Valuation Fundamentals Workshop

Fundamentals of Valuation and Methodologies

TRACK A

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2015

Session 2 - Valuation Basics

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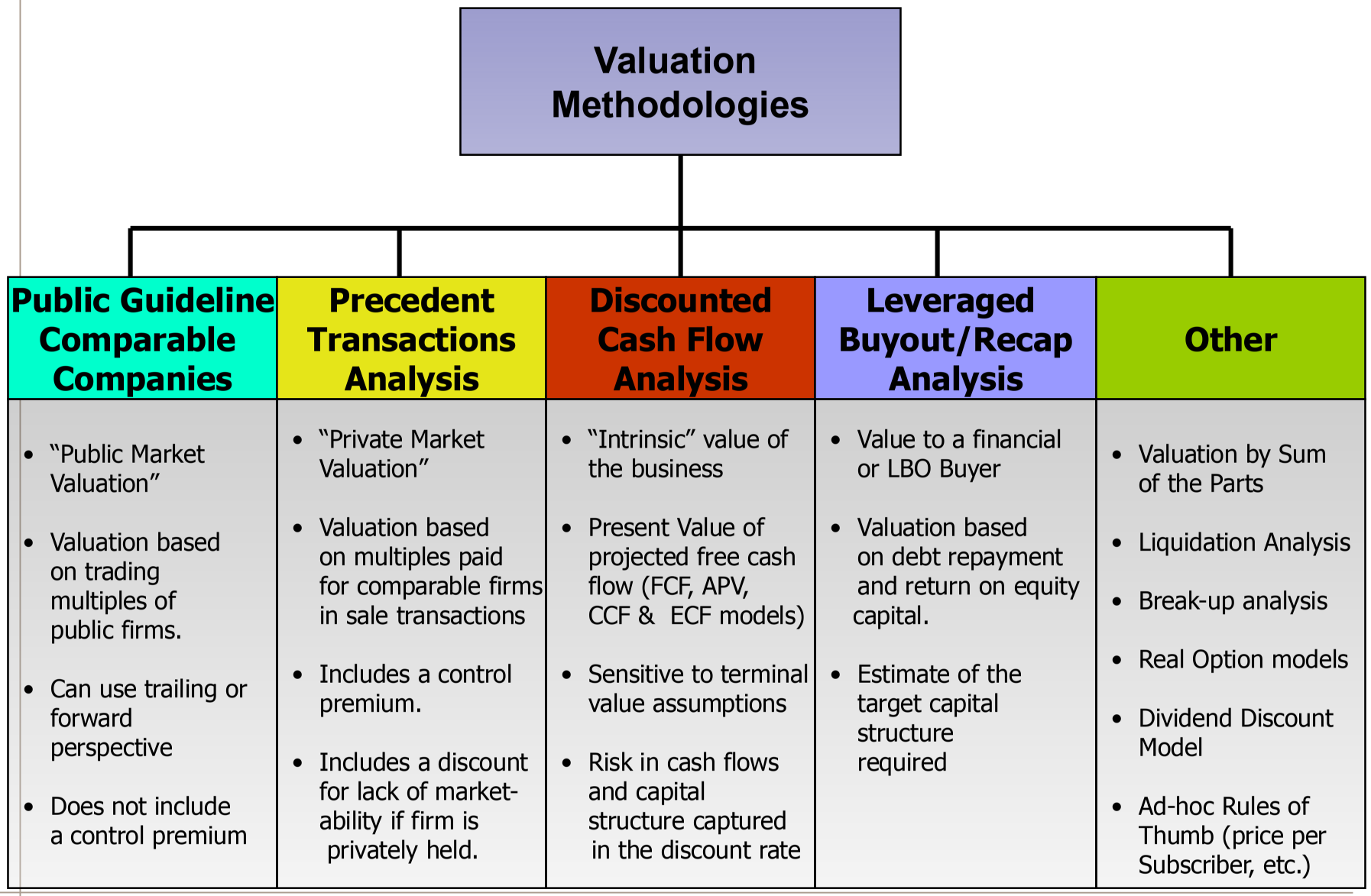
February 25, 2015

Agenda

- **Income or Discounted Cash Flow Approaches**
  - Firm Free Cash Flow
  - Discount Rate
  - Frictionless Model
  - WACC
- **Market Value Approaches**
  - Guideline Public Multiples
  - Precedent Transaction Multiples
- **Other valuation approaches**
  - Adjusted Present Value
  - Dividend Discount Model
  - Flow-to-Equity Model
  - Sum-of-the-Parts
  - LBO Valuation
  - Replacement cost of the assets – Value in Trade or Liquidation

Valuation Methodologies



How to Value an Asset?

- General framework to *value* an asset: discounting future expected cash flows = Discounted Cash Flow (DCF) Model

$$V = \sum_{t=0}^{\infty} \frac{\mathrm{E}[CF_t]}{(1+r)^t}$$

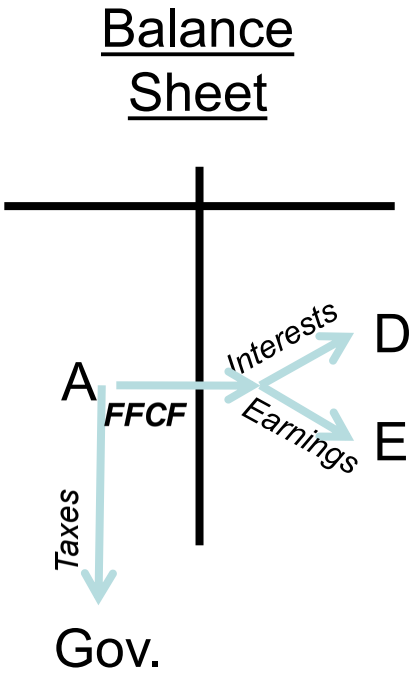
  - E[CF] = Expected Cash Flow
  - r = Discount Rate

- The DCF model can be used for a multitude of purposes (firm valuation, real estate rent setting, bond pricing, retirement plans, investment decisions, …)

- The challenge is estimating the expected future cash flows and using the appropriate discount rate that reflects the riskiness of the cash flows.

How to Value a Company?

- Using the DFC Model, we can find the Enterprise Value of a firm (Enterprise Value = Firm Value = Value of the Assets)
  1. Estimate Firm Free Cash Flow (FFCF)
  2. Discount using the appropriate discount rate (r)



$$V_A = \sum_{t=0}^{\infty} \frac{\mathrm{E}[FFCF_t]}{(1+r)^t} = \text{Enterprise Value}$$

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How to Find the Stock Price?

- Thus, the market value of equity (MVE) and the stock price (P) are:

$$MVE = V_A - MVD \qquad P = \frac{MVE}{N}$$

  - ***MVD***: market value of debt
  - **N:** Number of shares outstanding

- Note: Financial investments, excess cash and other assets not necessary for business operation should be valued separately and added to the value obtained by discounting free cash flows

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What is Firm Free Cash Flow?

