



Value Enhancement: Back to Basics

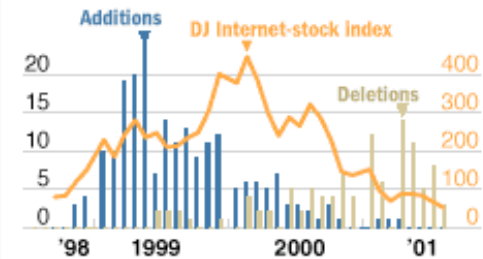
Price Enhancement versus Value E



NAME THAT STOCK

New Markets, New Names

In the bull market, adding dot-com to a company name made a stock soar. Lately those zippy new monikers are disappearing.



New Name, Higher Price

But the stocks still get a bounce when dot-com goes away. Chart shows returns in the days before and after the name change.

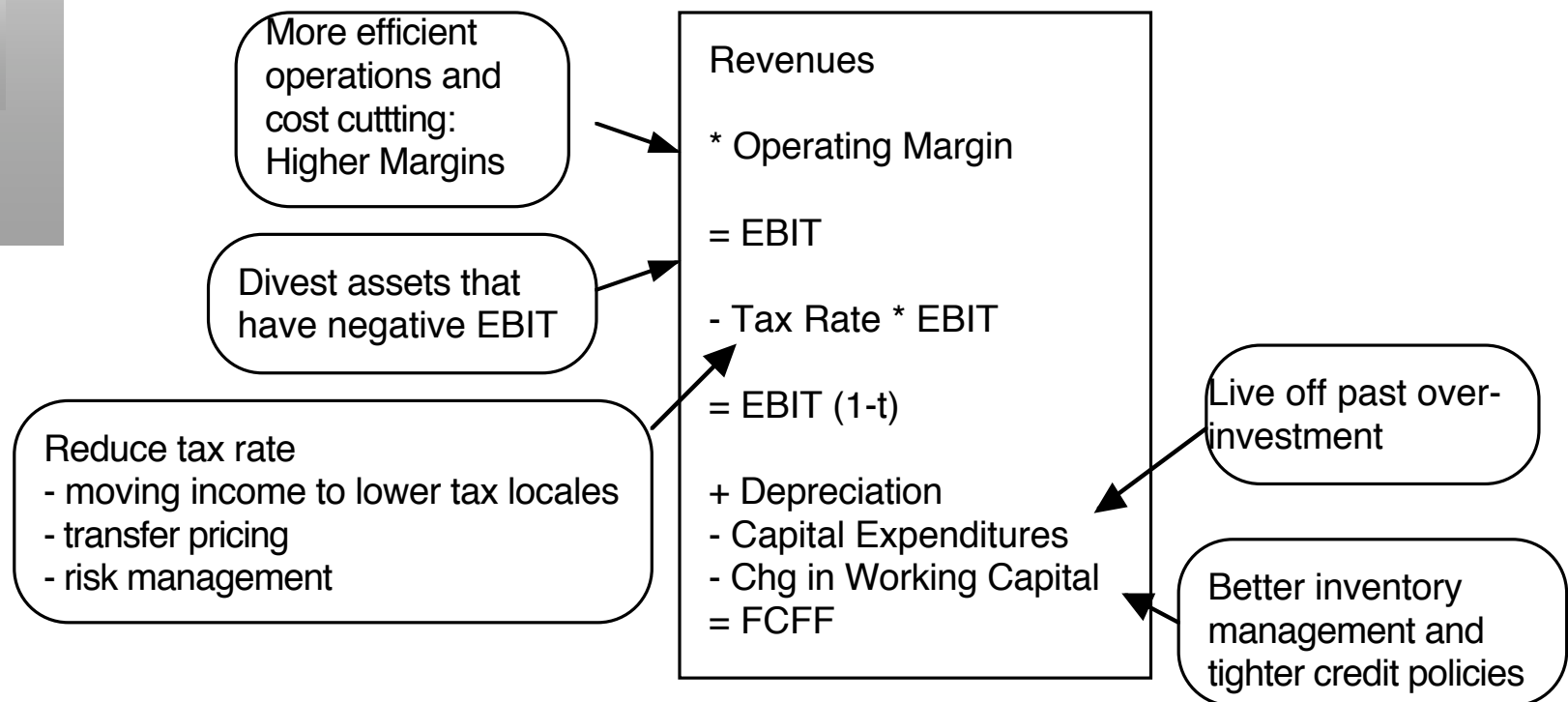


Sources: Thomson Datastream; P. Raghavendra Rau, Michael J. Cooper, Igor Osobov, Purdue Univ.; Ajay Khorana, Virginia Univ.; Ajay Patel, Wake Forest Univ.

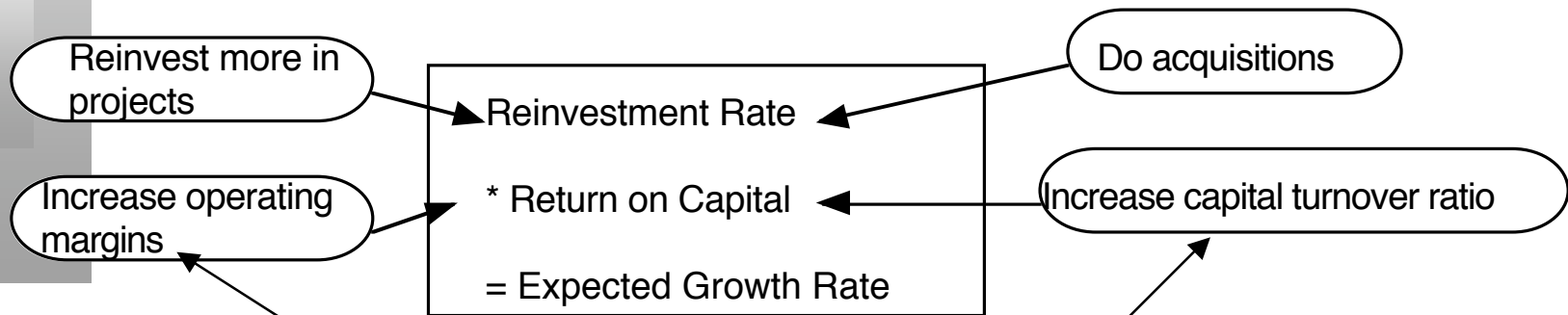
The Paths to Value Creation

- Using the DCF framework, there are four basic ways in which the value of a firm can be enhanced:
 - The cash flows from existing assets to the firm can be increased, by either
 - increasing after-tax earnings from assets in place or
 - reducing reinvestment needs (net capital expenditures or working capital)
 - The expected growth rate in these cash flows can be increased by either
 - Increasing the rate of reinvestment in the firm
 - Improving the return on capital on those reinvestments
 - The length of the high growth period can be extended to allow for more years of high growth.
 - The cost of capital can be reduced by
 - Reducing the operating risk in investments/assets
 - Changing the financial mix
 - Changing the financing composition

