

From DCF value to target price and returns...

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- Assume that you believe that your valuation of Con Ed (\$42.30) is a fair estimate of the value, 7.70% is a reasonable estimate of Con Ed's cost of equity and that your expected dividends for next year (2.32×1.021) is a fair estimate, what is the expected stock price a year from now (assuming that the market corrects its mistake?)
- If you bought the stock today at \$40.76, what return can you expect to make over the next year (assuming again that the market corrects its mistake)?

3M: A Pre-crisis valuation

Current Cashflow to Firm
 EBIT(1-t)= 5344 (1-.35)= 3474
 - Nt CpX= 350
 - Chg WC 691
 = FCFF 2433
 Reinvestment Rate = 1041/3474
 =29.97%
 Return on capital = 25.19%

Reinvestment Rate
30%

Expected Growth in EBIT (1-t)
 $.30 \times .25 = .075$
 7.5%

Return on Capital
25%

Stable Growth
 g = 3%; Beta = 1.10;
 Debt Ratio= 20%; Tax rate=35%
 Cost of capital = 6.76%
 ROC= 6.76%;
 Reinvestment Rate=3/6.76=44%

First 5 years

Terminal Value₅ = 2645 / (.0676 - .03) = 70,409

Op. Assets 60607
 + Cash: 3253
 - Debt 4920
 =Equity 58400

Year	1	2	3	4	5
EBIT (1-t)	\$3,734	\$4,014	\$4,279	\$4,485	\$4,619
- Reinvestment	\$1,120	\$1,204	\$1,312	\$1,435	\$1,540
= FCFF	\$2,614	\$2,810	\$2,967	\$3,049	\$3,079

Term Yr
 \$4,758
 \$2,113
 \$2,645

Value/Share \$ 83.55

Cost of capital = 8.32% (0.92) + 2.91% (0.08) = 7.88%

Cost of Equity
8.32%

Cost of Debt
 $(3.72\% + .75\%)(1 - .35)$
 = 2.91%

Weights
 E = 92% D = 8%

On September 12, 2008, 3M was trading at \$70/share

Riskfree Rate:
 Riskfree rate = 3.72%

+

Beta
1.15

x

Risk Premium
4%

Unlevered Beta for Sectors: 1.09

D/E=8.8%

Lowered base operating income by 10%

3M: Post-crisis valuation

Reduced growth rate to 5%

Did not increase debt ratio in stable growth to 20%

Current Cashflow to Firm

EBIT(1-t)= 4810 (1-.35)= 3,180
 - Nt CpX= 350
 - Chg WC 691
 = FCFF 2139
 Reinvestment Rate = 1041/3180
 =33%
 Return on capital = 23.06%

Reinvestment Rate
25%

Return on Capital
20%

Expected Growth in EBIT (1-t)
 $.25 \times .20 = .05$
 5%

Stable Growth

g = 3%; Beta = 1.00;; ERP =4%
 Debt Ratio= 8%; Tax rate=35%
 Cost of capital = 7.55%
 ROC= 7.55%;
 Reinvestment Rate=3/7.55=40%

First 5 years

Terminal Value₅ = 2434 / (.0755 - .03) = 53,481

Op. Assets 43,975
 + Cash: 3253
 - Debt 4920
 =Equity 42308

Year	1	2	3	4	5	Term Yr
EBIT (1-t)	\$3,339	\$3,506	\$3,667	\$3,807	\$3,921	\$4,038
- Reinvestment	\$835	\$877	\$1,025	\$1,288	\$1,558	\$1,604
= FCFF	\$2,504	\$2,630	\$2,642	\$2,519	\$2,363	\$2,434

Value/Share \$ 60.53

Cost of capital = 10.86% (0.92) + 3.55% (0.08) = 10.27%

Cost of Equity
10.86%

Higher default spread for next 5 years

Cost of Debt
 $(3.96\% + 1.5\%)(1 - .35)$
 = 3.55%

Weights
 E = 92% D = 8%

On October 16, 2008, MMM was trading at \$57/share.

