



THE FAT LADY IS SINGING: SPRING 2020

Aswath Damodaran

Ponderous Thoughts, or maybe not

1. There are few facts and lots of opinions.
 - a. Even the givens (cash & risk free rate) are not.
 - b. With accounting and market numbers, all bets are off.
2. The real world is a messy place.
 - a. Money making firms can become money losers
 - b. Companies can be restructured/ given facelifts
3. Models don't compute values and optimal paths.
You do.
4. Change is the only constant. Everything changes all the time.

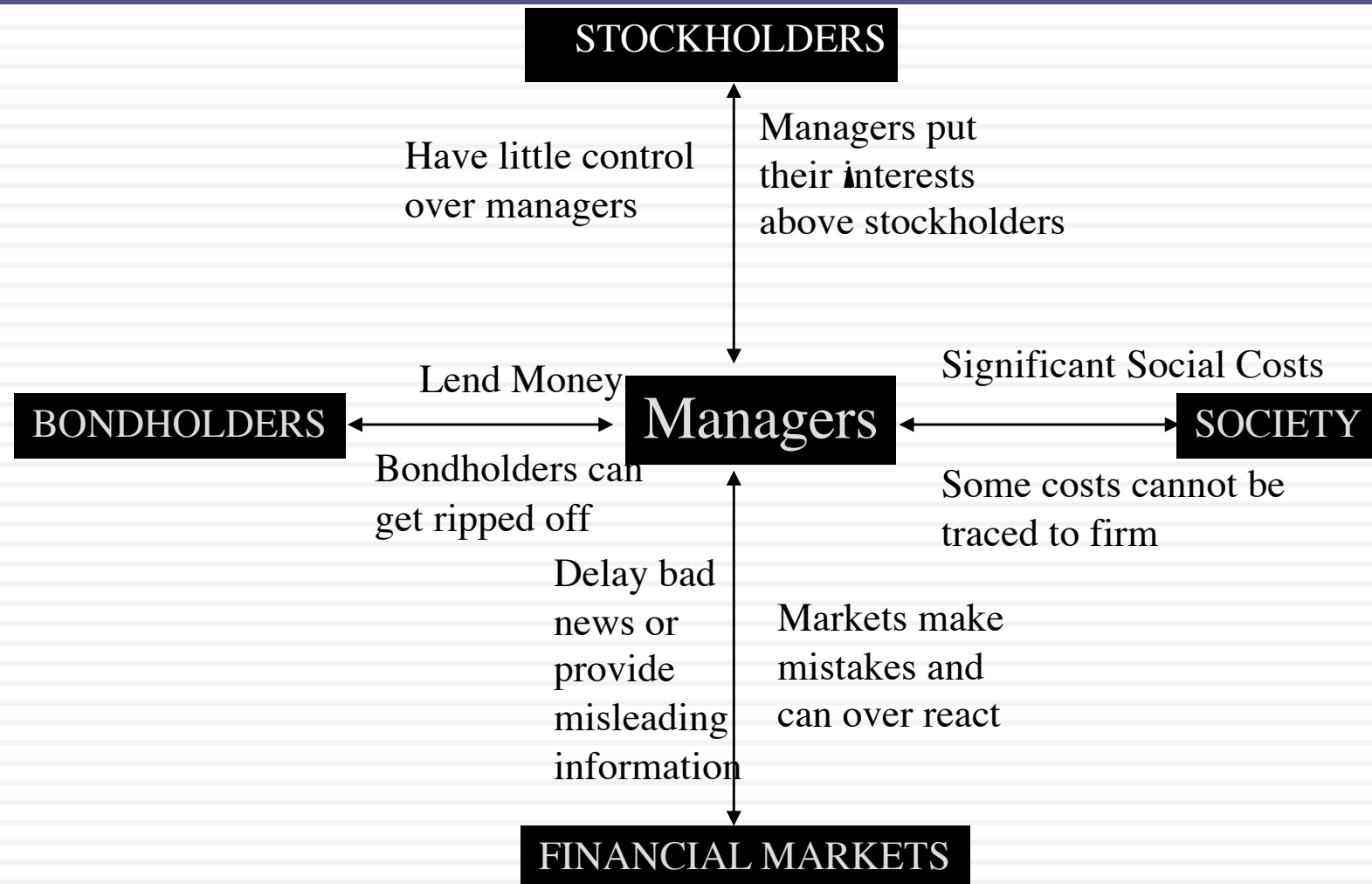
The most analyzed companies this semester were..

Company	Number of analyses
Netflix	9
Activision Blizzard	7
Lululemon	6
Take-Two Interactive	6
Chipotle	6
Electronics Arts	5
Salesforce	5
Starbucks	4

And here's why you can do the same company..

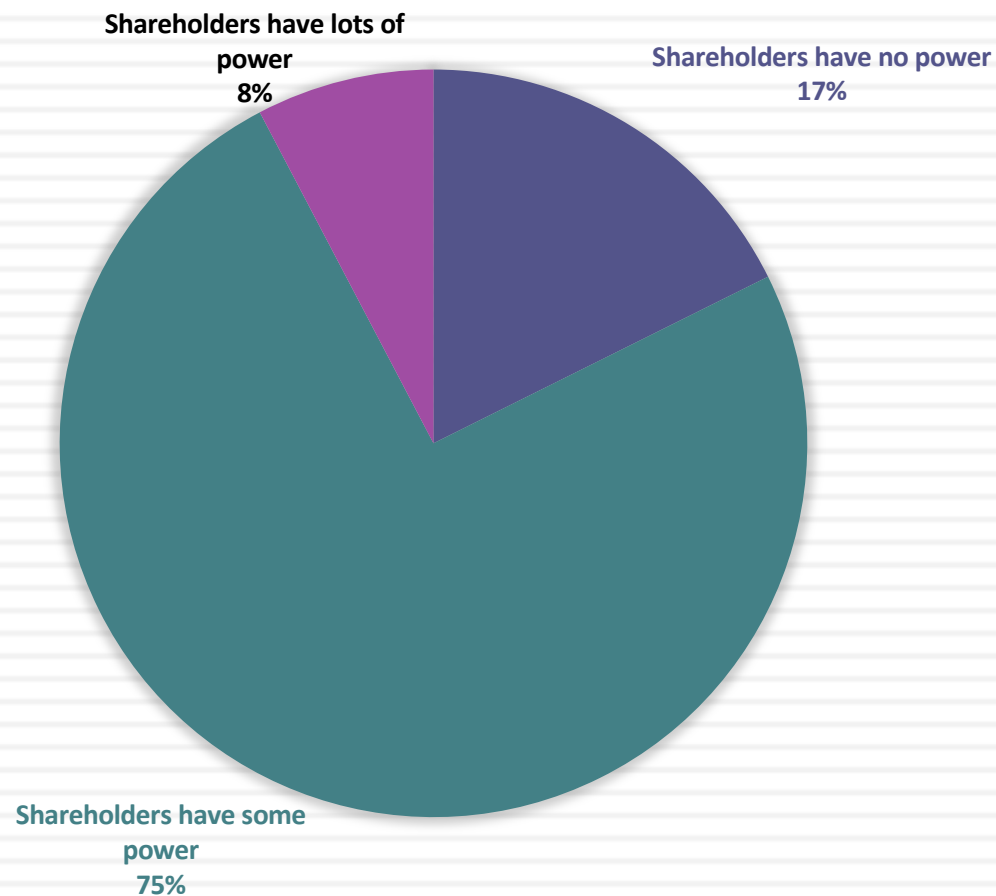
Company picked for project	Corporate Governance Measure (0-2)	Regression Beta	Jensen's Alpha (% annualized)	R Squared (%)	Bottom up Levered Beta (%)	Cost of Capital (%)	Return on Equity (%)	Return on Capital	Optimal Debt Ratio (%)	Change in Value (in % terms)	Price per share (\$)	Value per share (\$)
Activision Blizzard	1	0.76	-1.07%	11.27%	0.94	8.31%	11.74%	14.60%	40%	2.98%	\$73.10	\$29.07
Activision Blizzard	0	0.69	54.83%	2.80%	0.69	4.49%	12.40%	7.30%	0	-4.97%	\$73.10	\$68.72
Activision Blizzard	0	0.59	153.96%	59.00%	1.17	5.82%	12.34%	11.05%	30%	5%	73.14	17.04
Activision Blizzard	1	0.77	-0.23%	12.10%	1.11	10.24%	11.74%	12.44%	0%	-2.33%	\$73.06	\$17.64
Activision Blizzard	1	0.84	1.49%	11.60%	0.78	5.06%	11.74%	11.80%	10%	-0.25%	\$73.32	\$86.59
Activision Blizzard	1	0.88	1.36%	12.82%	1.22	8.79%	11.74%	12.76%	10%	0.70%	\$59.42	\$59.81
Activision Blizzard	1	0.87	0.36%	8.95%	0.85	5.57%	12.42%	11.49%	10%	1.43%	73.1	35.53

The Breakdown in the Classical Objective Function



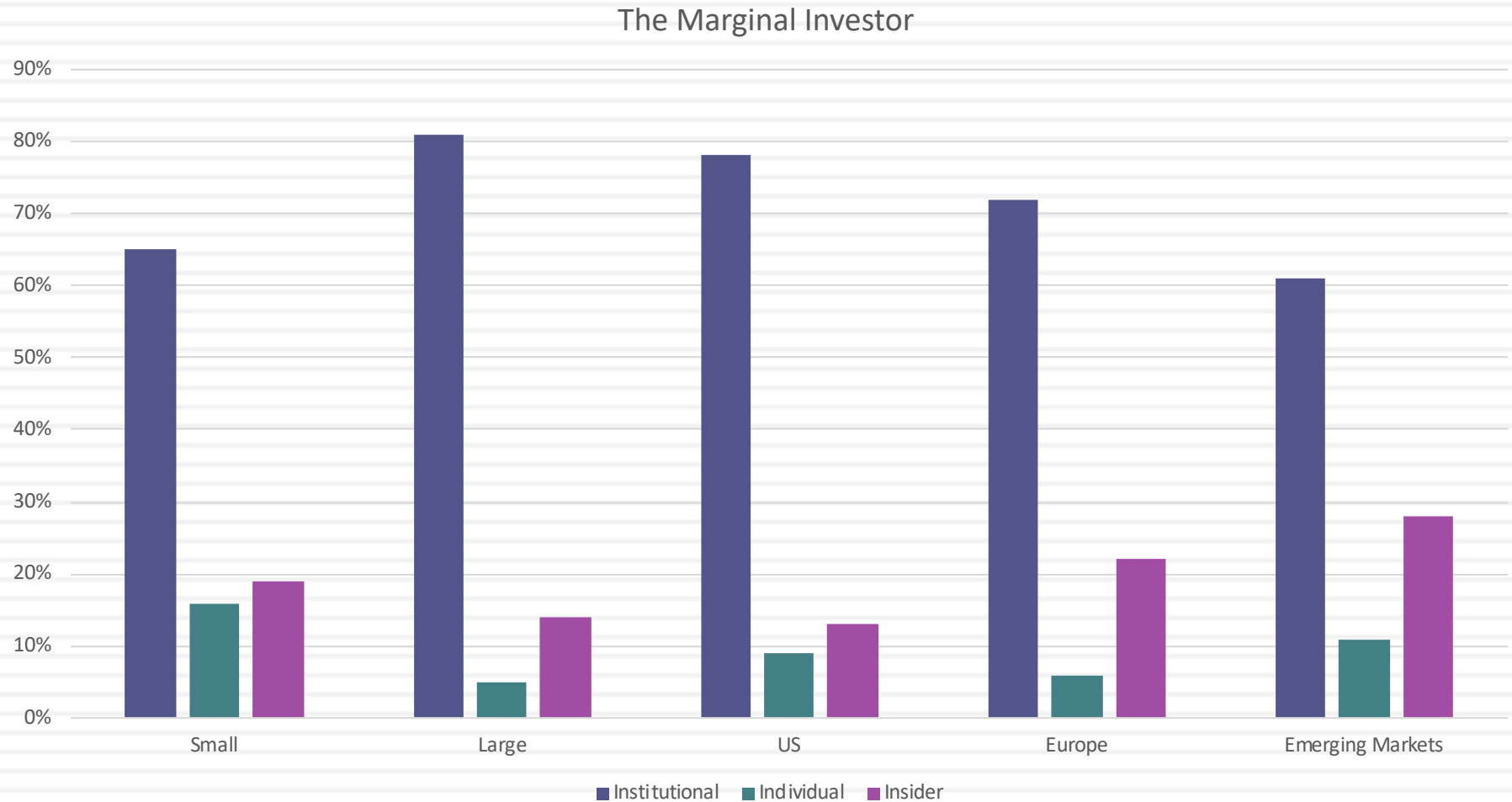
I. Where does the power lie?

