



CRISIS AS A CRUCIBLE: A JEDI GUIDE TO
INVESTMENT SERENITY!

Look forward, you must!

Lesson 1: Listen to markets, not experts

- During a crisis, you will be often told by experts and market gurus that markets are irrational and behave in crazy and chaotic ways.
- To back this up, the evidence that they will offer is that markets have wild swings on a day-to-day basis, and that these swings are incompatible with rational investing.
- They very conveniently ignore the fact that their advice is even more volatile, veering from day to day...

The truth: Markets play a pricing game...

Tools for intrinsic analysis

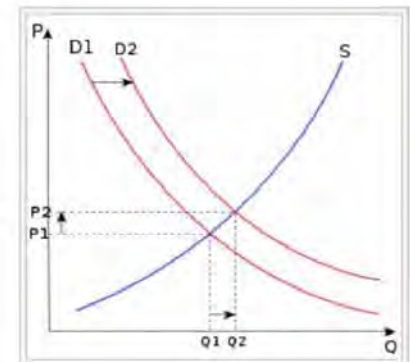
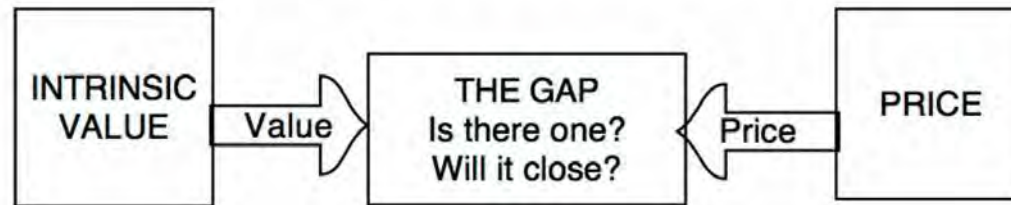
- Discounted Cashflow Valuation (DCF)
- Intrinsic multiples
- Book value based approaches
- Excess Return Models

Tools for "the gap"

- Behavioral finance
- Price catalysts

Tools for pricing

- Multiples and comparables
- Charting and technical indicators
- Pseudo DCF



Drivers of intrinsic value

- Cashflows from existing assets
- Growth in cash flows
- Quality of Growth

Drivers of "the gap"

- Information
- Liquidity
- Corporate governance

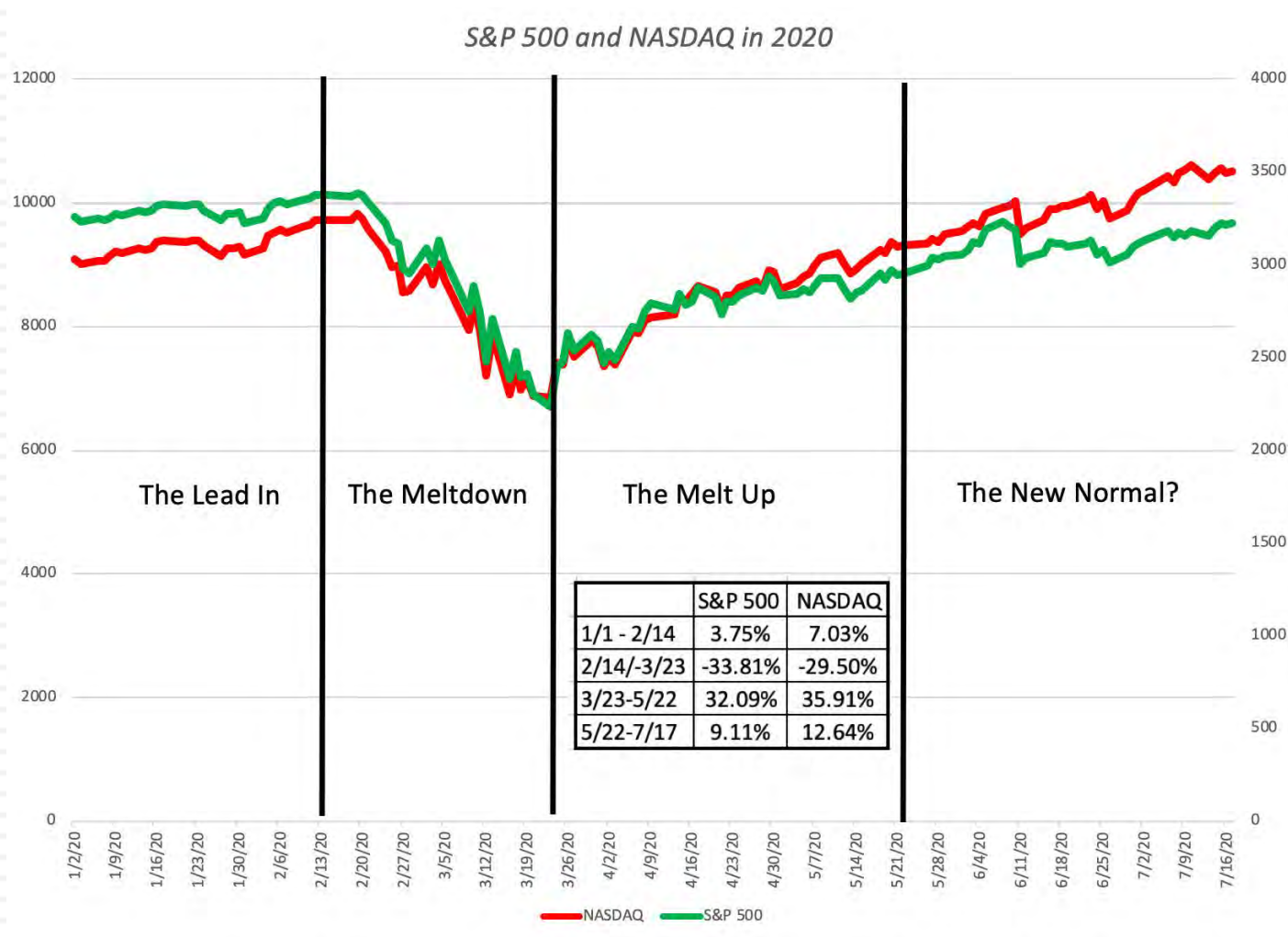
Drivers of price

- Market moods & momentum
- Surface stories about fundamentals

And price and value can diverge...

1. Value has upper & lower bounds. Price does not: Since price is determined by demand and supply, and there is nothing that requires that those buying and selling in markets have to be constrained, it follows that there is no upper or lower bound to prices. Value on the other hand has both upper and lower bounds, with both bounds being set by expected cash flows, growth and risk.
2. Price is reactive, value is proactive: Pricing forces can take information that, at least at first sight, seems insignificant to long term value and cause price changes that are disproportional.
3. Price may never converge on value: Absent a catalyst causing the convergence, price will not only diverge from value in the short term, but it could do so in the long term.

US Equities, during the crisis...

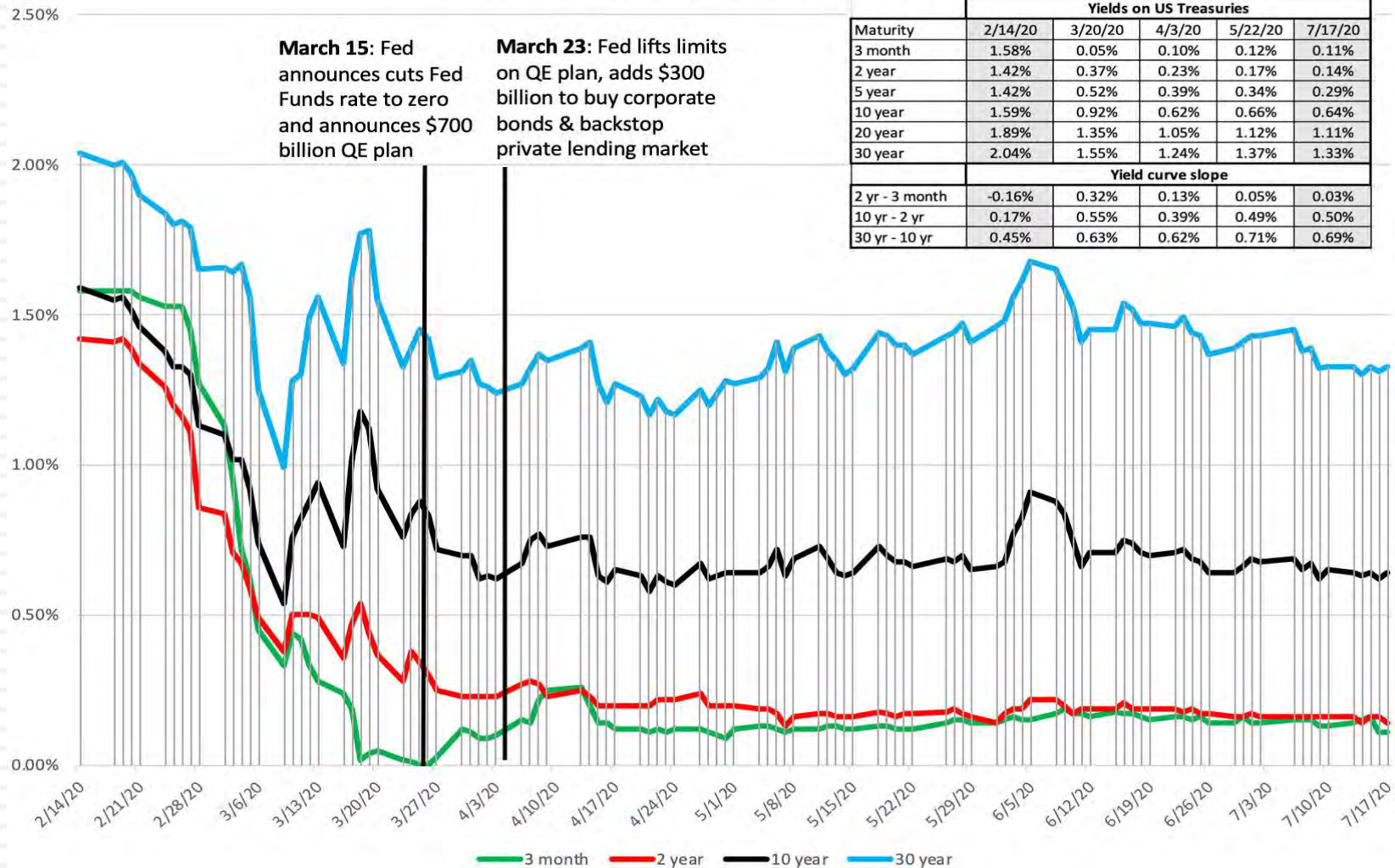


Macro Review: Equity Indices

	Index	Country/Region	Levels			% Change				
			14-Feb	20-Mar	26-Jun	7/10-7/17	6/17-7/17	2/14-3/20	3/20-7/17	2/14 - 7/17
Americas	S&P 500	US	3374	2305	3225	0.28%	1.25%	-31.68%	39.91%	-4.42%
	NASDAQ 100	US	9712	6994	10645	0.18%	-1.76%	-27.99%	52.20%	9.61%
	TSX	Canada	17848	11852	16123	0.62%	2.61%	-33.59%	36.04%	-9.66%
	IPC Mexico	Mexico	45000	34270	36328	-0.38%	-0.38%	-23.84%	6.01%	-19.27%
	iBovespa	Brazil	114381	67069	102888	2.32%	2.86%	-41.36%	53.41%	-10.05%
Europe	FTSE 100	UK	7409	5191	6290	0.63%	3.20%	-29.94%	21.17%	-15.10%
	DAX	Germany	13744	8929	12920	0.35%	2.26%	-35.03%	44.70%	-6.00%
	CAC 40	France	6069	4131	5069	-0.31%	1.99%	-31.93%	22.71%	-16.48%
	S&P Europe 350	Europe	1731	1181	1488	0.09%	1.60%	-31.77%	26.00%	-14.04%
Asia	Nikkei 225	Japan	23688	16553	22681	-0.35%	1.75%	-30.12%	37.02%	-4.25%
	Shanghai 50	China	2895	2628	3186	0.75%	-4.95%	-9.22%	21.23%	10.05%
	Hang Seng	Hong Kong	27816	22805	25089	0.47%	-2.48%	-18.01%	10.02%	-9.80%
	Sensex	India	41258	29916	37020	1.50%	1.16%	-27.49%	23.75%	-10.27%
Australia & NZ	ASX 200	Australia	7133	4825	6034	0.38%	1.93%	-32.36%	25.06%	-15.41%
	NZX 50	New Zealand	11835	9202	11584	0.69%	1.66%	-22.25%	25.89%	-2.12%
Africa	FTSE/JSE TOP 40	South Africa	52050	36302	51501	0.27%	0.68%	-30.26%	41.87%	-1.05%
	NSE-All Share	Nigeria	27756	22198	24288	-0.17%	-0.08%	-20.02%	9.42%	-12.49%

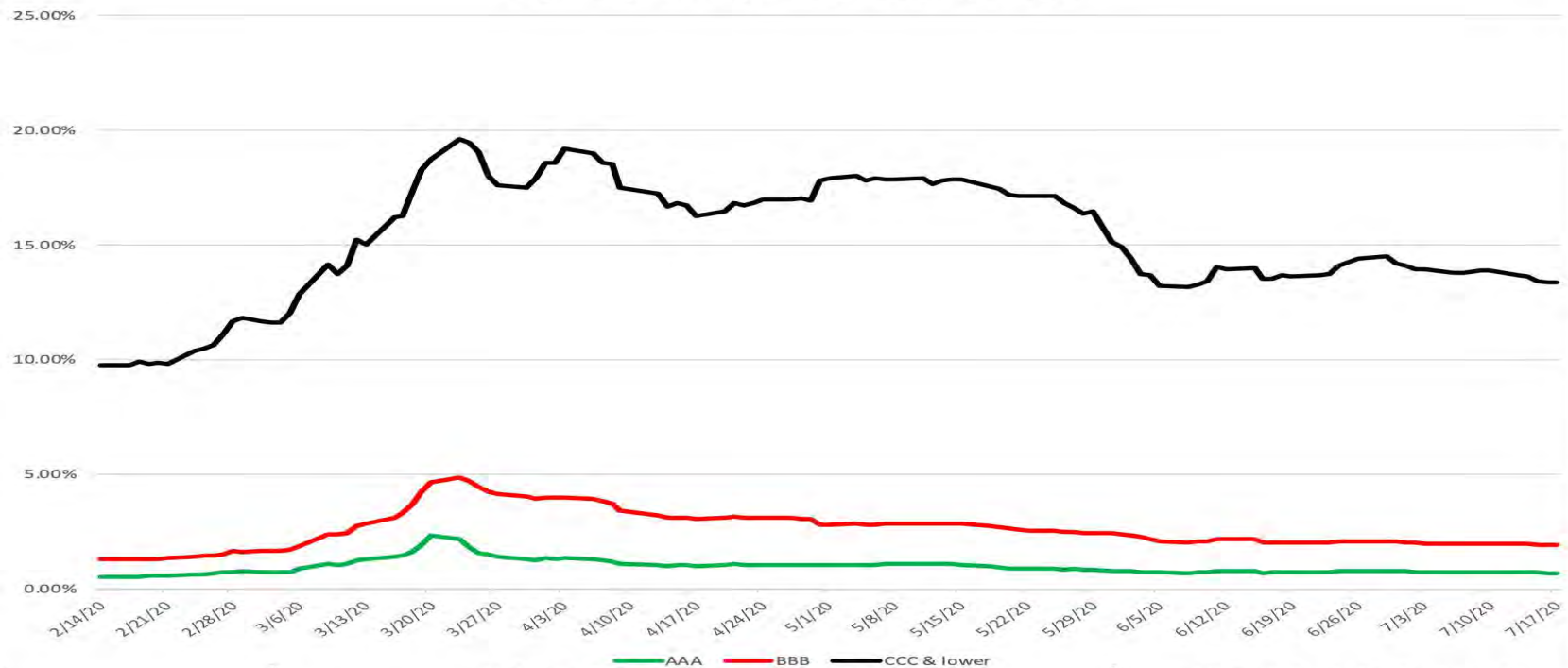
Macro Review: US Treasuries

US Treasuries: February 14, 2020 - July 17, 2020



Macro Review: Corporate Bonds

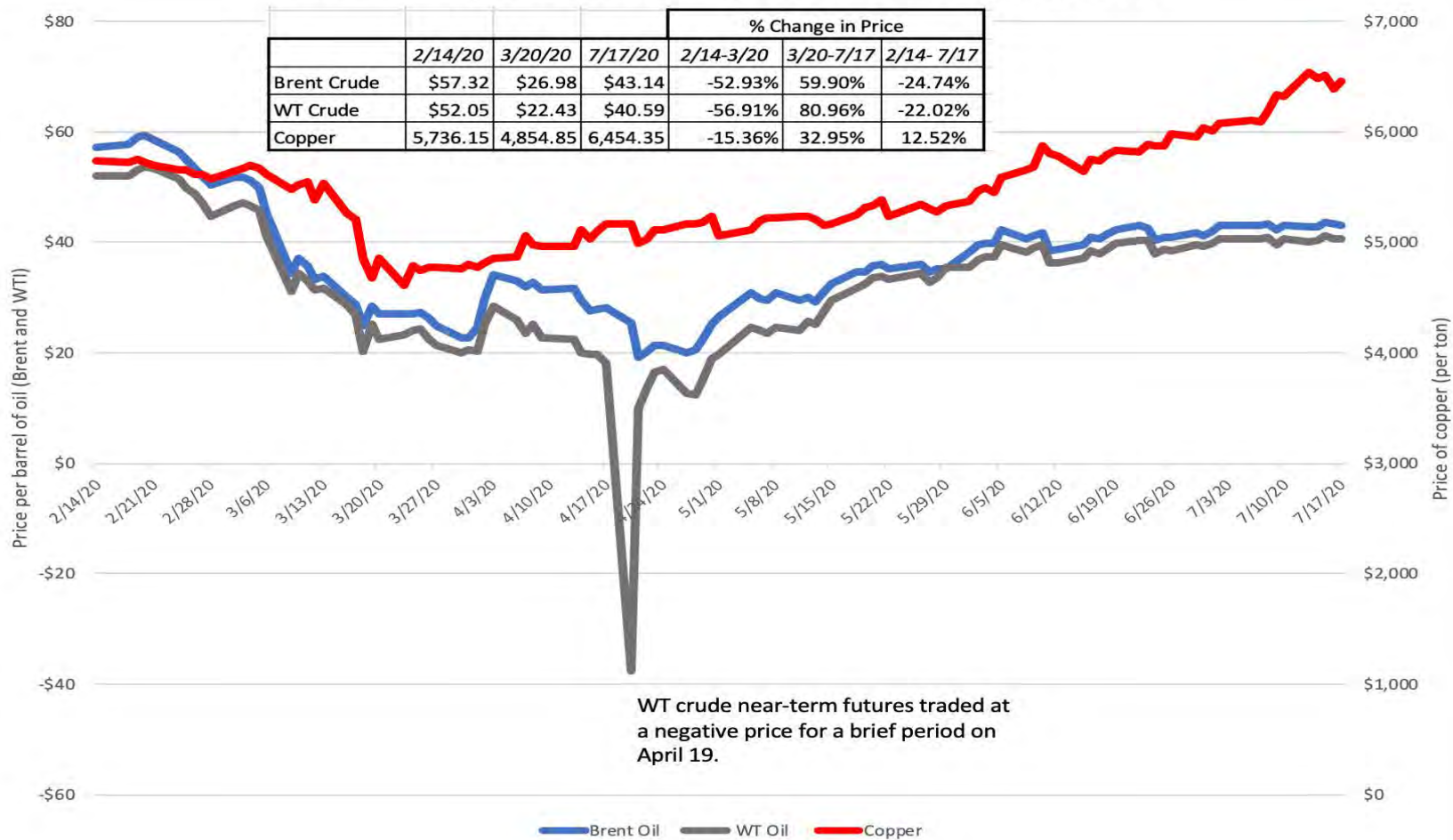
Default Spreads by Ratings Class: 2/14-7/17



