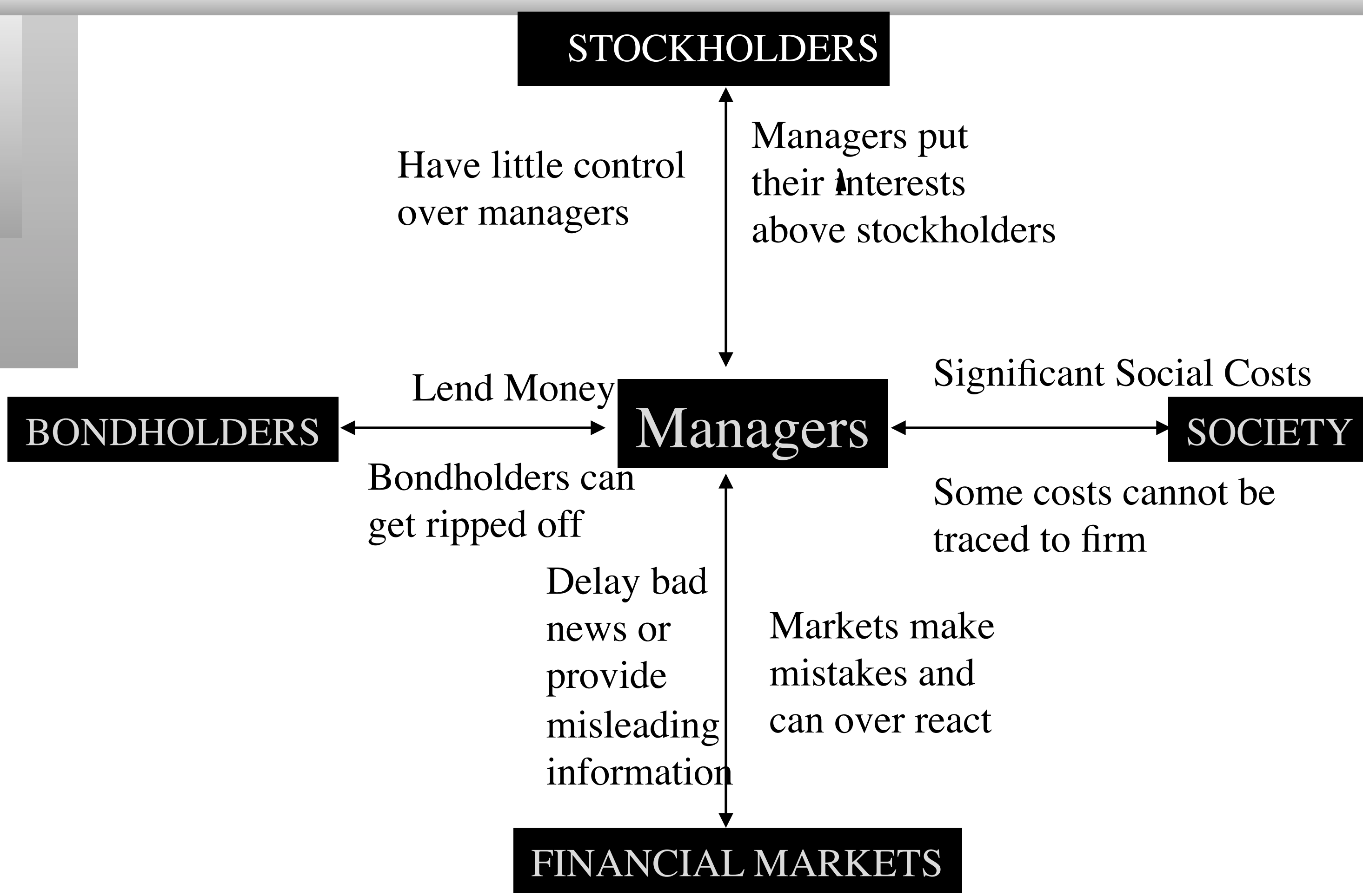
# Corporate Finance: Spring 2010

Aswath Damodaran

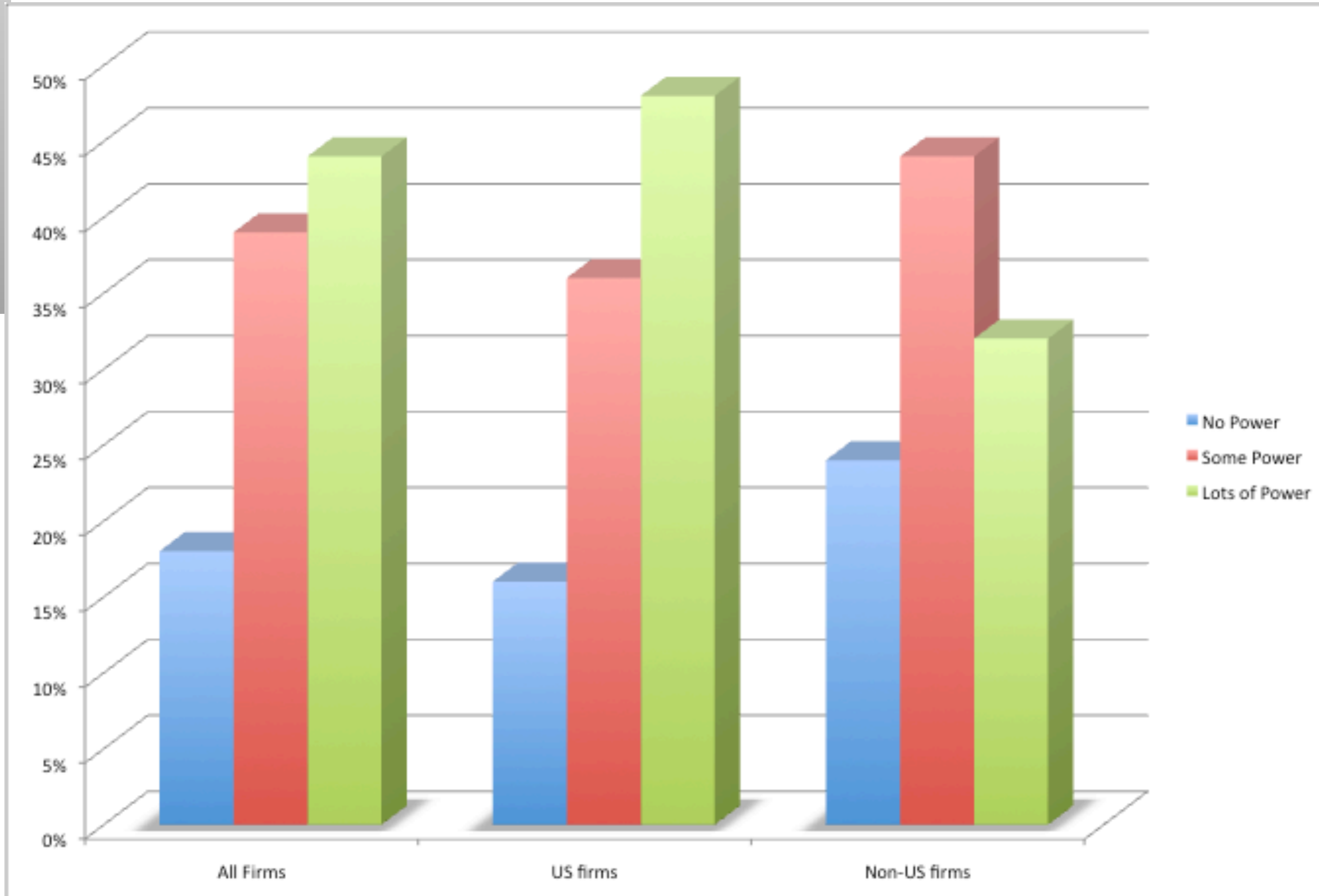
# Ponderous Thoughts… (or maybe not)

- There are few facts and lots of opinions…
- The real world is a messy place…
- The model is your tool… Not the other way around…
- Change is the only constant…

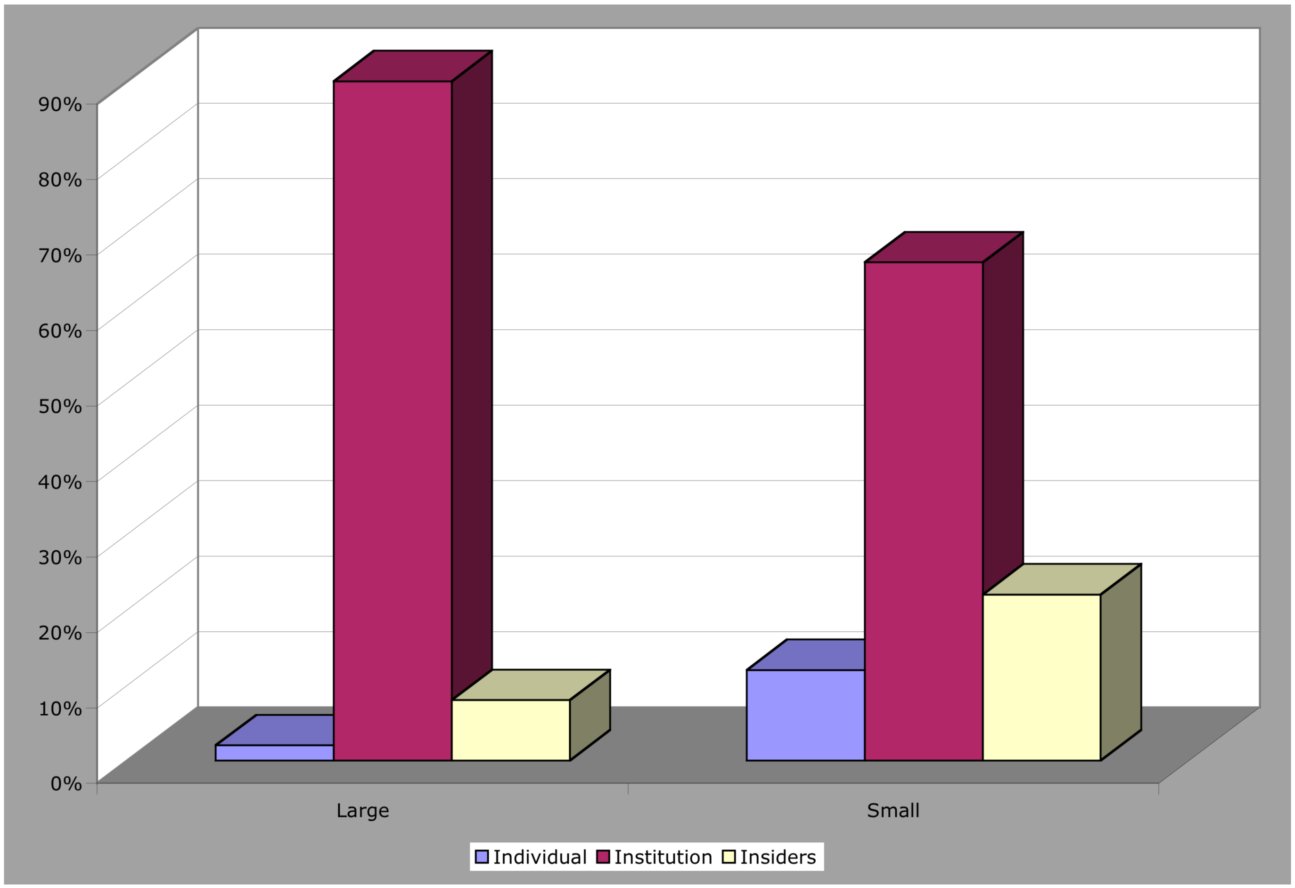
# The Breakdown in the Classical Objective Function



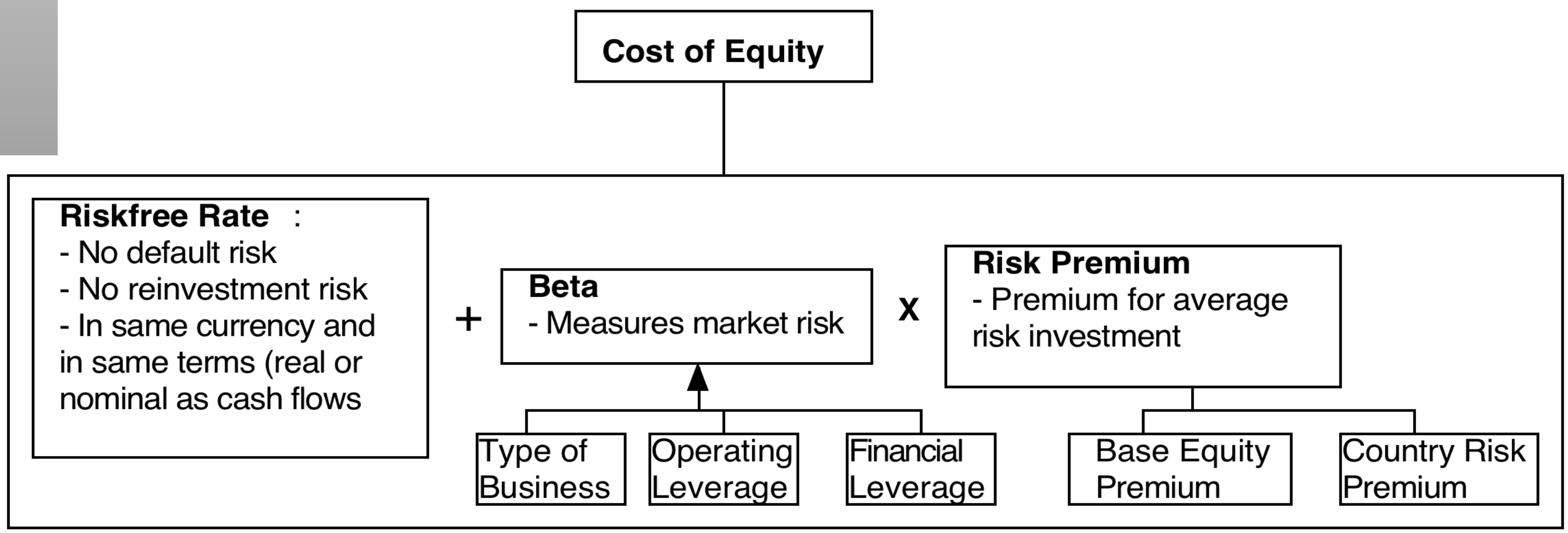
# I. Where does the power lie?



