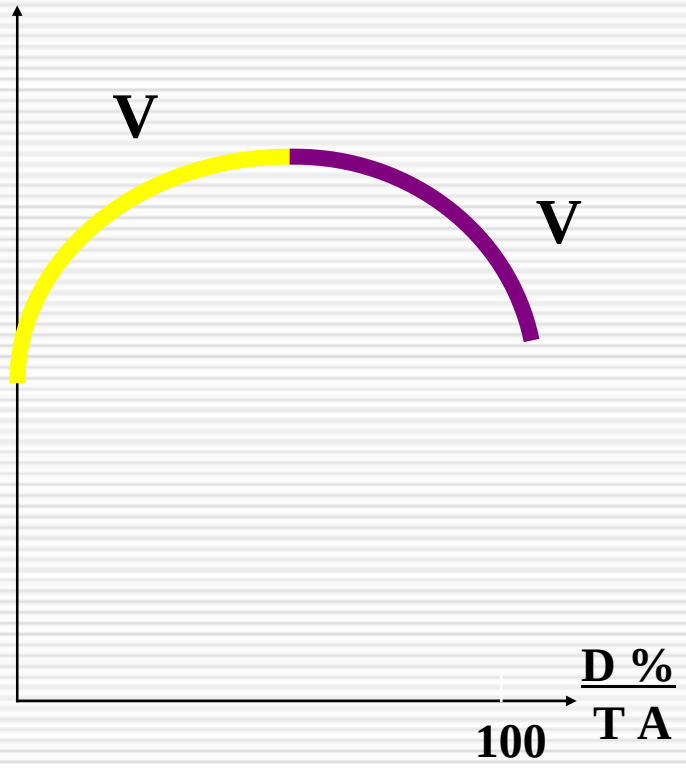
1）不管企业负债多少，固定的Ka 使企业价值也成为固定值。

2）固定的Ka 和Kd意味着负债杠杆会使股东承担的风险增大，则Ks增大。

若NOI的假设是正确的，那么资本结构决策就无关紧要。

Tradition Theory





Continued

- Modigliani and Miller's Analysis (现代资本结构理论，1958年后)

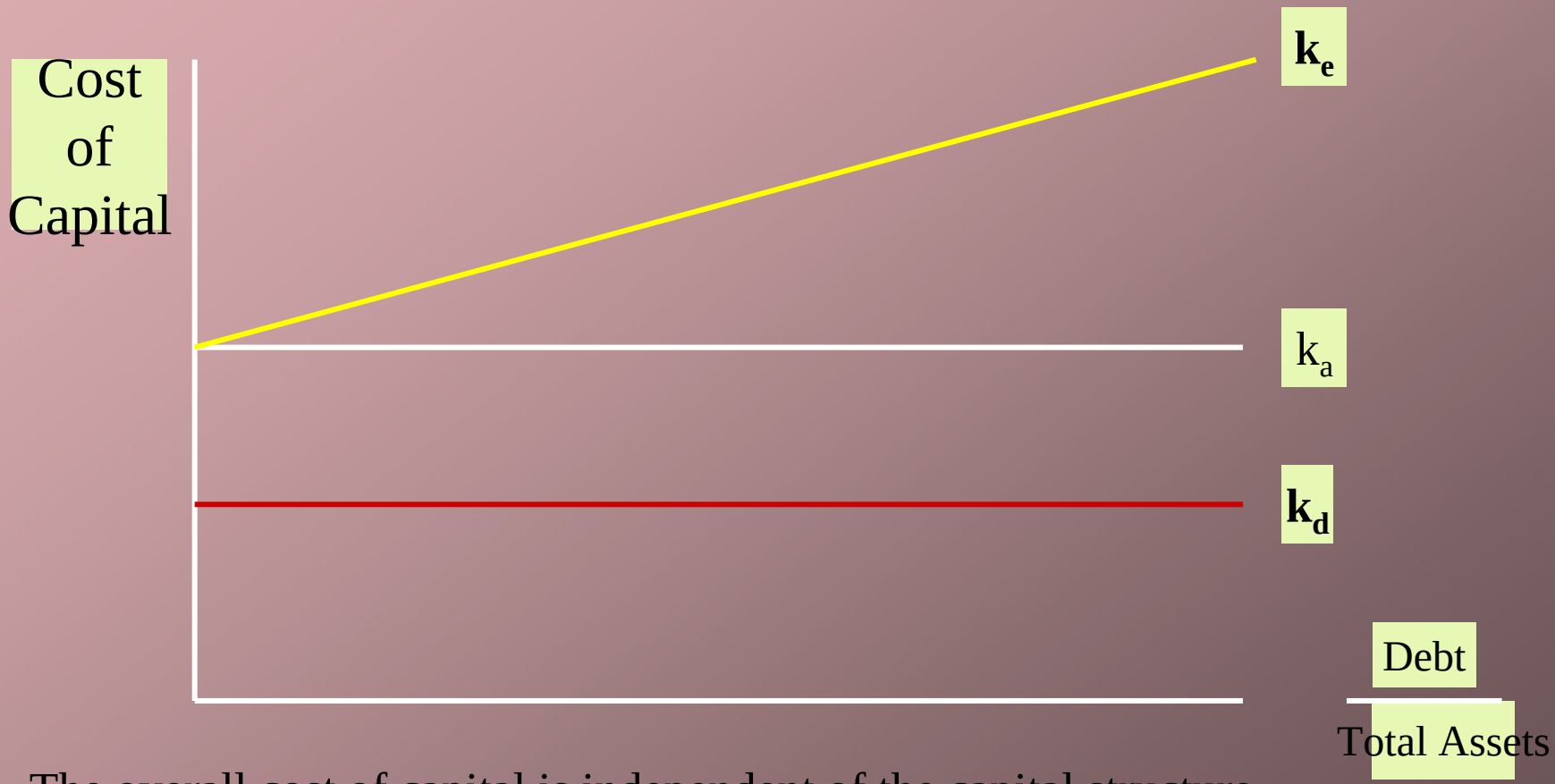
（I）MM without a Corporate Income Tax

- Assumptions:
  - ✓No taxes
  - ✓No transaction costs
  - ✓Individuals and corporations borrow at same rate
- Results:
  - ✓Proposition I: $V_L=V_U(=EBIT/k_a=EBIT/k_{eU})$
  - ✓Proposition II: $k_{eL}=k_{eU}+B/E(k_{eU}-k_d)$

Continued

- Intuition:
  - ✓ Proposition I: Through homemade leverage, Individuals can either duplicate or undo the effects of corporate leverage.
  - ✓ Proposition II: The cost of equity rises with leverage, because the risk to equity rises with the leverage.
  - ✓ Cost of equity (k_{eL}) increases to exactly offset the benefits of more debt financing (k_d), leaving the cost of capital (k_a) constant see model 1

Model 1



The overall cost of capital is independent of the capital structure

The firm's value is independent of the capital structure

Continued

- MM Arbitrage Proof
  - ✓ $VU = D/ k_{eU}$
  - ✓ $V L = D/ k_{eL} + I/ k_d$

D paid to L's stockholders are reduced by the amount of I paid on the debt

k_e is higher for L because of the additional leverage-induced risk

The values of U and L are identical due to arbitrage

（II） MM with a Corporate Income Tax

- Assumptions:
  - ✓Corporations are taxed at the rate T, on earnings after interest
  - ✓No transaction costs
  - ✓Individuals and corporations borrow at same rate
- Results:
  - ✓Proposition I: $V_L = V_U + BT$(for a firm with perpetual debt)($V_U = EBIT(1-T)/k_{eU}$ $V_L = EBIT(1-T)/k_a$)
  - ✓Proposition II: $k_{eL} = k_{eU} + B/E(k_{eU} - k_d)(1-T)$

    $(WACC = k_a = k_e * E/V + k_d(1-T) * B/V)$

Continued

- Intuition:
  - ✓Proposition I: Since corporations can deduct interest payments but not dividend payments, corporate leverage lowers tax payments.
  - ✓Proposition II: The cost of equity rises with leverage, because the risk to equity rises with the leverage.

