CAPITAL STRUCTURE

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INTRODUCTION

- In order to define the financial policy, managers need to assess the performance and financial structure of the firm under the strategy that has being followed.

- The definition of the strategy and the business/strategic comes after SWOT including financial performance.

- Then, broadly speaking, managers need to take three major decisions:
  - Under the present strategy, which investments projects create the most value and which assets must be sold. (reshuffled of assets)
  - Which sources of capital is best for financing the firm's investments and what to do with the cash generated from divestments;
  - Which is the appropriate dividends policy.

- The Investments and capital structure decision affects financial risk and, hence, the value of the company.

- The capital structure theory helps us understand the factors most important in the relationship between capital structure and the value of the company.

ISSUES TO ADDRESS IN THE CLASS

- Capital structure irrelevance
- Benefit from tax deductibility of interest
- Financial distress costs
- Static trade-off theory
- Agency costs
- Asymmetric information costs
- Debt rating effects
- Capital structure policy
- Leverage in an international setting

CAPITAL STRUCTURE THEORIES

THE WEIGHTED AVERAGE COST OF CAPITAL (BEFORE TAXES)

- The weighted average cost of capital (WACC) is affected by the costs of capital and the proportion of each source of capital and the marginal costs of raising additional capital:

- $k_{WACC} = \left[\dfrac{E}{V} k_e\right] + \left[\dfrac{D}{V} k_d (1 - t)\right]$

- where:
  - rd is the before-tax marginal cost of debt
  - re is the marginal cost of equity
  - t is the marginal tax rate
  - D is the market value of debt
  - E is the market value of equity

- V = D + E

MODIGLIANI AND MILLER - PROPOSITION I: CAPITAL STRUCTURE IRRELEVANCE WITHOUT TAXES

- Franco Modigliani and Merton Miller (MM) developed a theory on capital structure.

- The assumptions of their model are unrealistic, but they help us work through the effects of the capital structure decision:
  - Investors have homogeneous expectations regarding future cash flows.
  - Bonds and stocks trade in perfect markets.
  - Investors can borrow and lend at the same rate.
  - There are no agency costs.
  - There is no taxes
  - Investment and financing decisions are independent of one another.

PROPOSITION I WITHOUT TAXES:
CAPITAL STRUCTURE IRRELEVANCE

> MM Proposition I
> The market value of a company is not affected by the capital structure of the company.

- Based on the assumptions that there are no taxes, costs of financial distress, or agency costs, investors would value firms with the same cash flows, regardless of how the firms are financed.

- Reasoning: There is no benefit to borrowing at the firm level because there is no interest deductibility. Firms would be indifferent to the source of capital and investors could use financial leverage if they wish.

PROPOSITION II WITHOUT TAXES:
HIGHER FINANCIAL LEVERAGE

> MM Proposition II:
> The cost of equity is a linear function of the company's debt/equity ratio.

- Because creditors have a claim to income and assets that has preference over equity, the cost of debt will be less than the cost of equity.

- As the company uses more debt in its capital structure, the cost of equity increases because of the seniority of debt:

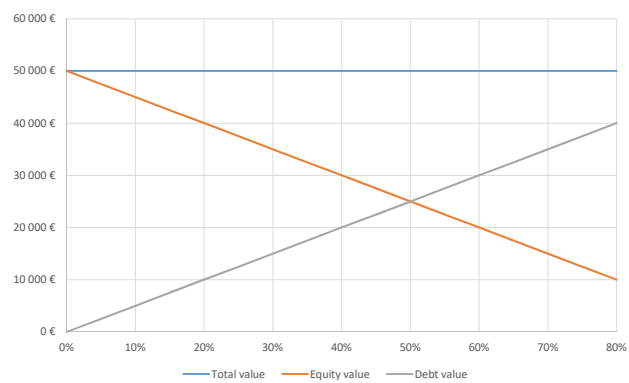$$k_e = k_u + (k_u - k_d)\left(\frac{D}{E}\right)$$

where r_u is the cost of equity if there is no debt financing.