Value Creation 1: Increase Cash Flows from Assets in Place



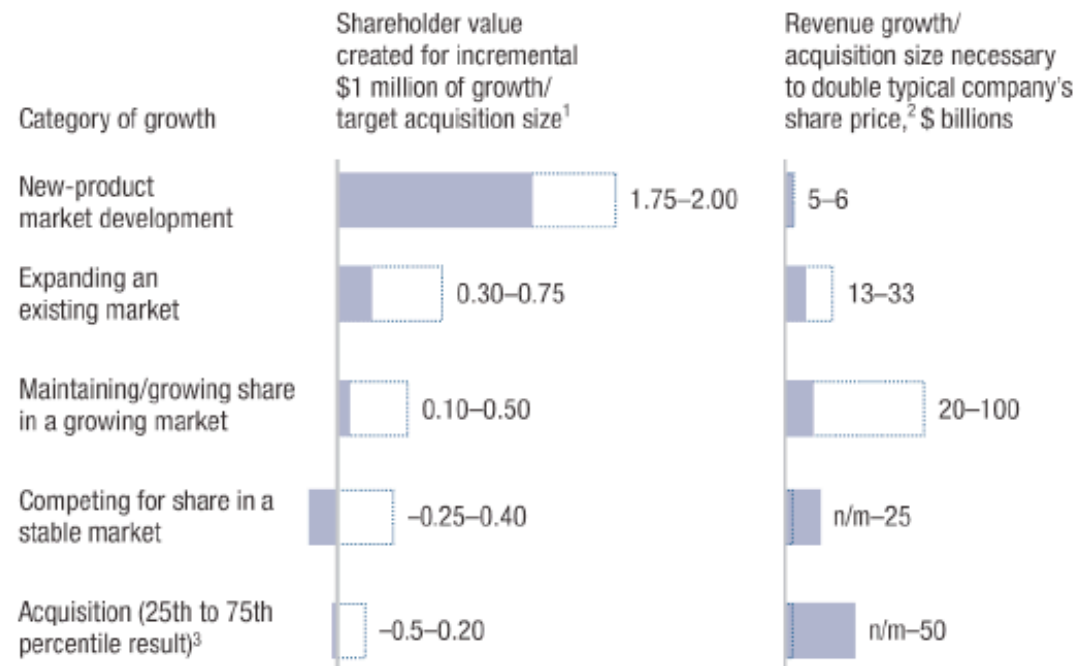
Value Creation 2: Increase Expected Growth



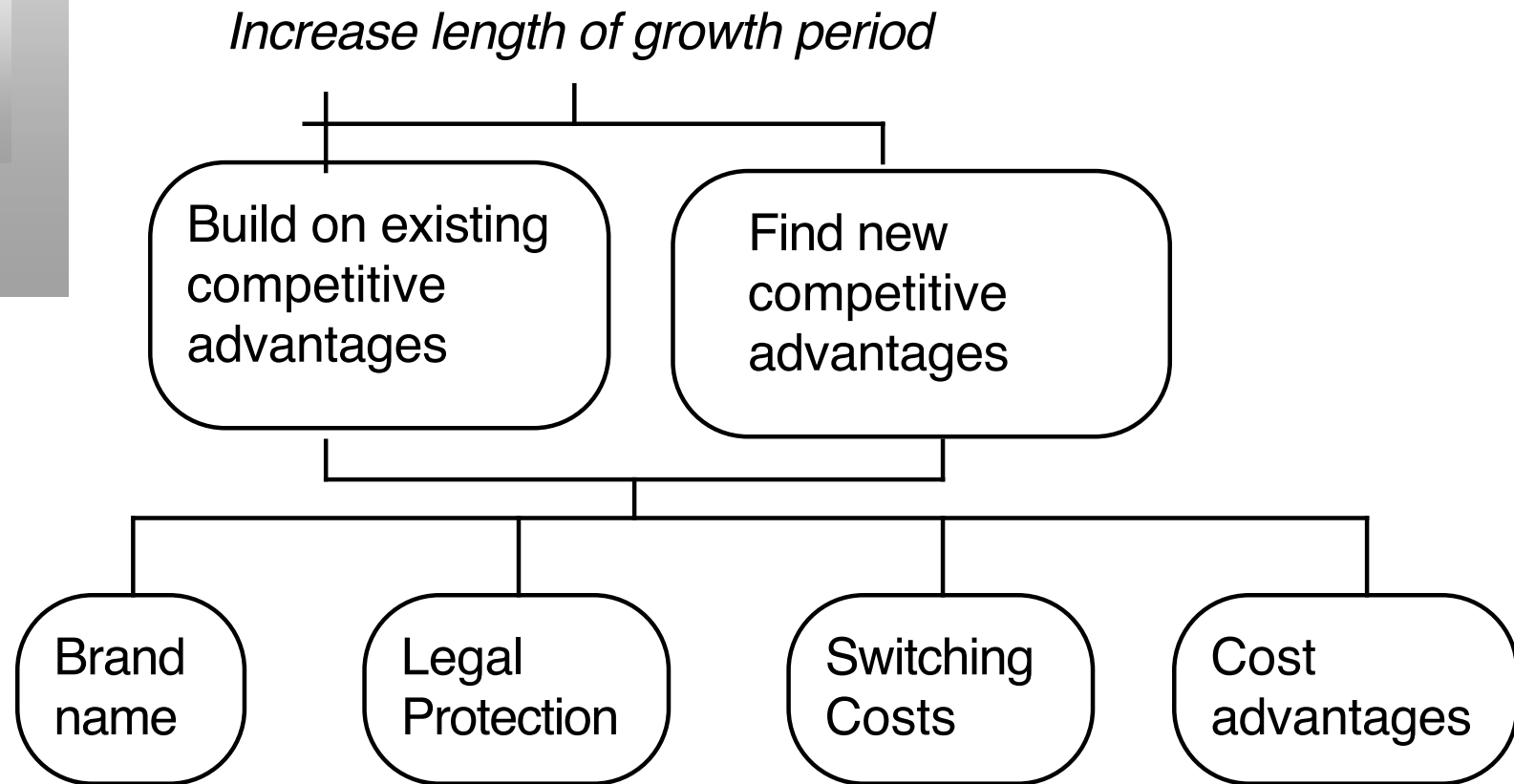
Price Leader versus Volume Leader Strategies
*Return on Capital = Operating Margin * Capital Turnover Ratio*

Value Creating Growth... Evaluating the Alternatives..

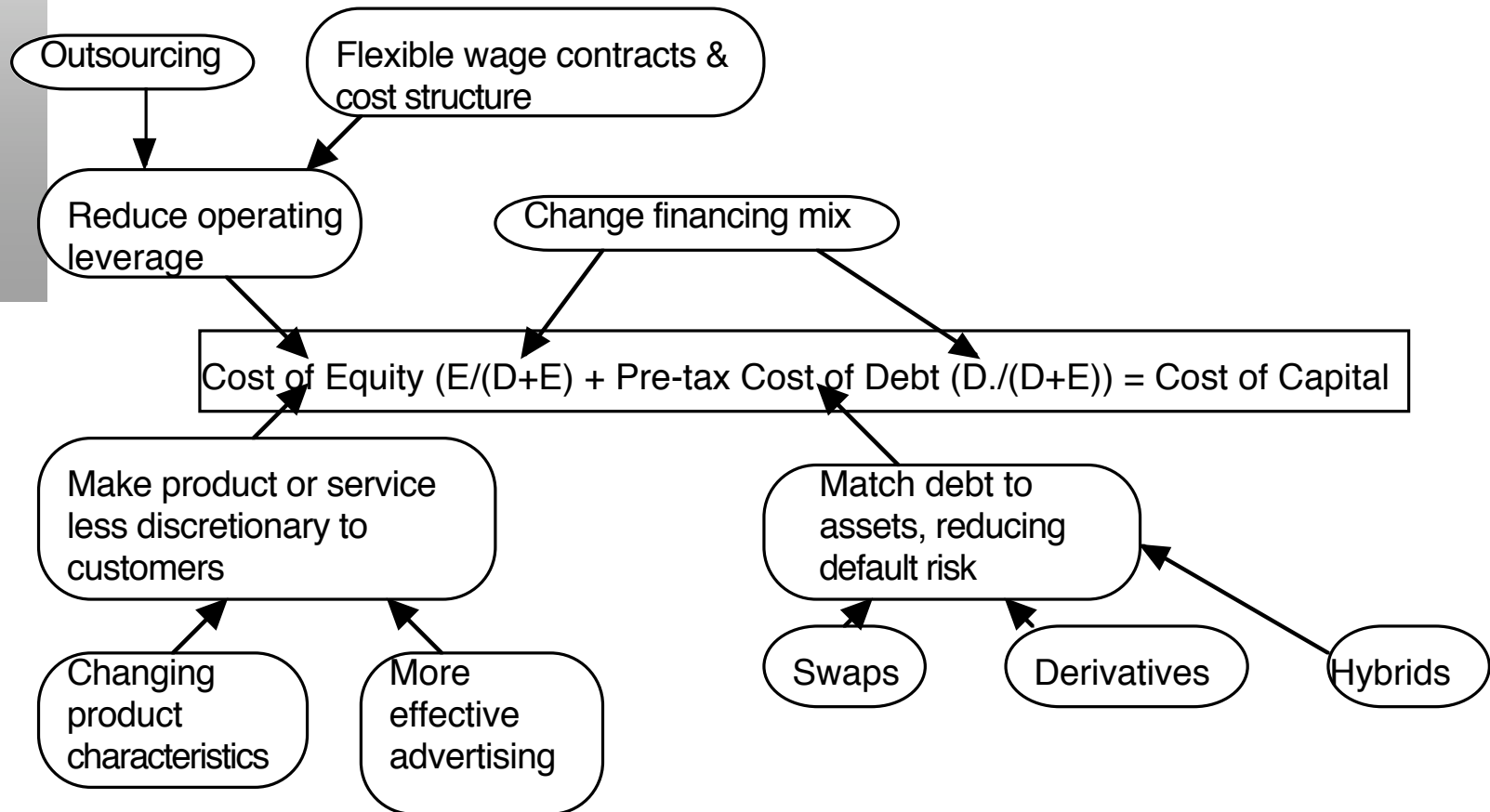
Modes of organic growth vary in value creation intensity— consumer goods industry



