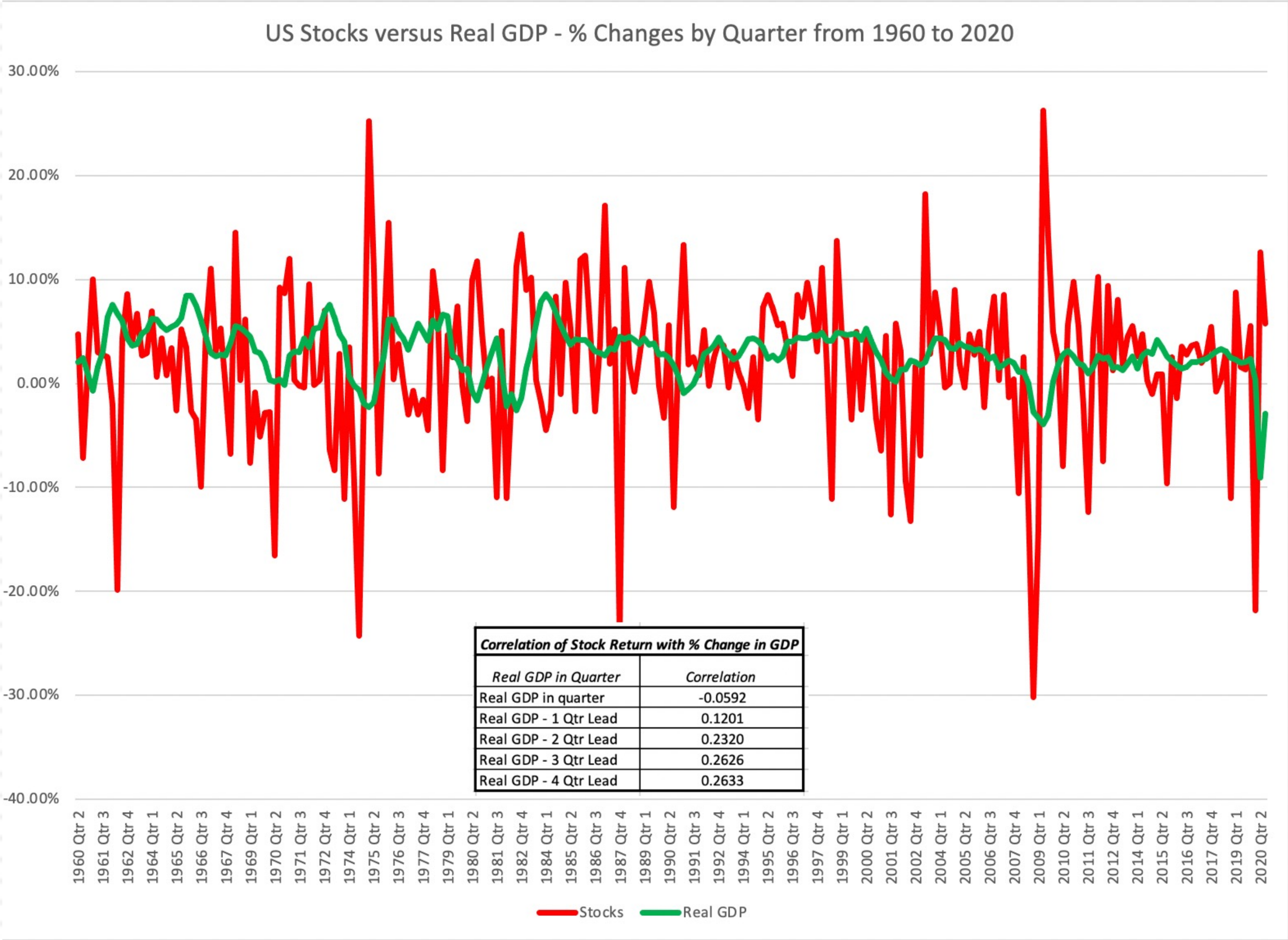
Valuing the Index in November 2020: Crisis effects?

- 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.