Riskfree Rate:
 Riskfree rate = 3.96%

Increased risk premium to 6% for next 5 years

+ **Beta** 1.15 X **Risk Premium** 6%

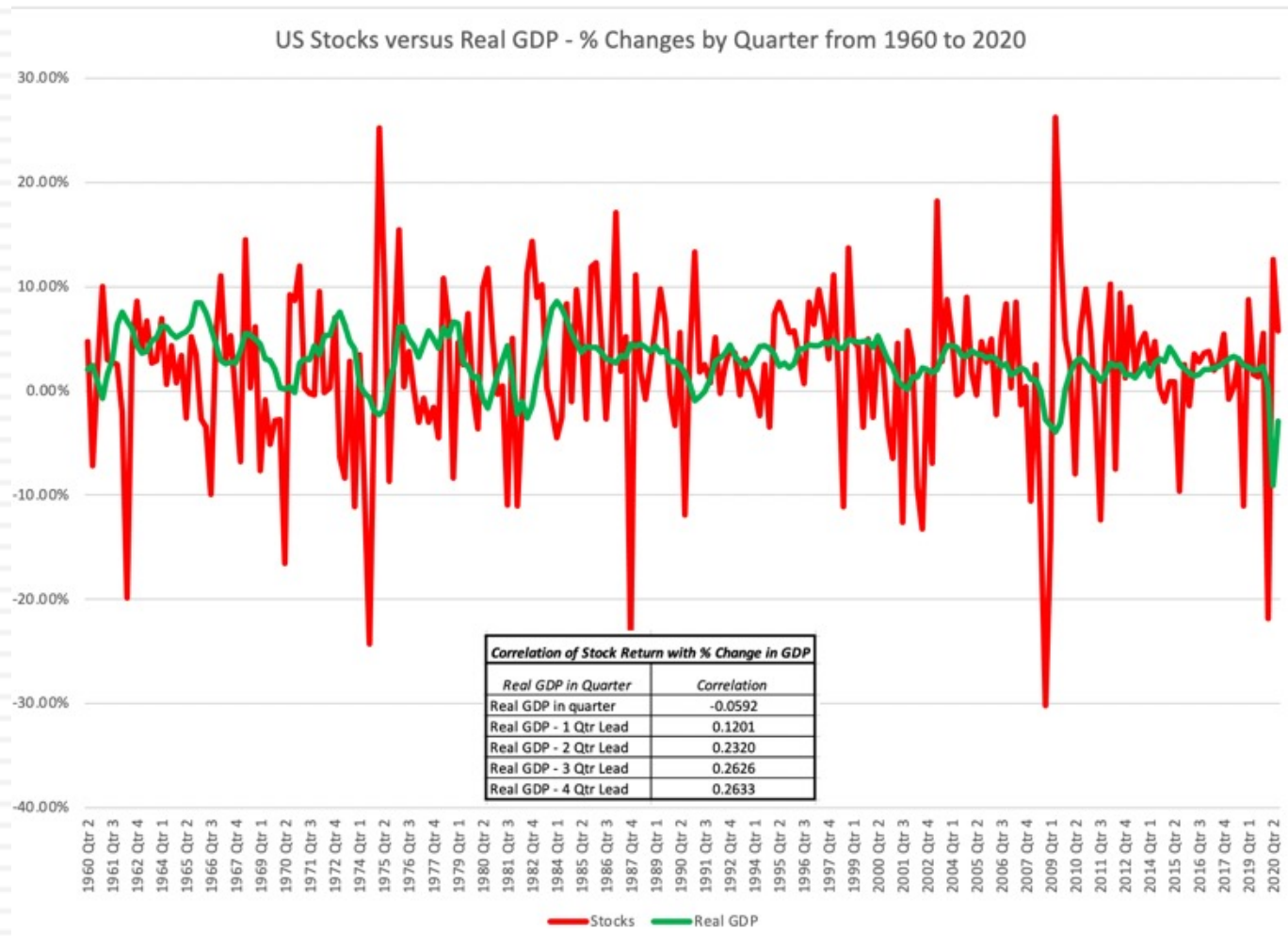
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Unlevered Beta for Sectors: 1.09 D/E=8.8%

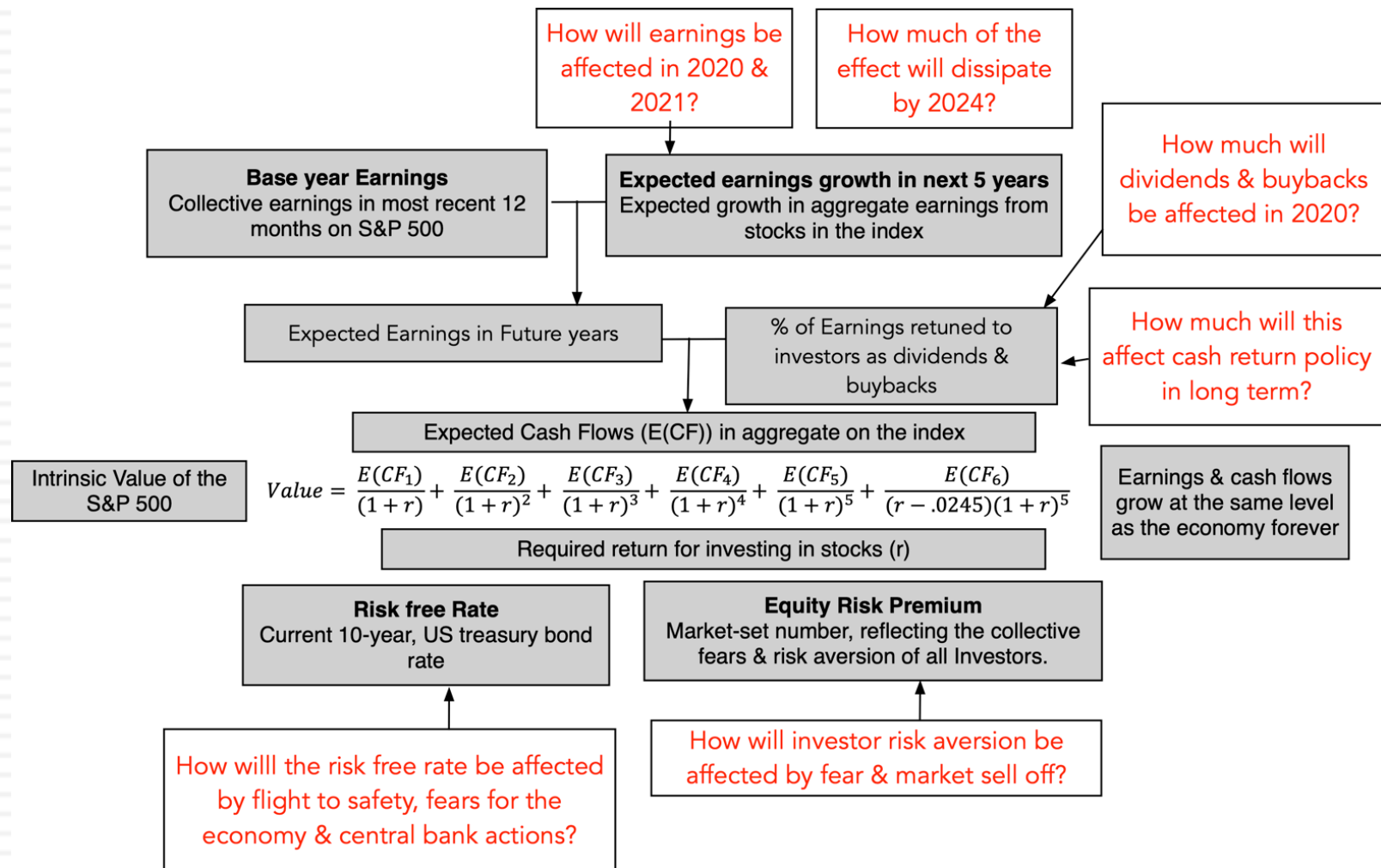
Valuing the Index in November 2020: Crisis effects?