# II. Who is your marginal investor? From Spring 2009



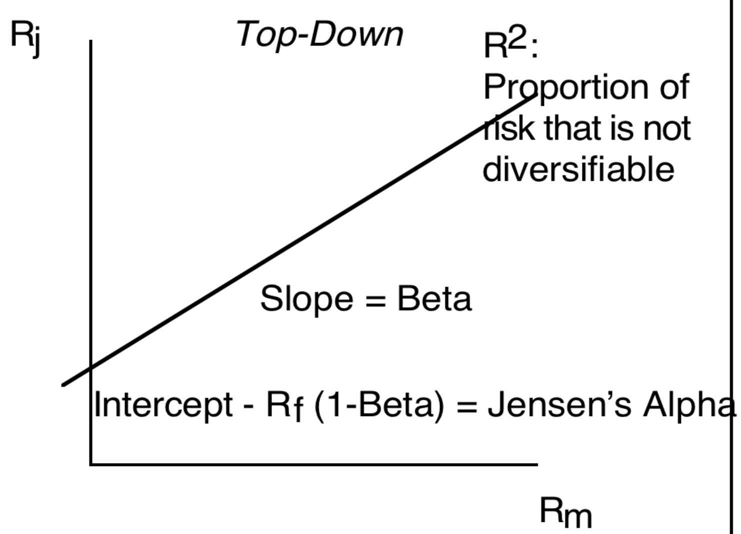
# III. Risk Profiles and Costs of Equity



# Beta: The Standard Approach

**Beta of Equity**

*Top-Down*




*Bottom-up*

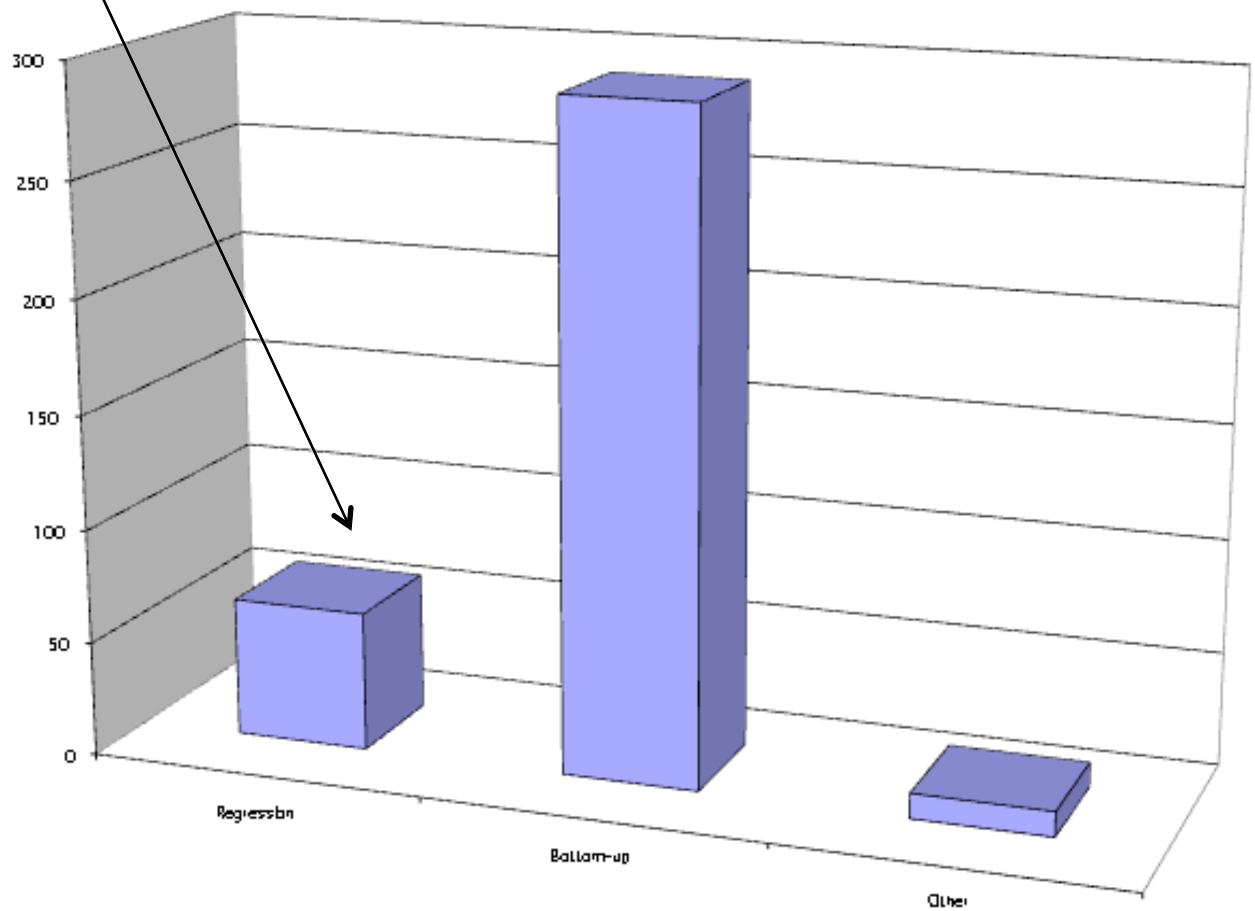
1. Identify businesses that firm is in.
2. Take weighted average of the unlevered betas of other firms in the business
3. Compute the levered beta using the firm's current debt to equity ratio:

$\beta_l = \beta_u$ [1 + (1-tax rate) (Debt/Equity)]

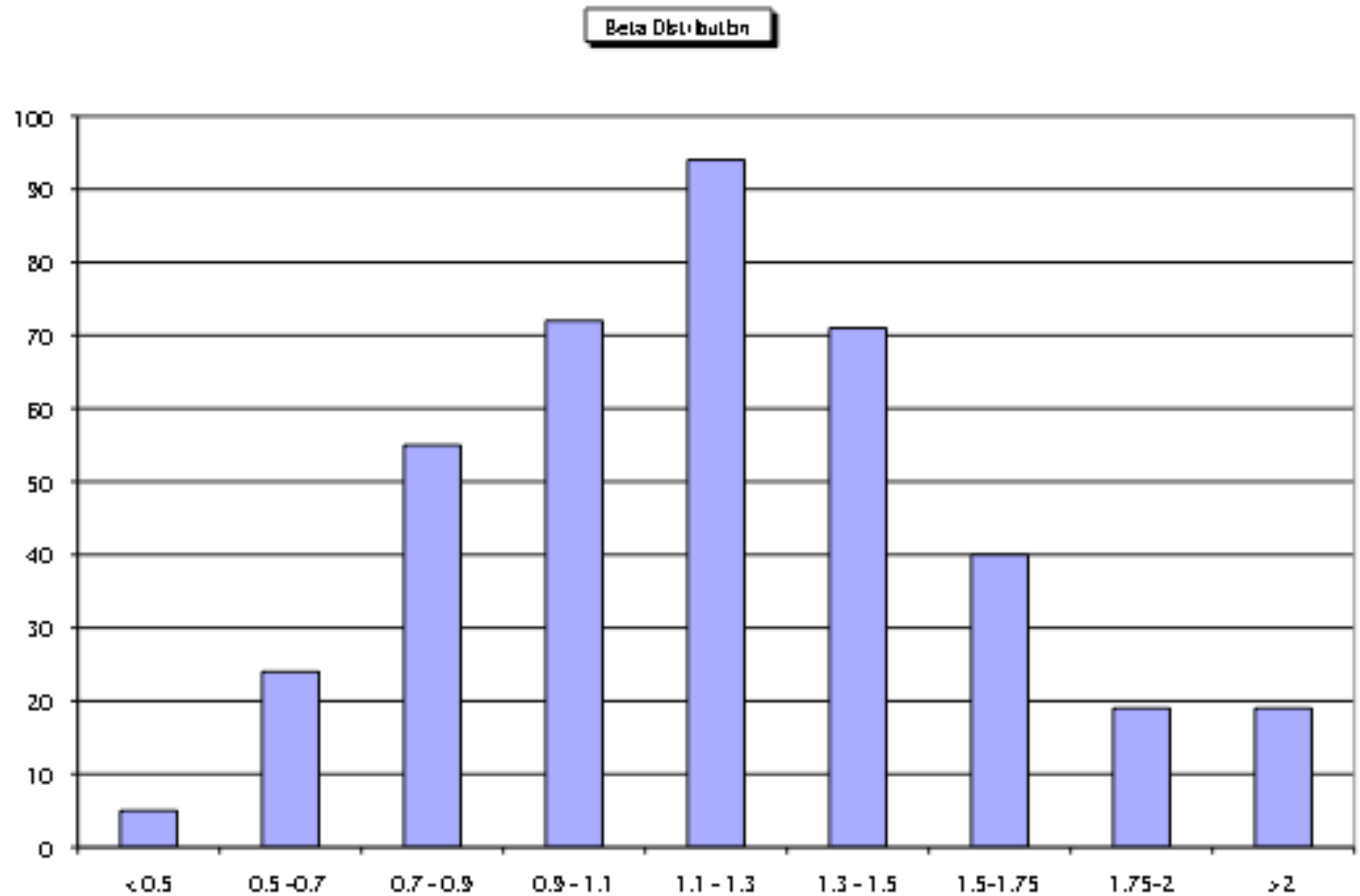
Typical reasons

1. My company is unique
2. My company is in only one line of business
3. My bottom-up beta is too different from my regression beta