Income Statement

Revenues -
Costs (COGS & SG&A) =
EBITDA -
Depreciation & Amortization (DA) =
EBIT -
Interest Expense=
EBT –
Taxes=
Earnings

FFCF=(Rev – Costs)(1-T) + DA*T - ΔNWC – Capex + Asset Sales

FFCF from Operating Activities FFCF from Investing Activities

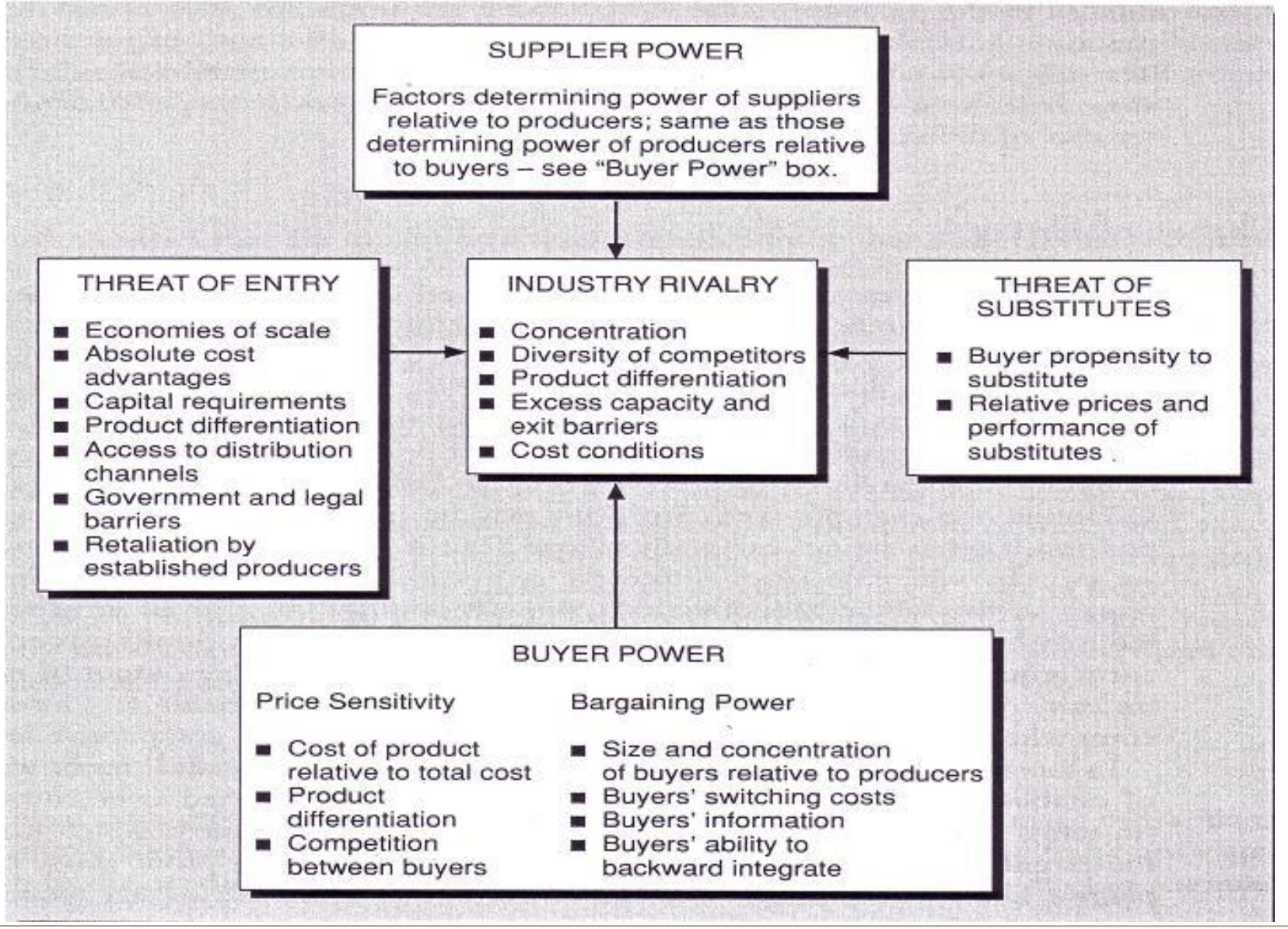
FFCF=(Rev – Costs-DA)(1-T) + DA - ΔNWC – Capex + Asset Sales

FFCF from Operating Activities FFCF from Investing Activities

How do we measure future FFCF?

- The most important step in estimating FFCF is to analyze its business environment
  1. Analysis of macro-economic conditions
  2. Analysis of industry dynamics
  3. Analysis of intra-industry firm's competitive advantage or disadvantage
  4. Analysis of firm's historical performance

Porter Analysis - Industry dynamics



Intra-industry competitive advantage

- Key question: Does the firm have a competitive advantage compared to its competitors? If yes, which type?
  - Product differentiation (superior quality, variety, delivery or service, image, brand, R&D)
  - Cost leadership (economies of scale/scope, efficiencies in production or distribution, simpler designs, better technology, lower input costs, better cost controls)
- Examples of competitive advantage: Product price reductions (e.g., Walmart), Product innovations (e.g., Apple), Product delivery innovations (e.g., Amazon), Lower production costs (e.g., outsourcing)

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Why discount the Cash Flow?

- Today dollars are worth more than tomorrow dollar (Time Value of Money – Opportunity Cost).
  - Which would you choose?
    I. $50 for sure TODAY or $50 for sure 1 YEAR FROM NOW
    II. $40 for sure TODAY or $50 for sure 1 YEAR FROM NOW

- Individuals are usually risk-averse (safe dollars worth more than risky dollars):
  - Which would you choose?
    I. $50 for sure or $0 / $100 at 50% probability each
    II. $40 for sure or $0 / $100 at 50% probability each

- The higher the risk, the higher the return (i.e. the discount rate)

$$r = r_f + \text{Premium for risk}$$

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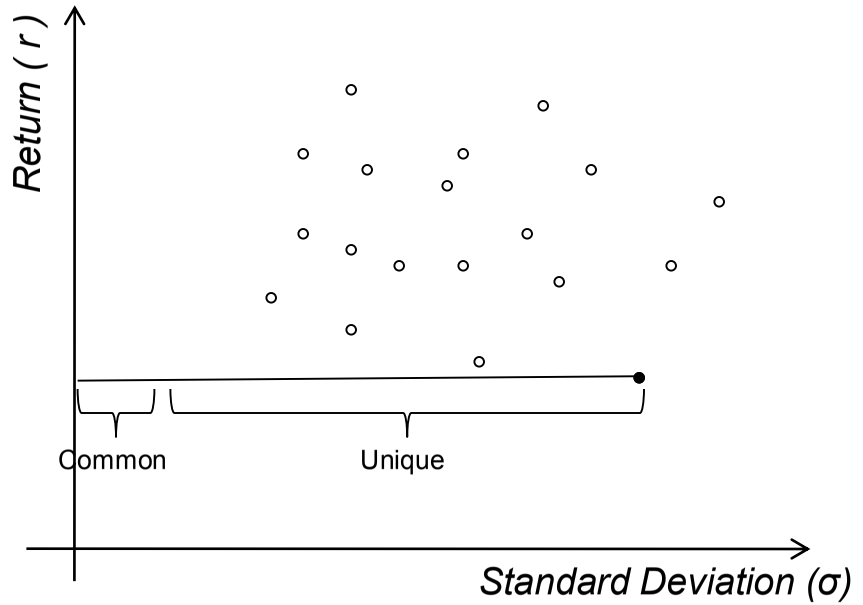
Why discount the Cash Flow?