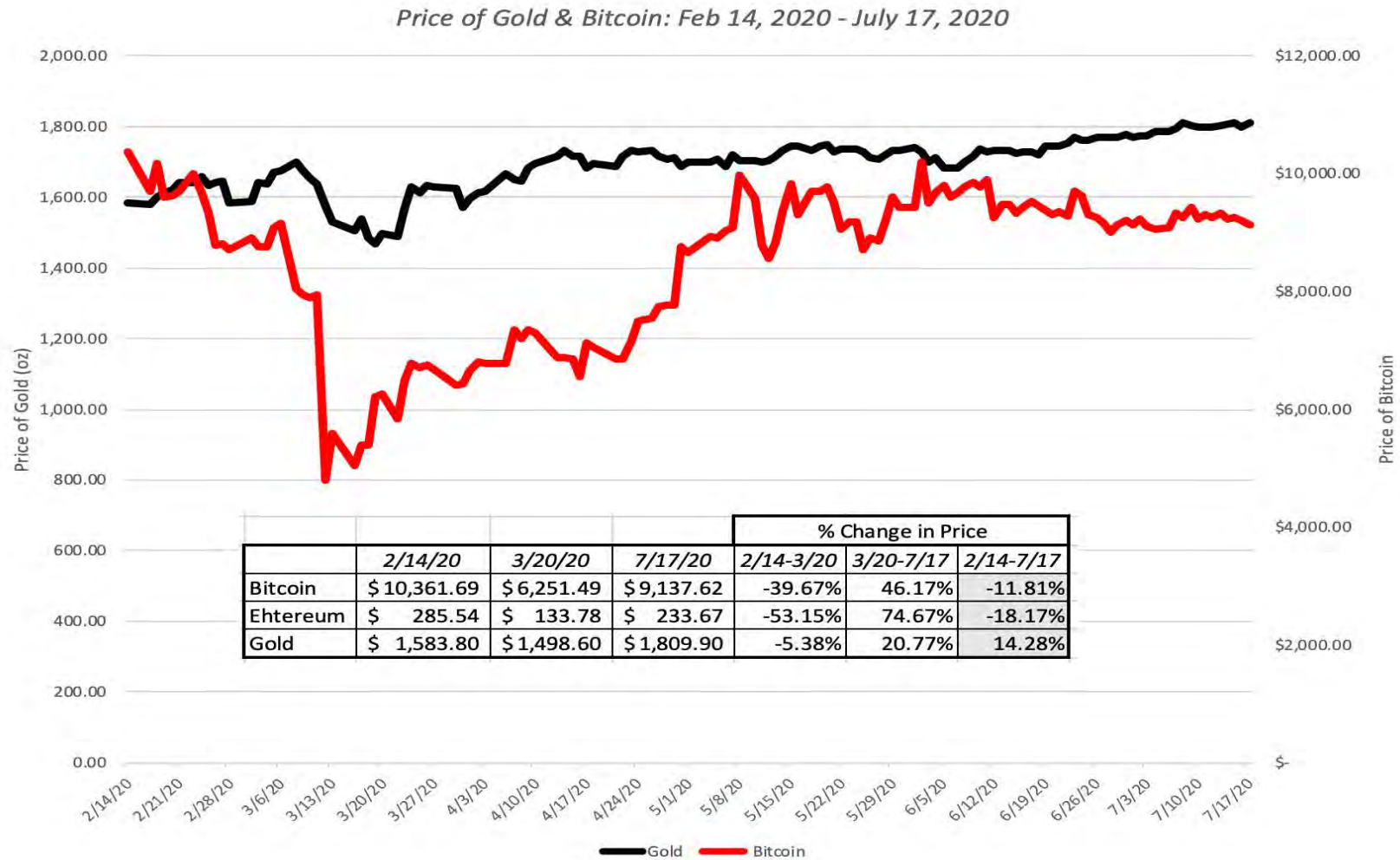
S&P Bond Rating	Yields and Spreads on Corporates						Change in default spread		
	Spread over 10-yr Treasury			Yield on Corporate			2/14-3/20	3/20-7/17	2/14 -7/17
	2/14/20	3/20/20	7/17/20	2/14/20	3/20/20	7/17/20			
AAA	0.69%	1.43%	0.83%	2.28%	2.35%	1.47%	0.74%	-0.60%	0.14%
AA	0.72%	2.64%	0.90%	2.31%	3.56%	1.54%	1.92%	-1.74%	0.18%
A	0.80%	3.15%	1.02%	2.39%	4.07%	1.66%	2.35%	-2.13%	0.22%
BBB	1.33%	3.73%	1.85%	2.92%	4.65%	2.49%	2.40%	-1.88%	0.52%
BB	1.93%	7.45%	3.82%	3.52%	8.37%	4.46%	5.52%	-3.63%	1.89%
B	3.40%	10.74%	5.56%	4.99%	11.66%	6.20%	7.34%	-5.18%	2.16%
CCC or lower	9.65%	17.81%	13.00%	11.24%	18.73%	13.64%	8.16%	-4.81%	3.35%

Macro Review: Oil & Copper

Commodity Prices: February 14, 2020 to July 17, 2020



Macro Review: Gold & Bitcoin



Global Equities: By Region

Sub Region	Number of firms	Market Capitalization (US \$)				Change in Market Cap (US \$)				% Change in Market Cap			
		2/14/20	3/20/20	5/22/20	7/17/20	2/14-3/20	3/20-5/22	5/22-7/17	2/14-7/17	2/14-3/20	3/20-5/22	5/22-7/17	2/14/7/17
Africa	725	\$ 580,341	\$ 363,726	\$ 416,438	\$ 464,668	\$ (216,615)	\$ 52,712	\$ 48,230	\$ (115,673)	-37.33%	14.49%	11.58%	-19.93%
Australia & NZ	1,380	\$ 1,613,256	\$ 948,523	\$ 1,257,885	\$ 1,474,908	\$ (664,733)	\$ 309,362	\$ 217,023	\$ (138,348)	-41.20%	32.62%	17.25%	-8.58%
Canada	1,591	\$ 2,228,039	\$ 1,351,965	\$ 1,761,566	\$ 1,981,992	\$ (876,073)	\$ 409,601	\$ 220,426	\$ (246,046)	-39.32%	30.30%	12.51%	-11.04%
China	6,225	\$ 14,035,639	\$ 12,434,328	\$ 13,070,519	\$ 15,526,291	\$ (1,601,311)	\$ 636,192	\$ 2,455,772	\$ 1,490,652	-11.41%	5.12%	18.79%	10.62%
EU & Environs	4,885	\$ 13,592,988	\$ 9,223,171	\$ 10,989,027	\$ 12,713,485	\$ (4,369,818)	\$ 1,765,856	\$ 1,724,459	\$ (879,503)	-32.15%	19.15%	15.69%	-6.47%
Eastern Europe & Russia	447	\$ 824,687	\$ 498,774	\$ 638,951	\$ 640,567	\$ (325,913)	\$ 140,177	\$ 1,616	\$ (184,120)	-39.52%	28.10%	0.25%	-22.33%
India	1,984	\$ 2,203,812	\$ 1,519,473	\$ 1,582,592	\$ 1,920,271	\$ (684,338)	\$ 63,118	\$ 337,679	\$ (283,541)	-31.05%	4.15%	21.34%	-12.87%
Japan	3,811	\$ 6,028,147	\$ 4,455,691	\$ 5,366,876	\$ 5,726,632	\$ (1,572,457)	\$ 911,186	\$ 359,756	\$ (301,515)	-26.09%	20.45%	6.70%	-5.00%
Latin America & Caribbean	1,131	\$ 2,473,516	\$ 1,446,219	\$ 1,608,737	\$ 1,877,259	\$ (1,027,297)	\$ 162,518	\$ 268,522	\$ (596,257)	-41.53%	11.24%	16.69%	-24.11%
Middle East	1,389	\$ 3,102,088	\$ 2,578,180	\$ 2,906,278	\$ 2,989,557	\$ (523,908)	\$ 328,098	\$ 83,279	\$ (112,531)	-16.89%	12.73%	2.87%	-3.63%
Small Asia	8,273	\$ 5,121,005	\$ 3,584,453	\$ 4,307,038	\$ 4,893,414	\$ (1,536,553)	\$ 722,585	\$ 586,376	\$ (227,591)	-30.00%	20.16%	13.61%	-4.44%
UK	1,122	\$ 3,067,813	\$ 1,922,871	\$ 2,332,350	\$ 2,553,894	\$ (1,144,942)	\$ 409,480	\$ 221,544	\$ (513,919)	-37.32%	21.30%	9.50%	-16.75%
United States	4,996	\$ 35,579,759	\$ 23,840,131	\$ 31,019,849	\$ 34,060,863	\$ (11,739,627)	\$ 7,179,718	\$ 3,041,014	\$ (1,518,896)	-33.00%	30.12%	9.80%	-4.27%
Global	37,960	\$ 90,451,088	\$ 64,167,504	\$ 77,258,106	\$ 86,823,800	\$ (26,283,585)	\$ 13,090,602	\$ 9,565,695	\$ (3,627,288)	-29.06%	20.40%	12.38%	-4.01%

Global Equities: By Sector

Primary Sector	Number of firms	Market Capitalization (US \$)				Change in Market Cap (US \$)				% Change in Market Cap			
		2/14/20	3/20/20	5/22/20	7/17/20	2/14-3/20	3/20-5/22	5/22-7/17	2/14-7/17	2/14-3/20	3/20-5/22	5/22-7/17	2/14/7/17
Communication Services	1,731	\$ 7,317,717	\$ 5,480,057	\$ 6,692,506	\$ 7,406,450	\$ (1,837,660)	\$ 1,212,449	\$ 713,944	\$ 88,734	-25.11%	22.12%	10.67%	1.21%
Consumer Discretionary	5,187	\$ 10,171,743	\$ 7,077,597	\$ 8,964,672	\$ 10,572,377	\$ (3,094,146)	\$ 1,887,075	\$ 1,607,705	\$ 400,633	-30.42%	26.66%	17.93%	3.94%
Consumer Staples	2,468	\$ 7,194,331	\$ 5,755,503	\$ 6,516,474	\$ 7,233,703	\$ (1,438,828)	\$ 760,971	\$ 717,230	\$ 39,372	-20.00%	13.22%	11.01%	0.55%
Energy	1,348	\$ 5,934,575	\$ 3,850,798	\$ 4,738,382	\$ 4,877,124	\$ (2,083,777)	\$ 887,584	\$ 138,742	\$ (1,057,451)	-35.11%	23.05%	2.93%	-17.82%
Financials	4,243	\$ 14,966,820	\$ 9,957,256	\$ 10,765,127	\$ 12,153,788	\$ (5,009,563)	\$ 807,870	\$ 1,388,662	\$ (2,813,031)	-33.47%	8.11%	12.90%	-18.80%
Health Care	3,469	\$ 8,912,595	\$ 6,857,781	\$ 8,827,926	\$ 9,760,935	\$ (2,054,814)	\$ 1,970,145	\$ 933,009	\$ 848,341	-23.06%	28.73%	10.57%	9.52%
Industrials	6,732	\$ 10,112,767	\$ 6,888,228	\$ 8,108,214	\$ 9,206,140	\$ (3,224,540)	\$ 1,219,986	\$ 1,097,926	\$ (906,628)	-31.89%	17.71%	13.54%	-8.97%
Information Technology	4,913	\$ 13,578,601	\$ 9,721,055	\$ 12,602,614	\$ 14,356,617	\$ (3,857,546)	\$ 2,881,559	\$ 1,754,003	\$ 778,017	-28.41%	29.64%	13.92%	5.73%
Materials	4,540	\$ 4,985,820	\$ 3,521,349	\$ 4,325,435	\$ 5,000,036	\$ (1,464,471)	\$ 804,085	\$ 674,601	\$ 14,216	-29.37%	22.83%	15.60%	0.29%
Real Estate	2,456	\$ 4,063,599	\$ 2,720,303	\$ 3,082,921	\$ 3,356,464	\$ (1,343,296)	\$ 362,618	\$ 273,543	\$ (707,135)	-33.06%	13.33%	8.87%	-17.40%
Utilities	864	\$ 3,211,907	\$ 2,337,104	\$ 2,633,215	\$ 2,899,538	\$ (874,803)	\$ 296,112	\$ 266,323	\$ (312,369)	-27.24%	12.67%	10.11%	-9.73%
Global	37,960	\$ 90,451,088	\$ 64,167,504	\$ 77,258,106	\$ 86,823,800	\$ (26,283,585)	\$ 13,090,602	\$ 9,565,695	\$ (3,627,288)	-29.06%	20.40%	12.38%	-4.01%

Global Equities: Industry Winners & Losers

Worst Performing Industries													
Industry	Number of firms	Market Capitalization (US \$)				Change in Market Cap (US \$)				% Change in Market Cap			
		2/14/20	3/20/20	5/22/20	7/17/20	2/14-3/20	3/20-5/22	5/22-7/17	2/14-7/17	2/14-3/20	3/20-5/22	5/22-7/17	2/14/7/17
Oil/Gas (Production and Exploration)	493	\$ 693,972	\$ 318,951	\$ 473,722	\$ 472,363	\$ (375,020)	\$154,771	\$ (1,360)	\$ (221,609)	-54.04%	48.52%	-0.29%	-31.93%
Air Transport	155	\$ 558,873	\$ 315,542	\$ 336,507	\$ 383,146	\$ (243,331)	\$ 20,965	\$ 46,640	\$ (175,726)	-43.54%	6.64%	13.86%	-31.44%
Aerospace/Defense	214	\$1,219,995	\$ 674,020	\$ 784,781	\$ 877,946	\$ (545,975)	\$110,761	\$ 93,164	\$ (342,049)	-44.75%	16.43%	11.87%	-28.04%
Broadcasting	126	\$ 165,337	\$ 94,492	\$ 111,952	\$ 119,888	\$ (70,845)	\$ 17,460	\$ 7,936	\$ (45,449)	-42.85%	18.48%	7.09%	-27.49%
Oil/Gas Distribution	186	\$ 645,226	\$ 355,848	\$ 470,221	\$ 469,346	\$ (289,377)	\$114,373	\$ (876)	\$ (175,880)	-44.85%	32.14%	-0.19%	-27.26%
Food Wholesalers	121	\$ 93,408	\$ 50,303	\$ 64,131	\$ 68,901	\$ (43,106)	\$ 13,828	\$ 4,770	\$ (24,507)	-46.15%	27.49%	7.44%	-26.24%
Banks (Regional)	803	\$1,010,949	\$ 656,582	\$ 710,559	\$ 759,550	\$ (354,367)	\$ 53,977	\$ 48,990	\$ (251,399)	-35.05%	8.22%	6.89%	-24.87%
Reinsurance	34	\$ 180,664	\$ 98,286	\$ 115,458	\$ 137,368	\$ (82,379)	\$ 17,172	\$ 21,910	\$ (43,296)	-45.60%	17.47%	18.98%	-23.97%
Hotel/Gaming	574	\$ 711,791	\$ 384,350	\$ 494,130	\$ 544,831	\$ (327,440)	\$109,780	\$ 50,701	\$ (166,959)	-46.00%	28.56%	10.26%	-23.46%
Bank (Money Center)	629	\$6,848,003	\$4,654,398	\$4,743,951	\$5,243,515	\$ (2,193,604)	\$ 89,553	\$499,564	\$ (1,604,487)	-32.03%	1.92%	10.53%	-23.43%
Best Performing Industries													
Industry	Number of firms	Market Capitalization (US \$)				Change in Market Cap (US \$)				% Change in Market Cap			
		2/14/20	3/20/20	5/22/20	7/17/20	2/14-3/20	3/20-5/22	5/22-7/17	2/14-7/17	2/14-3/20	3/20-5/22	5/22-7/17	2/14/7/17
Software (Internet)	110	\$ 226,454	\$ 166,465	\$ 286,700	\$ 323,843	\$ (59,988)	\$120,235	\$ 37,143	\$ 97,390	-26.49%	72.23%	12.96%	43.01%
Retail (Online)	255	\$2,457,236	\$1,991,178	\$2,635,256	\$3,223,694	\$ (466,059)	\$644,079	\$588,438	\$ 766,458	-18.97%	32.35%	22.33%	31.19%
Precious Metals	522	\$ 419,174	\$ 297,425	\$ 483,048	\$ 546,917	\$ (121,748)	\$185,623	\$ 63,869	\$ 127,743	-29.04%	62.41%	13.22%	30.48%
Drugs (Biotechnology)	915	\$1,406,869	\$1,133,255	\$1,541,746	\$1,773,440	\$ (273,614)	\$408,491	\$231,694	\$ 366,571	-19.45%	36.05%	15.03%	26.06%
Healthcare Information and Technology	317	\$ 771,555	\$ 606,652	\$ 826,228	\$ 960,423	\$ (164,903)	\$219,576	\$134,194	\$ 188,868	-21.37%	36.19%	16.24%	24.48%
Education	193	\$ 194,194	\$ 151,211	\$ 176,709	\$ 223,915	\$ (42,983)	\$ 25,497	\$ 47,206	\$ 29,721	-22.13%	16.86%	26.71%	15.30%
Entertainment	525	\$1,115,900	\$ 843,682	\$1,083,757	\$1,254,954	\$ (272,218)	\$240,075	\$171,197	\$ 139,054	-24.39%	28.46%	15.80%	12.46%
Software (System & Application)	1,084	\$3,761,431	\$2,789,268	\$3,691,214	\$4,135,406	\$ (972,163)	\$901,947	\$444,192	\$ 373,975	-25.85%	32.34%	12.03%	9.94%
Healthcare Products	635	\$1,832,387	\$1,350,787	\$1,795,988	\$2,011,121	\$ (481,601)	\$445,201	\$215,134	\$ 178,734	-26.28%	32.96%	11.98%	9.75%
Semiconductor Equip	285	\$ 525,747	\$ 340,467	\$ 481,655	\$ 574,369	\$ (185,280)	\$141,188	\$ 92,714	\$ 48,622	-35.24%	41.47%	19.25%	9.25%

A Sum-up on Markets..

- Uncertainty barometer: The market has had its ups and downs, with volatility in the mix. It has looked uncertain about direction, with big up days followed by big down days. It is reflecting the uncertainty that we all feel, on a day-to-day basis.
- Order in chaos: When we look at the full effects, the market has been remarkably orderly in how it has meted out punishment and doled out reward.
- Liquidity is a solution, not a problem: To those who argued that markets should be shut down, this crisis should be a reminder that removing liquidity during a crisis often makes it worse, rather than better.

Lesson 2: Opinions are trumped by data...

- Every crisis brings forth explanations for why it is happening, and what we should do about it, with half-baked rationales and anecdotal evidence. Listen, with respect, but verify for yourself.
- For people with agendas, the crisis has offered an opportunity to not only say, “I told you so”, but also to push for legal and regulatory changes to advance their viewpoints.
- Here are two stories that are making the rounds
 - Just punishment: The market drop is well-deserved punishment for those who invested in high flying companies and on momentum.
 - Buybacks are the problem: The surge in buybacks are caused companies to become weak and exposed, and the market is punishing those companies.

Value versus Growth: A pre-crisis lead in..

Value vs Growth: US Stocks, by decade

	<i>Lowest PBV</i>	<i>Highest PBV</i>	<i>Difference</i>	<i>Lowest PE</i>	<i>Highest PE</i>	<i>Difference</i>
1930-39	6.04%	4.27%	1.77%	NA	NA	NA
1940-49	22.96%	7.43%	15.53%	NA	NA	NA
1950-59	25.06%	20.92%	4.14%	34.33%	19.16%	15.17%
1960-69	13.23%	9.57%	3.66%	15.27%	9.79%	5.48%
1970-79	17.05%	3.89%	13.16%	14.83%	2.28%	12.54%
1980-89	24.48%	12.94%	11.54%	18.38%	14.46%	3.92%
1990-99	20.17%	21.88%	-1.71%	21.61%	22.03%	-0.41%
2000-09	8.59%	-0.49%	9.08%	13.84%	0.61%	13.23%
2010-19	11.27%	16.67%	-5.39%	11.35%	17.09%	-5.75%

The under performance of value has played out not only in the mutual fund business, but it has also brought many legendary value investors down to earth. We were told that this was temporary, and that a crisis would put value back on top again...

PE and Market Returns – During Crisis

decile(Trailing PE)	Number of firms	Market Capitalization (US \$)				Change in Market Cap (US \$)				% Change in Market Cap			
		2/14/20	3/20/20	5/22/20	7/17/20	2/14-3/20	3/20-5/22	5/22-7/17	2/14-7/17	2/14-3/20	3/20-5/22	5/22-7/17	2/14/7/17
Bottom decile	2,478	\$ 2,958,320	\$ 2,304,688	\$ 2,487,820	\$ 2,711,791	\$ (653,632)	\$ 183,132	\$ 223,970	\$ (246,529)	-22.09%	7.95%	9.00%	-8.33%
2nd decile	2,478	\$ 3,730,146	\$ 2,600,424	\$ 2,908,409	\$ 3,208,972	\$ (1,129,722)	\$ 307,985	\$ 300,563	\$ (521,174)	-30.29%	11.84%	10.33%	-13.97%
3rd decile	2,477	\$ 4,883,497	\$ 3,333,788	\$ 3,835,161	\$ 4,242,892	\$ (1,549,709)	\$ 501,373	\$ 407,731	\$ (640,605)	-31.73%	15.04%	10.63%	-13.12%
4th decile	2,480	\$ 6,491,812	\$ 4,452,656	\$ 5,117,351	\$ 5,663,346	\$ (2,039,155)	\$ 664,695	\$ 545,995	\$ (828,466)	-31.41%	14.93%	10.67%	-12.76%
5th decile	2,478	\$ 8,036,977	\$ 5,516,372	\$ 6,425,671	\$ 7,043,446	\$ (2,520,606)	\$ 909,300	\$ 617,774	\$ (993,531)	-31.36%	16.48%	9.61%	-12.36%
6th decile	2,478	\$ 12,169,682	\$ 8,975,532	\$ 10,432,585	\$ 11,476,328	\$ (3,194,151)	\$ 1,457,054	\$ 1,043,743	\$ (693,354)	-26.25%	16.23%	10.00%	-5.70%
7th decile	2,479	\$ 13,239,428	\$ 9,473,098	\$ 11,709,484	\$ 13,252,220	\$ (3,766,330)	\$ 2,236,387	\$ 1,542,736	\$ 12,792	-28.45%	23.61%	13.18%	0.10%
8th decile	2,478	\$ 13,697,261	\$ 9,935,147	\$ 12,092,317	\$ 13,622,618	\$ (3,762,113)	\$ 2,157,169	\$ 1,530,302	\$ (74,642)	-27.47%	21.71%	12.66%	-0.54%
9th decile	2,478	\$ 10,818,892	\$ 7,883,240	\$ 9,649,331	\$ 10,886,440	\$ (2,935,652)	\$ 1,766,091	\$ 1,237,109	\$ 67,548	-27.13%	22.40%	12.82%	0.62%
Top decile	2,479	\$ 6,234,486	\$ 4,639,706	\$ 5,928,549	\$ 6,908,336	\$ (1,594,780)	\$ 1,288,842	\$ 979,787	\$ 673,849	-25.58%	27.78%	16.53%	10.81%
Negative Earnings	13,177	\$ 8,190,587	\$ 5,052,853	\$ 6,671,427	\$ 7,807,411	\$ (3,137,734)	\$ 1,618,574	\$ 1,135,984	\$ (383,176)	-38.31%	32.03%	17.03%	-4.68%
All firms	37,960	\$ 90,451,088	\$ 64,167,504	\$ 77,258,106	\$ 86,823,800	\$ (26,283,585)	\$ 13,090,602	\$ 9,565,695	\$ (3,627,288)	-29.06%	20.40%	12.38%	-4.01%

