POSTCARDS FROM THE EDGE: COVID LESSONS FOR INVESTING/BUSINESS

Glimmers of light?

Lesson 1: Listen to markets, not experts

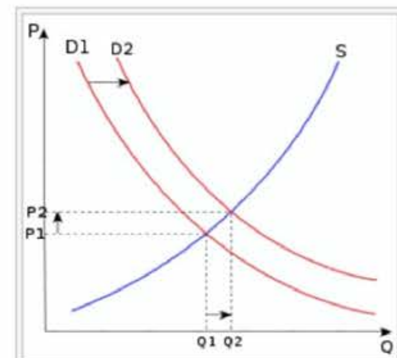
- During a crisis, you will be often told by experts and market gurus that markets are irrational and behave in crazy and chaotic ways.
- To back this up, the evidence that they will offer is that markets have wild swings on a day-to-day basis, and that these swings are incompatible with rational investing.
- 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



INTRINSIC VALUE → Value → THE GAP ← Price ← PRICE

THE GAP
Is there one?
Will it close?

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.

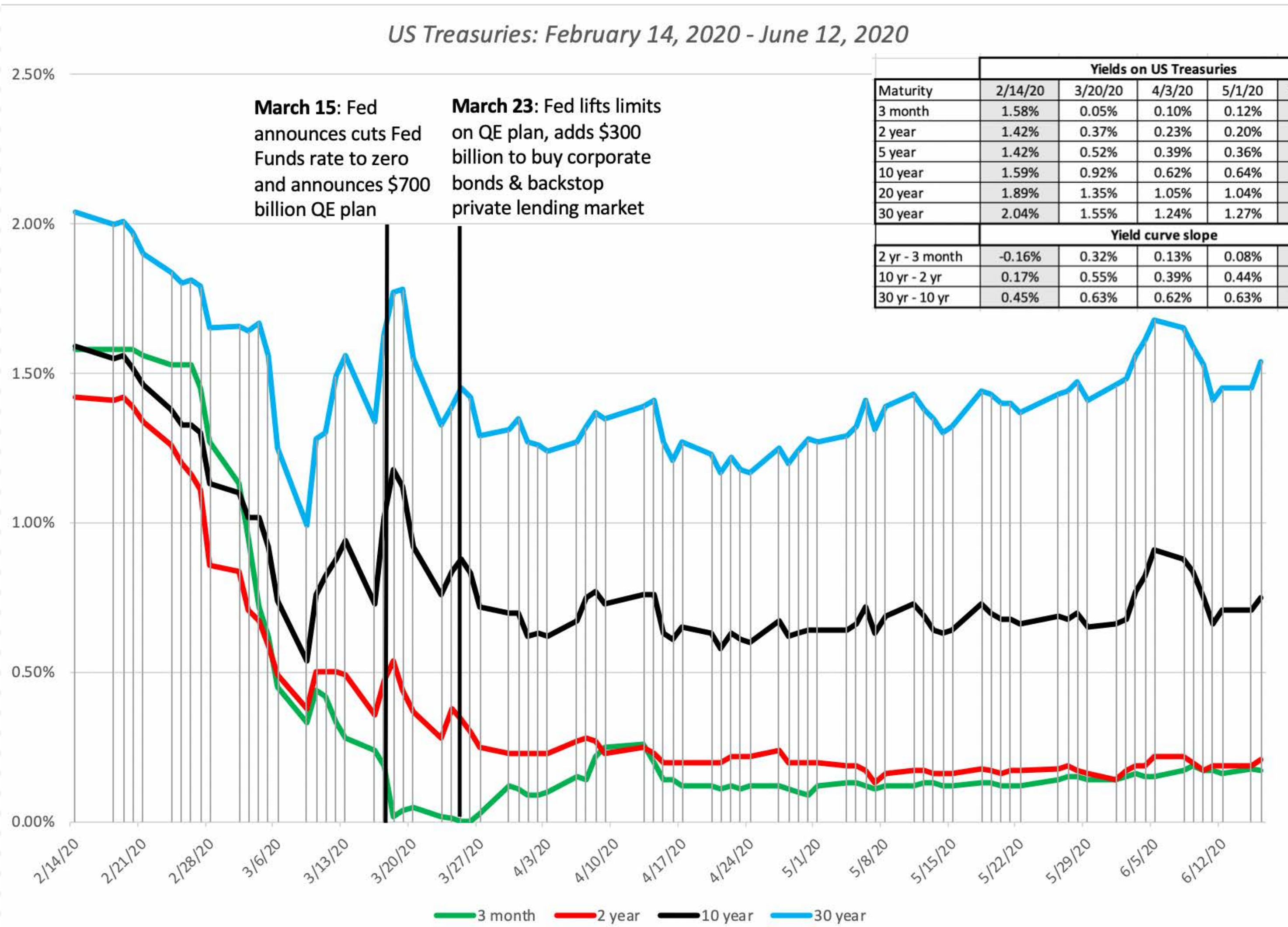
Equities, during the crisis…

	14-Feb-20	20-Mar-20	1-May-20
S&P 500	3380.16	2304.92	2830.71
NASDAQ	9731.18	6879.52	8604.95

Macro Review: Equity Indices

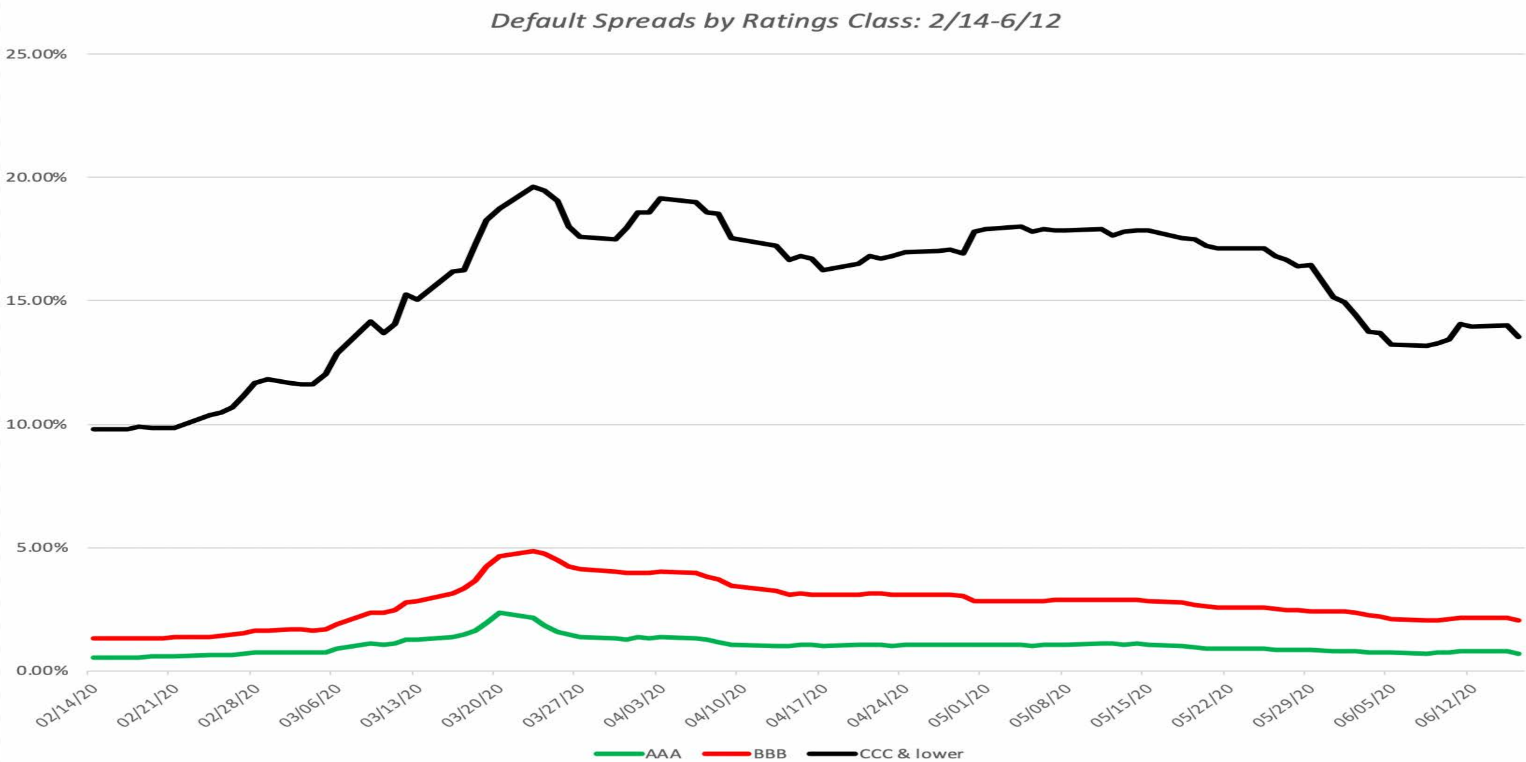
			Levels			% Change				
	Index	*Country/Region*	*14-Feb*	*20-Mar*	*12-Jun*	*6/5-6/12*	*5/12-6/12*	*2/14-3/20*	*3/20-6/12*	*2/14 - 6/12*
Americas	S&P 500	US	3214	2305	3041	1.31%	-4.78%	-28.28%	31.93%	-5.38%
	NASDAQ 100	US	9624	6994	9664	0.79%	-1.63%	-27.33%	38.18%	0.42%
	TSX	Canada	17848	11852	15257	1.37%	-3.77%	-33.59%	28.73%	-14.52%
	IPC Mexico	Mexico	45000	34270	37679	2.31%	-3.26%	-23.84%	9.95%	-16.27%
	iBovespa	Brazil	114381	67069	92795	-2.00%	-1.95%	-41.36%	38.36%	-18.87%
Europe	FTSE 100	UK	7409	5191	6105	0.47%	-5.85%	-29.94%	17.61%	-17.60%
	DAX	Germany	13744	8929	11949	-0.18%	-6.99%	-35.03%	33.82%	-13.06%
	CAC 40	France	6069	4131	4826	0.21%	-7.16%	-31.93%	16.82%	-20.48%
	S&P Europe 350	Europe	1731	1181	1417	0.27%	-5.60%	-31.77%	19.97%	-18.15%
Asia	Nikkei 225	Japan	23688	16553	22305	-0.75%	-2.44%	-30.12%	34.75%	-5.84%
	Shanghai 50	China	2895	2628	2884	0.26%	-0.42%	-9.22%	9.74%	-0.38%
	Hang Seng	Hong Kong	27816	22805	24301	-0.73%	-1.89%	-18.01%	6.56%	-12.64%
	Sensex	India	41258	29916	33781	0.72%	-1.48%	-27.49%	12.92%	-18.12%
Australia & NZ	ASX 200	Australia	7133	4825	5848	-1.89%	-2.52%	-32.36%	21.20%	-18.01%
	NZX 50	New Zealand	11835	9202	10906	-2.23%	-2.38%	-22.25%	18.52%	-7.85%
Africa	FTSE/JSE TOP 40	South Africa	52050	36302	49248	0.73%	-1.90%	-30.26%	35.66%	-5.38%
	NSE-All Share	Nigeria	27756	22198	25183	-0.13%	-0.51%	-20.02%	13.45%	-9.27%

Macro Review: US Treasuries



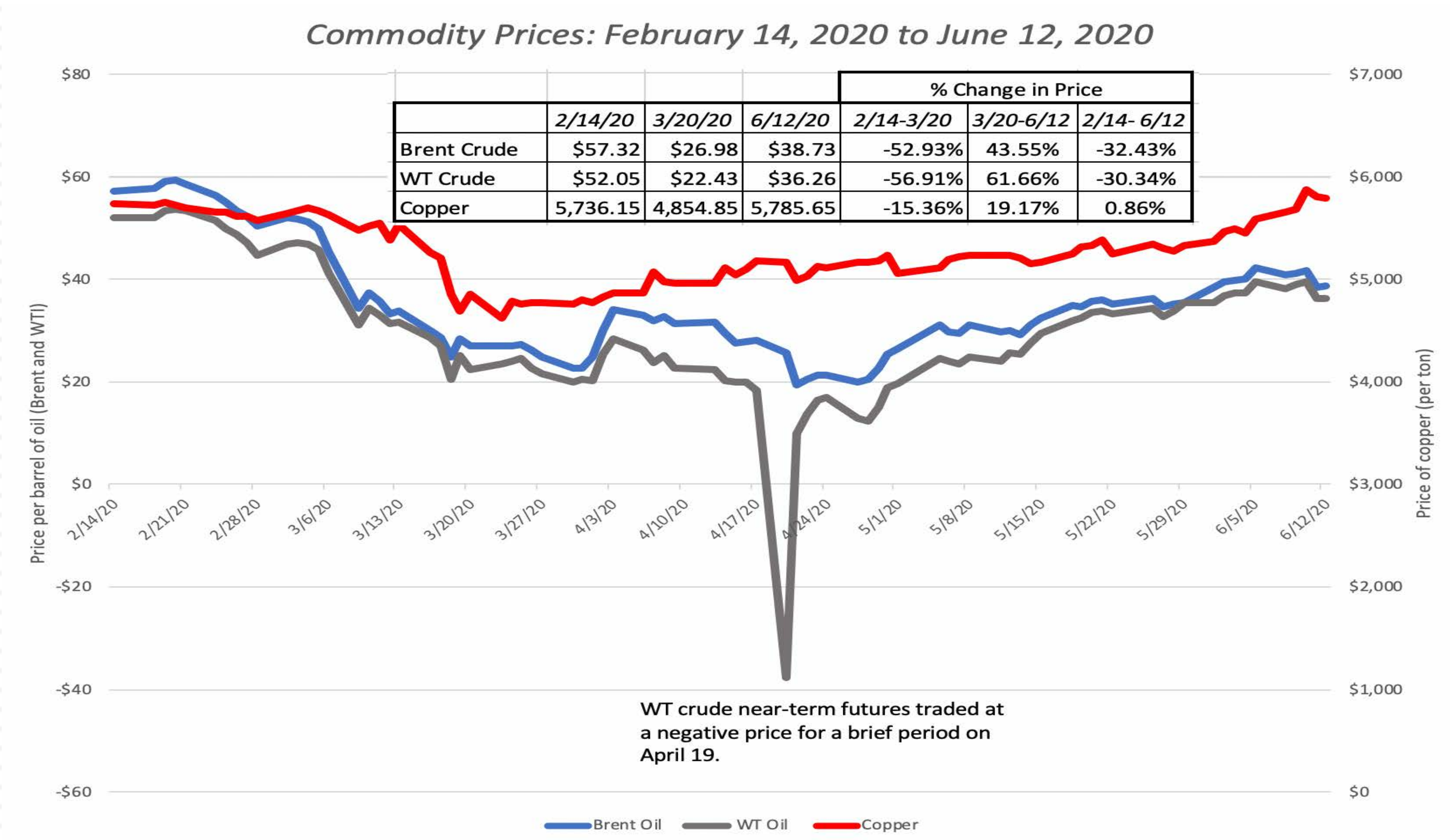
	Yields on US Treasuries				
Maturity	2/14/20	3/20/20	4/3/20	5/1/20	6/12/20
3 month	1.58%	0.05%	0.10%	0.12%	0.16%
2 year	1.42%	0.37%	0.23%	0.20%	0.19%
5 year	1.42%	0.52%	0.39%	0.36%	0.33%
10 year	1.59%	0.92%	0.62%	0.64%	0.71%
20 year	1.89%	1.35%	1.05%	1.04%	1.24%
30 year	2.04%	1.55%	1.24%	1.27%	1.45%
	Yield curve slope				
2 yr - 3 month	-0.16%	0.32%	0.13%	0.08%	0.03%
10 yr - 2 yr	0.17%	0.55%	0.39%	0.44%	0.52%
30 yr - 10 yr	0.45%	0.63%	0.62%	0.63%	0.74%