WHERE THE POWER LIES: SPRING 2020

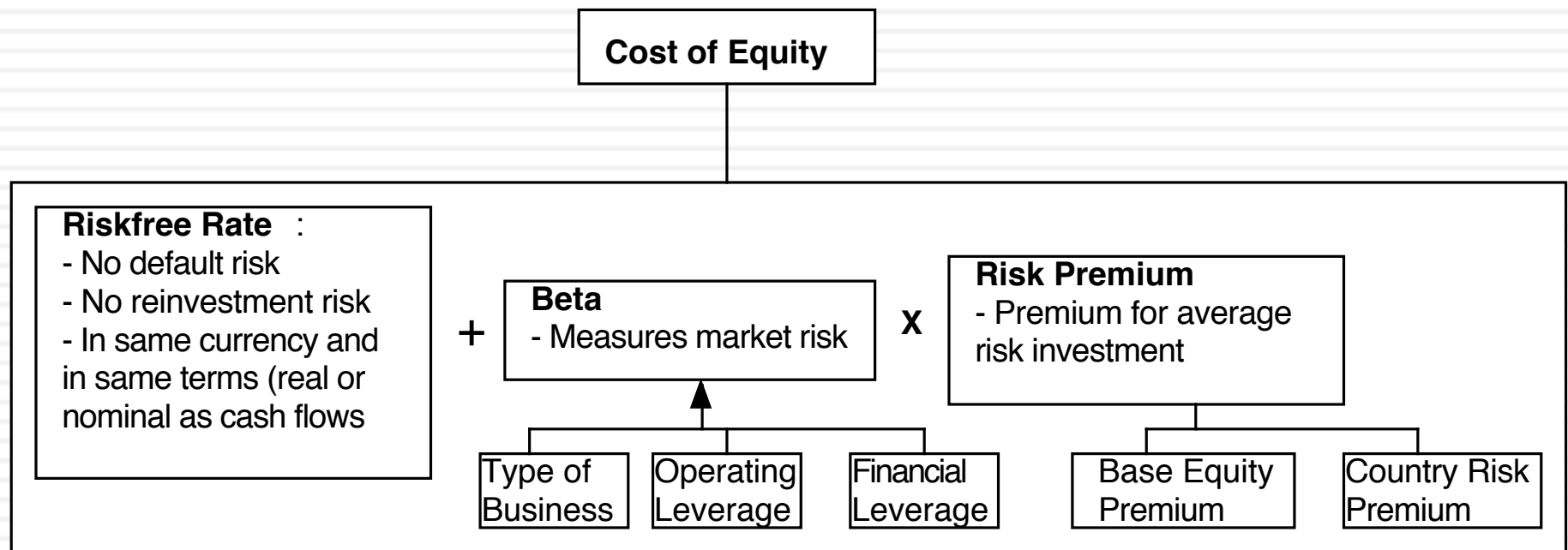


II. Who is your marginal investor?

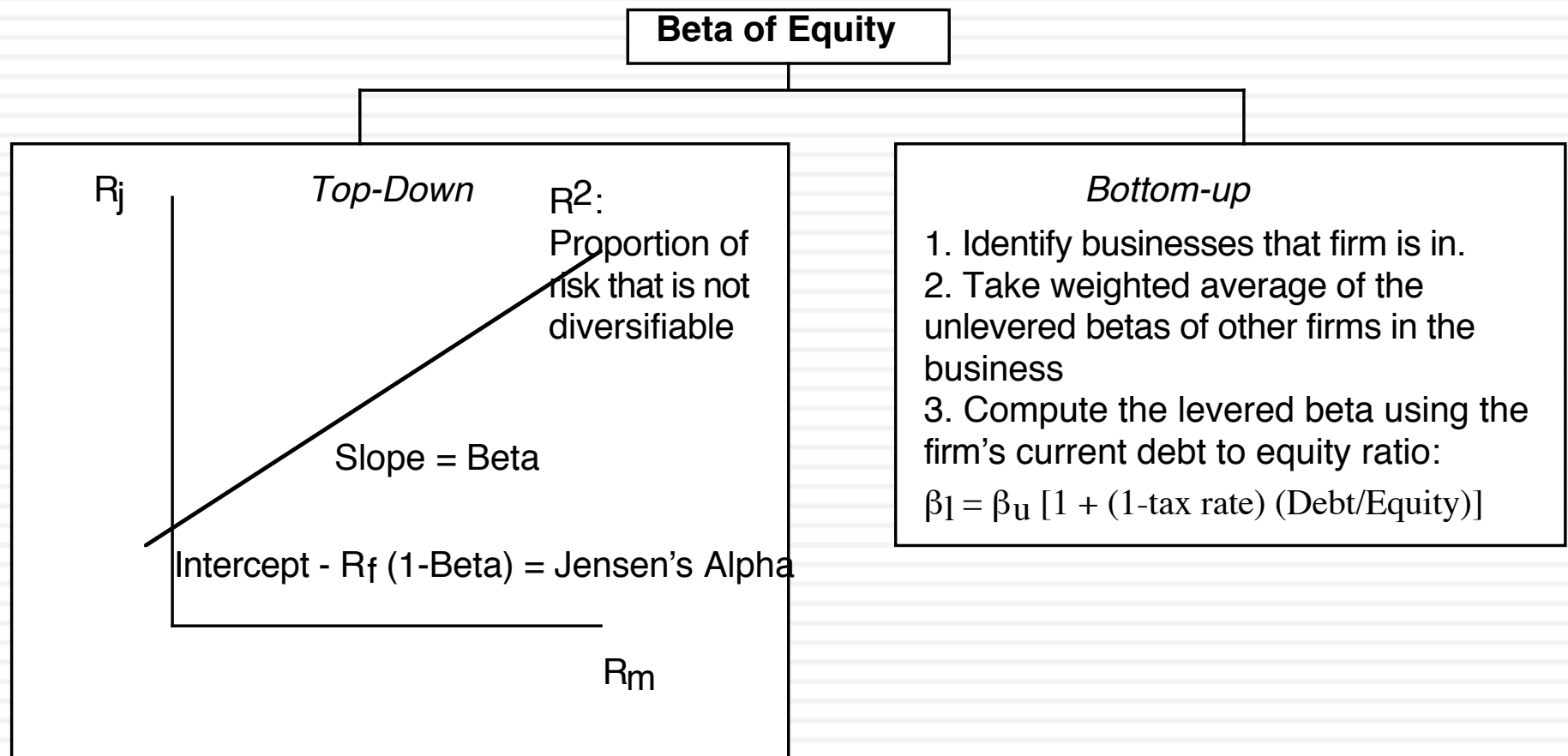
From Spring 2019



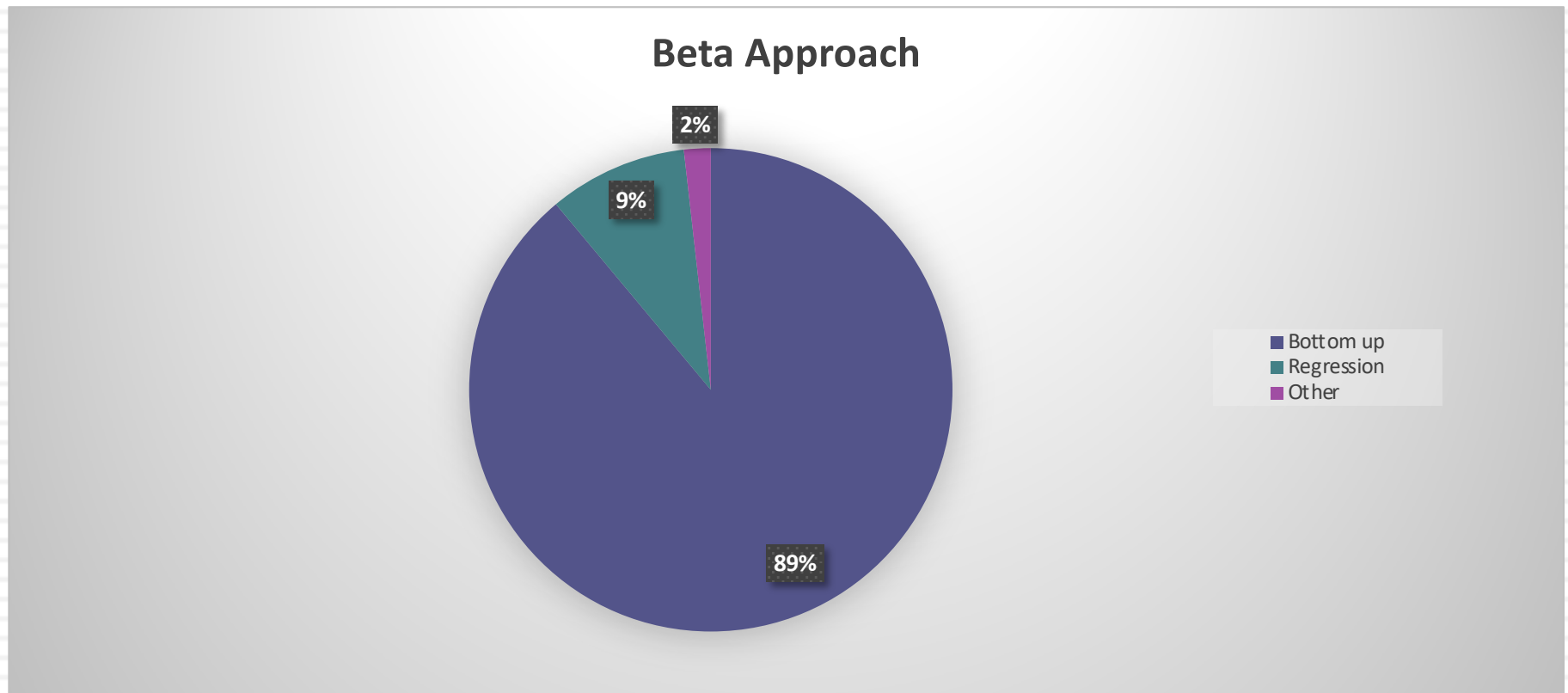
III. Risk Profiles and Costs of Equity



Beta: The Standard Approach



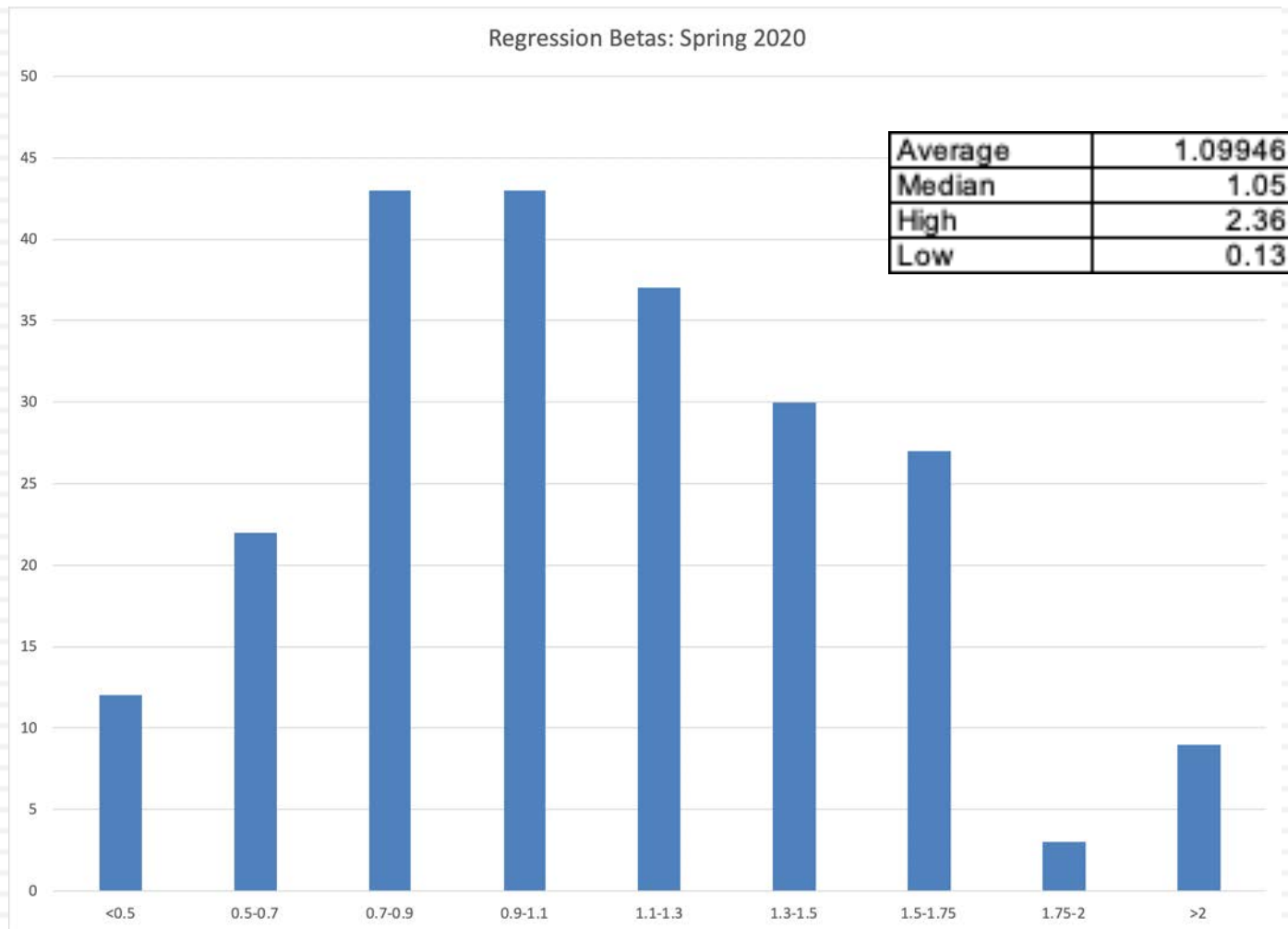
Your choice on beta approach



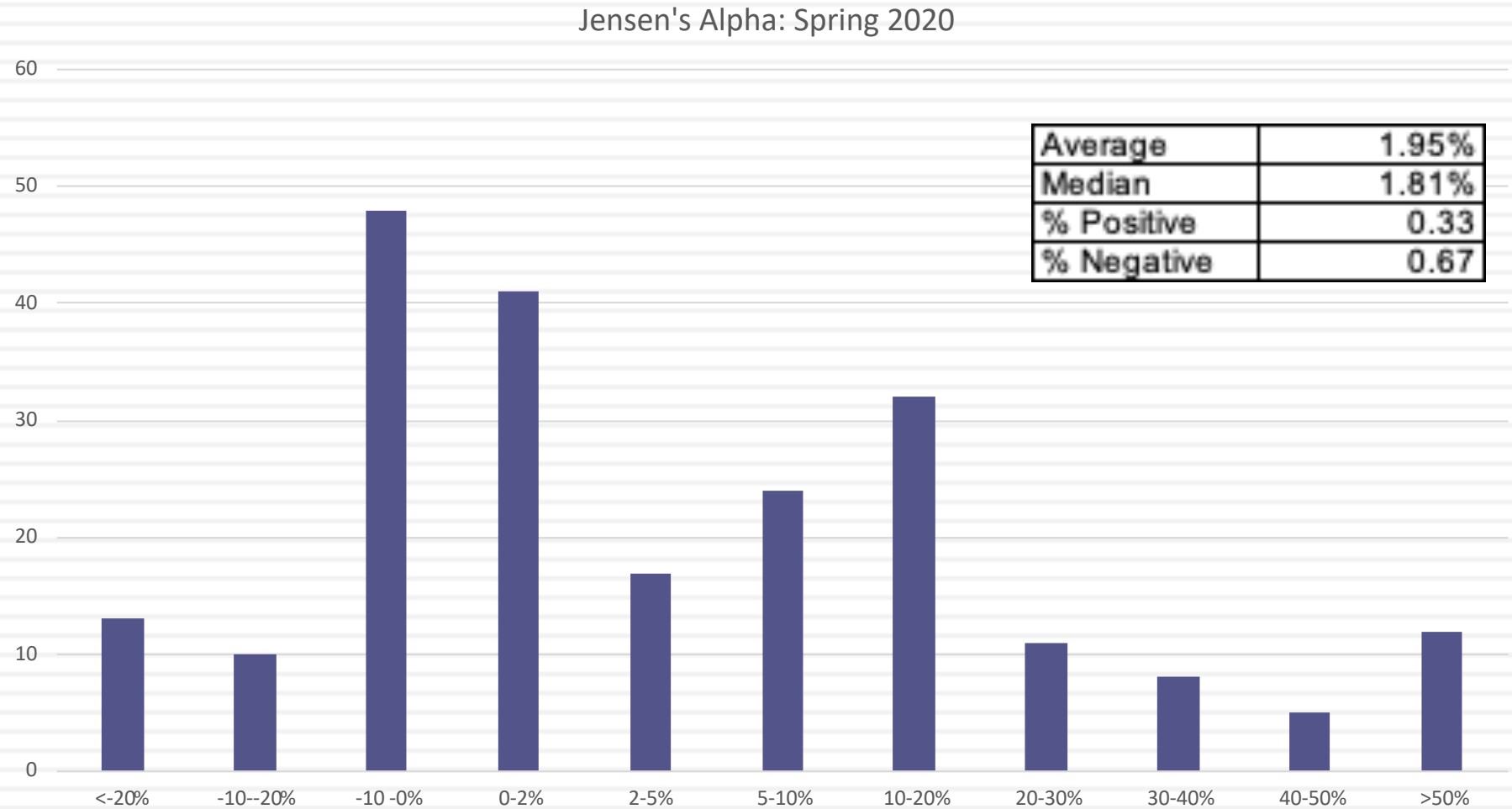
Typical reasons

1. My company is unique. I cannot find comparable firms.
2. My company is in only one line of business
3. My bottom-up beta is too different from my regression beta