Continued

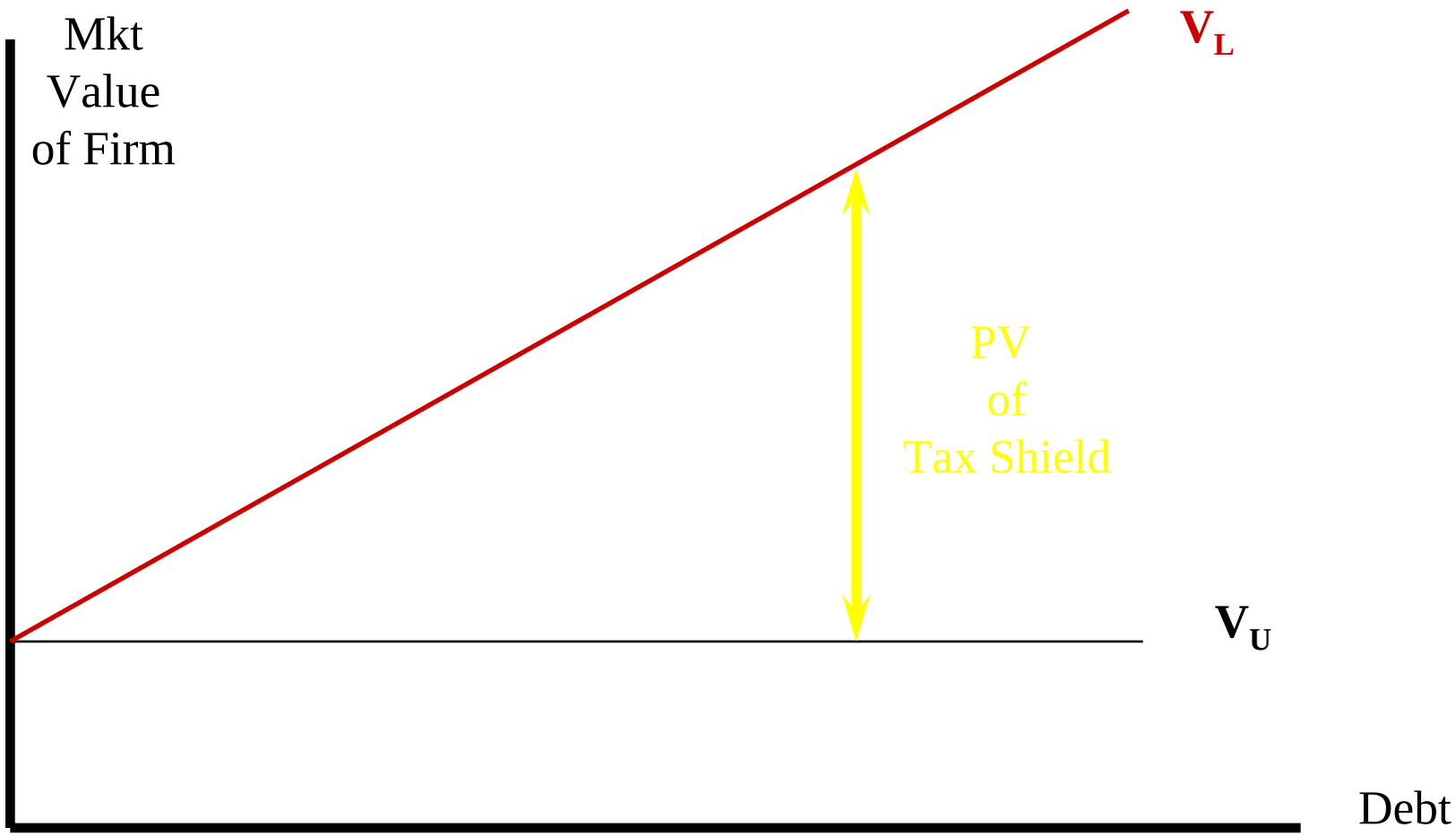
- MM Arbitrage Proof
  - ✓ $VU = D/k_e$
  - ✓ $VL = D/k_e + I/k_d$

D distributed to U's stockholders are reduced by the taxes paid on operating income and the value of U drops

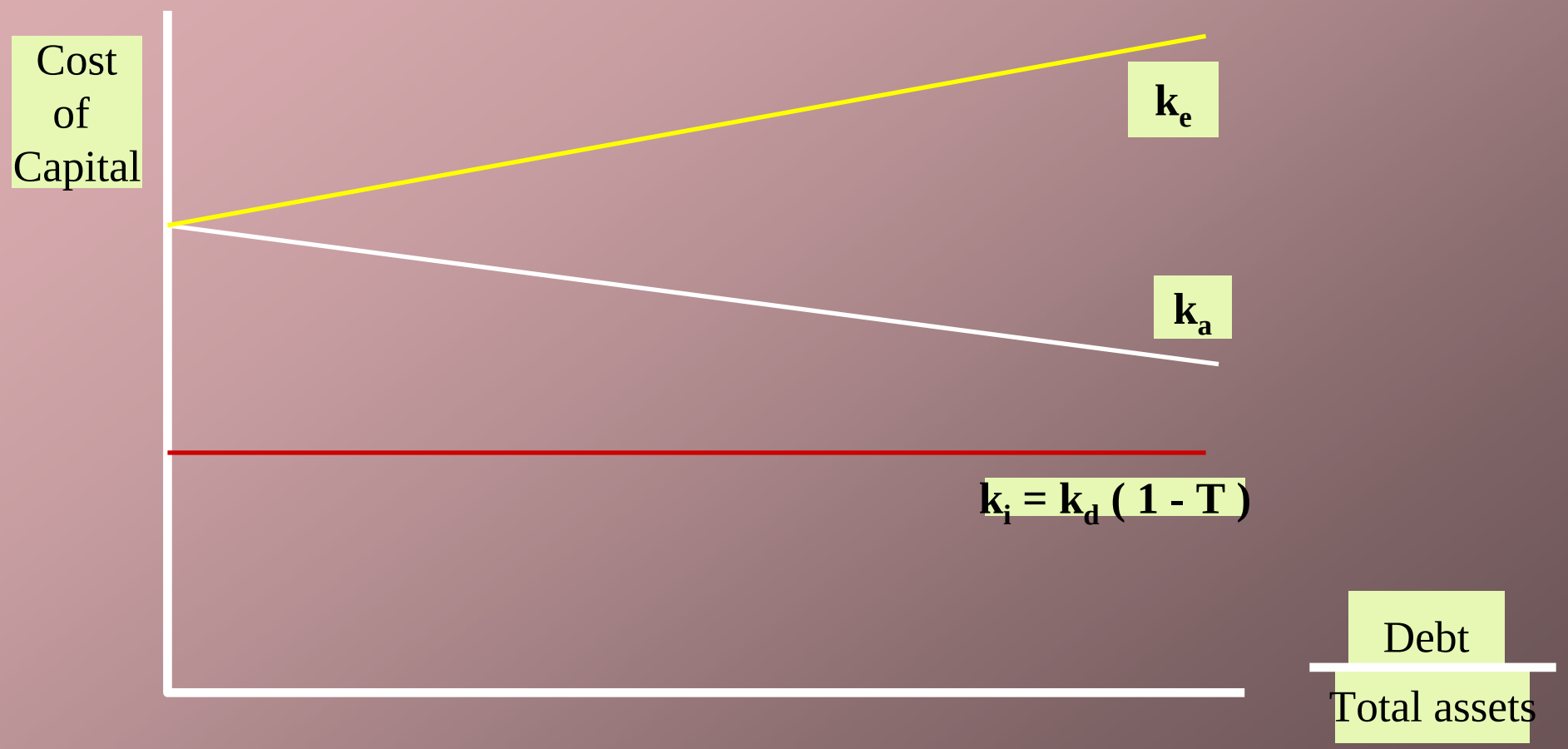
Since I is tax deductible, L realizes a tax savings

PV of tax shield = value of debt (B) X tax rate (T)

VL = VU + Value of Tax Shield



Model 2



The cost of capital decreases with the amount of debt

Firm maximizes its value by choosing a capital structure that is all debt

Case1:

A 公司是一家经济增长缓慢、提供居民饮用水的自来水企业，该公司的经营情况如下：

·公司目前无负债，其资本全部为股本；

· 预期EBIT = $4,000,000，估计未来不会增长，因此，公司的增长率为零；

· 公司的税率为40%；

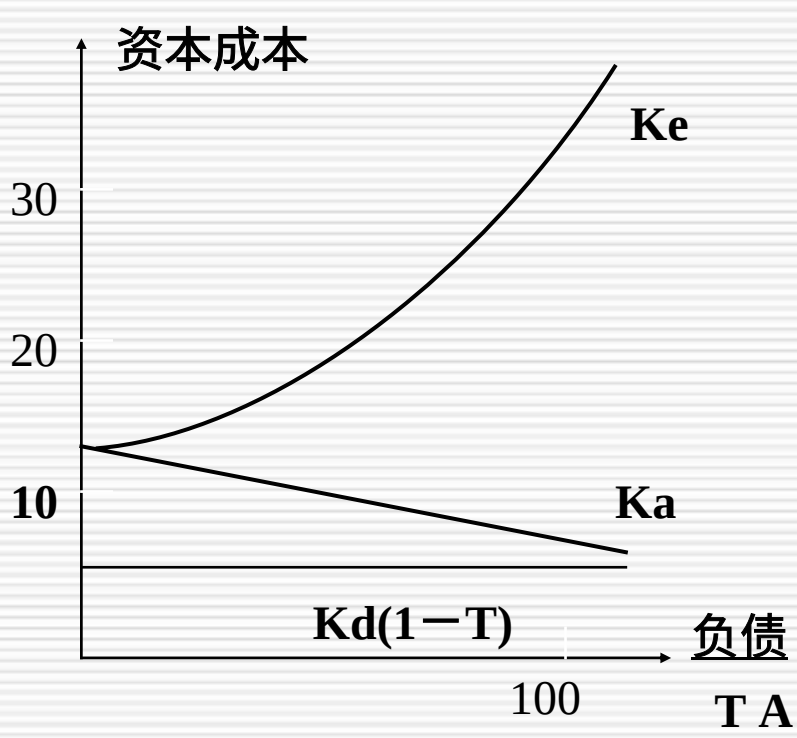
· 公司把其收入全部作为股利发放；

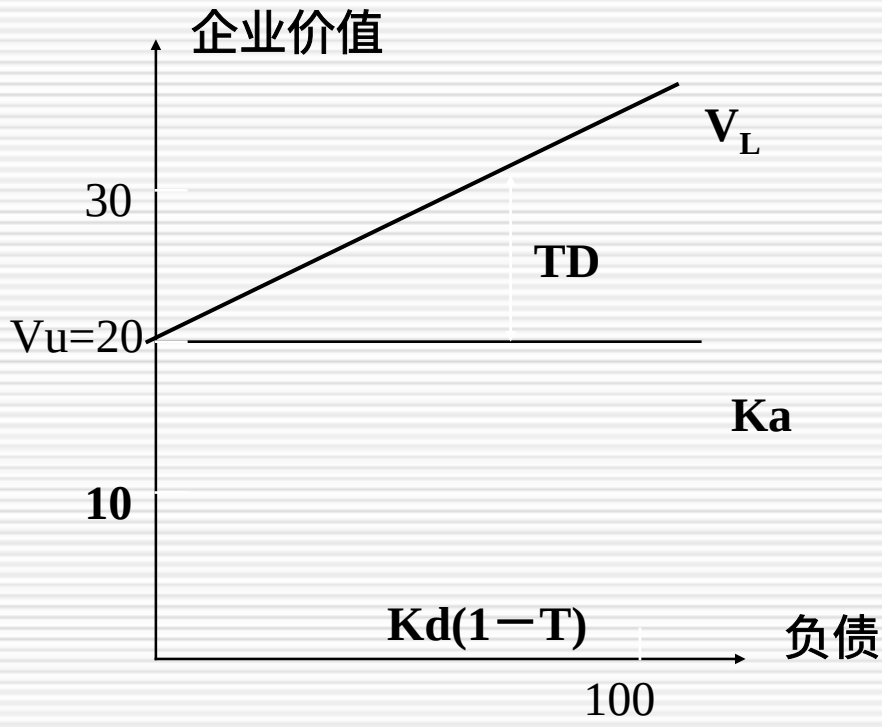
· 如果公司打算举债，可借到利率为8%的资金，并且此利率 不随负债量而变化；

· 公司资产的风险和EBIT 的风险表现为无负债条件下的股 东要求收益率12% ，

如果公司举债$1,000万元，确定负债条件下的Ka 和 Ke_L。

分析如图所示：





Case2:

A is just about to commence operations as an international trading company. The firm expects to earn $1.2 million earnings before taxes. It is known that the capitalization rate for an all-equity firm in this business is 10%,that is, k_{eU}=10%. Further, A can borrow at a rate of 6%. Assume that the tax rate is zero and the MM assumptions apply.

(1) According to MM, what will be the value of A if it uses no debt? If it uses $4 million debt?

(2) What are the values of the WACC and k_{eL} at debt levels of $4 million?

(3) Assume the initial facts of the problem (k_d=6%, EBIT=$1.2 million, k_{eU}=10%), but now assume that a 40% percent tax rate exists. Find the new market values for A with zero debt and with $4 million debt. And Find WACC and k_{eL} at debt levels of $4 million?

Continued

Solution:

(1) $V_L=V_U=EBIT/k_{eU}=1.2m/10\%=12m$

(2) $E=V-B=12m-4m=8m$

$k_{eL}=k_{eU}+B/E(k_{eU}-k_d)=10\%+(10\%-6\%)*4m/8m$

$=12\%$

WACC=10%

(3) $V_U=EBIT*(1-T)/k_{eU}=1.2*(1-40\%0/10\%=7.2m$

$V_L=V_U+BT=7.2m+4m*40\%=8.8m$

$k_{eL}=k_{eU}+B/E*(1-40\%)(k_{eU}-k_d)=10\%+(10\%-6\%)*(1-40\%)*4m/4.8m=12\%$

$WACC=k_e*E/V+k_d(1-T)*B/V=12\%*4.8/8.8+6\%*(1-T)*4/8.8=8.18\%$

（II） Capital Structure with a Corporate Income Tax, Financial Distress Costs, and Agency Costs

- B & A costs increase with the amount of leverage, eventually offset the marginal benefits from the value of the tax shield
- Market value of levered firm

= Market value of unlevered firm

+ PV of tax shield

- PV of bankruptcy costs

- PV of agency costs See optimal debt ratio slide

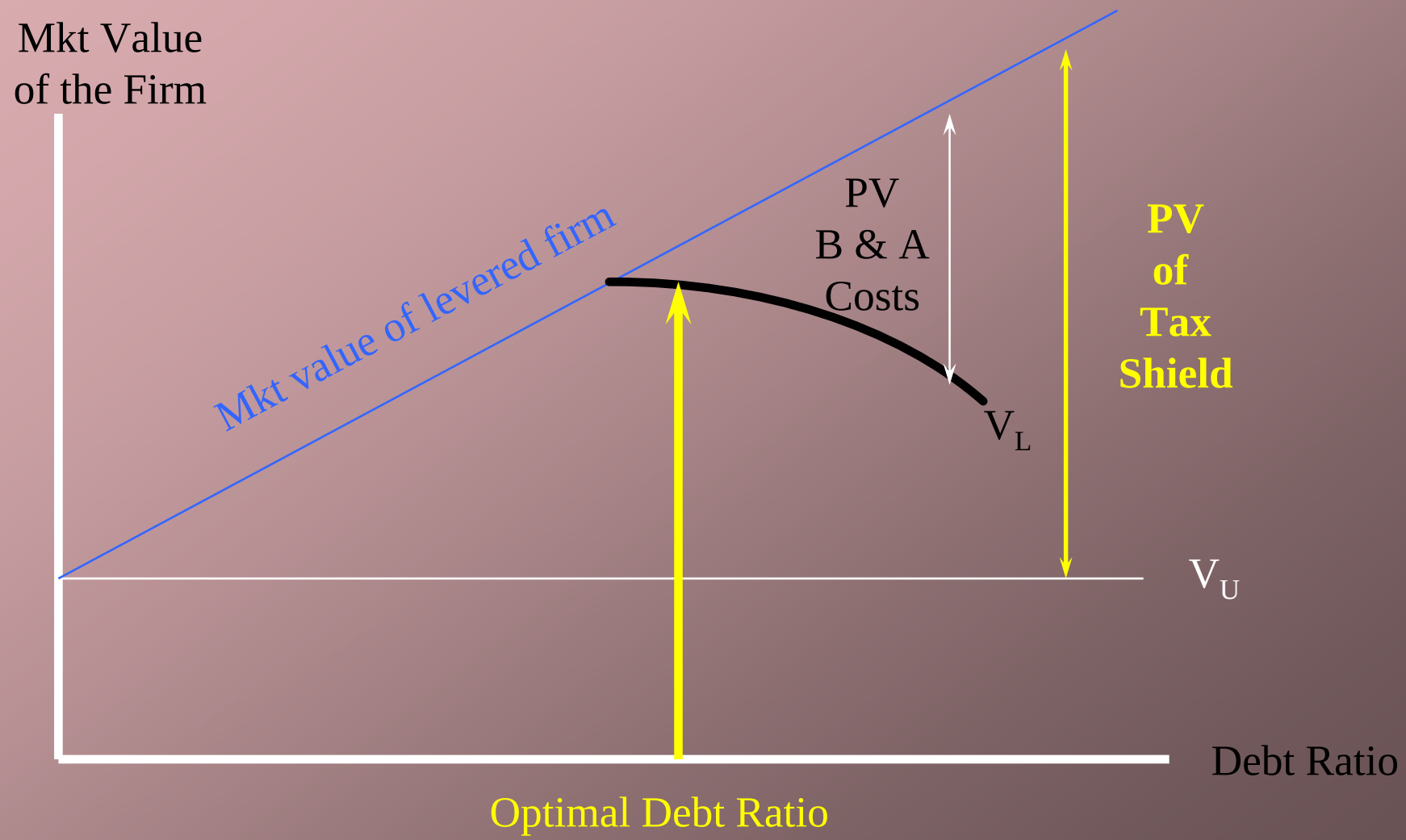
Continued

- Bankruptcy Costs :
  - ✓Lenders may demand higher interest rates
  - ✓Lenders may decline to lend at all
  - ✓Customers may shift their business to other firms
  - ✓Distress incurs extra accounting & legal costs
  - ✓If forced to liquidate, assets may have to be sold for less than market value

Continued

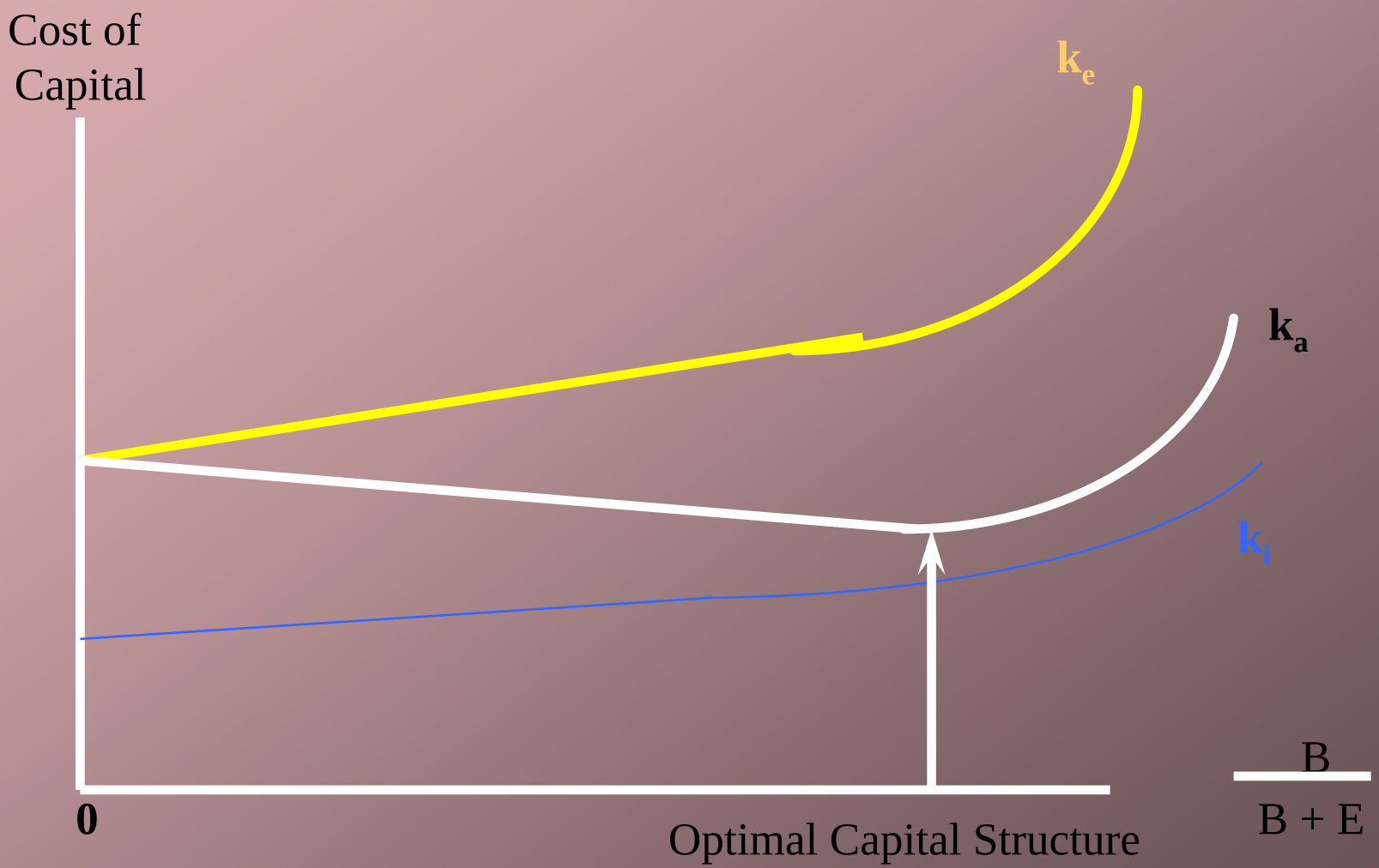
- Agency Costs(Stockholder-Bondholder Relationship) :
  - ✓Investing in projects with high risk and high returns can shift wealth from bondholders to stockholders
  - ✓Stockholders may forgo some profitable investments in the presence of debt
  - ✓Stockholders might issue high quantities of new debt and diminish the protection afforded to earlier bondholders
  - ✓Bondholders will shift monitoring and bonding costs back to the stockholders by charging higher interest rates