Macro Review: Corporate Bonds



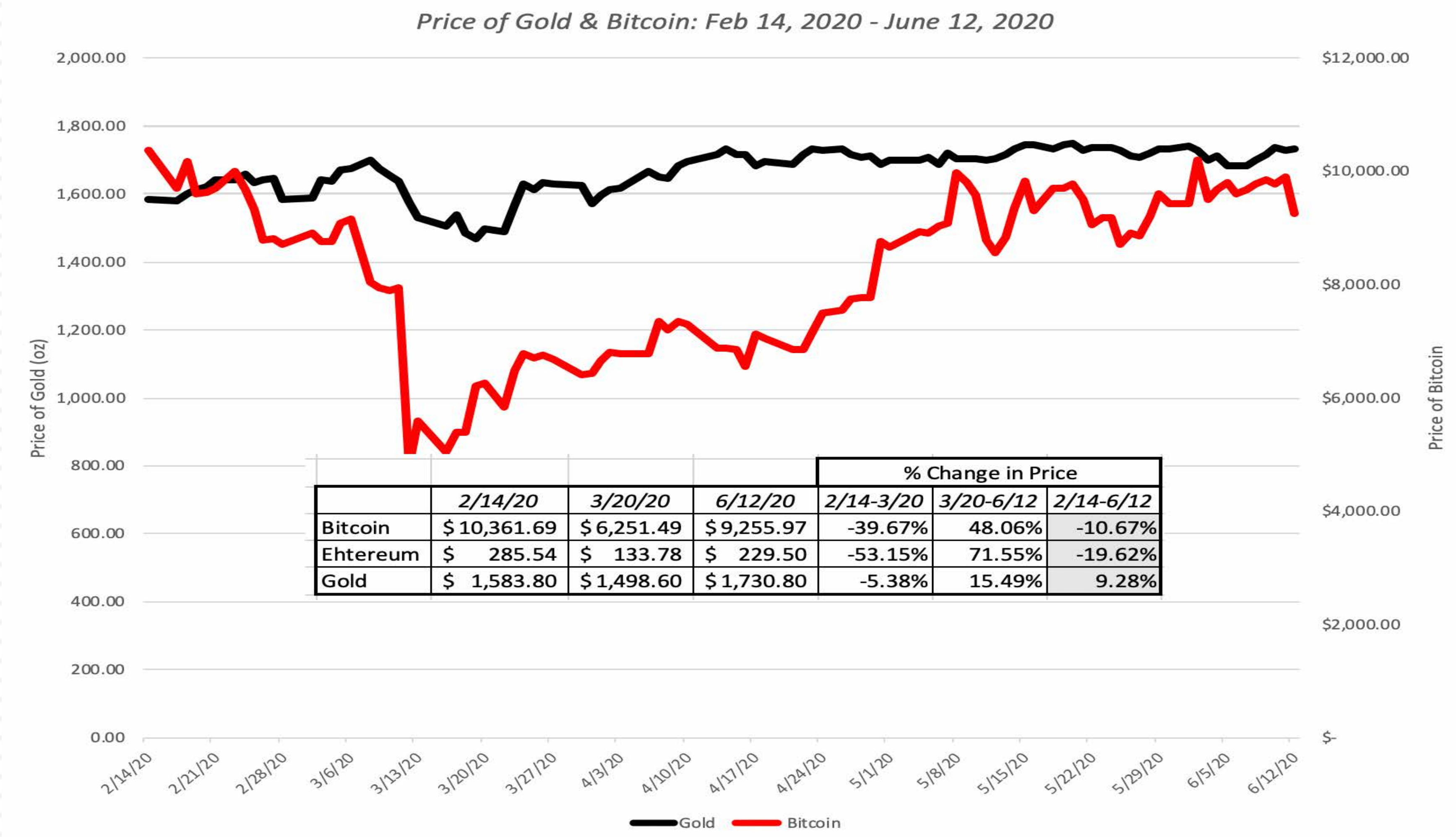
	Yields and Spreads on Corporates						Change in default spread		
	Spread over 10-yr Treasury			*Yield on Treasury*			*2/14-3/20*	*3/20-6/12*	2/14 -6/12
S&P Bond Rating	2/14/20	3/20/20	6/12/20	2/14/20	3/20/20	6/12/20			
AAA	0.69%	1.43%	0.89%	2.28%	2.35%	1.60%	0.74%	-0.54%	0.20%
AA	0.72%	2.64%	0.94%	2.31%	3.56%	1.65%	1.92%	-1.70%	0.22%
A	0.80%	3.15%	1.22%	2.39%	4.07%	1.93%	2.35%	-1.93%	0.42%
BBB	1.33%	3.73%	2.11%	2.92%	4.65%	2.82%	2.40%	-1.62%	0.78%
BB	1.93%	7.45%	4.28%	3.52%	8.37%	4.99%	5.52%	-3.17%	2.35%
B	3.40%	10.74%	6.02%	4.99%	11.66%	6.73%	7.34%	-4.72%	2.62%
CCC or lower	9.65%	17.81%	13.56%	11.24%	18.73%	14.27%	8.16%	-4.25%	3.91%

Macro Review: Oil & Copper



				% Change in Price		
	2/14/20	*3/20/20*	*6/12/20*	*2/14-3/20*	*3/20-6/12*	*2/14- 6/12*
Brent Crude	$57.32	$26.98	$38.73	-52.93%	43.55%	-32.43%
WT Crude	$52.05	$22.43	$36.26	-56.91%	61.66%	-30.34%
Copper	5,736.15	4,854.85	5,785.65	-15.36%	19.17%	0.86%

Macro Review: Gold & Bitcoin



				% Change in Price		
	2/14/20	*3/20/20*	*6/12/20*	*2/14-3/20*	*3/20-6/12*	*2/14-6/12*
Bitcoin	$ 10,361.69	$ 6,251.49	$ 9,255.97	-39.67%	48.06%	-10.67%
Ehtereum	$ 285.54	$ 133.78	$ 229.50	-53.15%	71.55%	-19.62%
Gold	$ 1,583.80	$ 1,498.60	$ 1,730.80	-5.38%	15.49%	9.28%

Global Equities: By Region

					Change in Market Cap ($)			Change in Market Cap (%)		
Sub Region	*Number of firms*	*Market Cap (2/14/20)*	*Market Cap (3/20/20)*	*Market Cap (6/12/20)*	*2/14-3/20*	*3/20-6/12*	*2/14-6/12*	*2/14-3/20*	*3/20-6/12*	*2/14-6/12*
Africa	654	$ 575,496	$ 359,162	$ 443,640	$ (216,334)	$ 84,478	$ (131,857)	-37.59%	23.52%	-22.91%
Australia & NZ	1,371	$ 1,617,138	$ 952,067	$ 1,400,976	$ (665,071)	$ 448,909	$ (216,162)	-41.13%	47.15%	-13.37%
Canada	1,571	$ 2,227,644	$ 1,352,771	$ 1,865,157	$ (874,874)	$ 512,386	$ (362,487)	-39.27%	37.88%	-16.27%
China	6,158	$ 14,015,652	$ 12,415,827	$ 13,895,918	$ (1,599,826)	$ 1,480,091	$ (119,734)	-11.41%	11.92%	-0.85%
EU & Environs	4,740	$ 13,571,684	$ 9,202,075	$ 11,794,851	$ (4,369,610)	$ 2,592,777	$ (1,776,833)	-32.20%	28.18%	-13.09%
Eastern Europe & Russia	414	$ 816,965	$ 489,932	$ 659,411	$ (327,033)	$ 169,479	$ (157,554)	-40.03%	34.59%	-19.29%
India	1,955	$ 2,196,012	$ 1,513,323	$ 1,752,009	$ (682,690)	$ 238,686	$ (444,004)	-31.09%	15.77%	-20.22%
Japan	3,810	$ 6,037,683	$ 4,465,063	$ 5,714,884	$ (1,572,620)	$ 1,249,821	$ (322,800)	-26.05%	27.99%	-5.35%
Latin America & Caribbean	944	$ 2,381,042	$ 1,377,871	$ 1,799,639	$ (1,003,171)	$ 421,768	$ (581,404)	-42.13%	30.61%	-24.42%
Middle East	1,260	$ 3,093,494	$ 2,572,681	$ 2,917,388	$ (520,812)	$ 344,707	$ (176,105)	-16.84%	13.40%	-5.69%
Small Asia	8,171	$ 5,113,426	$ 3,580,396	$ 4,752,640	$ (1,533,030)	$ 1,172,244	$ (360,786)	-29.98%	32.74%	-7.06%
UK	1,088	$ 3,057,235	$ 1,918,106	$ 2,444,548	$ (1,139,129)	$ 526,442	$ (612,687)	-37.26%	27.45%	-20.04%
United States	4,914	$ 35,643,839	$ 23,875,859	$ 32,069,578	$ (11,767,980)	$ 8,193,719	$ (3,574,261)	-33.02%	34.32%	-10.03%
Global	37,050	$ 90,347,312	$ 64,075,133	$ 81,510,639	$ (26,272,179)	$ 17,435,506	$ (8,836,673)	-29.08%	27.21%	-9.78%

Global Equities: By Sector

					Change in Market Cap ($)			Change in Market Cap (%)		
Primary Sector	*Number of firms*	*Market Cap (2/14/20)*	*Market Cap (3/20/20)*	*Market Cap (6/12/20)*	*2/14-3/20*	*3/20-6/12*	*2/14-6/12*	*2/14-3/20*	*3/20-6/12*	*2/14-6/12*
Communication Services	1,704	$ 7,347,017	$ 5,493,369	$ 6,957,578	$ (1,853,648)	$ 1,464,209	$ (389,439)	-25.23%	26.65%	-5.30%
Consumer Discretionary	5,054	$ 10,166,087	$ 7,068,403	$ 9,694,554	$ (3,097,685)	$ 2,626,152	$ (471,533)	-30.47%	37.15%	-4.64%
Consumer Staples	2,369	$ 7,125,338	$ 5,708,041	$ 6,771,545	$ (1,417,296)	$ 1,063,504	$ (353,793)	-19.89%	18.63%	-4.97%
Energy	1,328	$ 5,936,511	$ 3,851,584	$ 4,871,749	$ (2,084,927)	$ 1,020,165	$ (1,064,762)	-35.12%	26.49%	-17.94%
Financials	4,044	$ 14,945,750	$ 9,937,595	$ 11,795,978	$ (5,008,155)	$ 1,858,383	$ (3,149,772)	-33.51%	18.70%	-21.07%
Health Care	3,424	$ 8,904,743	$ 6,852,095	$ 8,896,443	$ (2,052,648)	$ 2,044,348	$ (8,300)	-23.05%	29.84%	-0.09%
Industrials	6,615	$ 10,108,394	$ 6,889,681	$ 8,705,180	$ (3,218,712)	$ 1,815,499	$ (1,403,214)	-31.84%	26.35%	-13.88%
Information Technology	4,864	$ 13,588,589	$ 9,729,618	$ 13,154,096	$ (3,858,971)	$ 3,424,478	$ (434,493)	-28.40%	35.20%	-3.20%
Materials	4,464	$ 4,983,621	$ 3,520,252	$ 4,574,380	$ (1,463,369)	$ 1,054,128	$ (409,241)	-29.36%	29.94%	-8.21%
Real Estate	2,344	$ 4,034,867	$ 2,693,800	$ 3,338,419	$ (1,341,066)	$ 644,618	$ (696,448)	-33.24%	23.93%	-17.26%
Utilities	836	$ 3,206,018	$ 2,330,427	$ 2,750,312	$ (875,591)	$ 419,885	$ (455,706)	-27.31%	18.02%	-14.21%
Global	37,050	$ 90,347,312	$ 64,075,133	$ 81,510,639	$ (26,272,179)	$ 17,435,506	$ (8,836,673)	-29.08%	27.21%	-9.78%

Global Equities: Industry Winners & Losers

Worst Performing Industries (2/14 - 6/12)										
					Change in Market Cap ($)			*Change in Market Cap (%)*		
Industry	*Number of firms*	*Market Cap (2/14/20)*	*Market Cap (3/20/20)*	*Market Cap (6/12/20)*	*2/14-3/20*	*3/20-6/12*	*2/14-6/12*	*2/14-3/20*	*3/20-6/12*	*2/14-6/12*
Oil/Gas (Production and Exploration)	482	$ 692,302	$ 317,710	$ 496,757	$ (374,592)	$ 179,047	$ (195,545)	-54.11%	56.36%	-28.25%
Air Transport	150	$ 556,284	$ 313,573	$ 399,729	$ (242,712)	$ 86,157	$ (156,555)	-43.63%	27.48%	-28.14%
Aerospace/Defense	209	$ 1,217,710	$ 674,040	$ 880,027	$ (543,670)	$ 205,986	$ (337,684)	-44.65%	30.56%	-27.73%
Broadcasting	122	$ 164,611	$ 93,921	$ 119,701	$ (70,690)	$ 25,780	$ (44,910)	-42.94%	27.45%	-27.28%
Food Wholesalers	118	$ 92,996	$ 49,886	$ 67,931	$ (43,110)	$ 18,045	$ (25,066)	-46.36%	36.17%	-26.95%
Oil/Gas Distribution	187	$ 649,489	$ 358,302	$ 477,980	$ (291,186)	$ 119,678	$ (171,509)	-44.83%	33.40%	-26.41%
Reinsurance	33	$ 180,567	$ 98,174	$ 133,092	$ (82,393)	$ 34,918	$ (47,475)	-45.63%	35.57%	-26.29%
Insurance (General)	194	$ 833,907	$ 508,235	$ 638,415	$ (325,672)	$ 130,180	$ (195,493)	-39.05%	25.61%	-23.44%
Homebuilding	147	$ 247,004	$ 127,536	$ 189,240	$ (119,469)	$ 61,705	$ (57,764)	-48.37%	48.38%	-23.39%
Bank (Money Center)	609	$ 6,832,396	$ 4,640,710	$ 5,241,726	$ (2,191,686)	$ 601,016	$ (1,590,670)	-32.08%	12.95%	-23.28%
Best Performing Industries (2/14 - 6/12)										
					Change in Market Cap ($)			*Change in Market Cap (%)*		
Industry	*Number of firms*	*Market Cap (2/14/20)*	*Market Cap (3/20/20)*	*Market Cap (6/12/20)*	*2/14-3/20*	*3/20-6/12*	*2/14-6/12*	*2/14-3/20*	*3/20-6/12*	*2/14-6/12*
Software (Internet)	108	$ 226,924	$ 166,710	$ 275,515	$ (60,214)	$ 108,805	$ 48,591	-26.54%	65.27%	21.41%
Retail (Online)	251	$ 2,455,480	$ 1,989,459	$ 2,816,540	$ (466,021)	$ 827,081	$ 361,060	-18.98%	41.57%	14.70%
Drugs (Biotechnology)	907	$ 1,407,275	$ 1,133,375	$ 1,548,157	$ (273,900)	$ 414,782	$ 140,883	-19.46%	36.60%	10.01%
Precious Metals	518	$ 418,790	$ 297,835	$ 460,466	$ (120,954)	$ 162,631	$ 41,677	-28.88%	54.60%	9.95%
Heathcare Information and Technolog	315	$ 771,525	$ 606,655	$ 848,174	$ (164,869)	$ 241,519	$ 76,649	-21.37%	39.81%	9.93%
Software (System & Application)	1,068	$ 3,761,996	$ 2,790,247	$ 3,807,011	$ (971,749)	$ 1,016,764	$ 45,015	-25.83%	36.44%	1.20%
Education	187	$ 193,073	$ 150,891	$ 194,460	$ (42,182)	$ 43,570	$ 1,387	-21.85%	28.88%	0.72%
Entertainment	516	$ 1,115,176	$ 843,007	$ 1,123,147	$ (272,168)	$ 280,140	$ 7,971	-24.41%	33.23%	0.71%
Beverage (Alcoholic)	196	$ 1,147,100	$ 874,777	$ 1,146,214	$ (272,323)	$ 271,437	$ (887)	-23.74%	31.03%	-0.08%
Software (Entertainment)	236	$ 2,579,295	$ 1,873,369	$ 2,569,028	$ (705,926)	$ 695,659	$ (10,267)	-27.37%	37.13%	-0.40%

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
  - <u>Just punishment</u>: The market drop is well-deserved punishment for those who invested in high flying companies and on momentum.
  - <u>Buybacks are the problem</u>: 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

	Lowest PBV	*Highest PBV*	*Difference*	*Lowest PE*	*Highest PE*	*Difference*
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

		Market Capitalization (in US dollars)			Percentage Change		
Trailing PE	*Number of firms*	*2/14/20*	*3/20/20*	*6/1/20*	*2/14-3/20*	*3/20-6/1*	*2/14-6/1*
Bottom decile	2,444	$ 3,061,076	$ 2,351,948	$ 2,594,261	-23.17%	10.30%	-15.25%
2nd decile	2,444	$ 3,760,687	$ 2,643,016	$ 3,041,725	-29.72%	15.09%	-19.12%
3rd decile	2,444	$ 4,714,250	$ 3,168,954	$ 3,773,153	-32.78%	19.07%	-19.96%
4th decile	2,445	$ 7,747,037	$ 5,166,733	$ 6,030,835	-33.31%	16.72%	-22.15%
5th decile	2,444	$ 6,980,675	$ 4,880,317	$ 5,776,611	-30.09%	18.37%	-17.25%
6th decile	2,444	$ 12,238,312	$ 8,934,428	$ 10,752,901	-27.00%	20.35%	-12.14%
7th decile	2,445	$ 12,931,401	$ 9,348,278	$ 11,682,177	-27.71%	24.97%	-9.66%
8th decile	2,444	$ 14,074,833	$ 10,186,052	$ 12,989,969	-27.63%	27.53%	-7.71%
9th decile	2,444	$ 10,247,107	$ 7,470,118	$ 9,438,631	-27.10%	26.35%	-7.89%
Top decile	2,445	$ 6,787,975	$ 5,089,776	$ 6,555,668	-25.02%	28.80%	-3.42%
Negative Earnings	12,204	$ 7,781,793	$ 4,825,619	$ 6,595,127	-37.99%	36.67%	-15.25%
All	36,647	$ 90,325,147	$ 64,065,238	$ 79,231,056	-29.07%	23.67%	-12.28%