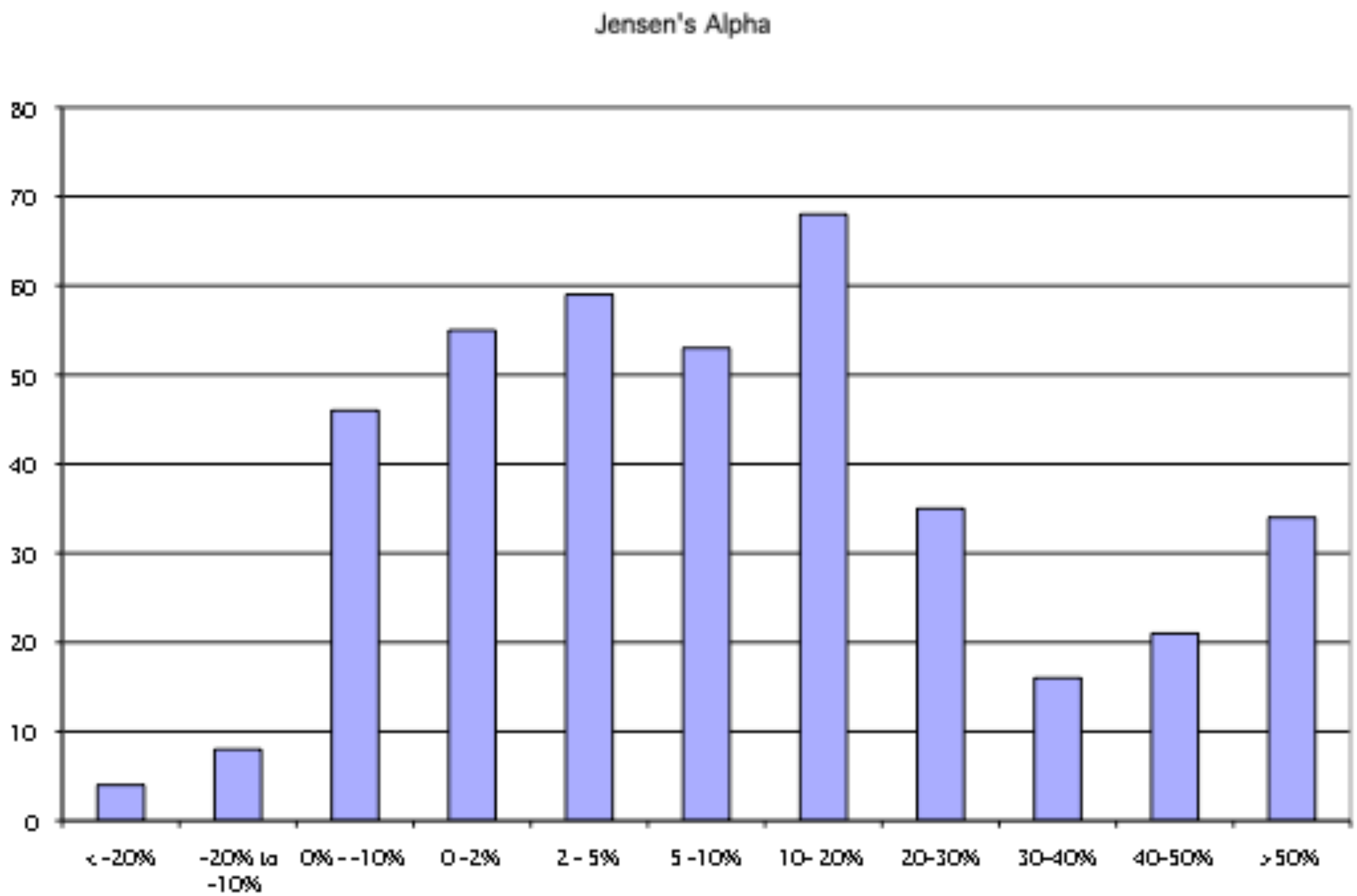
# Regression Estimation Approaches



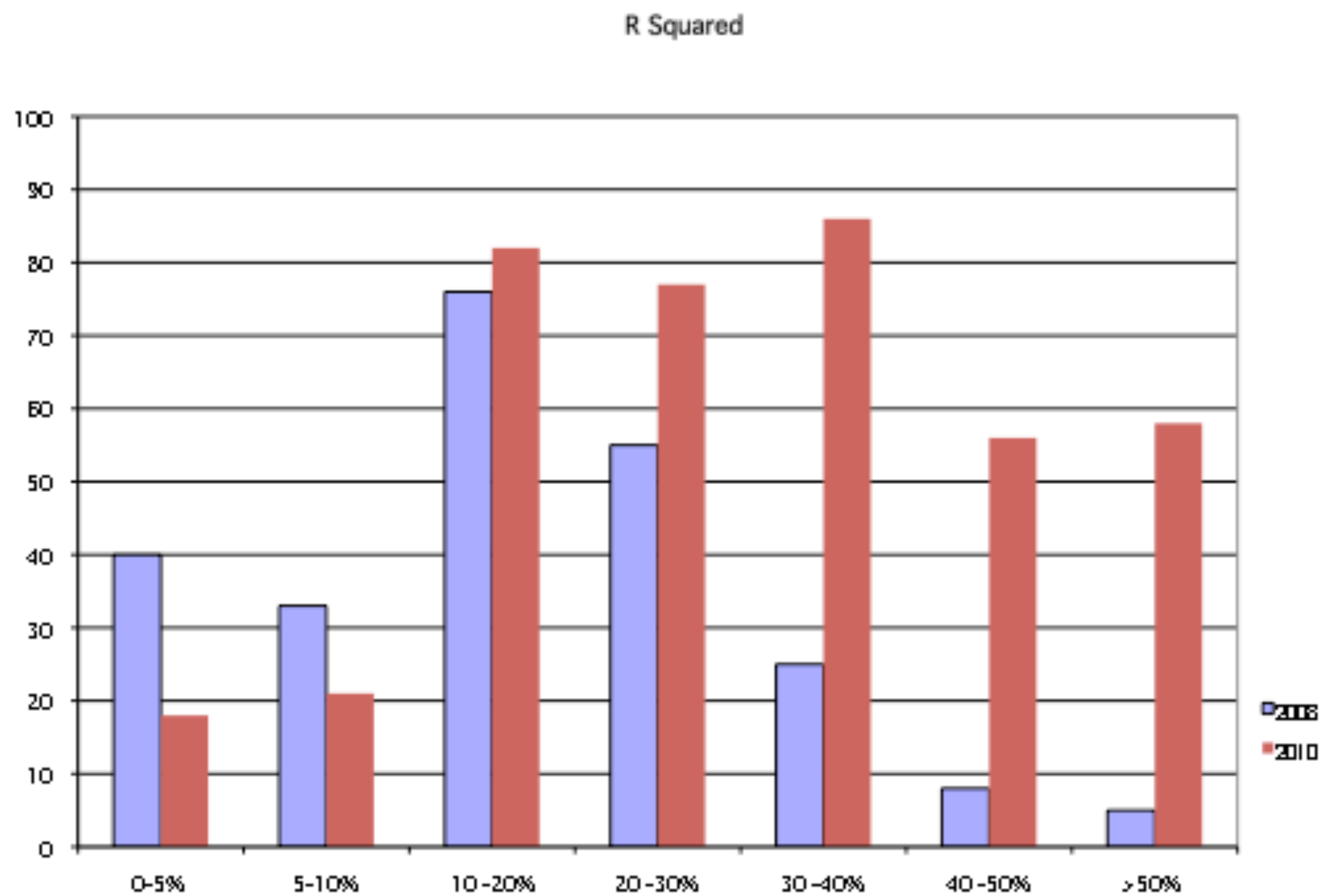
# Beta Distribution



# Jensen's Alpha Distribution

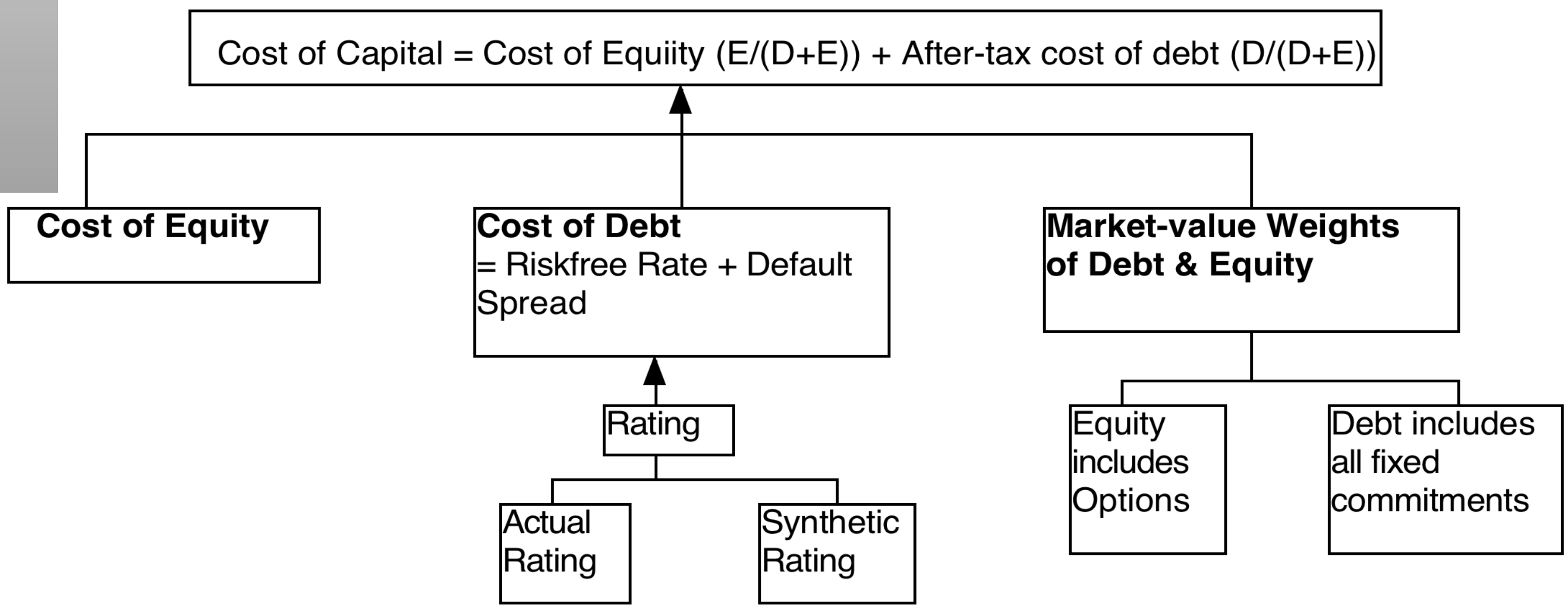


# R Squared

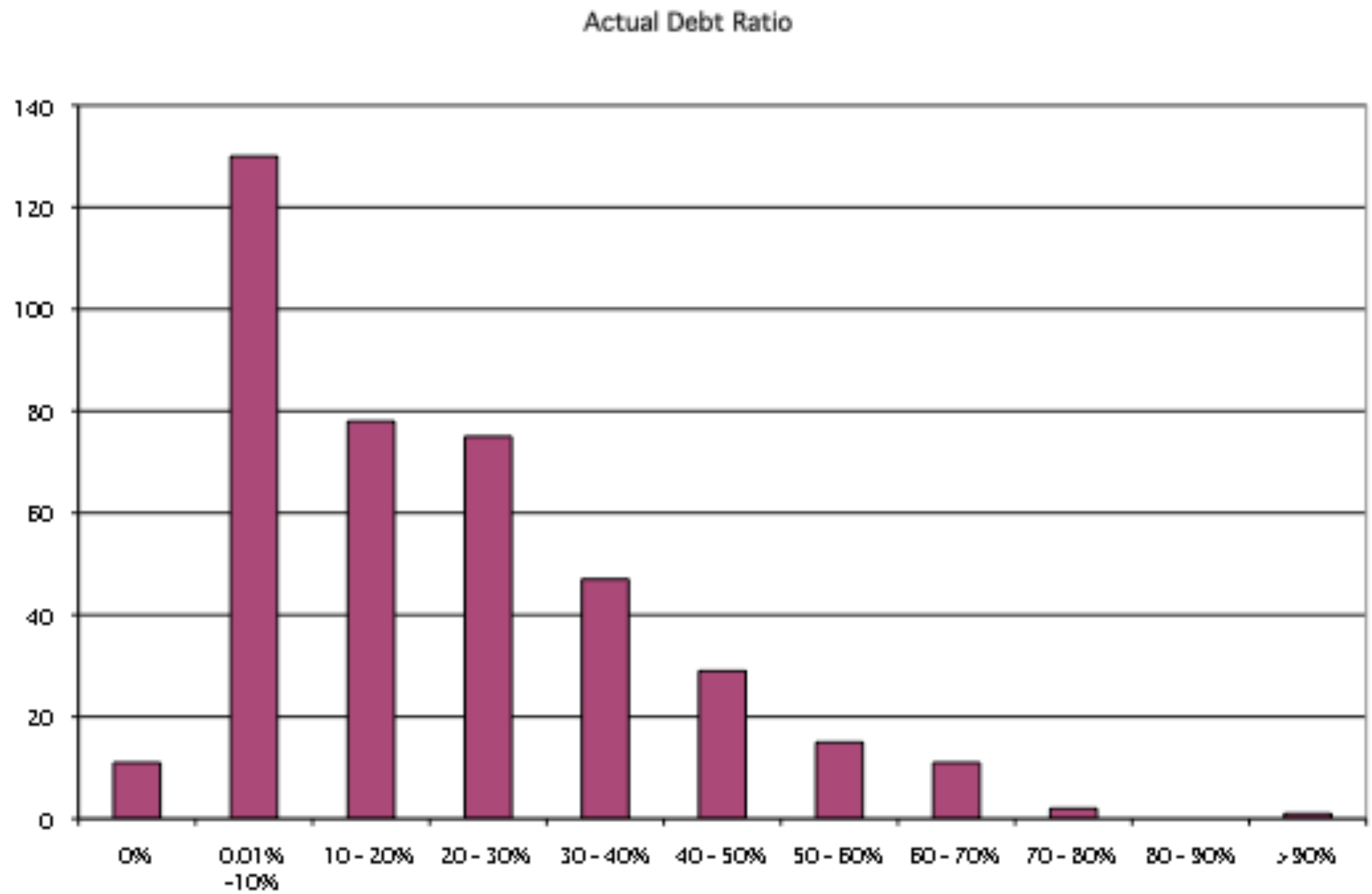


R Squared
100
90
80
70
60
50
40
30
20
10
0
0-5%
5-10%
10-20%
20-30%
30-40%
40-50%
>50%
2008
2010

