Investment Analysis Project

Aston Business School

April, 25th, 2012

Session 1 and 2

Dr Cesario MATEUS
www.cesariomateus.com

Aim

Conduct an in-depth investment analysis case study on a single company drawn from FTSE 350 and been listed at least for the last three years. The case study exercise aims to provide students with the opportunity to demonstrate, in the development of a detailed analyst's company report, the skills and knowledge acquired in the area of investment analysis

In the project the students should address besides others the following questions/issues:

- Introductory Material: Company Description, Ticker Symbol, Industry (Type of the industry), officers/Directors Holdings, Partners, etc.

Corporate Governance Analysis: Is this a company where there is a separation between management and ownership?

Economy Analysis: Discuss the general economy, Economic life cycle, Economic indicators, Macro-economic forecast and the future expectations from an economy

Industry Analysis: Discuss the industry of the company, Industry life cycle, Macro and micro level of industry forecast and future expectations from an industry.

Company Information: Copy of any relevant articles that appear in the written media, summarize the listed articles and discuss the effects of the articles to the company's financial structure. Follow the company news and information presented to the Stock Exchange, discuss the effects of the news to the company's stock price.

Stockholder Analysis: Who is the average investor in this stock? (Individual or pension fund, small or large, domestic or foreign)

Risk and Return: Is the risk of the coming from market, firm, industry or currency? What return would you have earned investing in this company's stock? Would you have under or outperformed the market? How risky is this company's equity? Why? What is its cost of equity? How risky is this company's debt? What is its cost of debt? What is this company's current cost of capital

Capital Structure Choices: What types of financing that this company has used to raise funds. Advantages or disadvantages for the firm in using debt. Does your firm have too much or too little debt comparing with the industry and the market?

Dividend Policy: How has this company returned cash to its owners? How would you recommend that they return cash to stockholders?

Financial Information: Monthly Stock Prices of the last 3 years. Adjusted and Unadjusted. Monthly Stock Price Graph of the last 3 years, compare it to the FTSE 100 monthly returns. Fundamental Values with fundamental analysis (Last 3 years balance sheet and income statement with the most important accounts and headings, discuss the company's past performance in-terms of financial statements).

Valuation: What type of cash flow would you choose to discount for this firm? What is your estimate of value of equity in this firm? How does this compare to the market value? What is the value of the firm? Is the firm over or undervalued?

Most recent: Market Value, Book Value, Beta, ROE, ROA, ROI, Profit Margin, Current Ratio, Dividends, P/E approach, and other important ratios of your choice from Leverage, Liquidity, Efficiency, Profitability, and Market-Value approaches.

Timetable

Date		Hours
April, 25th	Lecture	10-13
April, 25th	Lecture	14-17
May, 23rd	Lecture	10-13
May, 23rd	Office Hours	14-17
June, 14th	Lecture	10-13
June, 14th	Office Hours	14-17

Results

	2010	2011
Nr Students	46	75
Average Mark	63.8	62.6
Median Mark	64	61
Std deviation	9.84	11.75
Maximum	88	85
Minimum	45	35

Firm Value

BALANCE SHEET	
ASSETS	DEBT
	EQUITY

Value of Assets: Value of Debt + Value of Equity (V = D + E)

Fundamental Analysis

Involves analyzing its financial statements (FSA) and health, its management and competitive advantages, and its competitors and markets.

Fundamental analysis maintains that markets may misprice a security in the short run but that the "correct" price will eventually be reached. Profits can be made by trading the mispriced security and then waiting for the market to recognize its "mistake" and re-price the security.

Fundamental Analysis - Why?

- If you are going to buy the firm.
- If you are going to lend money.
- If you are going to make an equity investment.

Fundamental Analysis - What?

Buy Firm	Lend Money
•All assets	•Debt
•Going concern or breakup value?	•How risky
•Change management, capital structure	•Debt coverage ratios, etc
•Control premium	

Industry and Company analysis

Industry Analysis: analysis of a specific branch of manufacturing, service or trade. Understanding the industry in which a company operates provides an essential framework for the analysis of the individual company (company analysis).

What are the similarities and differences among industry classification systems?

How does an analyst go about choosing a peer group of companies?

What are the key factors to consider when analyzing an industry?

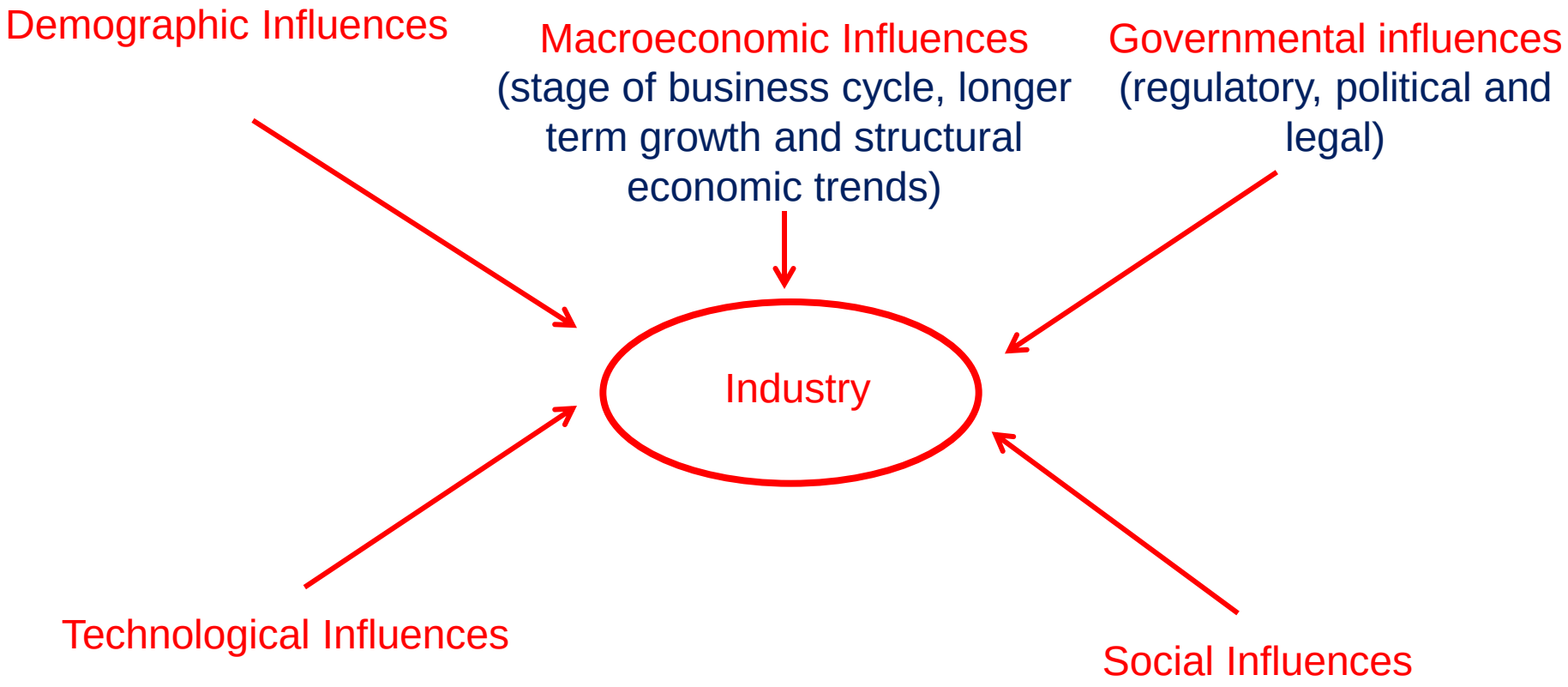
What advantages are enjoyed by companies in strategically well-positioned industries?

Uses of Industry Analysis

Understanding a company's business and business environment.
Critical step in stock selection and valuation because I provides insights into the issuer's growth opportunities, competitive dynamics, and business risks.

Identifying active equity investment opportunities.
Identify industries with positive, neutral, or negative outlooks for profitability and growth.

Framework for Industry Analysis



PESTEL analysis

Political factors: These refer to government policy such as the degree of intervention in the economy. What goods and services does a government want to provide? To what extent does it believe in subsidizing firms? What are its priorities in terms of business support? Political decisions can impact on many vital areas for business such as the education of the workforce, the health of the nation and the quality of the infrastructure of the economy.

Economic factors: These include interest rates, taxation changes, economic growth, inflation and exchange rates.

- higher interest rates may deter investment because it costs more to borrow
- a strong currency may make exporting more difficult because it may raise the price in terms of foreign currency
- inflation may provoke higher wage demands from employees and raise costs
- higher national income growth may boost demand for a firm's products

Social factors: Changes in social trends can impact on the demand for a firm's products and the availability and willingness of individuals to work. Example: retirement age, longer pensions….

Technological factors: new technologies create new products and new processes. These developments can benefit consumers as well as the organizations providing the products.

Environmental factors: environmental factors include the weather and climate change. Changes in temperature can impact on many industries including farming, tourism and insurance.

Legal factors: these are related to the legal environment in which firms operate. The introduction of age discrimination and disability discrimination legislation, an increase in the minimum wage and greater requirements for firms to recycle are examples of relatively recent laws that affect an organizations actions.

New Entrant Threats

Supplier bargaining Forces

(affected by number of industries buying suppliers' products, of supply substitutes, switching costs of suppliers' customers, industry, and customers' ability to enter industry)

Internal Competitive Forces

(affected by economies of scale, cost advantages, other brand loyalty, customer's switching costs, product, government regulation, industry's competitive structure, corporate rivalries, cost conditions, entry and exit barriers).

Life Cycle Analysis

Embryonic, growth, shake-out, mature and declining

Business Cycle Sensitivity

Cyclical: leading, lagging, coincident, defensive, growth.