Dividends and Market Returns

Dividend Yield	Number of firms	Market Capitalization (US \$)				Change in Market Cap (US \$)				% Change in Market Cap			
		2/14/20	3/20/20	5/22/20	7/17/20	2/14-3/20	3/20-5/22	5/22-7/17	2/14-7/17	2/14-3/20	3/20-5/22	5/22-7/17	2/14/7/17
Non-Dividend Paying	17,511	\$ 21,226,096	\$ 14,799,581	\$ 18,899,952	\$ 21,673,846	\$ (6,426,515)	\$ 4,100,371	\$ 2,773,894	\$ 447,750	-30.28%	27.71%	14.68%	2.11%
Bottom quintile	4,089	\$ 14,311,088	\$ 10,499,288	\$ 12,945,049	\$ 15,045,533	\$ (3,811,800)	\$ 2,445,761	\$ 2,100,484	\$ 734,446	-26.64%	23.29%	16.23%	5.13%
2nd quintile	4,090	\$ 16,695,402	\$ 11,899,079	\$ 14,521,477	\$ 16,316,540	\$ (4,796,324)	\$ 2,622,398	\$ 1,795,063	\$ (378,862)	-28.73%	22.04%	12.36%	-2.27%
3rd quintile	4,090	\$ 14,285,438	\$ 9,978,241	\$ 11,753,066	\$ 12,978,405	\$ (4,307,197)	\$ 1,774,825	\$ 1,225,339	\$ (1,307,033)	-30.15%	17.79%	10.43%	-9.15%
4th quintile	4,090	\$ 15,089,384	\$ 10,921,395	\$ 12,343,116	\$ 13,385,982	\$ (4,167,990)	\$ 1,421,721	\$ 1,042,866	\$ (1,703,402)	-27.62%	13.02%	8.45%	-11.29%
Top quintile	4,090	\$ 8,843,679	\$ 6,069,920	\$ 6,795,445	\$ 7,423,493	\$ (2,773,760)	\$ 725,525	\$ 628,048	\$ (1,420,186)	-31.36%	11.95%	9.24%	-16.06%

Momentum and Damage

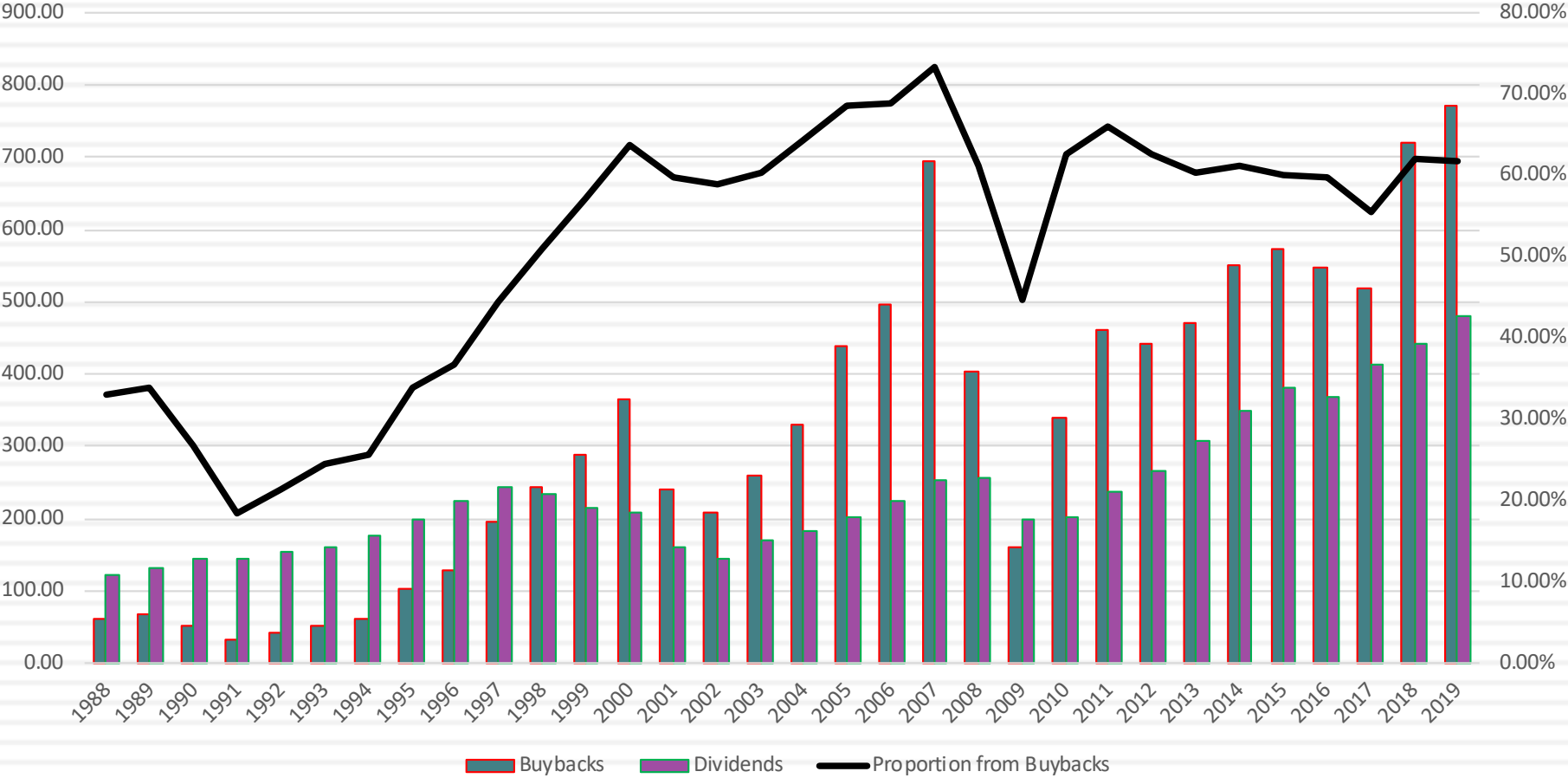
Price Momentum	Number of firms	Market Capitalization (US \$)				Change in Market Cap (US \$)				% Change in Market Cap			
		2/14/20	3/20/20	5/22/20	7/17/20	2/14-3/20	3/20-5/22	5/22-7/17	2/14-7/17	2/14-3/20	3/20-5/22	5/22-7/17	2/14/7/17
Bottom decile	3,546	\$ 908,171	\$ 569,861	\$ 728,541	\$ 854,061	\$ (338,310)	\$ 158,680	\$ 125,520	\$ (54,110)	-37.25%	27.85%	17.23%	-5.96%
2nd decile	3,546	\$ 2,458,137	\$ 1,685,780	\$ 1,901,420	\$ 2,131,054	\$ (772,357)	\$ 215,640	\$ 229,634	\$ (327,084)	-31.42%	12.79%	12.08%	-13.31%
3rd decile	3,546	\$ 5,301,074	\$ 3,559,672	\$ 4,064,507	\$ 4,455,424	\$ (1,741,402)	\$ 504,835	\$ 390,917	\$ (845,650)	-32.85%	14.18%	9.62%	-15.95%
4th decile	3,547	\$ 5,694,568	\$ 3,959,746	\$ 4,434,562	\$ 4,900,526	\$ (1,734,822)	\$ 474,816	\$ 465,963	\$ (794,043)	-30.46%	11.99%	10.51%	-13.94%
5th decile	3,546	\$ 7,489,357	\$ 5,342,279	\$ 6,104,608	\$ 6,727,945	\$ (2,147,078)	\$ 762,330	\$ 623,337	\$ (761,412)	-28.67%	14.27%	10.21%	-10.17%
6th decile	3,546	\$ 8,049,023	\$ 5,777,603	\$ 6,605,309	\$ 7,340,094	\$ (2,271,420)	\$ 827,706	\$ 734,786	\$ (708,929)	-28.22%	14.33%	11.12%	-8.81%
7th decile	3,547	\$ 12,847,243	\$ 9,049,986	\$ 10,573,192	\$ 11,698,216	\$ (3,797,257)	\$ 1,523,206	\$ 1,125,023	\$ (1,149,028)	-29.56%	16.83%	10.64%	-8.94%
8th decile	3,546	\$ 21,456,217	\$ 15,087,088	\$ 18,519,766	\$ 20,723,031	\$ (6,369,129)	\$ 3,432,678	\$ 2,203,266	\$ (733,185)	-29.68%	22.75%	11.90%	-3.42%
9th decile	3,546	\$ 13,740,094	\$ 9,745,072	\$ 12,206,251	\$ 13,915,056	\$ (3,995,023)	\$ 2,461,179	\$ 1,708,805	\$ 174,961	-29.08%	25.26%	14.00%	1.27%
Top decile	3,547	\$ 8,947,749	\$ 6,463,816	\$ 8,673,657	\$ 10,314,302	\$ (2,483,933)	\$ 2,209,840	\$ 1,640,646	\$ 1,366,554	-27.76%	34.19%	18.92%	15.27%

Bottom Line on Value vs Growth

- Value failed this crisis test: During this crisis, following the value investing playbook of buying low PE stocks with high dividend yields would have resulted in far worse punishment being meted out than buying high PE stocks, based upon momentum.
- In my view: I believe that value investing has become ritualistic (worshiping at the altar of Buffett and Munger, and paying lip service to Ben Graham) and righteous (with finger wagging and worse reserved for anyone who invested in growth or tech companies).
- Hope? On a hopeful note, I think that value investing can recover, but only if it is open to more flexible thinking about value, less hero worship and less of a sense of entitlement.

The Buyback Bogeyman...

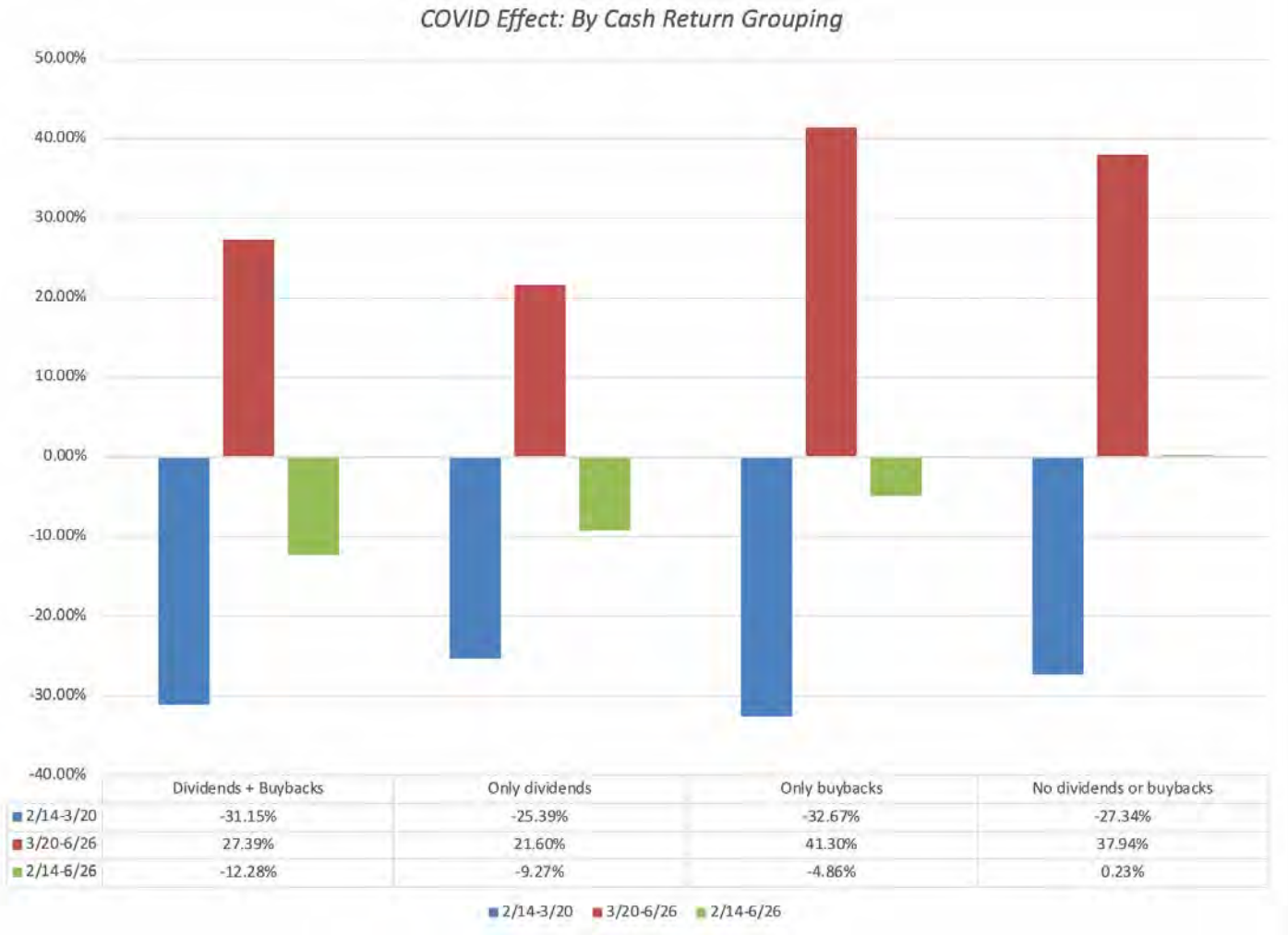
Dividends and Buybacks on S&P 500: 1988- 2019



Cash Returns and the Crisis...

<i>(Dividends+Buybacks)/ Net Income</i>	<i>Number of firms</i>	<i>Market Cap (\$ millions)</i>			<i>Change in Market Cap (\$ millions)</i>			<i>% Change in Market Cap</i>		
		<i>2/14/20</i>	<i>3/20/20</i>	<i>6/26/20</i>	<i>2/14-3/20</i>	<i>3/20-6/26</i>	<i>2/14-6/26</i>	<i>2/14-3/20</i>	<i>3/20-6/26</i>	<i>2/14-6/26</i>
Bottom decile	1,919	\$ 2,967,674	\$ 2,150,563	\$ 2,839,196	\$ (817,111)	\$ 688,633	\$ (128,479)	-27.53%	32.02%	-4.33%
2nd decile	1,920	\$ 7,938,475	\$ 5,741,000	\$ 7,662,658	\$ (2,197,474)	\$ 1,921,657	\$ (275,817)	-27.68%	33.47%	-3.47%
3rd decile	1,920	\$ 6,104,819	\$ 4,432,951	\$ 5,863,841	\$ (1,671,867)	\$ 1,430,889	\$ (240,978)	-27.39%	32.28%	-3.95%
4th decile	1,920	\$ 8,044,613	\$ 5,632,176	\$ 7,393,756	\$ (2,412,437)	\$ 1,761,580	\$ (650,857)	-29.99%	31.28%	-8.09%
5th decile	1,920	\$ 8,667,724	\$ 6,133,595	\$ 7,924,867	\$ (2,534,129)	\$ 1,791,272	\$ (742,857)	-29.24%	29.20%	-8.57%
6th decile	1,920	\$ 8,978,606	\$ 6,446,483	\$ 8,015,325	\$ (2,532,122)	\$ 1,568,841	\$ (963,281)	-28.20%	24.34%	-10.73%
7th decile	1,920	\$11,138,692	\$ 8,053,634	\$ 9,840,747	\$ (3,085,058)	\$ 1,787,113	\$ (1,297,945)	-27.70%	22.19%	-11.65%
8th decile	1,920	\$ 8,495,881	\$ 6,387,028	\$ 7,615,372	\$ (2,108,853)	\$ 1,228,344	\$ (880,509)	-24.82%	19.23%	-10.36%
9th decile	1,920	\$ 5,686,394	\$ 4,101,973	\$ 4,915,426	\$ (1,584,421)	\$ 813,453	\$ (770,968)	-27.86%	19.83%	-13.56%
Top decile	1,920	\$ 5,172,790	\$ 3,471,244	\$ 4,283,611	\$ (1,701,546)	\$ 812,367	\$ (889,179)	-32.89%	23.40%	-17.19%

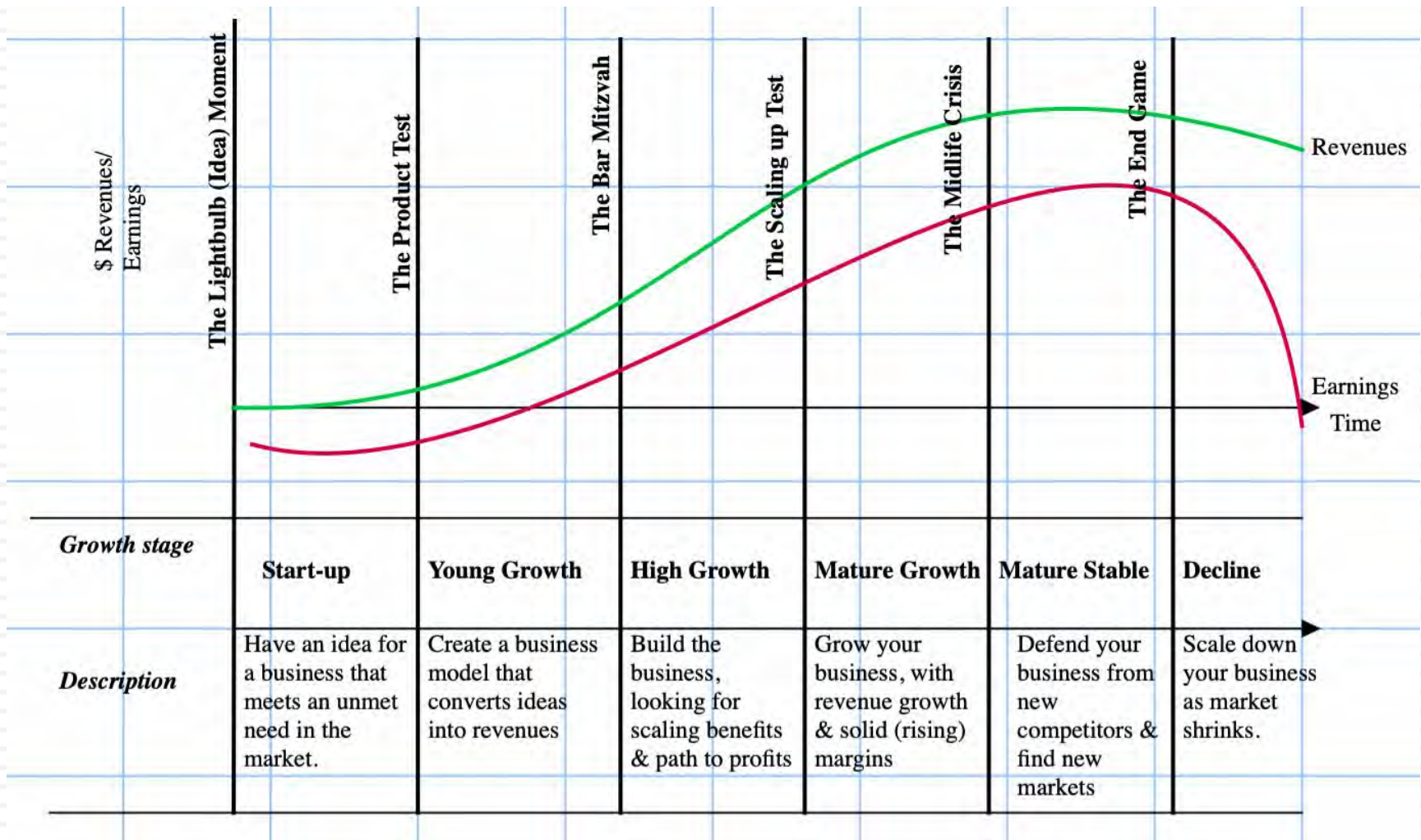
A Test on Buybacks..



The Real Culprit...