Optimal Debt Ratio



Model 3

Least Cost Capital Structure is Optimal



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- Other Impacts on the Optimal Capital Structure
  - Business risk
  - Personal tax effects—Could reverse some tax benefits
  - Industry effects—Profitability and bankruptcy patterns
  - Signaling effects—Asymmetric information
  - Managerial preferences—Pecking order theory

…continued

- Business risk: Variabilility or uncertainty of a firm's operating income (EBIT)
- Factors Influencing a Firm's Business Risk:
  - Variability of sales volume
  - Variability of selling price
  - Variability of cost
  - Amount of market power
  - Extent of product diversification
  - Firm's growth rate
  - Degree of operating leverage (DOL)
  - Both systematic and unsystematic risk
- Financial risk:Variability of EPS and increased probability of bankruptcy using fixed-cost source of funds
- Factors indicating financial risk:
  - Debt-to asset ratio
  - Debt-to-equity ratio
  - Fixed charge coverage ratio
  - DFL
  - Probability distribution of profits
  - Times interest earned ratio
  - EBIT-EPS analysis

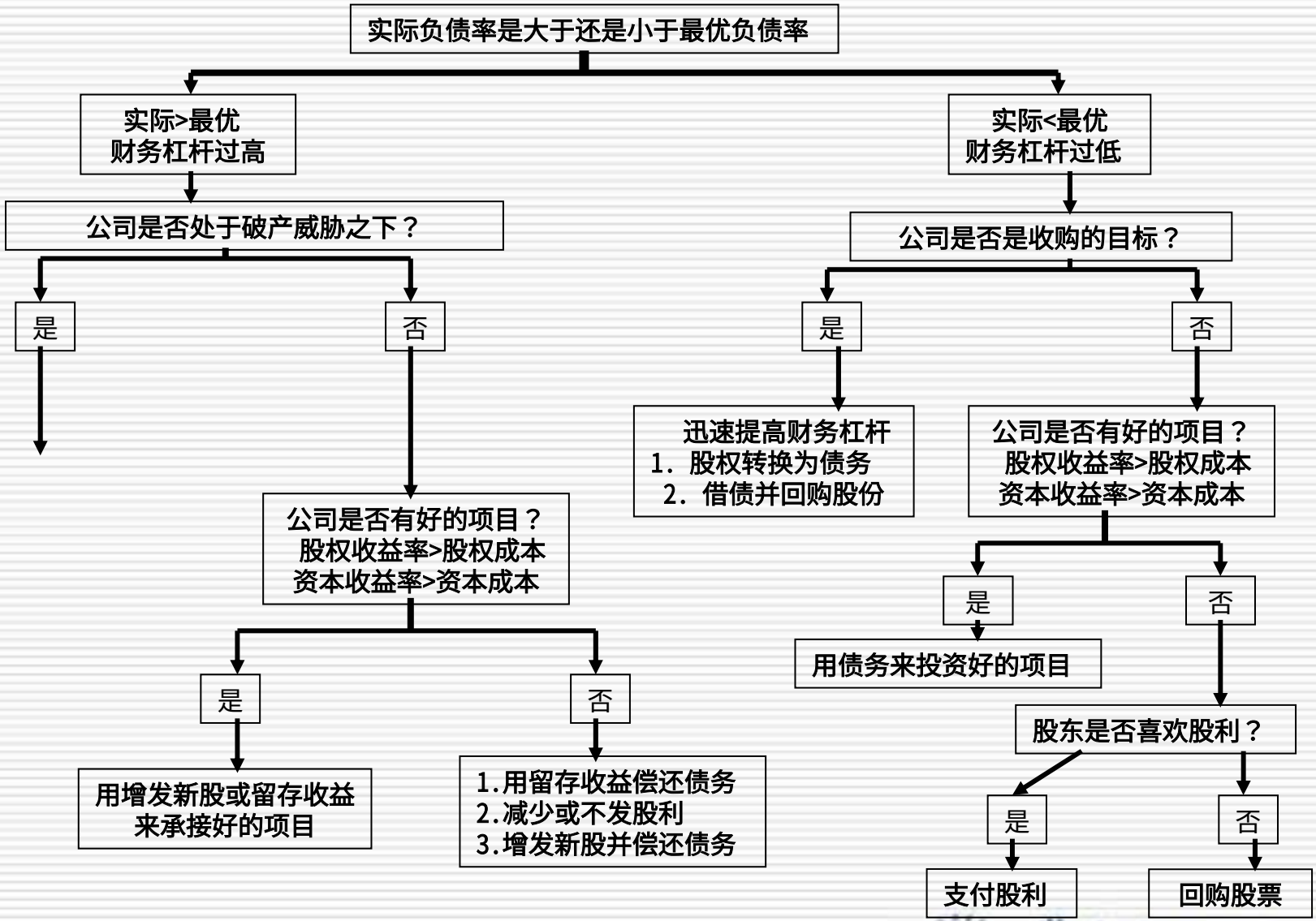
课堂案例分析讨论

10：有关国际资本结构的国际比较

课堂案例分析讨论

11：宁向股东伸手　不要银行贷款

资本结构的分析框架



Chapter 13

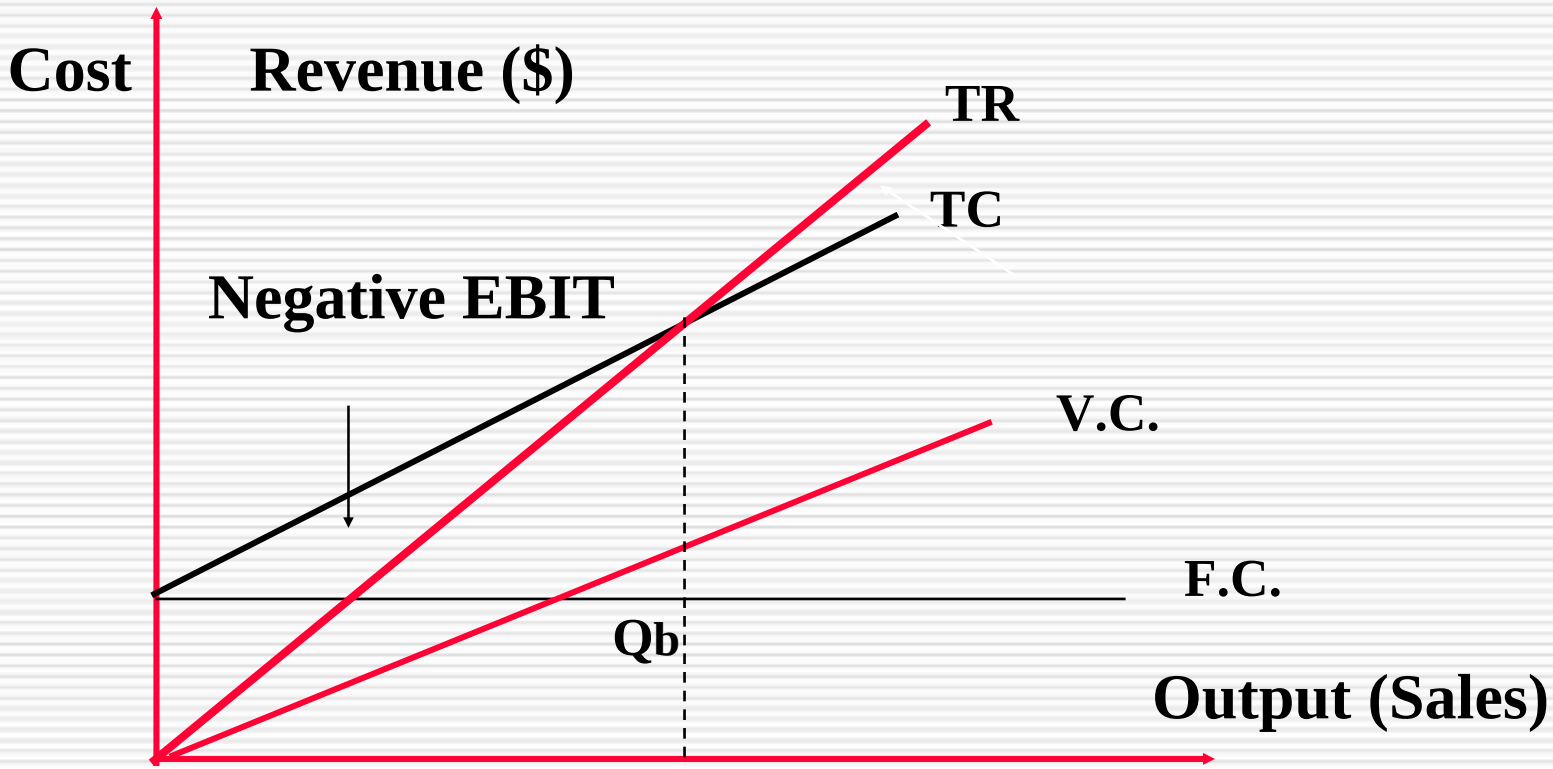
Capital Structure Management in Practice