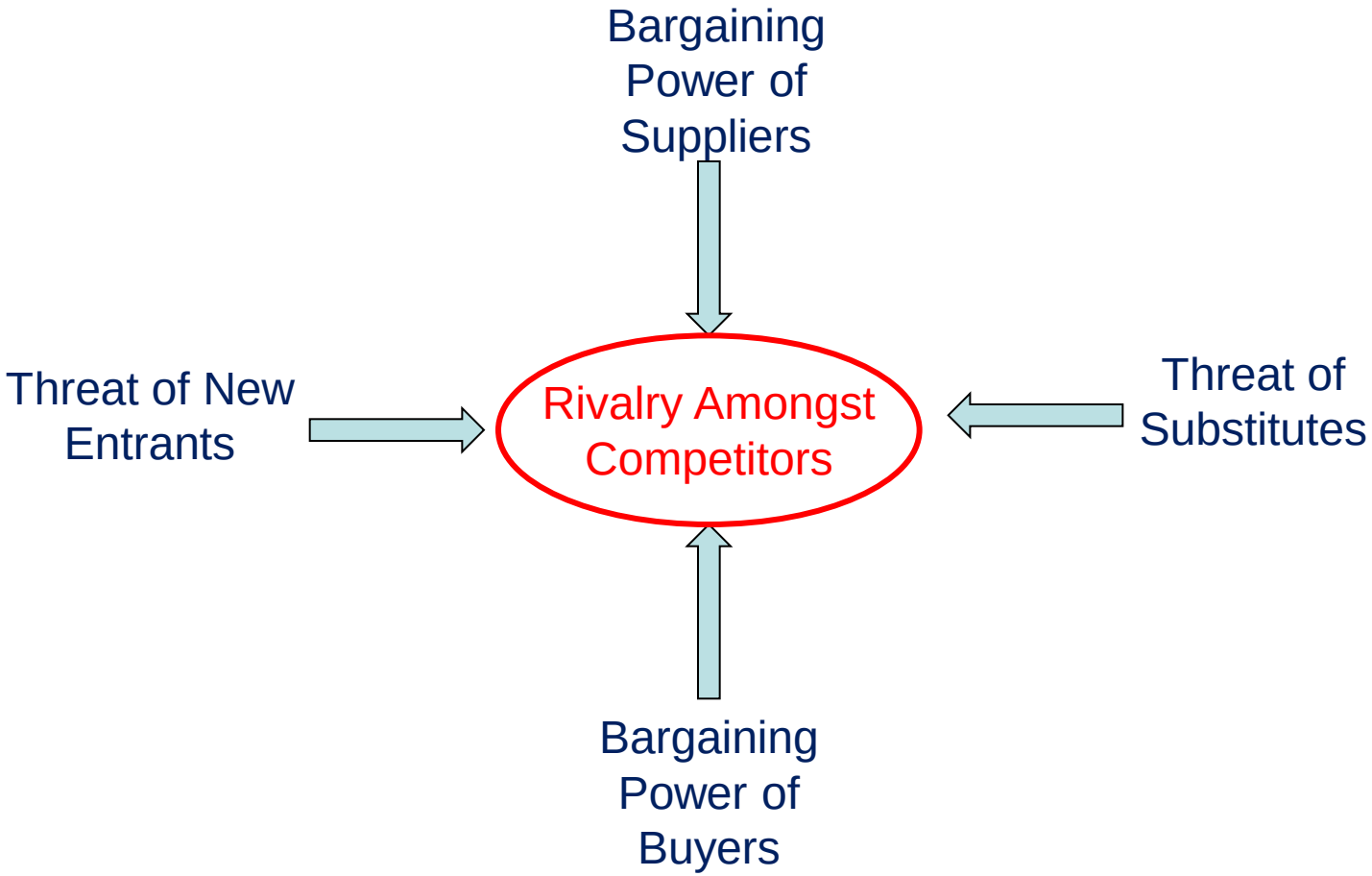
Analysis by Position on the Experience Curve

Customer Bargaining Forces

(affected by number of suppliers, number of purchasers, their size/power, switching costs to other suppliers, number of contracted suppliers, customers' ability to produce the product themselves)

Product/Service Substitution Threats

Industry Analysis - Porter's Five Forces Model



Threat of Entry

- Importance of barriers to entry:
  - Economies of scale
  - First mover cost advantages
  - Capital required
  - Government/legal barriers
  - Control of distribution
  - Product differentiation

- Higher the barriers, higher the profitability

- Example: Telecoms industry

Buyer Power

Price sensitivity x Bargaining power

- Cost of purchase vs total costs
- Profitability of buyers
- Size & concentration of buyers relative to suppliers
- Buyers switching costs
- Buyer's information
- Ability to integrate backwards

Example: Auto parts industry

- Bargaining power of auto manufacturers reduces profitability of auto parts industry

Threat of Substitutes

Willingness to substitute

Price-performance of substitutes

Example: frozen food industry
- Prices limited by prices of canned & fresh foods

Competitor Rivalry

Increase rivalry, lower profitability:

- Low industry concentration
- Slow demand growth
- High fixed costs
- Homogeneous goods

Example: Chemicals industry

Risk Considerations - Porter's 5 Forces (Resume)

Threat of new entrants - Barriers to entry

- Pure competition – none
- Monopoly Competition – low
- Oligopoly / Monopoly - high

High profits attract new competitors

- Rivalry among firms within the industry
  - Price wars – low concentration

- Availability of substitutes
  - Price elasticity
- Bargaining power to customers
  - Pushes down prices – Thus, profit margins goes down
- Bargaining power of suppliers
  - Pushes up costs - Thus, profit margins goes down

Affect Firm's Competitive structure!!!

Top-Down, Three-Step Approach

1. General economic influences
   - Decide how to allocate investment funds among countries, and within countries to bonds, stocks, and cash
2. Industry influences
   - Determine which industries will prosper and which industries will suffer on a global basis and within countries
3. Company analysis
   - Determine which companies in the selected industries will prosper and which stocks are undervalued

Company Analysis

Includes an analysis of the company's financial position, products and/or services and competitive strategy (plans for responding to the threats and opportunities presented by the external environment).

Analyst should seek to determine whether the strategy is primarily defensive or offensive (and how the company intends to implement the strategy).

Two main competitive strategies: a low cost strategy (cost leadership) and a product/service differentiation strategy.

Checklist for Company Analysis

Corporate Profile

- Identify of company's major product and services, current position in industry and history

- Composition of Sales

- Product life-cycle stages / experience curve effects

- Research & development activities

- Past and planned capital expenditures

- Management strengths, weaknesses, compensation, turnover and corporate culture

- Benefits, retirement plans and their influence on shareholder value

- Labor relations
- Insider ownership levels and changes
- Legal actions and the company’s state of preparedness
- Other special strengths and weaknesses

Industry Characteristics

- Stage in its life cycle

- Business-cycle sensitivity or economic characteristics

- Typical product life cycles in the industry (short and marked by technological obsolescence or long, such as pharmaceuticals by patents)

- Brand loyalty, customer switching costs, and intensity of competition

- Entry and exit barriers

- Industry supplier considerations (concentration of sources, ability to switch suppliers or enter suppliers' business).

- Number of companies in the industry and whether it is, as determined by market shares, fragmented or concentrated

- Opportunity to differentiate product/service and relative product/service price, cost, and quality advantages/disadvantages.

- Technologies used

- Government regulation

- State and history of labor relations

- Other industry problems/opportunities

Analysis of Demand for Products/services

- Sources of demand
- Product differentiation
- Past record, sensitivities, and correlations with social, demographic, economic, and other variables.
- Outlook – short, medium, and long term, including new product and business opportunities.

Analysis of Supply of Products/services

- Sources (concentration, competition and substitutes)
- Industry capacity outlook – short, medium and long term
- Company’s capacity and cost structure
- Import/export considerations
- Proprietary products or trademarks

Using CFO Surveys as a Motivational Tool to Teach Corporate Finance

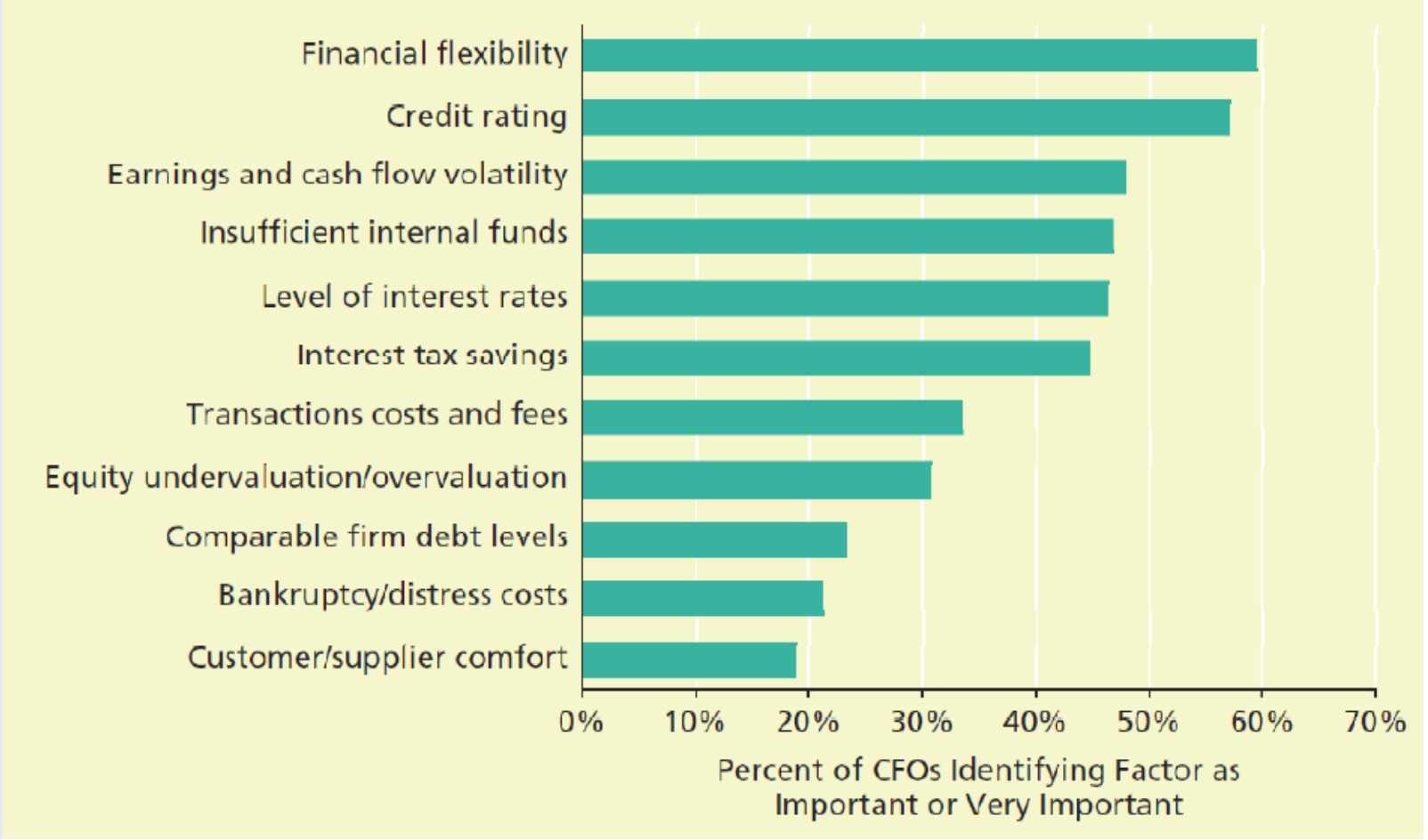
One of the most common questions business school professors hear from students is “Will I use this on the job?”

Overlap between the fundamental skills and concepts that a finance practitioner uses on the job and the concepts taught in finance classrooms.