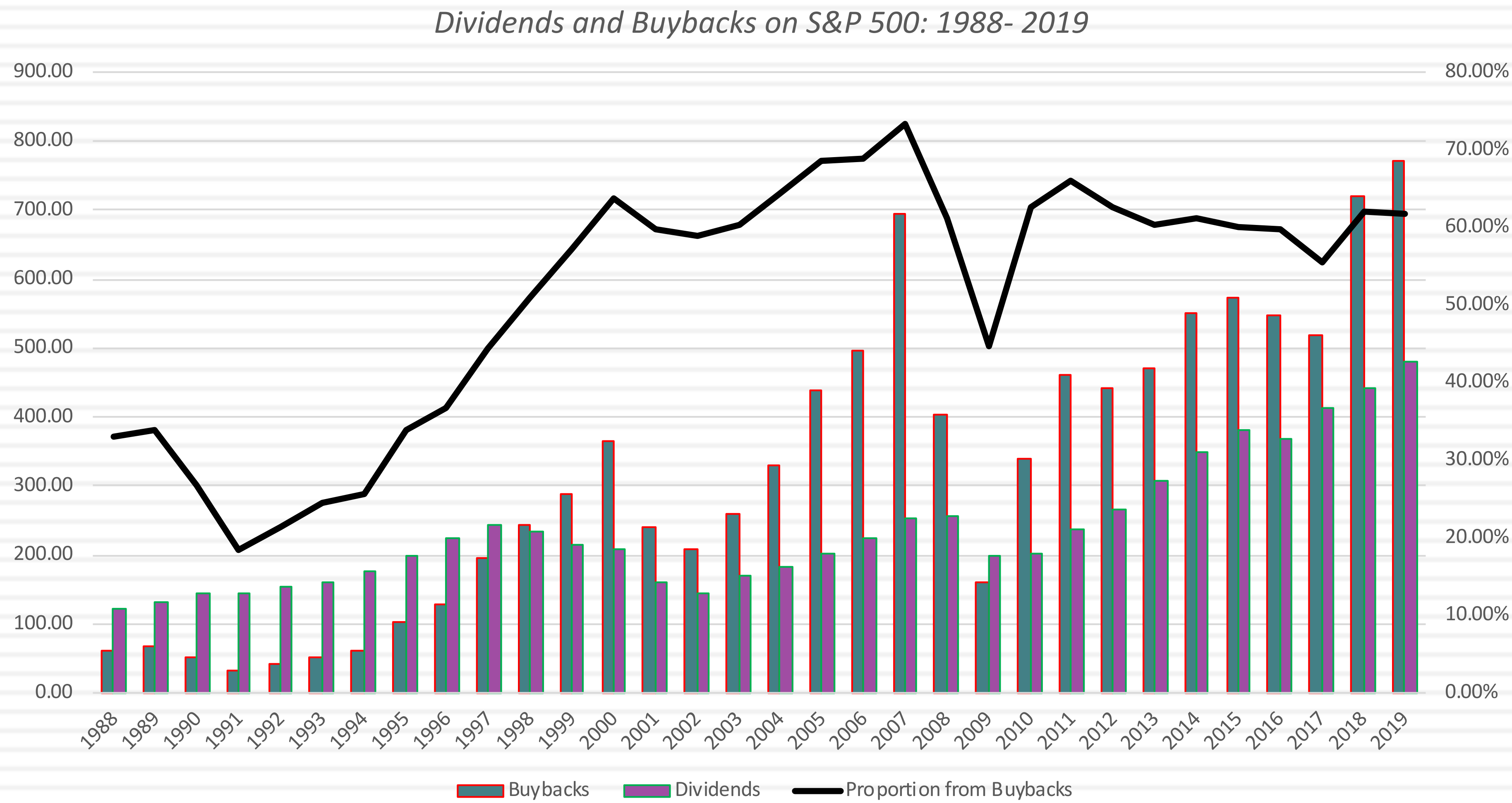
Momentum and Damage

		Market Capitalization (in US dollars)			Percentage Change		
% Price Change (2/14/19-2/14/20)	*Number of firms*	*2/14/20*	*3/20/20*	*6/1/20*	*2/14-3/20*	*3/20-6/1*	*2/14-6/1*
Bottom decile	3,438	$ 919,383	$ 576,793	$ 752,403	-37.26%	30.45%	-18.16%
2nd decile	3,439	$ 2,477,964	$ 1,700,301	$ 1,882,297	-31.38%	10.70%	-24.04%
3rd decile	3,439	$ 5,426,550	$ 3,647,359	$ 4,210,121	-32.79%	15.43%	-22.42%
4th decile	3,439	$ 5,627,021	$ 3,909,348	$ 4,446,376	-30.53%	13.74%	-20.98%
5th decile	3,439	$ 7,592,126	$ 5,393,414	$ 6,339,128	-28.96%	17.53%	-16.50%
6th decile	3,438	$ 8,215,466	$ 5,899,859	$ 6,988,211	-28.19%	18.45%	-14.94%
7th decile	3,439	$ 12,946,293	$ 9,102,865	$ 11,036,764	-29.69%	21.24%	-14.75%
8th decile	3,439	$ 21,259,458	$ 14,960,556	$ 18,988,325	-29.63%	26.92%	-10.68%
9th decile	3,439	$ 13,493,728	$ 9,577,270	$ 12,397,337	-29.02%	29.45%	-8.13%
Top decile	3,439	$ 8,835,277	$ 6,383,971	$ 8,705,721	-27.74%	36.37%	-1.47%
Missing	2,259	$ 3,531,881	$ 2,913,502	$ 3,484,374	-17.51%	19.59%	-1.35%
All	36,647	$ 90,325,147	$ 64,065,238	$ 79,231,056	-29.07%	23.67%	-12.28%

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…



A Test: Buybacks vs No Buybacks

						3/20-3/27		2/14 - 3/27	
Sub Region	*[Buybacks/Market Cap = 0.00%]*	*count*	*Market Cap (2/14/20)*	*Market Cap (3/20/20)*	*Market Cap (3/27/20)*	*$ Change*	*% Change*	*$ Change*	*% Change*
Africa	Buybacks	131	$ 184,573	$ 104,839	$ 104,697	$ (142)	-0.14%	$ (79,876)	-43.28%
	No Buybacks	518	$ 393,802	$ 258,553	$ 263,368	$ 4,814	1.86%	$ (130,435)	-33.12%
Australia & NZ	Buybacks	198	$ 918,106	$ 524,059	$ 548,057	$ 23,998	4.58%	$ (370,049)	-40.31%
	No Buybacks	1,025	$ 698,233	$ 428,103	$ 466,865	$ 38,762	9.05%	$ (231,368)	-33.14%
Canada	Buybacks	311	$ 1,329,530	$ 811,789	$ 882,146	$ 70,357	8.67%	$ (447,385)	-33.65%
	No Buybacks	1,072	$ 947,707	$ 577,118	$ 645,859	$ 68,741	11.91%	$ (301,848)	-31.85%
China	Buybacks	517	$ 3,079,745	$ 2,644,924	$ 2,737,579	$ 92,655	3.50%	$ (342,167)	-11.11%
	No Buybacks	5,638	$ 10,952,414	$ 9,786,548	$ 9,933,086	$ 146,538	1.50%	$ (1,019,328)	-9.31%
EU & Environs	Buybacks	981	$ 7,410,273	$ 5,109,535	$ 5,608,557	$ 499,021	9.77%	$ (1,801,717)	-24.31%
	No Buybacks	3,667	$ 6,268,130	$ 4,197,365	$ 4,564,530	$ 367,166	8.75%	$ (1,703,600)	-27.18%
Eastern Europe &	Buybacks	72	$ 273,054	$ 169,736	$ 171,615	$ 1,879	1.11%	$ (101,439)	-37.15%
	No Buybacks	344	$ 548,064	$ 327,937	$ 349,479	$ 21,541	6.57%	$ (198,585)	-36.23%
India	Buybacks	10	$ 87,380	$ 64,478	$ 63,050	$ (1,428)	-2.22%	$ (24,330)	-27.84%
	No Buybacks	1,751	$ 2,119,358	$ 1,456,768	$ 1,411,620	$ (45,148)	-3.10%	$ (707,738)	-33.39%
Japan	Buybacks	404	$ 2,581,570	$ 1,926,472	$ 2,253,688	$ 327,215	16.99%	$ (327,882)	-12.70%
	No Buybacks	3,410	$ 3,471,934	$ 2,554,470	$ 2,989,679	$ 435,209	17.04%	$ (482,256)	-13.89%
Latin America &	Buybacks	197	$ 721,055	$ 428,766	$ 449,556	$ 20,790	4.85%	$ (271,499)	-37.65%
	No Buybacks	719	$ 1,664,005	$ 953,425	$ 1,040,531	$ 87,106	9.14%	$ (623,474)	-37.47%
Middle East	Buybacks	111	$ 1,971,311	$ 1,705,871	$ 1,742,222	$ 36,352	2.13%	$ (229,089)	-11.62%
	No Buybacks	1,119	$ 1,127,502	$ 873,355	$ 867,243	$ (6,112)	-0.70%	$ (260,259)	-23.08%
Small Asia	Buybacks	1,051	$ 883,172	$ 615,416	$ 662,409	$ 46,993	7.64%	$ (220,763)	-25.00%
	No Buybacks	6,915	$ 4,217,379	$ 2,961,812	$ 3,147,994	$ 186,182	6.29%	$ (1,069,385)	-25.36%
UK	Buybacks	324	$ 2,140,244	$ 1,317,339	$ 1,479,924	$ 162,585	12.34%	$ (660,321)	-30.85%
	No Buybacks	730	$ 931,038	$ 610,024	$ 673,132	$ 63,108	10.35%	$ (257,906)	-27.70%
United States	Buybacks	2,473	$ 29,219,828	$ 19,388,811	$ 21,458,076	$ 2,069,265	10.67%	$ (7,761,752)	-26.56%
	No Buybacks	2,410	$ 6,525,839	$ 4,564,903	$ 5,007,885	$ 442,981	9.70%	$ (1,517,955)	-23.26%
Global	Buybacks	6,780	$ 50,799,843	$ 34,812,035	$ 38,161,575	$ 3,349,539	9.62%	$ (12,638,269)	-24.88%
	No Buybacks	29,318	$ 39,865,405	$ 29,550,382	$ 31,361,270	$ 1,810,888	6.13%	$ (8,504,135)	-21.33%

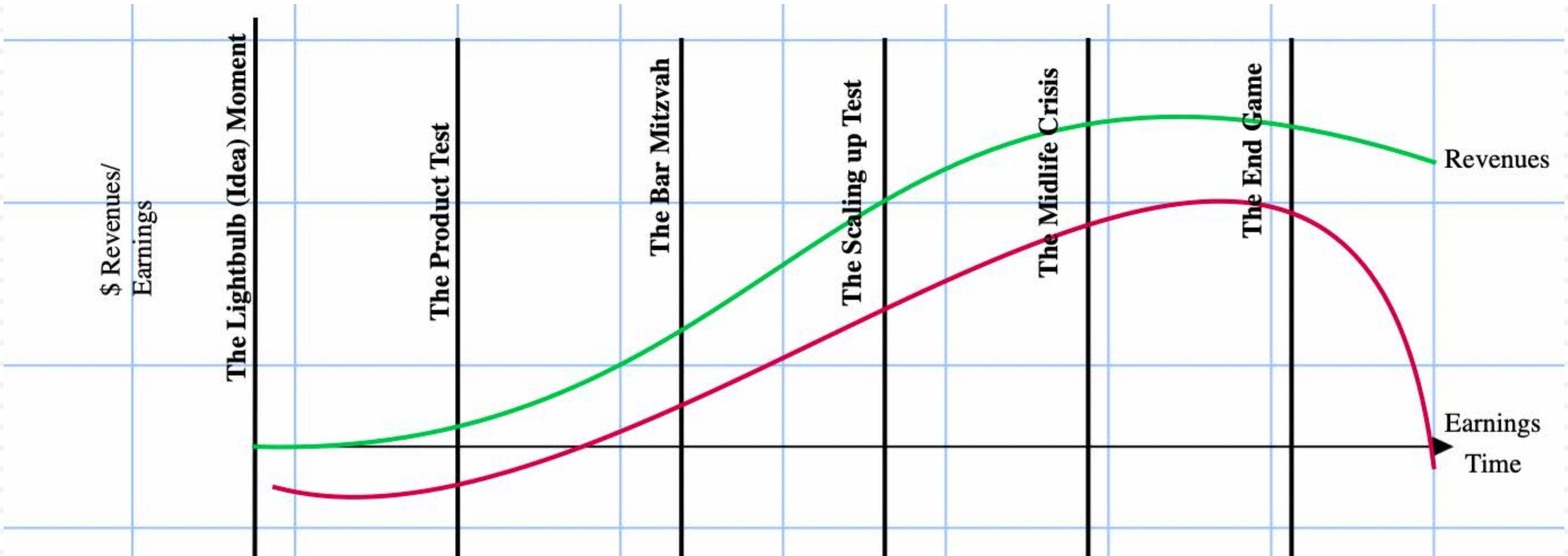
A follow up with dividends

		Market Cap			Dollar Change			% Change		
Dividend Yield Classes	*Number of firms*	*2/14/20*	*3/20/20*	*5/1/20*	*2/14-3/20*	*3/20-5/1*	*2/14 - 5/1*	*2/14-3/20*	*3/20-5/1*	*2/14 - 5/1*
No Dividends	19,225	$ 24,707,423	$17,289,721	$ 20,743,671	$ (7,417,702)	$ 3,453,950	$ (3,963,753)	-30.02%	19.98%	-16.04%
Bottom quintile	3,440	$ 14,683,166	$10,815,860	$ 13,009,503	$ (3,867,306)	$ 2,193,643	$ (1,673,663)	-26.34%	20.28%	-11.40%
2nd quintile	3,440	$ 15,339,511	$10,891,211	$ 13,012,951	$ (4,448,300)	$ 2,121,740	$ (2,326,560)	-29.00%	19.48%	-15.17%
3rd quintile	3,439	$ 14,326,211	$10,101,474	$ 11,784,654	$ (4,224,737)	$ 1,683,180	$ (2,541,557)	-29.49%	16.66%	-17.74%
4th quintile	3,441	$ 14,749,540	$10,569,522	$ 11,995,030	$ (4,180,019)	$ 1,425,508	$ (2,754,510)	-28.34%	13.49%	-18.68%
Top quintile	3,440	$ 6,558,097	$ 4,440,724	$ 5,007,719	$ (2,117,372)	$ 566,995	$ (1,550,378)	-32.29%	12.77%	-23.64%
All firms	36,425	$ 90,363,948	$64,108,512	$ 75,553,528	$ (26,255,436)	$ 11,445,016	$ (14,810,420)	-29.06%	17.85%	-16.39%

The Real Culprit…

		Market Cap			*Dollar Change*			*% Change*		
Net Debt Ratio	*Number of firms*	*2/14/20*	*3/20/20*	*5/1/20*	*2/14-3/20*	*3/20-5/1*	*2/14 - 5/1*	*2/14-3/20*	*3/20-5/1*	*2/14 - 5/1*
Bottom decile	2,531	$ 2,460,033	$ 1,950,211	$ 2,239,697	$ (509,822)	$ 289,487	$ (220,335)	-20.72%	14.84%	-8.96%
2nd decile	2,532	$ 5,331,445	$ 4,109,946	$ 4,892,012	$ (1,221,499)	$ 782,066	$ (439,433)	-22.91%	19.03%	-8.24%
3rd decile	2,532	$ 7,877,954	$ 6,018,450	$ 7,187,853	$ (1,859,504)	$ 1,169,403	$ (690,101)	-23.60%	19.43%	-8.76%
4th decile	2,531	$ 8,594,180	$ 6,647,750	$ 7,627,550	$ (1,946,430)	$ 979,800	$ (966,630)	-22.65%	14.74%	-11.25%
5th decile	2,532	$ 12,475,883	$ 9,050,739	$ 10,904,998	$ (3,425,145)	$ 1,854,259	$ (1,570,886)	-27.45%	20.49%	-12.59%
6th decile	2,532	$ 11,806,339	$ 8,195,049	$ 9,769,674	$ (3,611,289)	$ 1,574,624	$ (2,036,665)	-30.59%	19.21%	-17.25%
7th decile	2,531	$ 11,105,948	$ 7,598,270	$ 9,067,167	$ (3,507,678)	$ 1,468,897	$ (2,038,781)	-31.58%	19.33%	-18.36%
8th decile	2,532	$ 8,055,701	$ 5,476,347	$ 6,519,914	$ (2,579,353)	$ 1,043,567	$ (1,535,787)	-32.02%	19.06%	-19.06%
9th decile	2,532	$ 6,737,795	$ 4,329,035	$ 5,165,483	$ (2,408,760)	$ 836,448	$ (1,572,312)	-35.75%	19.32%	-23.34%
Top decile	2,532	$ 2,507,113	$ 1,612,397	$ 1,896,025	$ (894,716)	$ 283,628	$ (611,088)	-35.69%	17.59%	-24.37%
Negative EBITDA	11,108	$ 13,411,556	$ 9,120,317	$ 10,283,154	$ (4,291,239)	$ 1,162,837	$ (3,128,402)	-32.00%	12.75%	-23.33%
All firms	36,425	$ 90,363,948	$64,108,512	$ 75,553,528	$ (26,255,436)	$ 11,445,016	$ (14,810,420)	-29.06%	17.85%	-16.39%