Introduction

- Breakeven Analysis
- DOL / DFL / DCL
- EBIT-EPS Analysis

1. Breakeven Analysis
盈亏临界点分析（本-量-利分析）

- Graphic Method 临界点的图解法



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- **Algebraic Method 代数方法**

  因为总收益：TR = P×Q　总成本：TC = F + *v*×Q

  营业利润 EBIT = TR －TC

  在盈亏临界点EBIT = 0 , $\Rightarrow$ TR = TC $\Rightarrow$ P Q_b =F + *v* Q_b

  整理得 $Q_b = \frac{F}{P - v}$ 或 $(= \frac{F + \text{目标利润}}{P - v})$ (数量)

  用货币表示的盈亏临界点 $Cash = \frac{F}{1 - (v/P)}$

2. DOL / DFL / DCL

- Basic concepts
  - Operating Leverage: Results from fixed operating costs (Costs of sales/General & administrative costs) such that a change in sales revenue is magnified into a relative large change in EBIT
  - Financial Leverage: Results from fixed capital costs (Interest charges/Preferred dividends/Income taxes) such that a change in EBIT is magnified into a relative large change in EPS

Continued…

operating leverage

Sales

Operating costs ---------- Variable operating costs

Contribution margin

Fixed operating costs

EBIT

financial leverage

Interest ---------- Fixed capital costs

EBT

Income taxes ---------- Variable capital costs

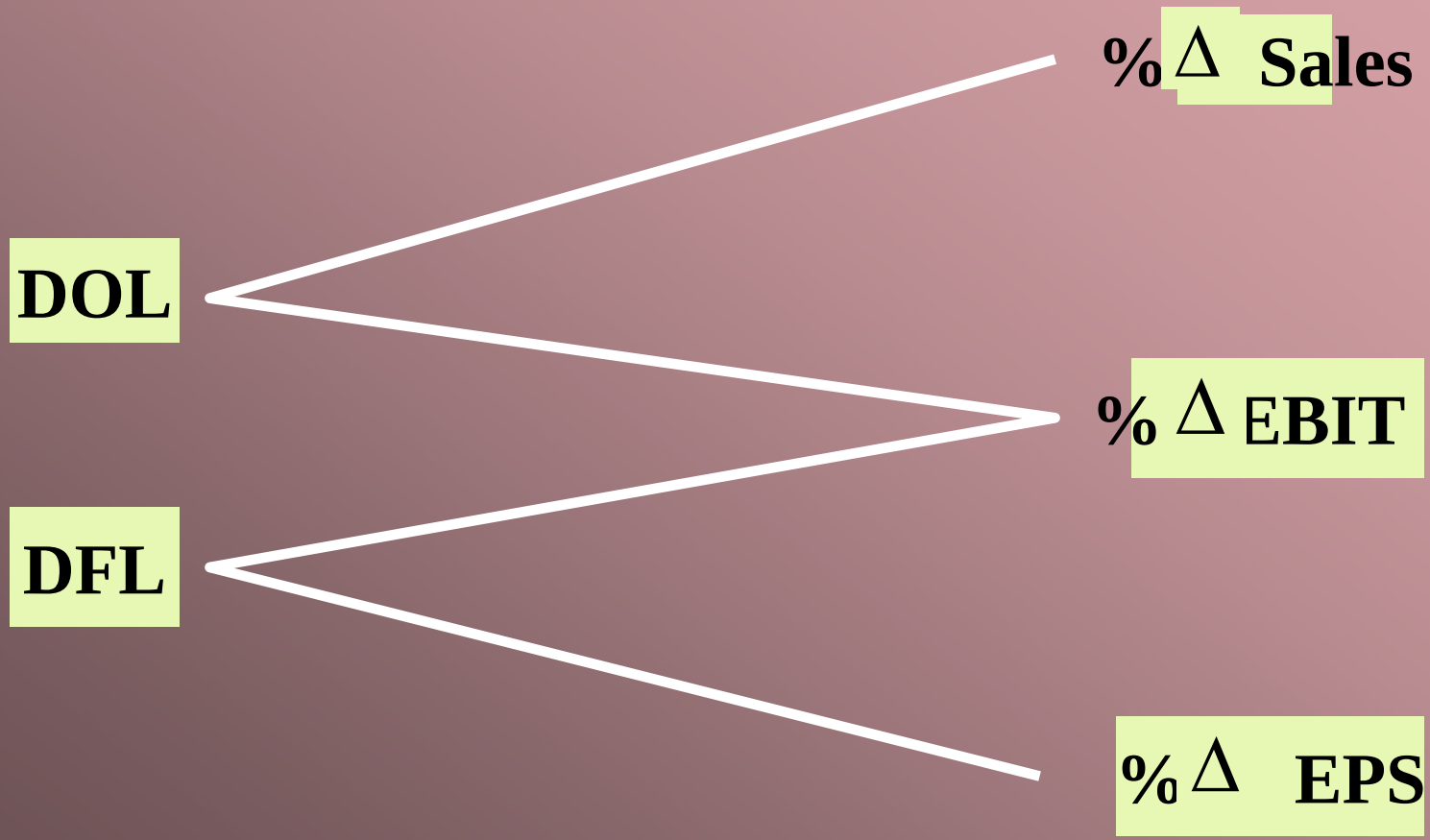
EAT

P/S dividends ---------- Fixed capital costs

Earnings available to C/S

EPS

Leverage Model



Continued…

- Measurement of operating and financial leverage
  - Degree of operating leverage(DOL)
    - Definition:Measured as a % change in EBIT resulting from a given % change in sales
    - Equation:

$$\text{DOL at X} = \frac{\text{Sales - Variable Costs}}{\text{EBIT}}$$

Original values

Sales - VC - FC = EBIT

Continued…

derivation

$$DOL = \frac{\Delta EBIT / EBIT}{\Delta S / S}$$

$$= \frac{\Delta Q (p - v)}{EBIT} \times \frac{pQ}{p \Delta Q}$$

$$= \frac{(p - v)Q}{EBIT}$$

$$= \frac{S - VC}{EBIT}$$

Continued…

case3：

若 ΔEBIT/EBIT =36% Δsales/sales = 20%

DOL = 36% /20% = 1.80

经营杠杆程度1.8 表明，利税前收益（营业利润）的增长是销售量（额）增长的1.8倍。也就是说，如销售量（额）增长20%，利税前收益（营业利润）将增长36%。应记住：经营杠杆程度的影响是两方面的。因此，它还表明：营业利润下降是销售量下降的1.8倍，即销售量下降20%，营业利润下降36%。

若DOL=负数，则表明销售量没有达到保本点时，销售量的增加，使得亏损减少。

Case4:

Q =60,000 units，P=$10 *v*=$1 F= $240,000

$$DOL = \frac{60{,}000(10-1)}{60{,}000(10-1)-240{,}000} = \frac{540{,}000}{300{,}000} = 1.8$$

当 F=0，DOL =1 说明在不存在固定成本的条件下，销售量与营业利润同比例变动；

当 F ≠0, 固定成本的改变将导致DOL的变动。因此解释为：在60,000单位销售水平上，公司的经营杠杆程度等于1.8，即销售量增长1%，EBIT增长1.8%，反之，销售量下降1%，EBIT下降1.8%。

课堂案例分析讨论

12：经营风险导致的财务风险—铱星的陨落

Continued…

- Degree of financial leverage(DFL)
  - Definition: Measured as the % change in EPS resulting from a given % change in EBIT
  - Equation:

$$\text{DFL at X} = \frac{\text{EBIT}}{\text{EBIT} - \text{I} - D_p / (1 - \text{T})}$$

P/S dividends on a before tax basis

derivation

$$EPS = [(EBIT - I)(1-T) - D_P] / N$$

$$DFL = \frac{\Delta EPS / EPS}{\Delta EBIT / EBIT}$$

$$= \frac{\Delta EBIT (1-T) / N}{[(EBIT - I)(1-T) - D_P] / N} \cdot \frac{EBIT}{\Delta EBIT}$$

$$= \frac{EBIT}{EBIT - I - D_P /(1-T)}$$

Case5：

DFL = 1.27　　EBIT = $2,000,000

DFL为1.27表明营业利润从$2,000,000水平开始，每股收益的变动是营业利润变动的1.27倍。即如选择债务融资，营业利润每增加1%，每股收益将增加1.27%，反之，营业利润下降1%，每股收益将下降1.27%。