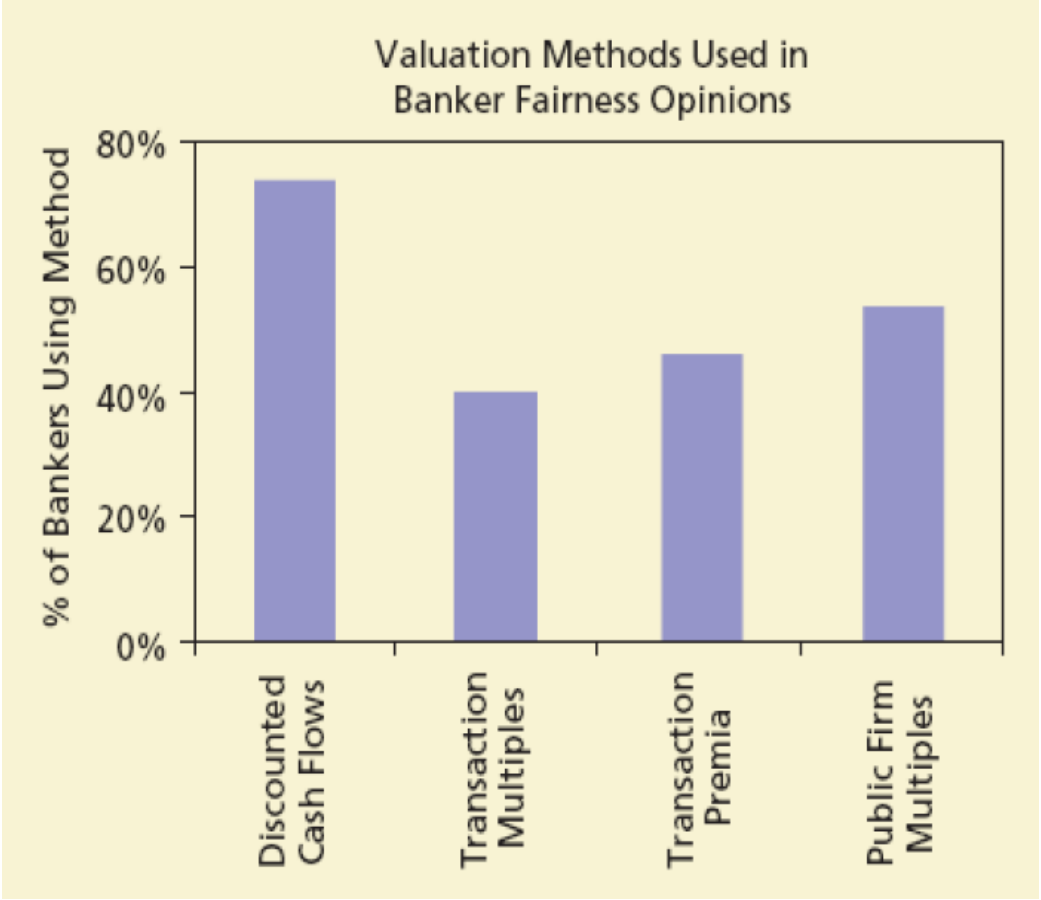
Which Finance Functions add the most value

Servaes and Tufano
"CFO views on the importance and Execution of the Finance Function" (Deutsche Bank, 2006)

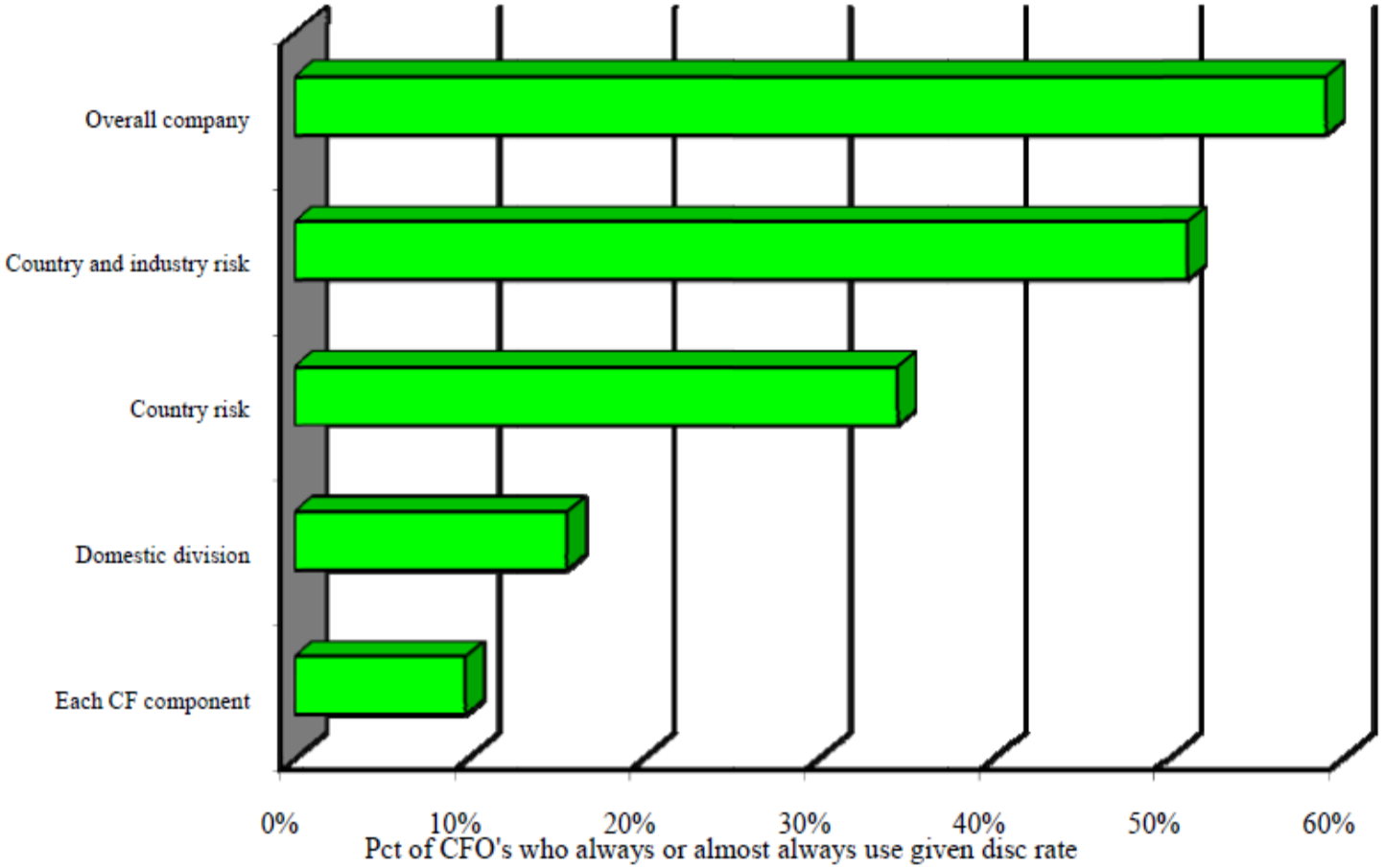
What factors Do U.S. Companies Consider When Choosing Debt Policy?