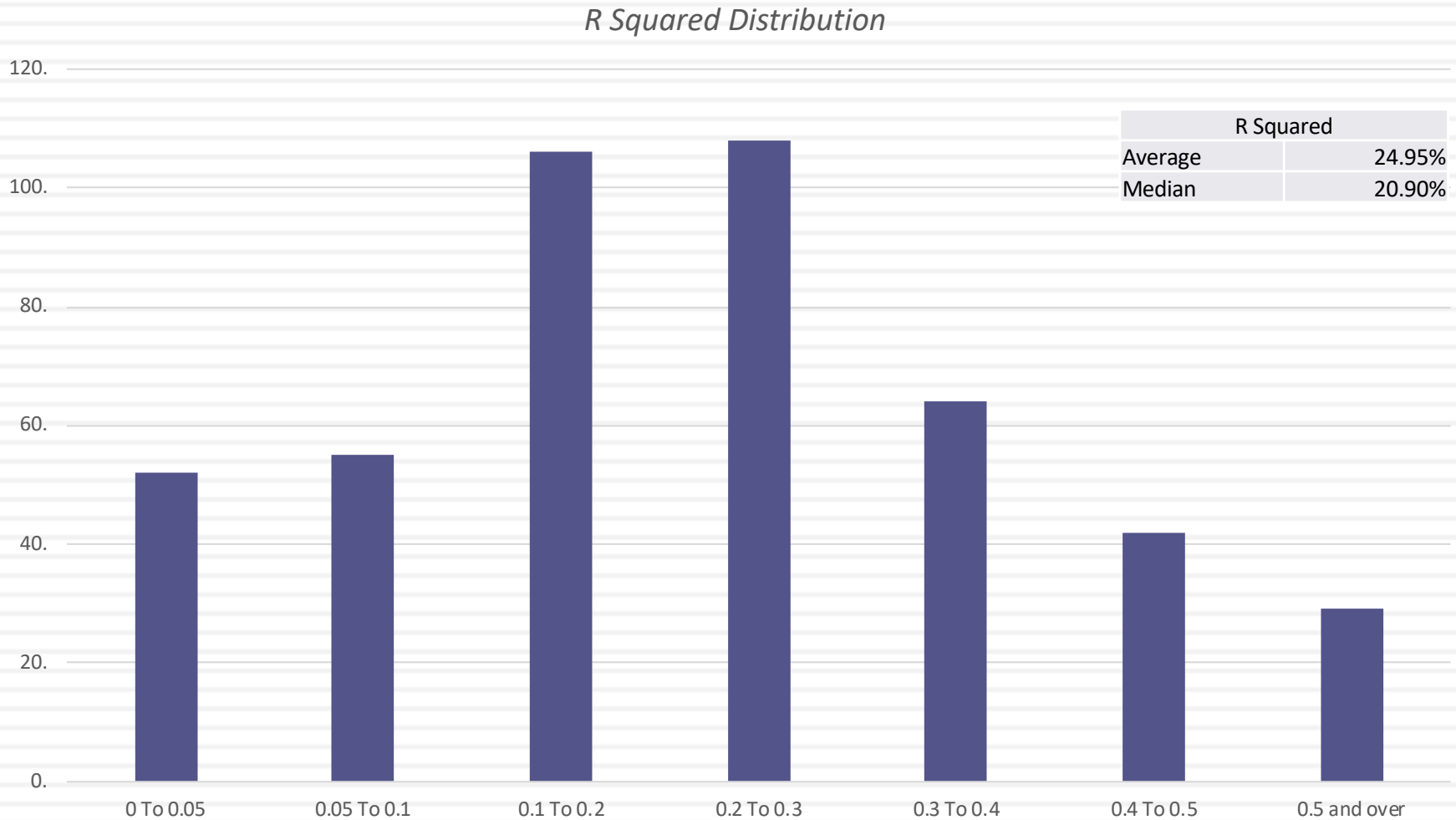
Beta Distribution



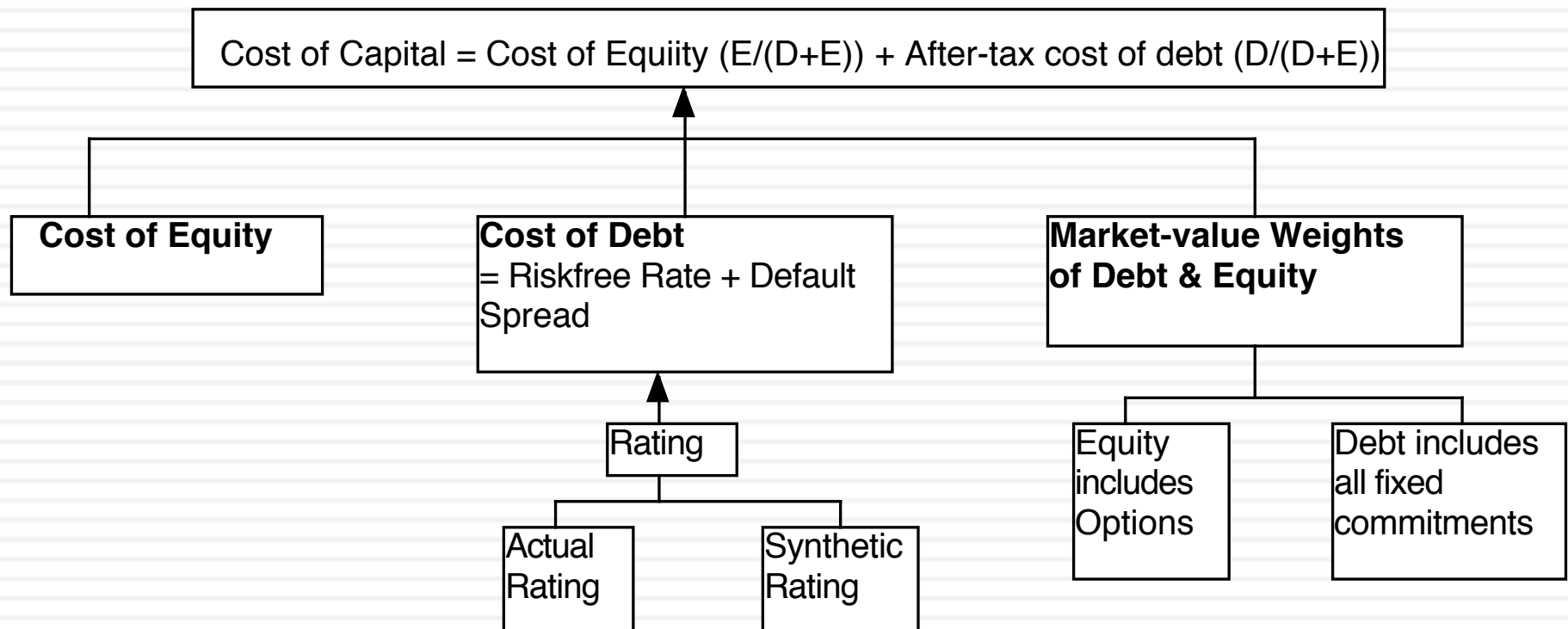
Jensen's Alpha Distribution



R Squared

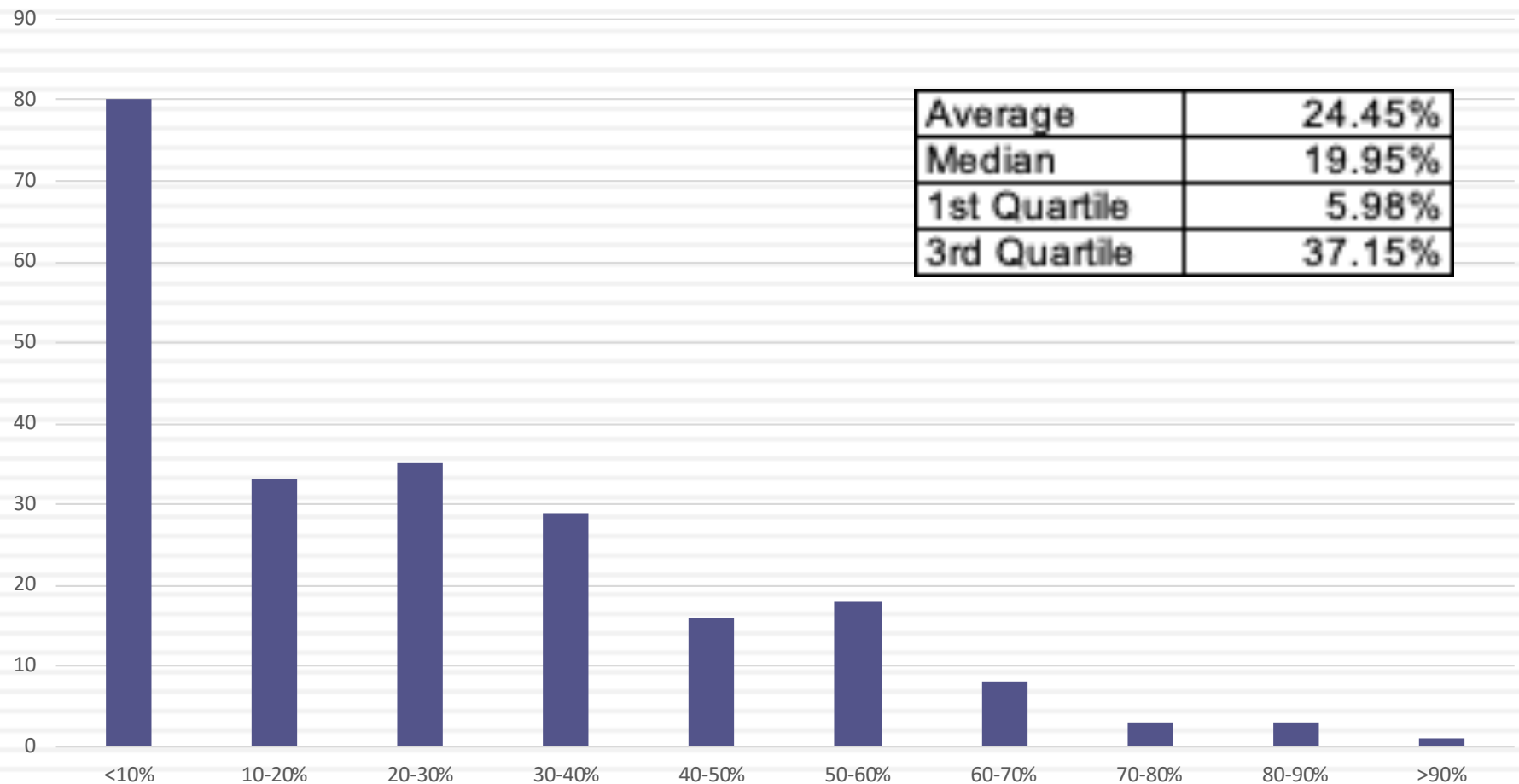


Cost of Capital

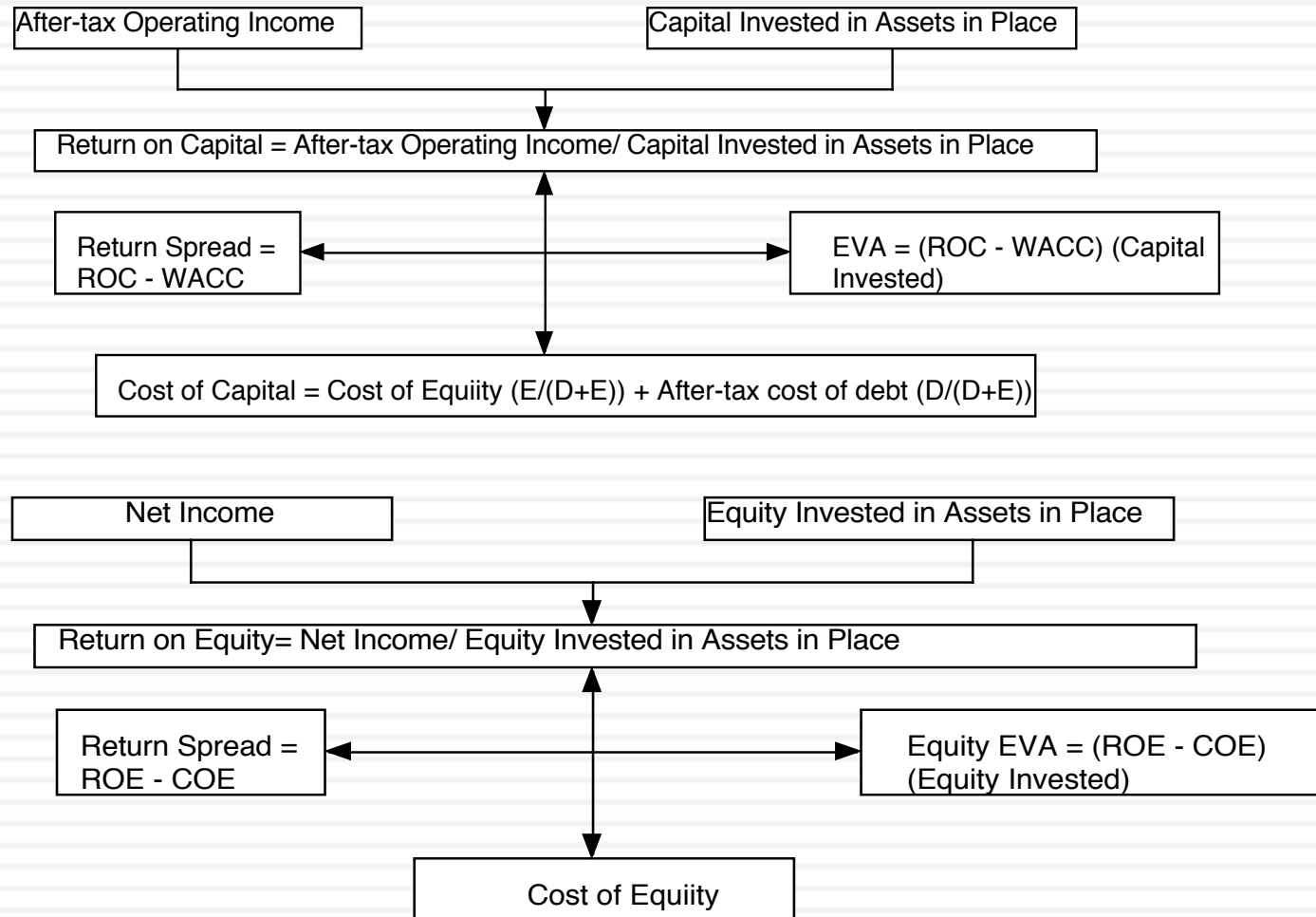