如果I = 0，　Dp = 0，则表明不管营业利润多少，财务杠杆程度总是等于1，即每股收益随营业利润同比例变动；

如果I ≠ 0，　Dp≠0，则表明企业选择债务和优先股融资，财务杠杆程度大于1，即债务或优先股的运用，使得收益以更大的幅度增加。由于债务或优先股造成财务杠杆大于1，实际的财务杠杆程度取决于营业利润水平。

Continued…

- Degree of financial leverage(DCL)
  - Definition: Measured as a % change in EPS resulting from a given % change in sales
  - Equation:

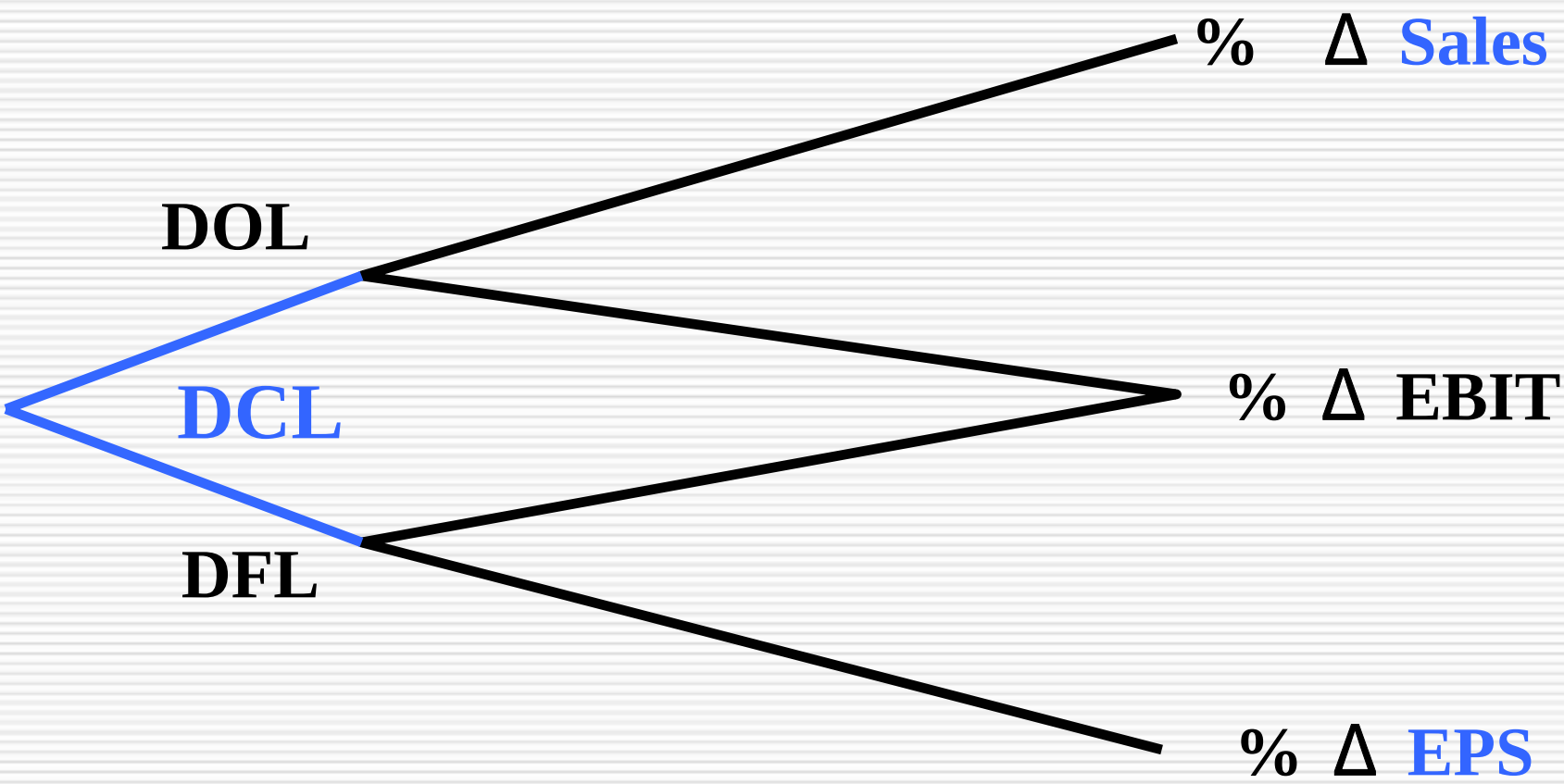
$$\text{DCL at X} = \text{DOL} \times \text{DFL}$$

$$\text{DCL at X} = \frac{\text{Sales - Variable Costs}}{\text{EBIT - I - } D_p/(1 - T)}$$

See DCL model

The higher I or lower EBIT, the higher DFL.

DCL Model



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ABC Company Income statement(ABC公司收益表)

经营杠杆：

决定营业利润

Sales (80,000 units $2/unit)销售额		$ 160,000
Fixed Costs 固定成本		60,000
Variable Costs ($0.80/unit)可变成本		64,000

财务杠杆：

决定企业经营成果如何以每股收益的形式分配给股东

EBIT营业利润	$ 36,000	
Interest利息	12,000	
EBT税前收益	$ 24,000	
Taxes(50税收	12,000	
Net earnings净收益	$ 12,000	
EPS(8,000 shares)每股收益(8,000股)		$1.50

Continued…

- DOL & DFL Trade Off
  - A firm can trade off operating and financial leverage to control DCL
  - A firm with a high DOL may choose a capital structure with a low DFL to avoid a high DCL

3. EBIT-EPS Analysis

- Technique for comparing alternative capital structures
- Assumption
  - investing policy and dividend policy are constant
  - Disregarding the implicit costs of debt financing
  - The market value of the firm's common stock is affected by EPS
- Results
  - EBIT being constant, we can find out the best decision on capital structure which leads to the highest EPS.
  - EBIT being unknown, we can visualize the impact of different financing plan on EPS over a range of EBIT levels.

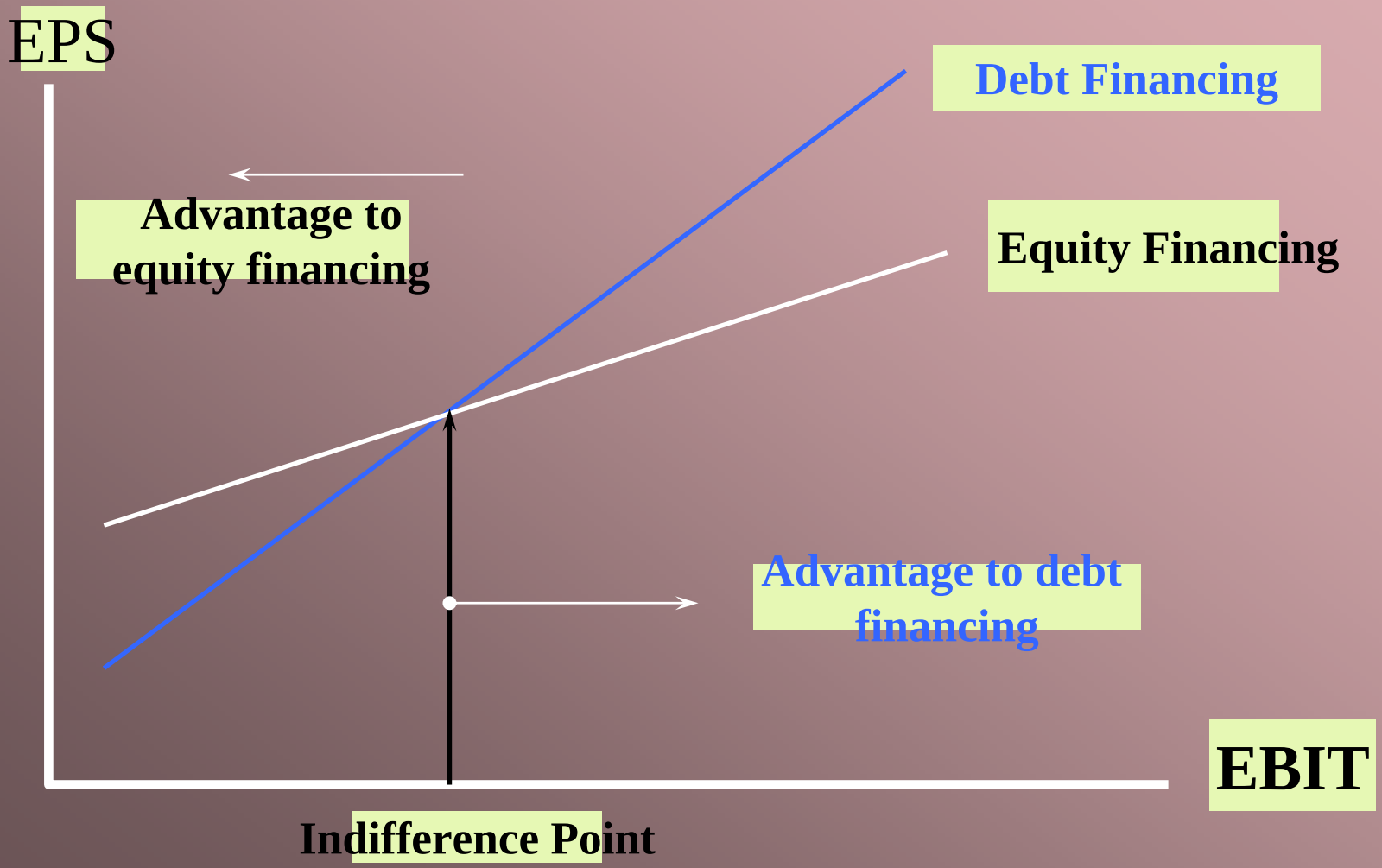
Continued…

- Determine indifference point(the level of EBIT where EPS would be identical under either debt or equity financing)

$$\frac{(EBIT - I_d)(1 - T) - D_p}{N_d} = \frac{(EBIT - I_e)(1 - T) - D_p}{N_e}$$