- Disconnect from economic news: For some, the skepticism comes from the disconnect with macroeconomic numbers that are abysmal, as unemployment claims climb into the tens of millions and consumer confidence hovers around historic lows. I will spend the first part of this section arguing that this reflects a fundamental misunderstanding of what markets try to do, and a misreading of history.
- In denial? For others, the question is whether markets are adequately reflecting the potential for long term damage to earnings and cash flows, as well as the cost of defaults, from this crisis. Since that answer to that question lies in the eyes of the beholder, I will provide a framework for converting your fears and hopes into numbers and a value for the market.

Explaining the disconnect...



Value Drivers for the Index



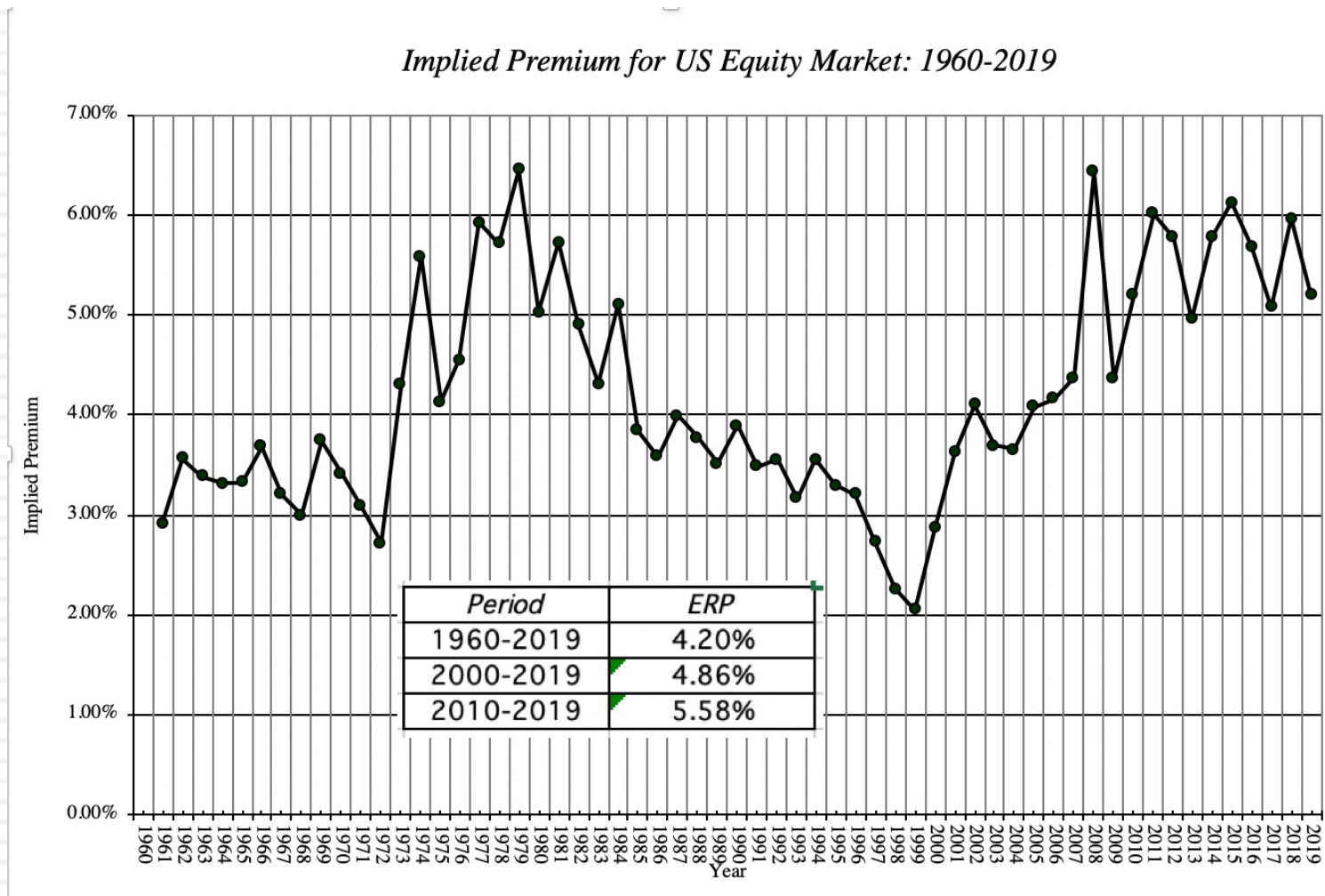
1. Earnings

Estimated S&P 500 Earnings (Ed Yardeni)			Bottom-up Estimates (Analyst Consensus on 10/5/20)		
Year	Earnings on Index		Year	Earnings on Index	
2019		163	2019		162.97
2020	-23.31%	125	2020	-20.10%	130.21
2021	24.00%	155	2021	27.65%	166.21
2022	16.13%	180	2022	14.76%	190.75
			2020 S&P Target		
	Firm	Strategist			
	Bank of America Merrill Lynch	Savita Subramanian	\$125.00		
	Barclays	Maneesh Deshpande	\$137.00		
	BMO	Brian Belski	\$130.00		
	BTIG	Julian Emanuel	\$127.00		
	Canaccord Genuity	Tony Dwyer	\$125.00		
	CFRA	Sam Stovall	\$129.84		
	Citigroup	Tobias Levkovich	\$131.50		
	Credit Suisse	Jonathan Golub	\$125.00		