- The WACC is constant because as more of the cheaper source of capital is used (that is, debt), the cost of equity increases.

COST OF CAPITAL AS A FUNCTION OF FINANCIAL LEVERAGE WITHOUT TAXES


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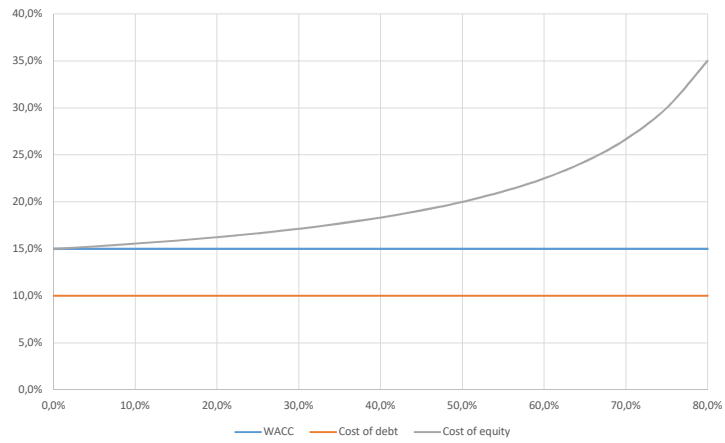
IMPACT OF VALUE OF FIRM WITHOUT TAXES

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MM THEORY WITH AND WITHOUT CORPORATE TAXES

- In real world the value of the firm is enhanced by the tax shield.

- Tax shield:
  - Lowers the cost of debt.
  - Lowers the WACC as more debt is used.
  - Increases the value of the firm by tD (i.e. marginal tax rate times debt)

	Without Taxes	With Taxes
Value of the Firm	$V_L = V_U$	$V_L = V_U + t.D$
WACC	$k_{WACC} = \left[k_e \frac{E}{V}\right] + \left[k_d \frac{D}{V}\right]$	$k_{WACC} = \left[k_e \frac{E}{V}\right] + \left[k_d \frac{D}{V}(1-t)\right]$
Cost of equity	$k_e = k_u + (k_u - k_d)\left(\dfrac{D}{E}\right)$	$k_e = k_u + (k_u - k_d)\left(\dfrac{D}{E}\right)(1-t)$

# COST OF CAPITAL AS A FUNCTION OF FINANCIAL LEVERAGE UNDER CORPORATE TAXATION
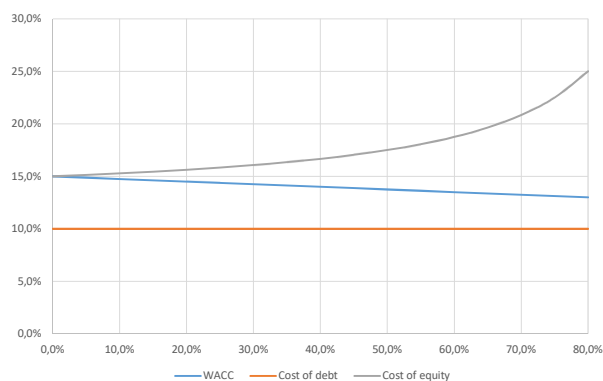
INTRODUCING COSTS OF FINANCIAL DISTRESS

- Costs of financial distress - costs associated with the difficulty of meeting financial obligations.

- Costs of financial distress include the following:
  - Opportunity cost of not making the best decisions
  - Inability to negotiate long-term supply contracts
  - Litigations cost
  - Loss of image an credibility
  - Loss of customers

- The expected cost of financial distress increases as the relative use of debt financing increases.
  - This increased marginal cost reduces the value of the firm
  - As a consequence it offsets part or totally the tax shield.
  - The expected cost of distress affects the cost of debt and equity.

  - Conclusion of the trade-off theory: There is an optimal capital structure at which the value of the firm is maximized and the cost of capital is minimized.