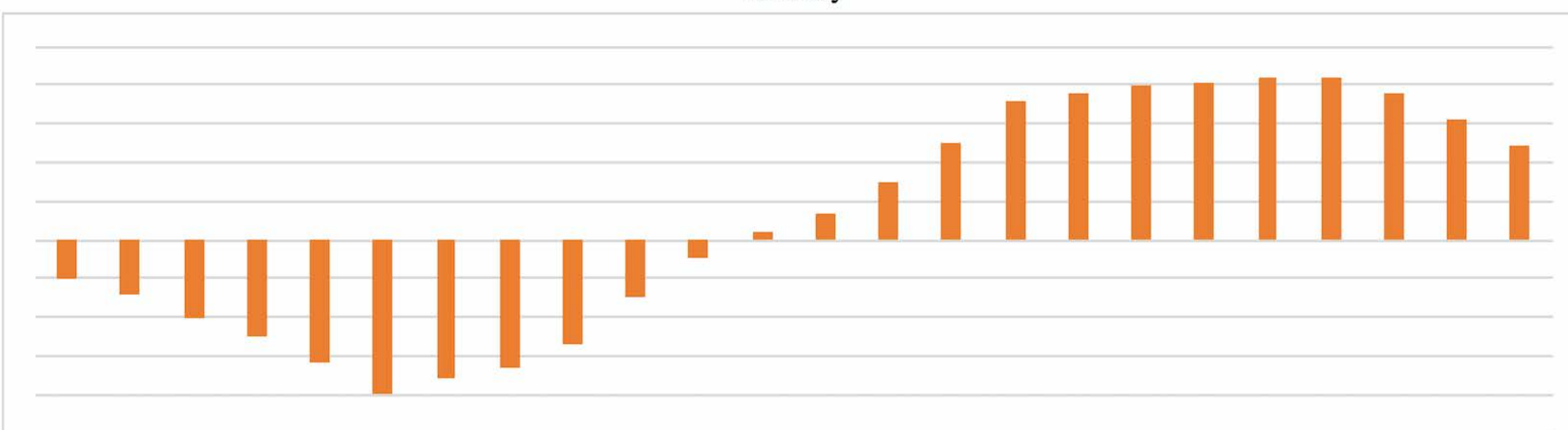
The Corporate Life Cycle



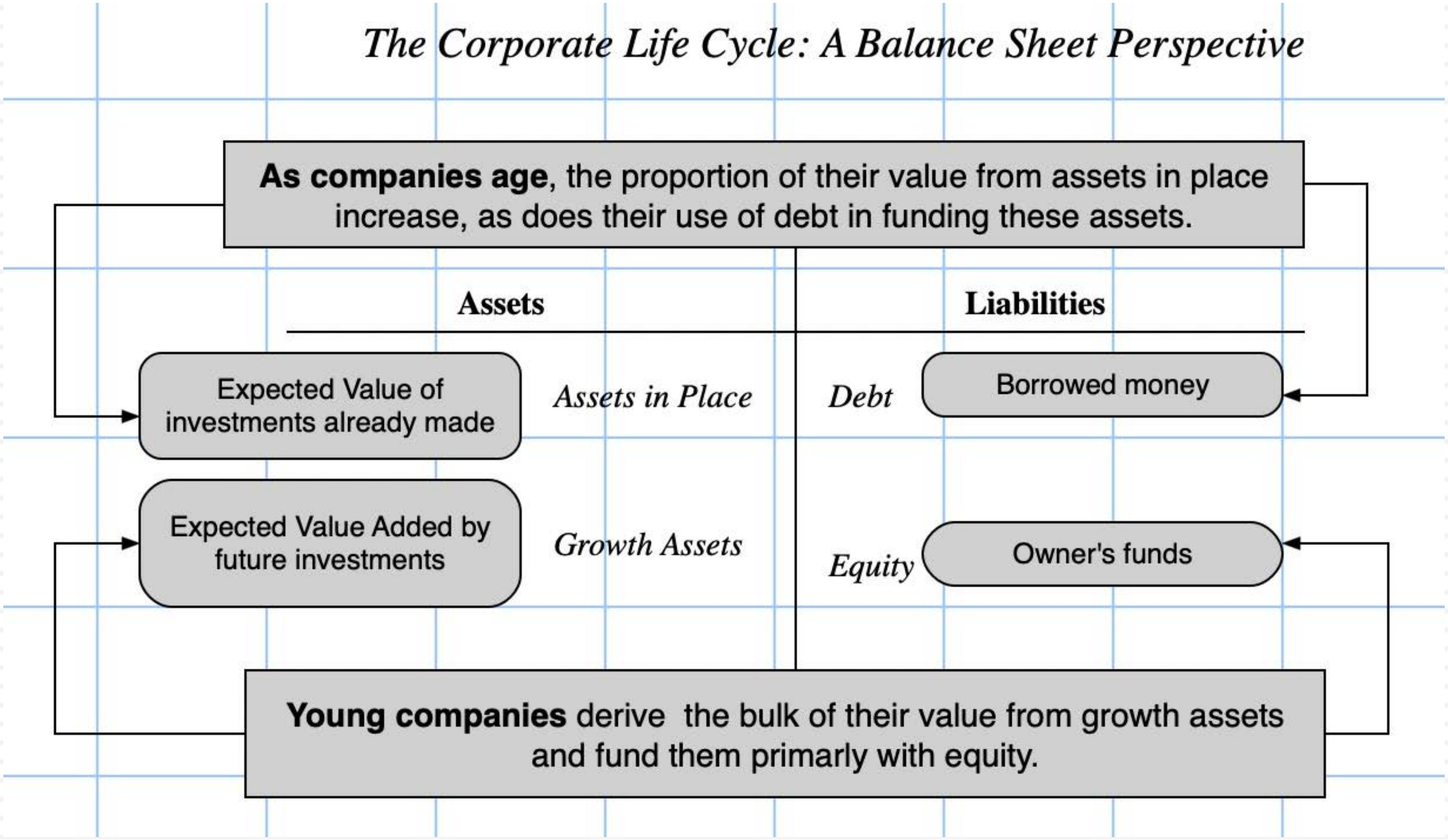
Growth stage	**Start-up**	**Young Growth**	**High Growth**	**Mature Growth**	**Mature Stable**	**Decline**
Description	Have an idea for a business that meets an unmet need in the market.	Create a business model that converts ideas into revenues	Build the business, looking for scaling benefits & path to profits	Grow your business, with revenue growth & solid (rising) margins	Defend your business from new competitors & find new markets	Scale down your business as market shrinks.

Cashflows across the life cycle…

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



And 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

					Change in Market Cap ($)			Change in Market Cap (%)		
Company Age (Decile)	Number of firms	Market Cap (2/14/20)	Market Cap (3/20/20)	Market Cap (6/12/20)	2/14-3/20	3/20-6/12	2/14-6/12	2/14-3/20	3/20-6/12	2/14-6/12
Youngest	3,290	$ 3,293,812	$ 2,257,807	$ 3,197,250	$ (1,036,005)	$ 939,443	$ (96,563)	-31.45%	41.61%	-2.93%
2nd decile	3,289	$ 4,260,977	$ 3,111,165	$ 4,137,437	$ (1,149,812)	$ 1,026,272	$ (123,540)	-26.98%	32.99%	-2.90%
3rd decile	3,007	$ 3,876,231	$ 2,914,757	$ 3,753,816	$ (961,474)	$ 839,059	$ (122,416)	-24.80%	28.79%	-3.16%
4th decile	3,222	$ 8,216,219	$ 6,262,223	$ 7,761,659	$ (1,953,996)	$ 1,499,437	$ (454,560)	-23.78%	23.94%	-5.53%
5th decile	3,361	$ 6,607,178	$ 5,079,510	$ 6,510,297	$ (1,527,668)	$ 1,430,788	$ (96,881)	-23.12%	28.17%	-1.47%
6th decile	3,531	$ 6,745,317	$ 4,928,358	$ 6,077,167	$ (1,816,959)	$ 1,148,809	$ (668,150)	-26.94%	23.31%	-9.91%
7th decile	3,307	$ 9,177,848	$ 6,538,028	$ 8,631,375	$ (2,639,820)	$ 2,093,347	$ (546,473)	-28.76%	32.02%	-5.95%
8th decile	3,373	$ 7,665,001	$ 5,090,833	$ 6,665,011	$ (2,574,168)	$ 1,574,178	$ (999,990)	-33.58%	30.92%	-13.05%
9th decile	3,321	$ 12,355,697	$ 8,936,023	$ 10,898,326	$ (3,419,674)	$ 1,962,303	$ (1,457,370)	-27.68%	21.96%	-11.80%
Oldest	3,338	$ 24,221,699	$ 16,142,833	$ 20,308,253	$ (8,078,866)	$ 4,165,419	$ (3,913,446)	-33.35%	25.80%	-16.16%

COVID: High Growth versus Low Growth

					Change in Market Cap ($)			Change in Market Cap (%)		
Expected Revenue Growth	*Number of firms*	*Market Cap (2/14/20)*	*Market Cap (3/20/20)*	*Market Cap (6/12/20)*	*2/14-3/20*	*3/20-6/12*	*2/14-6/12*	*2/14-3/20*	*3/20-6/12*	*2/14-6/12*
Lowest Growth	1,430	$ 8,053,586	$ 4,939,470	$ 6,323,465	$ (3,114,115)	$ 1,383,995	$ (1,730,120)	-38.67%	28.02%	-21.48%
2nd decile	1,434	$ 9,759,617	$ 6,171,539	$ 7,716,302	$ (3,588,078)	$ 1,544,763	$ (2,043,315)	-36.76%	25.03%	-20.94%
3rd decile	1,431	$ 9,523,772	$ 6,203,029	$ 7,847,628	$ (3,320,743)	$ 1,644,599	$ (1,676,144)	-34.87%	26.51%	-17.60%
4th decile	1,431	$ 10,020,274	$ 6,981,006	$ 8,694,882	$ (3,039,268)	$ 1,713,875	$ (1,325,392)	-30.33%	24.55%	-13.23%
5th decile	1,436	$ 11,638,075	$ 8,369,858	$ 10,372,567	$ (3,268,217)	$ 2,002,709	$ (1,265,508)	-28.08%	23.93%	-10.87%
6th decile	1,432	$ 10,796,357	$ 7,971,081	$ 9,953,453	$ (2,825,276)	$ 1,982,372	$ (842,904)	-26.17%	24.87%	-7.81%
7th decile	1,422	$ 6,202,696	$ 4,473,418	$ 5,699,189	$ (1,729,279)	$ 1,225,771	$ (503,508)	-27.88%	27.40%	-8.12%
8th decile	1,437	$ 7,893,925	$ 5,874,647	$ 7,763,962	$ (2,019,278)	$ 1,889,315	$ (129,963)	-25.58%	32.16%	-1.65%
9th decile	1,442	$ 7,971,026	$ 6,341,751	$ 8,567,384	$ (1,629,275)	$ 2,225,632	$ 596,358	-20.44%	35.09%	7.48%
Highest Growth	1,433	$ 2,917,285	$ 2,256,708	$ 3,363,268	$ (660,576)	$ 1,106,560	$ 445,983	-22.64%	49.03%	15.29%

What’s different?

- Crisis Origins: This crisis seems to have had a much greater negative impact on older, more mature companies than on younger, high growth ones. perhaps because it 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.
- Private Risk Capital: Young companies have benefited from the fact, that after being on hold in the first few weeks of the crisis, risk capital came roaring back in the middle of March, both in public and private markets. That access to risk capital has also benefited distressed companies at the other end of the life cycle, explaining why you have seen surges in airline stock prices and in portions of the oil sector.

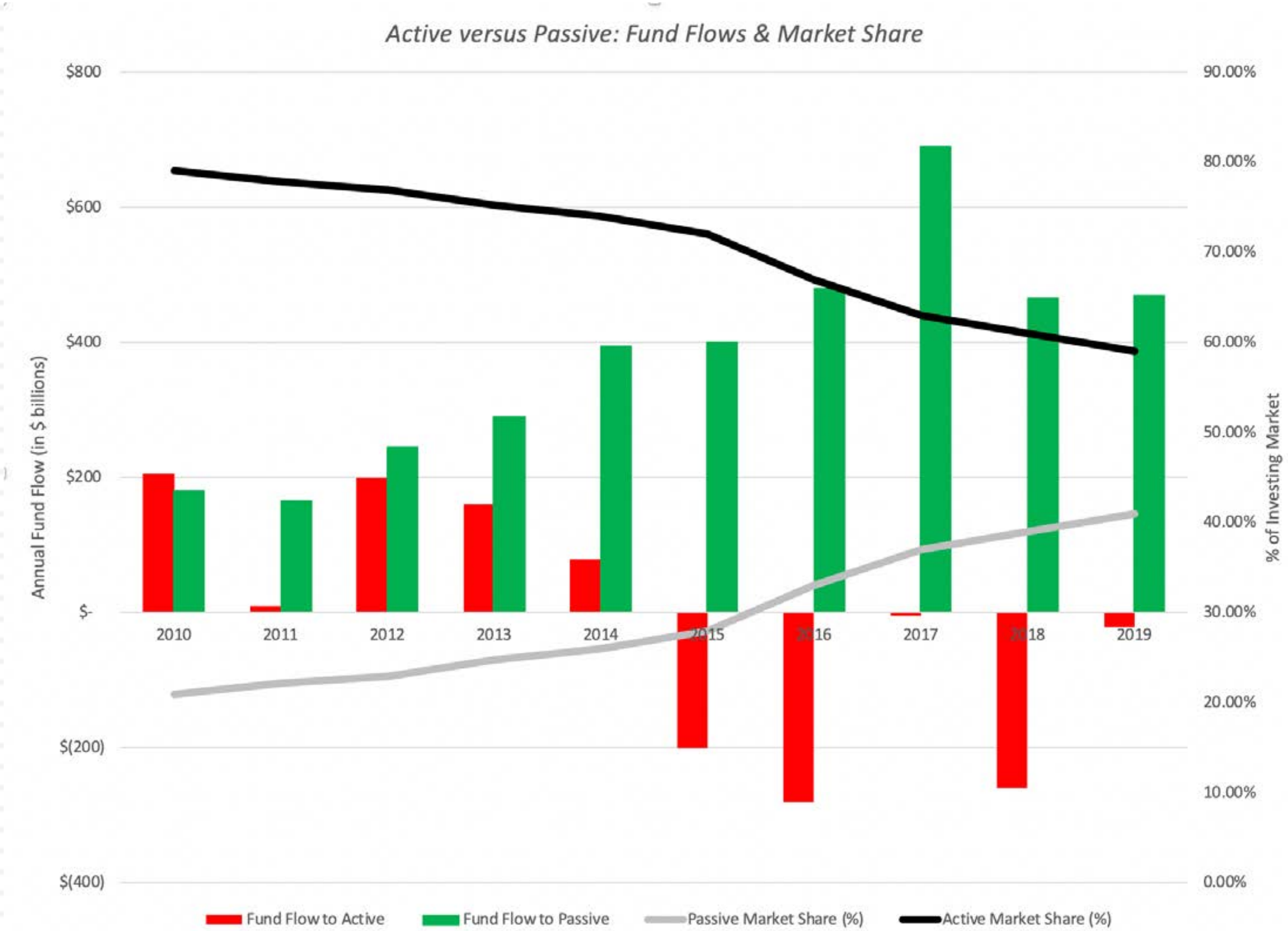
Lesson 3: There is no smart money…

- 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



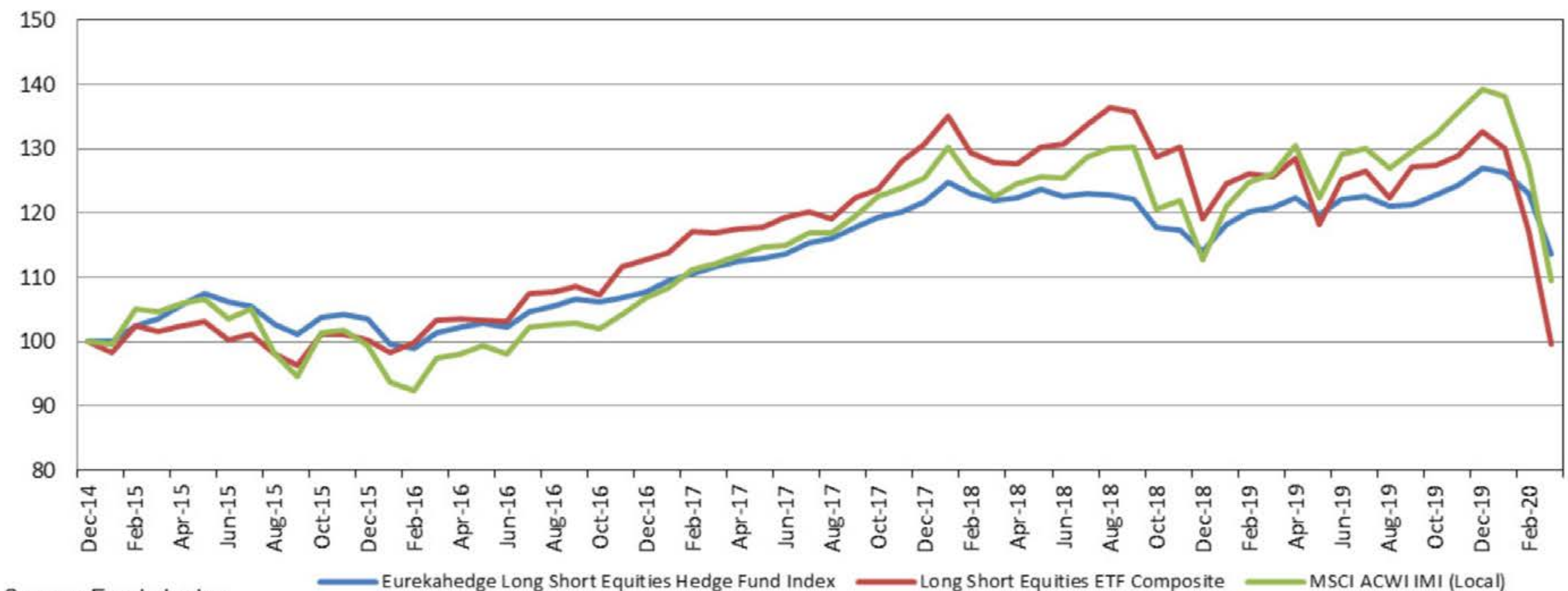
Active versus Passive: Fund Flows & Market Share
$800
$600
$400
$200
$-
$(200)
$(400)
Annual Fund Flow (in $ billions)
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
% of Investing Market
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
Fund Flow to Active
Fund Flow to Passive
Passive Market Share (%)
Active Market Share (%)

The Crisis Test: Active Mutual Funds

	Returns in 2020, First Quarter		
Equity Mutual Funds	*Mutual Funds*	*MS Index*	*Active Excess Return*
Large Blend	-20.92%	-17.86%	-3.06%
Large Growth	-15.48%	-11.51%	-3.97%
Large Value	-26.77%	-25.10%	-1.67%
Mid-Cap Blend	-28.28%	-26.42%	-1.86%
Mid-Cap Growth	-20.64%	-17.00%	-3.64%
Mid-Cap Value	-32.53%	-35.52%	2.99%
Small Blend	-32.37%	-31.61%	-0.76%
Small Growth	-24.59%	-21.45%	-3.14%
Small Value	-36.89%	-39.68%	2.79%
All US Equity Funds	-21.94%	-20.57%	-1.37%