	Deutsche Bank	Binky Chadha	\$133.00		
	Goldman Sachs	David Kostin	\$130.00		
	JPMorgan Chase	Dubravko Lakos-Bujas	\$136.00		
	Morgan Stanley	Mike Wilson	\$130.00		
	Oppenheimer	John Stoltzfus	Suspended		
	RBC	Lori Calvasina	Suspended		
	UBS	Keith Parker	\$126.00		
	Wells Fargo Investment Institute	Darrell Cronk	\$130.00		
		High Value	\$137.00		
		Low Value	\$125.00		
		Median	\$130.00		

Cash Flows

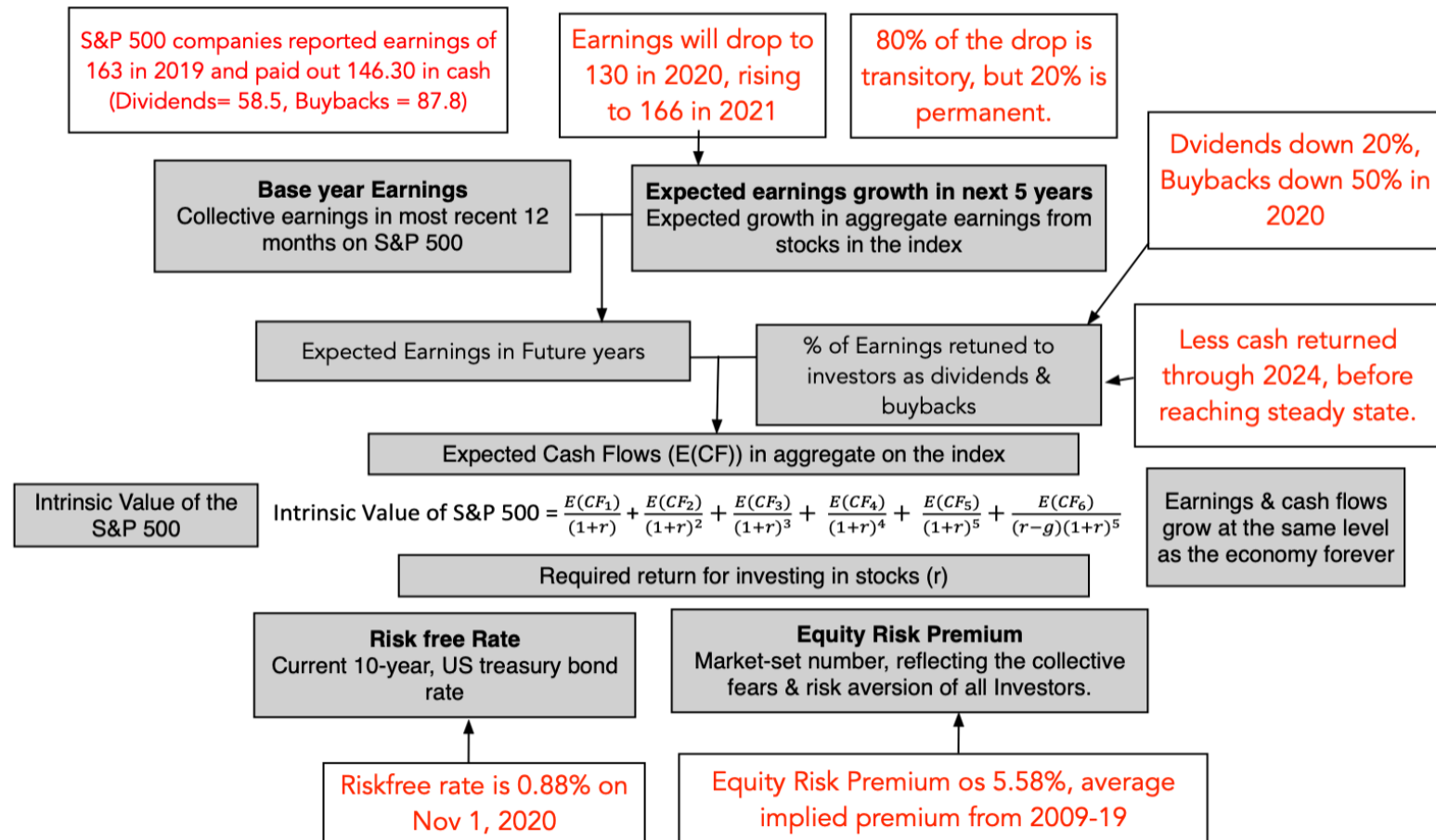
	S&P 500					
Year	Market value	Earnings	Dividends	Buybacks	Cash Returned as % of Earnings	Cash Returned as % of Market Cap
2001	1148.09	38.85	15.74	14.34	77.43%	2.62%
2002	879.82	46.04	15.96	13.87	64.78%	3.39%
2003	1111.91	54.69	17.88	13.70	57.74%	2.84%
2004	1211.92	67.68	19.01	21.59	59.99%	3.35%
2005	1248.29	76.45	22.34	38.82	80.01%	4.90%
2006	1418.30	87.72	25.04	48.12	83.40%	5.16%
2007	1468.36	82.54	28.14	67.22	115.53%	6.49%
2008	903.25	49.51	28.45	39.07	136.37%	7.47%
2009	1115.00	56.86	21.97	15.46	65.82%	3.36%
2010	1257.64	83.77	22.65	32.88	66.28%	4.42%
2011	1257.60	96.44	26.53	44.75	73.91%	5.67%
2012	1426.19	96.82	31.25	44.65	78.39%	5.32%
2013	1848.36	104.92	34.90	53.23	84.00%	4.77%
2014	2058.90	116.16	39.55	62.44	87.79%	4.95%
2015	2043.94	100.48	43.41	64.94	107.83%	5.30%
2016	2238.82	106.26	45.70	62.32	101.66%	4.82%
2017	2673.61	124.51	48.93	60.85	88.17%	4.11%
2018	2506.85	152.78	54.39	96.11	98.51%	6.00%
2019	3230.78	163.00	58.50	87.81	89.76%	4.53%
				Median	83.40%	4.82%
				High	136.37%	7.47%
				Low	57.74%	2.84%