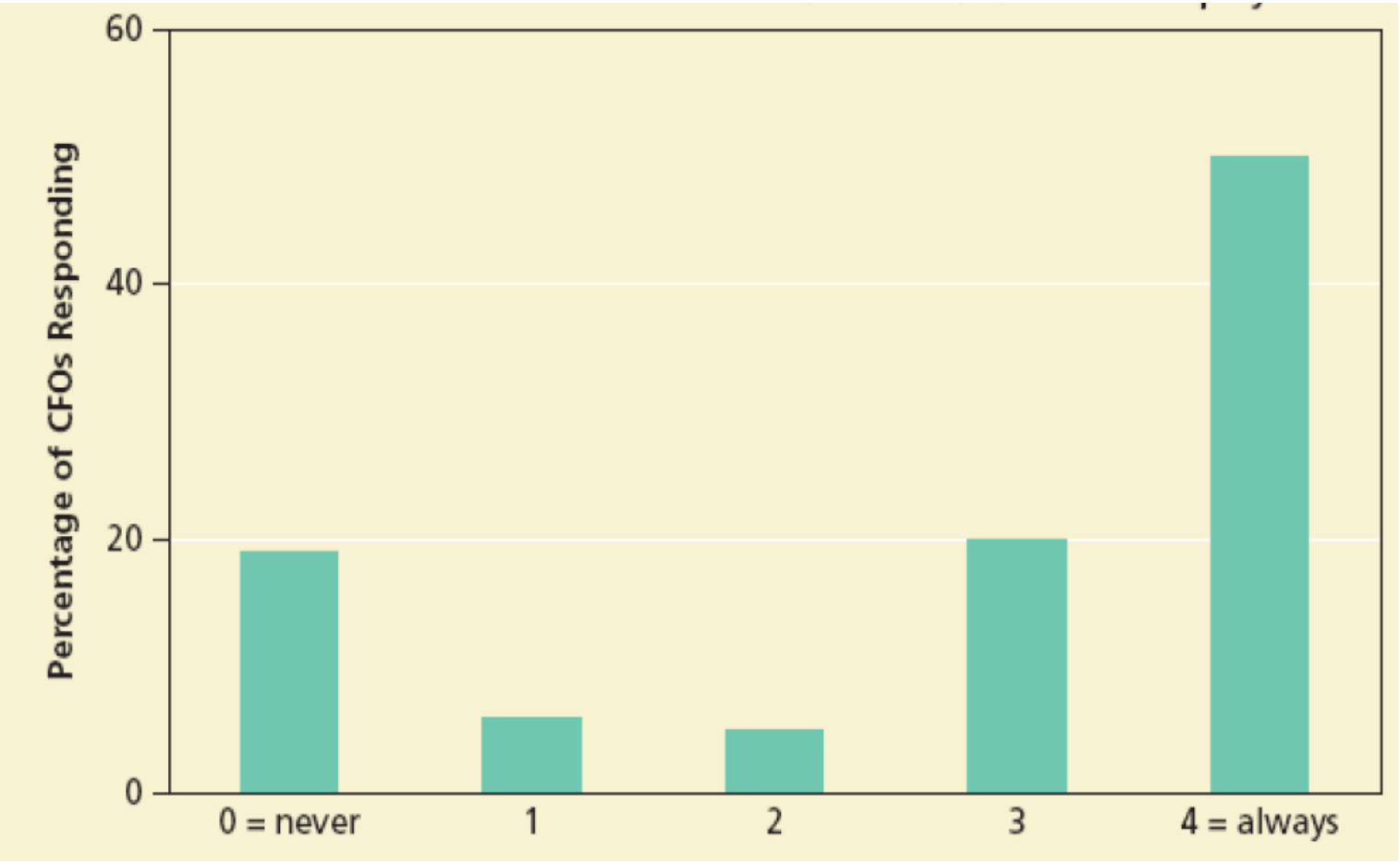
How Investment Bankers Value Companies



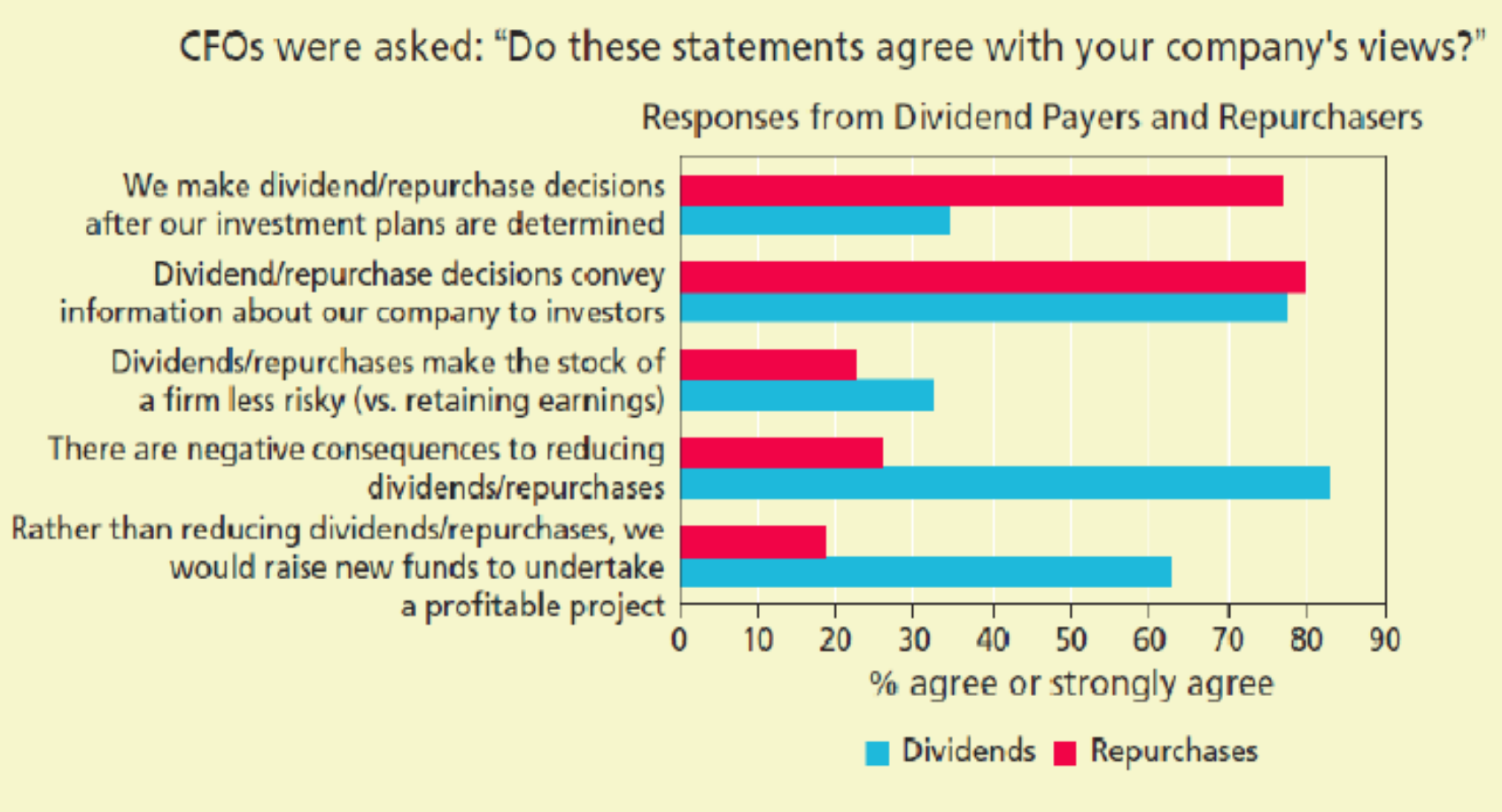
Which discount rate when evaluating a new project



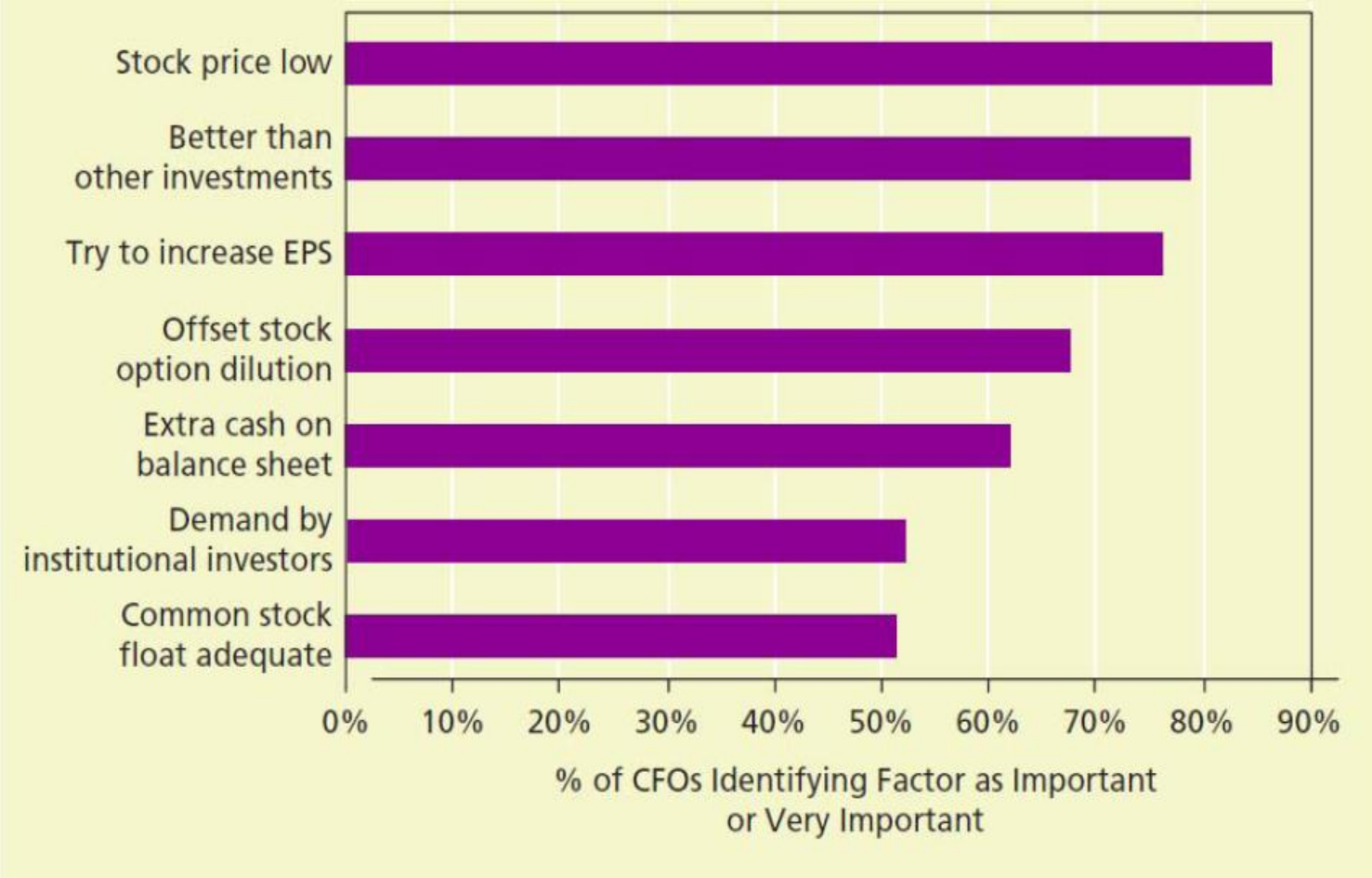
How often to you use the CAPM to calculate the cost of equity?



CFOs' views on Dividends and Repurchases



Important Factors in the decision to repurchase Shares



Introduction

Corporate finance consists of three major decisions:

Investment decision

The financing decision

- Where do firms raise the funds for value-creating investments?
- What mix of owner's money (equity) or borrowed money (debt) should the firm use?

Dividend decision

Debt versus Equity

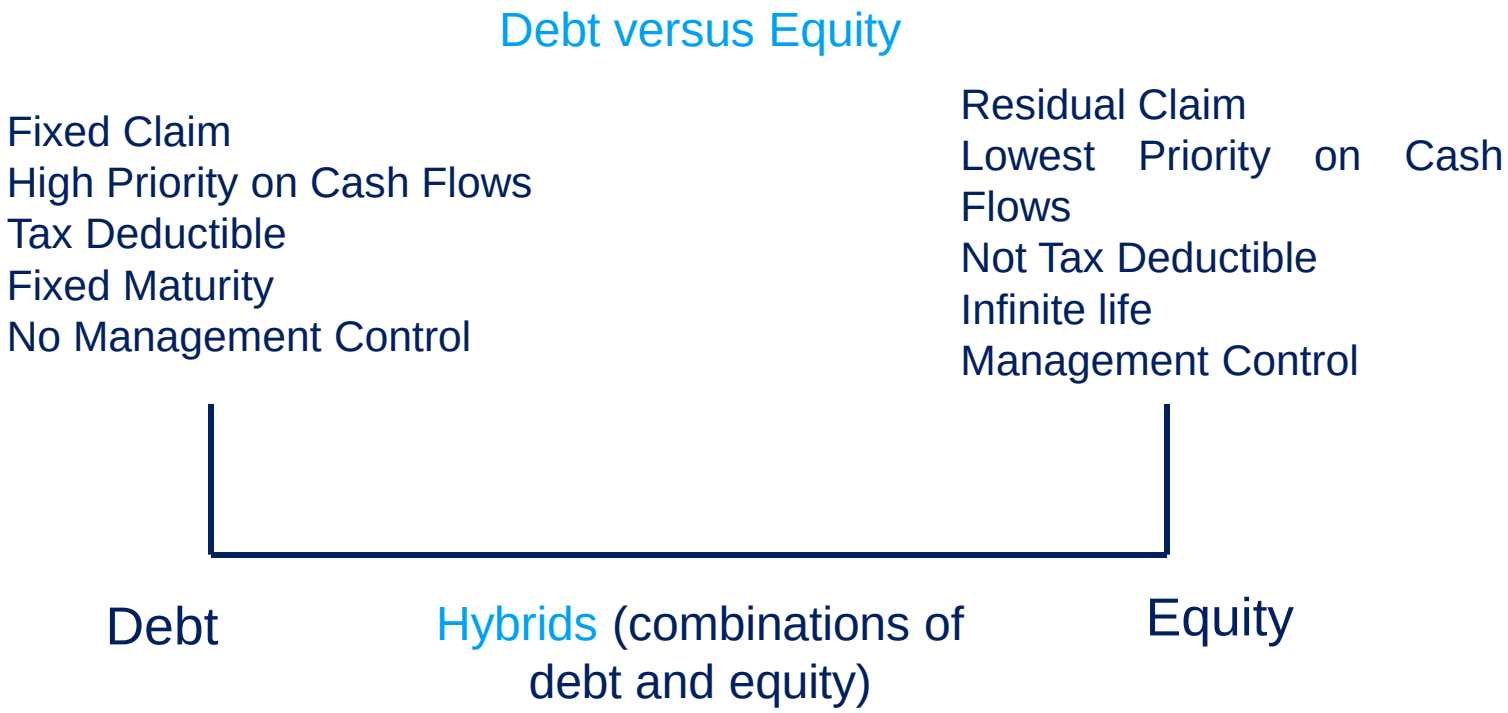
There are only two ways in which a business can raise money.

The first is debt. The essence of debt is that you promise to make fixed payments in the future (interest payments and repaying principal). If you fail to make those payments, you lose control of your business.

The other is equity. With equity, you do get whatever cash flows are left over after you have made debt payments.

Debt versus Equity

The differences between debt and equity lies in the nature of the stakeholders' claims on the firm's cash flows, tax treatment, maturity and voting power



Financing

Distinction between internal and external financing and the factors that affect how much firms draw on each source and how firms decide between their external financing choices.

Internal Financing: funds raised from cash flows of existing assets

External Financing: funds raised from outside the company (VC, debt, equity, etc.)