III. Building Competitive Advantages: Increase length of the growth period



Value Creation 4: Reduce Cost of Capital





IV. Loose Ends in Valuation: From firm value to value of equity per share

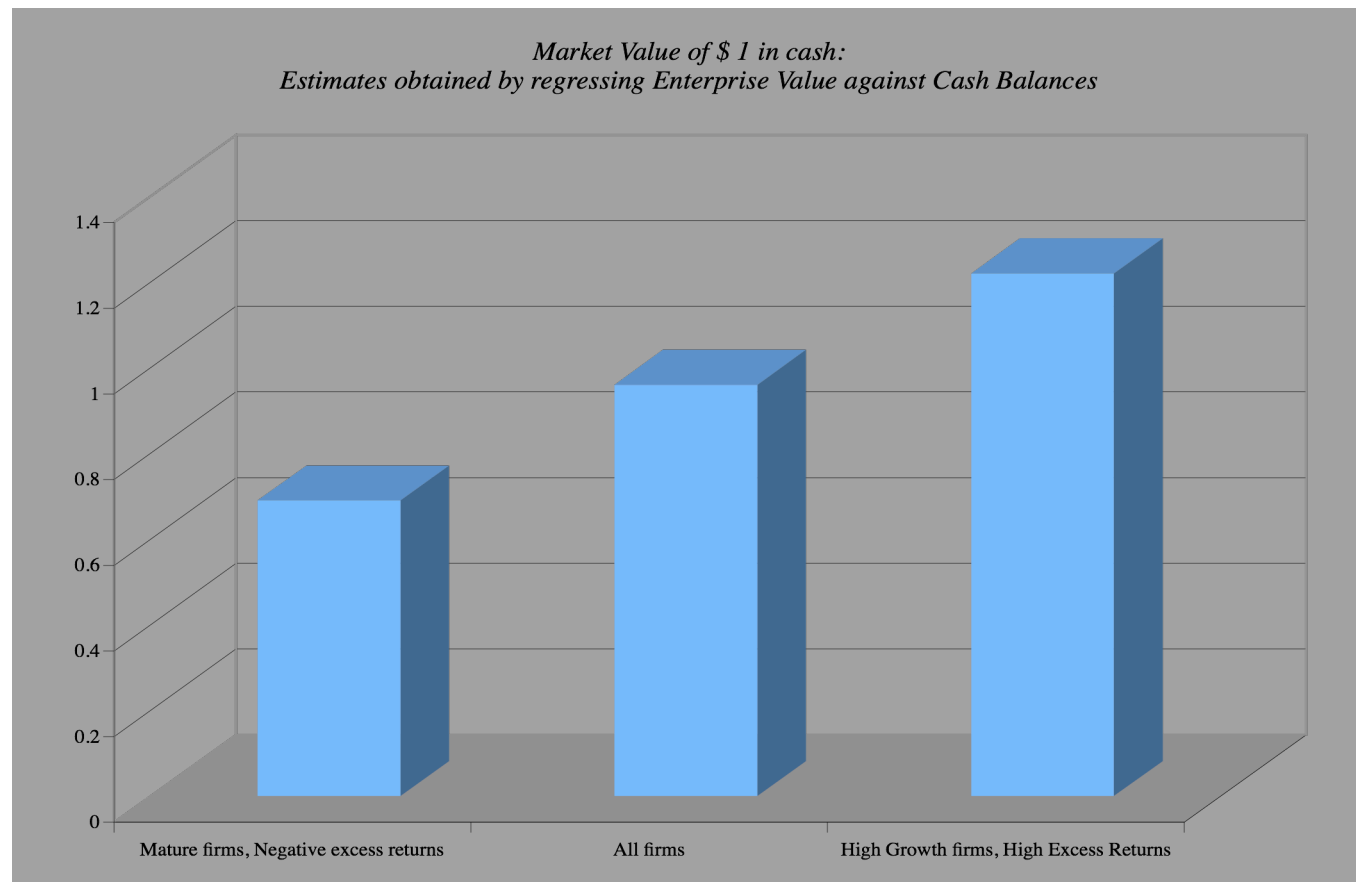
But what comes next?

| | |
|---|--|
| Value of Operating Assets | Since this is a discounted cashflow valuation, should there be a real option premium? |
| + Cash and Marketable Securities | Operating versus Non-operating cash Should cash be discounted for earning a low return? |
| + Value of Cross Holdings | How do you value cross holdings in other companies? What if the cross holdings are in private businesses? |
| + Value of Other Assets | What about other valuable assets? How do you consider under utilized assets? |
| Value of Firm | Should you discount this value for opacity or complexity? How about a premium for synergy? What about a premium for intangibles (brand name)? |
| - Value of Debt | What should be counted in debt? Should you subtract book or market value of debt? What about other obligations (pension fund and health care)? What about contingent liabilities? What about minority interests? |
| = Value of Equity | Should there be a premium/discount for control? Should there be a discount for distress |
| - Value of Equity Options | What equity options should be valued here (vested versus non-vested)? How do you value equity options? |
| = Value of Common Stock | Should you divide by primary or diluted shares? |
| / Number of shares | |
| = Value per share | Should there be a discount for illiquidity/ marketability? Should there be a discount for minority interests? |

1. An Exercise in Cash Valuation

| | <i>Company A</i> | <i>Company B</i> | <i>Company C</i> |
|-------------------|------------------|------------------|------------------|
| Enterprise Value | \$ 1 billion | \$ 1 billion | \$ 1 billion |
| Cash | \$ 100 mil | \$ 100 mil | \$ 100 mil |
| Return on Capital | 10% | 5% | 22% |
| Cost of Capital | 10% | 10% | 12% |
| Trades in | US | US | Argentina |

Cash: Discount or Premium?



2. Dealing with Holdings in Other firms

- Holdings in other firms can be categorized into
 - Minority passive holdings, in which case only the dividend from the holdings is shown in the balance sheet
 - Minority active holdings, in which case the share of equity income is shown in the income statements
 - Majority active holdings, in which case the financial statements are consolidated.
- We tend to be sloppy in practice in dealing with cross holdings. After valuing the operating assets of a firm, using consolidated statements, it is common to add on the balance sheet value of minority holdings (which are in book value terms) and subtract out the minority interests (again in book value terms), representing the portion of the consolidated company that does not belong to the parent company.

How to value holdings in other firms.. In a perfect world..