3. Equity Risk Pricing

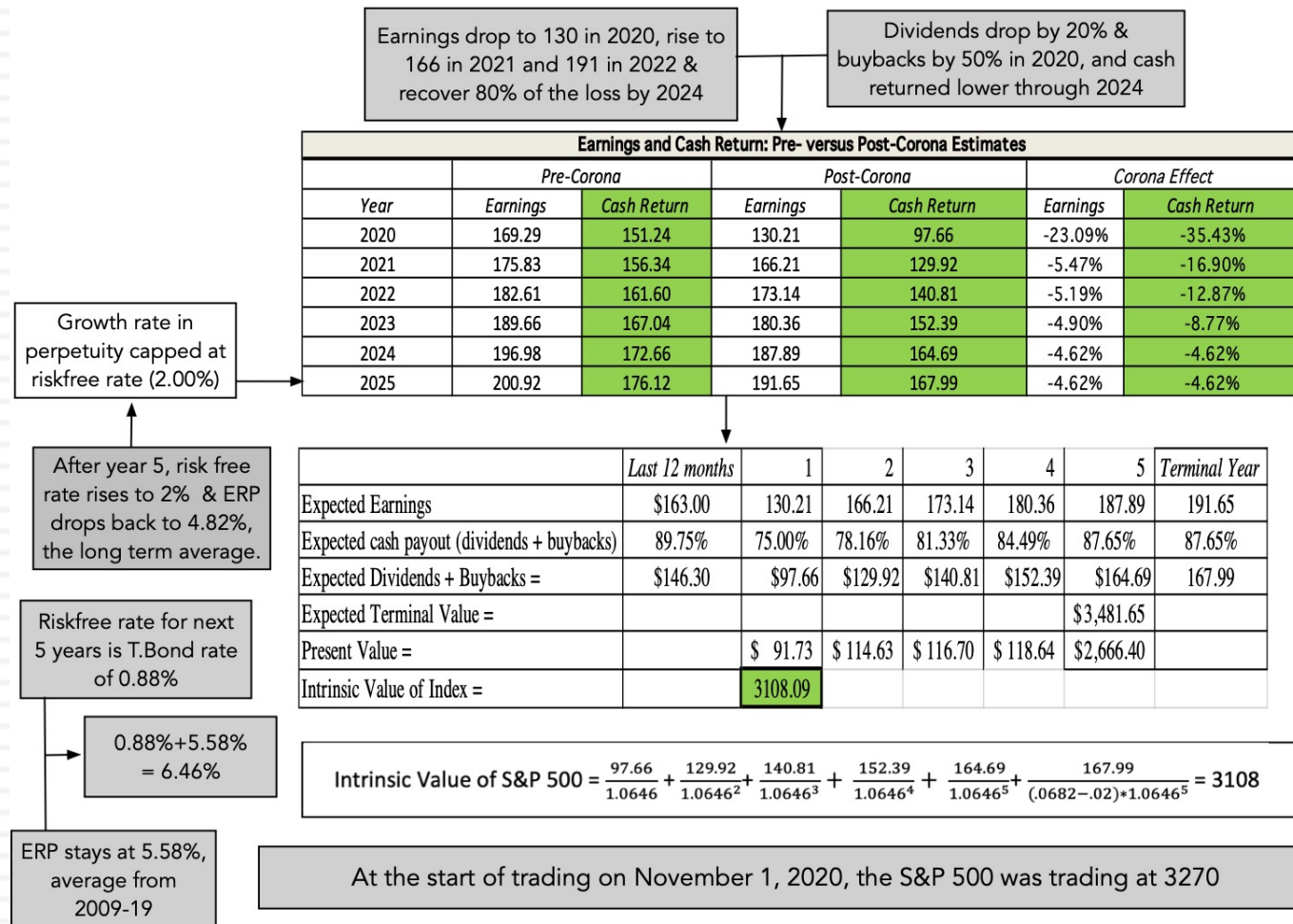


My Story for the Market

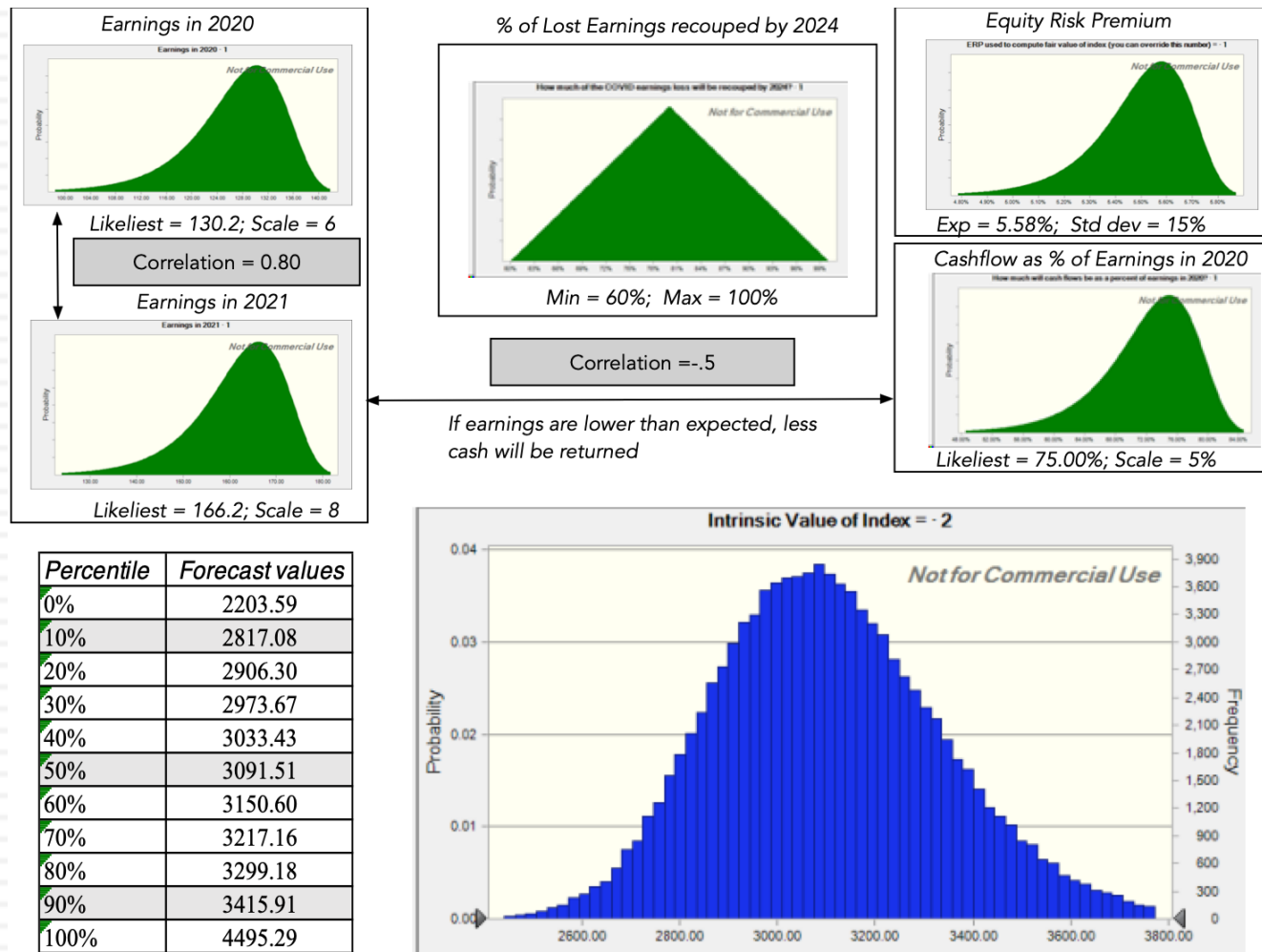
Valuing the S&P 500 on November 1, 2020



My Valuation of the Index