Debt financing **Equity financing**

Graphical Analysis of EBIT - EPS



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- Factors Considered in Capital Structure Decisions
  - Tendency to cluster around industry average
  - Need for funds
  - Benchmark leverage ratios
  - Managerial risk aversion
  - Retain control

Chapter 14

DIVIDEND POLICY

Investment Decisions

Determine the level of future earnings and future potential dividends

Financing Decisions

Influence the cost of capital, which can determine the number of acceptable investment opportunities

Dividend Decisions

Influences the amount of equity capital in a firm's capital structure and the cost of capital

No (Taxes, Transactions costs, Issuance costs)

Fixed investment policy

Introduction

1. Determinants of dividend policy
2. Dividend policy theory
3. Dividend policies in practice
4. Stock dividend and stock split
5. Stock repurchase

1. Determinants of dividend policy

- Variations in payout
- Legal constraints
- Restrictive covenants
- Tax considerations
- Liquidity and CF considerations
- Earnings stability
- Growth prospects(IOS)
- Inflation
- Shareholder preference
- Protection against dilution

- Borrowing capacity & access to capital markets

2. Dividend policy theory

- Irrelevance of Dividends Theory(MM)
  - Assumptions
    - No (Taxes ,Transactions costs ,Issuance costs) Fixed investment policy
  - Wealth of a shareholder is not effected by dividend policy
  - Dividend can have informational content
  - Signaling effect
  - Clientele effect

Continued…

- Relevance of Dividends Policy
  - Assumptions
    - Relaxed assumptions & dividend policy becomes important
  - Risk aversion (bird-in-the-hand theory)(GL)
  - Taxes(Tax Preference Theory)(LR)
  - Transaction costs
  - Issuance (Flotation) costs
  - Agency costs
  - Empirical evidence is mixed
  - Many practitioners believe that dividends are important Informational content / Expensive external equity

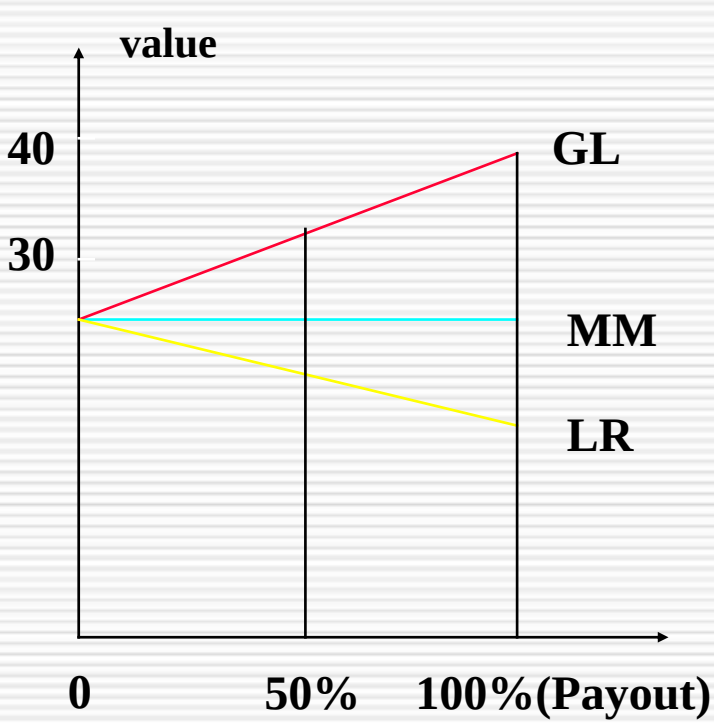
Continued…

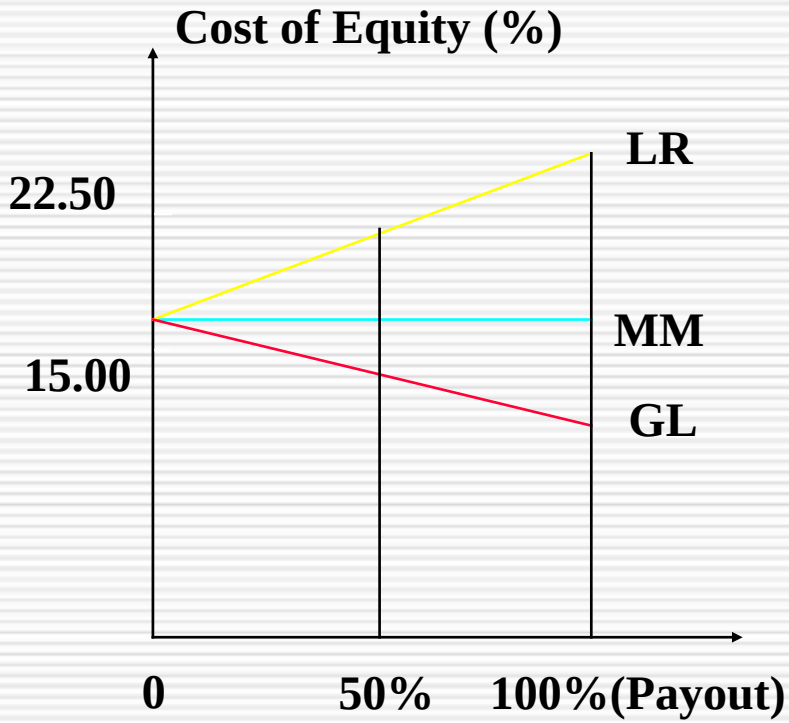
Case6：假设一投资者适应的资本收益税为28%，而股利收益税为40%，他正在考虑购买两只股票，有关两只股票的特性如下：

		capital gains yield	dividend yield
Stock G	growth stock	10%	5%
Stock I	income stock	5%	10%

P = $10 KG = KI = capital gains yield + dividend yield =15%

Difference between MM/GL/LR

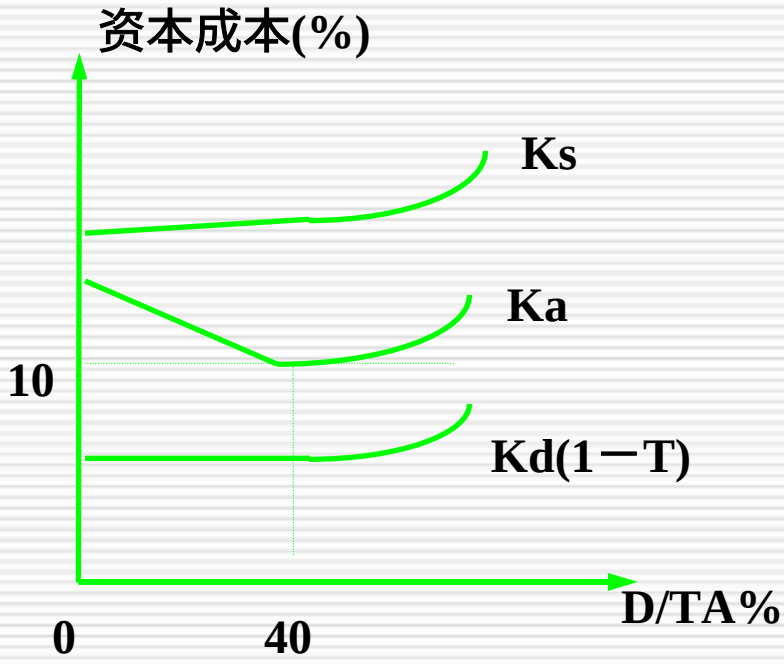


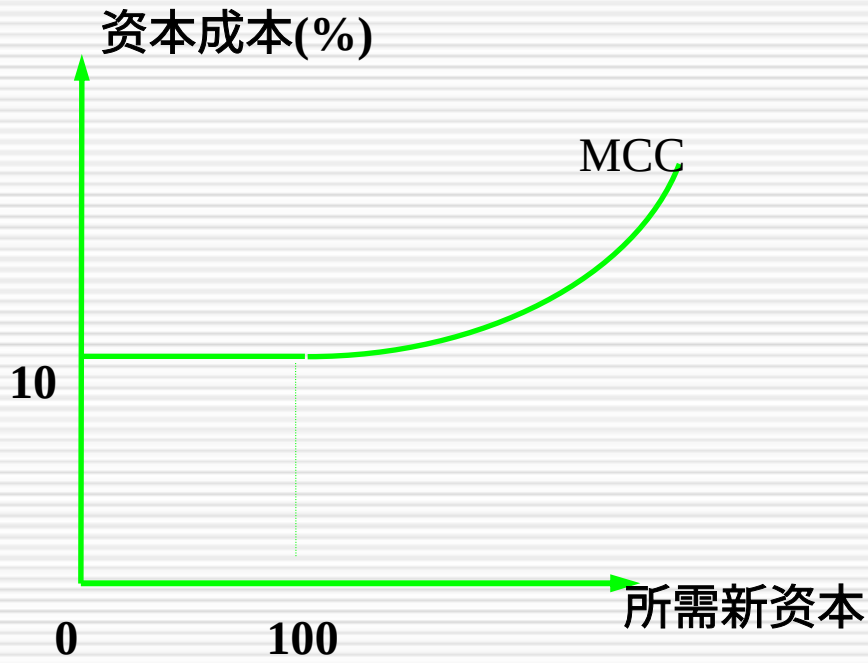


3. Dividend policies in practice

- Passive Residual Policy(Residual dividend model)——Setting the Target Pay-out Ratio
  - Suggests that a firm should retain its earnings as long as it has investment opportunities that promise higher rates of return than the required rate
  - Dividends can fluctuate significantly
    - **Depends on the firm's investment opportunities**
  - In practice dividends can be smoothed
  - Growth firms will have low dividend payout