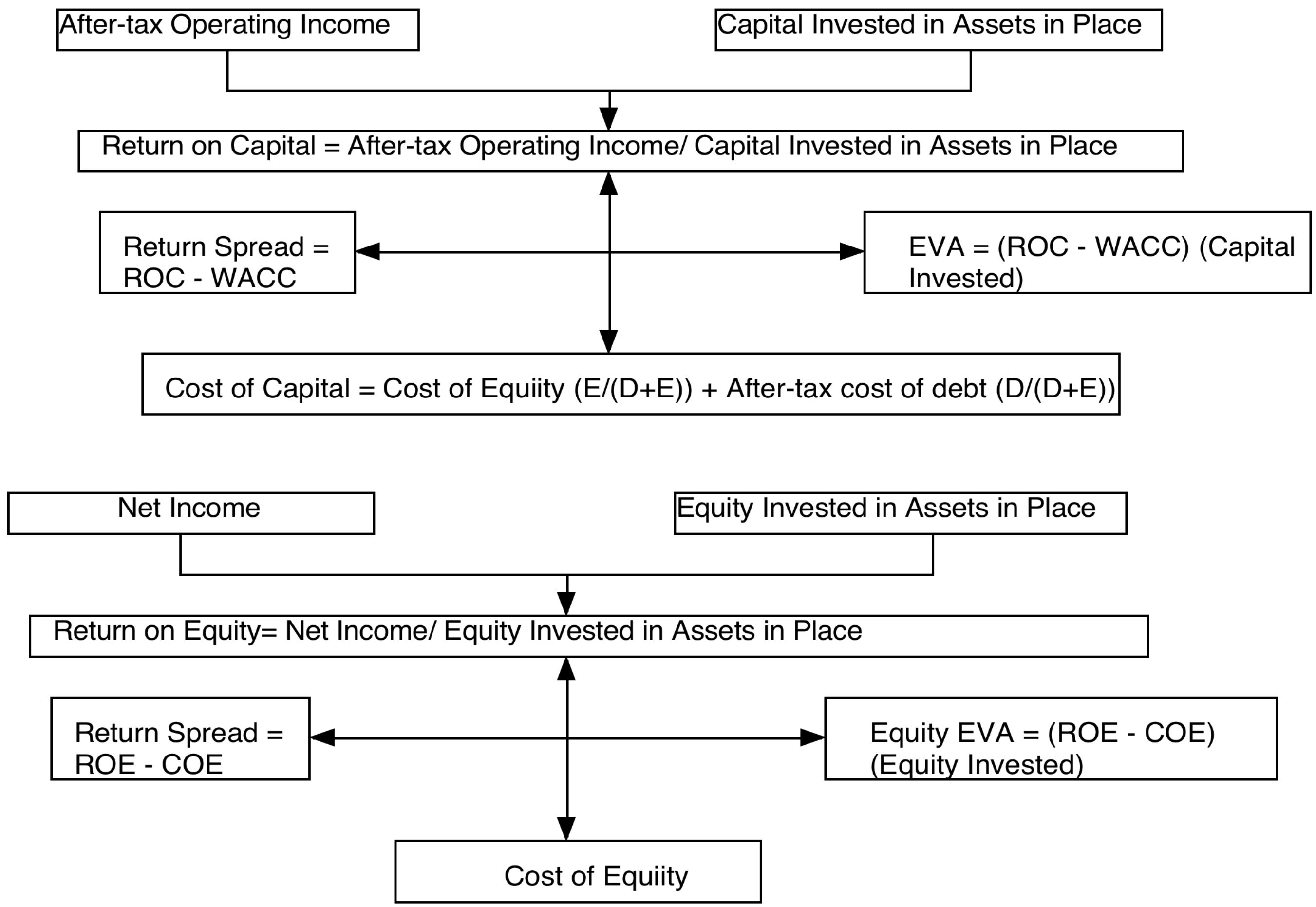
# Cost of Capital



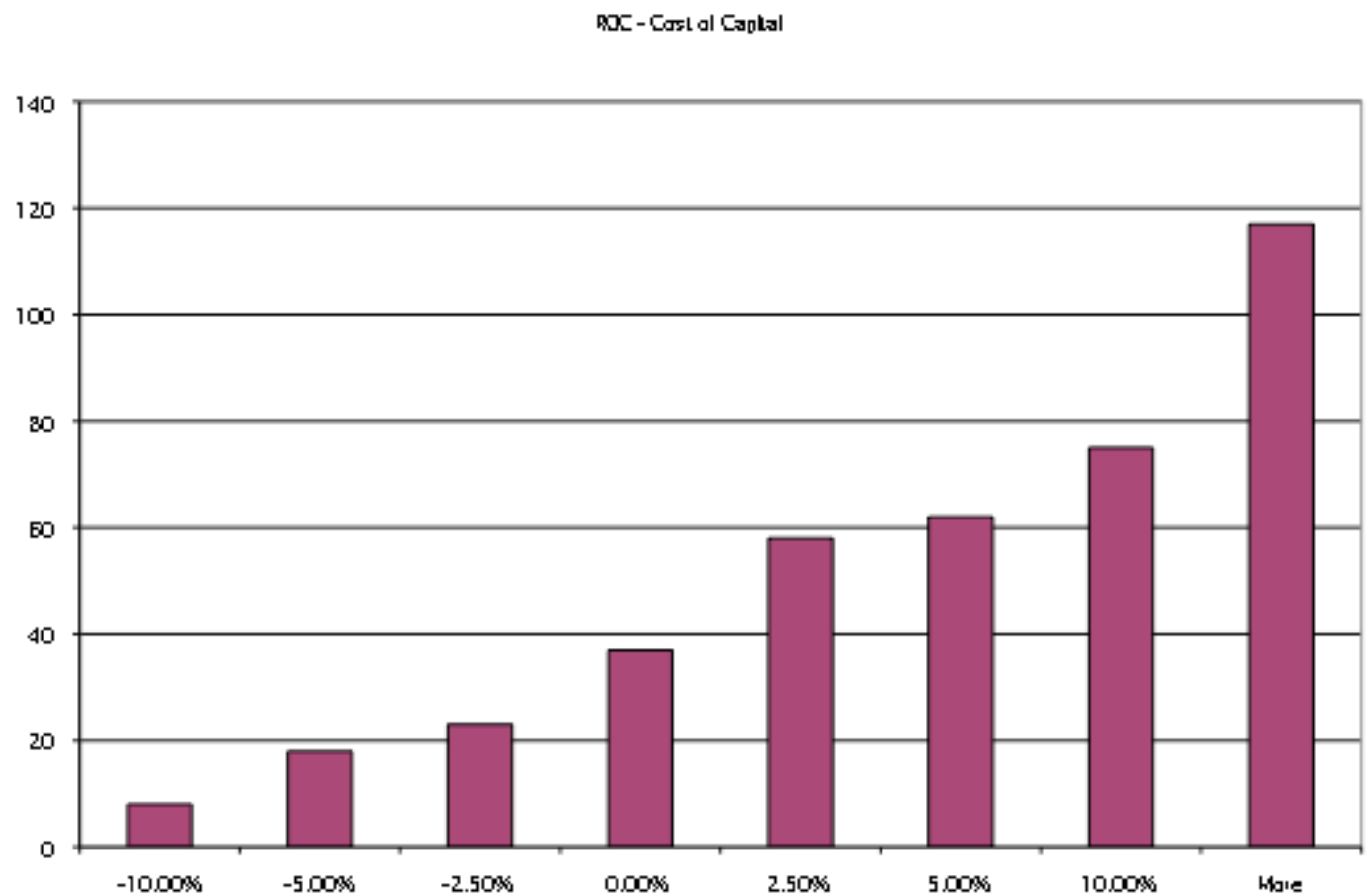
# Distribution of Current Market Value Debt Ratios



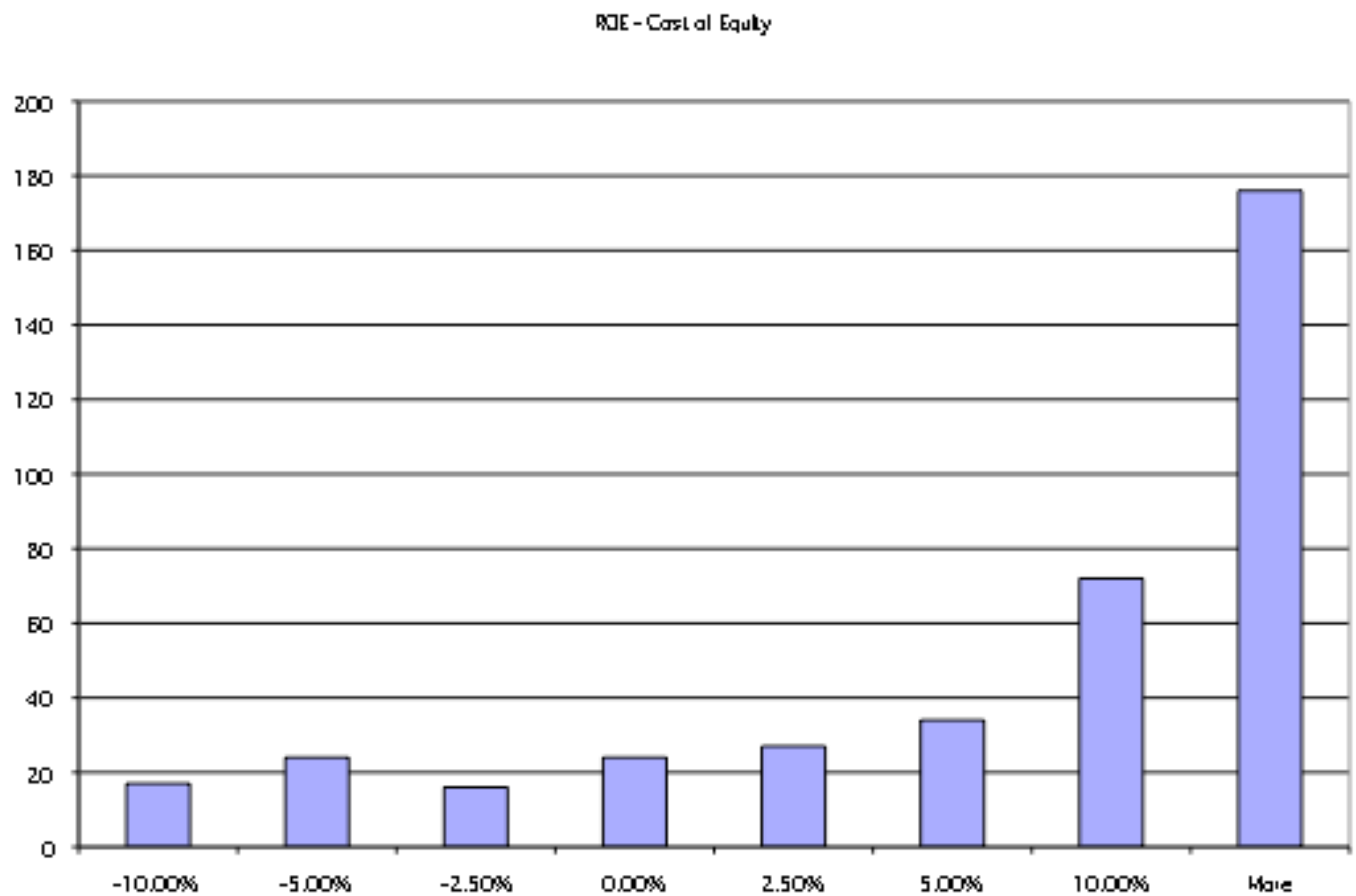
# IV. The Quality of Investments: The Firm View