Facing up to Uncertainty

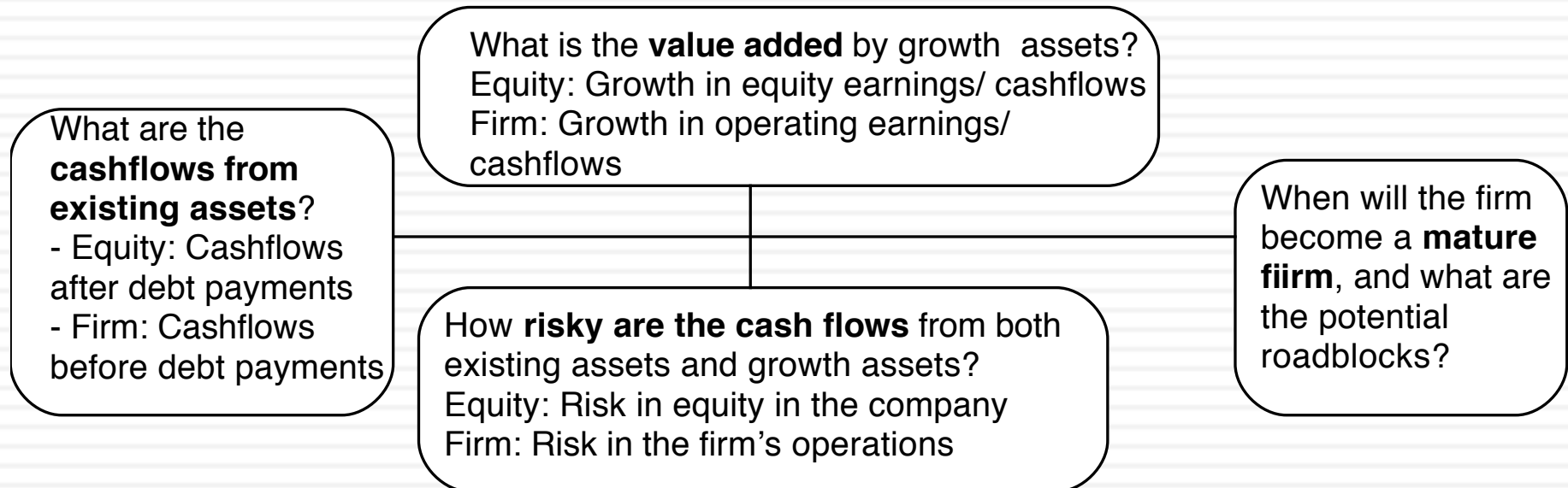


The Dark Side of Valuation

Anyone can value a company that is stable,
makes money and has an established
business model!