- Risk-Return: Empirical Evidence



Total Risk = Systematic (Common) Risk + Idiosyncratic (Unique) Risk

σ

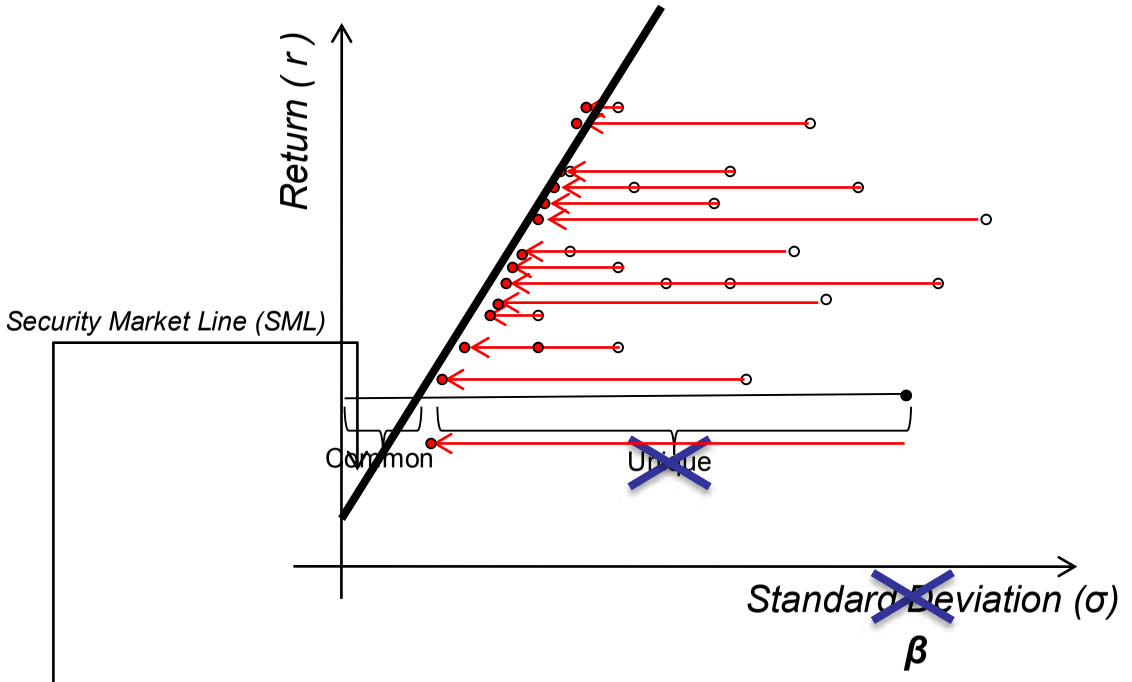
β

$$\beta_x = \frac{Cov(r_x, r_m)}{Var(r_m)}$$

Portfolio Theory tells us that Unique Risk can be diversified away.

Why discount the Cash Flow?

- Risk-Return: Empirical Evidence



Capital Asset Pricing Model (CAPM)

$$r = Intercept + \beta \cdot Slope = r_f + \beta \cdot (r_m - r_f)$$

Risk-free Rate

Market Risk Premium

$$r_e = r_f + \beta_e \cdot (r_m - r_f)$$
$$r_d = r_f + \beta_d \cdot (r_m - r_f)$$
$$r_{OA} = r_f + \beta_{OA} \cdot (r_m - r_f)$$
$$r_x = r_f + \beta_x \cdot (r_m - r_f)$$

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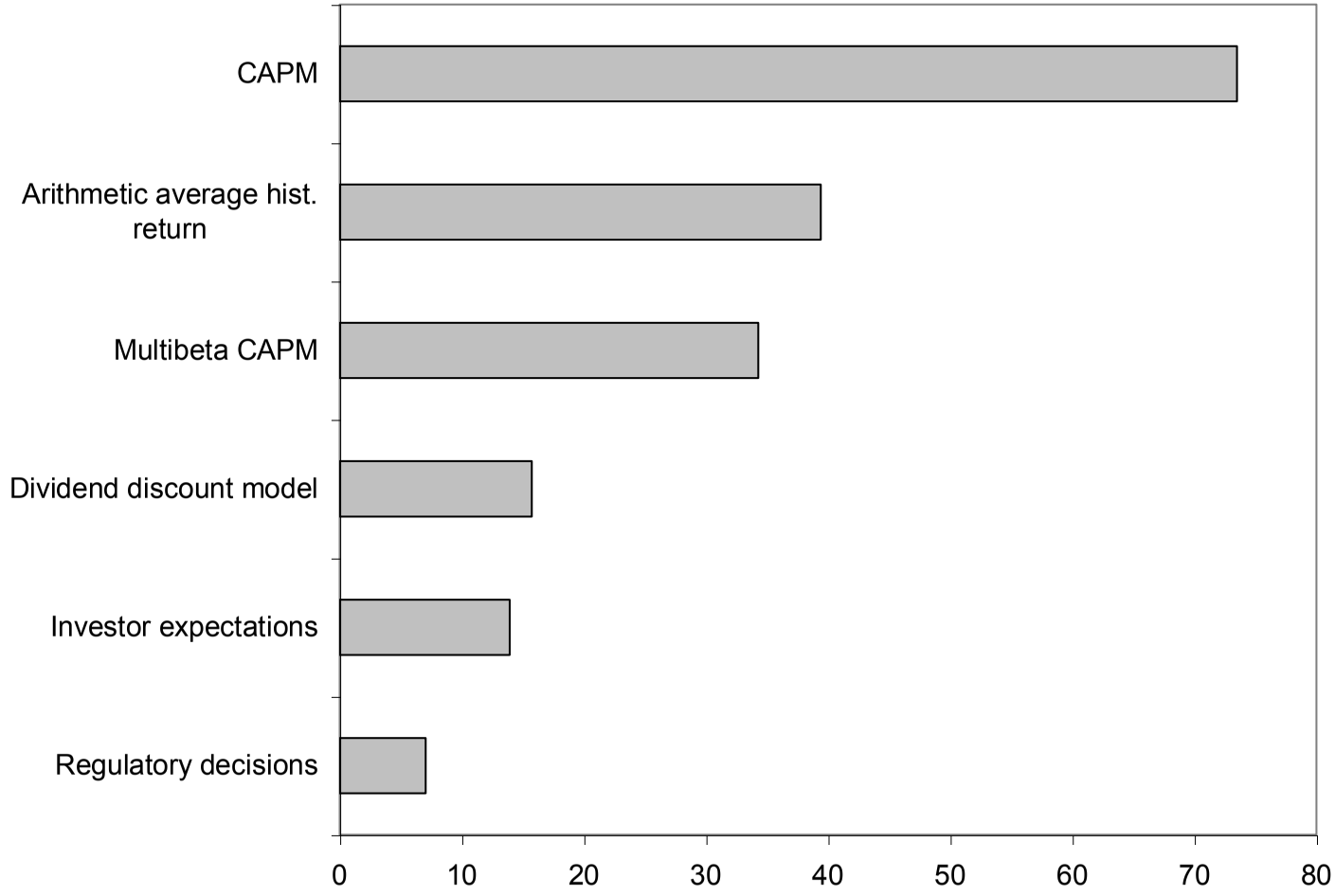
Cost of Capital in the real world