Distribution of Current Market Value Debt Ratios

Debt to Capital (Market): Spring 2020

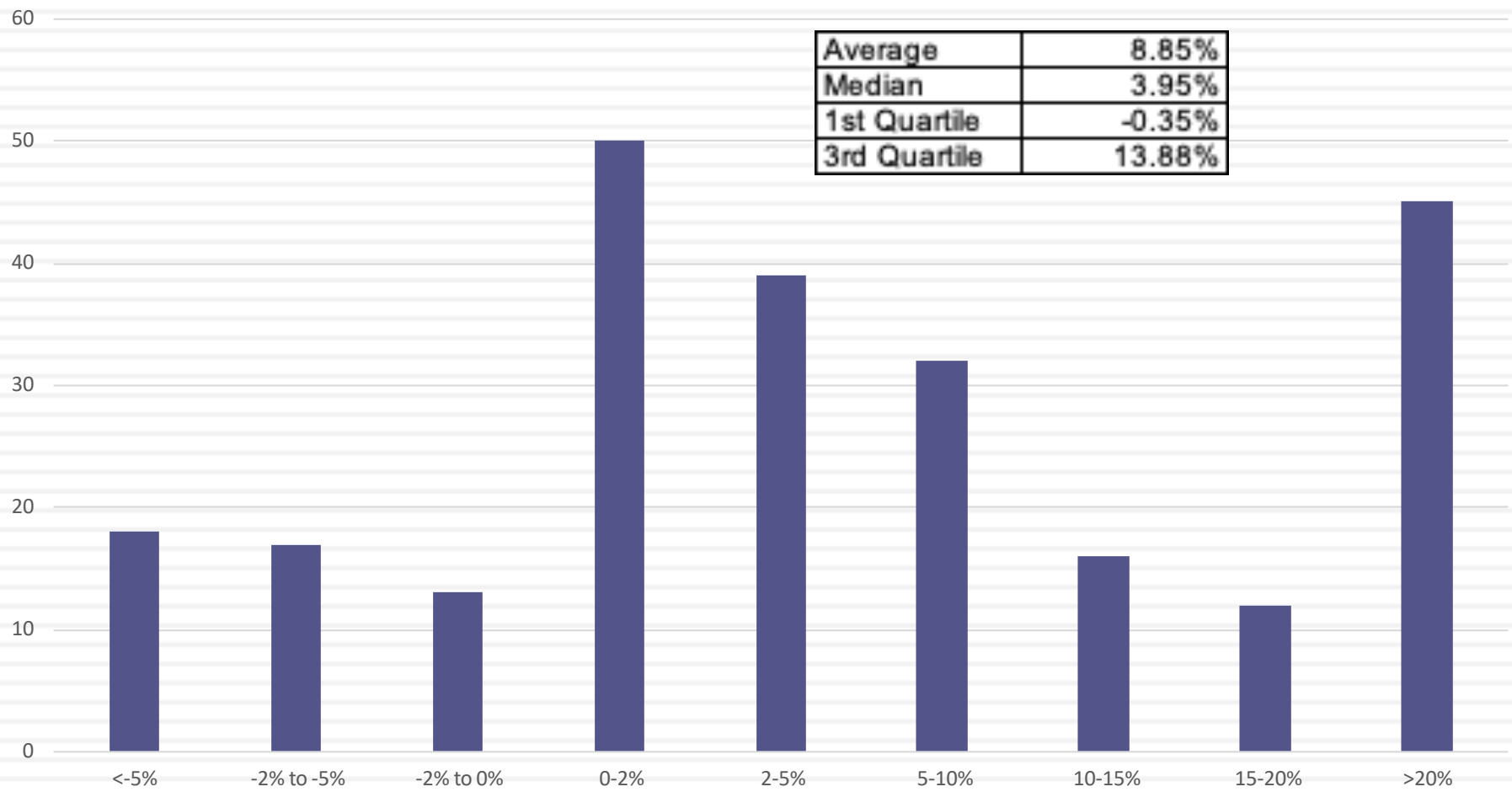


IV. The Quality of Investments: The Firm View



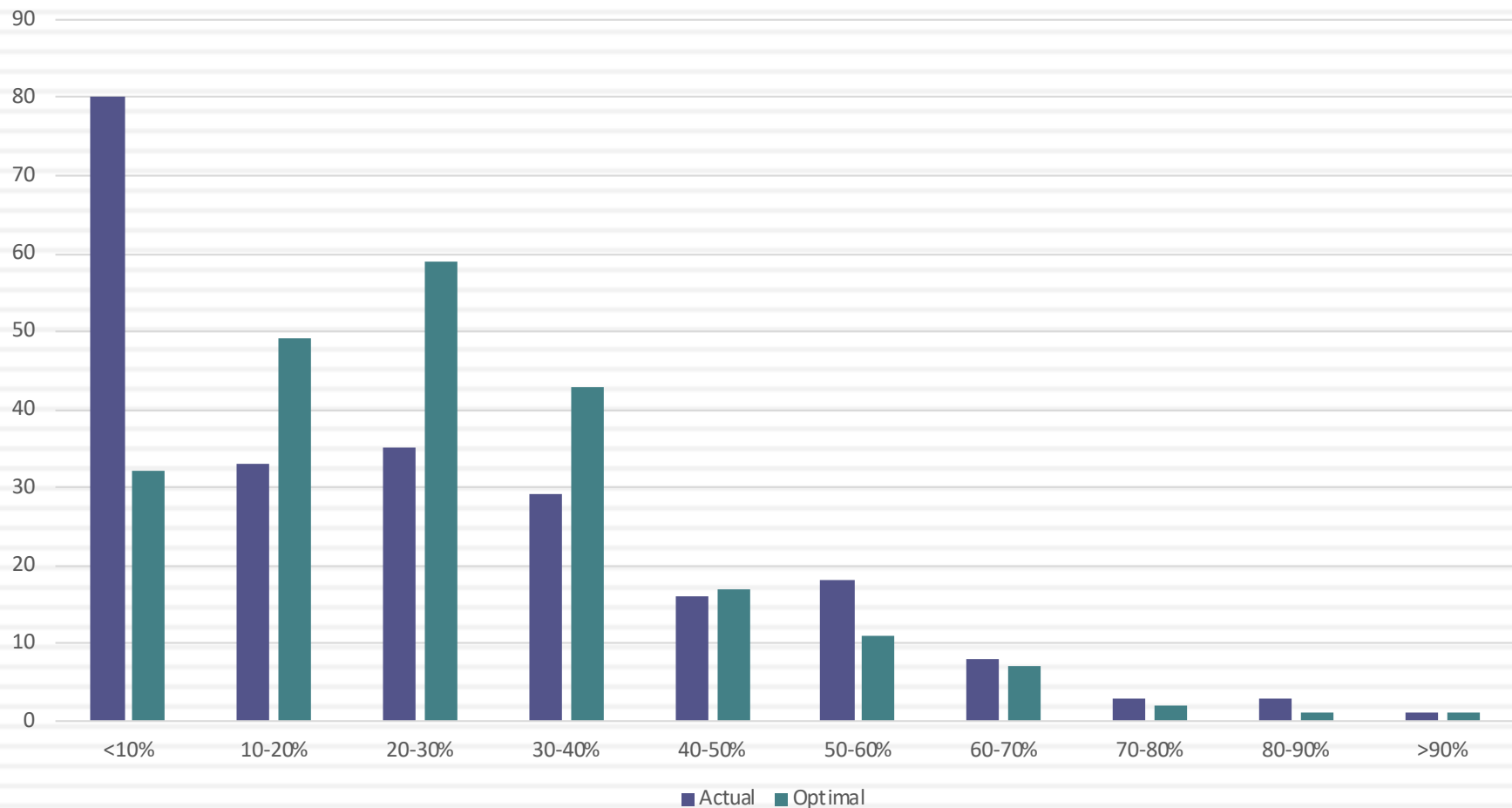