The fundamental determinants of value...

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The Dark Side of Valuation...

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- Valuing stable, money making companies with consistent and clear accounting statements, a long and stable history and lots of comparable firms is easy to do.
- The true test of your valuation skills is when you have to value “difficult” companies. In particular, the challenges are greatest when valuing:
 - ▣ Young companies, early in the life cycle, in young businesses
 - ▣ Companies that don’t fit the accounting mold
 - ▣ Companies that face substantial truncation risk (default or nationalization risk)

Difficult to value companies...

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- Across the life cycle:
 - Young, growth firms: Limited history, small revenues in conjunction with big operating losses and a propensity for failure make these companies tough to value.
 - Mature companies in transition: When mature companies change or are forced to change, history may have to be abandoned and parameters have to be reestimated.
 - Declining and Distressed firms: A long but irrelevant history, declining markets, high debt loads and the likelihood of distress make them troublesome.
- Across markets
 - Emerging market companies are often difficult to value because of the way they are structured, their exposure to country risk and poor corporate governance.
- Across sectors
 - Financial service firms: Opacity of financial statements and difficulties in estimating basic inputs leave us trusting managers to tell us what's going on.
 - Commodity and cyclical firms: Dependence of the underlying commodity prices or overall economic growth make these valuations susceptible to macro factors.
 - Firms with intangible assets: Accounting principles are left to the wayside on these firms.

I. The challenge with young companies...

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Making judgments on revenues/ profits difficult because you cannot draw on history. If you have no product/ service, it is difficult to gauge market potential or profitability. The company's entire value lies in future growth but you have little to base your estimate on.

Cash flows from existing assets non-existent or negative.

What are the cashflows from existing assets?

Different claims on cash flows can affect value of equity at each stage.

What is the value of equity in the firm?

What is the value added by growth assets?

How risky are the cash flows from both existing assets and growth assets?

Limited historical data on earnings, and no market prices for securities makes it difficult to assess risk.

When will the firm become a mature firm, and what are the potential roadblocks?

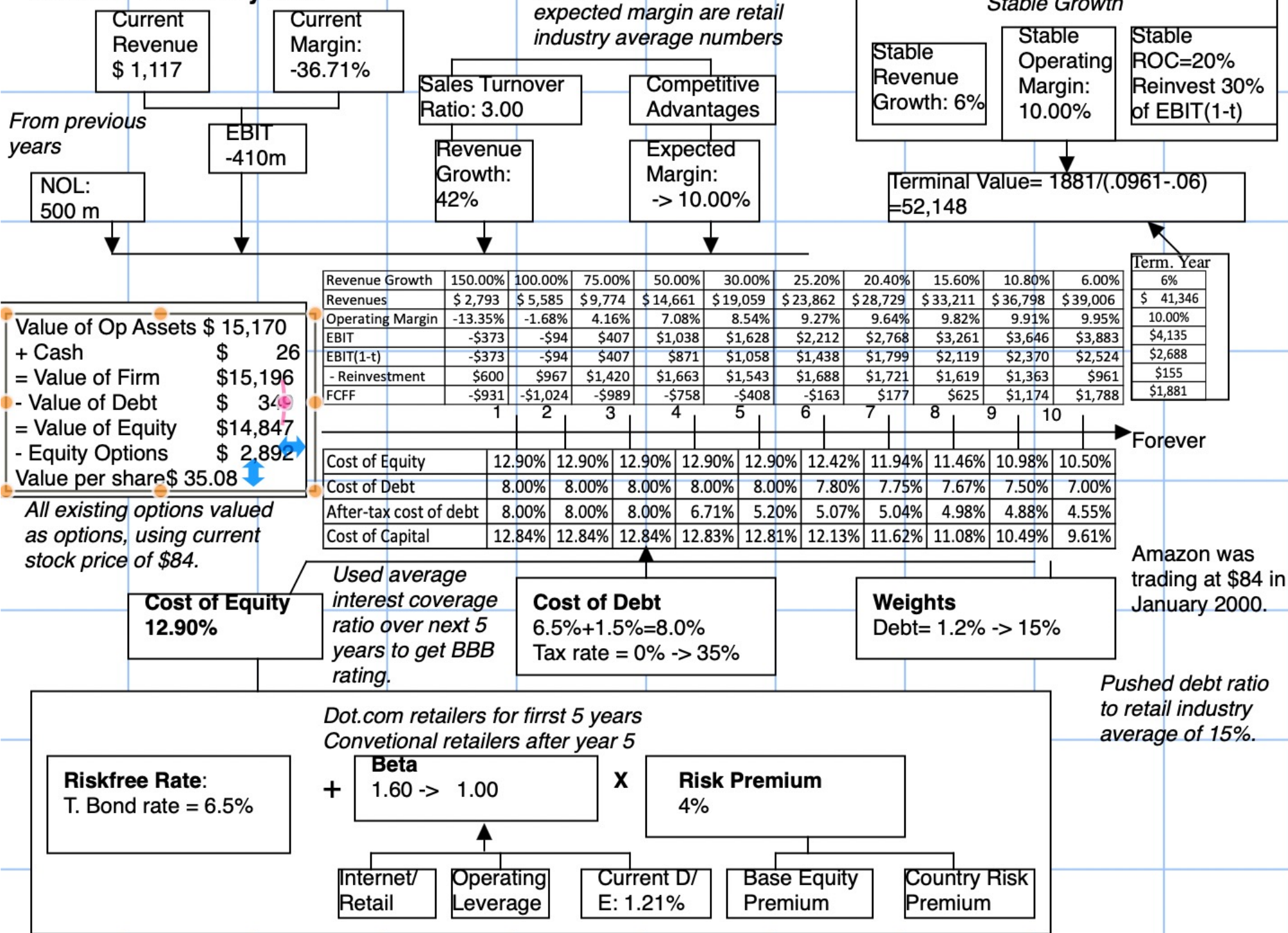
Will the firm will make it through the gauntlet of market demand and competition. Even if it does, assessing when it will become mature is difficult because there is so little to go on.