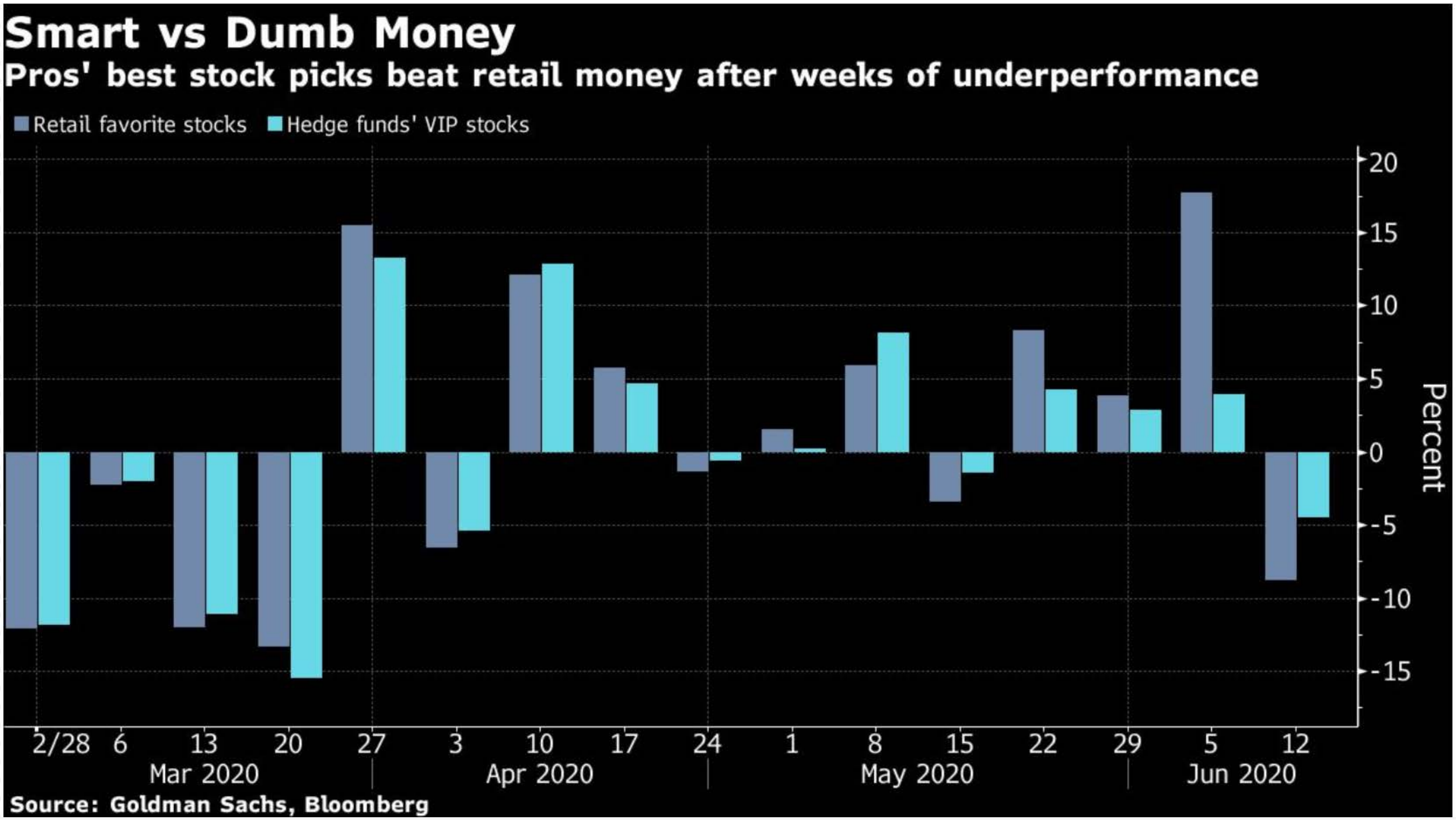
The Crisis Test: Hedge Funds

Figure 9: Performance comparison between equity hedge funds and alternative ETFs



Source: Eurekahedge

The Robinhood Phenomenon



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

Base year Cash flow
Collective dividends and buybacks in most recent 12 months on S&P 500

Expected cashflow growth in next 5 years
Expected growth in aggregate earnings & cash flows from stocks in the index

Expected Cash Flows (E(CF)) in aggregate on the index

Intrinsic Value of the S&P 500

$$Value = \frac{E(CF_1)}{(1+r)} + \frac{E(CF_2)}{(1+r)^2} + \frac{E(CF_3)}{(1+r)^3} + \frac{E(CF_4)}{(1+r)^4} + \frac{E(CF_5)}{(1+r)^5} + \frac{E(CF_6)}{(r-.0245)(1+r)^5}$$

Earnings & cash flows grow at the same level as the economy forever

Required return for investing in stocks (r)

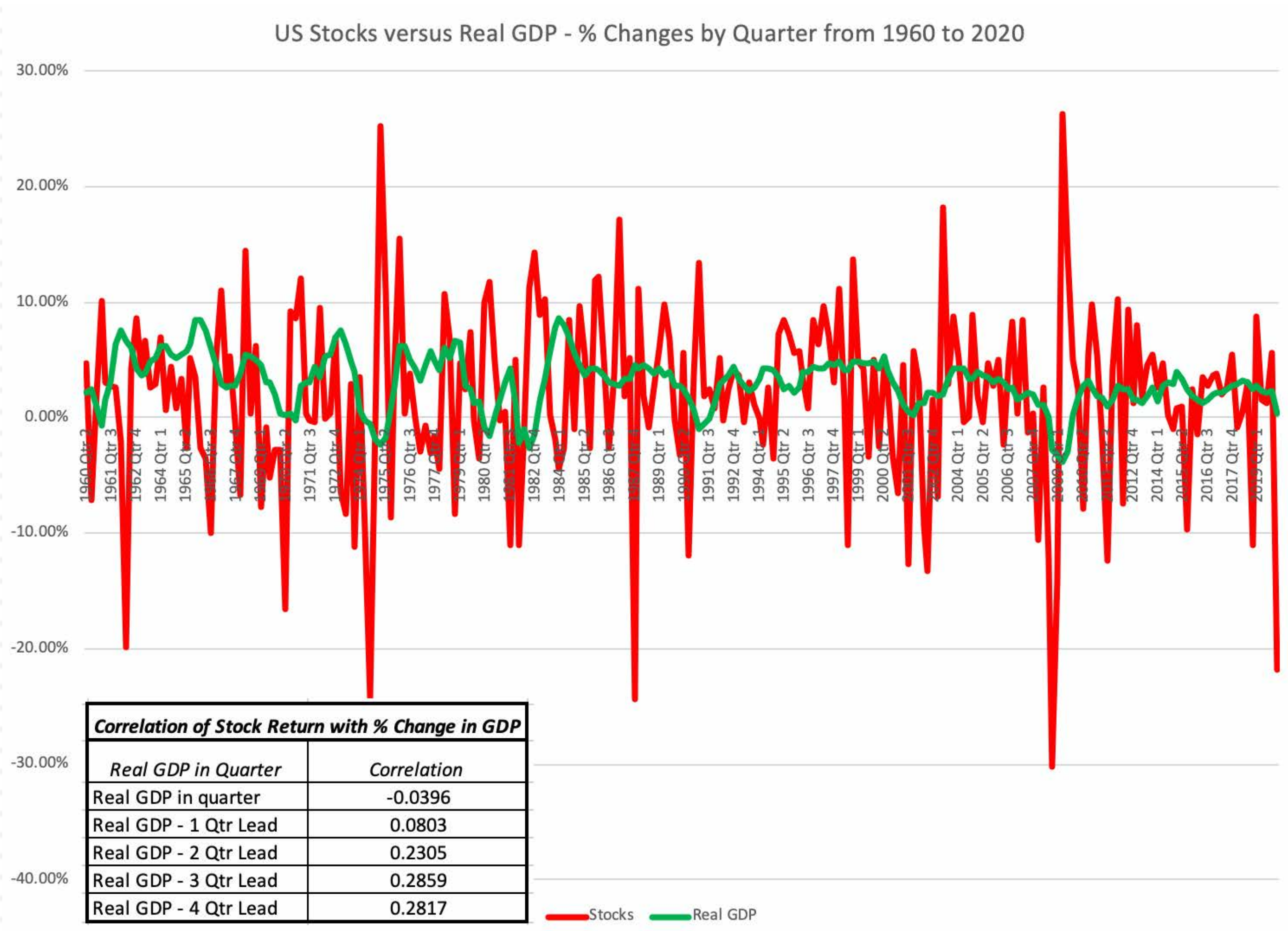
Risk free Rate
Current 10-year, US treasury bond rate

Equity Risk Premium
Market-set number, reflecting the collective fears & risk aversion of all Investors.

Market Worries

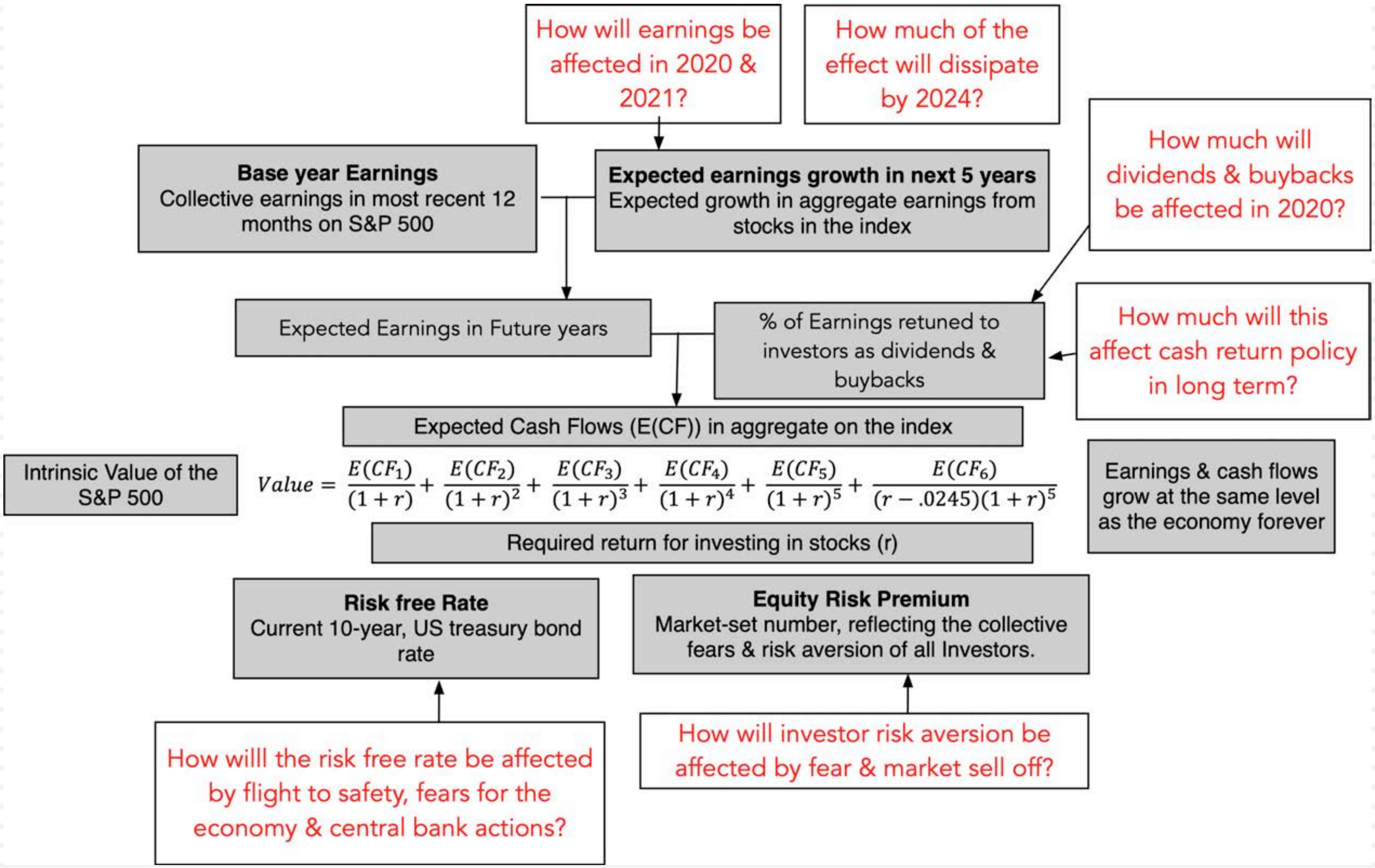
- Disconnect from economic news: For some, the skepticism comes from the disconnect with macroeconomic numbers that are abysmal, as unemployment claims climb into the tens of millions and consumer confidence hovers around historic lows. I will spend the first part of this section arguing that this reflects 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…



Correlation of Stock Return with % Change in GDP	
Real GDP in Quarter	*Correlation*
Real GDP in quarter	-0.0396
Real GDP - 1 Qtr Lead	0.0803
Real GDP - 2 Qtr Lead	0.2305
Real GDP - 3 Qtr Lead	0.2859
Real GDP - 4 Qtr Lead	0.2817

Value Drivers for the Index



1. Earnings

Ed Yardeni (6/1/20)	
Year	Earnings on Index
2019	163
2020	120
2021	150

Analyst Consensus (6/1/20)	
Year	Earnings on Index
2019	162.97
2020	125.79
2021	164.04

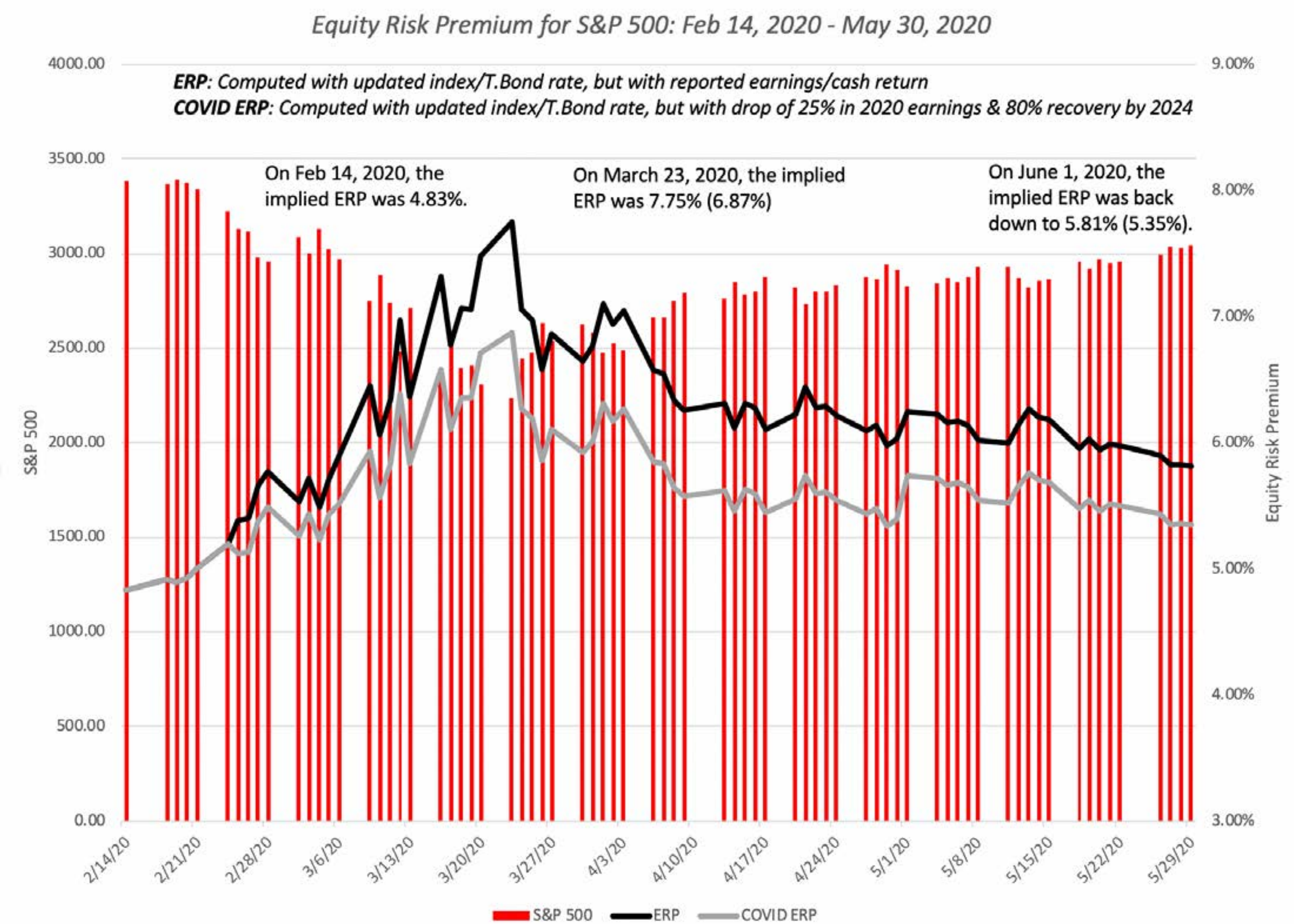
Thomson Reuters (6/1/20)	
Year	Earnings on Index
2019	162.93
2020	125.22
2021	163.67