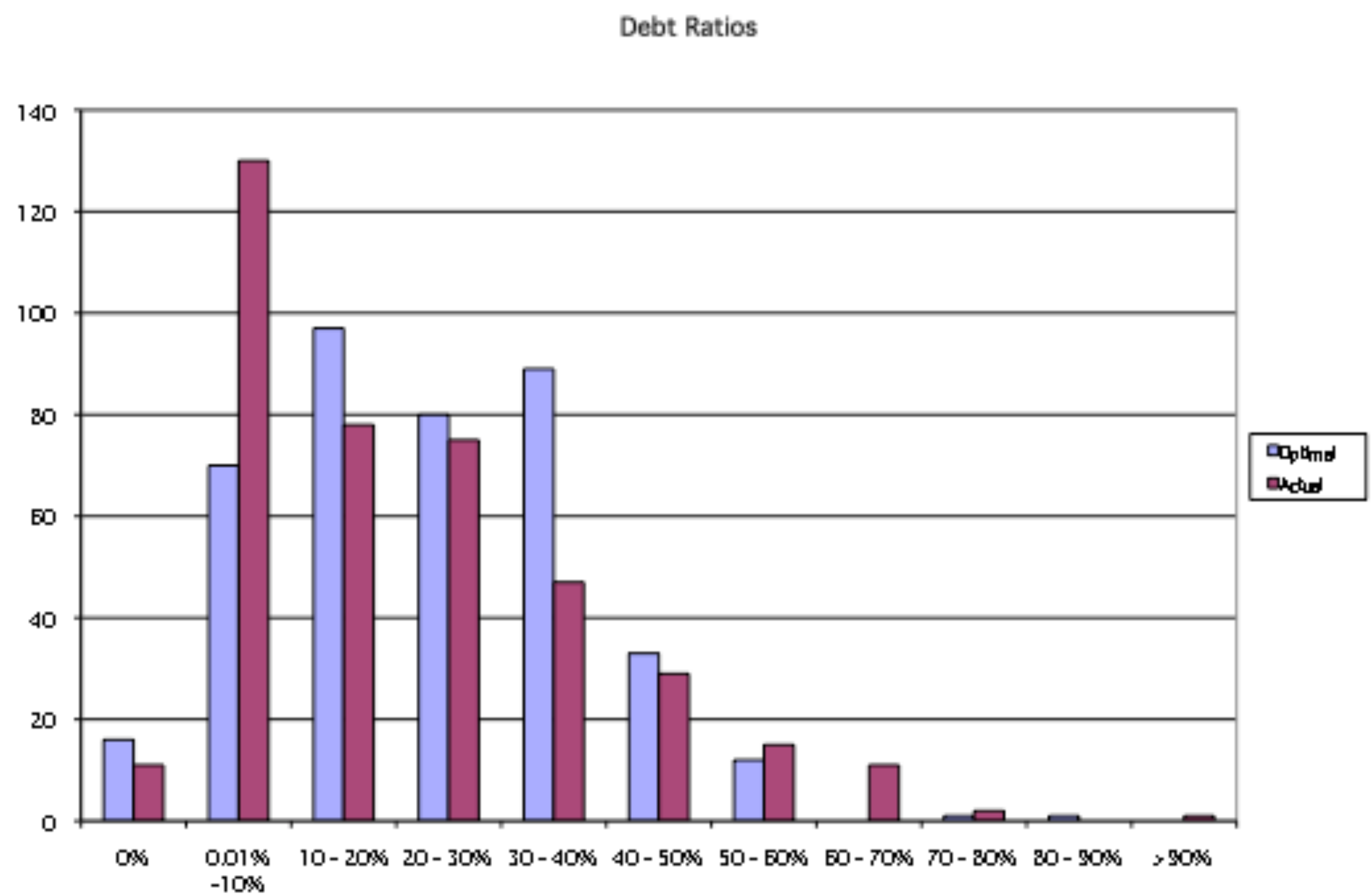
# ROC versus Cost of Capital



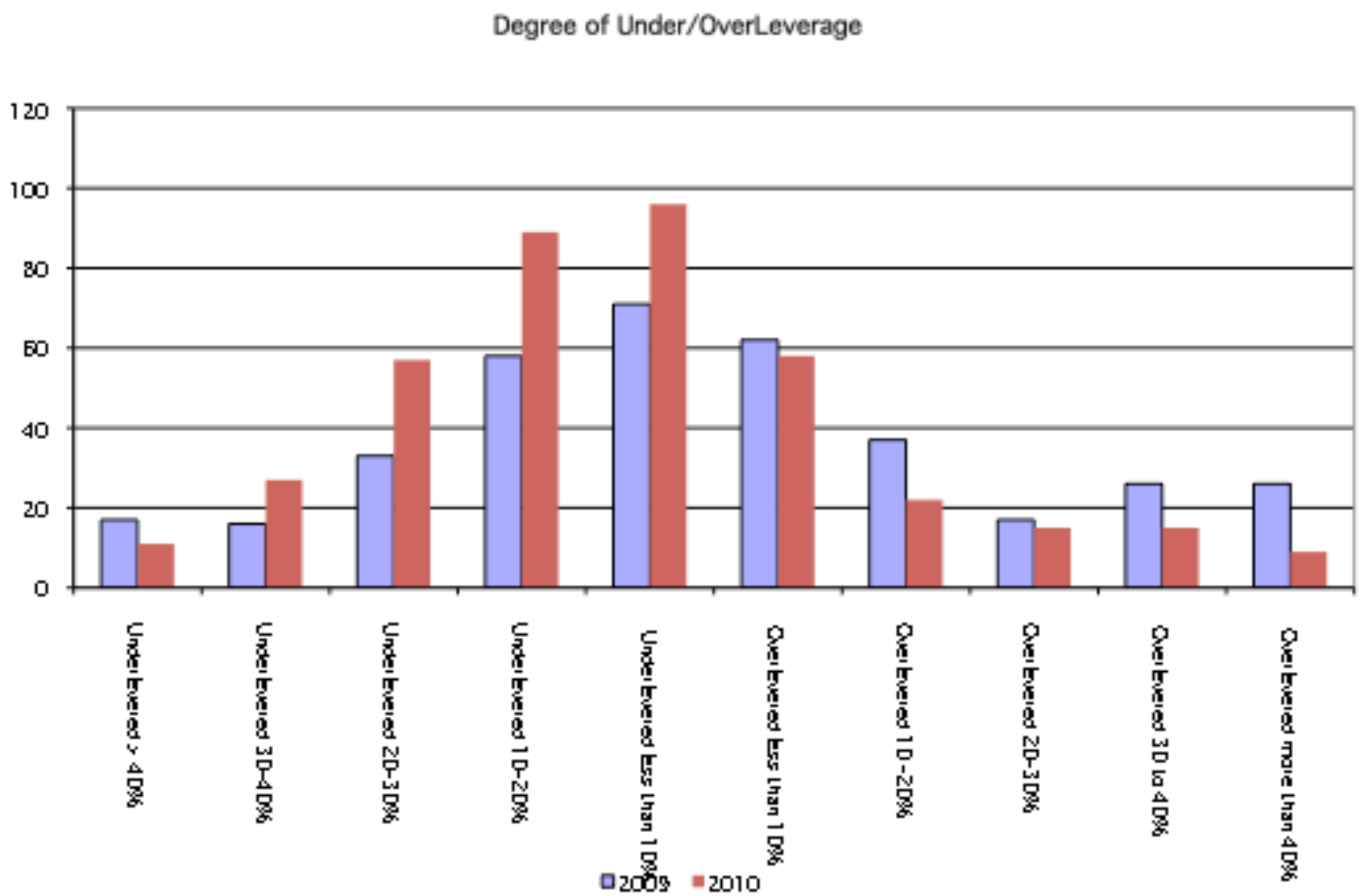
# ROE versus Cost of Equity



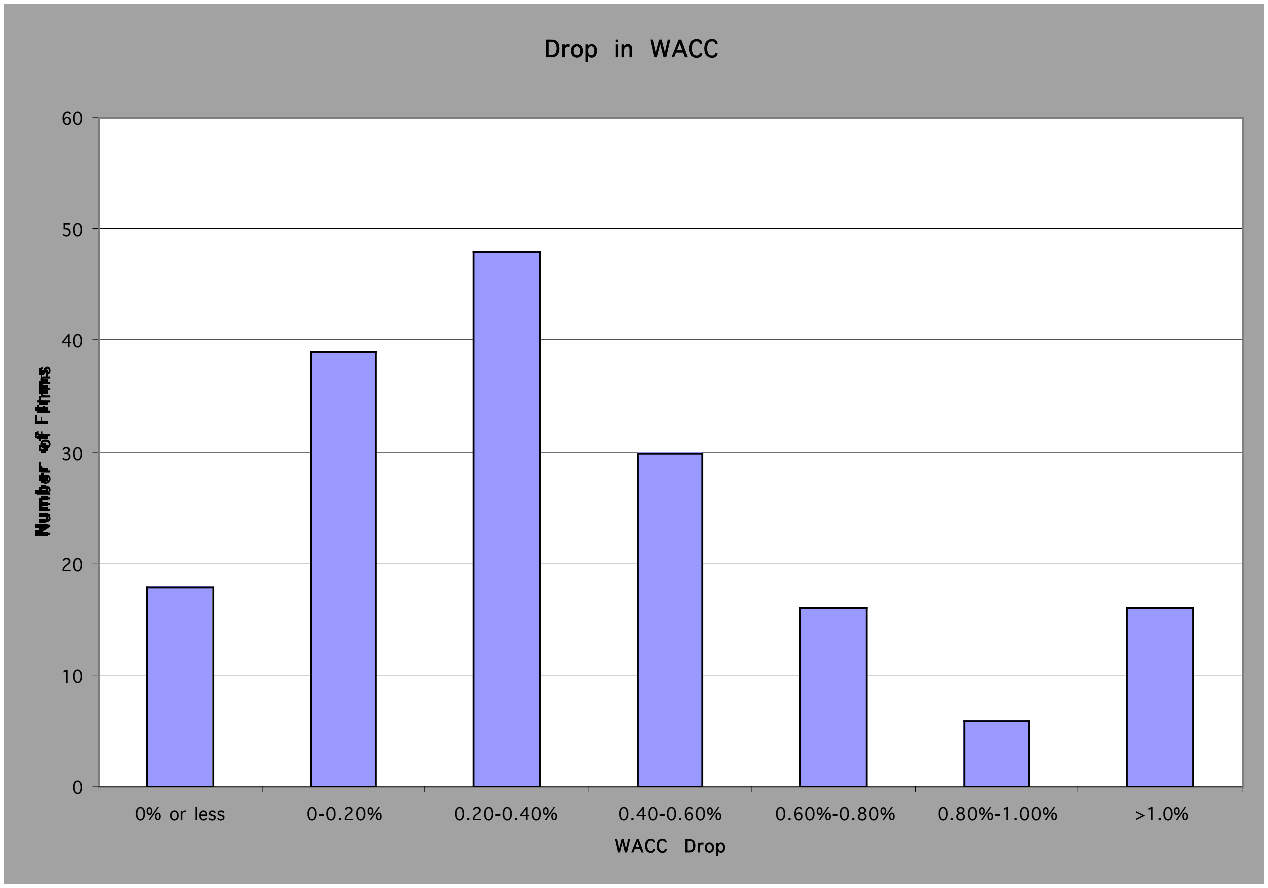
# VI. The Optimal Financing Mix



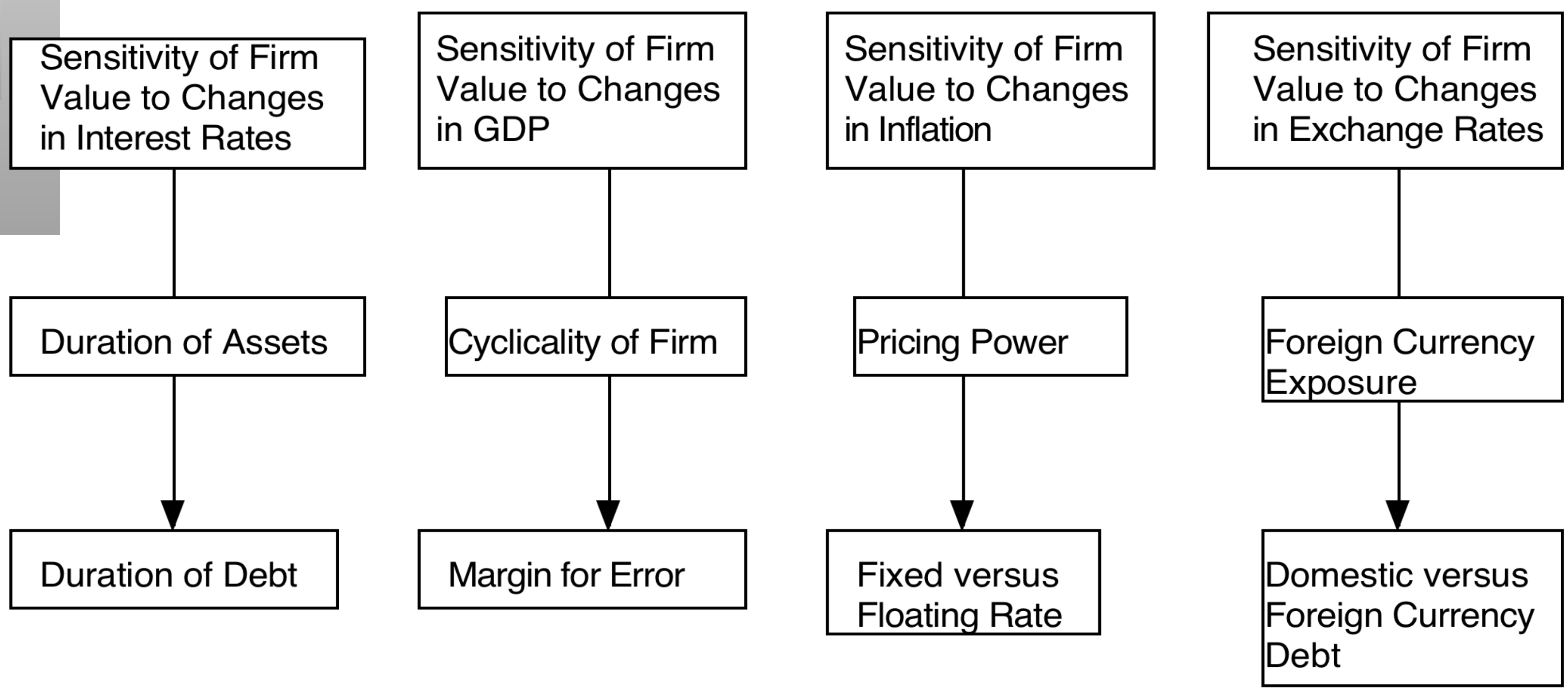
# Under versus Over Levered Firms



# Change in Cost of Capital



# VIII. The Right Kind of Financing



# IX. Measuring Potential Dividends

Begin with the net income (which is after interest expenses and taxes)