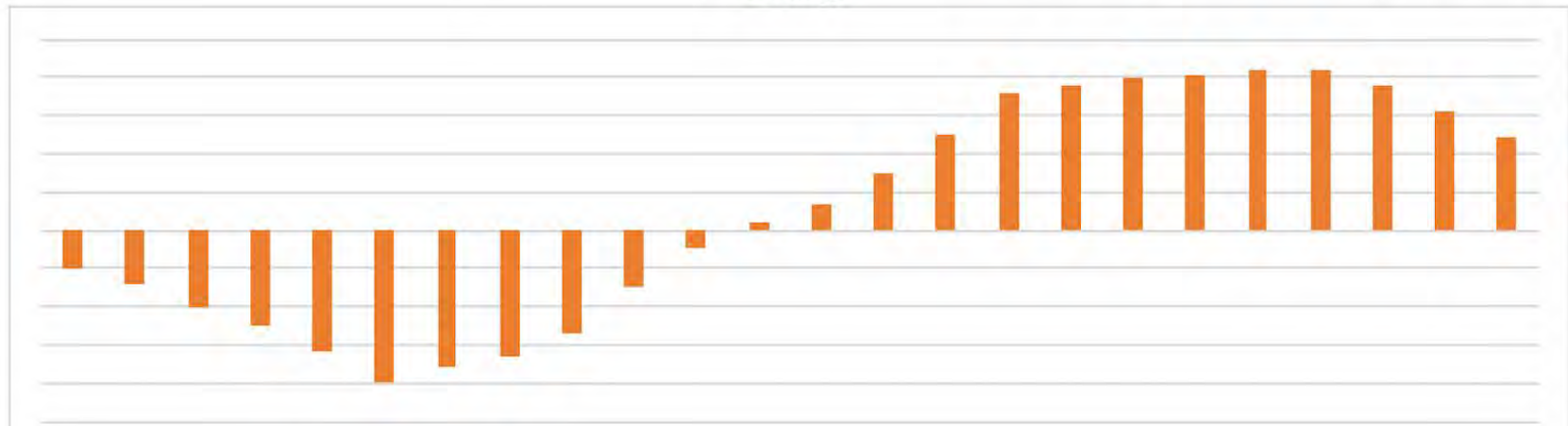
decile(Net Debt/EBITDA)	Number of firms	Market Capitalization (US \$)				Change in Market Cap (US \$)				% Change in Market Cap			
		2/14/20	3/20/20	5/22/20	7/17/20	2/14-3/20	3/20-5/22	5/22-7/17	2/14-7/17	2/14-3/20	3/20-5/22	5/22-7/17	2/14/7/17
Bottom decile	2,603	\$ 2,435,267	\$ 1,932,943	\$ 2,268,704	\$ 2,735,372	\$ (502,324)	\$ 335,761	\$ 466,669	\$ 300,106	-20.63%	17.37%	20.57%	12.32%
2nd decile	2,604	\$ 5,379,573	\$ 4,160,185	\$ 5,208,917	\$ 6,019,389	\$ (1,219,388)	\$ 1,048,732	\$ 810,471	\$ 639,815	-22.67%	25.21%	15.56%	11.89%
3rd decile	2,604	\$ 8,234,742	\$ 6,277,805	\$ 7,681,990	\$ 8,654,953	\$ (1,956,937)	\$ 1,404,184	\$ 972,963	\$ 420,211	-23.76%	22.37%	12.67%	5.10%
4th decile	2,604	\$ 8,156,430	\$ 6,298,765	\$ 7,541,409	\$ 8,410,048	\$ (1,857,665)	\$ 1,242,644	\$ 868,639	\$ 253,618	-22.78%	19.73%	11.52%	3.11%
5th decile	2,604	\$ 12,479,288	\$ 9,068,773	\$ 11,378,430	\$ 12,852,242	\$ (3,410,515)	\$ 2,309,657	\$ 1,473,812	\$ 372,953	-27.33%	25.47%	12.95%	2.99%
6th decile	2,603	\$ 12,123,846	\$ 8,544,165	\$ 10,224,055	\$ 11,275,767	\$ (3,579,681)	\$ 1,679,889	\$ 1,051,712	\$ (848,080)	-29.53%	19.66%	10.29%	-7.00%
7th decile	2,604	\$ 11,057,928	\$ 7,560,374	\$ 9,193,570	\$ 10,312,129	\$ (3,497,554)	\$ 1,633,196	\$ 1,118,559	\$ (745,799)	-31.63%	21.60%	12.17%	-6.74%
8th decile	2,604	\$ 8,201,697	\$ 5,507,080	\$ 6,646,543	\$ 7,326,942	\$ (2,694,617)	\$ 1,139,462	\$ 680,399	\$ (874,755)	-32.85%	20.69%	10.24%	-10.67%
9th decile	2,604	\$ 6,576,259	\$ 4,157,572	\$ 4,984,287	\$ 5,493,768	\$ (2,418,687)	\$ 826,714	\$ 509,481	\$ (1,082,491)	-36.78%	19.88%	10.22%	-16.46%
Top decile	2,604	\$ 2,317,194	\$ 1,502,022	\$ 1,737,441	\$ 1,958,254	\$ (815,172)	\$ 235,418	\$ 220,813	\$ (358,941)	-35.18%	15.67%	12.71%	-15.49%

The Corporate Life Cycle



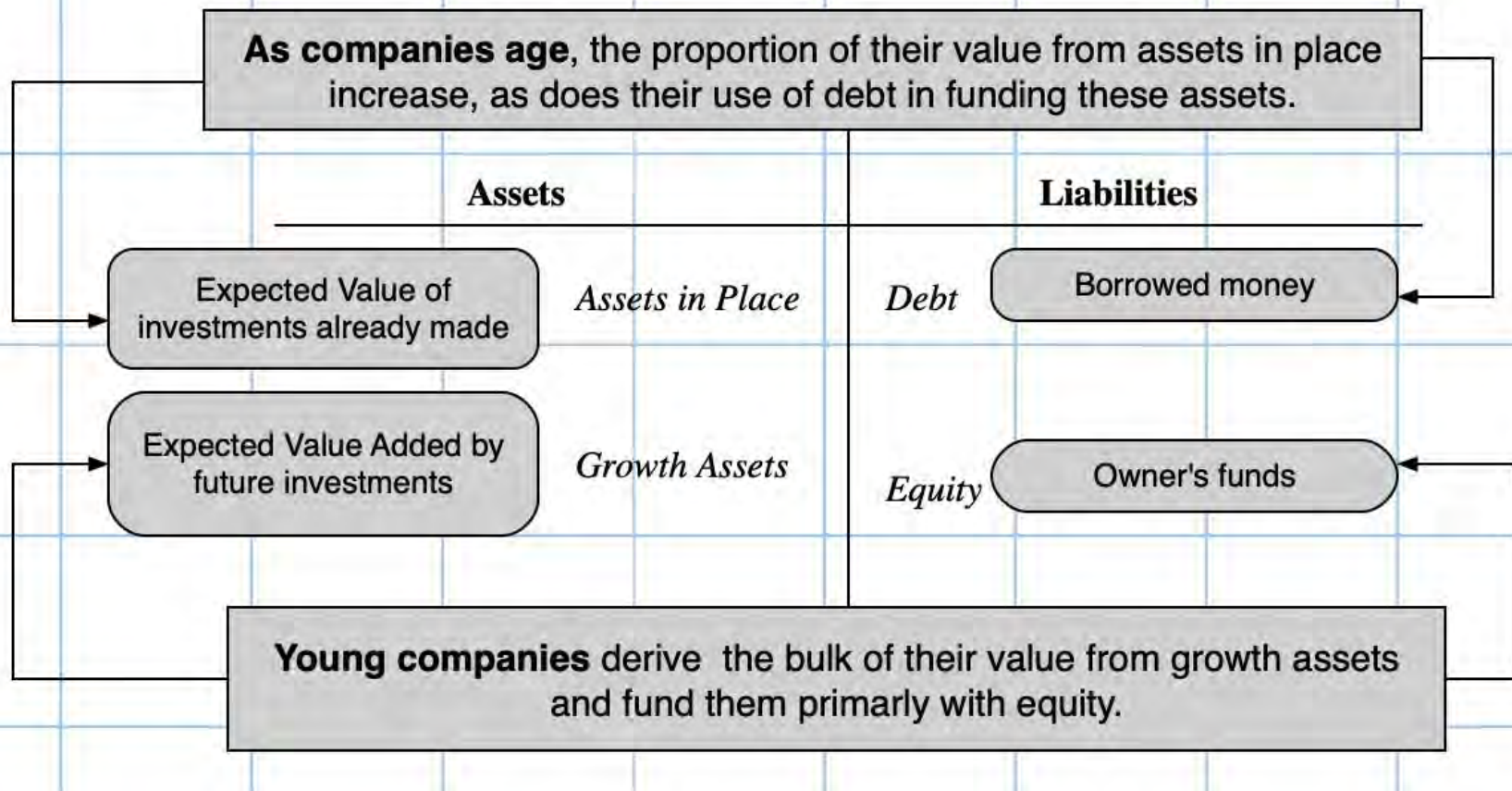
Cashflows across the life cycle...

<i>Growth stage</i>	Stage 1 Start-up	Stage 2 Young Growth	Stage 3: High Growth	Stage 4 Mature Growth	Stage 5 Mature Stable	Stage 6 Decline
<i>Operating Profits</i>	Large operating losses	Operating losses narrow	Operating profits turn positive	Operating profits grow quickly	Operating profits level off	Operating profits decline
<i>Reinvestment</i>	Very high	High	Remain large, but scale down as percent of firm	Decrease	Scale down further	Divestment
<i>Free Cash Flow to Firm</i>	Negative	Negative	Cross over to positive territory	Positive & growing	Positive & stable	Positive & dropping



And a Balance Sheet perspective...

The Corporate Life Cycle: A Balance Sheet Perspective



How crisis affect companies across the life cycle...

- Start up and very young companies: For young companies, the challenge is survival, since they mostly have small or no revenues, and are money losers. They need capital to make it to the next and more lucrative phases in the life cycle, and in a crisis, access to capital (from venture capitalists or public equity) can shut down or become prohibitively expensive, as investors become more fearful.
- Young growth companies: For young growth companies that have turned the corner on profitability, capital access still remains critical since it is needed for future growth. Without that capital, the values of these firms will shrink towards assets in place, and in a crisis, these firms have to hunker down and scale back their growth ambitions.
- Mature firms: For mature firms, the bigger damage from a crisis is the punishment it metes to assets in place, as the economy slows or goes into recession, and consumers cut back on spending. The effect will be greater on companies that sell discretionary products than on companies that sell staples.
- Declining firms: For declining firms, especially those with substantial debt, a crisis can tip them into distress and default, especially if access to risk capital declines, and risk premiums increase.

COVID: Young versus Old

Age of company	Number of firms	Market Capitalization (US \$)				Change in Market Cap (US \$)				% Change in Market Cap			
		2/14/20	3/20/20	5/22/20	7/17/20	2/14-3/20	3/20-5/22	5/22-7/17	2/14-7/17	2/14-3/20	3/20-5/22	5/22-7/17	2/14/7/17
Youngest	2,989	\$ 2,675,490	\$ 1,860,200	\$ 2,462,845	\$ 2,851,720	\$ (815,290)	\$ 602,645	\$ 388,876	\$ 176,230	-30.47%	32.40%	15.79%	6.59%
2nd decile	3,084	\$ 3,307,738	\$ 2,360,484	\$ 2,937,986	\$ 3,395,529	\$ (947,254)	\$ 577,502	\$ 457,542	\$ 87,791	-28.64%	24.47%	15.57%	2.65%
3rd decile	3,765	\$ 5,365,896	\$ 4,005,202	\$ 5,014,458	\$ 5,863,618	\$ (1,360,694)	\$ 1,009,255	\$ 849,160	\$ 497,722	-25.36%	25.20%	16.93%	9.28%
4th decile	3,284	\$ 8,183,079	\$ 6,248,620	\$ 7,414,872	\$ 8,457,421	\$ (1,934,460)	\$ 1,166,253	\$1,042,548	\$ 274,341	-23.64%	18.66%	14.06%	3.35%
5th decile	3,446	\$ 6,658,066	\$ 5,118,354	\$ 6,247,885	\$ 7,188,799	\$ (1,539,712)	\$ 1,129,531	\$ 940,914	\$ 530,733	-23.13%	22.07%	15.06%	7.97%
6th decile	3,597	\$ 6,734,867	\$ 4,926,946	\$ 5,735,010	\$ 6,470,710	\$ (1,807,921)	\$ 808,064	\$ 735,700	\$ (264,157)	-26.84%	16.40%	12.83%	-3.92%
7th decile	3,420	\$ 9,256,513	\$ 6,592,209	\$ 8,339,484	\$ 9,325,488	\$ (2,664,304)	\$ 1,747,275	\$ 986,004	\$ 68,975	-28.78%	26.51%	11.82%	0.75%
8th decile	3,435	\$ 7,651,522	\$ 5,080,712	\$ 6,250,104	\$ 6,921,449	\$ (2,570,809)	\$ 1,169,391	\$ 671,345	\$ (730,072)	-33.60%	23.02%	10.74%	-9.54%
9th decile	3,396	\$ 12,395,319	\$ 8,968,250	\$ 10,432,486	\$ 11,371,856	\$ (3,427,069)	\$ 1,464,236	\$ 939,370	\$ (1,023,463)	-27.65%	16.33%	9.00%	-8.26%
Oldest	3,413	\$ 24,312,918	\$ 16,201,520	\$ 19,137,789	\$ 21,150,936	\$ (8,111,398)	\$ 2,936,268	\$ 2,013,147	\$ (3,161,982)	-33.36%	18.12%	10.52%	-13.01%

COVID: High Growth versus Low Growth

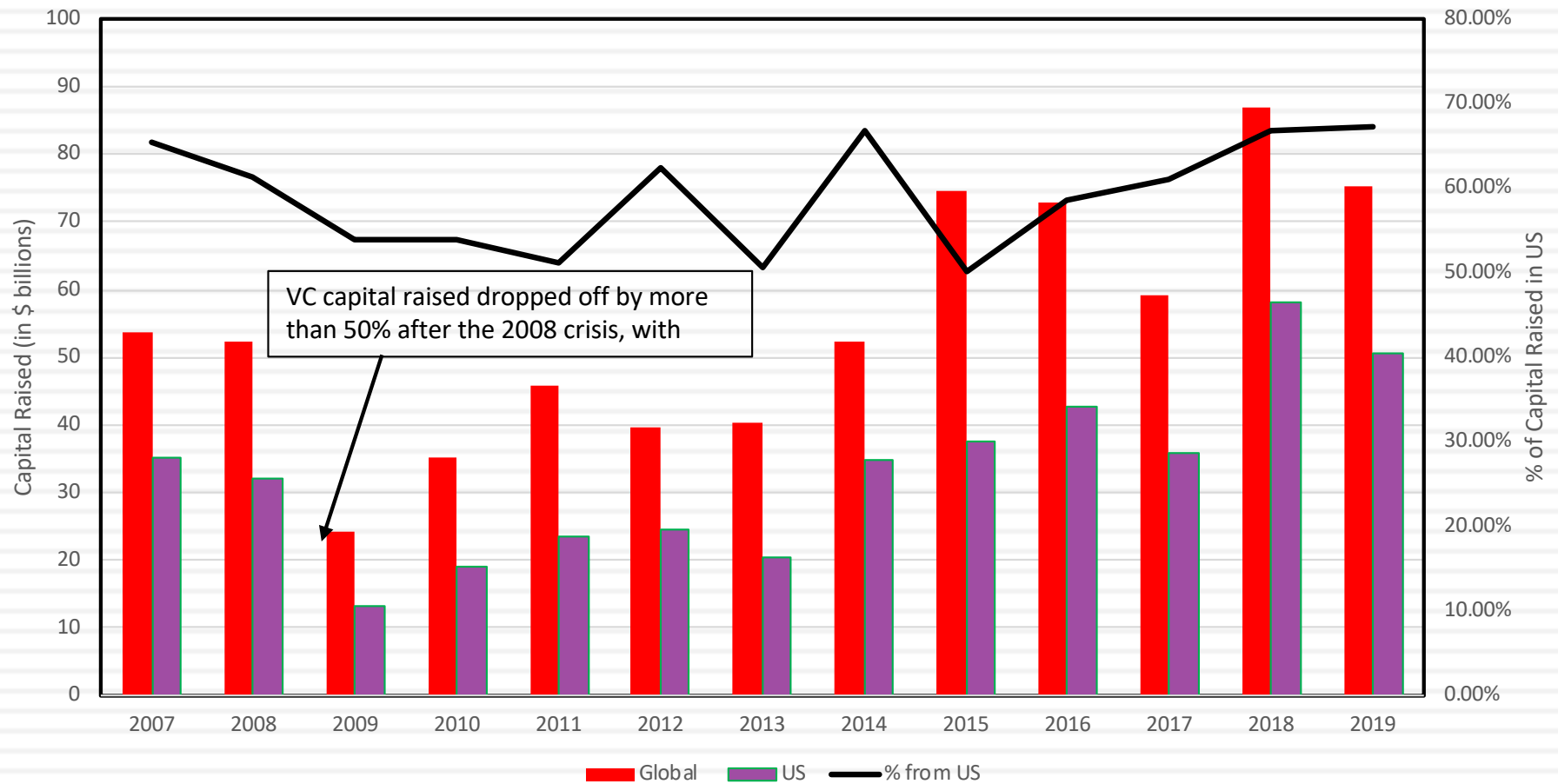
Revenue Growth	Number of firms	Market Capitalization (US \$)				Change in Market Cap (US \$)				% Change in Market Cap			
		2/14/20	3/20/20	5/22/20	7/17/20	2/14-3/20	3/20-5/22	5/22-7/17	2/14-7/17	2/14-3/20	3/20-5/22	5/22-7/17	2/14/7/17
Bottom decile	1,419	\$ 8,090,878	\$ 4,897,727	\$ 5,885,469	\$ 6,271,246	\$ (3,193,151)	\$ 987,742	\$ 385,777	\$ (1,819,632)	-39.47%	20.17%	6.55%	-22.49%
2nd decile	1,420	\$ 8,735,921	\$ 5,608,046	\$ 6,490,022	\$ 7,145,268	\$ (3,127,875)	\$ 881,976	\$ 655,245	\$ (1,590,654)	-35.80%	15.73%	10.10%	-18.21%
3rd decile	1,420	\$ 9,478,728	\$ 6,180,618	\$ 7,173,754	\$ 7,909,886	\$ (3,298,110)	\$ 993,135	\$ 736,132	\$ (1,568,842)	-34.79%	16.07%	10.26%	-16.55%
4th decile	1,418	\$ 10,464,315	\$ 7,299,207	\$ 8,516,285	\$ 9,397,399	\$ (3,165,108)	\$ 1,217,078	\$ 881,114	\$ (1,066,916)	-30.25%	16.67%	10.35%	-10.20%
5th decile	1,416	\$ 11,473,387	\$ 8,216,561	\$ 9,858,907	\$ 10,791,785	\$ (3,256,826)	\$ 1,642,346	\$ 932,878	\$ (681,602)	-28.39%	19.99%	9.46%	-5.94%
6th decile	1,426	\$ 10,664,808	\$ 7,749,782	\$ 9,348,858	\$ 10,408,208	\$ (2,915,026)	\$ 1,599,076	\$ 1,059,350	\$ (256,600)	-27.33%	20.63%	11.33%	-2.41%
7th decile	1,398	\$ 6,611,170	\$ 4,792,489	\$ 5,806,176	\$ 6,463,666	\$ (1,818,681)	\$ 1,013,687	\$ 657,490	\$ (147,504)	-27.51%	21.15%	11.32%	-2.23%
8th decile	1,438	\$ 8,092,555	\$ 6,085,325	\$ 7,685,512	\$ 8,796,691	\$ (2,007,230)	\$ 1,600,187	\$ 1,111,179	\$ 704,136	-24.80%	26.30%	14.46%	8.70%
9th decile	1,424	\$ 8,242,729	\$ 6,513,586	\$ 8,387,575	\$ 10,070,792	\$ (1,729,143)	\$ 1,873,989	\$ 1,683,217	\$ 1,828,063	-20.98%	28.77%	20.07%	22.18%
Top decile	1,420	\$ 2,938,401	\$ 2,260,180	\$ 3,189,509	\$ 3,984,364	\$ (678,221)	\$ 929,329	\$ 794,855	\$ 1,045,963	-23.08%	41.12%	24.92%	35.60%

The Resilience of Risk Capital

- Risk capital is capital invested in the riskiest investments. When investors get scared, a common by-product of crises, risk capital usually dries up, making it difficult for young cash-burning companies and aging, debt-laden companies to survive.
- With equity, risk capital shows up in private companies as venture capital investing and in public companies, as IPOs.
- With debt, risk capital is invested in the riskiest debt, in both public markets (as high yield, low rated bonds) and in private markets.