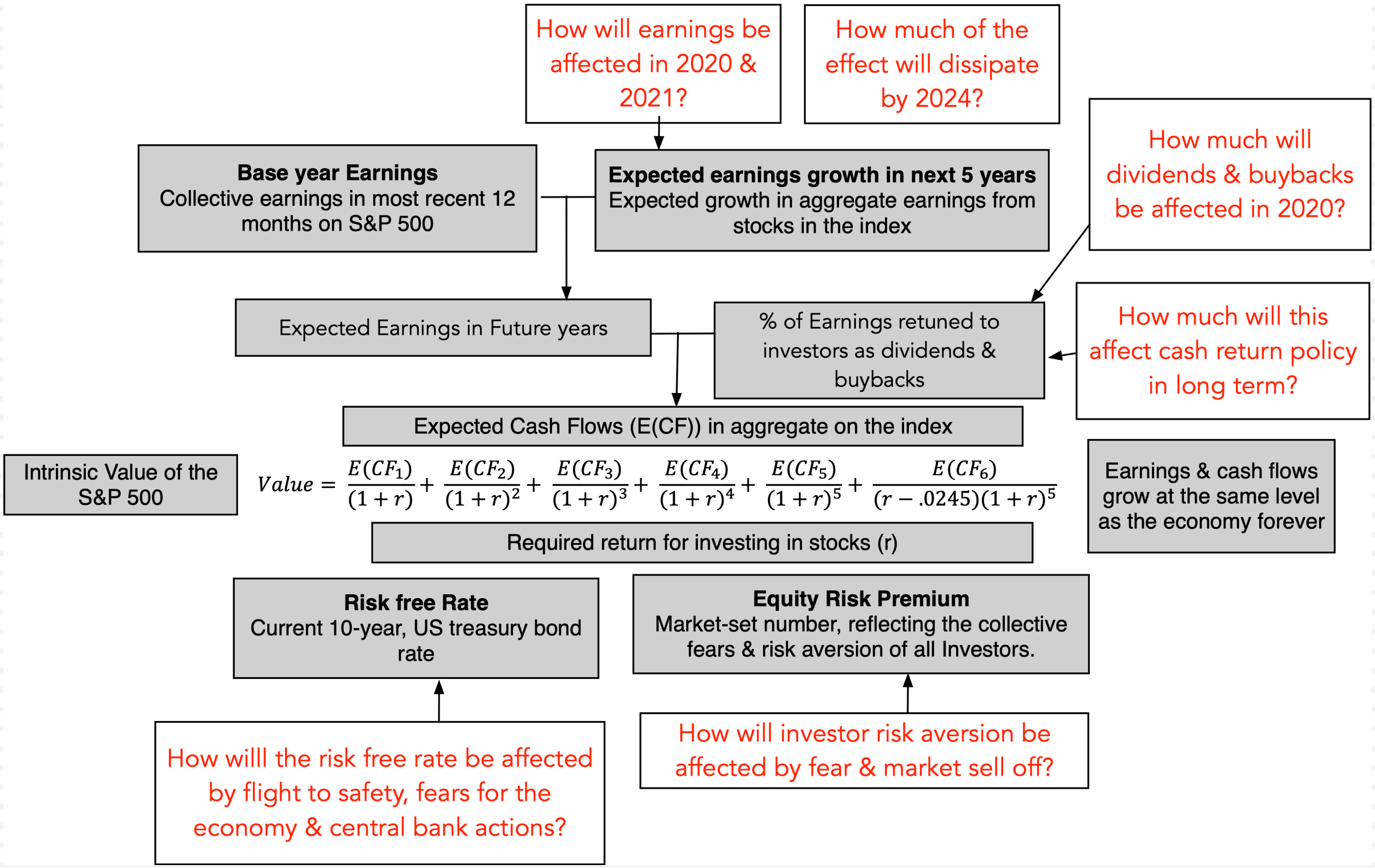
Explaining the disconnect…



Correlation of Stock Return with % Change in GDP

Real GDP in Quarter	*Correlation*
Real GDP in quarter	-0.0592
Real GDP - 1 Qtr Lead	0.1201
Real GDP - 2 Qtr Lead	0.2320
Real GDP - 3 Qtr Lead	0.2626
Real GDP - 4 Qtr Lead	0.2633

Value Drivers for the Index



1. Earnings

Estimated S&P 500 Earnings (Ed Yardeni)		
Year	Earnings on Index	
2019		163
2020	-23.31%	125
2021	24.00%	155
2022	16.13%	180