Internal vs. External Financing

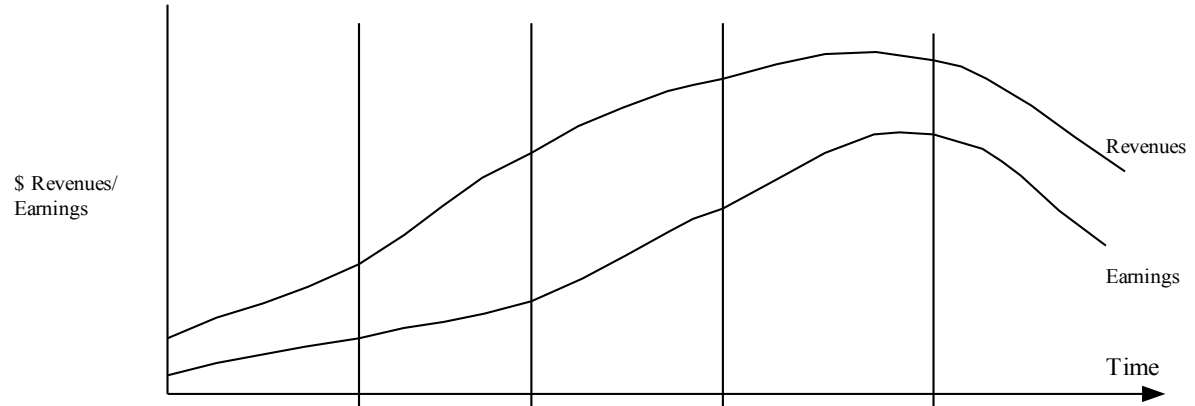
Firms may prefer internal financing because

- External financing is difficult to raise
- External financing may result in loss of control
- Raising external capital tends to be expensive

Projects funded by internal financing must meet same hurdle rates

Internal financing is limited

A Life Cycle View of Financing Choices



External funding needs	High, but constrained by infrastructure	High, relative to firm value.	Moderate, relative to firm value.	Declining, as a percent of firm value	Low, as projects dry up.
Internal financing	Negative or low	Negative or low	Low, relative to funding needs	High, relative to funding needs	More than funding needs
External Financing	Owner's Equity Bank Debt	Venture Capital Common Stock	Common stock Warrants Convertibles	Debt	Retire debt Repurchase stock
Growth stage	Stage 1 Start-up	Stage 2 Rapid Expansion	Stage 3 High Growth	Stage 4 Mature Growth	Stage 5 Decline
Financing Transitions	Accessing private equity	Inital Public offering	Seasoned equity issue	Bond issues	

Equity choices for public firms

The public firm has more alternatives for raising equity

Common Stock

- Initial public offerings (IPOs): raising equity capital publicly for the first time
- Sweat Equity Shares
- Warrants
- Seasoned equity offerings (SEOs): subsequent issues of common stock
- Private Placements
- Rights Offerings

Equity choices for public firms

Common Stock

Firms may issue common stock that is uniform in offering price and voting rights or;

Firms may create classes of shares to:

Create differential voting rights so that owners maintain control of the firm

Satisfy different clientele that are in different tax brackets

Common stock issues tend to decline as a means of raising capital as the firm matures

Equity choices for public firms

Sweat Equity Shares: means equity shares issued by the company to employees or directors at a discount.

The term used to refer to a form of compensation by businesses to their owners or employees.

Equity choices for public firms

Warrants

Provides investors with the option to buy equity at a fixed price in the future in return for paying for the warrants today

Can be attractive because

- No immediate financial obligation to firm
- No immediate dilution of ownership

General subscription (SEO)

Although for IPOs the underwriting agreement almost always involves a firm guarantee from the underwriter to purchase all of the issue, in secondary offerings, the underwriting agreement may be a best efforts guarantee where the underwriter sells as much of the issue as he can

SEOs tend to have lower underwriting commissions because of Investment Banking competition.

The issuing price of an SEO tends to be set slightly lower than the current market price

Private placement

Securities are sold directly to one or few investors

Saves on time and cost (no registration requirements, marketing needs)

Tends to be less common with corporate equity issues. Private placement is used more in corporate bond issues.

Rights offerings

Existing investors are provided the right to purchase additional shares in proportion to their current holdings at a price (subscription price) below current market price (rights-on price)

Each existing share is provided one right.

The number of rights required to purchase a share in the rights offering is then determined by the number of shares outstanding and the additional shares to be issued in the rights offering.

$$Rights\ Required\ to\ Purchase\ one\ Share = \frac{\#\ of\ Original\ Shares}{\#\ Shares\ Issued\ in\ RO}$$

Rights offerings

Because investors can purchase shares at a lower price, the rights have value:

$$Value\ of\ the\ right = \frac{rights\ on\ price - subscription\ price}{n+1}$$

n = number of rights required for each new share

Because additional shares are issued at a price below market price, the market price will drop after the rights offering to the ex-rights price

$$ex\ rights\ price = \frac{new\ value\ of\ equity}{new\ number\ of\ shares}$$

The value (or price) of the right can also be calculated as:

rights-on price – ex-rights price

Rights offerings

Costs are lower because of:

- Lower underwriting commissions – rights offerings tend to be fully subscribed
- Marketing and distribution costs are significantly lower

No dilution of ownership

No transfer of wealth

Debt

Debt can also take different forms

For private businesses: it is usually bank loans

For publicly traded firms: it can take the form of bonds

Debt financing options

Bank debt

Borrowing from a bank at an interest rate charged by the bank based on the borrowing firm's perceived risk

Advantages of bank debt (versus bonds):

Can be issued in small amounts

Allows firm to maintain proprietary information

Does not require being rated

Debt financing options

Bonds

Borrowing from the public by issuing debt

Advantages of bonds

Typically carry more favorable terms than bank debt

Allows issuers to add on special features

When issuing bonds, firms have to make a variety of choices including maturity, fixed or floating interest payment, secured or unsecured.

Credit Ratings

The table relates the interest coverage ratio of a firm to a "synthetic" rating and a default spread that goes with that rating

For large manufacturing firms

If interest coverage ratio is			
>	≤ to	Rating is	Spread is
-100000	0.199999	D	12.00%
0.2	0.649999	C	10.50%
0.65	0.799999	CC	9.50%
0.8	1.249999	CCC	8.75%
1.25	1.499999	B-	6.75%
1.5	1.749999	B	6.00%
1.75	1.999999	B+	5.50%
2	2.2499999	BB	4.75%
2.25	2.49999	BB+	3.75%
2.5	2.999999	BBB	2.50%
3	4.249999	A-	1.65%
4.25	5.499999	A	1.40%
5.5	6.499999	A+	1.30%
6.5	8.499999	AA	1.15%
8.50	100000	AAA	0.65%

Credit Ratings

For smaller and riskier firms

If interest coverage ratio is			
greater than	≤ to	Rating is	Spread is
-100000	0.499999	D	12.00%
0.5	0.799999	C	10.50%
0.8	1.249999	CC	9.50%
1.25	1.499999	CCC	8.75%
1.5	1.999999	B-	6.75%
2	2.499999	B	6.00%
2.5	2.999999	B+	5.50%
3	3.499999	BB	4.75%
3.5	3.9999999	BB+	3.75%
4	4.499999	BBB	2.50%
4.5	5.999999	A-	1.65%
6	7.499999	A	1.40%
7.5	9.499999	A+	1.30%
9.5	12.499999	AA	1.15%
12.5	100000	AAA	0.65%

Credit Default Spreads and Country Risk

Country	Local Currency Rating	Adj. Default Spread	Total Risk Premium
Portugal	Ba2	275	10.13%
Spain	A1	85	7.28%
Greece	Caa1	700	16.50%
Italy	A2	100	7.50%
Germany	Aaa	0	6.00%
France	Aaa	0	6.00%
United Kingdom	Aaa	0	6.00%
USA	Aaa	0	6.00%
Brazil	Baa2	175	8.63%
Russia	Baa1	150	8.25%
India	Baa3	200	9.00%
China	Aa3	70	7.05%

Debt financing options

Leasing

Firm (lessee) commits to making fixed payments to the owner (lessor) for the right to use the asset

Payments may be fully tax deductible

Provides firms with an alternative to buying capital assets

Debt financing options

Leasing

Operating lease

- Shorter term
- Present value of the lease payments is generally much lower than the price of asset
- Ownership resides with the lessor
- Lease expense is treated as an operating expense
- Off-balance sheet financing

Capital lease

- Lasts the lifetime of the asset
- Lessee is responsible for insurance and taxes on the asset
- For tax purposes, capital leases are equivalent to borrowing and buying the asset, consequently, depreciation and interest expense are shown as expenses on the income statement

Debt financing options

Leasing

Reasons provided for leasing

Firm has insufficient borrowing capacity

Bond covenants restrict firms from taking on more conventional debt

Operating leases tend to provide firms with greater profitability ratios since operating expense will typically be lower than if the asset was purchased and the lease is not included as part of the firm's capital

Differential tax rates: an entity with a higher tax rate will benefit more from buying the asset. This high-tax entity can then lease the asset to a lower / no tax entity and can share the tax benefits

Debt financing options

Leasing

The decision to lease or borrow/buy should be based on the incremental after-tax cash flows

Operating lease cash flows:

$$Lease\ Payments \times (1 - tc)$$

Debt financing options

Leasing

Borrow/Buy cash outflows

- Interest expense (after tax)
- Principal payments (non-tax deductible)
- Maintenance expenses (after tax)

Borrow/Buy cash inflows

- Depreciation tax benefit (t × Depreciation)
- Salvage value (after tax)

Debt financing options

Leasing
The net advantage to Leasing

$$NPV\ of\ lease\ option\ -NPV\ of\ buy\ option$$

Where cash flows are discounted at the after tax cost of debt since both represent borrowing alternatives and cash flows are calculated on an after-tax basis.

Commercial Paper

Unsecured Promissory note with a fixed maturity of 1 to 270 days.

Money-market security issued (sold) by large banks and corporations to get money to meet short term debt obligations (for example, payroll), and is only backed by an issuing bank or corporation's promise to pay the face amount on the maturity date specified on the note.

Not backed by collateral, therefore only firms with excellent credit ratings from a recognized rating agency will be able to sell their commercial paper at a reasonable price.

Usually sold at a discount from face value, and carries higher interest repayment rates than bonds.

Trade Credit

Arrangement between businesses to buy goods or services on account, that is, without making immediate cash payment.

For many borrowers, trade credit serves as a valuable source of financing.