Add back the non-cash charges such as depreciation & amortization

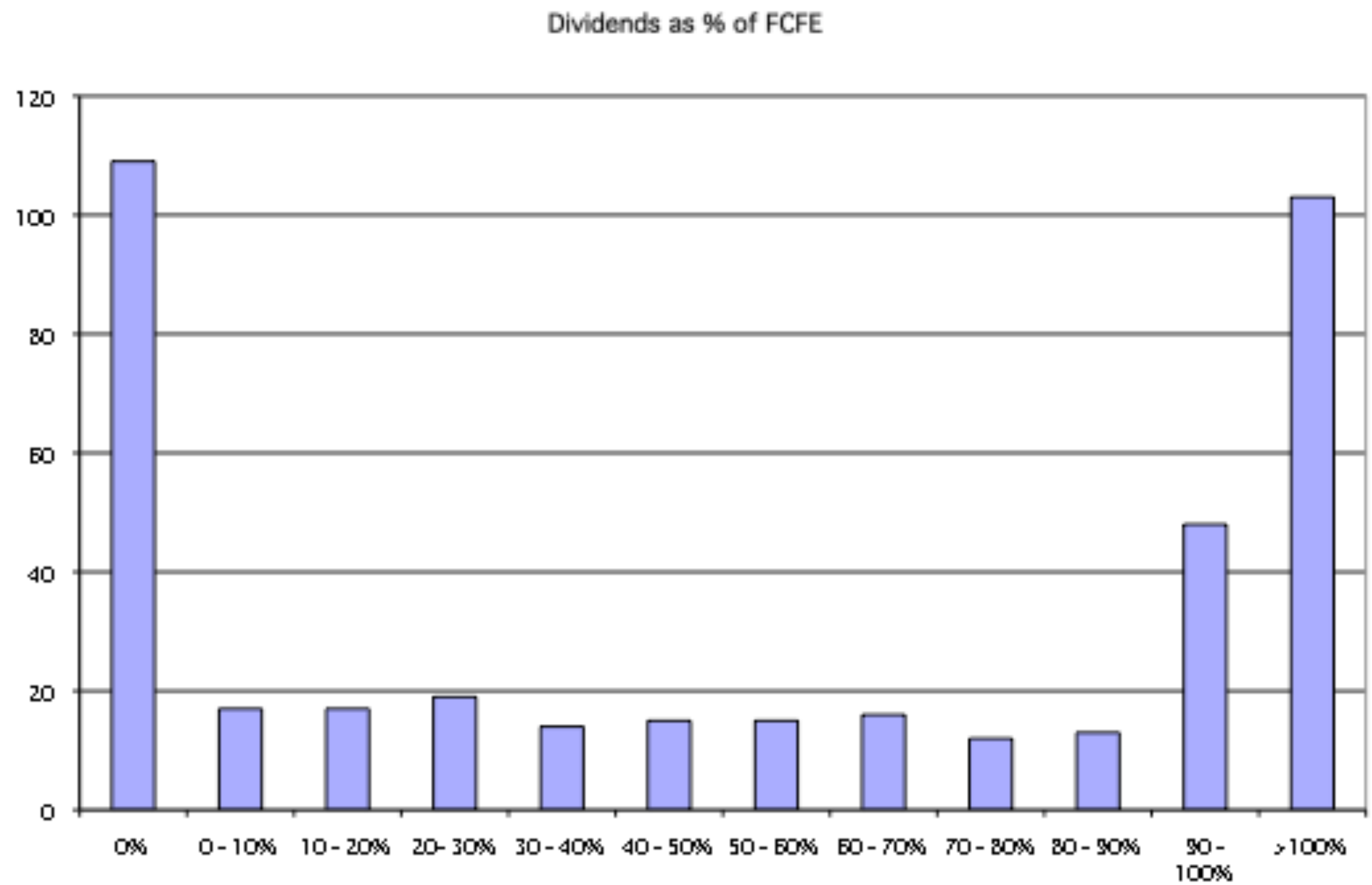
Subtract out reinvestment needs
- Capital expenditures
- Investments in Non-cash Working Capital (Change)

Subtract out payments to non-equity investors
- Principal Repayments
- Preferred Stock Dividends

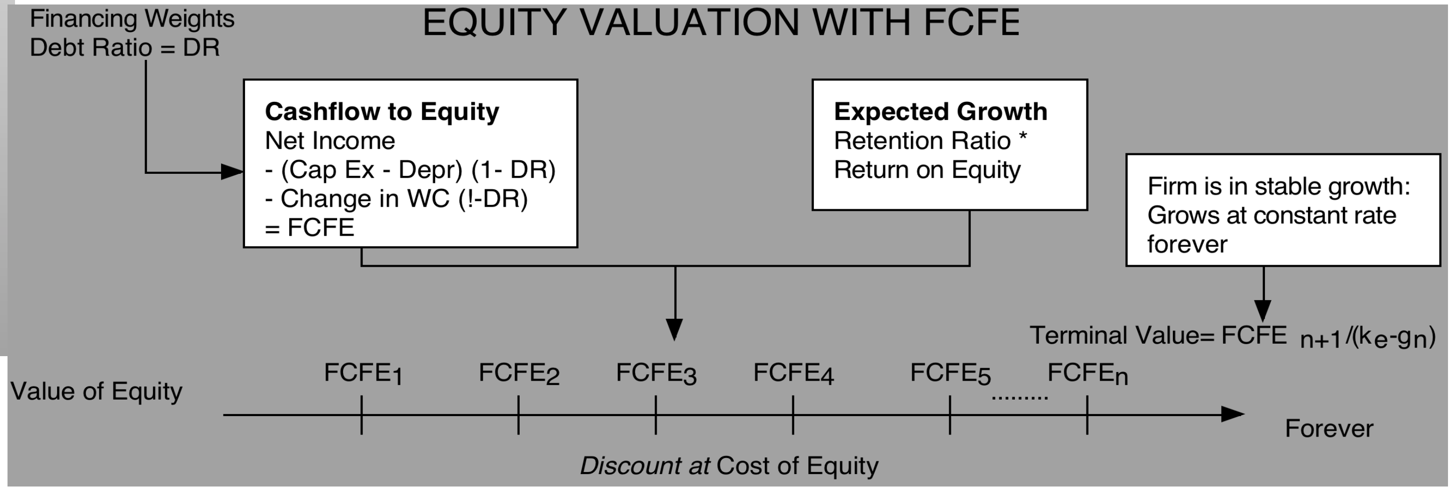
Add any cash inflows from new debt
- New Debt Issues

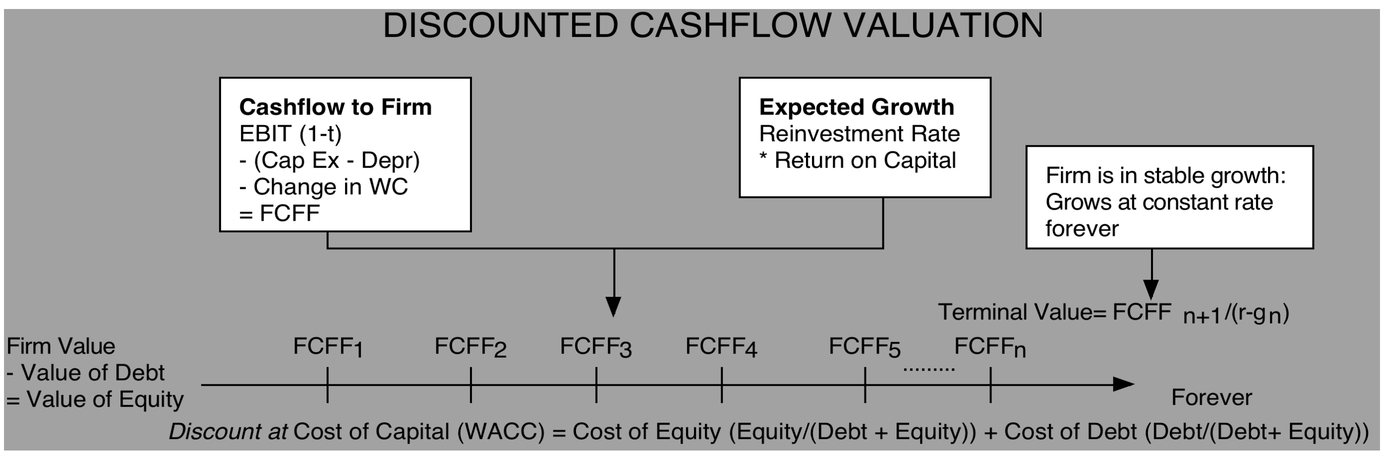
To get to the Cash that is available for return to Owners

# Dividends versus FCFE



# X. Valuation:
# Match up cashflows and discount rates…



# Getting to equity value per share

| Approach used | To get to equity value per share |
|---|---|
| Discount dividends per share at the cost of equity | Present value is value of equity per share |
| Discount aggregate FCFE at the cost of equity | Present value is value of aggregate equity. Subtract the value of equity options given to managers and divide by number of shares. |
| Discount aggregate FCFF at the cost of capital | PV = Value of operating assets<br>+ Cash & Near Cash investments<br>+ Value of minority cross holdings<br>-Debt outstanding<br>= Value of equity<br>-Value of equity options<br>=Value of equity in common stock<br>/ Number of shares |

# Disney: Inputs to Valuation

| | *High Growth Phase* | *Transition Phase* | *Stable Growth Phase* |
|---|---|---|---|
| Length of Period | 5 years | 5 years | Forever after 10 years |
| Tax Rate | 38% | 38% | 38% |
| Return on Capital | 9.91% | Declines linearly to 9% | Stable ROC of 9% |
| Reinvestment Rate (Net Cap Ex + Working Capital Investments/EBIT) | 53.72% (based on normalized acquisition costs) | Declines to 33.33% as ROC and growth rates drop: Reinvestment Rate = g/ROC | 33.33% of after-tax operating income, estimated from stable growth rate of 3% and return on capital of 9%. Reinvestment rate = 3/9=33.33% |
| Expected Growth Rate in EBIT | ROC * Reinvestment Rate = 12%*0.5318 = 6.38% | Linear decline to Stable Growth Rate of 4% | 3% |
| Debt/Capital Ratio | 26.7% | Stays unchanged | Stays unchanged |
| Risk Parameters | Beta = 0.9033, $k_e$ = 8.91%% Pre-tax Cost of Debt = 6% Cost of capital = 7.52% | Beta increases linearly to 1.00; Cost of debt stays at 6% Cost of capital goes to 7.95% | Beta = 1.00; $k_e$ = 9.5% Cost of debt stays at 6% Cost of capital = 7.95% |

# Disney - Status Quo in 2009

**Current Cashflow to Firm**
EBIT(1-t)= 7030(1-.38)= 4,359
- Nt CpX= 2,101
- Chg WC 241
= FCFF 2,017
Reinvestment Rate = 2342/4359
=53.72%
Return on capital = 9.91%

Reinvestment Rate
53.72%

**Expected Growth in EBIT (1-t)**
.5372*.0991=.0532
**5.32%**

Return on Capital
9.91%

**Stable Growth**
g = 3%; Beta = 1.00;
Cost of capital =7.95%
ROC= 9%;
Reinvestment Rate=3/9=33.33%

Terminal Value$_{10}$= 4704/(.0795-.03) = 94,928

First 5 years

Growth decreases gradually to 3%

Op. Assets 65,284
+ Cash: 3,795
+ Non op inv 1,763
- Debt 16,682
- Minority int 1,344
=Equity 73,574
-Options 528
Value/Share $ 28.16

| Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| EBIT (1-t) | $4,591 | $4,835 | $5,093 | $5,364 | $5,650 | $5,924 | $6,185 | $6,428 | $6,650 | $6,850 |
| - Reinvestment | $2,466 | $2,598 | $2,736 | $2,882 | $3,035 | $2,941 | $2,818 | $2,667 | $2,488 | $2,283 |
| FCFF | $2,125 | $2,238 | $2,357 | $2,482 | $2,615 | $2,983 | $3,366 | $3,761 | $4,162 | $4,567 |

Term Yr
7055
2351
4704

Cost of Capital (WACC) = 8.91% (0.73) + 3.72% (0.27) = 7.52%

Cost of capital gradually increases to 7.95%

**Cost of Equity**
**8.91%**

**Cost of Debt**
(3.5%+2.5%)(1-.38)
= 3.72%
Based on actual A rating

**Weights**
E = 73% D = 27%

On June 1, 2009, Disney was trading at $24.34 /share

**Riskfree Rate**:
Riskfree rate = 3.5%

+

**Beta**
0.90

X

**Risk Premium**
6%

Unlevered Beta for Sectors: 0.7333

D/E=36.91%

*Investment decision affects risk of assets being finance and financing decision affects hurd*

**The Investment Decision**
Invest in projects that earn a return greater than a minimum acceptable hurdle rate

**The Dividend Decision**
If you cannot find investments that earn more than the hurdle rate, return the cash to the owners of the businesss.