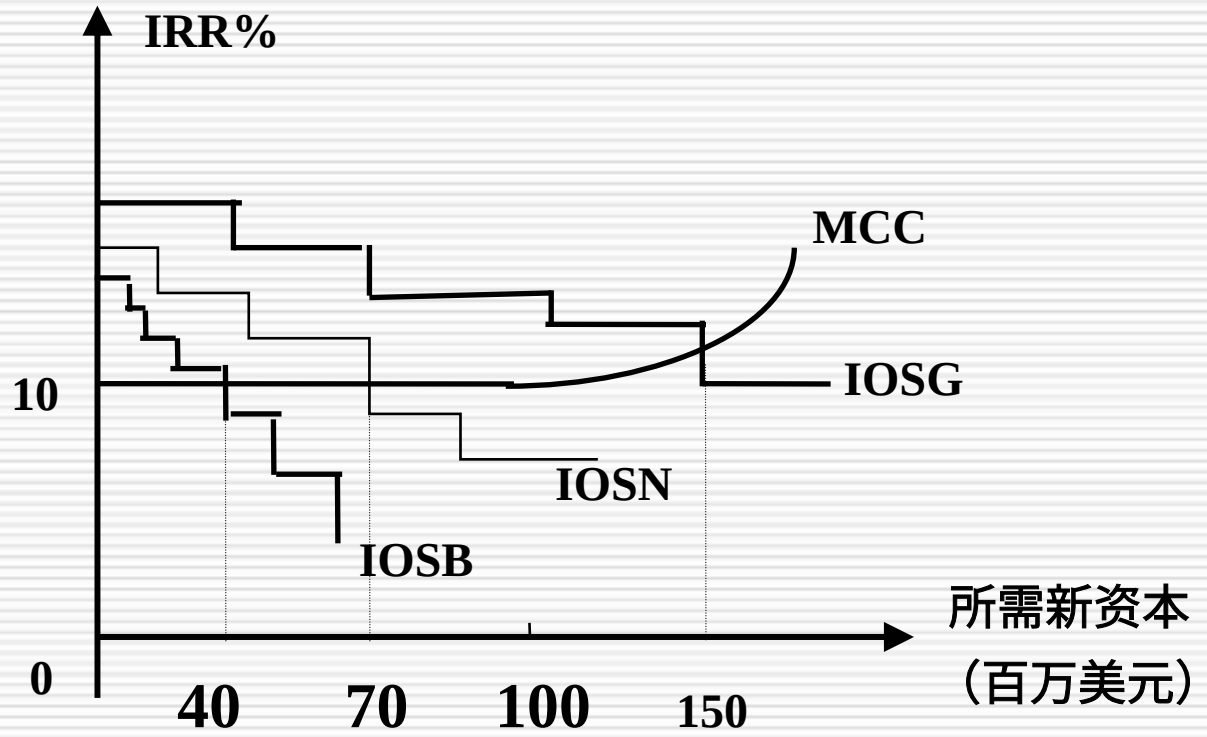
Case7: Dallas Oil Company (DOC) 达拉斯石油公司有关最佳资本结构如下：





Continued…

假设DOC有6千万美元的净收益，在满足最佳资本结构的条件下，怎样确定目标支付率？



Continued…

- Stable $ Dividend Policies
  - **Reluctance to reduce dividends**
  - **Increases in dividends tend to lag earnings**
  - **Desirability**
    - Information content
    - Many shareholders depend on dividends
    - Stability tends to reduce uncertainty
    - Legally desirable

Continued…

- Constant Payout Ratio
  - Pays a constant % of earnings as dividends
  - Fluctuating dividends
- Small Regular Dividends Plus Extras
  - Stockholders can depend on regular payout
  - Accommodates changing earnings and investment requirements
- Small Firms and Dividends
  - Tend to pay out a smaller % of earnings
  - Rapid growth and limited access to capital markets

Continued…

- Payment Procedures
  - Declaration Date
    - Board of directors announce a dividend
  - Record Date
    - Shareholders of record will receive dividends
  - Ex-dividend Date
    - 4 business days before record date [2 days/NYSE]
  - Payment Date
    - Dividend checks mailed or direct deposited

Continued…

- Dividend Reinvestment Plan
  - Cash dividend reinvested automatically into additional shares
  - Purchase new or existing shares
    - Purchasing new shares raises new equity capital for the firm
  - Advantage
    - No brokerage commissions
  - Disadvantage
    - Income tax liability

4. Stock dividends and Stock splits

- Stock dividends
  - Payment of additional shares of C/S
  - Effects of declaring stock dividends
    - Increases the number of shares outstanding
    - Accounting transaction:Transfer pre dividend market value from retained earnings to other stockholders equity
    - Market price of C/S should decline in proportion to the # of new shares issued

Continued…

- Reasons for Declaring a Stock Dividend
  - Broaden the ownership of the firm's shares
  - May result in an effective increase in cash dividends Provided the level of cash dividends is not reduced
  - Reduction in share price may broaden the appeal of the stock to investors Resulting in a real increase in market value

- Stock Splits
  - Stock splits are similar to stock dividends
  - Increases the number of shares outstanding
  - Reduces the price of each outstanding share

5. Share repurchases

- By a tender offer, in the open market, or by negotiation with large holders
- Treasury stock
- Reduces the number of shares outstanding/Increases EPS
- Usually announced
  - So investors know the reason for additional trading
  - So investors can wait for anticipated price increase
- Ignoring taxes, transaction costs, and other market imperfections, shareholders should be indifferent between equivalent returns from cash dividends and share repurchases.

Continued…

- Advantages and disadvantages
  - Advantages
    - Converts dividend income into capital gains
    - Greater financial flexibility
    - Signal effect
  - Disadvantages
    - Company may over pay for the stock
    - Trigger IRS scrutiny tax avoidance
    - Some current stockholders may be unaware

课堂案例分析讨论

13:对福特、通用、克莱斯勒股票回购的反思

课堂案例分析讨论

13:苹果计算机——首次股利政策的确定

苹果公司案例讨论

	1986	1990	1986-1990 年增长率	1997	1990-1997 年增长率
销售收入(百万美元)	$1,902	$5,558	31%	$7,081	4%
净收益 (百万美元)	154	475	33	-379	NA
投资额 (百万美元)	66	223	36	63	-16
股票价格	$ 20	$ 48	24	$24	NA
长期债务(百万美元)	0	0	0	950	NA
每股股利（美元）	0	$0.45		0	-100

问题：1、为什么苹果公司决定支付股利？

2、为什么苹果公司宣布现金股利同时又宣布1：2股票分割？

3、发放首次股利是苹果公司的最佳决策吗？

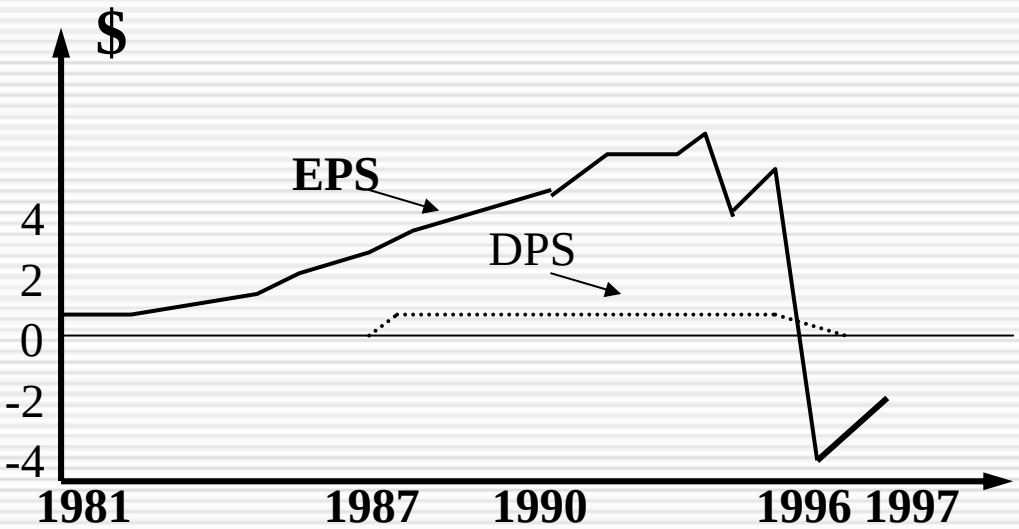
苹果公司案例讨论

后续的故事：

1990年以后至1997年是苹果公司的困难期。

1996年和1997年都出现亏损……

1996年，苹果的股利彻底停发了。



4、苹果公司为什么在1996年停放了股利？

结论：从苹果公司1981年-1997年股利行为图看出，苹果公司的股利比其盈利更为稳定。这也是多数公司典型的股利政策模式。当公司遭受巨大损失时，稳定的股利不可能永远坚持下去，如果亏损持续，大多数公司最终便削减股利。

1998年，苹果公司东山再起……

确定初始股利政策的利与弊

有利方面

- 现金股利分配能使公司良好业绩得到增强，支持股价上升。
- 股利可吸引愿意有股利回报的机构投资者。由于企业有进入较广市场的能力，机构和个人投资者的组合，使企业能以较低成本筹资。
- 宣布初始股利分配通常使股价上升
- 股利分配可吸收多余的现金流量，从而可降低代理成本。

不利方面

- 股利要作为一般收益上税。
- 股利减少内部融资。股利促使企业放弃放弃NPV为正的项目，或依赖较高成本的外部权益融资。
- 股利政策一旦建立，股利削减很难了，或者削减股利对公司股价的影响是不利的。

股利政策分析框架