- Estimation of cost of capital



Legend: % of CFOs who always or almost always uses a certain technique
Source: Graham and Harvey, Journal of Financial Economics 2001

How do we compute the discount rate?

$$r = r_f + \beta \cdot (r_m - r_f)$$

- **Risk Free Rate:** represents the rate you would earn on an equivalent maturity investment with no risk
  - I use the return on the 20-year Treasury. However, if I need to value a short term project, I will use a risk free rate that matches the duration of the project.
  - http://www.treasury.gov/resource-center/data-chart-center/Pages/index.aspx
- **Market Risk Premium:** represents the expected return of the market, in excess of the risk free rate, for the next 20 years.
  - I use 5%, which is close to the arithmetic average of the last 80 years.
  - Professor Damodaran publishes a monthly implied MRP on his website at NYU. http://people.stern.nyu.edu/adamodar/
- **Beta:** represents the riskiness (common) of the firm. It is measured as the way stock returns co-vary with the stock market returns.
  - http://finance.yahoo.com/q/ks?s=HOG+Key+Statistics

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Frictionless Model (M&M)

- We first study a valuation model with no frictions
  - No Corporate or Personal Taxes
  - No Bankruptcy Costs
  - No Transaction or Issuance Costs
  - No Asymmetric Information

- We will then add back frictions, and understand how taxes and bankruptcy costs affect firm value.

How to Value a Firm – No Friction Model

$$FFCF = EBITDA \cdot (1 - t_C) + DA \cdot t_C - \Delta NWC - Capex + AS - CGT$$

$$V_A = \sum_{t=0}^{\infty} \frac{\mathrm{E}[FFCF_t]}{(1+r)^t}$$

$$r_A = \frac{D}{D+E} r_d + \frac{E}{D+E} r_e$$

$$MVE = V_A + NOA - MVD$$

$$P = \frac{MVE}{N}$$

AS = Asset Sales
CGT = Capital Gains Tax
NOA = Non-Operating Assets (excess cash, NOL Carryforwards, etc.)
MVD = Market Value of Debt

Estimating the Cost of Capital

$$r_A = \frac{D}{D+E} r_d + \frac{E}{D+E} r_e$$

- **Cost of Debt (r_d)** depends on the risk free rate, and the company's systematic default risk. It can be estimated by:
  - CAPM: $r_d = r_f + \beta_d \cdot (r_m - r_f)$
  - Yield-to-maturity of firm's corporate bonds
  - Using a credit spread, which we add to the relevant Treasury rate
- **Cost of Equity (re)** depends on the riskiness of the equity of the company.
  - CAPM: $r_e = r_f + \beta_e \cdot (r_m - r_f)$
  - Find cost of equity of comparable companies with same leverage.

Discount Rate and Leverage

$$r_A = \frac{D}{D+E} r_d + \frac{E}{D+E} r_e$$

- What happens to the firm cost of capital r_A if a company increases its leverage?
  - r_e increases because equity stake is more risky
  - r_d increases because debt stake is more risky
  - r_A ?
- Under a no friction model, if we increase the leverage, the discount rate r_A remains constant, because even if r_e and r_d increase, the D/(D+E) goes up and E/(D+E) goes down. (Modigliani and Miller)

- The benefits of the tax shield and cheaper cost of debt are offset by the increased cost of equity.

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Intro on WACC

- The No-Friction Model assumes that there are no corporate taxes and no costs of financial distress (bankruptcy)
- The WACC (Weighted Average Cost of Capital) model relaxes these assumptions.
  - Corporations pay taxes at a marginal rate T
  - Financial distress is costly for the firm

Interest Payment Tax Shield ⟵

IS

Revenues -
Costs (COGS & SG&A) =
EBITDA -
Depreciation & Amortization (DA) =
EBIT -
Interest =
EBT –
Taxes=
Earnings

- Debt is good because interest on the debt is paid before taxes, generating a Tax Shield
- How much Tax savings does Debt generate?
  - Value of Debt Tax Shields = $t_c D$

Intro to WACC

- **Thus, the value of a levered firm is equal to the value of an unlevered firm plus the value of the tax shields.**

	Unlevered Firm		Levered firm
Debt	$ 0		$ 40,000
Equity	100,000		60,000
Total	$100,000		$100,000
NOI	*$11,000*		*$11,000*
Interest (10%)	0		4,000
Taxes (25%)	2,750	(1,000)	1,750
NI	$ 8,250		$ 5,250
Bondholders' Income	$ 0		$4,000
Stockholders' Income	8,250		5,250
Total Security Holder Inc.	$8,250	+1,000	$9,250

Tax shield = Interest Expense x (Tax Rate) = (.25)x($4,000) = $1,000

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Example: National Instruments Cost of Capital

- Since NI uses no interest bearing debt in the capital structure, the cost of capital is the cost of equity.
- The cost of equity is estimated using the capital asset pricing model (CAPM)
  - $K_e = R_f + \beta(ERP)$
    - Where;
      - K_e – Cost of Equity
      - R_f = Risk Free Rate
      - β = Beta Coefficient (Covariance of Stock with Index)
      - ERP = Expected Equity Risk Premium (Equity return less.Treasury Bond Returns)

NI's Cost of Equity - Unlevered

- **If we assume the current 20-year US treasury note is 2.6%**
- **National Instrument's Beta is 1.14**
- **The expected equity (market) risk premium is 5%.**

- **Then the cost of equity of NI would be:**

  - Ke = 2.6% + 1.14 (5%) = 8.3%

How Debt Affects Equity Betas

In the absence of taxes, the beta of a levered firm is equal to its unlevered beta times one plus its debt to equity ratio.

$$\beta_L = \beta_U [1 + \frac{D}{E}]$$

With taxes, a firm's levered beta is equal to its unlevered beta plus its debt to equity ratio times (1 minus the corporate tax rate) times the difference in the unlevered equity beta and the debt beta.

$$\beta_{\mathrm{L}} = \beta_{\mathrm{U}} + \frac{D}{E}(1 - T_C)(\beta_{\mathrm{U}} - \beta_{\mathrm{D}})$$

If the debt is considered risk free and thus the debt beta is zero, then the formula with taxes can be consolidated to"

$$\beta_L = \beta_U [1 + \frac{D}{E}(1 - Tc)]$$

How Debt Affects Cost of Equity

- NI's unlevered beta is 1.14. If NI changed its capital structure to 20% debt and 80% equity by issuing debt and repurchasing equity. Assume the debt is AAA and considered risk free, so that the debt beta is zero. The company is in a 35% corporate tax rate.
- The levered beta would be:

$$\beta_L = \beta_U[1 + \frac{D}{E}(1 - Tc)]$$

$$= 1.14(1 + (20/80)(1 - .35)) = 1.325$$

- NI's levered cost of equity would increase from 8.3% to 9.225% due to greater financial risk:

K_e = 2.6% + 1.325 (5%) = 9.225%

- But what would happen to WACC?