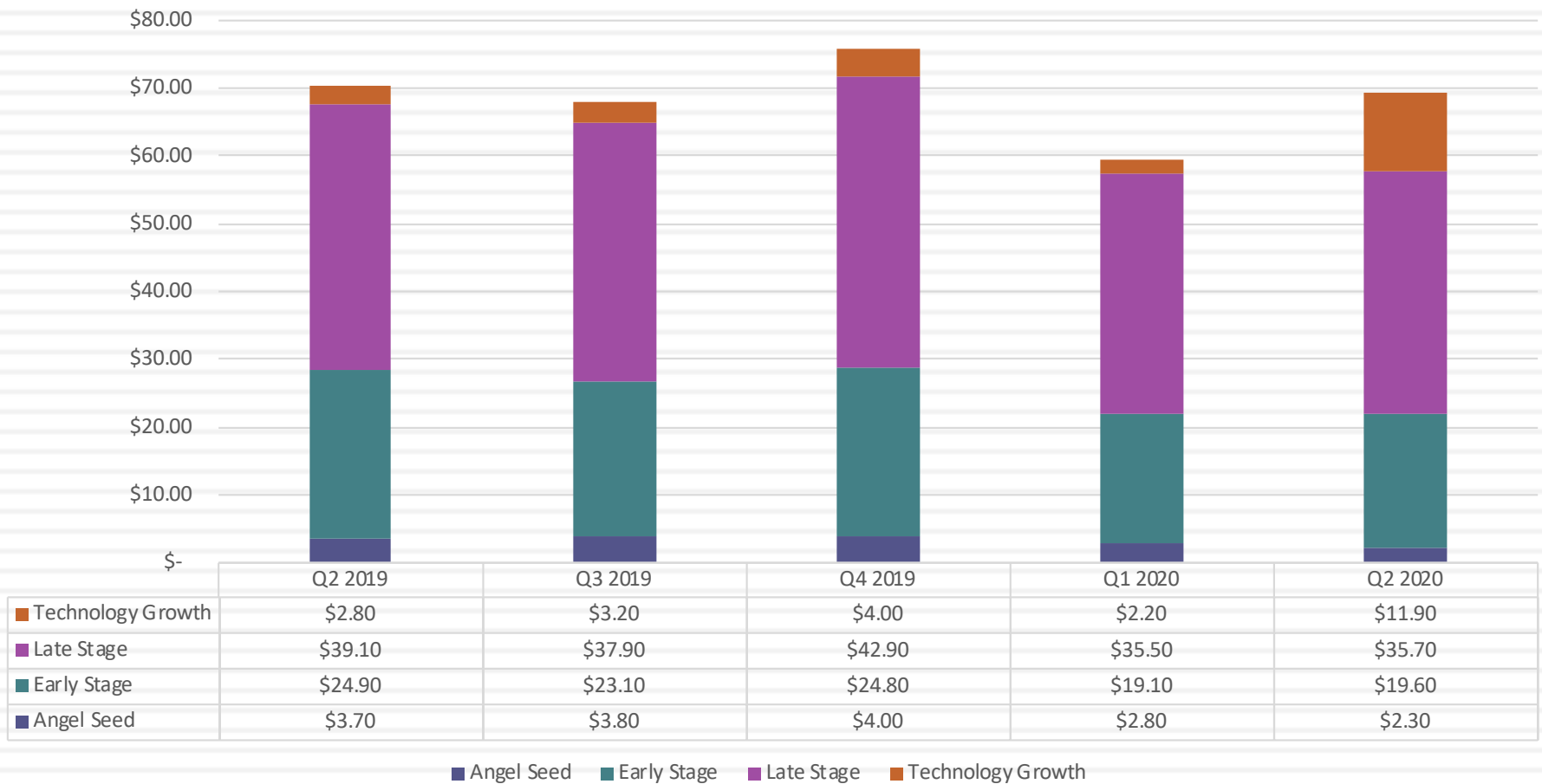
Venture Capital: Historical Perspective

Capital Raised by Venture Capital: US and Global: 2007-2019

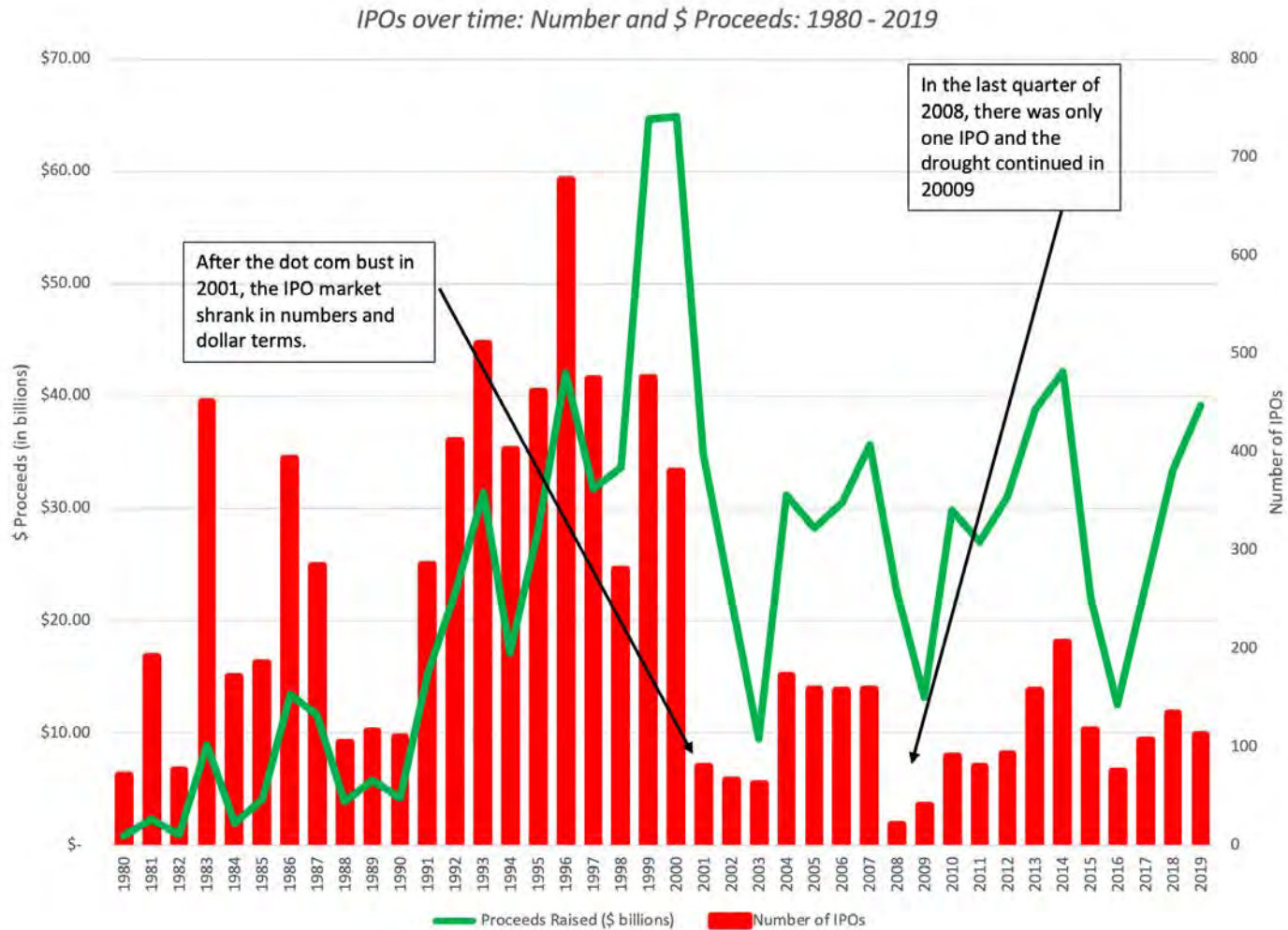


Venture Capital: The COVID effect

VC Investing: By Type

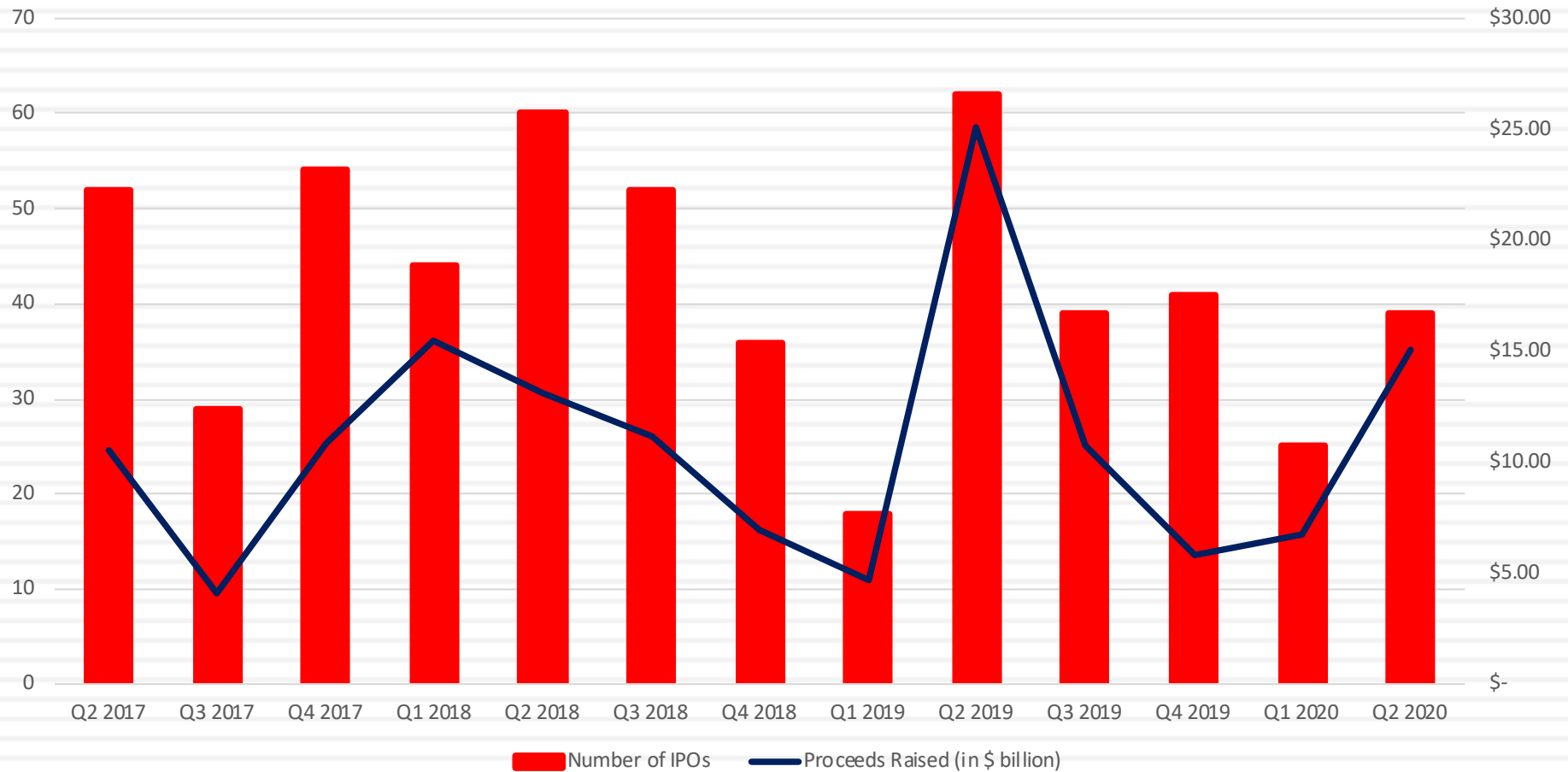


IPOs: A Historical Perspective

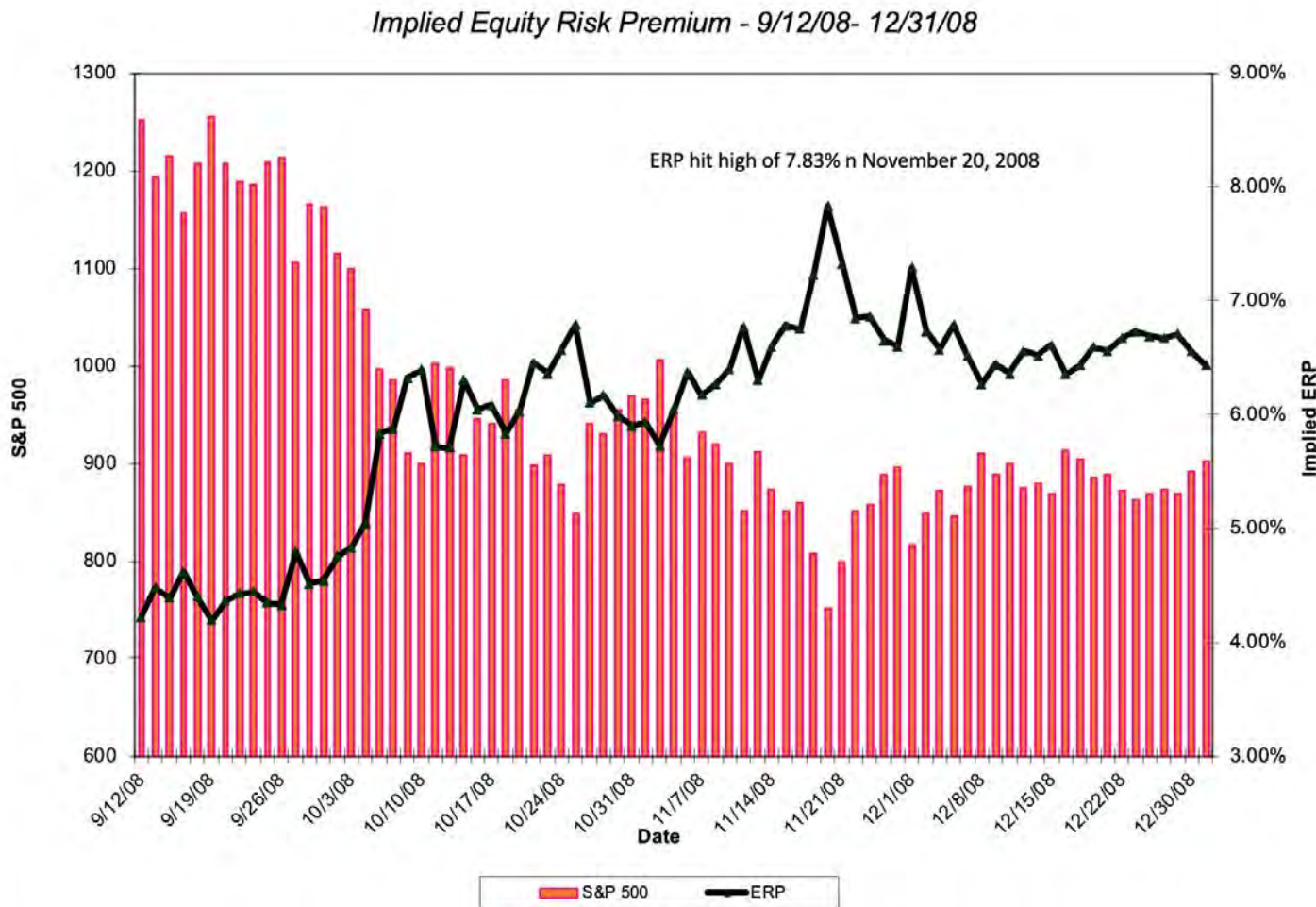


IPOs: The COVID effect

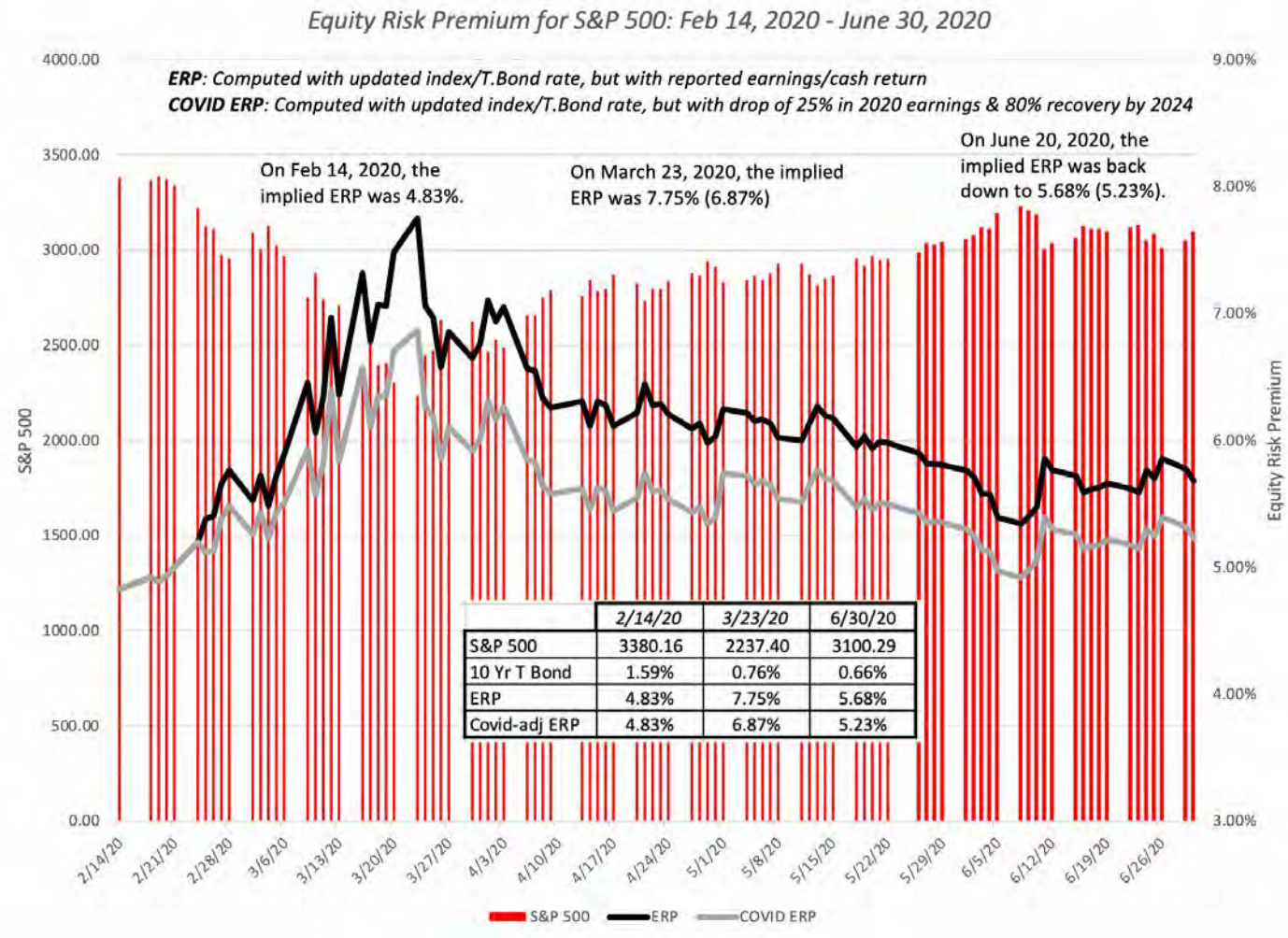
IPOs by Quarter: Including COVID quarters



The Price of Equity Risk: The 2008 Crisis



The Price of Equity Risk: COVID



What's different?

- Crisis Origins: This crisis started at a time, when capital markets were buoyant and investors were eagerly taking on risk, with risk premiums in both equity and bond markets at close to decade-level lows, with a global economic shut down, with a cessation of most business activity.
 - ▣ With a Timer: That shut down came with a time frame, though there was uncertainty not only about when economic activity would start up again, but how vigorously it would return.
- The Fed Effect: The decisive turnaround in markets happened on March 23, which coincidentally or otherwise was the date that the Fed announced it would be a backstop in private lending markets.

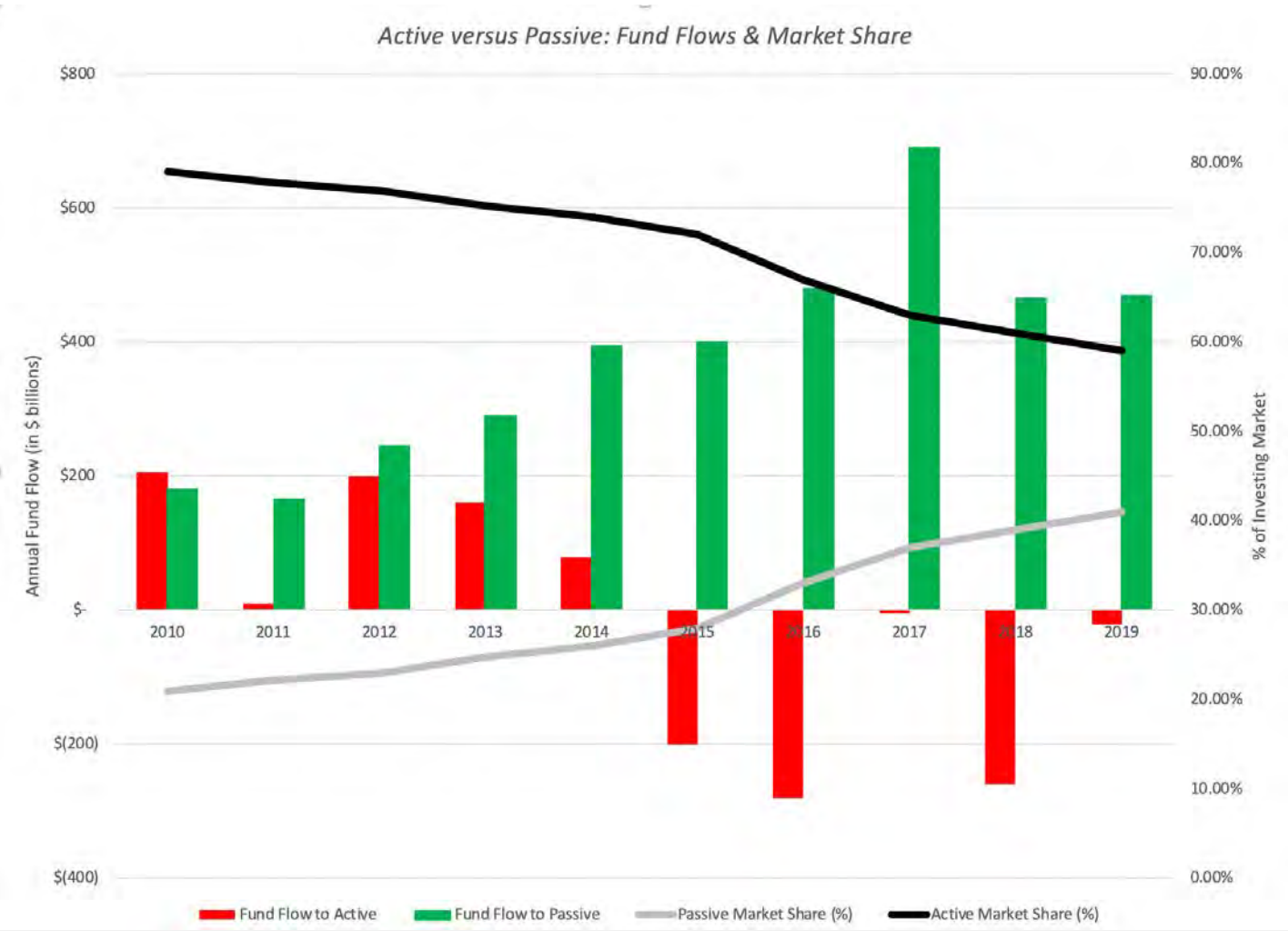
Lesson 3: There is no smart money...

- In investing mythology, there are smart investors and stupid investors.
 - Smart investors sense when markets are going to turn, and get in sooner than others, and get out sooner than others. After every crisis, there are a few who are anointed as gurus. They are also much better at picking the right stocks to buy and sell
 - Stupid investors are uninformed, act on emotion, and panic quickly.
- Professional money managers and talking heads on financial TV land are smart investors. Retail investors are stupid investors.

One test: Active vs Passive

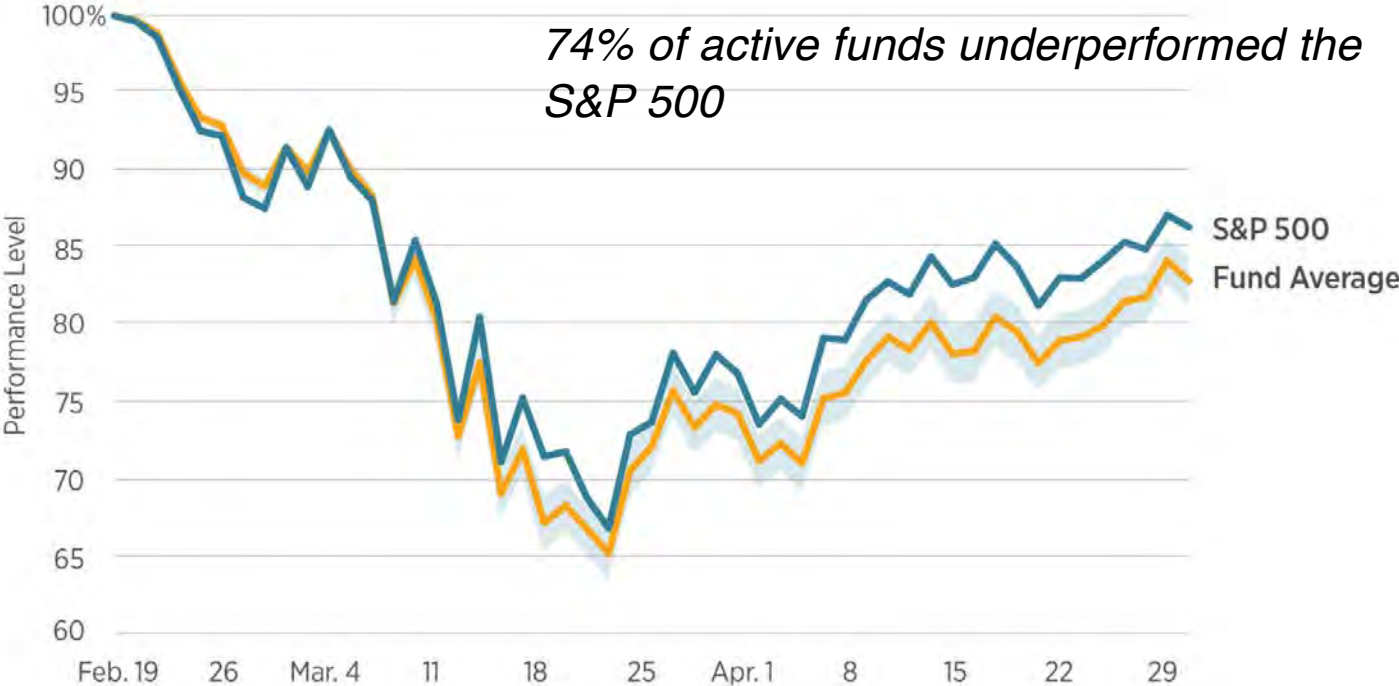
- In passive investing, as an investor, you allocate your wealth across asset classes (equities, bonds, real assets) based upon your risk aversion, liquidity needs and time horizon, and within each class, rather than pick individual stocks, bonds or real assets, you invest in index funds or exchange traded funds (ETFs) to cover the spectrum of choices.
- In active investing, you try to time markets (by allocating more money to asset classes that you believe are under valued and less to those that you think are over valued) or pick individual assets that you believe offer the potential for higher returns.
- Active investing covers a whole range of different philosophies from day trading to buying entire companies and holding them for the long term.