FACTORS AFFECTING THE RISK AND COST OF FINANCIAL DISTRESS

- Volatility of operational profits and operational cash flows

- Type of assets (tangible assets that are not very specific to the industry and liquid assets are more valuable for creditors)

- Type of products and services the company sells

- The country financial system and tradition

TRADE-OFF STATIC THEORY
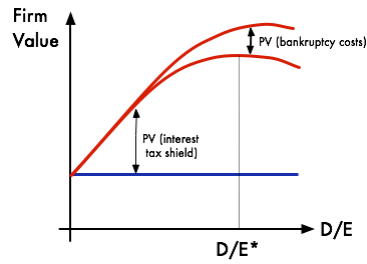
THE OPTIMAL CAPITAL STRUCTURE UNDER THE TRADE OFF THEORY

FIRM VALUE

WACC

AGENCY COSTS

- Agency costs are the costs associated with the separation of owners and management
- Types of agency costs:
  - Monitoring costs
  - Bonding costs
  - Residual loss
- Good governance practices, lowers the agency costs
- Agency costs increase the cost of equity and reduce the value of the firm
- As a consequence, good governance practices translate into higher shareholder value
- The high use of debt reduces the agency costs:
  - Bank financing – Banks do their own supervision
  - Bonds – Rating agencies grade the debt
  - Free-cash cash flow hypothesis (Jensen) – discipline managers by forcing them to manage efficiently the company as they need to periodically pay interest and principal

COSTS OF ASYMMETRIC INFORMATION

- Under asymmetric information different stakeholders have different access to information
  - Managers will have a better information set than investors
  - Larger shareholders that sit on boards have better information than small investors
  - The degree of asymmetric information varies among companies and industries

PECKING ORDER THEORY

- Developed by Myers and Majluf (1984)

- The pecking order theory argues that the capital structure decision is affected by management's choice of a source of capital that gives higher priority to sources that reveal the least amount of information
  - 1) Retained earnings
  - 2) Bank loans
  - 3) Bonds
  - 4) Equity

SIGNALING THEORY

- Managers decisions signals to the market their view

- The issue of equity makes sense if managers perceive the shares are overvalued. Managers are reluctant to issue equity if the shares are perceived to be undervalue

DEBT RATINGS

• Companies consider debt ratings in making capital structure decisions because the cost of debt is affected by the rating.

Bond Ratings by Moody's, Standard & Poor's, and Fitch

	Moody's	Standard & Poor's	Fitch	
Highest quality	Aaa	AAA	AAA	
High quality	Aa	AA	AA	Investment grade
Upper medium grade	A	A	A	
Medium grade	Baa	BBB	BBB	
Speculative	Ba	BB	BB	
Highly speculative	B	B	B	
Substantial risk	Caa	CCC	CCC	Speculative grade
Extremely speculative	Ca			
Possibly in default	C			
Default		D	DDD-D	

Source: Corporate Finance, 2nd Ed., Wiley, CFA Institute, p. 216

CAPITAL STRUCTURE PRACTICE

THE OPTIMAL CAPITAL STRUCTURE

- It may be difficult to determine the optimal capital structure for a given company, but we know what are the determinants:
  - Business risk
  - Financial risk
  - Taxation (corporate taxes and personal taxes on dividends)
  - Structure of assets – amount of tangible assets and liquidity of assets
  - Quality of corporate governance
  - Transparency of financial information

- The best practice is to define the capital structure target as debt ratio or net debt to EBITDA

CAPITAL STRUCTURE POLICY EVALUATION

- Analysts consider the capital structure of a company
  - Over time
  - Compared with competitors with similar business risk
  - Considering the company's corporate governance

- They must also consider
  - The industry
  - The regulatory environment
  - The assets structure – amount of tangible assets
  - Transparency of financial information
  - The degree of information asymmetry
  - The need for financial flexibility