- In a perfect world, we would strip the parent company from its subsidiaries and value each one separately. The value of the combined firm will be
 - Value of parent company + Proportion of value of each subsidiary
- To do this right, you will need to be provided detailed information on each subsidiary to estimated cash flows and discount rates.

Two compromise solutions...

- The market value solution: When the subsidiaries are publicly traded, you could use their traded market capitalizations to estimate the values of the cross holdings. You do risk carrying into your valuation any mistakes that the market may be making in valuation.
- The relative value solution: When there are too many cross holdings to value separately or when there is insufficient information provided on cross holdings, you can convert the book values of holdings that you have on the balance sheet (for both minority holdings and minority interests in majority holdings) by using the average price to book value ratio of the sector in which the subsidiaries operate.

Titan's Cash and Cross Holdings

- Titan has a majority interest in another company and the financial statements of that company are consolidated with those of Titan. The minority interests (representing the equity in the subsidiary that does not belong to Titan) are shown on the balance sheet at 25.50 million Euros.
- Estimated market value of minority interests = Book value of minority interest * P/BV of sector that subsidiary belongs to = $25.50 * 1.80 = 45.90$ million

| | |
|---|------------|
| Present Value of FCFF in high growth phase = | \$599.36 |
| Present Value of Terminal Value of Firm = | \$2,285.01 |
| Value of operating assets of the firm = | \$2,884.37 |
| + Value of Cash, Marketable Securities & Non-operating assets = | \$76.80 |
| Value of Firm = | \$2,961.17 |
| -Market Value of outstanding debt = | \$414.25 |
| - Value of Minority Interests in Consolidated Company = | \$45.90 |
| Market Value of Equity = | \$2,501.02 |

3. Other Assets that have not been counted yet..

- **Unutilized assets:** If you have assets or property that are not being utilized (vacant land, for example), you have not valued it yet. You can assess a market value for these assets and add them on to the value of the firm.
- **Overfunded pension plans:** If you have a defined benefit plan and your assets exceed your expected liabilities, you could consider the over funding with two caveats:
 - Collective bargaining agreements may prevent you from laying claim to these excess assets.
 - There are tax consequences. Often, withdrawals from pension plans get taxed at much higher rates.

Do not double count an asset. If you count the income from an asset in your cashflows, you cannot count the market value of the asset in your value.

4. A Discount for Complexity: An Experiment

| | <i>Company A</i> | <i>Company B</i> |
|------------------|------------------|---------------------|
| Operating Income | \$ 1 billion | \$ 1 billion |
| Tax rate | 40% | 40% |
| ROIC | 10% | 10% |
| Expected Growth | 5% | 5% |
| Cost of capital | 8% | 8% |
| Business Mix | Single Business | Multiple Businesses |
| Holdings | Simple | Complex |
| Accounting | Transparent | Opaque |

- *Which firm would you value more highly?*

Measuring Complexity: Volume of Data in Financial Statements

| <i>Company</i> | <i>Number of pages in last 10Q</i> | <i>Number of pages in last 10K</i> |
|-------------------|------------------------------------|------------------------------------|
| General Electric | 65 | 410 |
| Microsoft | 63 | 218 |
| Wal-mart | 38 | 244 |
| Exxon Mobil | 86 | 332 |
| Pfizer | 171 | 460 |
| Citigroup | 252 | 1026 |
| Intel | 69 | 215 |
| AIG | 164 | 720 |
| Johnson & Johnson | 63 | 218 |
| IBM | 85 | 353 |

Measuring Complexity: A Complexity Score

| <i>Item</i> | <i>Factors</i> | <i>Follow-up Question</i> | <i>Answer</i> | <i>Complexity score</i> |
|---------------------------|--|---|---------------|-------------------------|
| Operating Income | 1. Multiple Businesses | Number of businesses (with more than 10% of revenues) = | 2 | 4 |
| | 2. One-time income and expenses | Percent of operating income = | 20% | 1 |
| | 3. Income from unspecified sources | Percent of operating income = | 15% | 0.75 |
| | 4. Items in income statement that are volatile | Percent of operating income = | 5% | 0.25 |
| Tax Rate | 1. Income from multiple locales | Percent of revenues from non-domestic locales = | 100% | 3 |
| | 2. Different tax and reporting books | Yes or No | Yes | 3 |
| | 3. Headquarters in tax havens | Yes or No | Yes | 3 |
| | 4. Volatile effective tax rate | Yes or No | Yes | 2 |
| Capital Expenditures | 1. Volatile capital expenditures | Yes or No | Yes | 2 |
| | 2. Frequent and large acquisitions | Yes or No | Yes | 4 |
| | 3. Stock payment for acquisitions and investments | Yes or No | Yes | 4 |
| Working capital | 1. Unspecified current assets and current liabilities | Yes or No | Yes | 3 |
| | 2. Volatile working capital items | Yes or No | Yes | 2 |
| Expected Growth rate | 1. Off-balance sheet assets and liabilities (operating leases and R&D) | Yes or No | Yes | 3 |
| | 2. Substantial stock buybacks | Yes or No | Yes | 3 |
| | 3. Changing return on capital over time | Is your return on capital volatile? | Yes | 5 |
| | 4. Unsustainably high return | Is your firm's ROC much higher than industry average? | Yes | 5 |
| Cost of capital | 1. Multiple businesses | Number of businesses (more than 10% of revenues) = | 2 | 2 |
| | 2. Operations in emerging markets | Percent of revenues= | 30% | 1.5 |
| | 3. Is the debt market traded? | Yes or No | Yes | 0 |
| | 4. Does the company have a rating? | Yes or No | Yes | 0 |
| | 5. Does the company have off-balance sheet debt? | Yes or No | No | 0 |
| Complexity Score = | | | | 51.5 |

Dealing with Complexity

In Discounted Cashflow Valuation

- The Aggressive Analyst: Trust the firm to tell the truth and value the firm based upon the firm's statements about their value.
- The Conservative Analyst: Don't value what you cannot see.
- The Compromise: Adjust the value for complexity
 - Adjust cash flows for complexity
 - Adjust the discount rate for complexity
 - Adjust the expected growth rate/ length of growth period
 - Value the firm and then discount value for complexity

In relative valuation

In a relative valuation, you may be able to assess the price that the market is charging for complexity:

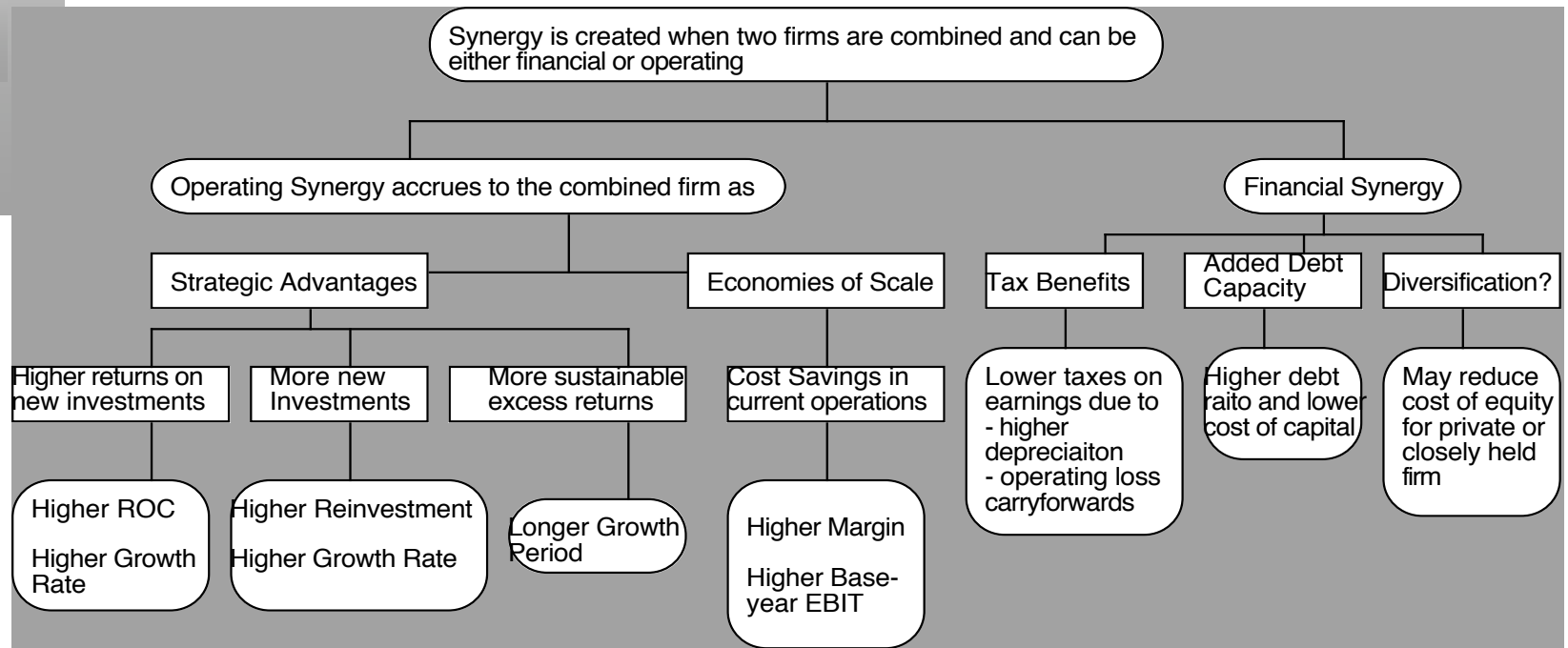
With the hundred largest market cap firms, for instance:

$PBV = 0.65 + 15.31 ROE - 0.55 \text{ Beta} + 3.04 \text{ Expected growth rate} - 0.003 \# \text{ Pages in 10K}$

5. The Value of Synergy

- Synergy can be valued. In fact, if you want to pay for it, it should be valued.
- To value synergy, you need to answer two questions:
 - (a) What **form** is the synergy expected to take? Will it **reduce costs** as a percentage of sales and increase profit margins (as is the case when there are economies of scale)? Will it **increase future growth** (as is the case when there is increased market power)?)
 - (b) **When can the synergy be reasonably expected to start** affecting cashflows? (Will the gains from synergy show up instantaneously after the takeover? If it will take time, when can the gains be expected to start showing up?)
- If you cannot answer these questions, you need to go back to the drawing board...

Sources of Synergy



Valuing Synergy

- (1) the firms involved in the merger are **valued independently**, by discounting expected cash flows to each firm at the weighted average cost of capital for that firm.
- (2) the **value of the combined firm, with no synergy**, is obtained by adding the values obtained for each firm in the first step.
- (3) The **effects of synergy are built into expected growth rates and cashflows**, and the combined firm is re-valued with synergy.

Value of Synergy = Value of the combined firm, with synergy - Value of the combined firm, without synergy

Valuing Synergy: P&G + Gillette

| | P&G | Gillette | Piglet: No Synergy | Piglet: Synergy | |
|-------------------------------|------------|------------|--------------------|-----------------|--|
| Free Cashflow to Equity | \$5,864.74 | \$1,547.50 | \$7,412.24 | \$7,569.73 | Annual operating expenses reduced by \$250 million |
| Growth rate for first 5 years | 12% | 10% | 11.58% | 12.50% | Slightly higher growth rate |
| Growth rate after five years | 4% | 4% | 4.00% | 4.00% | |
| Beta | 0.90 | 0.80 | 0.88 | 0.88 | |
| Cost of Equity | 7.90% | 7.50% | 7.81% | 7.81% | Value of synergy |
| Value of Equity | \$221,292 | \$59,878 | \$281,170 | \$298,355 | \$17,185 |

5. Brand name, great management, superb product ...Are we short changing the intangibles?

- There is often a temptation to add on premiums for intangibles. Among them are
 - Brand name
 - Great management
 - Loyal workforce
 - Technological prowess
- There are two potential dangers:
 - For some assets, the value may already be in your value and adding a premium will be double counting.
 - For other assets, the value may be ignored but incorporating it will not be easy.

Categorizing Intangibles

| | <i>Independent and Cash flow generating intangibles</i> | <i>Not independent and cash flow generating to the firm</i> | <i>No cash flows now but potential for cashflows in future</i> |
|--------------------|---|--|---|
| Examples | Copyrights, trademarks, licenses, franchises, professional practices (medical, dental) | Brand names, Quality and Morale of work force, Technological expertise, Corporate reputation | Undeveloped patents, operating or financial flexibility (to expand into new products/markets or abandon existing ones) |
| Valuation approach | Estimate expected cashflows from the product or service and discount back at appropriate discount rate. | <ul style="list-style-type: none"> • Compare DCF value of firm with intangible with firm without (if you can find one) • Assume that all excess returns of firm are due to intangible. • Compare multiples at which firm trades to sector averages. | Option valuation <ul style="list-style-type: none"> • Value the undeveloped patent as an option to develop the underlying product. • Value expansion options as call options • Value abandonment options as put options. |
| Challenges | <ul style="list-style-type: none"> • Life is usually finite and terminal value may be small. • Cashflows and value may be person dependent (for professional practices) | With multiple intangibles (brand name and reputation for service), it becomes difficult to break down individual components. | <ul style="list-style-type: none"> • Need exclusivity. • Difficult to replicate and arbitrage (making option pricing models dicey) |

Valuing Brand Name

| | Coca Cola | With Cott Margins |
|---------------------------------|--------------------|--------------------|
| Current Revenues = | \$21,962.00 | \$21,962.00 |
| Length of high-growth period | 10 | 10 |
| Reinvestment Rate = | 50% | 50% |
| Operating Margin (after-tax) | 15.57% | 5.28% |
| Sales/Capital (Turnover ratio) | 1.34 | 1.34 |
| Return on capital (after-tax) | 20.84% | 7.06% |
| Growth rate during period (g) = | 10.42% | 3.53% |
| Cost of Capital during period = | 7.65% | 7.65% |
| Stable Growth Period | | |
| Growth rate in steady state = | 4.00% | 4.00% |
| Return on capital = | 7.65% | 7.65% |
| Reinvestment Rate = | 52.28% | 52.28% |
| Cost of Capital = | 7.65% | 7.65% |
| Value of Firm = | \$79,611.25 | \$15,371.24 |

6. Be circumspect about defining debt for cost of capital purposes...

- **General Rule:** Debt generally has the following characteristics:
 - Commitment to make fixed payments in the future
 - The fixed payments are tax deductible
 - Failure to make the payments can lead to either default or loss of control of the firm to the party to whom payments are due.
- Defined as such, debt should include
 - All interest bearing liabilities, short term as well as long term
 - All leases, operating as well as capital
- Debt should not include
 - Accounts payable or supplier credit

Book Value or Market Value

- For some firms that are in financial trouble, the book value of debt can be substantially higher than the market value of debt. Analysts worry that subtracting out the market value of debt in this case can yield too high a value for equity.
- A discounted cashflow valuation is designed to value a going concern. In a going concern, it is the market value of debt that should count, even if it is much lower than book value.
- In a liquidation valuation, you can subtract out the book value of debt from the liquidation value of the assets.

Converting book debt into market debt,.....