Upping the ante.. Young companies in young businesses...

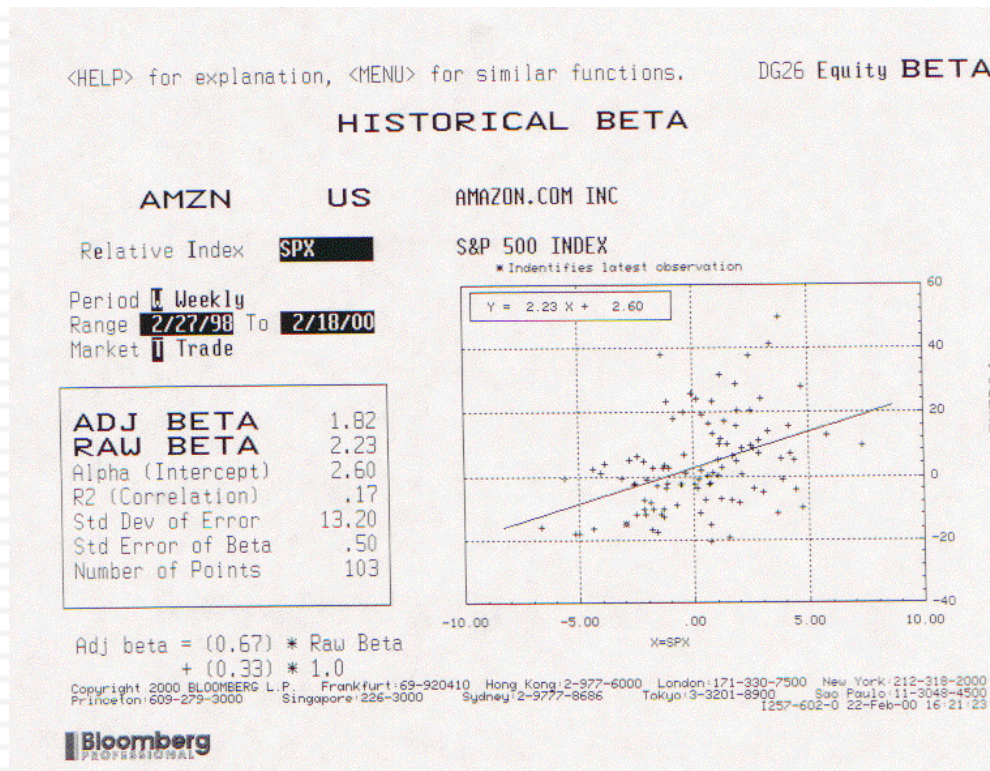
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- When valuing a business, we generally draw on three sources of information
 - ▣ The firm's current financial statement
 - How much did the firm sell?
 - How much did it earn?
 - ▣ The firm's financial history, usually summarized in its financial statements.
 - How fast have the firm's revenues and earnings grown over time?
 - What can we learn about cost structure and profitability from these trends?
 - Susceptibility to macro-economic factors (recessions and cyclical firms)
 - ▣ The industry and comparable firm data
 - What happens to firms as they mature? (Margins.. Revenue growth... Reinvestment needs... Risk)
- It is when valuing these companies that you find yourself tempted by the dark side, where
 - ▣ "Paradigm shifts" happen...
 - ▣ New metrics are invented ...
 - ▣ The story dominates and the numbers lag...

Amazon in January 2000



Lesson 1: Don't sweat the small stuff



- Spotlight the business the company is in & use the beta of that business.
- Don't try to incorporate failure risk into the discount rate.
- Let the cost of capital change over time, as the company changes.
- If you are desperate, use the cross section of costs of capital to get your estimation going (use the 90th or 95th percentile across all companies).

Lesson 2: Work backwards and keep it simple...

Year	Revenue Growth	Sales	Operating Margin	EBIT	EBIT (1-t)
Tr 12 mths		\$1,117	-36.71%	-\$410	-\$410
1	150.00%	\$2,793	-13.35%	-\$373	-\$373
2	100.00%	\$5,585	-1.68%	-\$94	-\$94
3	75.00%	\$9,774	4.16%	\$407	\$407
4	50.00%	\$14,661	7.08%	\$1,038	\$871
5	30.00%	\$19,059	8.54%	\$1,628	\$1,058
6	25.20%	\$23,862	9.27%	\$2,212	\$1,438
7	20.40%	\$28,729	9.64%	\$2,768	\$1,799
8	15.60%	\$33,211	9.82%	\$3,261	\$2,119
9	10.80%	\$36,798	9.91%	\$3,646	\$2,370
10	6.00%	\$39,006	9.95%	\$3,883	\$2,524
TY	6.00%	\$41,346	10.00%	\$4,135	\$2,688