Debt Affect on WACC

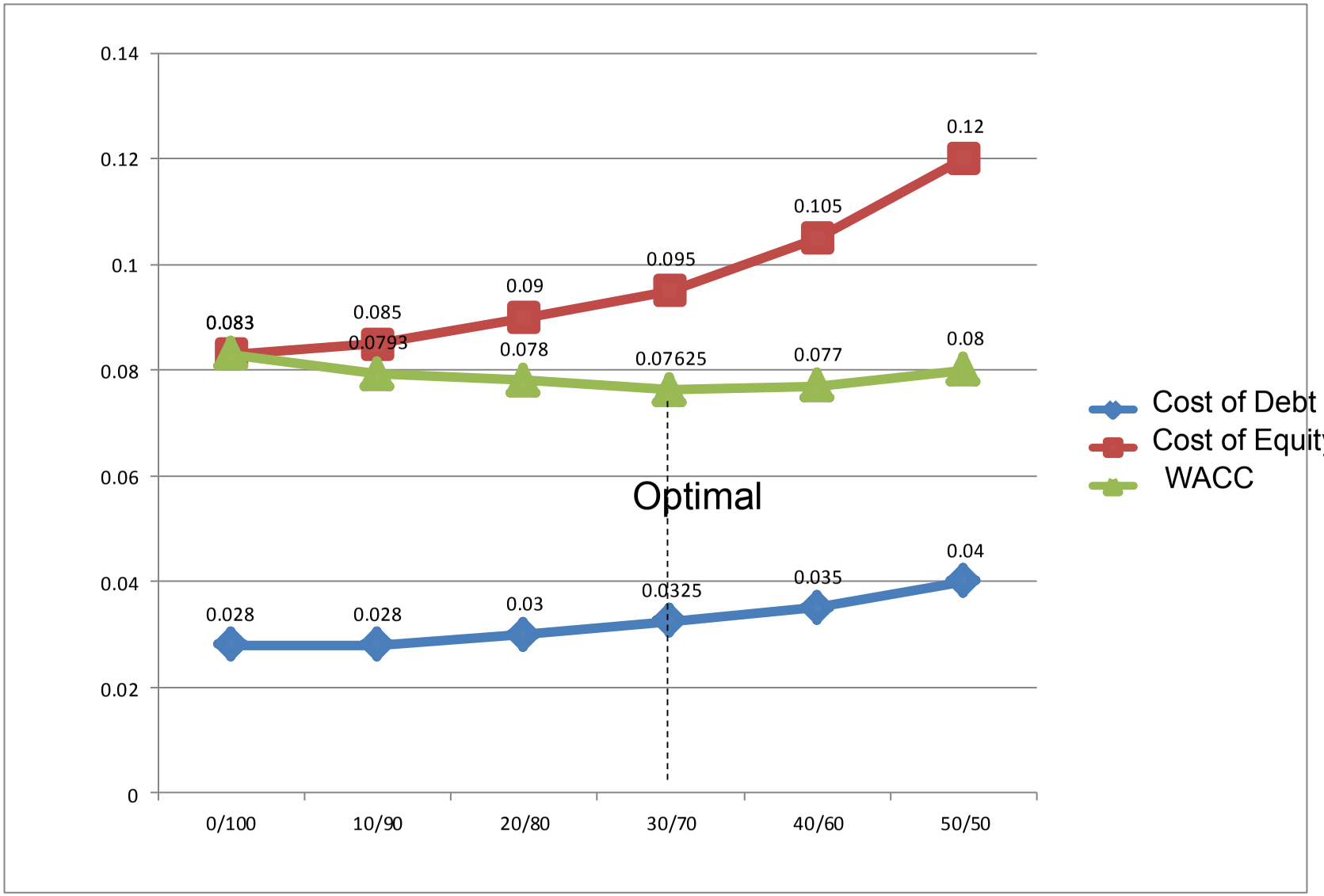
- If NI started using 20% debt in the capital structure at a cost of 4% (2.6% after-tax if they are in a 35% tax bracket) and 80% equity.

…. Even though the cost of equity increased from 8.3% to 9.225% due to slightly higher risk for the shareholders.

The WACC would be 7.90% (20% (2.6%)+ 80% (9.225%)) or a decrease of 40 basis points from the 8.3% when all equity was used.

As additional debt is employed, the cost of debt and cost of equity will rise but the WACC will decrease to the optimal capital structure (30% debt in following slide example).

WACC Graph



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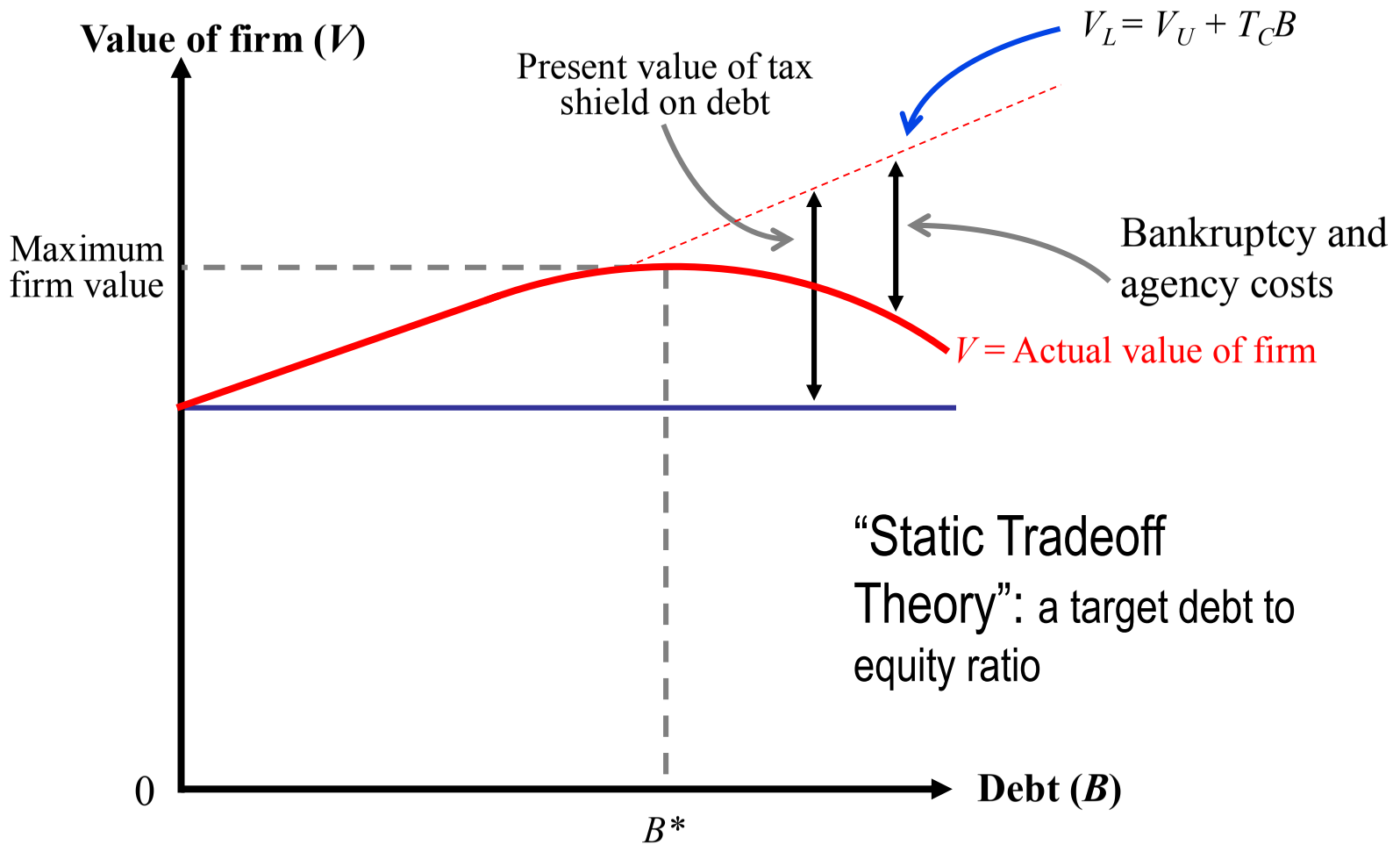
Tradeoff between Tax Benefits and Bankruptcy Costs