But you should consider other potential liabilities when getting to equity value

- If you have under funded pension fund or health care plans, you should consider the under funding at this stage in getting to the value of equity.
 - If you do so, you should not double count by also including a cash flow line item reflecting cash you would need to set aside to meet the unfunded obligation.
 - You should not be counting these items as debt in your cost of capital calculations....
- If you have contingent liabilities - for example, a potential liability from a lawsuit that has not been decided - you should consider the expected value of these contingent liabilities
 - Value of contingent liability = Probability that the liability will occur * Expected value of liability

7. The Value of Control

- The value of the control premium that will be paid to acquire a block of equity will depend upon two factors -
 - **Probability that control of firm will change:** This refers to the probability that incumbent management will be replaced. this can be either through acquisition or through existing stockholders exercising their muscle.
 - **Value of Gaining Control of the Company:** The value of gaining control of a company arises from two sources - the increase in value that can be wrought by changes in the way the company is managed and run, and the side benefits and perquisites of being in control

Value of Gaining Control = Present Value (Value of Company with change in control - Value of company without change in control) + Side Benefits of Control

Titan Cements: Restructured

Reinvest more in slightly less attractive projects

Current Cashflow to Firm

| | |
|-----------------------------|-----|
| EBIT(1-t) : | 173 |
| - Nt CpX | 49 |
| - Chg WC | 52 |
| = FCFF | 72 |
| Reinvestment Rate = 101/173 | |
| =58.5% | |

Reinvestment Rate
50%

Expected Growth in EBIT (1-t)
.50*.18=.09
9%

Return on Capital
18%

Stable Growth
g = 3.41%; Beta = 1.00;
Country Premium= 0%
Cost of capital = 5.97%
ROC= 5.97%; Tax rate=33%
Reinvestment Rate=51.9%

Terminal Value₅ = 106.0 / (.0597 - .0341) = 4137

| | |
|---------------|---------|
| Op. Assets | 3,468 |
| + Cash: | 77 |
| - Debt | 411 |
| - Minor. Int. | 46 |
| =Equity | 3,088 |
| -Options | 0 |
| Value/Share | \$40.33 |

| Year | 1 | 2 | 3 | 4 | 5 |
|----------------|----------|----------|----------|----------|----------|
| EBIT | € 252.66 | € 275.40 | € 300.19 | € 327.20 | € 356.65 |
| EBIT(1-t) | € 188.31 | € 205.26 | € 223.73 | € 243.87 | € 265.81 |
| - Reinvestment | € 94.15 | € 102.63 | € 111.86 | € 121.93 | € 132.91 |
| = FCFF | € 94.15 | € 102.63 | € 111.86 | € 121.93 | € 132.91 |

Term Yr

| |
|-------|
| 368.8 |
| 247.1 |
| 141.1 |
| 106.0 |

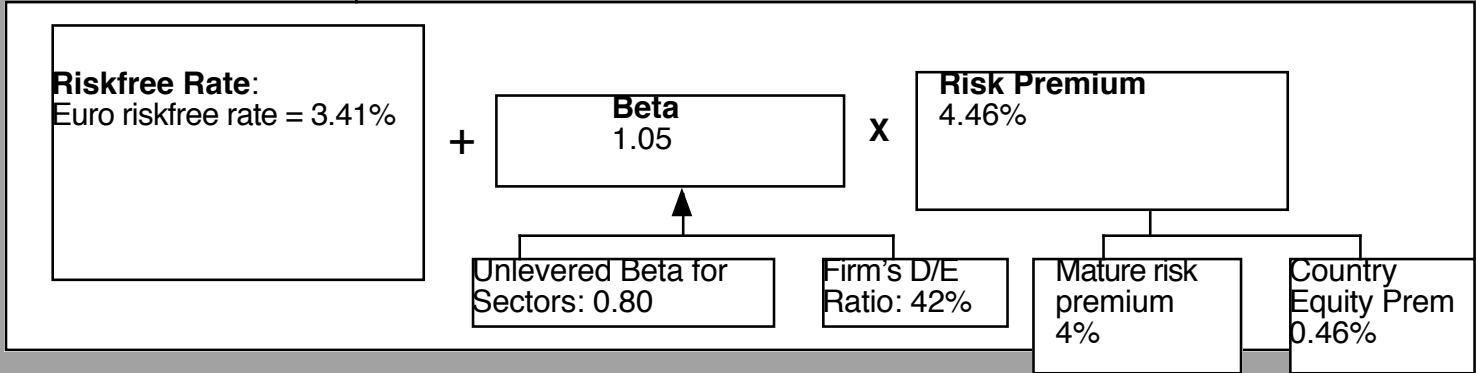
Discount at Cost of Capital (WACC) = 8.11% (.70) + 3.29% (0.30) = 6.6%

Use a higher debt ratio

Cost of Equity
8.11%

Cost of Debt
(3.41%+.74%+.26%)(1-.2547)
= 3.29%

Weights
E = 70% D = 30%



The Value of Control in a publicly traded firm..

- If the value of a firm run optimally is significantly higher than the value of the firm with the status quo (or incumbent management), you can write the value that you should be willing to pay as:

Value of control = Value of firm optimally run - Value of firm with status quo

Value of control at Titan Cements = 40.33 Euros per share - 32.84 Euros per share = 7.49 Euros per share

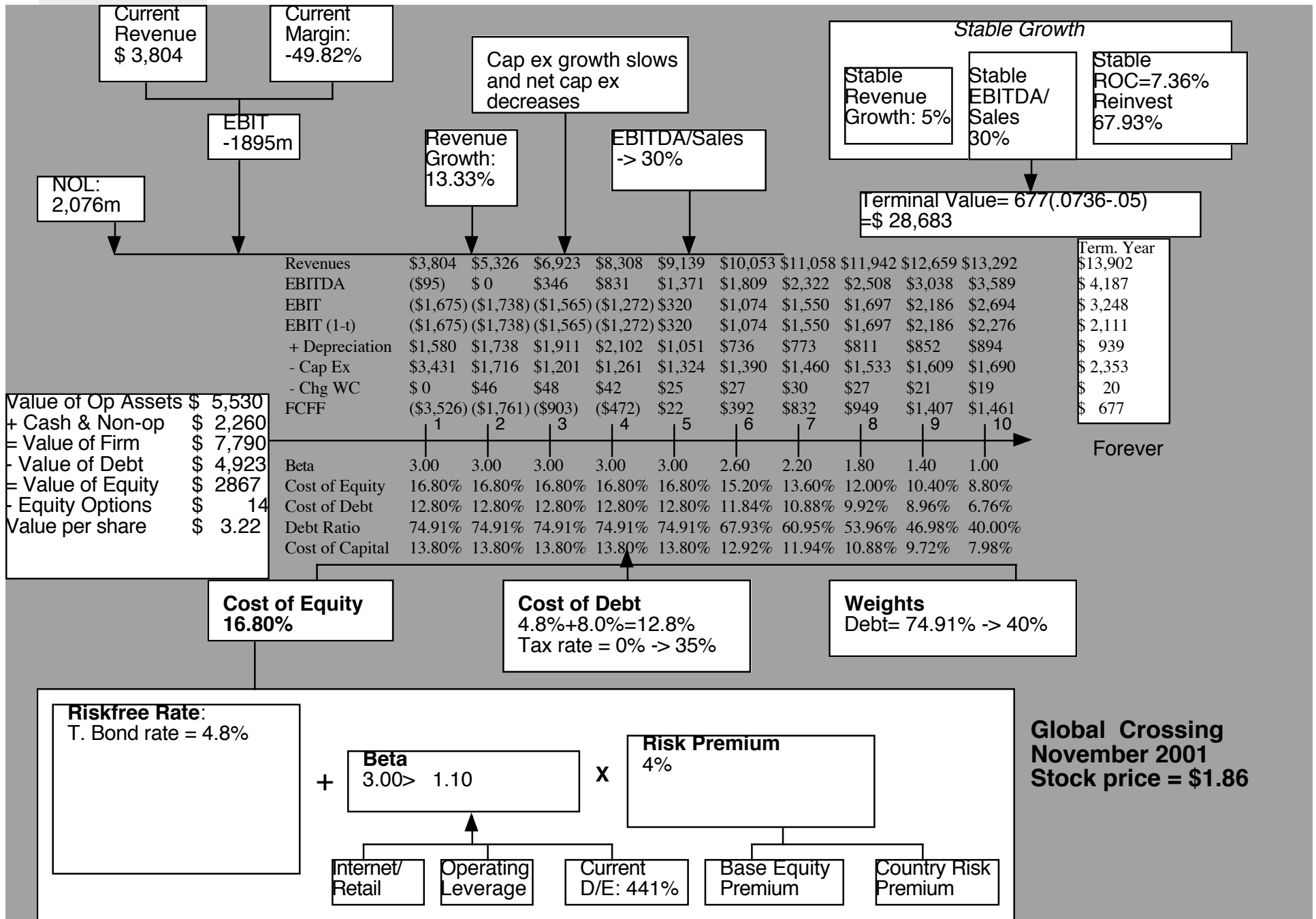
- Implications:
 - In an acquisition, this is the most that you would be willing to pay as a premium (assuming no other synergy)
 - As a stockholder, you will be willing to pay a value between 32.84 and 40.33, depending upon your views on whether control will change.
 - If there are voting and non-voting shares, the difference in prices between the two should reflect the value of control.