The Lead In



The Crisis Test: Active Mutual Funds

Average Fund Performance vs. the S&P 500 During the COVID-19 Crisis



Notes: The figure plots the performance of the average equity mutual fund against the S&P 500 from February 20 to April 30, 2020. Both price indices are initialized at 100 on February 19, 2020 and are computed by compounding daily returns. The shaded blue area represents 95% confidence intervals.



The Crisis Test: Hedge Funds



The Robinhood Phenomenon

Smart vs Dumb Money

Pros' best stock picks beat retail money after weeks of underperformance

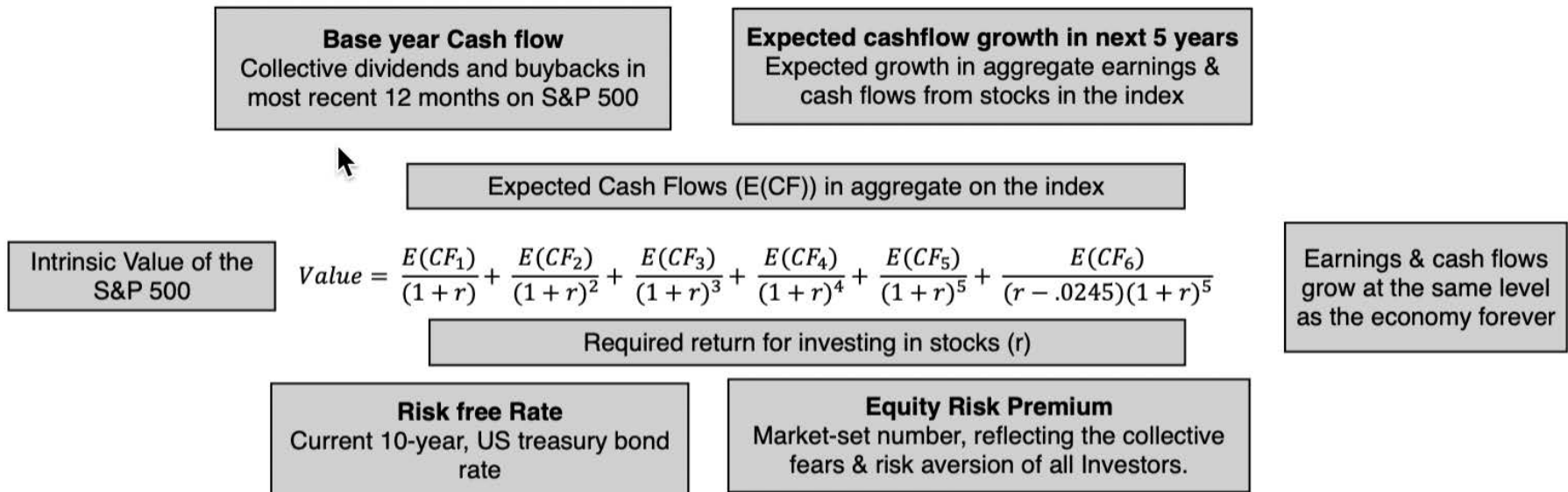


Source: Goldman Sachs, Bloomberg

A Different Classification

- Humble vs Arrogant: I think that investors are better grouped into humble and arrogant, with
 - ▣ Humble investors recognizing that success, when it comes, is as much a function of luck as it is of skill, and failure, when it too arrives, is part of investing and an occasion for learning.
 - ▣ Arrogant investors claim every investing win as a sign of their skill and view every loss as an affront, doubling down on their mistakes.
- If I had to pick someone to manage my money, the quality that I would value the most in making that choice is humility, since humble investors are less likely to overpromise and overcommit.

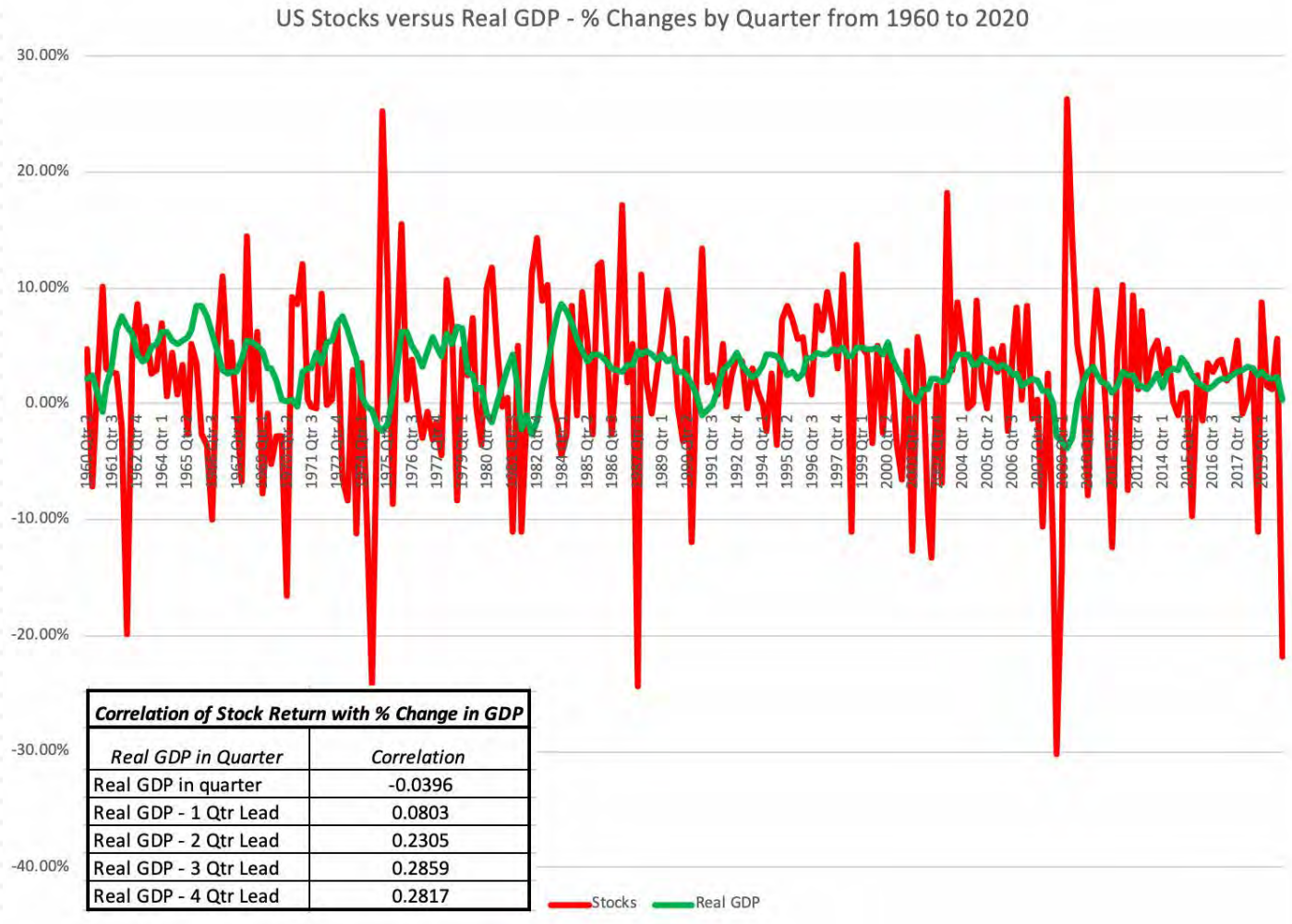
Lesson 4: The fundamentals matter, more than ever... in a crisis



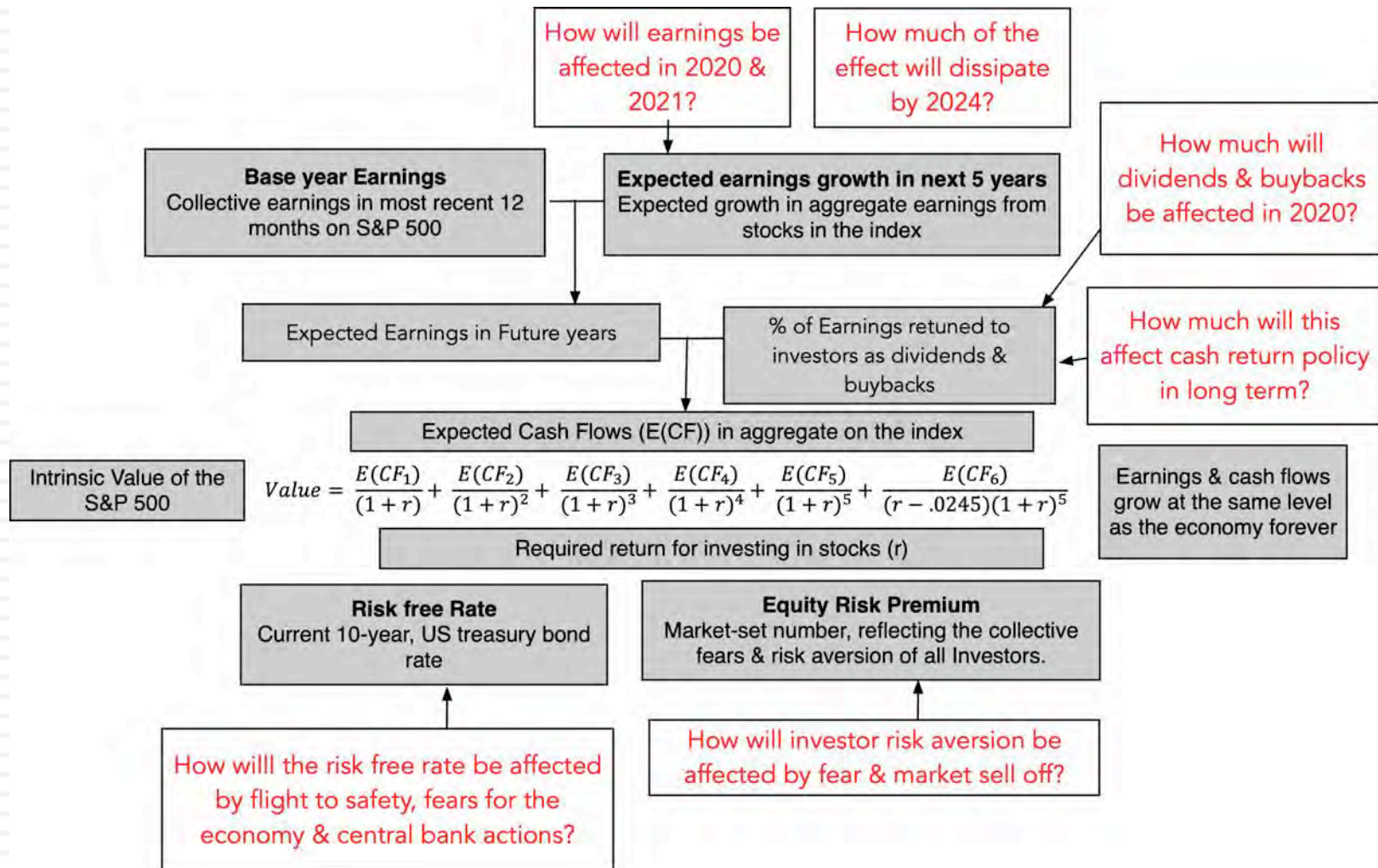
Market Worries

- 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

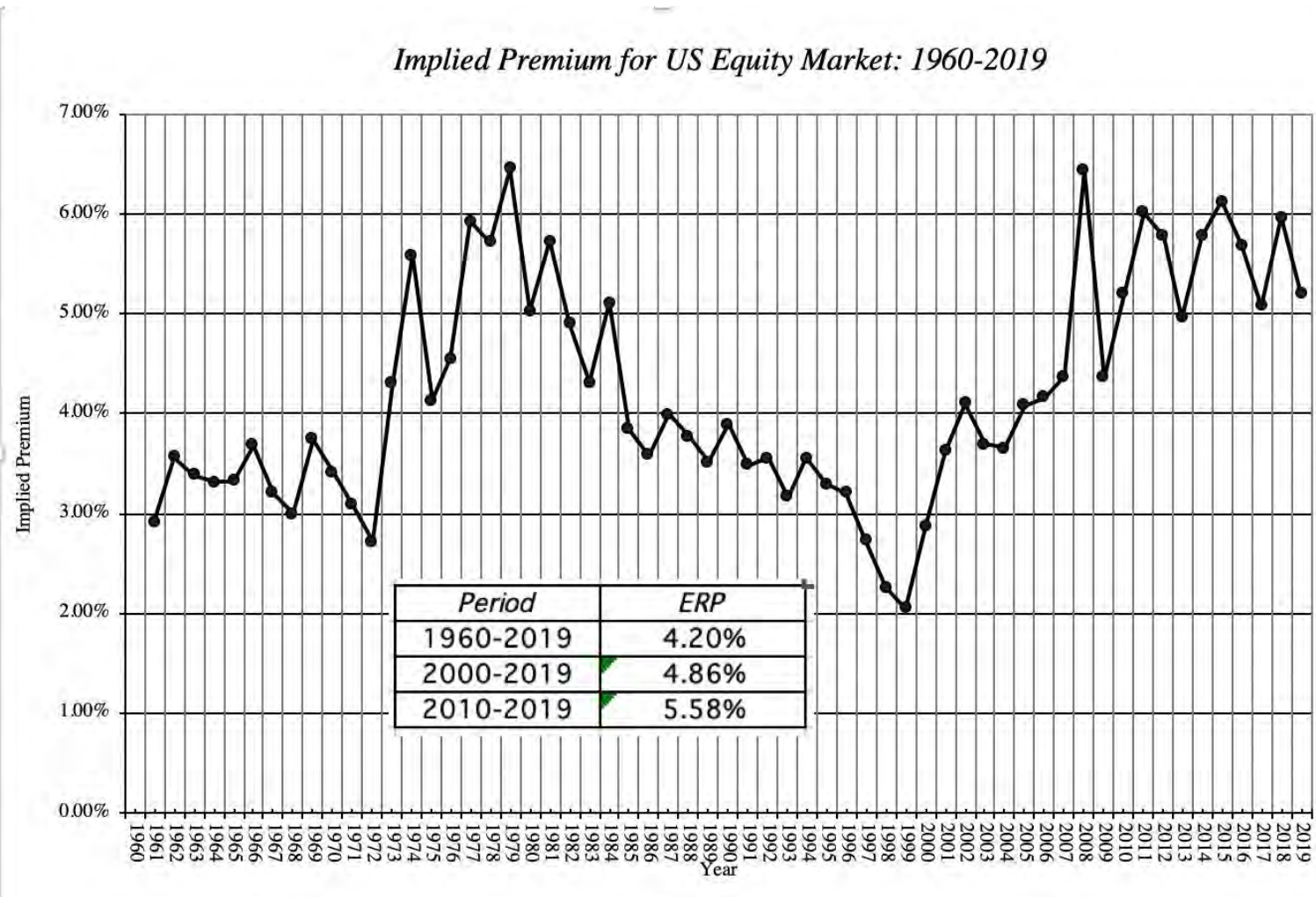
Ed Yardeni (6/1/20)		Analyst Consensus (6/1/20)		Thomson Reuters (6/1/20)	
Year	Earnings on Index	Year	Earnings on Index	Year	Earnings on Index
2019	163	2019	162.97	2019	162.93
2020	120	2020	125.79	2020	125.22
2021	150	2021	164.04	2021	163.67

Market Strategists Forecasts for S&P 500 Earnings in 2020		
Firm	Strategist	2020 EPS Estimate
Bank of America Merrill Lynch	Savita Subramanian	\$115.00
Barclays	Maneesh Deshpande	\$119.00
BMO	Brian Belski	Suspended
BTIG	Julian Emanuel	\$127.00
Canaccord Genuity	Tony Dwyer	\$128.00
CFRA	Sam Stovall	\$162.37
Citigroup	Tobias Levkovich	\$125.00
Credit Suisse	Jonathan Golub	\$125.00
Deutsche Bank	Binky Chadha	\$133.00
Goldman Sachs	David Kostin	\$110.00
JPMorgan Chase	Dubravko Lakos-Bujas	\$150.00
Morgan Stanley	Mike Wilson	\$130.00
Oppenheimer	John Stoltzfus	Suspended
RBC	Lori Calvasina	\$135.00
UBS	Francois Trahan	\$140.00
Wells Fargo Investment Institute	Darrell Cronk	\$115.00
Average		\$129.60
Median		\$127.50
High		\$162.37
Low		\$110.00

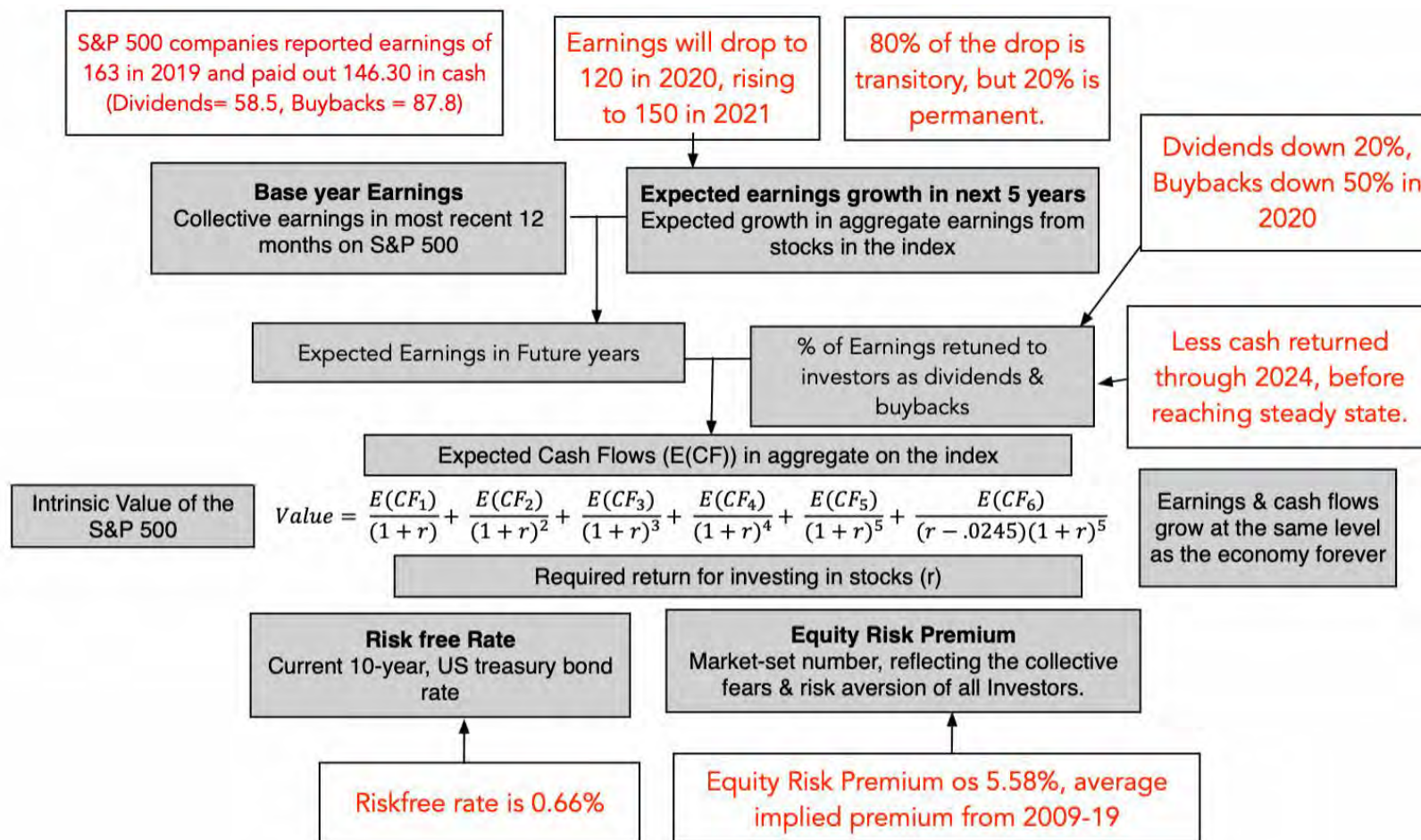
2. Cash Flows

Year	S&P 500				Cash Returned as % of Earnings	Cash Returned as % of Market Cap
	Market value	Earnings	Dividends	Buybacks		
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%