Hybrid securities

Financing choices that have characteristics of both debt and equity are referred to as hybrid securities

Convertible debt

Can be converted by the bondholder to a predetermined number of shares of common stock

The conversion option:

Conversion ratio: number of shares for which each bond may be exchanged

Conversion value: current value of shares for which the bonds can be exchanged

Conversion premium: excess of bond price over conversion value

Hybrid securities

Convertible debt

Reasons for issuing convertible debt

Investors will require a lower required return, thus allowing firms to set a lower coupon rate

Particularly useful for high-growth companies

Reduces the conflict between equity and bond holders

Hybrid securities

Preferred stock

Generates fixed payment obligations by the firm

Cost more to raise than debt

Reasons for issue:

Analysts and rating agencies treat preferred stock as equity for calculating leverage

Capital Asset Pricing Model

CAPM is used to “price” individual securities given the expected return on the market portfolio and risk-free rate

CAPM relates a security’s expected return to its nondiversifiable or systematic risk and market premium for bearing that risk

$$E_{Ri} = RF + \beta_i(E_{RM} - RF)$$

E_{Ri} = is the expected return on the capital asset

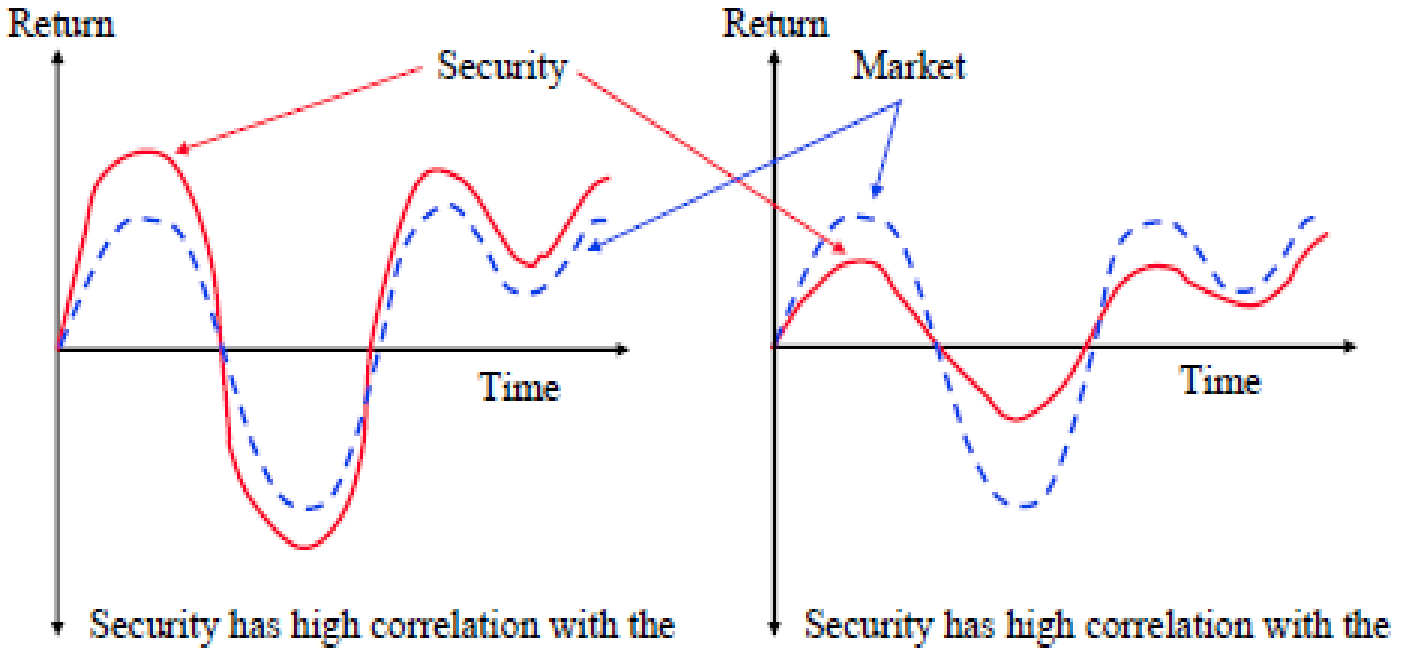
RF = is the risk-free rate of interest such as interest arising from government bond

β_i = (the *beta*) is the sensitivity of the expected excess asset returns to the expected excess market returns

$E_{RM} - RF$ = market premium

Betas and Correlations

Beta is not the same as the correlation between a security (portfolio) and the market portfolio



9.1

Capital Structure

Outline

Meaning of Capital Structure

Optimal Capital Structure

How much should a firm borrow? Does capital structure matter?

Does it influence the value of the firm?

Limits to the use of debt

How companies establish their capital structure?

Capital Structure

A mix of debt, preferred stock, and common stock with which the firm plans to finance its investments.

Objective is to have such a mix of debt, preferred stock, and common equity which will maximize shareholder wealth or maximize market price per share

WACC depends on the mix of different securities in the capital structure. A change in the mix of different securities in the capital structure will cause a change in the WACC. Thus, there will be a mix of different securities in the capital structure at which WACC will be the least.

An optimal capital structure means a mix of different securities which will maximize the stock price share or minimize WACC.

Leverage and Capital Structure

Leverage means use of fixed cost source of funds. Generally, it refers to use of debt in the capital structure of the firm

How much leverage should be there in a firm? Why is this question important? Two reasons:

- a higher debt ratio can improve the rate of return on equity capital during good economic times
- a higher debt ratio also increases the riskiness of the firm's earnings stream

Capital structure decision involves a trade off between risk and return to maximize market price per share

Costs and benefits of debt

Benefits of Debt

- Tax Benefits
- Adds discipline to management

Costs of Debt

- Bankruptcy Costs
- Agency Costs
- Loss of Future Flexibility

What is the optimal debt-equity ratio?

Need to consider two kinds of risk:

- Business risk:
- Factors:
  - Demand variability
  - Sales price variability
  - Input cost variability
  - Ability to develop new products
  - Foreign exchange exposure
  - Operating leverage (fixed vs variable costs)

- Financial risk
- The additional risk placed on the common stockholders as a result of the decision to finance with debt

Tax benefits of debt

Interest paid on debt is tax deductible, whereas cash flows to equity have to be paid out of after-tax cash flows.

The dollar tax benefit from the interest payment in any year is a function of your tax rate and the interest payment:

Tax benefit each year = Tax Rate × Interest Payment

Implications of the tax benefit of debt

The debt ratios of firms with higher tax rates should be higher than the debt ratios of comparable firms with lower tax rates.

Firms that have substantial non-debt tax shields, such as depreciation, should be less likely to use debt than firms that do not have these tax shields.

If tax rates increase over time, we would expect debt ratios to go up over time as well, reflecting the higher tax benefits of debt.

We would expect debt ratios in countries where debt has a much larger tax benefit to be higher than debt ratios in countries whose debt has a lower tax benefit.

Debt adds discipline to management

Free cash flow (or cash flow to equity) represents cash flow from operations after all obligations have been paid.

It represents cash flow for which management has discretionary spending power.

Without discipline, management may make wasteful investments with free cash flow because they do not bear any costs for making these investments.

Forcing firms with free cash flow to borrow money can be an antidote to managerial complacency.

Empirical evidence is consistent with the hypothesis that increasing debt improves firm performance.

Bankruptcy costs

Bankruptcy is when a firm is unable to meet its contractual commitments.
The expected bankruptcy cost is a function of two variables:

- the cost of going bankrupt
  - direct costs: Legal and other administrative costs (1-5% of asset value)
  - indirect costs: Costs arising because people perceive you to be in financial trouble – loss of revenue, stricter supplier terms, capital raising difficulties

- the probability of bankruptcy, which is a function of the size of operating cash flows relative to debt obligations and the variance in operating cash flows

As you borrow more, you increase the probability of bankruptcy and hence the expected bankruptcy cost.

Agency cost
(conflict between stockholder and bondholder)

When you lend money to a business, you are allowing the stockholders to use that money in the course of running that business. Stockholders interests are different from your interests, because:

- You (as lender) are interested in getting your money back
- Stockholders are interested in maximizing their wealth

In some cases, the conflict of interests can lead to stockholders:

- Investing in riskier projects than you would want them to
- Paying themselves large dividends when you would rather have them keep the cash in the business.

The financing mix question

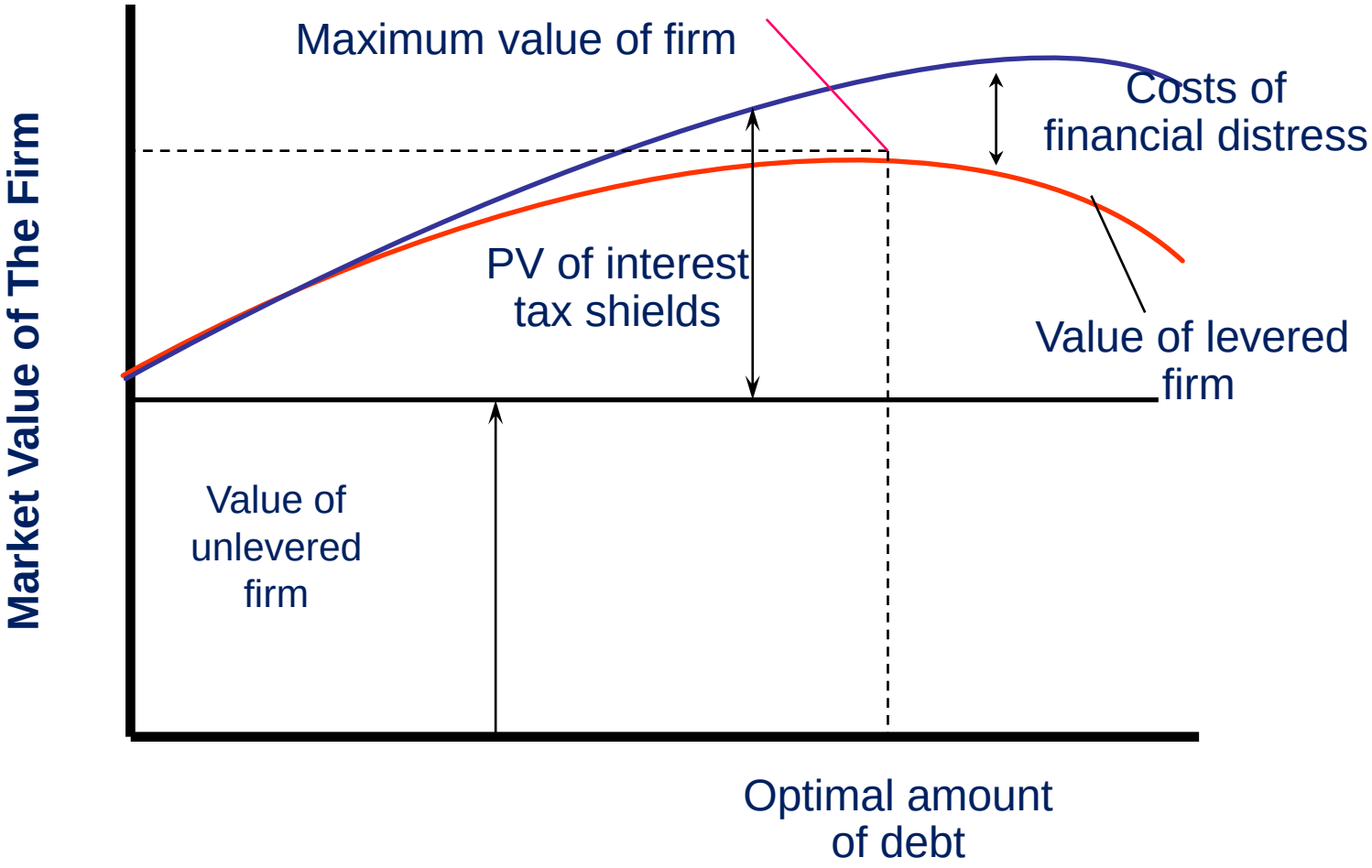
In deciding to raise financing for a business, is there an optimal mix of debt and equity?

- If yes, what is the trade off that lets us determine this optimal mix?
- If not, why not?

Optimal debt to equity ratio

The optimal ratio of debt to equity is determined by taking an increasing amounts of debt until the marginal gain from leverage is equal to the marginal expected loss from the bankruptcy costs

Optimal debt to equity ratio



What managers consider important in deciding on how much debt to carry...