Return Spreads

Excess Returns (ROIC - Cost of Capital): Spring 2020

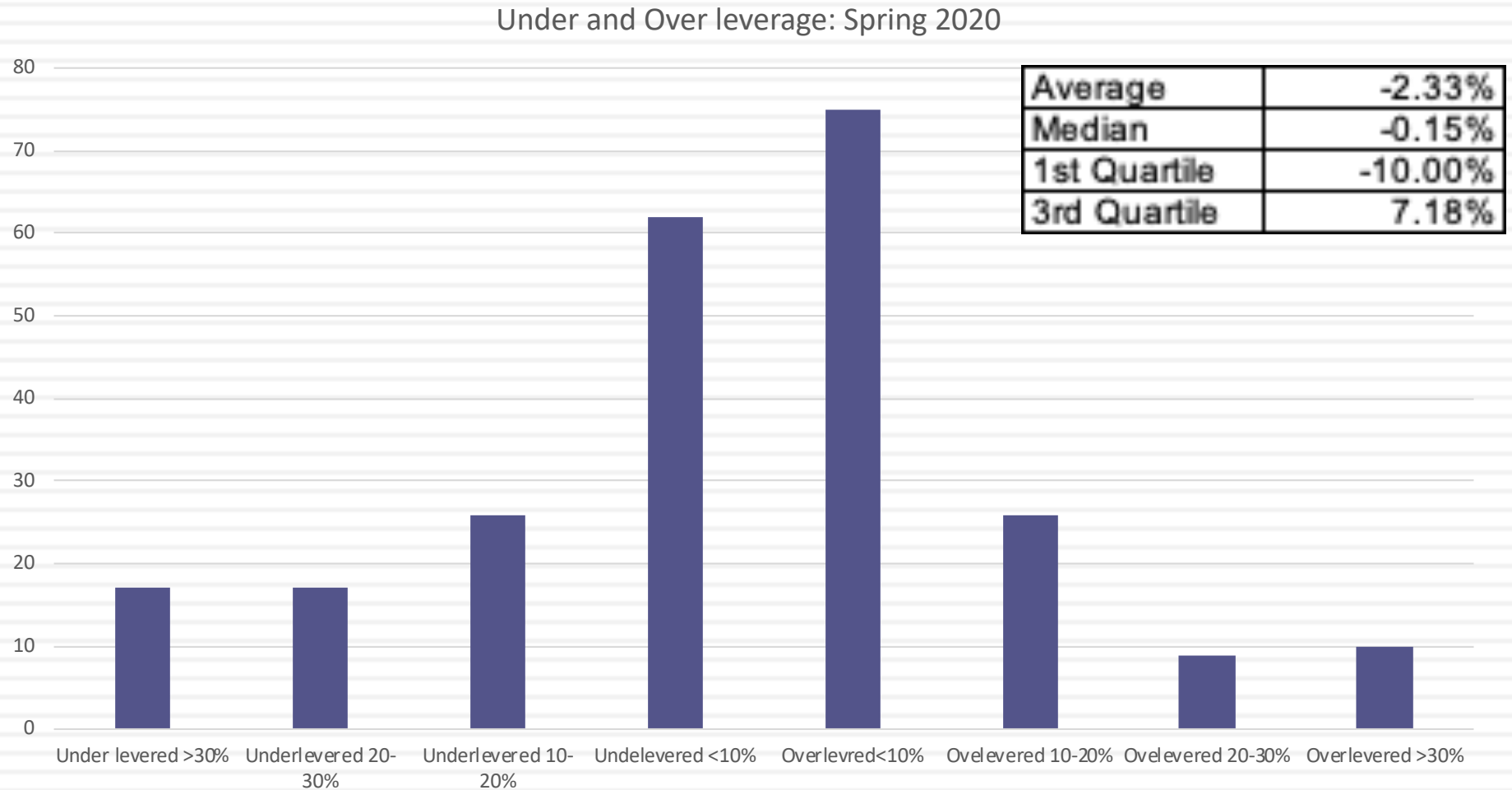


VI. The Optimal Financing Mix

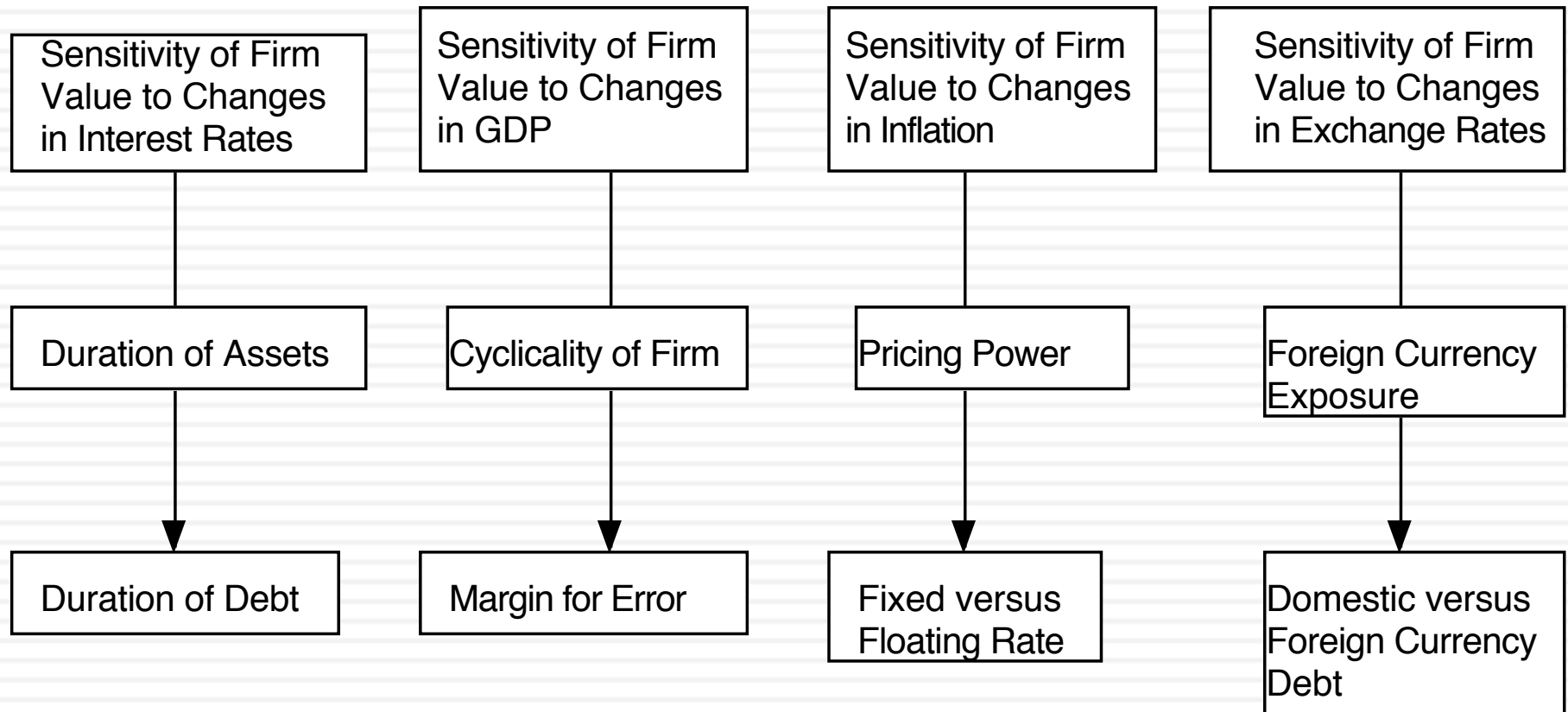
Actual and Optimal Debt Ratios: Spring 2020