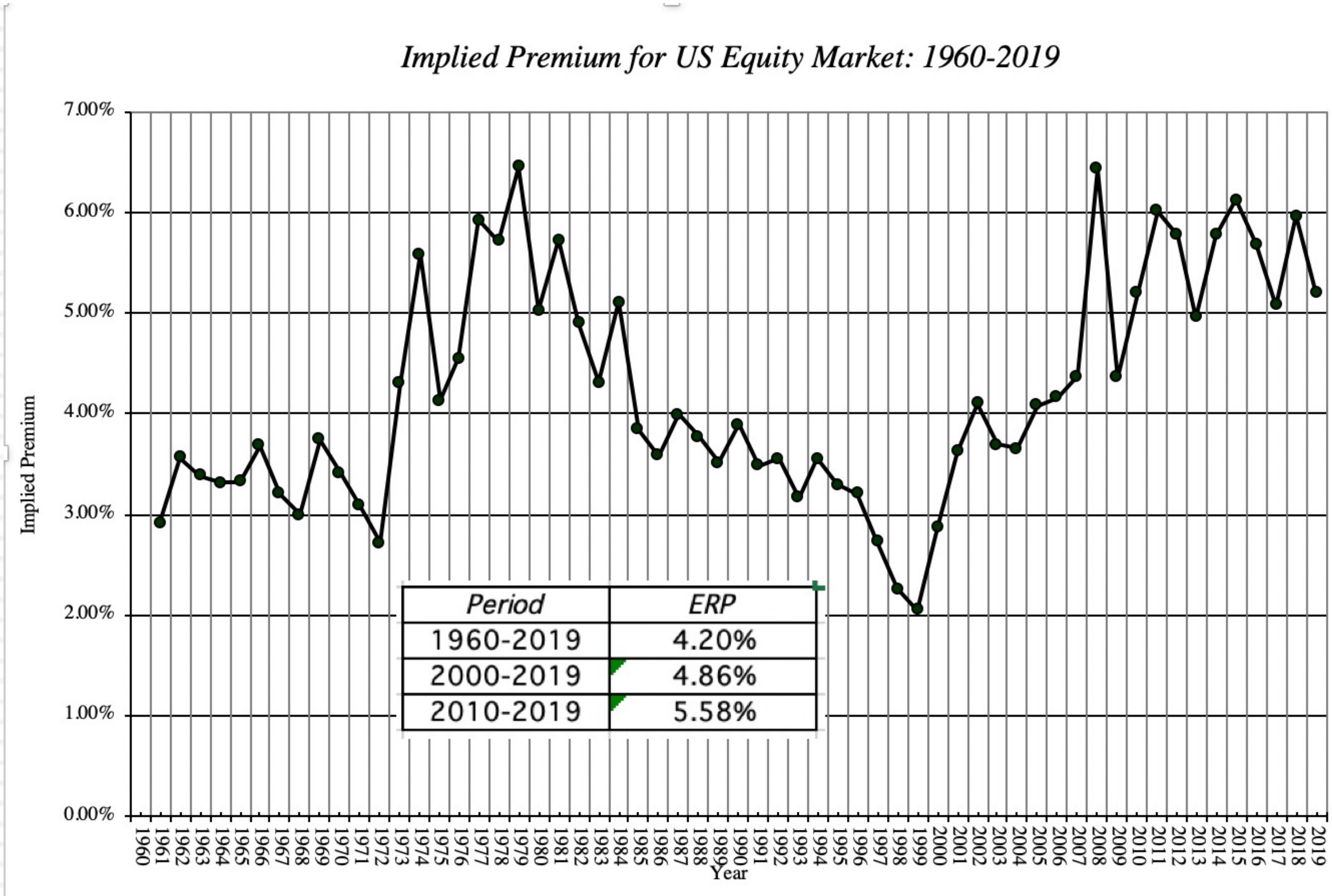
Bottom-up Estimates (Analyst Consensus on 10/5/20		
Year	Earnings on Index	
2019		162.97
2020	-20.10%	130.21
2021	27.65%	166.21
2022	14.76%	190.75

Firm	Strategist	2020 S&P Target
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