DEBT RATIOS FOR SELECTED U.S. INDUSTRIES

Industries with high ratios of debt as a percentage of debt plus equity		Industries with low ratios of debt as a percentage of debt plus equity	
Real estate investment companies	65%	Internet software and services	19%
Tobacco	60	Application software	17
Multi-utilities	55	Systems software	15
Airlines	54	Electronic equipment and instruments	14
Healthcare facilities	53	Semiconductors	12
Electric utilities	52	Internet retail	12
Gas utilities	50	Biotechnology	12
Department stores	50	Home entertainment software	8
Average debt ratio of all industries 32%			

Source: Hawawini and Viallet, Finance for Executives, 5th ed., p. 469

DEVIATING FROM TARGET CAPITAL STRUCTURE

- A company's capital structure may be different from its target capital structure because of the following:
  - Market values of outstanding issues change constantly
  - Market conditions that are favorable to one type of security over another
  - Market conditions in which it is inadvisable or too expensive to raise capital
  - Investment banking fees that encourage larger, less frequent security issuance
  - Market opportunities for acquisition or selling of assets
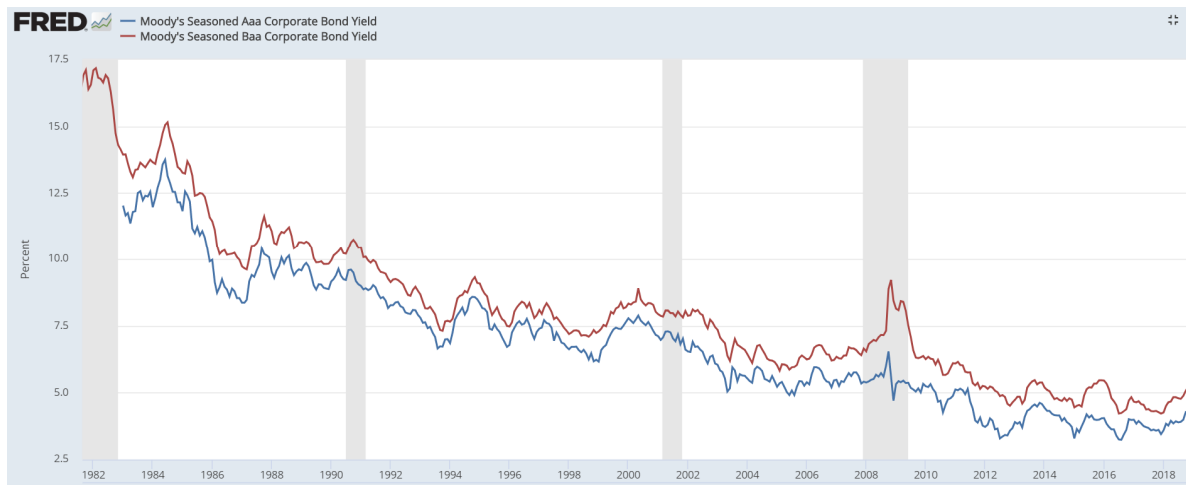
HOW FIRMS DECIDE ABOUT THEIR DEBT LEVEL
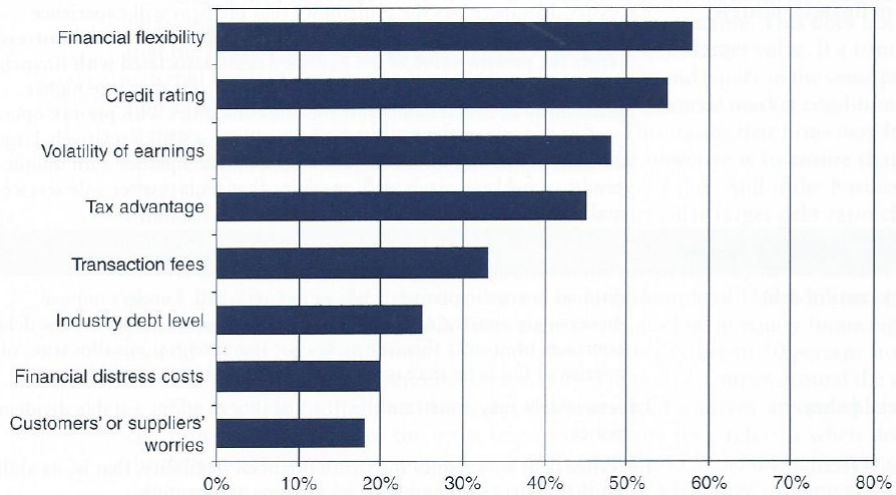
Source: Hawawini and Viallet, Finance for Executives, 5th ed., p. 478