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

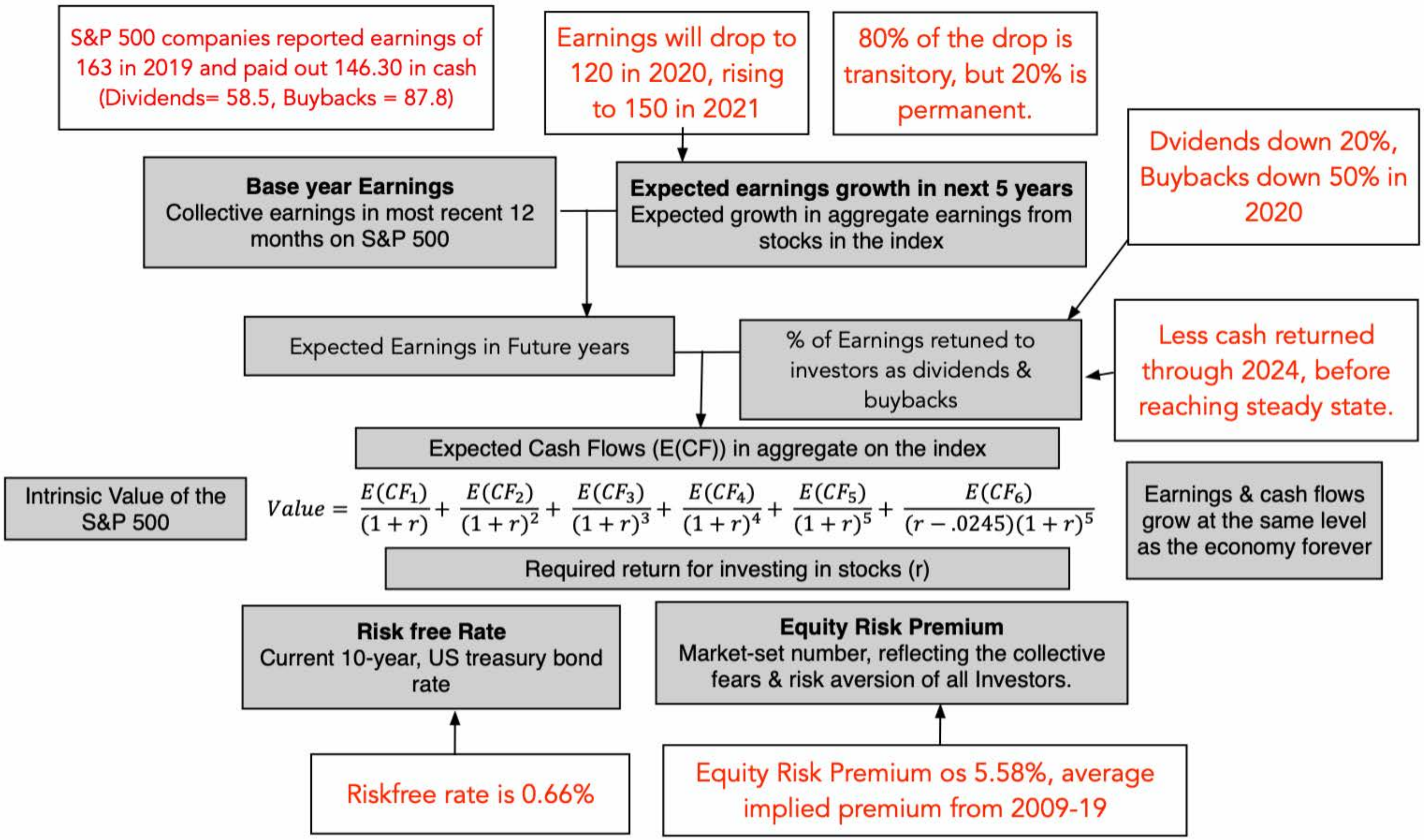
	S&P 500					
Year	Market value	Earnings	Dividends	Buybacks	Cash Returned as % of Earnings	Cash Returned as % of Market Cap
2001	1148.09	38.85	15.74	14.34	77.43%	2.62%
2002	879.82	46.04	15.96	13.87	64.78%	3.39%
2003	1111.91	54.69	17.88	13.70	57.74%	2.84%
2004	1211.92	67.68	19.01	21.59	59.99%	3.35%
2005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



Equity Risk Premium for S&P 500: Feb 14, 2020 - May 30, 2020
ERP: Computed with updated index/T.Bond rate, but with reported earnings/cash return
COVID ERP: Computed with updated index/T.Bond rate, but with drop of 25% in 2020 earnings & 80% recovery by 2024
On Feb 14, 2020, the implied ERP was 4.83%.
On March 23, 2020, the implied ERP was 7.75% (6.87%)
On June 1, 2020, the implied ERP was back down to 5.81% (5.35%).
S&P 500
Equity Risk Premium
4000.00
3500.00
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
9.00%
8.00%
7.00%
6.00%
5.00%
4.00%
3.00%
2/14/20
2/21/20
2/28/20
3/6/20
3/13/20
3/20/20
3/27/20
4/3/20
4/10/20
4/17/20
4/24/20
5/1/20
5/8/20
5/15/20
5/22/20
5/29/20
S&P 500
ERP
COVID ERP

My Story for the Market



My Valuation of the Index

Earnings drop to 120 in 2020, rise to 150 in 2021 & 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	169.18	153.93	120.00	90.71	-29.07%	-41.07%
2021	175.59	161.93	150.00	121.01	-14.57%	-25.27%
2022	182.24	170.32	160.83	137.93	-11.75%	-19.02%
2023	189.15	179.11	172.45	156.66	-8.83%	-12.54%
2024	196.32	188.32	184.91	177.37	-5.81%	-5.81%
2025	197.62	189.56	186.13	178.54	-5.81%	-5.81%

Growth rate in perpetuity capped at 0.66%

Riskfree rate is T.Bond rate of 0.66%

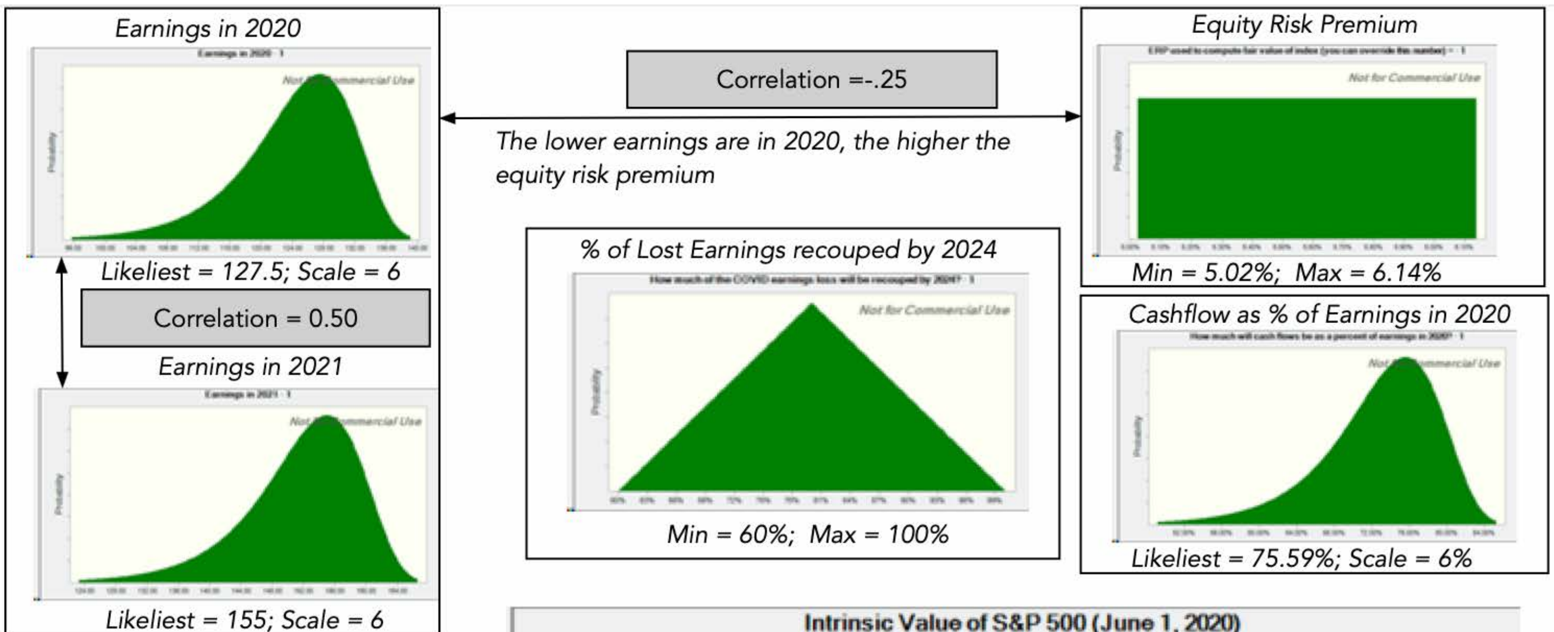
.066%+5.58% = 6.24%

ERP stays at 5.58%, average from 2009-19

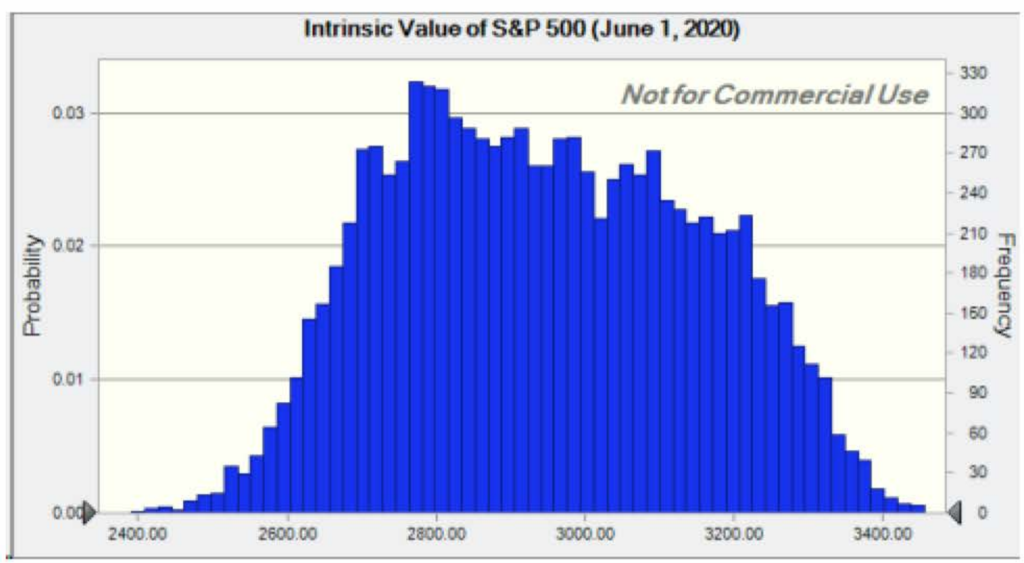
Intrinsic Value Estimate (based on your choice of ERP) based upon post-Corona numbers							
	Last 12 months	1	2	3	4	5	*Terminal Year*
Expected Earnings	$163.00	120.00	150.00	160.83	172.45	184.91	186.13
Expected cash payout (divi	89.75%	75.59%	80.67%	85.76%	90.84%	95.93%	95.93%
Expected Dividends + Buy	$146.30	$90.71	$121.01	$137.93	$156.66	$177.37	178.54
Expected Terminal Value =						$ 3,200.86	
Present Value =		$ 85.38	$ 107.21	$ 115.03	$ 122.98	$ 2,496.27	
Intrinsic Value of Index =		2926.87					
Intrinsic PE (with 2020 E)		24.39					
Intrinsic CAPE		25.69					

$$\frac{90.71}{(1.0624)} + \frac{121.01}{(1.0624)^2} + \frac{137.93}{(1.0624)^3} + \frac{156.66}{(1.0624)^4} + \frac{177.37}{(1.0624)^5} + \frac{177.37(1.0066)}{(.0624 - .0066)(1.0624)^5} = 2926.87$$

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

Favored Tools
- Accounting statements
- Excel spreadsheets
- Statistical Measures
- Pricing Data

Favored Tools
- Anecdotes
- Experience (own or others)
- Behavioral evidence

A Good Valuation

The Numbers People ⟷ The Narrative People

Illusions/Delusions
1. Precision: Data is precise
2. Objectivity: Data has no bias
3. Control: Data can control reality

Illusions/Delusions
1. Creativity cannot be quantified
2. If the story is good, the investment will be.
3. Experience is the best teacher

From story to numbers and beyond..

Step 1: Develop a narrative for the business that you are valuing
In the narrative, you tell your story about how you see the business evolving over time. Keep it simple & focused.

Step 2: Test the narrative to see if it is possible, plausible and probable
There are lots of possible narratives, not all of them are plausible and only a few of them are probable. No fairy tales or runaway stories.

Step 3: Convert the narrative into drivers of value
Take the narrative apart and look at how you will bring it into valuaton inputs starting with potential market size down to cash flows and risk. By the time you are done, each part of the narrative should have a place in your numbers and each number should be backed up a portion of your story.

Step 4: Connect the drivers of value to a valuation
Create an intrinsic valuation model that connects the inputs to an end-value the business.

Step 5: Keep the feedback loop open
Listen to people who know the business better than you do and use their suggestions to fine tune your narrative and perhaps even alter it. Work out the effects on value of alternative narratives for the company.

						Jun-19
			Tesla			
			A Teenage Phenom faces growing (up) pains!			

Tesla will grow as a high-end auto company, deilivering $100 billion in revenues in year 10. In the face of stronger competition, Tesla's brand name and batter 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 acqusition 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%	
Operating margin (b)	1.98%	1.98% →	10.00%		10.00%	
Tax rate	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%	

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 & Mnority 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. Wgile 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

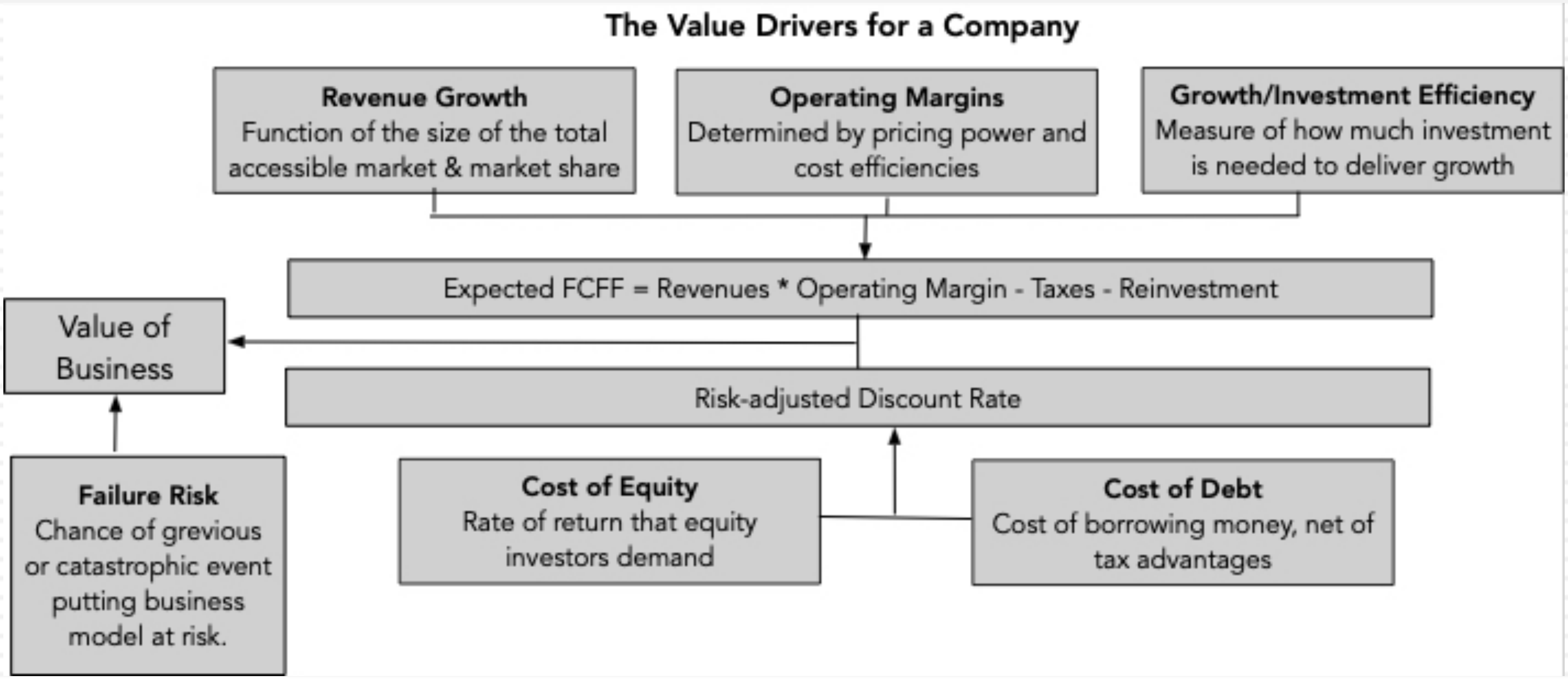
The Cash Flows

	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

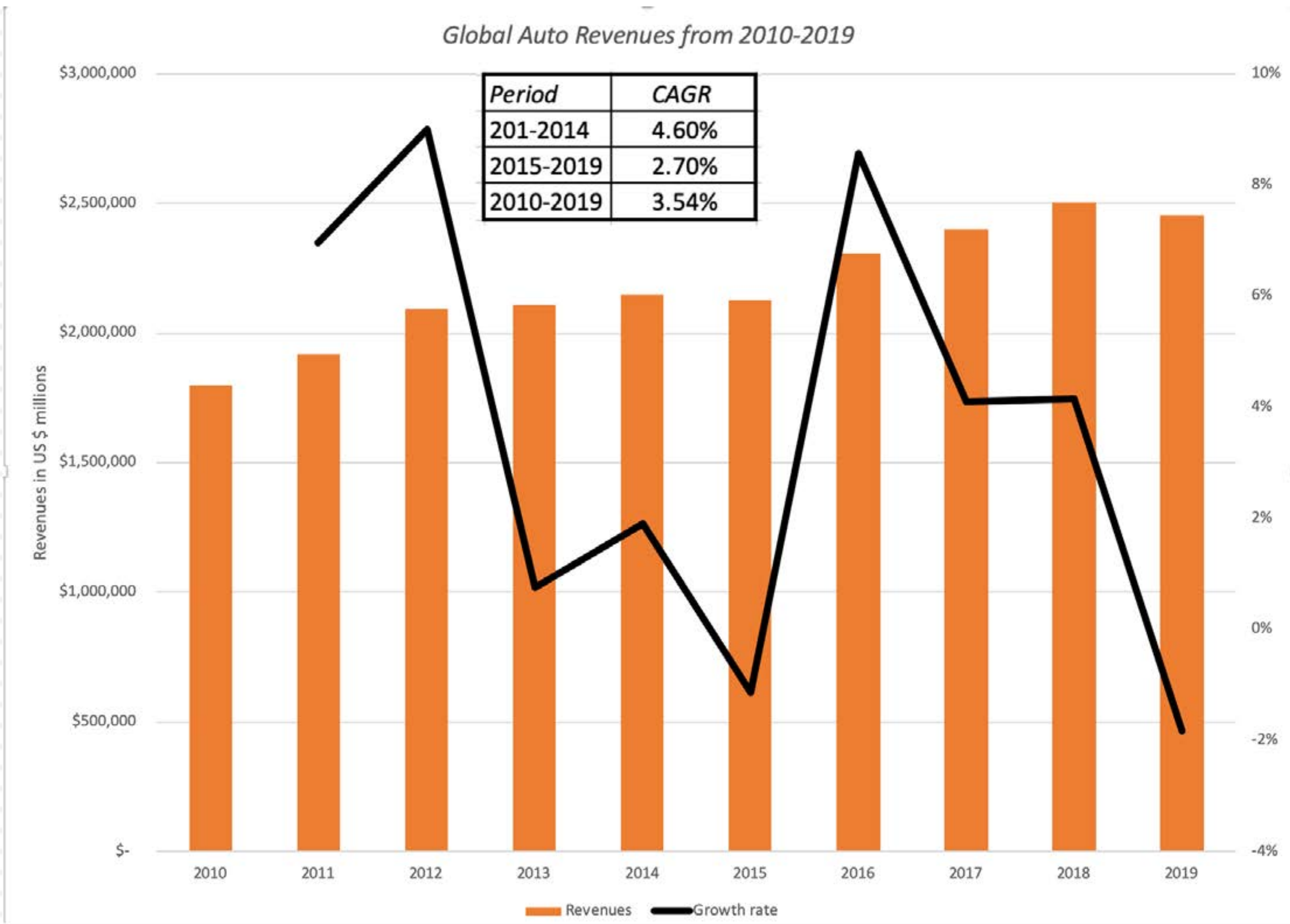
The Drivers of Value



The drivers of value

- The Growth Lever: The **revenue growth rate** controls how much and how quickly the firm will be able to grow its revenues from autos, software, solar panels and anything else that you believe the company. *In my Tesla story (valuation), I have estimated revenues of $125 billion in 2030, a five-fold increase over the 2019 revenues.*
- The Profitability Lever: The **target (pre-tax) operating margin** determines how profitable you think the company will be, once its growth days start to scale down. *In keeping with my view that R&D is really a capital expense, I capitalize R&D, which improves Tesla's profitability and target an operating margin of 12% by 2025.*
- The Investment Efficiency Lever: To grow, companies have to invest in capacity and the **sales to invested capital** drives how efficiently investment is done, with higher sales to capital ratios reflecting more efficiency. *With Tesla, I assume that every dollar of investment (in new factories, technology and new R&D) in the first 5 years generates $3 in revenue.*
- The Risk lever: The first is the **cost of capital** that I start the valuation with, a reflection of risk as seen through the eyes of a diversified investor in the company. The second is the **likelihood of failure** (or distress). *With Tesla, I set this cost of capital at 7% and assume that given its marginal profitability and significant debt load, the chance of failure is 10%.*