2. Cash Flows

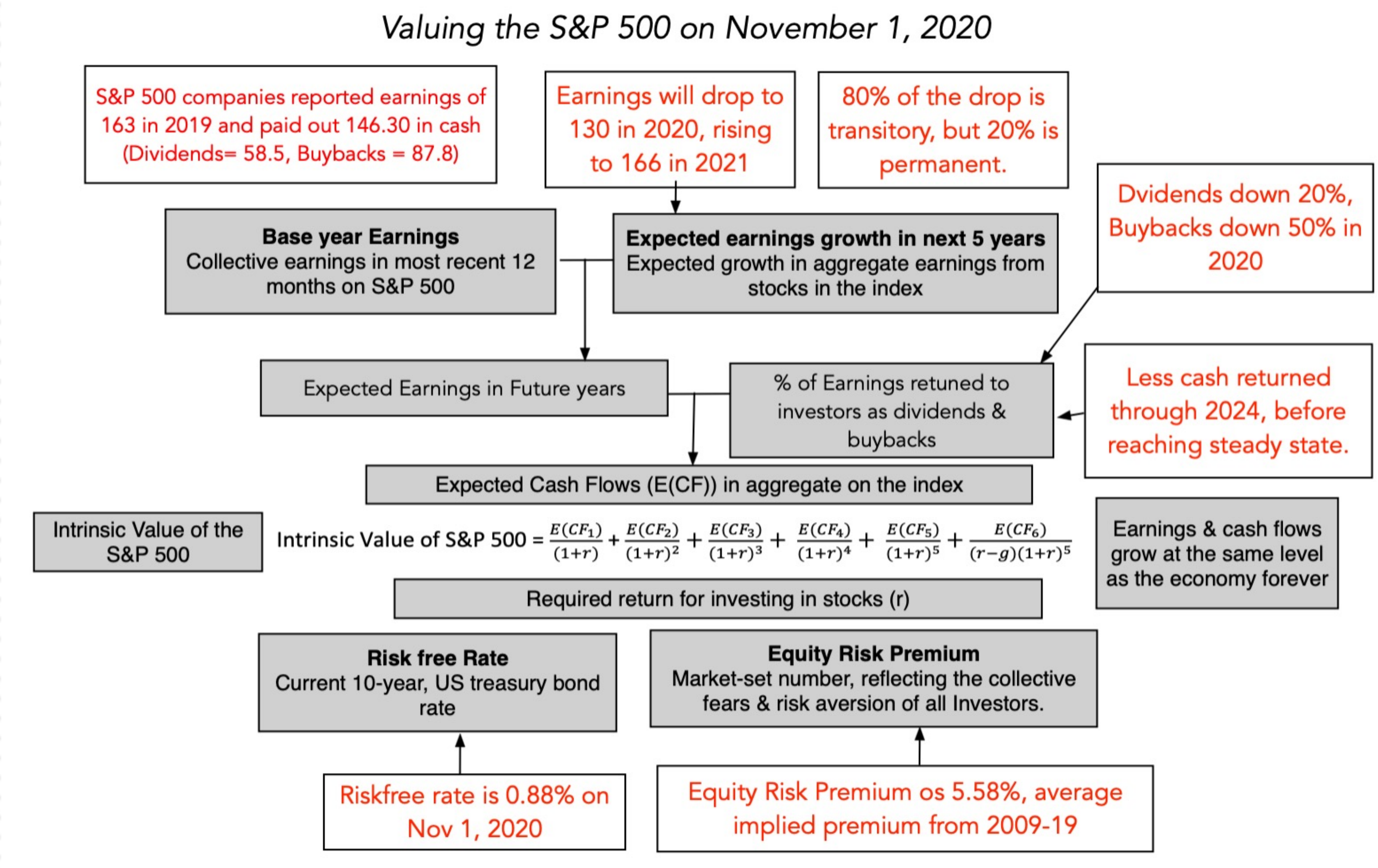
	S&P 500					
Year	Market value	Earnings	Dividends	Buybacks	Cash Returned as % of Earnings	Cash Returned as % of Market Cap
2001	1148.09	38.85	15.74	14.34	77.43%	2.62%
2002	879.82	46.04	15.96	13.87	64.78%	3.39%
2003	1111.91	54.69	17.88	13.70	57.74%	2.84%
2004	1211.92	67.68	19.01	21.59	59.99%	3.35%
2005	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