THE SPREAD BETWEEN AAA AND BBB RATED BONDS

- The spread between AAA rated and BBB rated bond yields is around 100 bps.

Source: Moodys

CAPITAL STRUCTURE IN AN INTERNATIONAL SETTING

LEVERAGE IN AN INTERNATIONAL SETTING

- Country-specific factors may affect the capital structure and the maturity of debt

- Determinants of capital structure in an international setting:
  - Institutional and legal environments
  - Financial markets and banking sector
  - Macroeconomic factors

COUNTRY-SPECIFIC FACTORS THAT IMPACTS IN THE CAPITAL STRUCTURE

Country-Specific Factor	If a Country	... then D/E Ratio Is Potentially	... and Debt Maturity Is Potentially
Institutional framework			
Legal system efficiency	is more efficient	Lower	Longer
Legal system origin	has common law as opposed to civil law	Lower	Longer
Information intermediaries	has auditors and analysts	Lower	Longer
Taxation	has taxes that favor equity	Lower	
Banking system, financial markets			
Equity and bond markets	has active bond and stock markets		Longer
Bank-based or market-based country	has a bank-based financial system	Higher	
Investors	has large institutional investors	Lower	Longer
Macroeconomic environment			
Inflation	has high inflation	Lower	Shorter
Growth	has high GDP growth	Lower	Longer

Source: Corporate Finance, 2nd Ed., Wiley, CFA Institute, p. 222

SUMMARY

4. SUMMARY

- The goal of the capital structure decision is to determine the financial leverage that maximizes the value of the company (or minimizes the weighted average cost of capital)

- In the Modigliani and Miller theory developed without taxes, capital structure is irrelevant because it has no impact on company value

- The tax shield lowers the cost of debt and the WACC. Under this framework the optimal capital structure would be all debt

- In the Modigliani and Miller propositions with and without taxes, increasing the use of debt increases the risk for equity. When there are financial distress costs, a higher debt ratio increases the distress costs

- Using more debt in a company's capital structure reduces the net agency costs of equity

SUMMARY (CONTINUED)

- The costs of asymmetric information increase as more equity is used versus debt, suggesting the pecking order theory of leverage, in which new equity issuance is the least preferred method of raising capital.

- According to the static trade-off theory of capital structure, in choosing a capital structure, a company balances the value of the tax benefit from deductibility of interest with the present value of the costs of financial distress. At the optimal target capital structure, the incremental tax shield benefit is exactly offset by the incremental costs of financial distress.

- A company may identify its target capital structure, but its capital structure at any point in time may not be equal to its target for many reasons.

- Many companies have goals for maintaining a certain credit rating, and these goals are influenced by the relative costs of debt financing among the different rating classes.

- In evaluating a company's capital structure, the financial analyst must look at the capital structure of the company over time, the capital structure of competitors that have similar business risk, and company-specific factors that may affect agency costs.

SUMMARY (CONTINUED)

- Good corporate governance and financial reporting transparency lowers the agency costs

- When comparing capital structures of companies in different countries, there are a number of characteristics that might differ and affect both the typical capital structure and the debt maturity structure as a results of:
  - Institutional and legal environment
  - Financial markets and banking sector
  - Macroeconomic environment