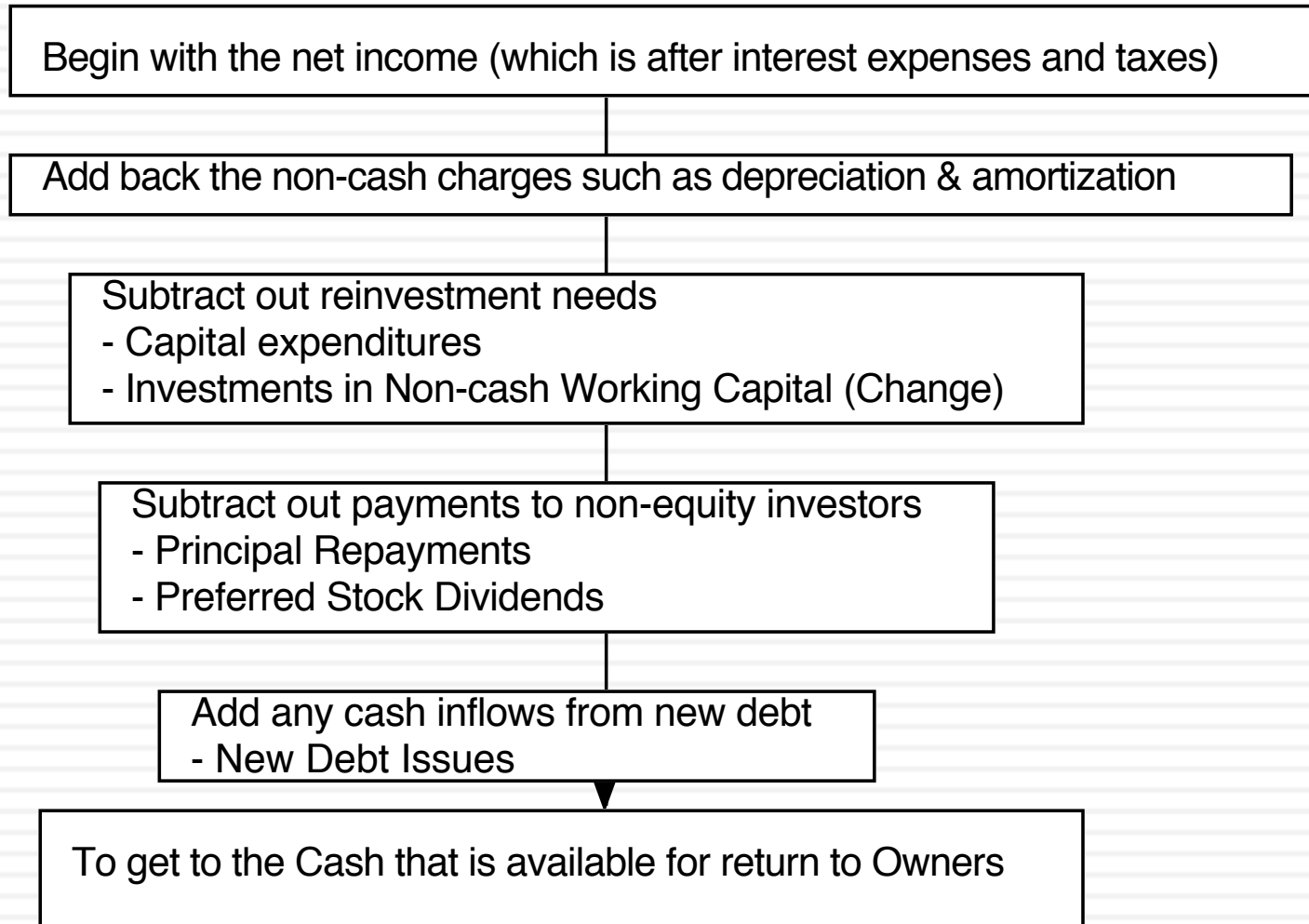
Under versus Over Levered Firms



VIII. The Right Kind of Financing

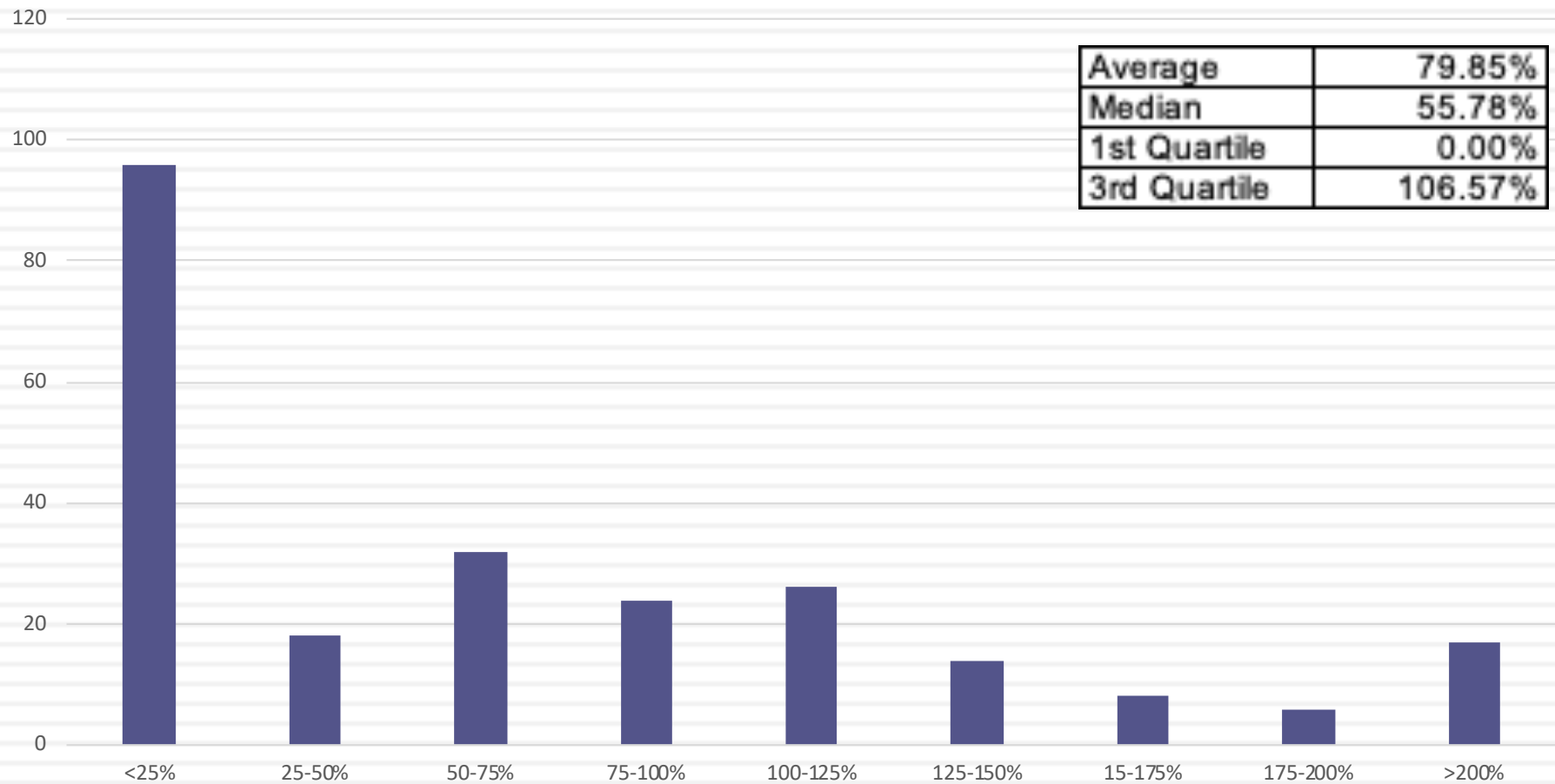


IX. Measuring Potential Dividends



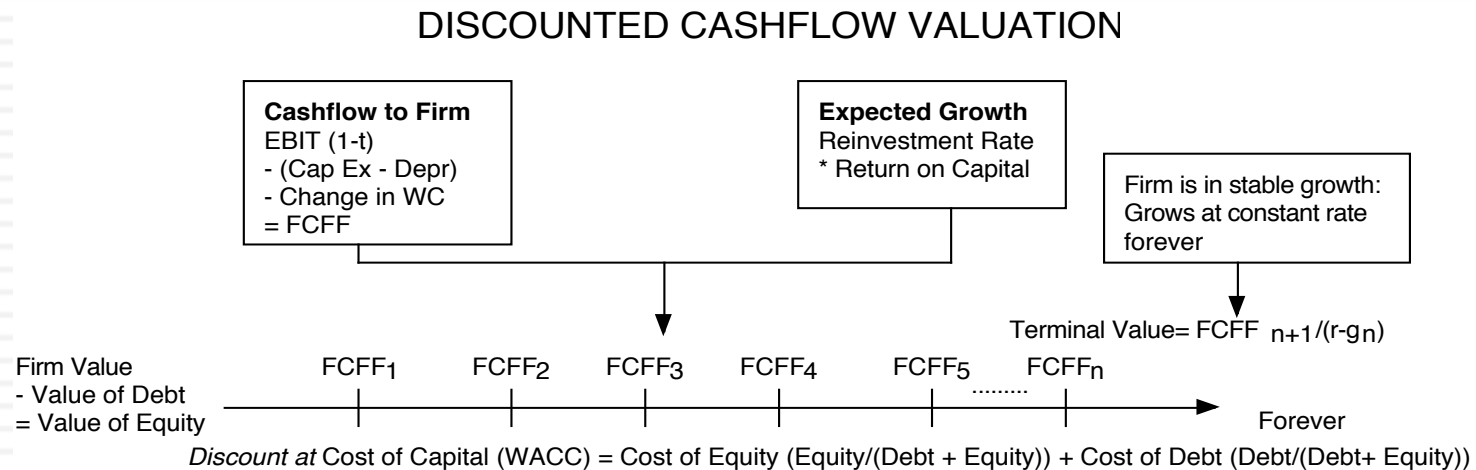
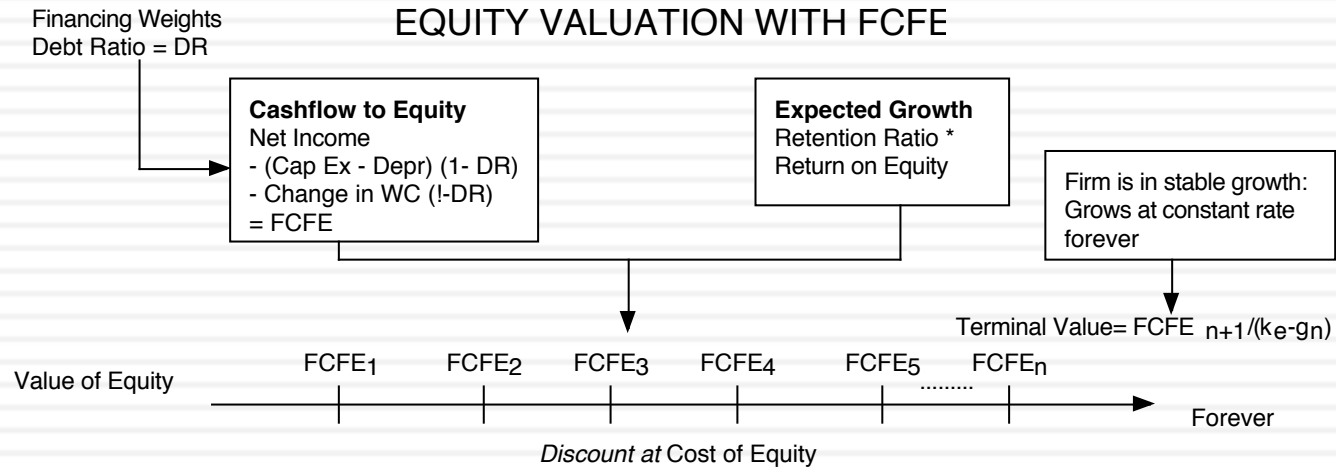
Dividends versus FCFE

(Dividends + Buybacks)/ FCFE: Spring 2020



X. Valuation:

Match up cashflows and discount rates...