A survey of Chief Financial Officers of large U.S. companies provided the following ranking (from most important to least important) for the factors that they considered important in the financing decisions:

Factor	Ranking (0-5)
1. Maintain financial flexibility	4.55
2. Ensure long-term survival	4.55
3. Maintain Predictable Source of Funds	4.05
4. Maximize Stock Price	3.99
5. Maintain financial independence	3.88
6. Maintain high debt rating	3.56
7. Maintain comparability with peer group	2.47

Debt: Summarizing the Trade Off

Advantages of Borrowing

1. Tax Benefit:

Higher tax rates --> Higher tax benefit

2. Added Discipline:

Greater the separation between managers and stockholders --> Greater the benefit

Disadvantages of Borrowing

1. Bankruptcy Cost:

Higher business risk --> Higher Cost

2. Agency Cost:

Greater the separation between stock-holders & lenders --> Higher Cost

3. Loss of Future Financing Flexibility:

Greater the uncertainty about future financing needs --> Higher Cost

A qualitative analysis of the firm's debt ratio

Tax benefits:

- What is the firm's tax rate?
- Does the company have substantial tax shields?

Discipline:

- Does management own shares?
- Does the firm have significant free cash flows?

Bankruptcy:

- How volatile are the firm's earnings and cash flows?
- How liquid and divisible are the firm's assets?
- How would you assess the firm's indirect bankruptcy costs (perception of the consumer)?

Agency:

- Are the firm's investments easily monitored?
- Are the investments short term or long term?

Financial Flexibility:

- What stage of life cycle is the firm in?

How do firms set their financing mixes?

- Life Cycle: Some firms choose a financing mix that reflects where they are in the life cycle; start- up firms use more equity, and mature firms use more debt.

- Comparable firms: Many firms seem to choose a debt ratio that is similar to that used by comparable firms in the same business.

- Financing Hierarchy: Firms also seem to have strong preferences on the type of financing used, with retained earnings being the most preferred choice. They seem to work down the preference list, rather than picking a financing mix directly.

Comparable firms

- When we look at the determinants of the debt ratios of individual firms, the strongest determinant is the average debt ratio of the industries to which these firms belong.

- This is not inconsistent with the existence of an optimal capital structure. If firms within a business share common characteristics (high tax rates, volatile earnings etc.), you would expect them to have similar financing mixes.

Rationale for financing hierarchy

- Managers value flexibility. External financing reduces flexibility more than internal financing.
- Managers value control. Issuing new equity weakens control and new debt creates bond covenants.

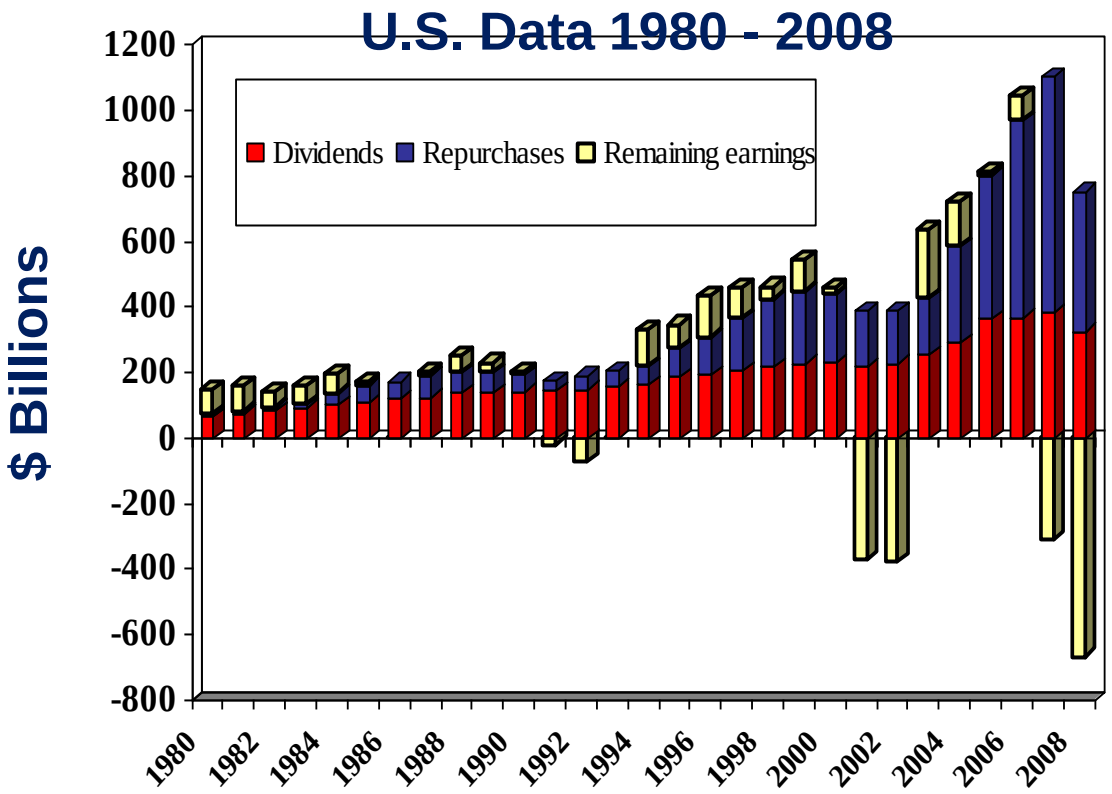
Preference rankings : Results of a survey

Ranking	Source	Score
1	Retained Earnings	5.61
2	Straight Debt	4.88
3	Convertible Debt	3.02
4	External Common Equity	2.42
5	Straight Preferred Stock	2.22
6	Convertible Preferred	1.72

Dividends and Dividend Policy

Dividend & Stock Repurchases

Companies pay out cash to shareholders in two ways: namely cash dividends and share repurchases.



Cash Dividends

- Regular cash dividend: cash payments made directly to stockholders,
- Extra cash dividend: indication that the “extra” amount may not be repeated in the future
- Special cash dividend: similar to extra dividend, but definitely won’t be repeated
- Liquidating dividend: some or all of the business has been sold

Dividend Payment

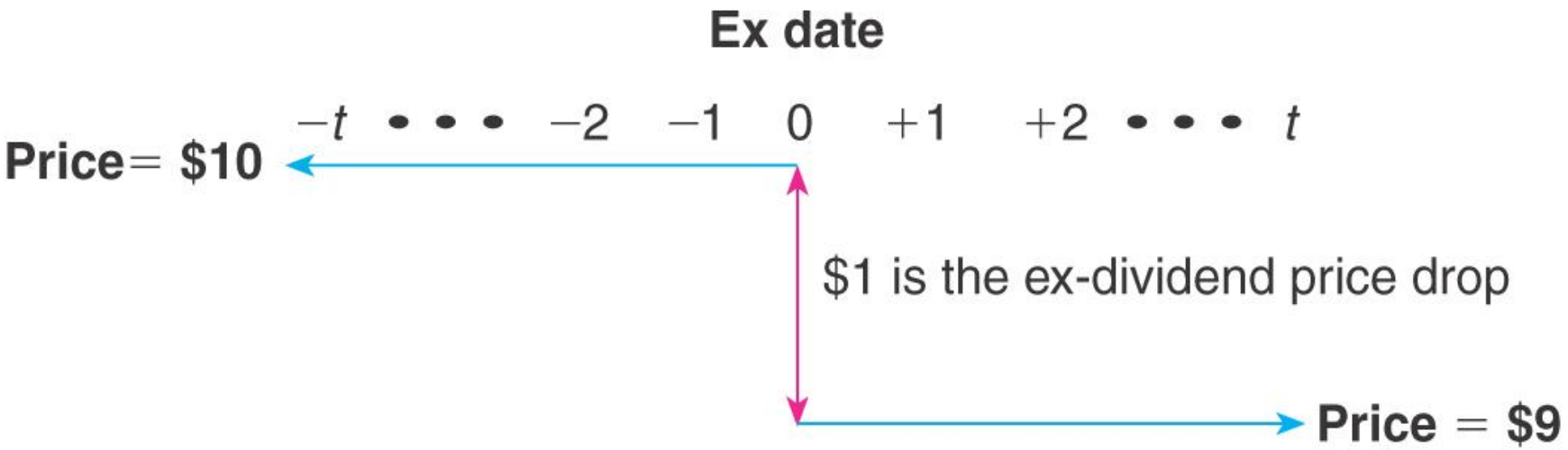
- Declaration Date: Board declares the dividend and it becomes a liability of the firm

- Ex-dividend Date
  - Occurs before date of record
  - If you buy stock on or after this date, you will not receive the dividend
  - Stock price generally drops by about the amount of the dividend

- Date of Record: Holders of record are determined and they will receive the dividend payment

- Date of Payment: payments are made

The Ex-Day Price Drop



The stock price will fall by the amount of the dividend on the ex date (Time 0). If the dividend is $1 per share, the price will be equal to $10 – 1 = $9 on the ex date.

Before ex date (Time –1)	Dividend = $0	Price = $10
On ex date (Time 0)	Dividend = $1	Price = $9

Low Payout Please

- Why might a low payout be desirable?
- Individuals in upper income tax brackets might prefer lower dividend payouts, with the immediate tax consequences, in favor of higher capital gains

- Dividend restrictions: debt contracts might limit the percentage of income that can be paid out as dividends

High Payout Please

- Why might a high payout be desirable?
- Desire for current income
  - Individuals in low tax brackets
  - Groups that are prohibited from spending principal (trusts and endowments)

- Uncertainty resolution: no guarantee that the higher future dividends will materialize

- Taxes
  - Tax-exempt investors don't have to worry about differential treatment between dividends and capital gains

Clientele Effect

- Some investors prefer low dividend payouts and will buy stock in those companies that offer low dividend payouts

- Some investors prefer high dividend payouts and will buy stock in those companies that offer high dividend payouts

- Implications
- What do you think will happen if a firm changes its policy from a high payout to a low payout?
- What do you think will happen if a firm changes its policy from a low payout to a high payout?
- If this is the case, does dividend POLICY matter?

Information Content of Dividends

- Stock prices generally rise with unexpected increases in dividends and fall with unexpected decreases in dividends

- The stock market reacts positively to dividend increases and negatively to decreases or cuts.

- Empirical evidence shows that tax increases lead to higher payouts, rather than lower.

Dividend Policy in Practice

- Residual dividend policy
- Constant growth dividend policy – dividends increased at a constant rate each year
- Constant payout ratio: pay a constant percent of earnings each year
- Compromise dividend policy

Residual Dividend Policy

- Determine capital budget
- Determine target capital structure
- Finance investments with a combination of debt and equity in line with the target capital structure
  - Remember that retained earnings are equity
  - If additional equity is needed, issue new shares
- If there are excess earnings, then pay the remainder out in dividends

Example – Residual Dividend Policy

- Given
  - Need $5 million for new investments
  - Target capital structure: D/E = 2/3
  - Net Income = $4 million

- Finding dividend
  - 40% financed with debt (2 million)
  - 60% financed with equity (3 million)
  - Net Income – equity financing = $1 million, paid out as dividends

Compromise Dividend Policy

- Goals, ranked in order of importance
  - Avoid cutting back on positive NPV projects to pay a dividend
  - Avoid dividend cuts
  - Avoid the need to sell equity
  - Maintain a target debt/equity ratio
  - Maintain a target dividend payout ratio

- Companies want to accept positive NPV projects, while avoiding negative signals

Stock Repurchase

- Company buys back its own shares of stock
  - Tender offer: company states a purchase price and a desired number of shares
  - Open market: buys stock in the open market

- Similar to a cash dividend in that it returns cash from the firm to the stockholders

- This is another argument for dividend policy irrelevance in the absence of taxes or other imperfections

Real-World Considerations

- Stock repurchase allows investors to decide if they want the current cash flow and associated tax consequences
- Investors face capital gains taxes instead of ordinary income taxes (lower rate)
- In our current tax structure, repurchases may be more desirable due to the options provided stockholders

Information Content of Stock Repurchases

- Stock repurchases sends a positive signal that management believes that the current price is low
- Tender offers send a more positive signal than open market repurchases because the company is stating a specific price
- The stock price often increases when repurchases are announced

Stock Repurchase Announcement

"America West Airlines announced that its Board of Directors has authorized the purchase of up to 2.5 million shares of its Class B common stock on the open market as circumstances warrant over the next two years …

"Following the approval of the stock repurchase program by the company's Board of Directors earlier today. W. A. Franke, chairman and chief officer said 'The stock repurchase program reflects our belief that America West stock may be an attractive investment opportunity for the Company, and it underscores our commitment to enhancing long-term shareholder value.'