Minority and Majority interests in a private firm

- When you get a controlling interest in a private firm (generally $>51\%$, but could be less...), you would be willing to pay the appropriate proportion of the optimal value of the firm.
- When you buy a minority interest in a firm, you will be willing to pay the appropriate fraction of the status quo value of the firm.
- For badly managed firms, there can be a significant difference in value between 51% of a firm and 49% of the same firm. This is the minority discount.
- If you own a private firm and you are trying to get a private equity or venture capital investor to invest in your firm, it may be in your best interests to offer them a share of control in the firm even though they may have well below 51% .

8. Distress and the Going Concern Assumption

- Traditional valuation techniques are built on the assumption of a going concern, i.e., a firm that has continuing operations and there is no significant threat to these operations.
 - In discounted cashflow valuation, this going concern assumption finds its place most prominently in the terminal value calculation, which usually is based upon an infinite life and ever-growing cashflows.
 - In relative valuation, this going concern assumption often shows up implicitly because a firm is valued based upon how other firms - most of which are healthy - are priced by the market today.
- When there is a significant likelihood that a firm will not survive the immediate future (next few years), traditional valuation models may yield an over-optimistic estimate of value.



Valuing Global Crossing with Distress

■ Probability of distress

- Price of 8 year, 12% bond issued by Global Crossing = \$ 653

$$653 = \sum_{t=1}^{t=8} \frac{120(1 - \pi_{Distress})^t}{(1.05)^t} + \frac{1000(1 - \pi_{Distress})^8}{(1.05)^8}$$

- Probability of distress = 13.53% a year
- Cumulative probability of survival over 10 years = $(1 - .1353)^{10} = 23.37\%$

■ Distress sale value of equity

- Book value of capital = \$14,531 million
- Distress sale value = 15% of book value = $.15 * 14531 = \$2,180$ million
- Book value of debt = \$7,647 million
- Distress sale value of equity = \$ 0

■ Distress adjusted value of equity

- Value of Global Crossing = $\$3.22 (.2337) + \$0.00 (.7663) = \$0.75$

9. Equity to Employees: Effect on Value

- In recent years, firms have turned to giving employees (and especially top managers) equity option packages as part of compensation. These options are usually
 - Long term
 - At-the-money when issued
 - On volatile stocks
- Are they worth money? And if yes, who is paying for them?
- Two key issues with employee options:
 - How do options granted in the past affect equity value per share today?
 - How do expected future option grants affect equity value today?

Equity Options and Value

- Options outstanding
 - Step 1: List all options outstanding, with maturity, exercise price and vesting status.
 - Step 2: Value the options, taking into accounting dilution, vesting and early exercise considerations
 - Step 3: Subtract from the value of equity and divide by the actual number of shares outstanding (not diluted or partially diluted).
- Expected future option and restricted stock issues
 - Step 1: Forecast value of options that will be granted each year as percent of revenues that year. (As firm gets larger, this should decrease)
 - Step 2: Treat as operating expense and reduce operating income and cash flows
 - Step 3: Take present value of cashflows to value operations or equity.

10. Analyzing the Effect of Illiquidity on Value

- Investments which are less liquid should trade for less than otherwise similar investments which are more liquid.
- The size of the illiquidity discount should depend upon
 - *Type of Assets owned by the Firm*: The more liquid the assets owned by the firm, the lower should be the liquidity discount for the firm
 - *Size of the Firm*: The larger the firm, the smaller should be size of the liquidity discount.
 - *Health of the Firm*: Stock in healthier firms should sell for a smaller discount than stock in troubled firms.
 - *Cash Flow Generating Capacity*: Securities in firms which are generating large amounts of cash from operations should sell for a smaller discounts than securities in firms which do not generate large cash flows.
 - *Size of the Block*: The liquidity discount should increase with the size of the portion of the firm being sold.

Illiquidity Discount: Restricted Stock Studies

- Restricted securities are securities issued by a company, but not registered with the SEC, that can be sold through private placements to investors, but cannot be resold in the open market for a two-year holding period, and limited amounts can be sold after that. Studies of restricted stock over time have concluded that the discount is between 25 and 35%. Many practitioners use this as the illiquidity discount for all private firms.
- A more nuanced use of restricted stock studies is to relate the discount to fundamental characteristics of the company - level of revenues, health of the company etc.. And to adjust the discount for any firm to reflect its characteristics:
 - The discount will be smaller for larger firms
 - The discount will be smaller for healthier firms

Illiquidity Discounts from Bid-Ask Spreads


- Using data from the end of 2000, for instance, we regressed the bid-ask spread against annual revenues, a dummy variable for positive earnings (DERN: 0 if negative and 1 if positive), cash as a percent of firm value and trading volume.

$$\text{Spread} = 0.145 - 0.0022 \ln(\text{Annual Revenues}) - 0.015 (\text{DERN}) - 0.016 (\text{Cash/Firm Value}) - 0.11 (\text{\$ Monthly trading volume/ Firm Value})$$