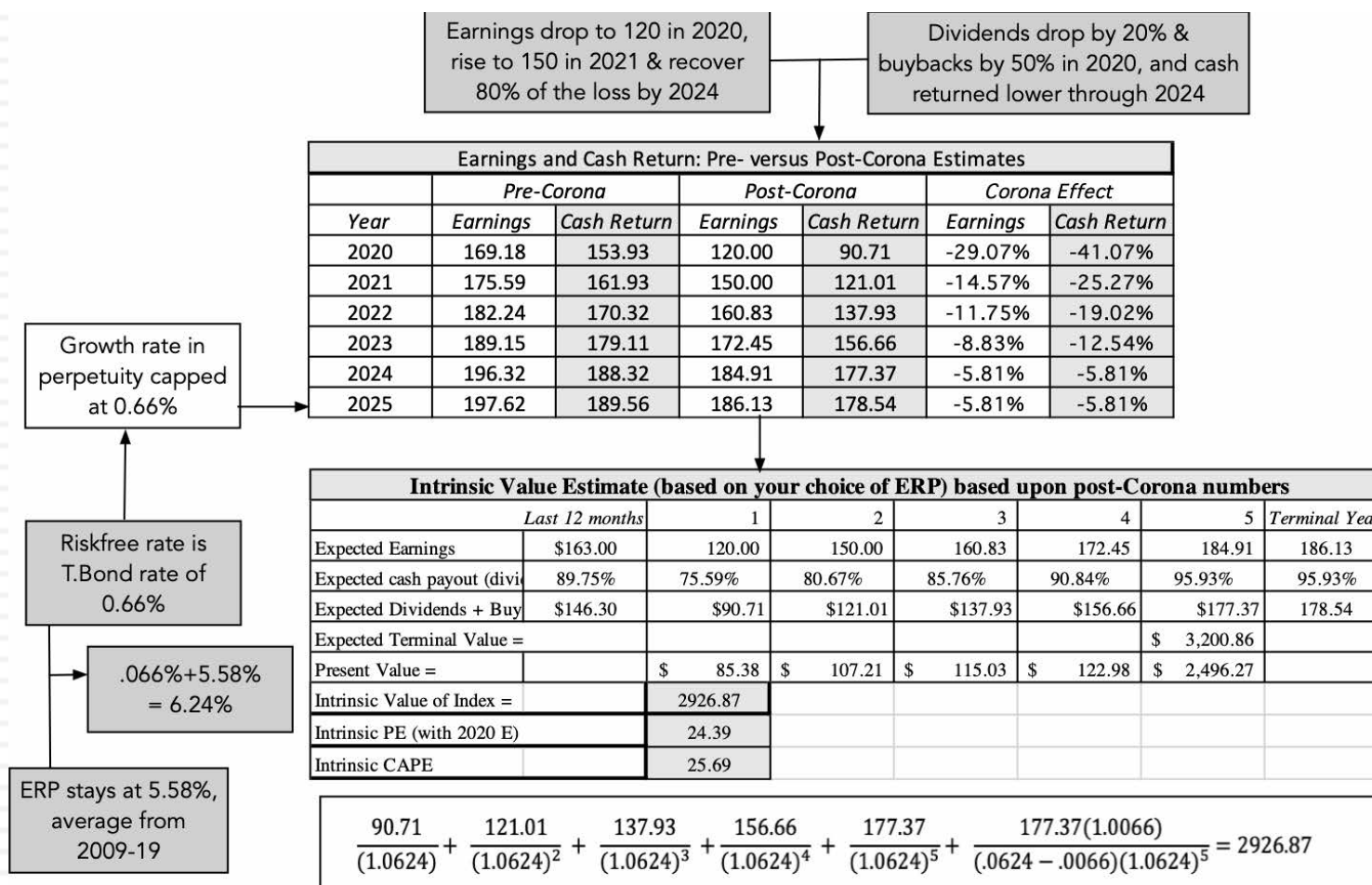
3. Equity Risk Pricing



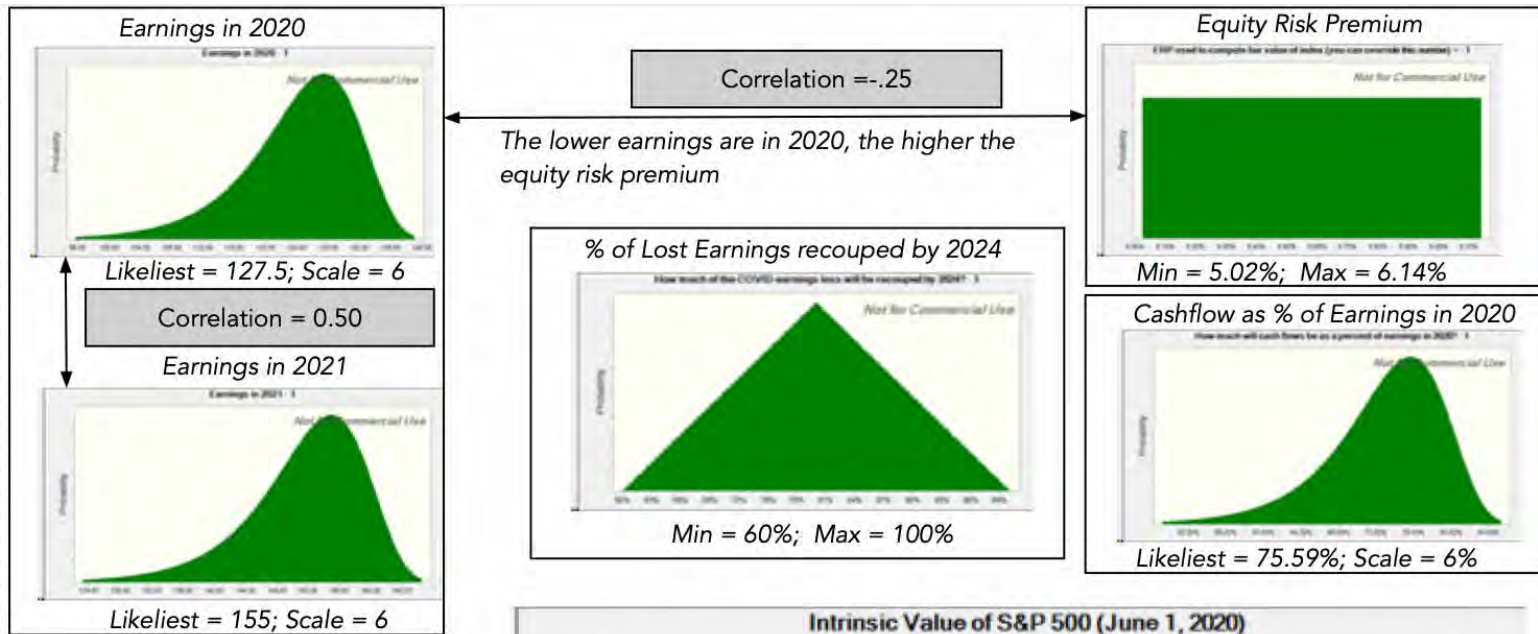
My Story for the Market



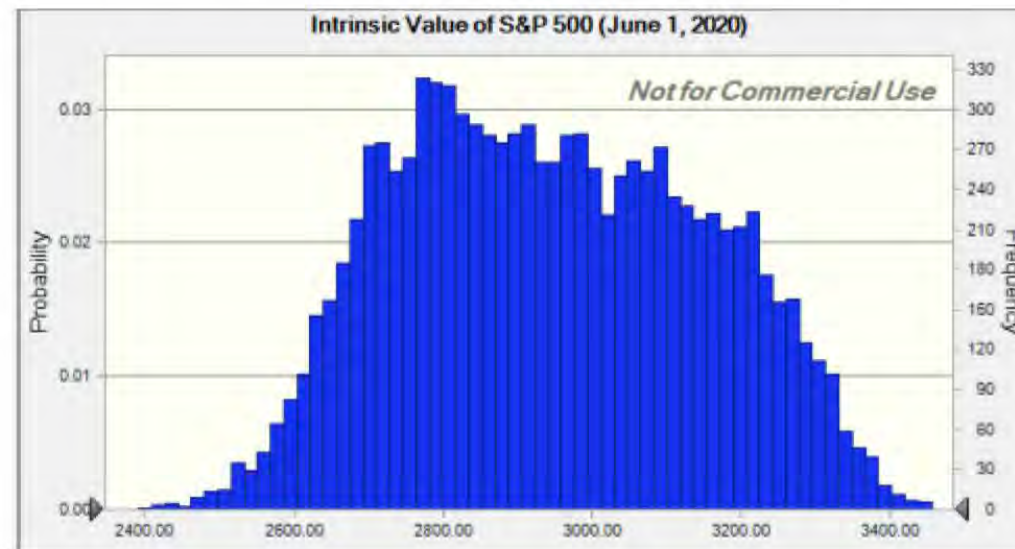
My Valuation of the Index



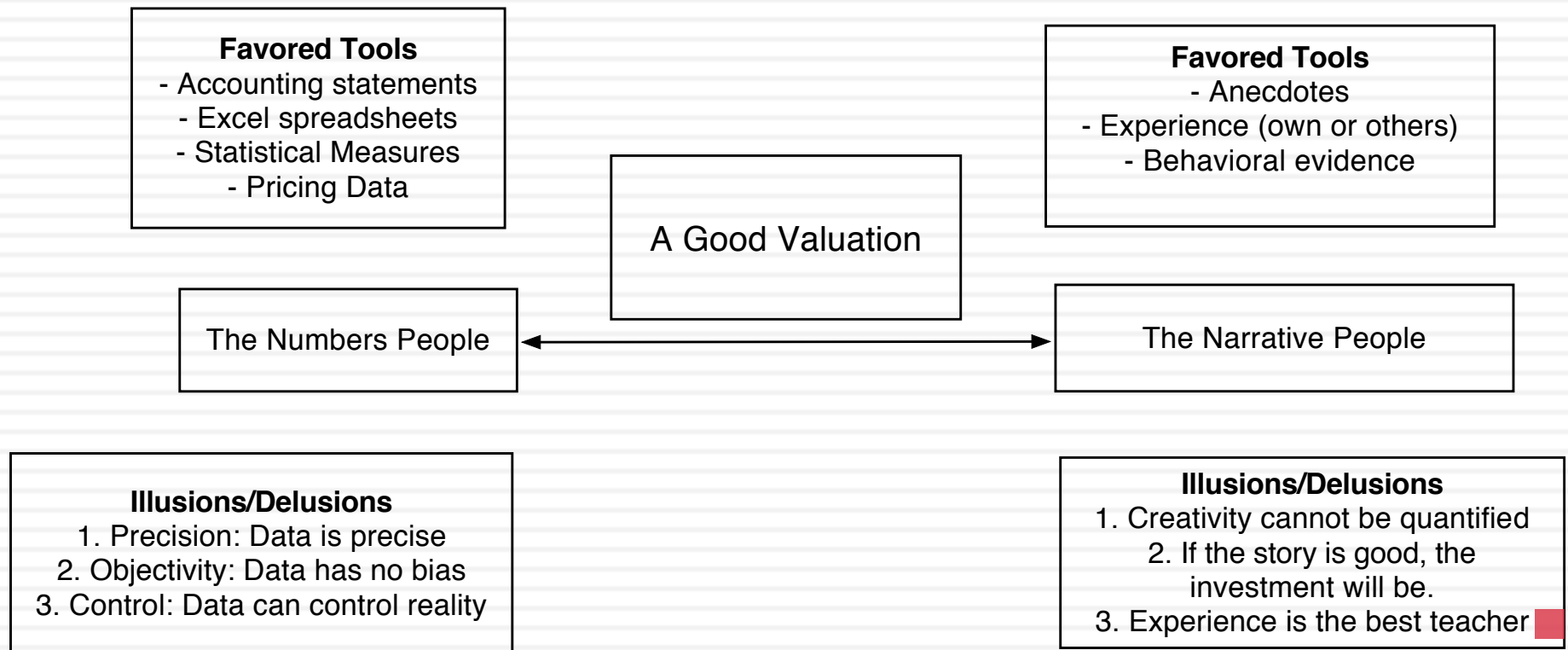
Facing up to uncertainty



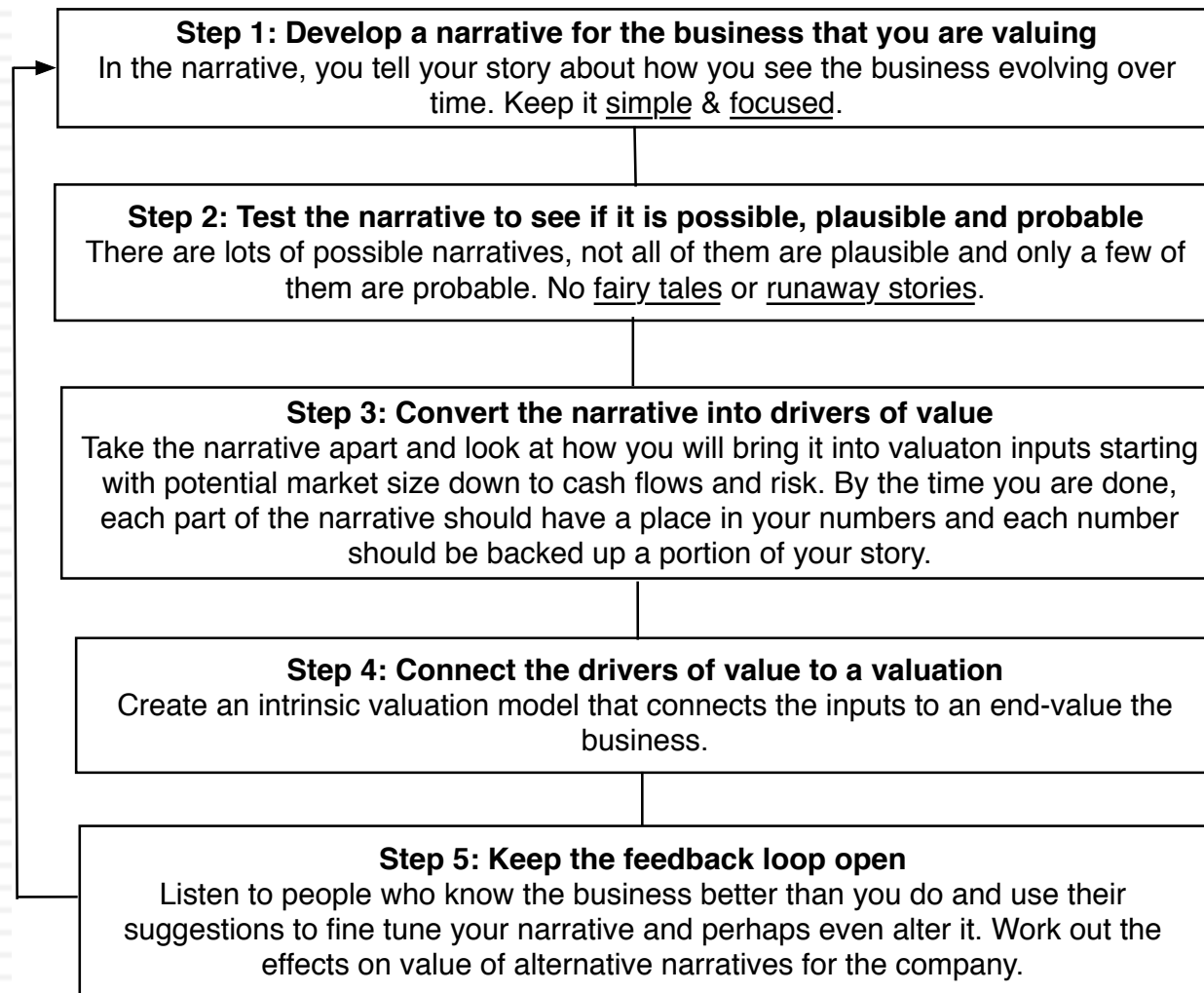
Percentile	Forecast values
0%	2277.04
10%	2685.17
20%	2752.07
30%	2809.79
40%	2870.31
50%	2932.91
60%	2999.98
70%	3072.14
80%	3144.45
90%	3226.31
100%	3455.33



Lesson 5: Stories + Numbers



From story to numbers and beyond..



A Teenage Phenom faces growing (up) pains!

Tesla will grow as a high-end auto company, delivering \$100 billion in revenues in year 10. In the face of stronger competition, Tesla's brand name and better technology will allow it to deliver on profitability (with margins in the 75th percentile of auto firms) and raise enough capital to cover its large reinvestment needs for much of the next decade. While Tesla's operating risk will move towards average over time, its debt burden puts it at risk of default, and that risk has risen to 20%. There is a floor to operating value at \$35-\$40 billion, at which the firm will be attractive as an acquisition target to an auto or (more likely) a large tech firm. Overlying all of this is the danger that Elon Musk will put the company's potential at risk, by either over reaching on product offerings or committing financial malpractice.

The Assumptions

	Base year	Years 1-5	Years 6-10		After year 10	Link to story
Revenues (a)	\$ 22,594	30.00% → 2.26%	2.26%		2.26%	
Operating margin (b)	1.98%	1.98% → 10.00%	10.00%		10.00%	
Tax rate	25.00%	25.00% → 25.00%	25.00%		25.00%	
Reinvestment (c)		Sales to capital ratio 2.00		RIR =	22.60%	
Return on capital	1.67%	Marginal ROIC =	24.53%		10.00%	
Cost of capital (d)		7.87% → 8.00%	8.00%		8.00%	

The Cash Flows

	Revenues	Operating Margin	EBIT	EBIT (1-t)	Reinvestment	FCFF
1	\$ 29,372	3.58%	\$ 1,053	\$ 1,053	\$ 3,389	\$ (2,337)
2	\$ 38,184	5.19%	\$ 1,981	\$ 1,981	\$ 4,406	\$ (2,425)
3	\$ 45,821	6.79%	\$ 3,112	\$ 3,112	\$ 3,818	\$ (706)
4	\$ 54,985	8.40%	\$ 4,616	\$ 3,751	\$ 4,582	\$ (831)
5	\$ 65,982	10.00%	\$ 6,598	\$ 4,949	\$ 5,498	\$ (550)
6	\$ 76,837	10.00%	\$ 7,684	\$ 5,763	\$ 5,428	\$ 335
7	\$ 86,752	10.00%	\$ 8,675	\$ 6,506	\$ 4,958	\$ 1,549
8	\$ 94,869	10.00%	\$ 9,487	\$ 7,115	\$ 4,058	\$ 3,057
9	\$ 100,379	10.00%	\$ 10,038	\$ 7,528	\$ 2,755	\$ 4,773
10	\$ 102,647	10.00%	\$ 10,265	\$ 7,699	\$ 1,134	\$ 6,564
Terminal year	\$ 104,967	10.00%	\$ 10,497	\$ 7,873	\$ 1,779	\$ 6,093

The Value

Terminal value	\$ 106,156	
PV(Terminal value)	\$ 49,594	
PV (CF over next 10 years)	\$ 2,461	
Value of operating assets =	\$ 52,055	
Adjustment for distress	\$ 5,206	Default probability (based on rating) = 20.00%
- Debt & Minority Interests	\$ 14,658	
+ Cash & Other Non-operating assets	\$ 2,198	
Value of equity	\$ 34,389	
- Value of equity options	\$ 805	32 million options (CEO package & convertibles), deep out of the money right now.
Number of shares	176.42	
Value per share	\$ 190.36	Stock was trading at = \$185.50

Tesla

Silence is golden!

With the wind behind its back, Tesla has consolidated its hold on the electric car market and will continue to grow that market, at the expense of conventional car makers. Pushing its production towards 2 million cars by 2030, it will also be able to deliver higher margins than conventional auto companies in steady state. The rise in its market capitalization has reduced its cost of capital and the chance of failure. While Tesla will be able to invest less than other auto companies to add to capacity, its need to ramp up production will require more capital, creating negative cash flows in the near years. While other revenue sources (green energy, driverless cars in ride sharing) will supplement revenues, it will remain at its core an electric car company.