Summary of MM I and II with Corporate Taxes

Value of unlevered firm: $$V_U = \frac{EBIT(1-T_C)}{r_O}$$

Value of levered firm: $$V_L = \frac{EBIT(1-T_C)}{r_O} + T_C B$$

Equity return: $$r_S = r_o + \frac{B}{S}(1-T_c)(r_o - r_B)$$

WACC $$r_{WACC=} \frac{B}{B+S} r_B (1-T_C) + \frac{S}{B+S} r_S$$

Where,

V_U = Value of Unlevered Firm
V_L = Value of Levered Firm
r_O = Unlevered return on assets
r_S= return on equity
r_B = return on debt
Tc = corporate tax rate
B = Value of Debt
S = Value of Equity
WACC = Weighted Average Cost of Capital

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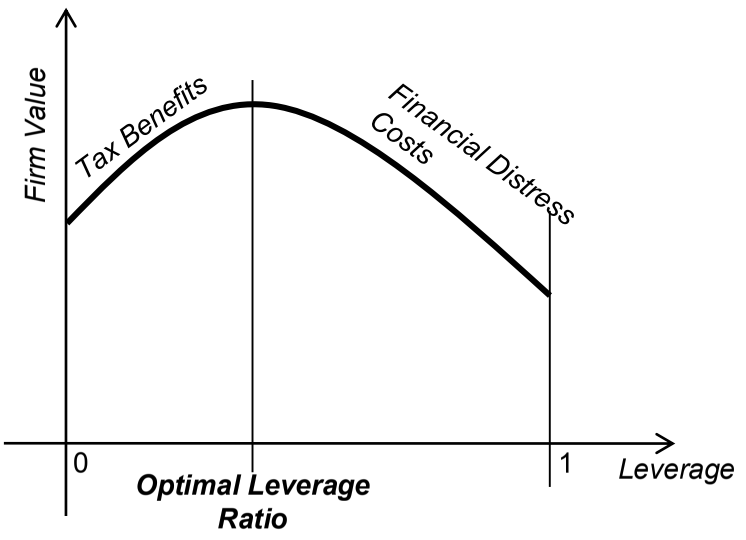
Recap: Trade-off Theory

- There is a trade off between the benefits and the costs of debt.

Benefits of Debt
• Interest Payment Tax Shield • Management Incentives • Concessions from Stakeholders

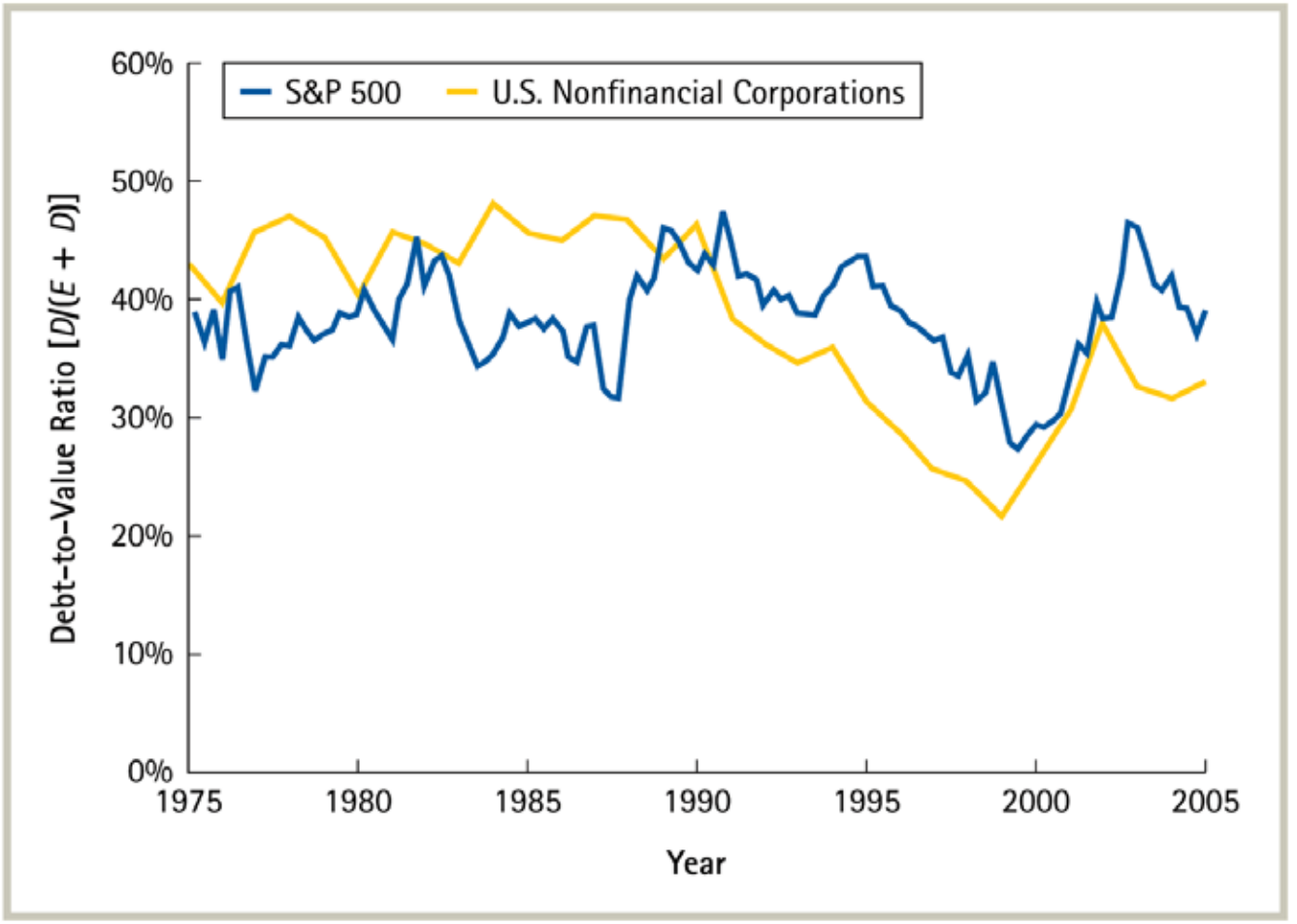


Costs of Debt
• Direct Financial Distress Costs • Indirect Financial Distress Costs – Asset Substitution Problem – Debt Overhang Problem – Stakeholders Problem

- **Companies should target an optimal leverage ratio** that maximizes firm value (Targeting Strategy) balancing the benefits and costs of debt

Firms' capital structure preferences (1/2)

- Debt-to-Value Ratio [D / (E + D)] of U.S. Firms, 1975–2005

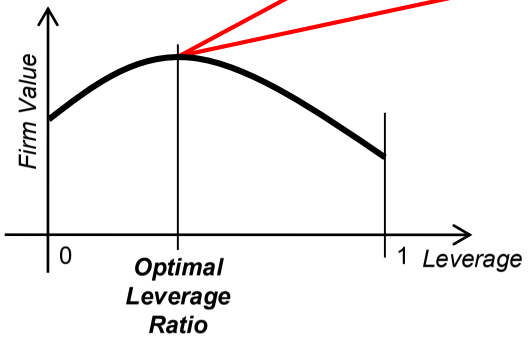


Source: Berk and deMarzo, 2009, chapter 15.