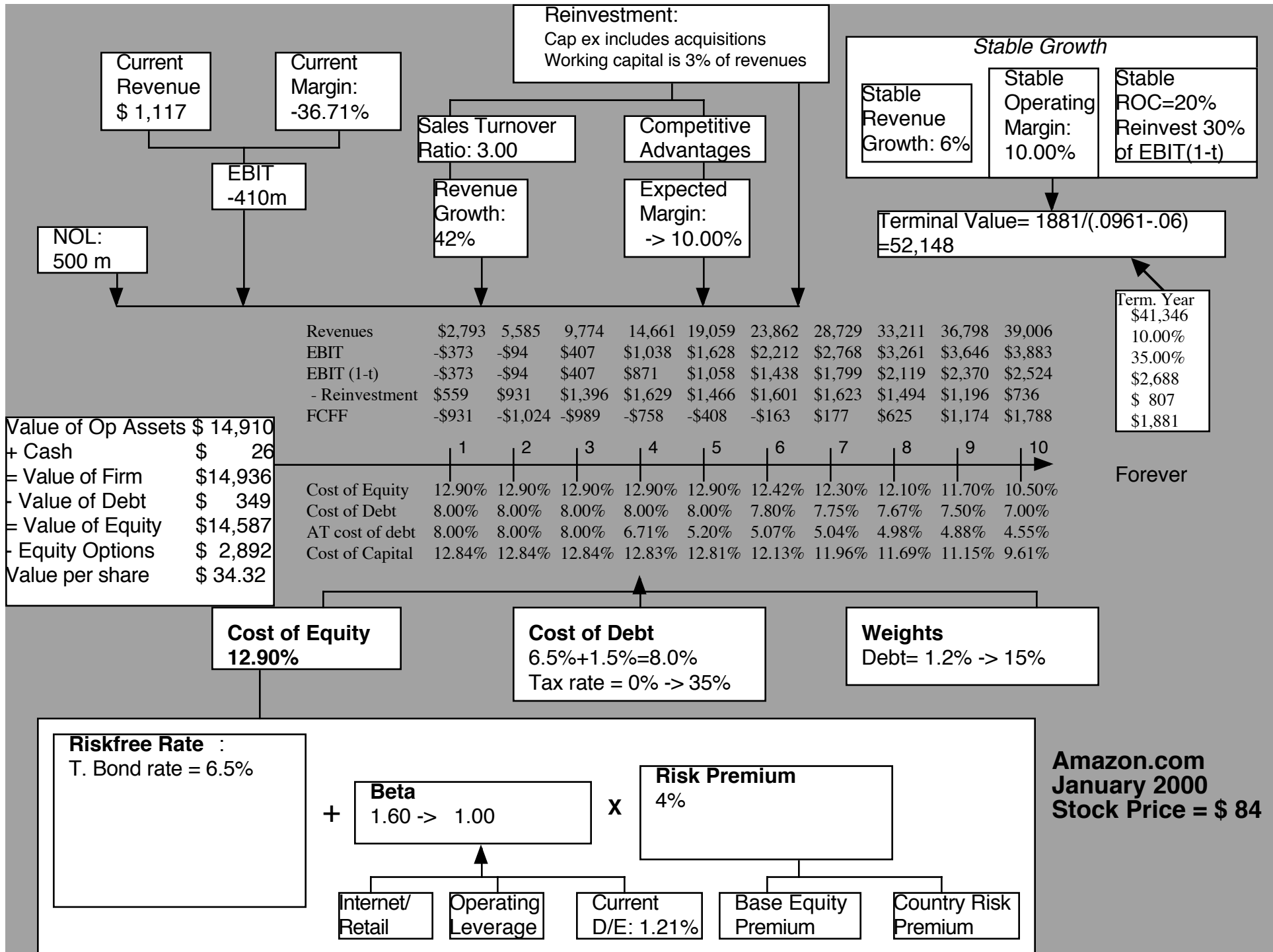
- We could substitute in the revenues of Kristin Kandy (\$5 million), the fact that it has positive earnings and the cash as a percent of revenues held by the firm (8%):

$$\begin{aligned} \text{Spread} &= 0.145 - 0.0022 \ln(\text{Annual Revenues}) - 0.015 (\text{DERN}) - 0.016 (\text{Cash/Firm Value}) - \\ & 0.11 (\text{\$ Monthly trading volume/ Firm Value}) \\ &= 0.145 - 0.0022 \ln(5) - 0.015 (1) - 0.016 (.08) - 0.11 (0) = .12.52\% \end{aligned}$$

- Based on this approach, we would estimate an illiquidity discount of 12.52% for Kristin Kandy.



V. Value, Price and Information: Closing the Deal



Amazon.com: Break Even at \$84?

| | 6% | 8% | 10% | 12% | 14% |
|-----|-----------|----------|-----------|-----------|-----------|
| 30% | \$ (1.94) | \$ 2.95 | \$ 7.84 | \$ 12.71 | \$ 17.57 |
| 35% | \$ 1.41 | \$ 8.37 | \$ 15.33 | \$ 22.27 | \$ 29.21 |
| 40% | \$ 6.10 | \$ 15.93 | \$ 25.74 | \$ 35.54 | \$ 45.34 |
| 45% | \$ 12.59 | \$ 26.34 | \$ 40.05 | \$ 53.77 | \$ 67.48 |
| 50% | \$ 21.47 | \$ 40.50 | \$ 59.52 | \$ 78.53 | \$ 97.54 |
| 55% | \$ 33.47 | \$ 59.60 | \$ 85.72 | \$ 111.84 | \$ 137.95 |
| 60% | \$ 49.53 | \$ 85.10 | \$ 120.66 | \$ 156.22 | \$ 191.77 |

Reinvestment:
Cap ex includes acquisitions
Working capital is 3% of revenues

Stable Growth
Stable Revenue Growth: 5%
Stable Operating Margin: 9.32%
Stable ROC=16.94%
Reinvest 29.5% of EBIT(1-t)

Current Revenue \$ 2,465
Current Margin: -34.60%
EBIT -853m
NOL: 1,289 m

Sales Turnover Ratio: 3.02
Revenue Growth: 25.41%
Competitive Advantages
Expected Margin: -> 9.32%

Terminal Value = $1064 / (.0876 - .05)$
= \$ 28,310

| | | | | | | | | | | | | |
|----------------|----------|----------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Revenues | \$4,314 | \$6,471 | \$9,059 | \$11,777 | \$14,132 | \$16,534 | \$18,849 | \$20,922 | \$22,596 | \$23,726 | \$24,912 | \$24,912 |
| EBIT | -\$703 | -\$364 | \$54 | \$499 | \$898 | \$1,255 | \$1,566 | \$1,827 | \$2,028 | \$2,164 | \$2,322 | \$2,322 |
| EBIT(1-t) | -\$703 | -\$364 | \$54 | \$499 | \$898 | \$1,133 | \$1,018 | \$1,187 | \$1,318 | \$1,406 | \$1,509 | \$1,509 |
| - Reinvestment | \$612 | \$714 | \$857 | \$900 | \$780 | \$796 | \$766 | \$687 | \$554 | \$374 | \$445 | \$ 445 |
| FCFF | -\$1,315 | -\$1,078 | -\$803 | -\$401 | \$118 | \$337 | \$252 | \$501 | \$764 | \$1,032 | \$1,064 | \$1,064 |

Term. Year
\$24,912
\$2,322
\$1,509
\$ 445
\$1,064

Value of Op Assets \$ 7,967
+ Cash & Non-op \$ 1,263
= Value of Firm \$ 9,230
- Value of Debt \$ 1,890
= Value of Equity \$ 7,340
- Equity Options \$ 748
Value per share \$ 18.74

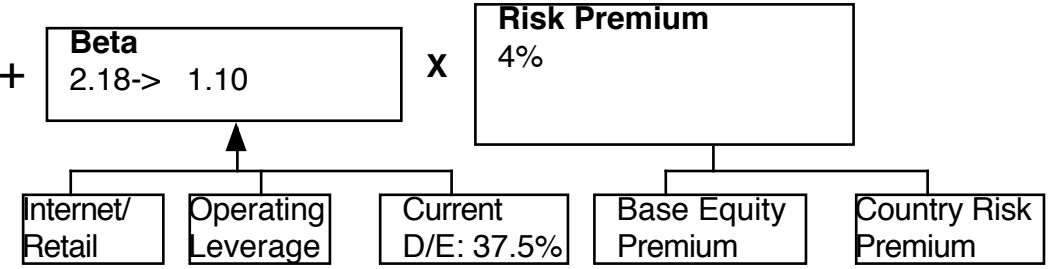
| | | | | | | | | | | | |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Forever |
| Debt Ratio | 27.27% | 27.27% | 27.27% | 27.27% | 27.27% | 24.81% | 24.20% | 23.18% | 21.13% | 15.00% | |
| Beta | 2.18 | 2.18 | 2.18 | 2.18 | 2.18 | 1.96 | 1.75 | 1.53 | 1.32 | 1.10 | |
| Cost of Equity | 13.81% | 13.81% | 13.81% | 13.81% | 13.81% | 12.95% | 12.09% | 11.22% | 10.36% | 9.50% | |
| AT cost of debt | 10.00% | 10.00% | 10.00% | 10.00% | 9.06% | 6.11% | 6.01% | 5.85% | 5.53% | 4.55% | |
| Cost of Capital | 12.77% | 12.77% | 12.77% | 12.77% | 12.52% | 11.25% | 10.62% | 9.98% | 9.34% | 8.76% | |

Cost of Equity
13.81%

Cost of Debt
5.1% + 4.75% = 9.85%
Tax rate = 0% -> 35%

Weights
Debt = 27.38% -> 15%

Riskfree Rate :
T. Bond rate = 5.1%



Amazon.com
January 2001
Stock price = \$14

Amazon over time...

