



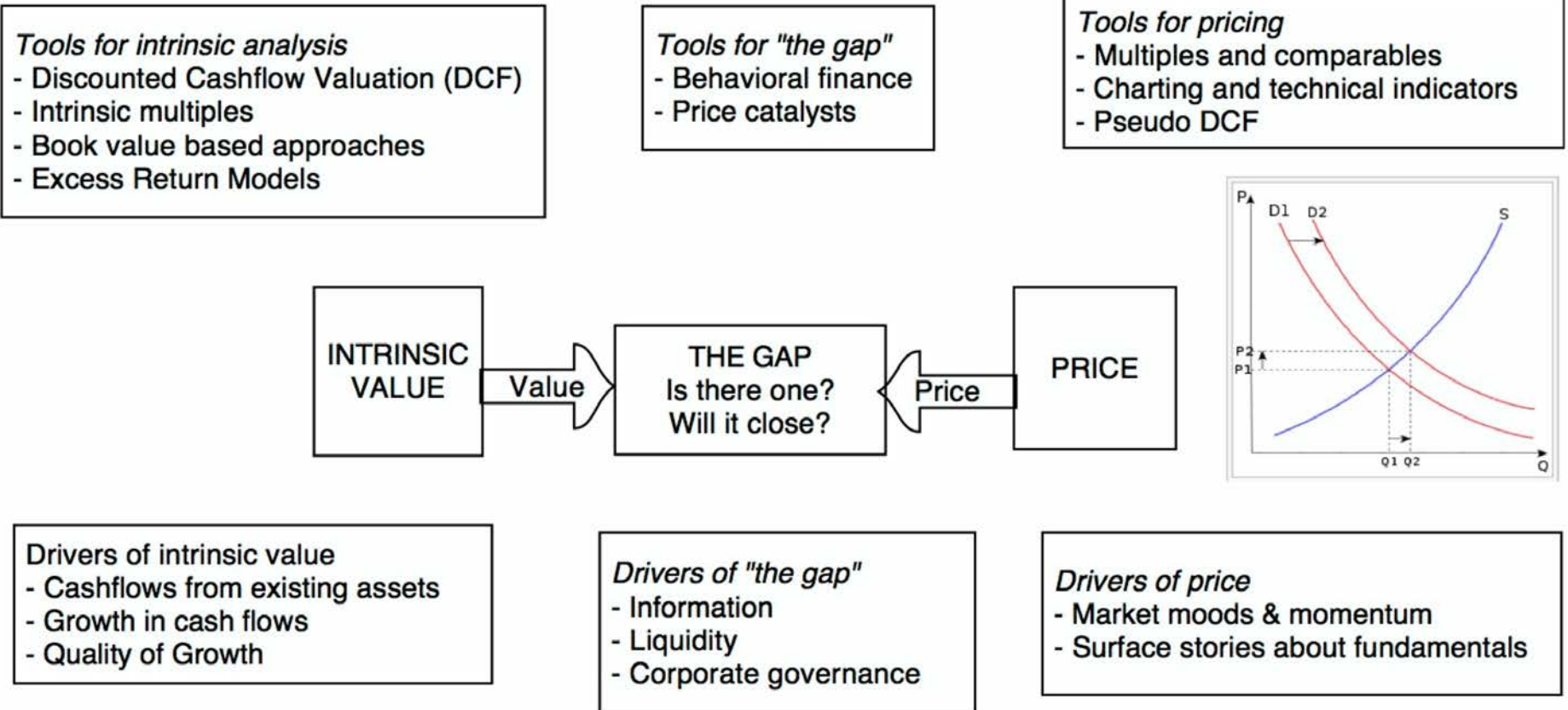
CRISIS AS A CRUCIBLE: A JEDI GUIDE TO
INVESTMENT SERENITY!

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, inconsistent over time and across investments.
- During the depths of a crisis, markets can sometimes look like they are disassociated from reality, but it is because they are predictive mechanisms, trying to look past the immediate danger to long term consequences.