Weighted Average Cost of Capital (WACC)

- The only assumption of the WACC is that the company is continuously rebalancing its capital structure to keep an optimal leverage ratio (Targeting Strategy) according to the trade-off theory
  - Mature, stable companies
  - Profitable companies
- Under this assumption, the discount rate to use to compute firm value is not r_A but the WACC:

$$WACC = \left(\frac{D}{D+E}\right)^{*} \cdot (1-T) \cdot r_d + \left(\frac{E}{D+E}\right)^{*} \cdot r_e$$



Interest Payment Tax Shield

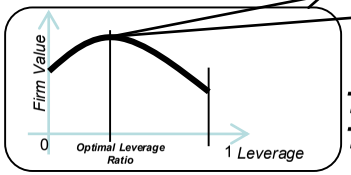
Recap: How to Value a Firm – WACC

$$FFCF = EBITDA \cdot (1 - t_C) + DA \cdot t_C - \Delta NWC - Capex + AS$$

$$V_A = \sum_{t=0}^{\infty} \frac{\mathrm{E}[FFCF_t]}{(1 + WACC)^t}$$

$$r_d = (1 - PD)YTM - PD(1 - RR)$$

$$WACC = \left(\frac{D}{D+E}\right)^{*} \cdot (1 - T) \cdot r_d + \left(\frac{E}{D+E}\right)^{*} \cdot r_e$$



TRADE-OFF THEORY

$$r_e = r_f + \beta_e (r_m - r_f)$$

CAPM

$$MVE = V_A - MVD$$

$$P = \frac{MVE}{N}$$

REGRESSION

$$\beta_e = \frac{Cov(r_e, r_m)}{Var(r_m)}$$

If Public Company

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Comparable Company – Relative Value

- **The relative value of a company can be estimated by comparing it to the value of similar companies.**
  - Guideline Public Companies - Since the firms are public, the pros are that the information is easy to get and the value is current. The cons are that the firms could be dissimilar (larger, more diversified, etc.) and their stock price reflects liquidity in the security for a minority block of stock.
  - Precedent Transactions – transaction prices paid by willing buyers and sellers of similar companies. The cons are that getting private information is difficult and the transaction date could be stale. The transaction price my reflect synergies, control premiums and discounts for lack of marketability. The pros could be that the companies are more similar to the target company.

Multiples Approach

EXAMPLE

	A		Comparables			
			B	C	D	E
V	?		$40	$50	$100	$15
EBITDA	$18		$10	$15	$20	$5
MULTIPLE	3.83	⇐	4	3.3	5	3

V = $68.94

V = Enterprise Value = Value of Equity + Net Debt

Valuation Ratios

- Several ratios are used to value assets
  - Equity (Stock Price) Multiples
    - P/E
    - PEG
    - MVE/BVE
  - Enterprise Value Multiples
    - V/EBITDA
    - V/FCF
    - V/Sales
    - V/EBIT

- The choice of which ratio to use depends on the type of firm that is valued, and the choice of comparables
  - For mature companies, M&A Professionals tend to use the V/EBITDA ratio. Why?

An example of trading multiples (1/2)

- You want to know whether Amazon is over- or under-valued using a simple PE ratio approach. Amazon has a very high price to earnings ratio

- Information on forward (NTM) PE ratios:

	PE Dec. 31, 2014
Amazon (AMZN)	194.05x
Barnes & Noble (BSK)	55.57x
Expedia (EXPE)	19.49x
Ebay (EBAY)	17.01X

Source: Capital IQ

An example of trading multiples (2/2)

- But Amazon exhibits much more growth than the other companies
  - Consensus of 441% for average EPS growth over next 5 years (believable?)
  - We could use instead the so-called **PEG ratio**:

$$PEG = \frac{PE}{Annual\ EPS\ growth \times 100}$$

- Information on forward PEG ratios:

	PEG Dec 31, 2014
Amazon (AMZN)	0.44
Barnes & Noble (BSK)	NM
Expedia (EXPE)	0.65
Ebay (EBAY)	1.01

Source: Capital IQ

Multiples Approach and DCF

- The Multiples approach is a very rough approximation of the DCF
- Example: From DCF to P/E

$$V = \sum_{t=0}^{\infty} \frac{\mathrm{E}[FFCF_t]}{(1+r)^t} \approx \frac{FFCF}{r-g} \approx \frac{Earnings}{r-g}$$

$$\frac{V}{E} \approx \frac{1}{r-g}$$

$$\frac{V/N}{E/N} \approx \frac{1}{r-g}$$

$$\frac{P}{EPS} \approx \frac{1}{r-g} = Multiple$$

Example: $\frac{\$10}{\$1} \approx \frac{1}{.125-.025} = 10x$

Assumptions

1. FFCF growing perpetuity
2. FFCF ~ Earnings
3. Comparable leverage
4. Comparable Risk (r)
5. Comparable growth rate (g)

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Multiples Vs DCF (1/2)

- You might prefer using DCF over Multiples when:
  - The firm is relatively unique in its industry and there's no good comps
  - You suspect a bubble or a panic or some other type of market irrationality
  - The firm operates in an industry with very few public firms so there's just not much comp data
  - You believe you have superior information (e.g. CFs forecast)

- You might prefer using Multiples over DCF when:
  - If you have really good comps and you believe the market is operating rationally
  - If you have very little confidence in projections of future performance
  - If you're trying to solely determine market value, or the amount you could get in a sale of the asset or the price you'll have to pay to buy the asset

Multiples Vs DCF (2/2)

- **In practice, we almost always use both methods and consider both values**
  - I recommend doing the DCF first so that you can get an understanding of the business which will allow you to discern better comps for the relative value work
  - Both the DCF value and the Relative Value measures provide important clues and information about the value of the asset you're working with, and provide somewhat of a check on each other (very important)

Agenda

- **Income or Discounted Cash Flow Approaches**
  - Firm Free Cash Flow
  - Discount Rate
  - Frictionless Model
  - WACC
- **Market Value Approaches**
  - Guideline Public Multiples
  - Precedent Transaction Multiples
- **Other valuation approaches**
  - Adjusted Present Value
  - Dividend Discount Model
  - Flow-to-Equity Model
  - Sum-of-the-Parts
  - LBO Valuation
  - Replacement cost of the assets – Value in Trade or Liquidation