From firm value to equity value per share

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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	$\begin{aligned} \text{PV} &= \text{Value of operating assets} \\ &+ \text{Cash \& Near Cash investments} \\ &+ \text{Value of minority cross holdings} \\ &- \text{Debt outstanding} \\ &= \text{Value of equity} \\ &- \text{Value of equity options} \\ &= \text{Value of equity in common stock} \\ &/ \text{Number of shares} \end{aligned}$

Valuing Deutsche Bank in early 2008

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- To value Deutsche Bank, we started with the normalized income over the previous five years (3,954 million Euros) and the dividends in 2008 (2,146 million Euros). We assumed that the payout ratio and ROE, based on these numbers will continue for the next 5 years:
 - ▣ Payout ratio = $2,146/3954 = 54.28\%$
 - ▣ Expected growth rate = $(1-.5428) * .1181 = 0.054$ or 5.4%
 - ▣ Cost of equity = 9.23%

<i>Year</i>	<i>Net Income</i>	<i>Payout Ratio</i>	<i>Dividends</i>	<i>PV @ 9.23%</i>
2008	4,167 €	54.28%	2,262 €	2,071 €
2009	4,392 €	54.28%	2,384 €	1,998 €
2010	4,629 €	54.28%	2,513 €	1,928 €
2011	4,879 €	54.28%	2,648 €	1,861 €
2012	5,143 €	54.28%	2,791 €	1,795 €
				9,653 €

Deutsche Bank in stable growth

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- At the end of year 5, the firm is in stable growth. We assume that the cost of equity drops to 8.5% (as the beta moves to 1) and that the return on equity also drops to 8.5 (to equal the cost of equity).

Stable Period Payout Ratio = $1 - g/\text{ROE} = 1 - 0.03/0.085 = 0.6471$ or 64.71%

Expected Dividends in Year 6 = Expected Net Income₅ * (1+g_{Stable}) * Stable Payout Ratio
 = €5,143 (1.03) * 0.6471 = €3,427 million

Terminal Value = $\frac{\text{Expected Dividends}_6}{(\text{Cost of Equity}-g)} = \frac{3,247}{(.085-.03)} = 62,318$ million Euros

PV of Terminal Value = $\frac{\text{Terminal Value}_n}{(1+\text{Cost of Equity}_{\text{High growth}})^n} = \frac{62,318}{(1.0923)^5} = 40,079$ mil Euros

- Value of equity = €9,653 + €40,079 = €49,732 million Euros
- Value of equity per share = $\frac{\text{Value of Equity}}{\# \text{ Shares}} = \frac{49,732}{474.2} = 104.88$ Euros/share

Stock was trading at 89 Euros per share at the time of the analysis.

Disney: Inputs to Valuation

	<i>High Growth Phase</i>	<i>Transition Phase</i>	<i>Stable Growth Phase</i>
Length of Period	5 years	5 years	Forever after 10 years
Tax Rate	31.02% (Effective) 36.1% (Marginal)	31.02% (Effective) 36.1% (Marginal)	31.02% (Effective) 36.1% (Marginal)
Return on Capital	12.61%	Declines linearly to 10%	Stable ROC of 10%
Reinvestment Rate	53.93% (based on normalized acquisition costs)	Declines gradually to 25% as ROC and growth rates drop:	25% of after-tax operating income. Reinvestment rate = g / ROC $= 2.5 / 10 = 25\%$
Expected Growth Rate in EBIT	$\text{ROC} * \text{Reinvestment Rate} = 0.1261 * .5393 = .068$ or 6.8%	Linear decline to Stable Growth Rate of 2.5%	2.5%
Debt/Capital Ratio	11.5%	Rises linearly to 20.0%	20%
Risk Parameters	Beta = 1.0013, $k_e = 8.52\%$ Pre-tax Cost of Debt = 3.75% Cost of capital = 7.81%	Beta changes to 1.00; Cost of debt stays at 3.75% Cost of capital declines gradually to 7.29%	Beta = 1.00; $k_e = 8.51\%$ Cost of debt stays at 3.75% Cost of capital = 7.29%

Disney - November 2013

Current Cashflow to Firm

$EBIT(1-t) = 10,032(1-.31) = 6,920$
 - (Cap Ex - Deprecn) 3,629
 - Chg Working capital 103
 $= FCFF$ 3,188
 $Reinvestment Rate = 3,732/6920 = 53.93\%$
 $Return on capital = 12.61\%$

Reinvestment Rate
 53.93%

Return on Capital
 12.61%

Expected Growth

$.5393 \times .1261 = .068$ or 6.8%

Stable Growth

$g = 2.75\%$; $Beta = 1.00$;
 $Debt \% = 20\%$; $k(debt) = 3.75$
 $Cost of capital = 7.29\%$
 $Tax rate = 36.1\%$; $ROC = 10\%$;
 $Reinvestment Rate = 2.5/10 = 25\%$

First 5 years

Growth declines gradually to 2.75%

Terminal Value₁₀ = $7,980 / (.0729 - .025) = 165,323$

Op. Assets 125,477
 + Cash: 3,931
 + Non op inv 2,849
 - Debt 15,961
 - Minority Int 2,721
 $= Equity$ 113,575
 - Options 972
Value/Share \$ 62.56

	1	2	3	4	5	6	7	8	9	10
EBIT * (1 - tax rate)	\$7,391	\$7,893	\$8,430	\$9,003	\$9,615	\$10,187	\$10,704	\$11,156	\$11,531	\$11,819
- Reinvestment	\$3,985	\$4,256	\$4,546	\$4,855	\$5,185	\$4,904	\$4,534	\$4,080	\$3,550	\$2,955
FCFF	\$3,405	\$3,637	\$3,884	\$4,148	\$4,430	\$5,283	\$6,170	\$7,076	\$7,981	\$8,864

Term Yr
 10,639
 2,660
 7,980

Cost of Capital (WACC) = $8.52\% (0.885) + 2.40\% (0.115) = 7.81\%$

Cost of capital declines gradually to 7.29%

Cost of Equity
 8.52%

Cost of Debt
 $(2.75\% + 1.00\%)(1 - .361)$
 $= 2.40\%$
 Based on actual A rating