"The shares will be repurchased with cash on hand, but only if and to the extent the Company holds unrestricted cash in excess of $200 million to ensure that an adequate level of cash and cash equivalents is maintained."

Stock Dividends

- Pay additional shares of stock instead of cash
- Increases the number of outstanding shares
- Small stock dividend
  - Less than 20 to 25%
  - If you own 100 shares and the company declared a 10% stock dividend, you would receive an additional 10 shares
- Large stock dividend: more than 20 to 25%

Stock Splits

- Stock splits: essentially the same as a stock dividend except expressed as a ratio
  - For example, a 2 for 1 stock split is the same as a 100% stock dividend

- It is often claimed that stock splits, in and of themselves, lead to higher stock prices; research, however, does not bear this out. What is true is that stock splits are usually initiated after a large run up in share price

- Common explanation for split is to return price to a “more desirable trading range”

Basics in Valuation Approaches

Basics in Valuation Approaches

• perception that markets are inefficient and make mistakes in assessing value

• an assumption about how and when these inefficiencies will get corrected

In an efficient market, the market price is the best estimate of value.

The purpose of any valuation model is then the justification of this value.

Valuation objective is to search for "true" value

Valuations are biased. The question is how much and in which direction.

The direction and magnitude of the bias is *directly proportional* to who pays you and how much you are paid.

Valuation Approaches

Discounted Cash Flow: value of any asset is estimated by computing the PV of the expected cash flows on that asset, discounted back at a rate that reflects the riskiness of the cash flows (measure of the intrinsic value of an asset).

Relative Valuation: The value of any asset can be estimated by looking how similar assets are priced in the market place.

Academic Studies

Mainly focus on the comparison of three model approaches:

- Discounted Dividends
- Discounted Cash Flows
- Abnormal Earnings

Ratios or multiple based models are discussed in isolation or in addition of the three previous models.

Consensus: models based in discounted cash flows, discounted Earnings as well as abnormal earnings should, in theory, should provide same results (valuation) for an infinite time horizon.

Practical differences occurs if input factors are not consistent or a finite model horizon is applied.

For practical reasons a comparison of different models is sensible and important as it contributes to the understanding of company valuation.

Discounted Cash Flow Valuation

Every asset has an intrinsic value that can be estimated, based upon its characteristics in terms of cash flows, growth and risk.

Information Needed (estimation)

- life of the asset
- the cash flows during the life of the asset
- the discount rate to apply to these cash flows to get present value

Market Inefficiency: Markets are assumed to make mistakes in pricing assets across time, and are assumed to correct themselves over time, as new information comes out about assets.

Discounted Cashflow Valuation

$$\text{Value} = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t}$$

Where

- CF_t is the cash flow in period t,
- *r* is the discount rate appropriate given the riskiness of the cash flow, and
- t is the life of the asset.

For an asset to have value, the expected cash flows have to be positive some time over the life of the asset.

Assets that generate cash flows early in their life will be worth more than assets that generate cash flows later; the later may however have greater growth and higher cash flows to compensate.

Equity versus Firm Valuation

- Value just the equity stake in the business.

- Value the entire business, which includes, besides equity, the other claimholders in the firm

Equity Valuation

The value of equity is obtained by:

Discounting expected *cashflows to equi*ty (the residual cashflows after meeting all expenses, tax obligations and interest and principal payments) at the cost of equity (required return to shareholders).

$$\text{Value of Equity} = \sum_{t=1}^{n} \frac{\text{CF to Equity}_t}{(1+k_e)^t}$$

CF to Equity_t = Expected Cashflow to Equity in period t

k_e = Cost of Equity

Note: The dividend discount model is a specialized case of equity valuation

Firm Valuation

The value of the firm is obtained by:

Discounting expected *cashflows to the firm* (the residual cashflows after meeting all operating expenses and taxes, but prior to debt payments) *at the WACC* (cost of the different components of financing used by the firm, weighted by their market value proportions)

$$\text{Value of Firm} = \sum_{t=1}^{n} \frac{\text{CF to Firm}_t}{(1+\text{wacc})^t}$$

Adjusted Present Value approach:

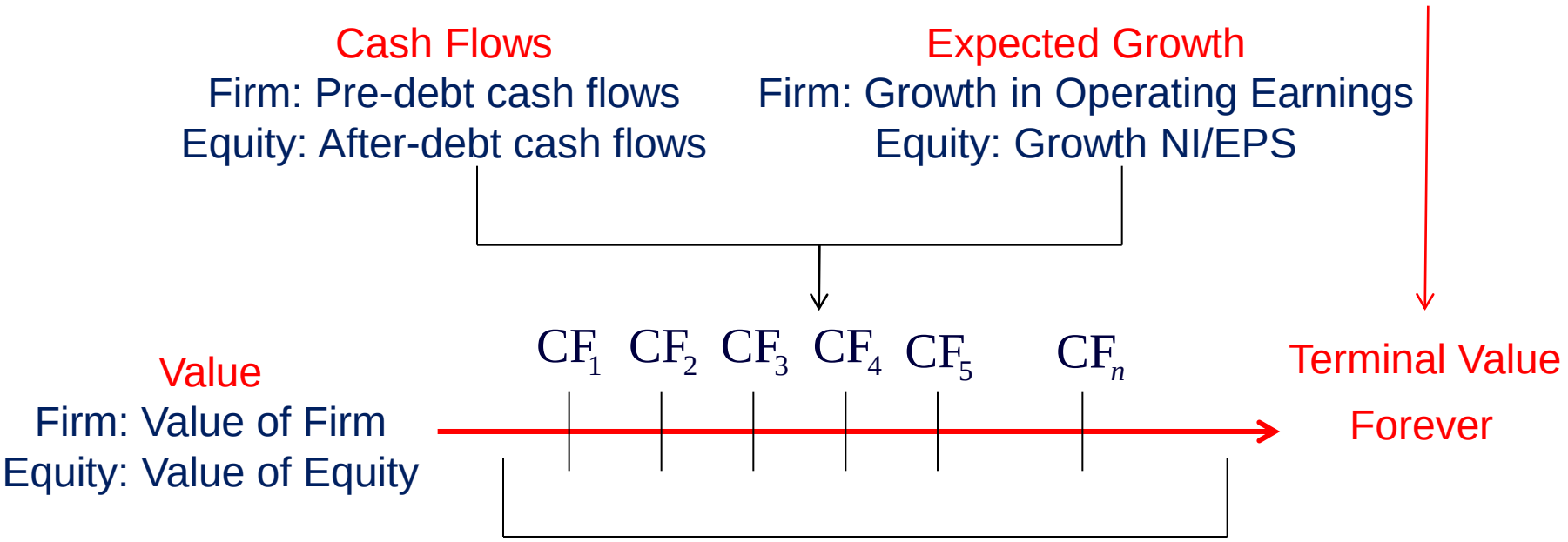
Firm Value = Unlevered Firm Value + PV of tax benefits of debt - Expected Bankruptcy Cost

Generic DCF Valuation Model

Firm is a stable growth
Grows at constant rate
forever

Cash Flows
Firm: Pre-debt cash flows
Equity: After-debt cash flows

Expected Growth
Firm: Growth in Operating Earnings
Equity: Growth NI/EPS



Discount Rate
Firm: Cost of Capital
Equity: Cost of Equity

Valuing ABC

Retention Ratio = 41.56% ROE = 16%

Dividends

EPS_0 = \$1.54

Payout Ratio = 58.44%

DPS_0 = \$0.90

Expected Growth

41.56% ×16.00% = 6.65%

$g = 4\%$: $ROE = 8.95\%$ (Cost of equity)

$Beta = 1.00$

$$Payout = 1 - \frac{g}{ROE} = 1 - \frac{0.04}{0.0895} = 55.31\%$$

$$\text{Terminal value} = \frac{EPS_6 \times Payout}{r - g}$$

$$= \frac{\$2.12 \times 1.04 \times 0.553}{(0.895 - 0.04)} = \$24.69$$

$EPS_1 = \$1.64$ $EPS_2 = \$1.75$ $EPS_3 = \$1.87$ $EPS_4 = \$1.99$ $EPS_5 = \$2.12$

$DPS_1 = \$0.96$ $DPS_2 = \$1.02$ $DPS_3 = \$1.09$ $DPS_4 = \$1.16$ $DPS_5 = \$1.24$

Value of equity per share = \$20.48

Forever

Discount at Cost of Equity

4.95% = 0.95 × 4% = 8.75%

Risk free rate (Long term bond rate in USD) + Beta ×Risk Premium

= 4.95% + 0.95 × 4%

Risk Premium = Mature Market (4%) + Country Risk (0%)

Discounted Free Cash Flow Model

Considers cash that is available to shareholders and lenders of the company.

Value of firm is determined as the present value of future cash flows plus excess cash and marketable securities, minus debt and preferred shares.

As valuation is completely dependent on future expectations, the model is vulnerable to mistakes in these assumptions. On average 82% of the firm value is determined by the terminal value.

$$V_{FCF} = \sum_{t=1}^{T} \frac{FCF_T}{(1+WACC)^t} + \frac{TV_{FCF}}{(1+WACC)^t} + ECMS - D - PS$$

$$with\ FCF = (Sales - OpExp - DepExp)(1-\tau) + (DepExp - \Delta WC - CapExp)$$

$V = Market\ Value$

$WACC = Weighted\ Average\ Cost\ of\ Capital$

$FCF = Free\ Cash\ Flow$

$TV = Terminal\ Value$

$ECMS = Excessive\ Cash\ and\ Marketable\ Securities$

$D = Debt$

$OpExp = Operating\ Expenses$

$DepExp = Depreciation\ Expenses$

$WC = Working\ Capital$

$CapExp = Capital\ Expenditures$

$PS = Preferred\ Shares$

$g = expected\ FCF\ growth$

Abnormal Earnings Model (Residual Income or Economic Profit Model)

Company value is based on book value of capital invested and the present value of expected abnormal earnings

Looks at whether management's decisions cause a company to perform better or worse than anticipated.

The model says that investors should pay more than book value if earnings are higher than expected and less than book value if earnings are lower than expected.

Abnormal Earnings: actual return – expected return on invested capital

Less sensitive to future forecasts than the FCF and DDM models

Book value accounts for 72% of the valuation.