APV: Main Intuition

- The Adjusted Present Value takes the Value of the Operating Assets, and "adjusts" it by adding the value of the tax shields and subtracting the costs of financial distress

$$V_A = V_{OA} + V_{TS} - V_{FDC} = PV(FFCF) + PV(IPTS) - PV(FDC) =$$
$$\sum_{t=0}^{\infty} \frac{\mathrm{E}[FFCF_t]}{(1+r_{OA})^t} + \sum_{t=0}^{\infty} \frac{\mathrm{E}[IPTS_t]}{(1+r_{TS})^t} - PV(FDC)$$

Where:

- FFCF = Firm Free Cash Flow
- IPTS= Interest Payment Tax Shield=IP·T=D·r_d·T
- FDC= Financial Distress Costs
- r_{OA} = Discount Rate on Operating Assets
- r_{TS} = Discount Rate on Tax Shields

WACC vs APV

	APV	WACC
PROS	• Highly Flexible • Applicable also to cases where capital structure is not stationary through time (LBOs, IPOs,…)	• Easy to use • Widely used
CONS	• More complex • Not as popular	• Applicable only when capital structure is stationary (mature, stable companies)

- The WACC assumes that the company is targeting a stationary capital structure, therefore the value using the WACC should be equal to the value using the APV with a targeting strategy
- The APV using a targeting strategy should give a lower valuation than the APV using a non-targeting strategy, because the tax shields are taxed at a higher discount rate

Dividend Discount Model

- Cash is king! At the end, the only way to return money back to investors is through dividend. Dividends should be the only thing that matters.
  - From "The Theory of Investment Value" by John Burr Williams (1938): *"A stock is worth the present value of all the dividends ever to be paid upon it, no more, no less... Present earnings, outlook, financial condition, and capitalization should bear upon the price of a stock only as they assist buyers and sellers in estimating future dividends."*

$$\text{Value of Equity} = \sum_{t=0}^{\infty} \frac{D_t}{(1+r_e)^t}$$

  - If growing perpetuity…Gordon Dividend Growth Formula

$$\text{Value of Equity} = \frac{D_1}{(r_e - g)} = \frac{D_0(1+g)}{(r_e - g)}$$

How should be estimate "g" in perpetuity?

Dividend Discount Model – Pros and Cons

- **Pros:**
  - Simple and intuitive
  - Provides directly the value of the equity (stock price)
- **Cons:**
  - Very rarely used (used only in CFA tests!)
  - Limited to mature companies with very predictable dividend forecast
  - In order to forecast dividends, you still have to forecast FCF, leverage policy, but now in addition you need also to predict how much the company reinvest its earnings….
  - Cost of equity changes if leverage changes

Free Cash Flow to Equity Model

- Define EFCF (Equity FCF) as:

EFCF=Net Income +DA- ΔNWC – Capex + AS – CGT + Δdebt

- From Warren Buffett's 1986 Letter to Shareholders, Berkshire Hathaway, Inc

"[Owners' Earnings] represent (a) reported earnings plus (b) depreciation, depletion, amortization, and certain other non-cash charges...less (c) the average annual amount of capitalized expenditures for plant and equipment, etc. that the business requires to fully maintain its long-term competitive position and its unit volume...."

$$\text{Value of Equity} = \sum_{t=0}^{\infty} \frac{EFCF_t}{(1+r_e)^t}$$

Valuing Equity directly

Note: Discount rate is the cost of equity

Free Cash Flow to Equity Model – Pros and Cons

- Pros:
  - A slight improvement over the Dividend Discount Model, using "potential dividends" rather than dividends
  - Used in LBOs where the debt repayment schedule is predictable

- Cons:
  - Still has to forecast FCF and debt repayment schedule
  - Assumes that FCF and interest payment have same level of risk (i.e. same discount rate)
  - Hard to use to value companies that target an optimal leverage ratio
  - Wrong to use when companies do not target an optimal leverage ratio because cost of equity changes over time

Sum of the Parts Valuation

- Conglomerates and Multi-National firms may require that you value different business units separately and then add the value of the parts to get the value of the whole.
  - If using DCF analysis, the riskiness of the cash flows could be different and thus the cash flows should be discounted at different rates.
    - The different business units could be in different industries where the volatility of cash flows affected differently by macro-economic conditions, competition, etc.
    - The different business units have different risks based on geographic location (country risk, political risk, currency risk, etc.)
  - If using Comparable Multiples, then different segments may have different multiples based on the profitability and growth of the various segments.

LBO Analysis

- LBO Analysis approaches the valuation based on what kind of financing a purchaser might be able to obtain in making the acquisition.

- Assume the target firm has EBITDA of $20 Million.
- If the current market is allowing firms to leverage a company with 4 times EBITDA of senior debt and an additional 2 turns of EBITDA in subordinated debt, then a buyer might get 6x EBITDA in total leverage. The buyer could borrow up to $120 million in debt (6 x $20M).

- If financial sponsors are putting in 40% equity into deals, then they would contribute $80 million ($120/(1-.40) = $200M-$120M = $80M). Thus, the enterprise value of the firm would be $200 million or 10x EBITDA with debt at 6x and equity at 4x EBITDA.

- Can the company service $120 M in debt with $20M in EBITDA?

Cost Approach

- The Cost Approach (also called Liquidation, Accounting or Book-Value-based Valuation) uses book values to proxy for the market value of the company.
- A company can be viewed as a collection of assets.
- Pros: You can easily find in on the balance sheet
- Cons:
  - Only applicable to mature companies with mostly fixed assets, little or no growth and in a perfect competitive market.
  - Extractive Industries and Financial Firms may also trade based on a cost approach.
  - Almost never used (maybe by some old school accountants)
  - Highly inaccurate (growth opportunities, intangible assets/brands, human capital).

Hot Topics in Valuation

- **Valuation professionals often make adjustments to their valuation analysis that are often continuous:**
  - Recasting Financial Statements - Adjusting for non-recurring income and expenses, excessive owner compensation, etc.
  - Built-in capital gains tax or tax-affecting the cash flows on S Corps
  - Discounts for Lack of Marketability and Lack of Liquidity
  - Discounts for Lack of Control or Premiums for Control
  - Size Discounts
  - Adjusting the discount rate for unique risk (Build-up Method) such as key person risk, concentration risks, etc.
  - Handling of Intangible Assets such as intellectual property and personal or professional goodwill.
  - Assumptions used in estimating the terminal value in a DCF model.
  - Throwing out “outliers”, using weighted averages, means vs. medians
  - Selection bias on comparable companies

Company Valuation Techniques Summary

- Several valuation techniques are used to value companies
  - WACC
  - APV
  - Relative Valuation (Multiples)
  - Dividend Discount Model (Gordon Formula)
  - EFCF
  - EVA
  - Cost Approach
  - Real Options
- The criteria that determines which valuation technique is more appropriate depends on several factors:
  - Available time
  - Available information (market, industry, firm)
  - Required accuracy
  - Company's leverage policy

Reading List

- **Pratt, Shannon. Valuing a Business, 5th Edition. The Analysis and Appraisal of Closely Held Companies. McGraw-Hill.**

- **Reilly, Robert and Shaked, Israel. A Practical Guide to Bankruptcy Valuation** Paperback, 2013.

- **Damodaran, Aswath. Investment Valuation: Tools and Techniques for Determining the Value of any Asset, University Edition. 2012.**

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