Weights
 $E = 88.5\%$ $D = 11.5\%$

In November 2013,
 Disney was trading at
 \$67.71/share

Riskfree Rate:
 Riskfree rate = 2.75%

+

Beta
 1.0013

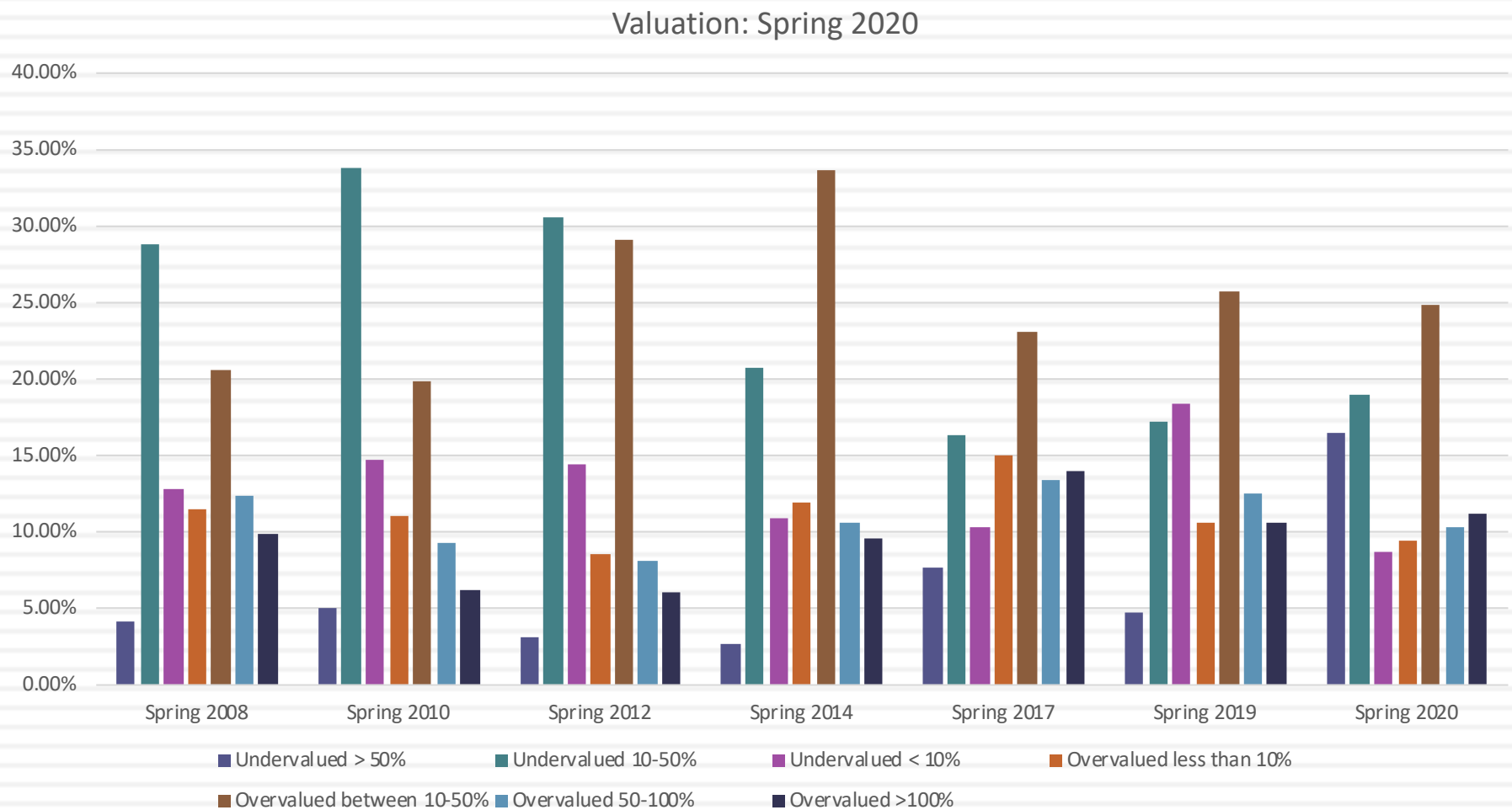
x

ERP for operations
 5.76%

Unlevered Beta for
 Sectors: 0.9239

$D/E = 13.10\%$

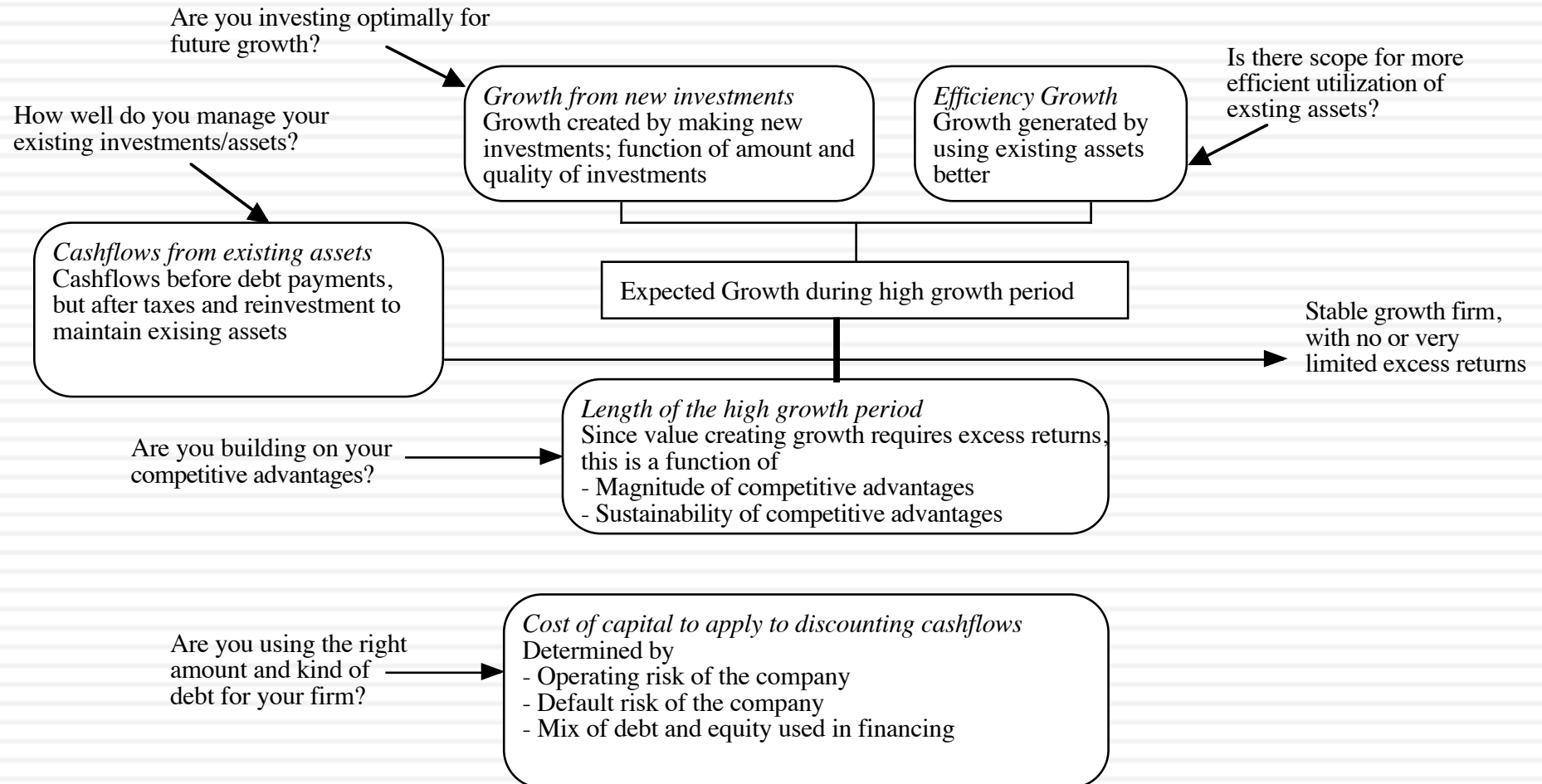
Value versus Price



Most undervalued stocks!!

Company	Price per share (\$)	Value per share (\$)	% Under valued
Activision Blizzard	\$20.19	\$115.09	-82.46%
Apollo Tyres	\$22.64	\$71.81	-68.47%
Lululemon	\$26.30	\$75.12	-64.99%
Take Two Interactive	\$22.54	\$59.24	-61.95%
Match Group	\$58.14	126.45	-54.02%
Lionsgate	\$13.97	\$25.30	-44.78%
AMC	41.14	74.23	-44.58%
Nordstrom	22.37	37.86	-40.91%
Comcast	\$27.20	\$44.72	-39.18%
Starbucks (SBUX)	\$27.56	\$45.23	-39.07%
Qualcomm	\$27.32	\$43.82	-37.65%

Ways of changing value...



Disney (Restructured)- November 2013

Current Cashflow to Firm

$EBIT(1-t) = 10,032(1-.31) = 6,920$
 - (Cap Ex - Deprecn) 3,629
 - Chg Working capital 103
 = FCFF 3,188
 Reinvestment Rate = $3,732/6920 = 53.93\%$
 Return on capital = 12.61%

Reinvestment Rate
50.00%

More selective
acquisitions &
payoff from gaming

Return on Capital
14.00%

Expected Growth
 $.50 * .14 = .07$ or 7%

Stable Growth

$g = 2.75\%$; Beta = 1.20;
 Debt % = 40%; $k(\text{debt}) = 3.75\%$
 Cost of capital = 6.76%
 Tax rate = 36.1%; ROC = 10%;
 Reinvestment Rate = $2.5/10 = 25\%$

First 5 years

Growth declines
gradually to 2.75%

Terminal Value₁₀ = $9,206 / (.0676 - .025) = 216,262$

Op. Assets 147,704
 + Cash: 3,931
 + Non op inv 2,849
 - Debt 15,961
 - Minority Int 2,721
 = Equity 135,802
 - Options 972
Value/Share \$ 74.91

	1	2	3	4	5	6	7	8	9	10
EBIT * (1 - tax rate)	\$7,404	\$7,923	\$8,477	\$9,071	\$9,706	\$10,298	\$10,833	\$11,299	\$11,683	\$11,975
- Reinvestment	\$3,702	\$3,961	\$4,239	\$4,535	\$4,853	\$4,634	\$4,333	\$3,955	\$3,505	\$2,994
Free Cashflow to Firm	\$3,702	\$3,961	\$4,239	\$4,535	\$4,853	\$5,664	\$6,500	\$7,344	\$8,178	\$8,981

Term Yr
 12,275
 3,069
 9,206

Cost of Capital (WACC) = $8.52\% (0.60) + 2.40\% (0.40) = 7.16\%$

Cost of capital declines
gradually to 6.76%

Cost of Equity
10.34%

Cost of Debt
 $(2.75\% + 1.00\%)(1 - .361)$
 = 2.40%
 Based on synthetic A rating

Weights
 E = 60% D = 40%

In November 2013,
 Disney was trading at
 \$67.71/share

Move to optimal
 debt ratio, with
 higher beta.

Riskfree Rate:
 Riskfree rate = 2.75%

+

Beta
 1.3175

x

ERP for operations
 5.76%

Unlevered Beta for
 Sectors: 0.9239

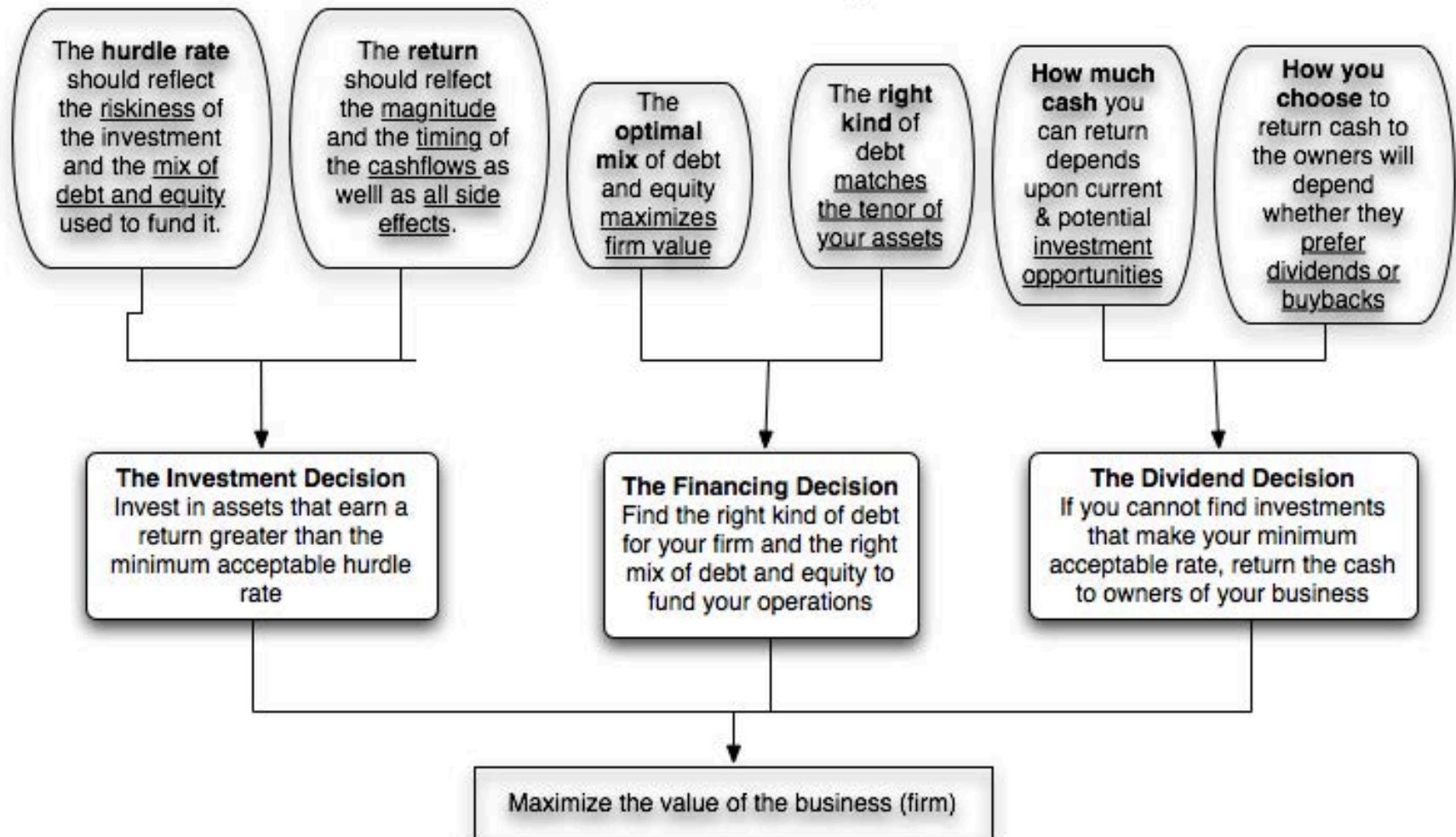
D/E = 66.67%

The Triple Whammy: Under levered, Cash Build-up and Under valued by at least 10%?

Company picked for project	Debt to Capital Ratio	Optimal Debt Ratio (%)	Cash Return as % of FCFE	Price per share (\$)	Value per share (\$)	Price/Value	% Under or over value
Micron Technology	8.41%	50%	49.47%	\$45.70	\$51.74	113.22%	13.22%
Activision Blizzard	5.49%	10%	45.87%	\$73.32	\$86.59	118.10%	18.10%
Live Nation	27.20%	40%	0.00%	40.92	48.5	118.52%	18.52%
Nucor	27.90%	60%	89.02%	40.5	51.94	128.25%	28.25%
Capgemini	28.36%	60%	33.82%	97.9	144	147.09%	47.09%
Solar Edge	1.53%	10%	0.00%	\$104.69	\$155.22	148.27%	48.27%
Southwest Airlines	22.60%	70%	87.91%	\$27.20	\$44.72	164.41%	64.41%

First Principles

Corporate Finance: The Big Picture



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 !!!