The Assumptions

	Base year	Years 1-5	Years 6-10		After year 10	Link to story
Revenues (a)	\$ 24,578	25.00% → 1.75%			1.75%	Growth in EV market & Tesla's early mover advantage work in its favor.
Operating margin (b)	1.60%	1.60% → 12.00%			12.00%	Continued economies of scale & brand
Tax rate	25.00%	25.00% → 25.00%			25.00%	Global tax rate
Reinvestment (c)		Sales to capital ratio 3.00		RIR =	17.50%	Capacity build up allows for less reinvestment in the near years.
Return on capital	1.59%	Marginal ROIC =	34.86%		10.00%	Cost of entry will limit competition.
Cost of capital (d)		7.00% → 7.40%			7.40%	Moves to median company cost of capital

The Cash Flows

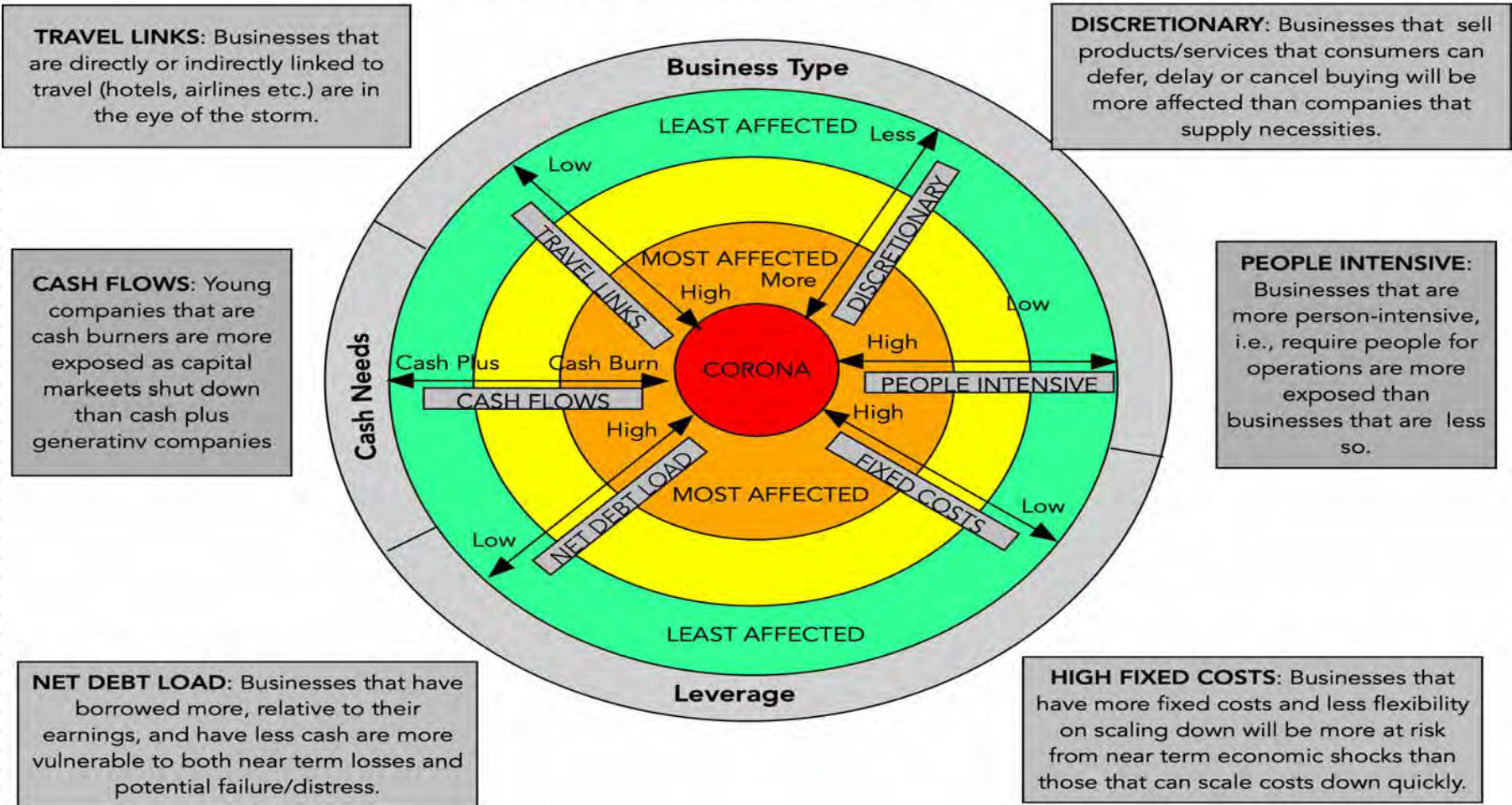
	Revenues	Operating Margin	EBIT	EBIT(1-t)	Reinvestment	FCFF
1	\$ 30,723	3.68%	\$ 1,132	\$ 849	\$ 2,048	\$ (1,199)
2	\$ 38,403	5.76%	\$ 2,213	\$ 1,660	\$ 2,560	\$ (900)
3	\$ 48,004	7.84%	\$ 3,764	\$ 2,823	\$ 3,200	\$ (377)
4	\$ 60,005	9.92%	\$ 5,953	\$ 4,465	\$ 4,000	\$ 464
5	\$ 75,006	12.00%	\$ 9,001	\$ 6,751	\$ 5,000	\$ 1,750
6	\$ 90,270	12.00%	\$ 10,832	\$ 8,124	\$ 7,632	\$ 492
7	\$ 104,442	12.00%	\$ 12,533	\$ 9,400	\$ 7,086	\$ 2,314
8	\$ 115,983	12.00%	\$ 13,918	\$ 10,438	\$ 5,770	\$ 4,668
9	\$ 123,406	12.00%	\$ 14,809	\$ 11,107	\$ 3,711	\$ 7,395
10	\$ 125,566	12.00%	\$ 15,068	\$ 11,301	\$ 1,080	\$ 10,221
Terminal year	\$ 127,763	12.00%	\$ 15,332	\$ 11,499	\$ 2,012	\$ 9,486

The Value

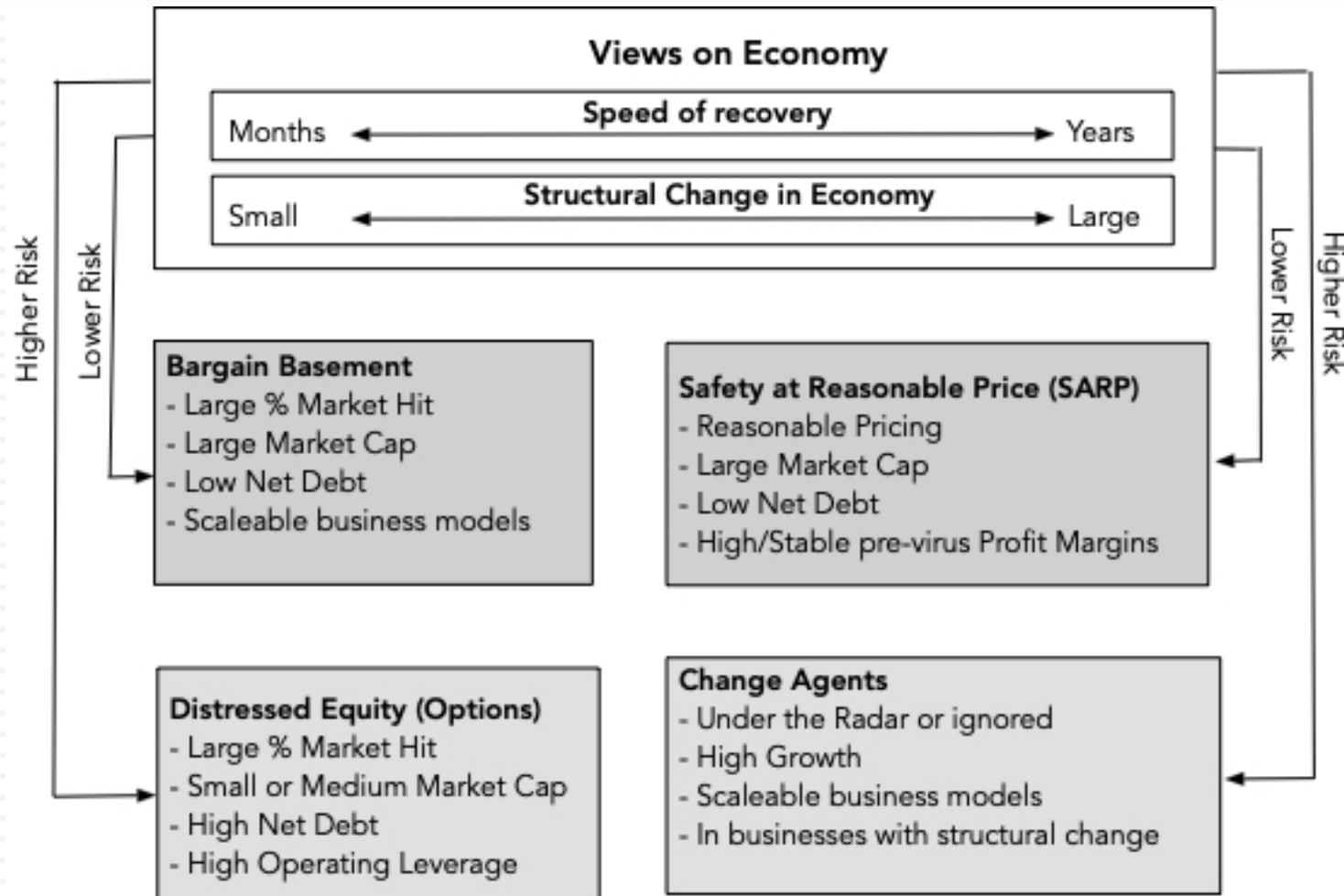
Terminal value	\$ 167,901		
PV(Terminal value)	\$ 84,402		
PV (CF over next 10 years)	\$ 12,988		
Value of operating assets =	\$ 97,390		
Adjustment for distress	\$ 4,869	Probability of failure =	10.00%
- Debt & Mnority Interests	\$ 14,708		
+ Cash & Other Non-operating assets	\$ 6,514		
Value of equity	\$ 84,326		
- Value of equity options	\$ 8,822		
Number of shares	177.00		
Value per share	\$ 426.58	Stock was trading at =	\$581.00

The Virus Effect: A Picture (in March 2020)

CIRCLES OF INFECTION: CORONA'S EFFECT ON BUSINESSES



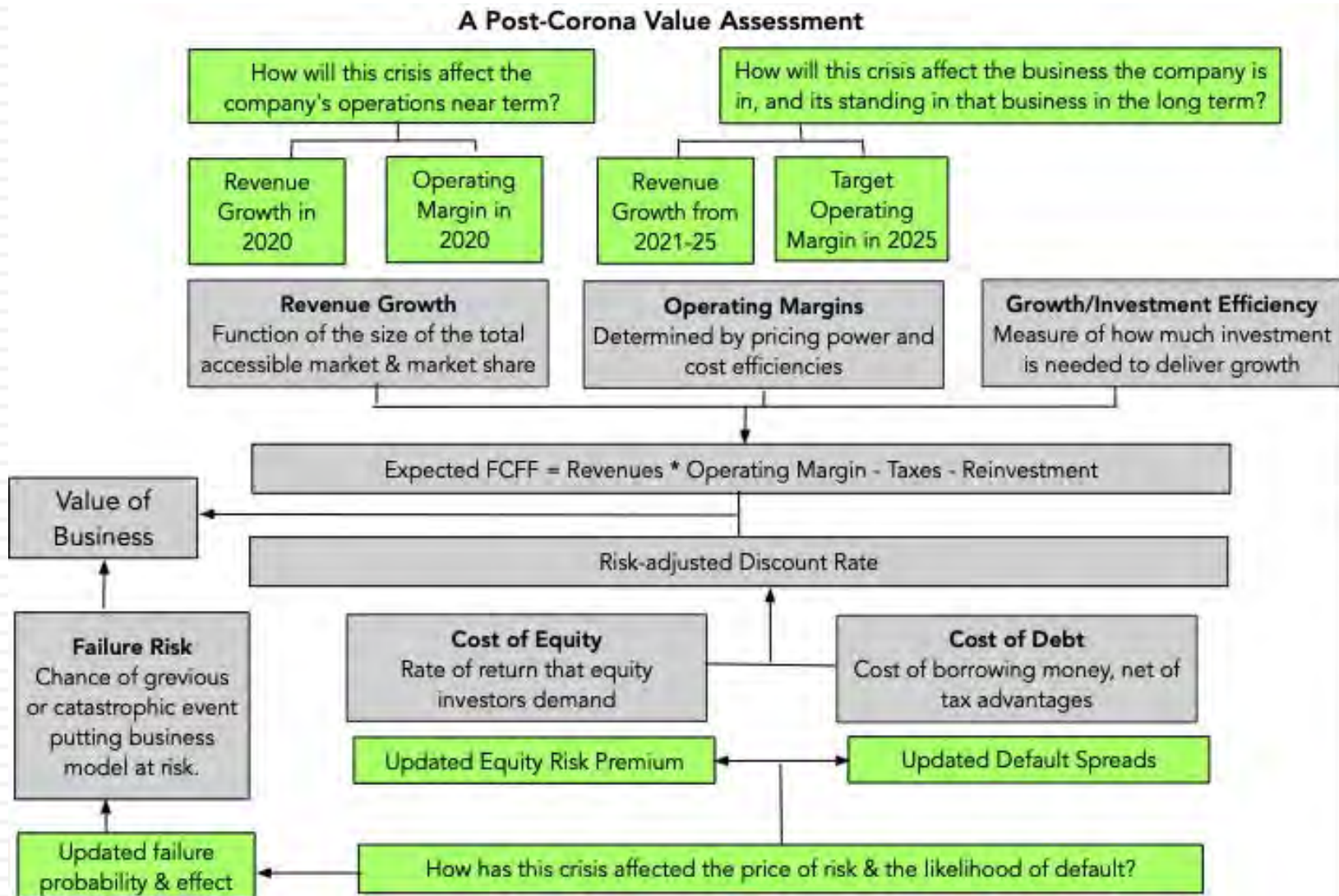
Investing in a post-virus economy (March 2020)



And the dark side beckons...

- If your concept of valuation is downloading last year's financials for a company into a spread sheet and then using historical growth rates, with some mean reversion thrown in, to forecast future numbers, you are probably feeling lost right now, and with good reason.
- It is also not a time to wring our hands, complain that there is too much uncertainty and argue that the fundamentals don't matter.
 - If you do so, you will be drawn to the dark side of investing, where fundamentals don't matter (paradigm shifts, anyone?), new pricing metrics get invented and you are at the mercy of mood and momentum.
- Ironically, it is precisely at times like these that you need to go back to basics.

A Post-Corona Version



Tesla

The Payoff to Flexibility

Jul-20

With the wind behind its back, Tesla has consolidated its hold on the electric car market and will continue to grow that market, at the expense of conventional car makers. As the crisis handicaps its more indebted, slower moving competitors, Tesla will consolidate its hold on the electric car market and push its production towards 2.5 million cars by 2030, it will also be able to deliver higher margins than conventional auto companies in steady state, using software sales to compliment auto sales. The drop in risk free rates has reduced its cost of capital and the chance of failure. Tesla's more flexible investment policies will allow it to be more efficient in generating growth. While other revenue sources (green energy, driverless cars in ride sharing) will supplement revenues, it will remain at its core an electric car

The Assumptions

	<i>Base year</i>	<i>Years 1-5</i>	<i>Years 6-10</i>		<i>After year 10</i>	<i>Link to story</i>
Revenues (a)	\$ 26,022	33.00% → 0.67%			0.67%	Growth in EV market & Tesla's early mover advantage work in its favor.
Operating margin (b)	4.07%	4.07% → 10.25%			10.25%	Continued economies of scale & brand
Tax rate	25.00%	25.00% → 25.00%			25.00%	Global tax rate
Reinvestment (c)		Sales to capital ratio 3.00		RIR =	6.70%	Capacity build up allows for less reinvestment in the near years.
Return on capital	3.90%	Marginal ROIC = 26.47%			10.00%	Cost of entry will limit competition.
Cost of capital (d)		6.04% → 6.00%			6.00%	Moves to median company cost of capital

The Cash Flows

	<i>Revenues</i>	<i>Operating Margin</i>	<i>EBIT</i>	<i>EBIT (1-t)</i>	<i>Reinvestment</i>	<i>FCFF</i>
1	\$ 34,609	5.31%	\$ 1,836	\$ 1,377	\$ 2,862	\$ (1,485)
2	\$ 46,030	6.54%	\$ 3,011	\$ 2,258	\$ 3,807	\$ (1,549)
3	\$ 61,220	7.78%	\$ 4,762	\$ 3,571	\$ 5,063	\$ (1,492)
4	\$ 81,423	9.01%	\$ 7,339	\$ 5,505	\$ 6,734	\$ (1,230)
5	\$ 108,293	10.25%	\$ 11,100	\$ 8,325	\$ 8,957	\$ (632)
6	\$ 137,027	10.25%	\$ 14,045	\$ 10,534	\$ 14,367	\$ (3,833)
7	\$ 164,526	10.25%	\$ 16,864	\$ 12,648	\$ 13,749	\$ (1,101)
8	\$ 186,904	10.25%	\$ 19,158	\$ 14,368	\$ 11,189	\$ 3,179
9	\$ 200,242	10.25%	\$ 20,525	\$ 15,394	\$ 6,669	\$ 8,725
10	\$ 201,583	10.25%	\$ 20,662	\$ 15,497	\$ 671	\$ 14,826
Terminal year	\$ 202,934	10.25%	\$ 20,801	\$ 15,601	\$ 1,045	\$ 14,555

The Value

Terminal value	\$ 273,083		
PV(Terminal value)	\$ 152,086		
PV (CF over next 10 years)	\$ 6,497		
Value of operating assets =	\$ 158,583		
Adjustment for distress	\$ 7,929	Probability of failure =	10.00%
- Debt & Mnority Interests	\$ 15,200		
+ Cash & Other Non-operating assets	\$ 8,080		
Value of equity	\$ 143,534		
- Value of equity options	\$ 31,546		
Number of shares	179.50		
Value per share	\$ 623.89	Stock was trading at =	\$1,366.00

The Story

Zoom is poised to take advantage of an explosion in the online meeting/seminar market, as the crisis changes behavior for the long term on both fronts. While there will be multiple players in the markets, some with deep pockets (Cisco's Webex, Microsoft's team and Google's whatever), Zoom will grab a dominant market shares, both because of its first mover advantages and networking benefits. As it grows, it will benefit from economies of scale and its margins will converge on those of software companies collectively. Its cost of capital reflects its business services model, but since it is young and not fully formed, there remains a chance of failure.

The Assumptions

	Base year	Years 1-5	Years 6-10		After year 10	Link to story
Revenues (a)	\$ 623	55.00%	2.00%		2.00%	Growing online market + Mkt share
Operating margin (b)	9.70%	9.70%	22.25%		22.25%	Software company margins
Tax rate	25.00%	25.00%	25.00%		25.00%	Global/US marginal tax rate
Reinvestment (c)		Sales to capital ratio 2.25		RIR =	29.34%	Drop from current level + higher than industry
Return on capital	23.64%	Marginal ROIC =	51.27%		6.82%	Low capital intensity + High margin model
Cost of capital (d)		7.72%	6.82%		6.82%	Close to average company's cost of capital

The Cash Flows

	Revenues	Operating Margin	EBIT	EBIT (1-t)	Reinvestment	FCFF
1	\$ 965	12.21%	\$ 118	\$ 88	\$ 152	\$ (64)
2	\$ 1,496	14.72%	\$ 220	\$ 165	\$ 236	\$ (71)
3	\$ 2,319	17.23%	\$ 400	\$ 300	\$ 366	\$ (66)
4	\$ 3,594	19.74%	\$ 710	\$ 532	\$ 567	\$ (35)
5	\$ 5,571	22.25%	\$ 1,240	\$ 930	\$ 879	\$ 51
6	\$ 8,045	22.25%	\$ 1,790	\$ 1,342	\$ 1,099	\$ 243
7	\$ 10,764	22.25%	\$ 2,395	\$ 1,796	\$ 1,208	\$ 588
8	\$ 13,261	22.25%	\$ 2,951	\$ 2,213	\$ 1,110	\$ 1,103
9	\$ 14,932	22.25%	\$ 3,322	\$ 2,492	\$ 743	\$ 1,749
10	\$ 15,230	22.25%	\$ 3,389	\$ 2,542	\$ 133	\$ 2,409
Terminal year	\$ 15,535	22.25%	\$ 3,457	\$ 2,593	\$ 761	\$ 1,832

The Value

Terminal value	\$ 38,036		
PV(Terminal value)	\$ 18,541		
PV (CF over next 10 years)	\$ 3,043		
Value of operating assets =	\$ 21,583		
Adjustment for distress	\$ 1,727	Probability of failure =	10.00%
- Debt & Mnority Interests	\$ 119		
+ Cash & Other Non-operating assets	\$ 855		
Value of equity	\$ 20,593		
- Value of equity options	\$ 1,121		
Number of shares	276.40		
Value per share	\$ 70.45	Stock was trading at =	\$146.48

Slip, slipping away!

In the face of the Covid-19 pandemic, the protracted impact on the airline industry, and the struggles in the past of the 737 Max, BA faces a tough path forward over the next 5 years. With the assumption that air travel will not return to its pre-Covid-19 levels for the next 4-6 quarters, BA will have negative growth. Furthermore, given BA's debt-heavy balance sheet, there will also be limited re-investment given that paying down the debt is the priority. Thus, risk remains high

The Assumptions

	Base year	Years 1-5	Years 6-10		After year 10	Link to story
Revenues (a)	\$ 76,559	-15.00%	2.00%		2.00%	Continued slowing of growth
Operating margin (b)	-2.82%	-2.82%	11.00%		11.00%	With pressure on margins
Tax rate	25.00%	25.00%	25.00%		25.00%	& Convergence to global tax rate
Reinvestment (c)		Sales to capital ratio 0.00		RIR =	16.67%	Business stays capital intensive
Return on capital	-9.31%	Marginal ROIC =	121.07%		12.00%	But competitive advantages fade
Cost of capital (d)		7.40%	7.00%		7.00%	As cost of capital stays low

The Cash Flows

	Revenues	Operating Margin	EBIT	EBIT (1-t)	Reinvestment	FCFF
1	\$ 65,075	-5.00%	\$ (3,254)	\$ (3,254)	\$ -	\$ (3,254)
2	\$ 60,195	4.09%	\$ 2,462	\$ 2,462	\$ (1,952)	\$ 4,414
3	\$ 72,233	7.54%	\$ 5,450	\$ 4,434	\$ 2,866	\$ 1,568
4	\$ 86,680	11.00%	\$ 9,535	\$ 7,151	\$ 3,440	\$ 3,711
5	\$ 95,348	11.00%	\$ 10,488	\$ 7,866	\$ 2,064	\$ 5,802
6	\$ 103,357	11.00%	\$ 11,369	\$ 8,527	\$ 1,907	\$ 6,620
7	\$ 110,386	11.00%	\$ 12,142	\$ 9,107	\$ 1,673	\$ 7,433
8	\$ 116,126	11.00%	\$ 12,774	\$ 9,580	\$ 1,367	\$ 8,214
9	\$ 120,306	11.00%	\$ 13,234	\$ 9,925	\$ 995	\$ 8,930
10	\$ 122,712	11.00%	\$ 13,498	\$ 10,124	\$ 573	\$ 9,551
Terminal year	\$ 125,167	11.00%	\$ 13,768	\$ 10,326	\$ 1,721	\$ 8,605

The Value

Terminal value	\$ 172,104		
PV(Terminal value)	\$ 85,215		
PV (CF over next 10 years)	\$ 31,867		
Value of operating assets =	\$ 117,082		
Adjustment for distress	\$ 8,781	Probability of failure =	15.00%
- Debt & Mnority Interests	\$ 28,371		
+ Cash & Other Non-operating assets	\$ 10,886		
Value of equity	\$ 90,816		
- Value of equity options	\$ 153		
Number of shares	564.20		
Value per share	\$ 160.69	Stock was trading at =	\$132.40