Period	ERP
1960-2019	4.20%
2000-2019	4.86%
2010-2019	5.58%

My Story for the Market



My Valuation of the Index

Earnings drop to 130 in 2020, rise to 166 in 2021 and 191 in 2022 & recover 80% of the loss by 2024

Dividends drop by 20% & buybacks by 50% in 2020, and cash returned lower through 2024

Earnings and Cash Return: Pre- versus Post-Corona Estimates

	Pre-Corona		*Post-Corona*		*Corona Effect*	
Year	*Earnings*	*Cash Return*	*Earnings*	*Cash Return*	*Earnings*	*Cash Return*
2020	169.29	151.24	130.21	97.66	-23.09%	-35.43%
2021	175.83	156.34	166.21	129.92	-5.47%	-16.90%
2022	182.61	161.60	173.14	140.81	-5.19%	-12.87%
2023	189.66	167.04	180.36	152.39	-4.90%	-8.77%
2024	196.98	172.66	187.89	164.69	-4.62%	-4.62%
2025	200.92	176.12	191.65	167.99	-4.62%	-4.62%

Growth rate in perpetuity capped at riskfree rate (2.00%)

After year 5, risk free rate rises to 2% & ERP drops back to 4.82%, the long term average.

Riskfree rate for next 5 years is T.Bond rate of 0.88%

0.88%+5.58% = 6.46%

ERP stays at 5.58%, average from 2009-19

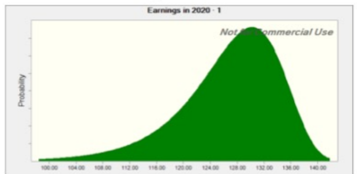
	Last 12 months	1	2	3	4	5	*Terminal Year*
Expected Earnings	$163.00	130.21	166.21	173.14	180.36	187.89	191.65
Expected cash payout (dividends + buybacks)	89.75%	75.00%	78.16%	81.33%	84.49%	87.65%	87.65%
Expected Dividends + Buybacks =	$146.30	$97.66	$129.92	$140.81	$152.39	$164.69	167.99
Expected Terminal Value =						$3,481.65	
Present Value =		$ 91.73	$ 114.63	$ 116.70	$ 118.64	$2,666.40	
Intrinsic Value of Index =		3108.09					

$$\text{Intrinsic Value of S\&P 500} = \frac{97.66}{1.0646} + \frac{129.92}{1.0646^2} + \frac{140.81}{1.0646^3} + \frac{152.39}{1.0646^4} + \frac{164.69}{1.0646^5} + \frac{167.99}{(.0682-.02)*1.0646^5} = 3108$$

At the start of trading on November 1, 2020, the S&P 500 was trading at 3270

Facing up to Uncertainty

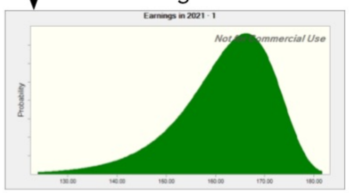
Earnings in 2020



Likeliest = 130.2; Scale = 6

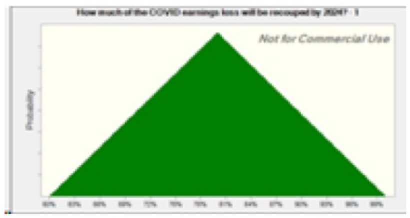
Correlation = 0.80

Earnings in 2021



Likeliest = 166.2; Scale = 8

% of Lost Earnings recouped by 2024

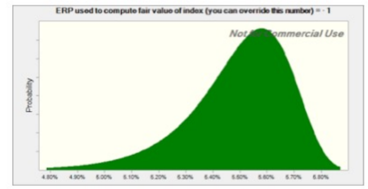


Min = 60%; Max = 100%

Correlation =-.5

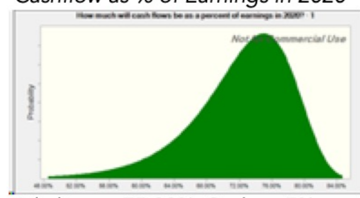
If earnings are lower than expected, less cash will be returned