**The Financing Decision**
Choose a financing mix that minimizes the hurdle rate and match your financing to your assets.

Strategic investments determine length of growth period

Existing Investments
ROC = 9.91%

New Investments

Return on Capital
9.91%

Reinvestment Rate
53.72%

*Financing Mix*
D=27%; E= 73%

*Financing Choices*
Fxed rate US $ debt with duration of years

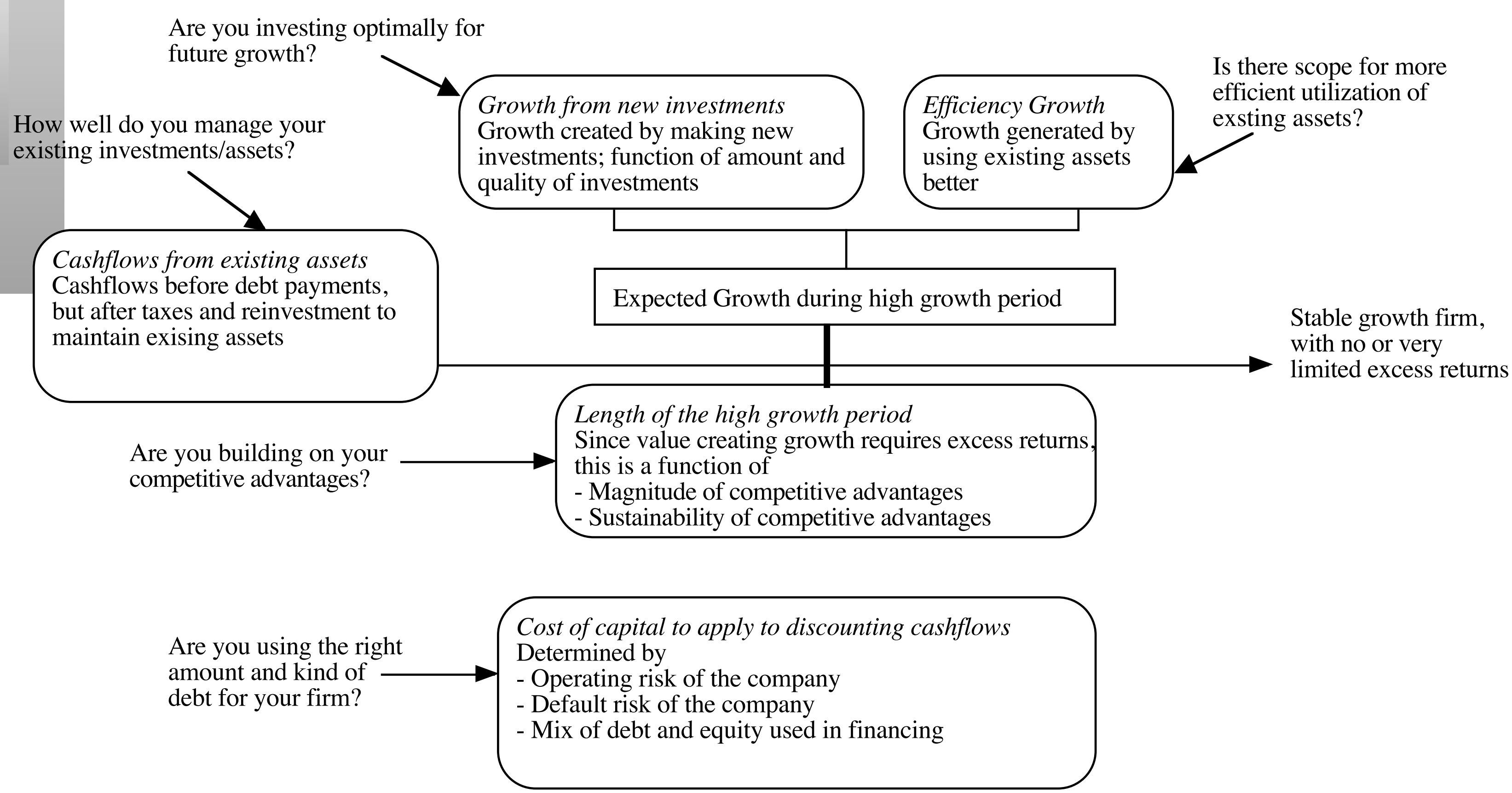
Current EBIT (1-t)
$ 4,359

Expected Growth Rate = 9.91% * 53.72% = 5.32%

Cost of capital = 8.91% (.73) + 3.72% (.27) = 7.52%

| Year | Expected grow | EBIT (1-t) | Reinvestment r | Reinvestment | FCFF | Terminal Value | Cost of capital | PV |
|---|---|---|---|---|---|---|---|---|
| 2009 | 5.32% | $4,591 | 53.72% | $2,466 | $2,125 | | 7.52% | $1,976 |
| 2010 | 5.32% | $4,835 | 53.72% | $2,598 | $2,238 | | 7.52% | $1,936 |
| 2011 | 5.32% | $5,093 | 53.72% | $2,736 | $2,357 | | 7.52% | $1,896 |
| 2012 | 5.32% | $5,364 | 53.72% | $2,882 | $2,482 | | 7.52% | $1,857 |
| 2013 | 5.32% | $5,650 | 53.72% | $3,035 | $2,615 | | 7.52% | $1,819 |
| 2014 | 4.86% | $5,924 | 49.64% | $2,941 | $2,983 | | 7.61% | $1,929 |
| 2015 | 4.39% | $6,185 | 45.57% | $2,818 | $3,366 | | 7.69% | $2,022 |
| 2016 | 3.93% | $6,428 | 41.49% | $2,667 | $3,761 | | 7.78% | $2,095 |
| 2017 | 3.46% | $6,650 | 37.41% | $2,488 | $4,162 | | 7.87% | $2,150 |
| 2018 | 3.00% | $6,850 | 33.33% | $2,283 | $4,567 | $94,928 | 7.95% | $47,604 |
| | | | | | | Value of operating assets = | | $65,284 |
| | | | | | | + Cash | | $3,795.00 |
| | | | | | | + Cross holdings | | $1,763.00 |
| | | | | | | - Debt | | $16,682.15 |
| | | | | | | - Minority interests | | $1,344.00 |
| | | | | | | - Equity Options | | $527.90 |
| | | | | | | Value of equity in stock = | | $52,288.17 |
| | | | | | | Value per share = | | $28.16 |

# Ways of changing value…



# Disney - Restructured

**Current Cashflow to Firm**
EBIT(1-t)= 7030(1-**.38**)= 4,359
- Nt CpX= 2,101
- Chg WC 241
= FCFF 2,017
Reinvestment Rate = 2342/4359
=53.72%
Return on capital = 9.91%

Reinvestment Rate
53.72%

**Expected Growth in EBIT (1-t)**
.5372*.12=.0645
**6.45%**

Return on Capital
12%

**Stable Growth**
g = 3%; Beta = 1.00;
Cost of capital =7.19%
ROC= 9%;
Reinvestment Rate=3/9=33.33%

First 5 years

Growth decreases gradually to 3%

Terminal $Value_{10}$= 5067/(.0719-.03) = 120,982

| Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| EBIT (1-t) | $4,640 | $4,939 | $5,257 | $5,596 | $5,957 | $6,300 | $6,619 | $6,909 | $7,164 | $7,379 |
| - Reinvestment | $2,492 | $2,653 | $2,824 | $3,006 | $3,200 | $3,127 | $3,016 | $2,866 | $2,680 | $2,460 |
| FCFF | $2,147 | $2,286 | $2,433 | $2,590 | $2,757 | $3,172 | $3,603 | $4,043 | $4,484 | $4,919 |

Term Yr
7600
2533
5067

Op. Assets 81,089
+ Cash: 3,795
+ Non op inv 1,763
- Debt 16,682
- Minority int 1,344
=Equity 68621
-Options 528
Value/Share $ 36.67

Cost of Capital (WACC) = 9.74% (0.60) + 3.72% (0.40) = 7.33%

Cost of capital gradually decreases to 7.19%

**Cost of Equity**
**9.74%**

**Cost of Debt**
(3.5%+2.5%)(1-.38)
= 3.72%
Based on synthetic A rating

**Weights**
E = 60% D = 40%

On June 1, 2009, Disney was trading at $24.34 /share

**Riskfree Rate**:
Riskfree rate = 3.5%

+

**Beta**
1.04

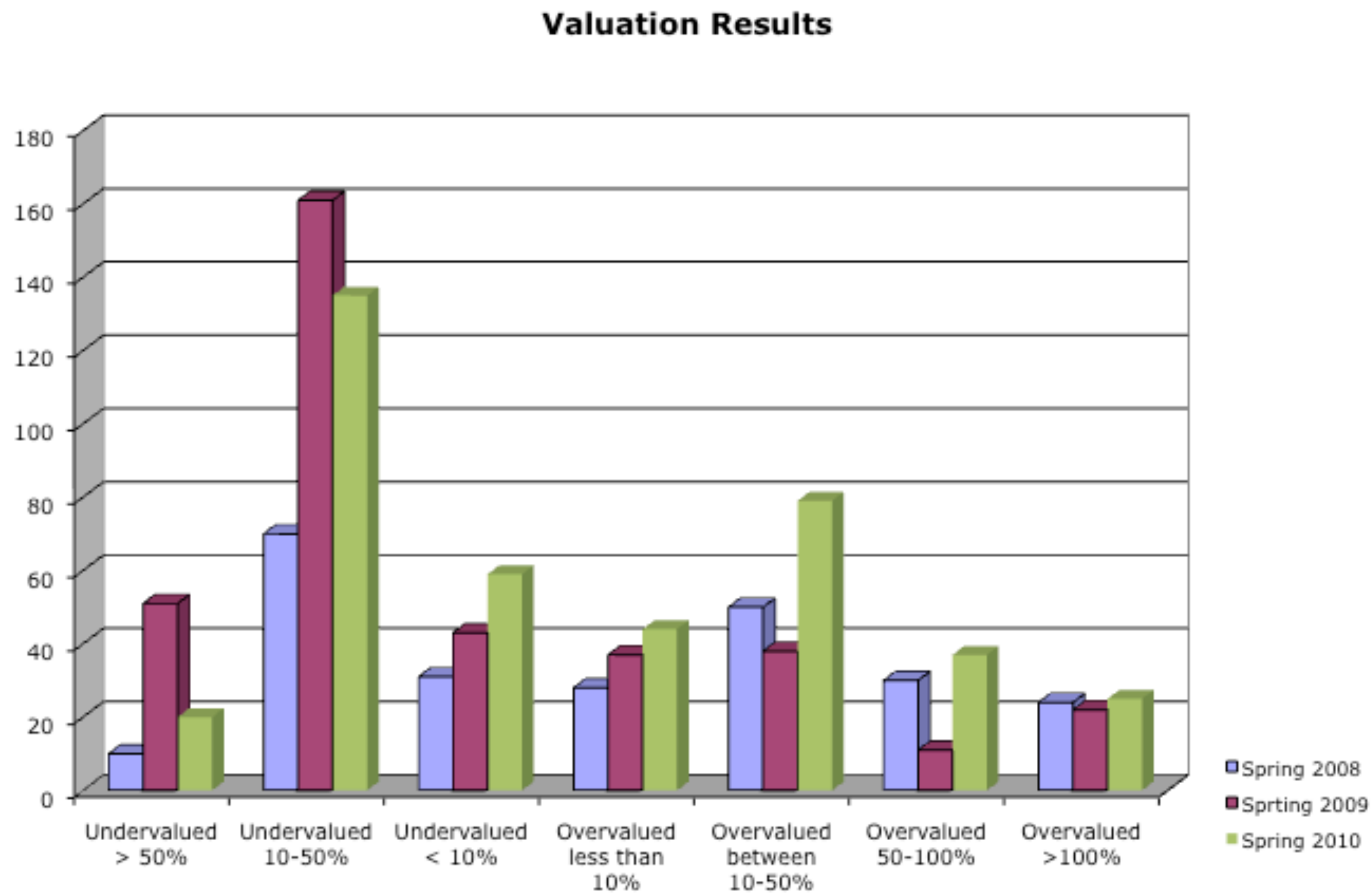
X

**Risk Premium**
6%

Unlevered Beta for Sectors: 0.7333

D/E=66.67%

# Value versus Price



# So, how do you explain the price? Its all relative..

| *Company Name* | *Ticker Symbol* | *PE* | *Expected Growth Rate* | *PEG* |
|---|---|---|---|---|
| Point 360 | PTSX | 10.62 | 5.00% | 2.12 |
| Fox Entmt Group Inc | FOX | 22.03 | 14.46% | 1.52 |
| Belo Corp. 'A' | BLC | 25.65 | 16.00% | 1.60 |
| Hearst-Argyle Television Inc | HTV | 26.72 | 12.90% | 2.07 |
| Journal Communications Inc. | JRN | 27.94 | 10.00% | 2.79 |
| Saga Communic. 'A' | SGA | 28.42 | 19.00% | 1.50 |
| Viacom Inc. 'B' | VIA/B | 29.38 | 13.50% | 2.18 |
| Pixar | PIXR | 29.80 | 16.50% | 1.81 |
| Disney (Walt) | DIS | 29.87 | 12.00% | 2.49 |
| Westwood One | WON | 32.59 | 19.50% | 1.67 |
| World Wrestling Ent. | WWE | 33.52 | 20.00% | 1.68 |
| Cox Radio 'A' Inc | CXR | 33.76 | 18.70% | 1.81 |
| Beasley Broadcast Group Inc | BBGI | 34.06 | 15.23% | 2.24 |
| Entercom Comm. Corp | ETM | 36.11 | 15.43% | 2.34 |
| Liberty Corp. | LC | 37.54 | 19.50% | 1.92 |
| Ballantyne of Omaha Inc | BTNE | 55.17 | 17.10% | 3.23 |
| Regent Communications Inc | RGCI | 57.84 | 22.67% | 2.55 |
| Emmis Communications | EMMS | 74.89 | 16.50% | 4.54 |
| Cumulus Media Inc | CMLS | 94.35 | 23.30% | 4.05 |
| Univision Communic. | UVN | 122.76 | 24.50% | 5.01 |
| Salem Communications Corp | SALM | 145.67 | 28.75% | 5.07 |
| Average for sector | | 47.08 | 17.17% | 2.74 |