1. The Growth Lever



The Biggest Auto Companies

Company Name	Revenues in 2019 (LTM)	CAGR: 2010-19	Operating Income in 2019 (LTM)	Operating Margin
Toyota Motor Corporation (TSE:7203)	$285,284.60	1.83%	$24,146.20	8.46%
Volkswagen AG (XTRA:VOW3)	$270,296.60	5.72%	$22,447.90	8.30%
Daimler AG (XTRA:DAI)	$187,796.30	4.54%	$5,167.40	2.75%
Ford Motor Company (NYSE:F)	$155,900.00	2.13%	$574.00	0.37%
Honda Motor Co., Ltd. (TSE:7267)	$145,690.50	3.24%	$6,968.20	4.78%
General Motors Company (NYSE:GM)	$137,237.00	0.13%	$5,481.00	3.99%
Fiat Chrysler Automobiles N.V. (BIT:FCA)	$117,565.20	16.08%	$6,174.90	5.25%
SAIC Motor Corporation (SHSE:600104)	$111,839.00	12.03%	$2,303.10	2.06%
BMW (XTRA:BMW)	$108,985.90	3.63%	$7,459.40	6.84%
Nissan Motor Co., Ltd. (TSE:7201)	$102,176.80	0.11%	$1,290.50	1.26%
Hyundai Motor (KOSE:A005380)	$86,053.20	1.03%	$2,454.50	2.85%
Peugeot S.A. (ENXTPA:UG)	$83,946.30	2.24%	$6,841.10	8.15%
AUDI AG (XTRA:NSU)	$64,663.20	5.37%	$5,034.10	7.79%
Renault SA (ENXTPA:RNO)	$63,168.00	3.61%	$3,801.80	6.02%
Kia Motors Corporation (KOSE:A000270)	$46,311.20	6.97%	$1,502.70	3.24%
Tata Motors Limited (BSE:500570)	$40,131.40	4.91%	$914.60	2.28%
Suzuki Motor Corporation (TSE:7269)	$34,206.70	1.03%	$2,259.30	6.60%
Mazda Motor Corporation (TSE:7261)	$32,769.80	1.80%	$721.20	2.20%
Subaru Corporation (TSE:7270)	$30,338.50	5.27%	$2,165.10	7.14%
Tesla, Inc. (NasdaqGS:TSLA)	$24,578.00	81.20%	$80.00	0.33%

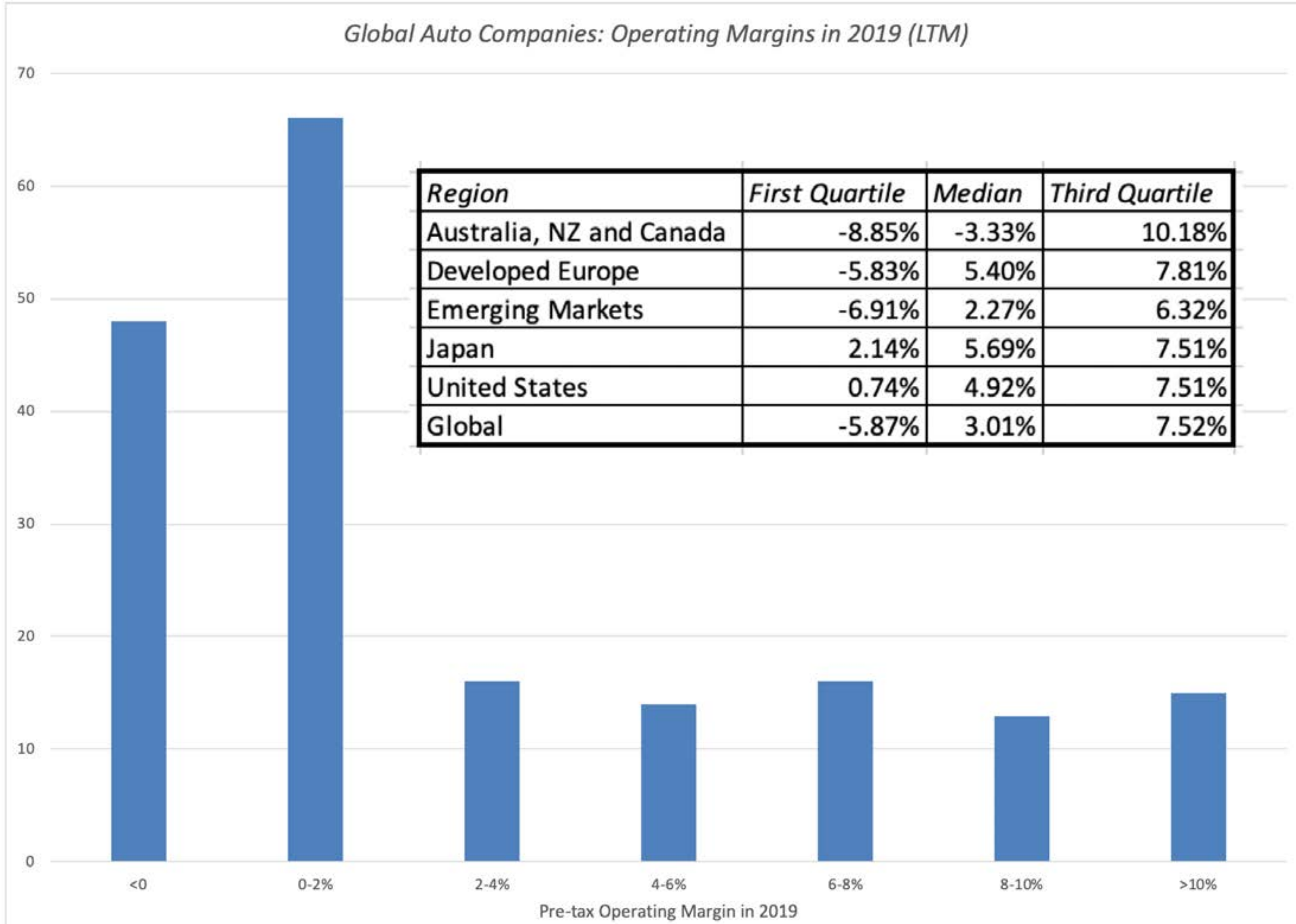
A tech company twist?

Company	*Revenues in 2019*	*Operating Income in 2019*	*Operating Margin*
Apple	$ 260,174.00	$ 63,333	24.34%
Microsoft	$ 129,814.00	$ 45,799	35.28%
Alphabet Inc.	$ 155,058.00	$ 32,650	21.06%
Amazon.com	$ 265,469.00	$ 12,795	4.82%
Facebook	$ 66,529.00	$ 21,167	31.82%
Netflix	$ 18,875.90	$ 2,269	12.02%
FAANG+M	$ 895,919.90	$ 178,012.16	19.87%

Your growth choice

Expected Revenues in 2030 (in $ millions)	*CAGR (next 5 years)*
A1: $65 billion (Renault-lie)	15.00%
A2: $100 billion (BMW-like)	21.00%
A3: $150 billion (Ford & Honda-like)	28.00%
A4: $200 billion (Daimler-like)	33.00%
A5: $300 billion (Toyota & VW-like)	40.00%
A6: Direct Input (Enter % growth rate)	25.00%

2. The Profitability Lever



Region	*First Quartile*	*Median*	*Third Quartile*
Australia, NZ and Canada	-8.85%	-3.33%	10.18%
Developed Europe	-5.83%	5.40%	7.81%
Emerging Markets	-6.91%	2.27%	6.32%
Japan	2.14%	5.69%	7.51%
United States	0.74%	4.92%	7.51%
Global	-5.87%	3.01%	7.52%

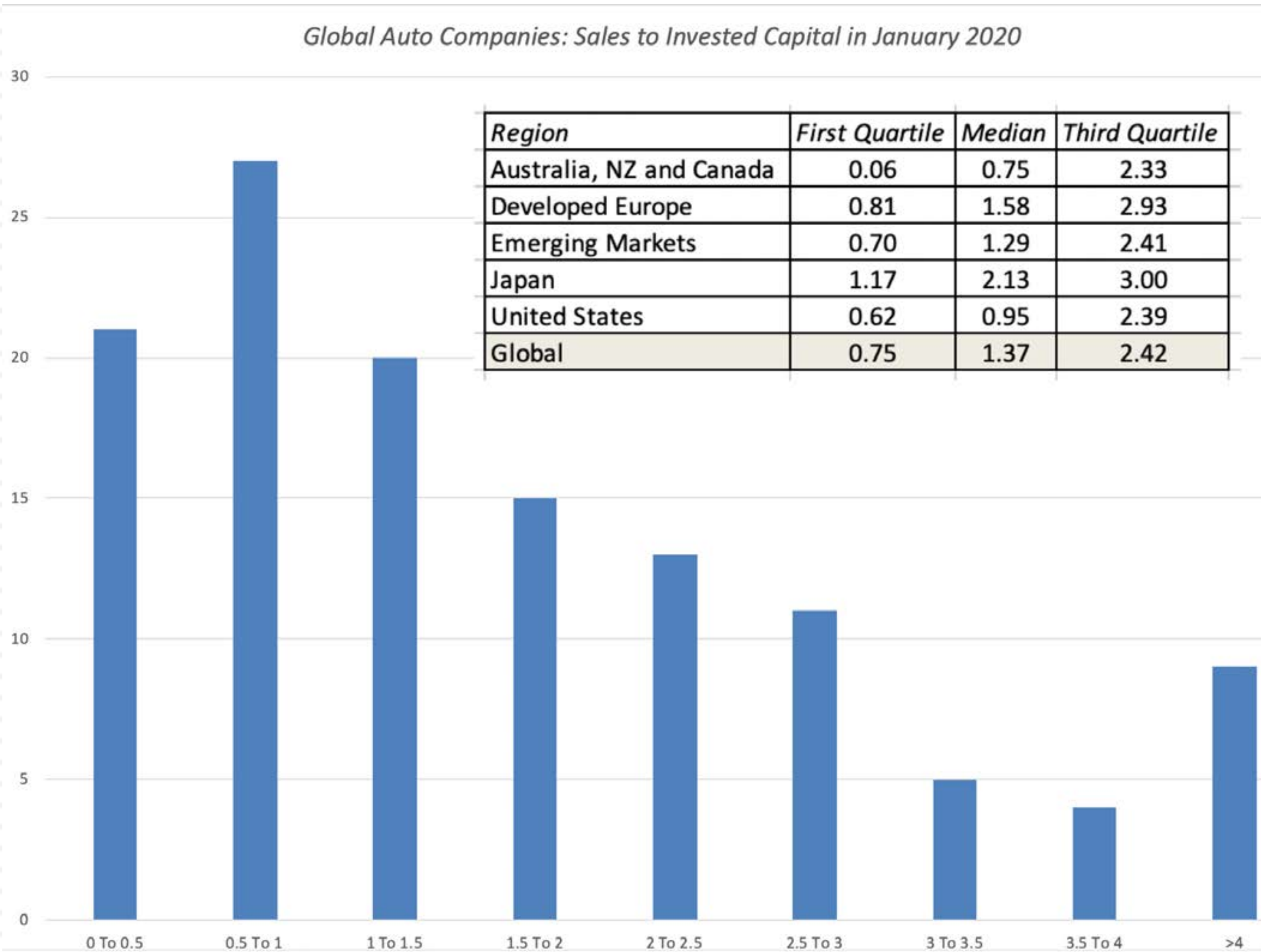
A tech twist?

- The median operating margin for tech companies (including both software & hardware is 10.25%).
- The picture is brighter for the FAANG stocks, where the aggregate operating margin across all five stocks is 19.87%, well above auto industry averages. That margin, though, is delivered on smaller revenues and with business models where production costs are a small fraction of selling prices.
- The operating margin for just software companies is even higher at 21.24%, because the marginal unit of software is close to costless to produce.

Your choice on profitability

Operating Margin in 2025	*Target Operating Margin*
B1: Auto Industry First Quartile	-5.87%
B2: Auto Industry Median	3.01%
B3: Auto Industry Third Quartile	7.52%
B4: Technology Median	10.25%
B5: Software	21.24%
B6: FAANG Aggregate	19.87%
B7: Direct Input	12.00%

3. The Investment Efficiency Lever



Region	*First Quartile*	*Median*	*Third Quartile*
Australia, NZ and Canada	0.06	0.75	2.33
Developed Europe	0.81	1.58	2.93
Emerging Markets	0.70	1.29	2.41
Japan	1.17	2.13	3.00
United States	0.62	0.95	2.39
Global	0.75	1.37	2.42

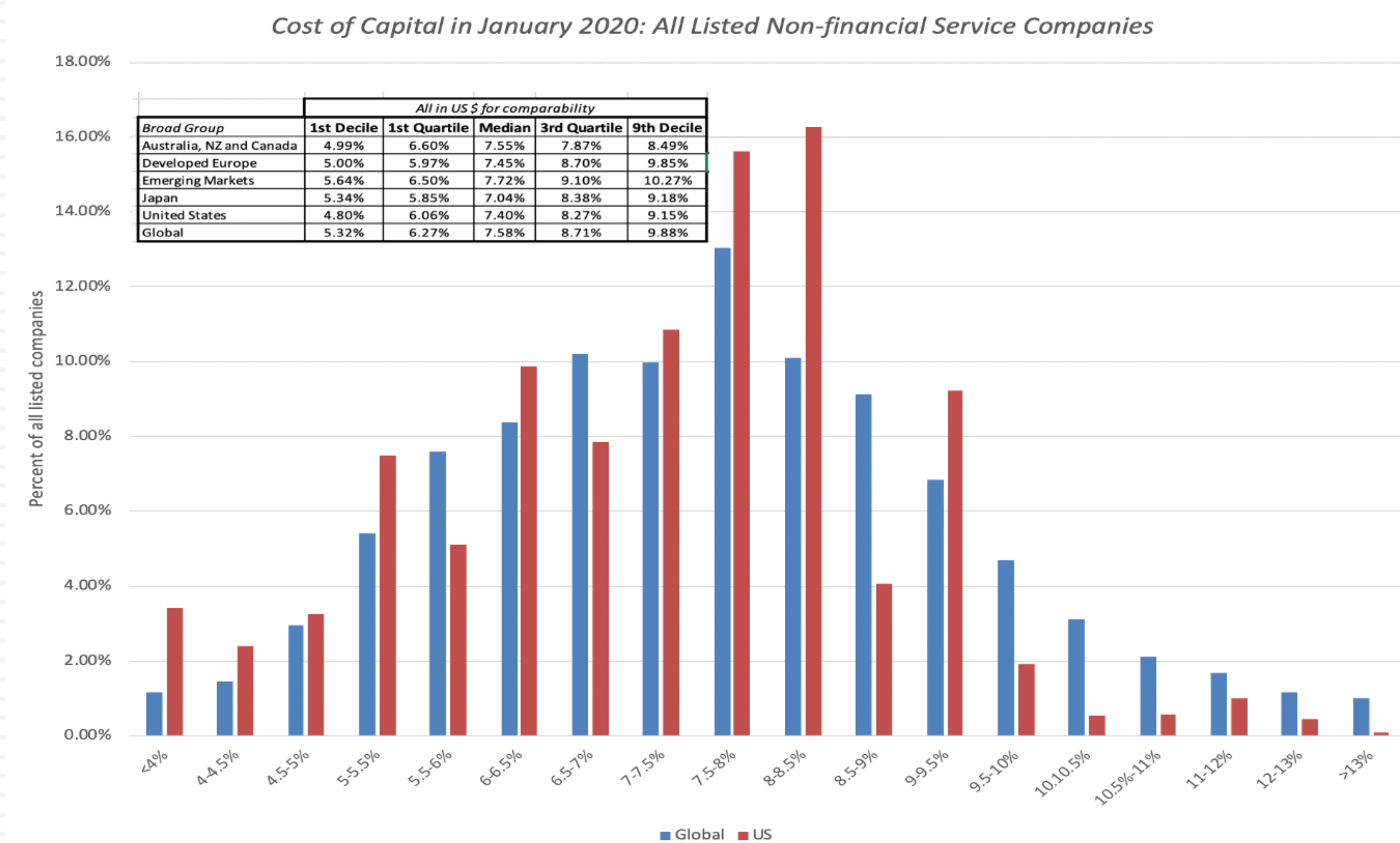
More on investment efficiency

- Looking across global auto companies, the median company generates $1.37 in sales for every dollar of capital invested, and at the 75th percentile, the more capital-efficient auto companies generate $2.42 in revenues for every dollar of capital invested.
- My estimate of $3 in revenues for every dollar of capital invested reflects an optimistic view of Tesla's capacity to bring technological innovation to its production processes, and reduce the capital needed to fund those processes.
- Since Tesla, in 2019, generates $1.32 in revenue for every dollar of capital invested, my estimate is more aspirational than based on observable efficiencies, right now.