Equity Risk Premium



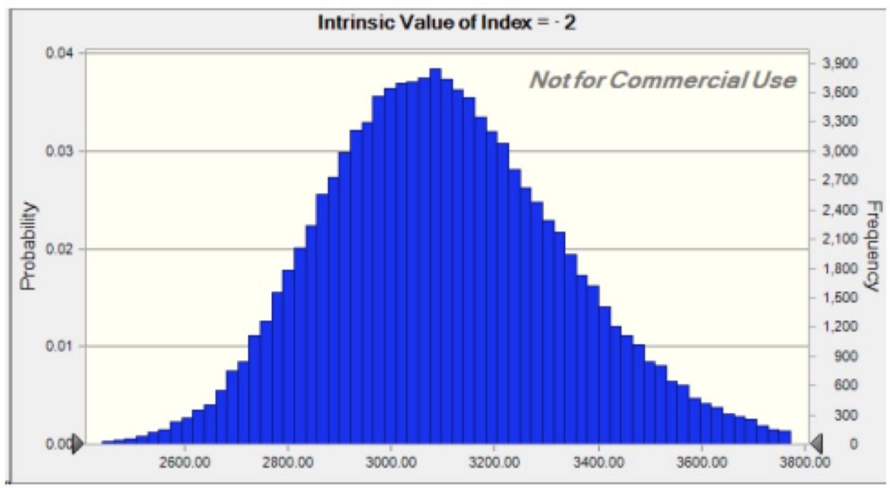
Exp = 5.58%; Std dev = 15%

Cashflow as % of Earnings in 2020



Likeliest = 75.00%; Scale = 5%

Percentile	Forecast values
0%	2203.59
10%	2817.08
20%	2906.30
30%	2973.67
40%	3033.43
50%	3091.51
60%	3150.60
70%	3217.16
80%	3299.18
90%	3415.91
100%	4495.29



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…

What is the **value added** by growth assets?
Equity: Growth in equity earnings/ cashflows
Firm: Growth in operating earnings/ cashflows

What are the **cashflows from existing assets**?
- Equity: Cashflows after debt payments
- Firm: Cashflows before debt payments

How **risky are the cash flows** from both existing assets and growth assets?
Equity: Risk in equity in the company
Firm: Risk in the firm's operations

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

The Dark Side of Valuation…

- 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)