# Most undervalued stocks!!

| | Value/share | | Price/Share | | Price/Value |
|---|---|---|---|---|---|
| Netflix | $ | 11.77 | $ | 103.17 | 876.55% |
| Panera | | 11.95 | | 78.01 | 652.80% |
| SunPower Corpor | $ | 3.58 | $ | 18.07 | 504.75% |
| HMA | $ | 2.27 | $ | 9.32 | 410.57% |
| Sttarbucks | $ | 6.37 | $ | 25.98 | 407.85% |
| Starbucks | | 6.58 | | 25.98 | 394.83% |
| Washington Post | $ | 121.10 | $ | 443.07 | 365.87% |
| Amazon | $ | 39.65 | $ | 137.10 | 345.78% |
| Willatmette Valley | | 1.18 | | 3.63 | 307.63% |
| Dr. Reddys | INR 403.97 | | INR 1,223.40 | | 302.84% |
| J. Crew | $ | 15.78 | $ | 47.48 | 300.89% |
| Amazon | $49.37 | | $143.63 | | 290.93% |
| Willamette Valley | $ | 1.27 | $ | 3.63 | 285.83% |
| Cablevision | $ | 10.40 | $ | 27.44 | 263.85% |

# The Triple Whammy: Underlevered, Cash Build-up and Under valued?

| | Current Debt ratio | Optimal Debt Ratio | Dividends | FCFE | Value/share | Price/Share |
|---|---|---|---|---|---|---|
| Exxon Mobil | 4.96% | 40.00% | 34,711 | 68,549 | $76.01 | $67.77 |
| Frisch Restaurants | 28.88% | 40.00% | 0.91442 | 2,495.79 | $25.72 | $22.80 |
| Apple | 1.00% | 20.00% | 0 | 7946 | $295.00 | $261.09 |
| Amgen | 15.63% | 30.00% | 4430 | 6786 | $65.10 | $57.31 |
| Hansen's | 0.40% | 30.00% | 86.2 | 208.83 | $50.21 | $44.15 |
| Boston Beer Company | 1.19% | 20.00% | $9.26 | $9.44 | 65.02 | 57.01 |
| MDR | 1.27% | 50.00% | 0 | 94.81 | $31.67 | $27.76 |
| Google | 0.97% | 30.00% | 0 | 120.83 | $602.70 | $525.70 |
| McCormick | 17.62% | 40.00% | $207 | $369 | $45 | $39 |
| Apple | 0.66% | 20.00% | 0 | $1,163 | $301.95 | $261.09 |
| Sysco | 13.28% | 50.00% | $981.32 | $1,093.51 | $36.56 | $31.54 |
| Game Stop | 25.50% | 40.00% | | 594 | $29.30 | $24.99 |
| General Mills | 20.53% | 50.00% | 1500 | 7200 | 84.02 | 71.16 |
| Nutrisystem | 1.48% | 30.00% | $21 | $28.00 | $22.98 | $19.33 |
| Best Buy | 30.42% | 50.00% | $1,025.17 | $2,435 | $54.13 | $45.52 |
| Apple | 0.00% | 30.00% | 0 | 2228.38 | $312.90 | $261.60 |
| Yum! Brands | 25.87% | 40.00% | 273 | 1149 | $46.13 | $38.33 |
| Netflix | 5.20% | 20.00% | 0 | 98.8 | $74.90 | $60.90 |
| Pepsi | 7.60% | 40.00% | 2739 | 4645 | $80.67 | $65.22 |
| Research In Motion | 0.45% | 30.00% | 1200 | 1818.772 | $88.39 | $68.48 |
| Tim Hortons | 14.69% | 40.00% | $207.27 | $215.70 | $44.54 | $32.99 |
| Viacom | 30.00% | 60.00% | 1133.33 | 1432.67 | $53.00 | $39.01 |
| HJ Heinz Co. | 28.08% | 40.00% | 470 | 702 | $64.27 | $46.87 |
| Archer Daniels Midland | 33.00% | 50.00% | 447 | 580 | $34.00 | $24.34 |
| Hormel | 6.79% | 50.00% | 139.5 | 231 | $58.62 | $40.61 |
| Microsoft | 2.92% | 40.00% | 13821 | 19350 | $42.30 | $29.16 |
| ConAgra Foods | 27.00% | 40.00% | $702.00 | $1,045.60 | $37.67 | $25.06 |
| Toyota | 48.74% | 60.00% | 3449.00% | 1012 | $55.60 | $36.69 |
| Gamestop | 23.48% | 50.00% | 0 | 149.4 | $37.53 | $24.31 |
| Chevron | 5.71% | 20.00% | 5032 | 6632.6 | $131.34 | $81.44 |
| First Solar | 2.40% | 20.00% | 0 | 847 | $216.77 | $133.87 |
| Magna International | 16.24% | 50.00% | 125 | 159 | $88.25 | $53.26 |
| Ross Stores | 20.36% | 50.00% | $269.73 | $283 | $92.91 | $56.00 |
| Sysco Corp. | 7.47% | 20.00% | 658 | 1061 | $52.79 | $31.41 |
| Dreamworks | 0.72% | 20.00% | 0 | 411.9 | $66.87 | $39.71 |
| Google | 1.16% | 20.00% | 0 | 1520.1 | $897.09 | $525.70 |
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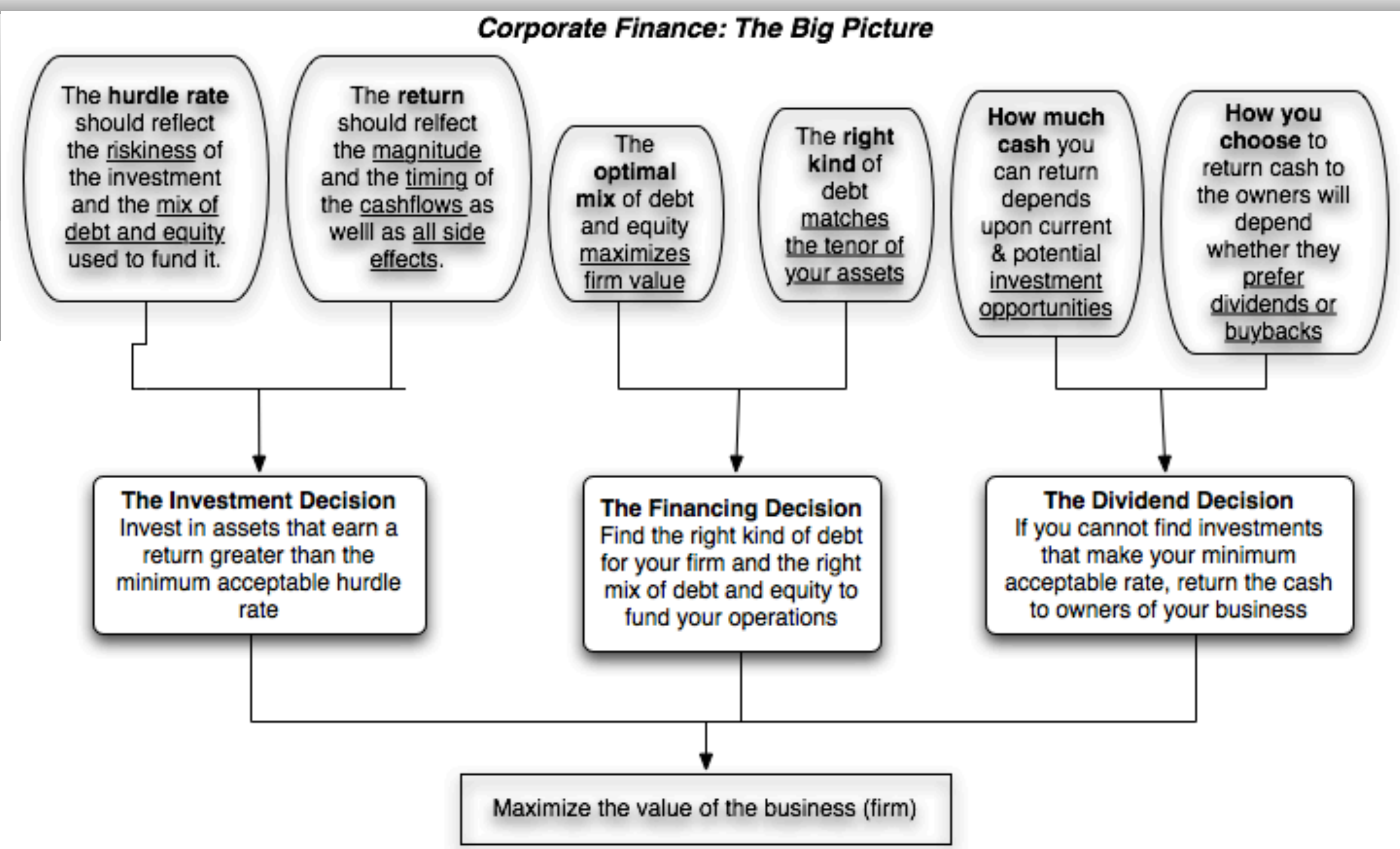
| Cardinal Health | 23.36% | 60.00% | 200.4 | 466.5 | $61.03 | $35.57 |
| Apple Inc. | 0.66% | 40.00% | $- | $19,327.40 | $464.51 | $263.00 |
| ConAgra Foods | 27.00% | 40.00% | $702.00 | $1,045.60 | $44.41 | $25.06 |
| GT Solar | 0.00% | 40.00% | 0 | 107.21 | **$11.06** | 5.85 |
| First Solar | 1.36% | 30.00% | 0 | 152.99 | $258.06 | 134.32 |
| Dreamworks | 3.67% | 20.00% | 0 | 264.9 | 79.99 | 41.38 |
| General Mills | 22.84% | 50.00% | 435.6 | 1086 | $155.45 | $71.16 |
| Coca Cola | 8.47% | 30.00% | $4,993.00 | $10,163.60 | $151.15 | $53.45 |
| Hansen's | 0.01% | 40.00% | 0 | 48.16 | $125.58 | $44.15 |
| GT Solar | 0.00% | 40.00% | 0 | 9.11 | $17.76 | $5.82 |
| Starbucks | 16.72% | 40.00% | $365.71 | $933.40 | $79.99 | $25.98 |
| Starbucks | 16.72% | 40.00% | $365.71 | $933.40 | $79.99 | $25.98 |
| BP | 39.06% | 90.00% | $8,795 | $14,008 | $209.97 | $54.15 |
| Trina Solar | 29.00% | 40.00% | 0 | 17.68 | $107.66 | 25.7 |

# First Principles



# Objectives of this class

- If you get the big picture, the details will come (sooner or later)
- Tools are useful but only in the larger context of answering bigger questions.
- Corporate finance is not so bad !!!

# And don't forget your CFEs…

1. This course was mentally challenging/intellectually stimulating.
*1 2 3 4 5 6 7*
*No-brainer!* *Brilliant insights!*

2. *This course was demanding of my time.*
*1 2 3 4 5 6 7*
*What work?* *Haven't slept all semester.*

3. *This course provided me with tools and information that I will find useful in the future.*
*1 2 3 4 5 6 7*
*Only in prison* *Completely relevant*

***4. Overall evaluation of the course***
***1 2 3 4 5 6 7***
***Horrible! ( I want my money back)*** ***Stupendous!***

5. *The instructor was organized and well prepared for class.*
*1 2 3 4 5 6 7*
*Had trouble finding classroom* *Scarily efficient!*

6. *The instructor communicated his/her ideas and material well.*
*1 2 3 4 5 6 7*
*Garbled gobbledygook!* *Should have own TV show*

7. *The instructor was enthusiastic about his/her subject matter.*
*1 2 3 4 5 6 7*
*Dead man talking!* *I am a convert*

***8. Overall evaluation of the instructor***
***1 2 3 4 5 6 7***
**Dog!** **Star!**