Your choice on investment efficiency

Sales to Invested Capital	*Sales to Capital (1st 5 years)*
C1: Auto Industry First Quartile	0.75
C2: Auto Industry Median	1.37
C3: Auto Industry Third Quartile	2.42
C4: Technology Median	1.51
C5: Software	2.30
C6: FAANG Aggregate	1.27
C7: Direct Input	3.00

4. Risk: The Cost of Capital - Global



	All in US $ for comparability				
Broad Group	**1st Decile**	**1st Quartile**	**Median**	**3rd Quartile**	**9th Decile**
Australia, NZ and Canada	4.99%	6.60%	7.55%	7.87%	8.49%
Developed Europe	5.00%	5.97%	7.45%	8.70%	9.85%
Emerging Markets	5.64%	6.50%	7.72%	9.10%	10.27%
Japan	5.34%	5.85%	7.04%	8.38%	9.18%
United States	4.80%	6.06%	7.40%	8.27%	9.15%
Global	5.32%	6.27%	7.58%	8.71%	9.88%

Your choice on cost of capital & the failure rate

Cost of Capital	*Initial cost of capital*
D1: Automobile Median	6.94%
D2: Technology Median	8.86%
D3: All companies - First Quartile	6.27%
D4: All companies - Median	7.58%
D5: All companies - Third Quartile	8.71%
D6: Direct Input	7.00%

Failure Likelihood	*Probability of failure*
E1: No chance	0%
E2: 10% (Marginal profitability, High Debt)	10%
E3: 20% (Money loser, High Debt)	20%
E4: 50% (Low Growth, Money loser, High De	50%

Valuation Stories

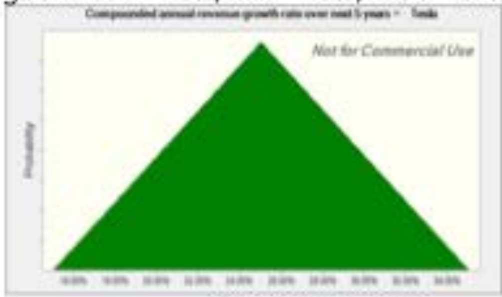
Story	Revenues	Operating Margins	Reinvestment Efficiency	Risk	Value/Share	Equity Value
The Big Auto	BMW-like ($100 billion)	Auto 75th percentile	Auto 75th percentile	Auto median	$ 105.79	$ 27,547
	Daimler-like ($200 billion)	Auto 75th percentile	Auto 75th percentile	Auto median	$ 227.42	$ 49,076
	VW/Toyota-like ($300 billion)	Auto 75th percentile	Auto 75th percentile	Auto median	$ 332.82	$ 67,731
Auto+ Tech	BMW-like ($100 billion)	Tech median	Tech median	Tech median	$ 110.96	$ 28,461
	Daimler-like ($200 billion)	Tech median	Tech median	Tech median	$ 211.84	$ 46,317
	VW/Toyota-like ($300 billion)	Tech median	Tech median	Tech median	$ 297.86	$ 61,544
An Auto FAANG	BMW-like ($100 billion)	FAANG aggregate	FAANG aggregate	Tech median	$ 458.37	$ 89,953
	Daimler-like ($200 billion)	FAANG aggregate	FAANG aggregate	Tech median	$ 854.64	$ 160,094
	VW/Toyota-like ($300 billion)	FAANG aggregate	FAANG aggregate	Tech median	$ 1,204.62	$ 222,040
FAANG	VW/Toyota-like ($300 billion)	Software median	Revolutionary Manufacturing	Auto median	$ 2,105.55	$ 381,504

Possible? Plausible? Probable?

- With the big auto stories, the key question will be whether Tesla can climb to the very top of the heap in terms of revenues, generally reserved for mass market companies, while earning operating margins that are usually reserved for smaller luxury auto companies?
- With the techy auto stories, the key question becomes whether a company that derives the bulk of its revenues from selling cars be profitable and reinvest like a tech company?
- With the FAANGy stories, the investment question becomes whether you should up front for a company on the expectation that it will be an exceptional company. It very well might make it to the top of the heap, but if it does not, you are set up for disappointment.
- With the MYB story, you are approaching the most dangerous place in valuation, where you pick and choose each assumption, without considering the ones you have already made. Put simply, is it even possible to build a company that generates revenues like Toyota, earns margins like Microsoft and invests more efficiently than any manufacturing company in history has ever done, while still preserving the low cost of capital of an auto company?

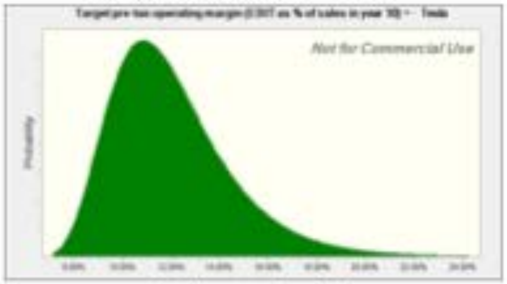
Revenue Growth

Triangular: Peak = 25%, Min = 15%; Max = 35%



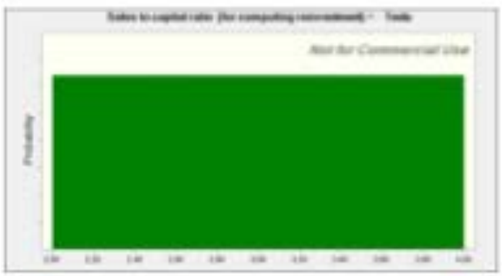
Operating Margin

Log Normal: Mean = 12%



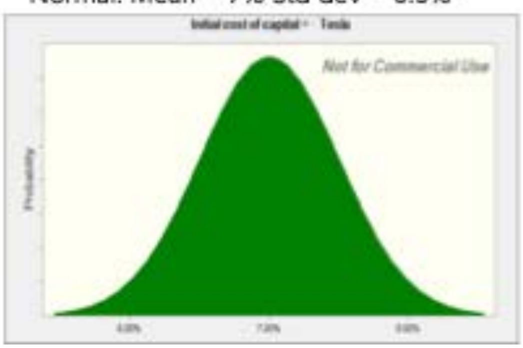
Sales to Capital

Unirform: Min =1.00 Max = 3.00



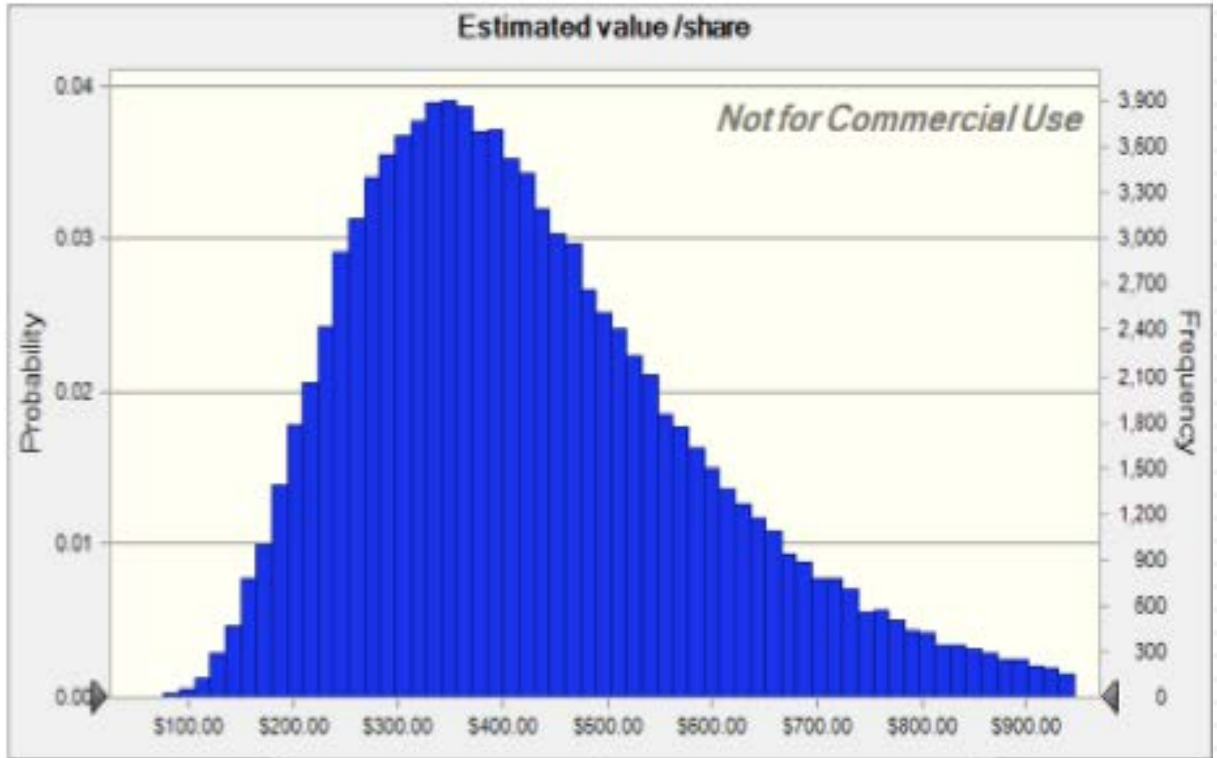
Cost of Capital

Normal: Mean = 7% Std dev = 0.5%



Tesla Value/Share in January 2020

Across 100,000 Simulations



Percentile	*Value/Share*
0%	$47.04
10%	$236.52
20%	$283.69
30%	$324.12
40%	$361.82
50%	$401.33
60%	$444.87
70%	$496.96
80%	$564.30
90%	$673.09
100%	$2,210.68

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. Wgile 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

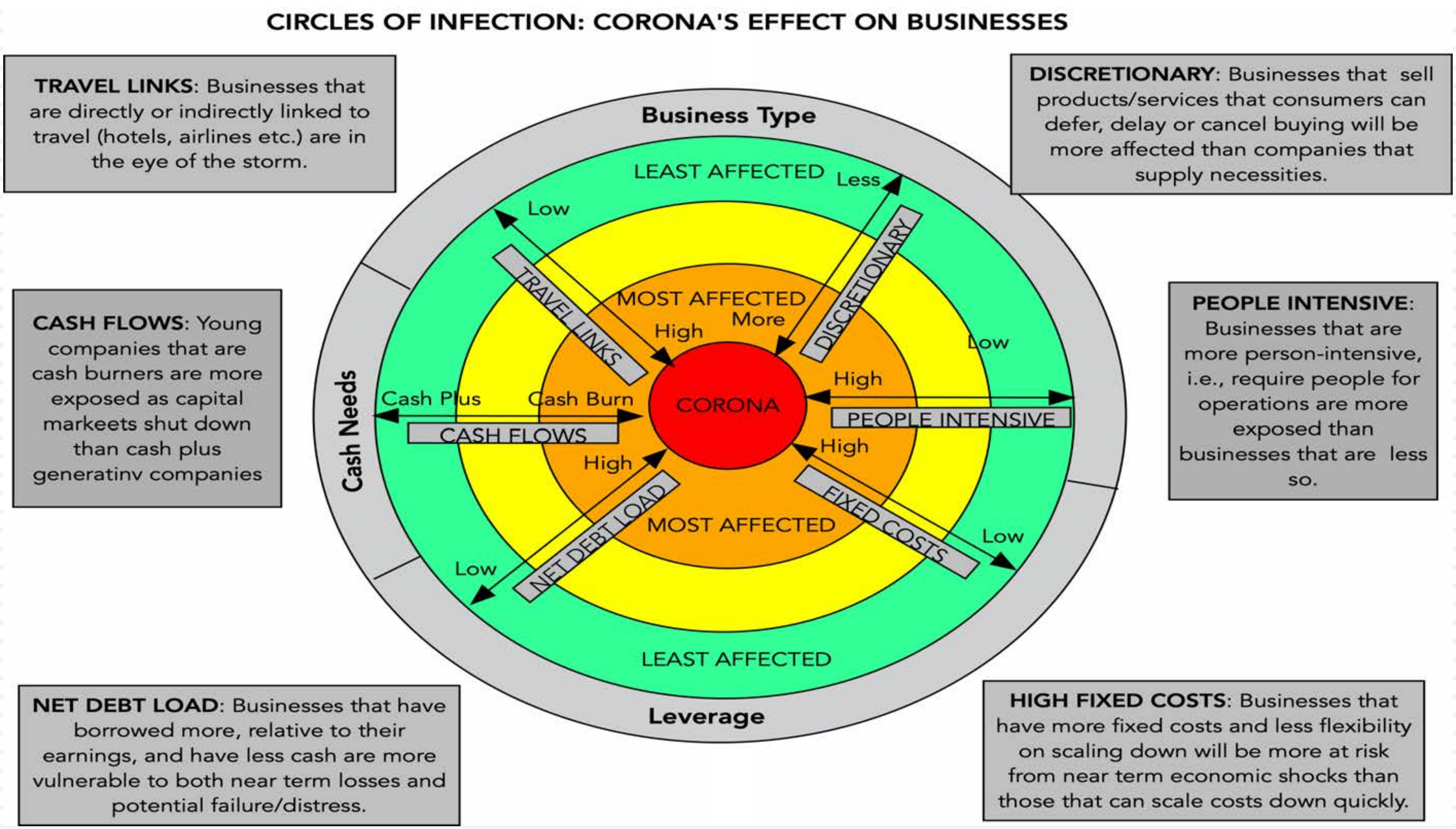
The Cash Flows

	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

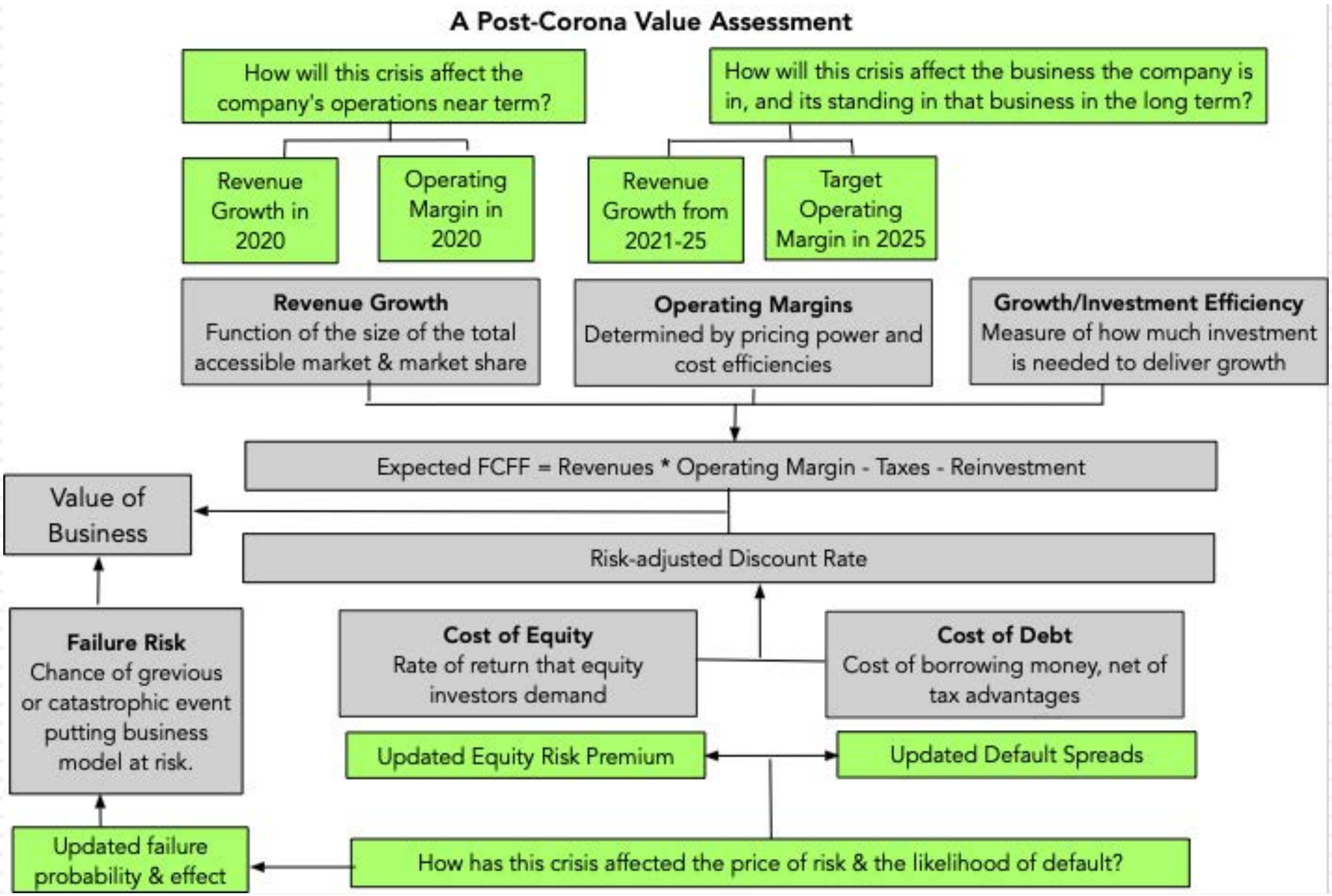
The Virus Effect: A Picture



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



Zoom	5/11/20

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 companis 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

Boeing	03/21/20

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 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