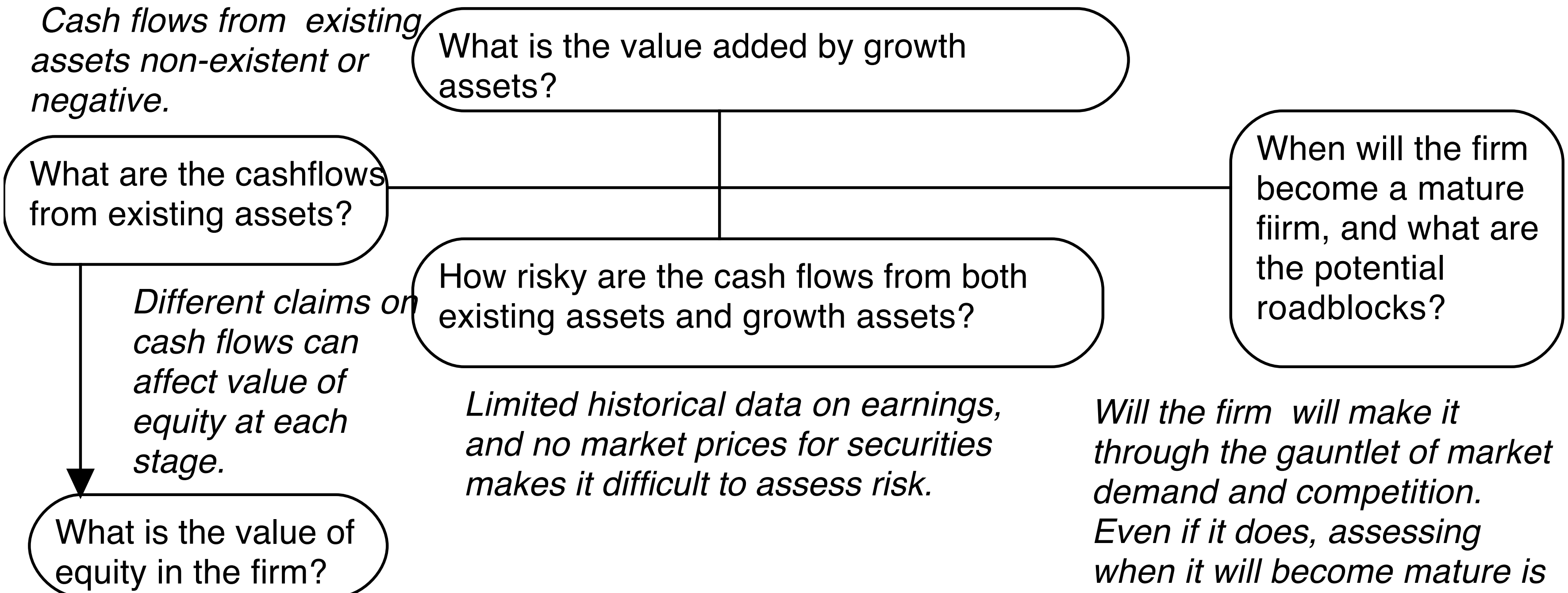
Difficult to value companies…

- 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…

Making judgments on revenues/ profits difficult becaue 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.



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

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

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…

- 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

Current Revenue $ 1,117

Current Margin: -36.71%

EBIT -410m

From previous years

NOL: 500 m

Sales to capital ratio and expected margin are retail industry average numbers

Sales Turnover Ratio: 3.00

Competitive Advantages

Revenue Growth: 42%

Expected Margin: -> 10.00%

Stable Growth

Stable Revenue Growth: 6%

Stable Operating Margin: 10.00%

Stable ROC=20% Reinvest 30% of EBIT(1-t)

Terminal Value= 1881/(.0961-.06) =52,148

	1	2	3	4	5	6	7	8	9	10	Term. Year
Revenue Growth	150.00%	100.00%	75.00%	50.00%	30.00%	25.20%	20.40%	15.60%	10.80%	6.00%	6%
Revenues	$ 2,793	$ 5,585	$ 9,774	$ 14,661	$ 19,059	$ 23,862	$ 28,729	$ 33,211	$ 36,798	$ 39,006	$ 41,346
Operating Margin	-13.35%	-1.68%	4.16%	7.08%	8.54%	9.27%	9.64%	9.82%	9.91%	9.95%	10.00%
EBIT	-$373	-$94	$407	$1,038	$1,628	$2,212	$2,768	$3,261	$3,646	$3,883	$4,135
EBIT(1-t)	-$373	-$94	$407	$871	$1,058	$1,438	$1,799	$2,119	$2,370	$2,524	$2,688
- Reinvestment	$600	$967	$1,420	$1,663	$1,543	$1,688	$1,721	$1,619	$1,363	$961	$155
FCFF	-$931	-$1,024	-$989	-$758	-$408	-$163	$177	$625	$1,174	$1,788	$1,881

Forever

Value of Op Assets	$ 15,170
+ Cash	$ 26
= Value of Firm	$15,196
- Value of Debt	$ 349
= Value of Equity	$14,847
- Equity Options	$ 2,892
Value per share	$ 35.08

All existing options valued as options, using current stock price of $84.

	1	2	3	4	5	6	7	8	9	10
Cost of Equity	12.90%	12.90%	12.90%	12.90%	12.90%	12.42%	11.94%	11.46%	10.98%	10.50%
Cost of Debt	8.00%	8.00%	8.00%	8.00%	8.00%	7.80%	7.75%	7.67%	7.50%	7.00%
After-tax cost of debt	8.00%	8.00%	8.00%	6.71%	5.20%	5.07%	5.04%	4.98%	4.88%	4.55%
Cost of Capital	12.84%	12.84%	12.84%	12.83%	12.81%	12.13%	11.62%	11.08%	10.49%	9.61%

Amazon was trading at $84 in January 2000.

Cost of Equity
12.90%

Used average interest coverage ratio over next 5 years to get BBB rating.

Cost of Debt
6.5%+1.5%=8.0%
Tax rate = 0% -> 35%

Weights
Debt= 1.2% -> 15%

Pushed debt ratio to retail industry average of 15%.

Dot.com retailers for firrst 5 years
Convetional retailers after year 5

Riskfree Rate:
T. Bond rate = 6.5%

\+

Beta
1.60 -> 1.00

X

Risk Premium
4%

Internet/ Retail

Operating Leverage

Current D/E: 1.21%

Base Equity Premium

Country Risk Premium