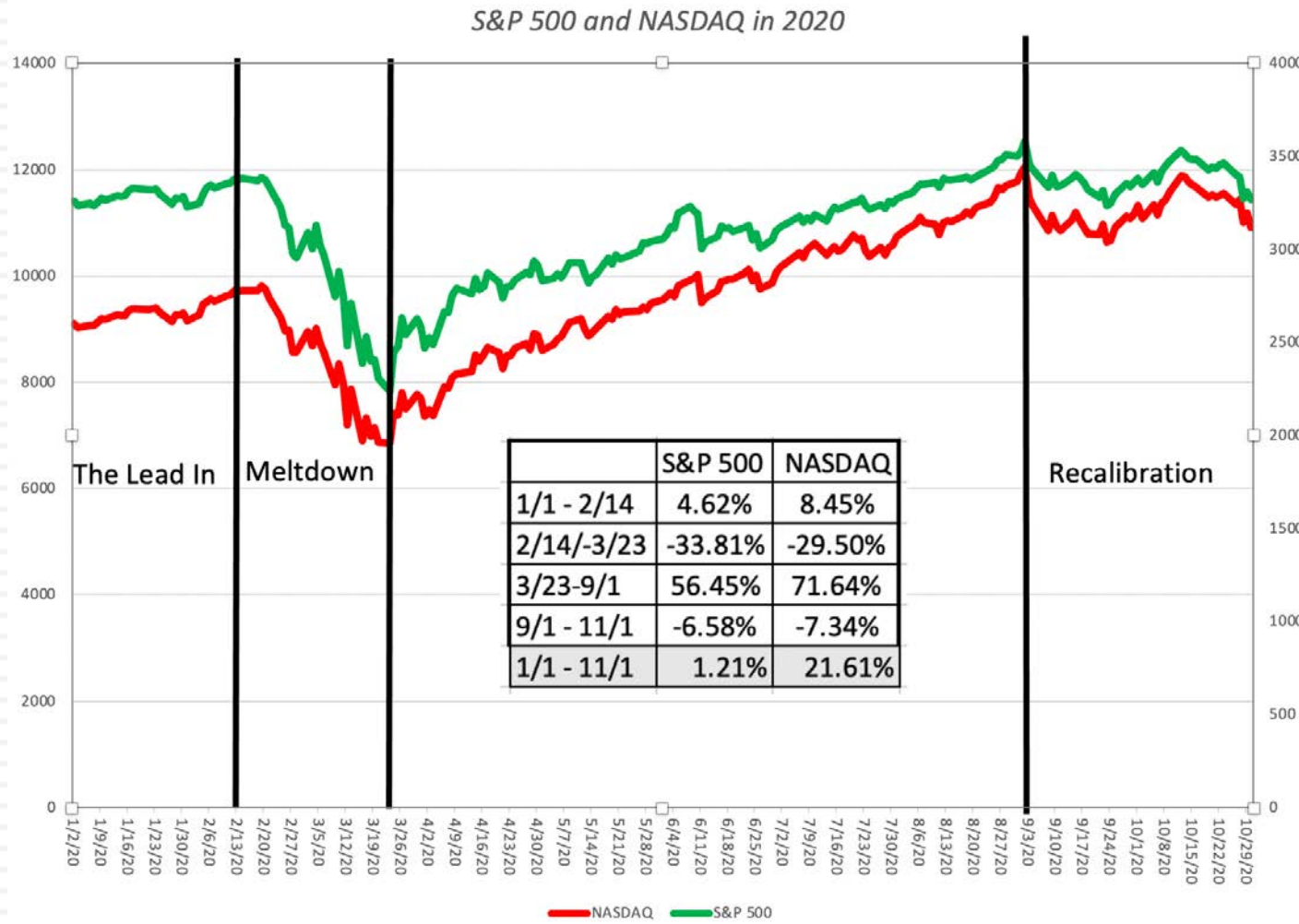
The truth: Markets play a pricing game...



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.

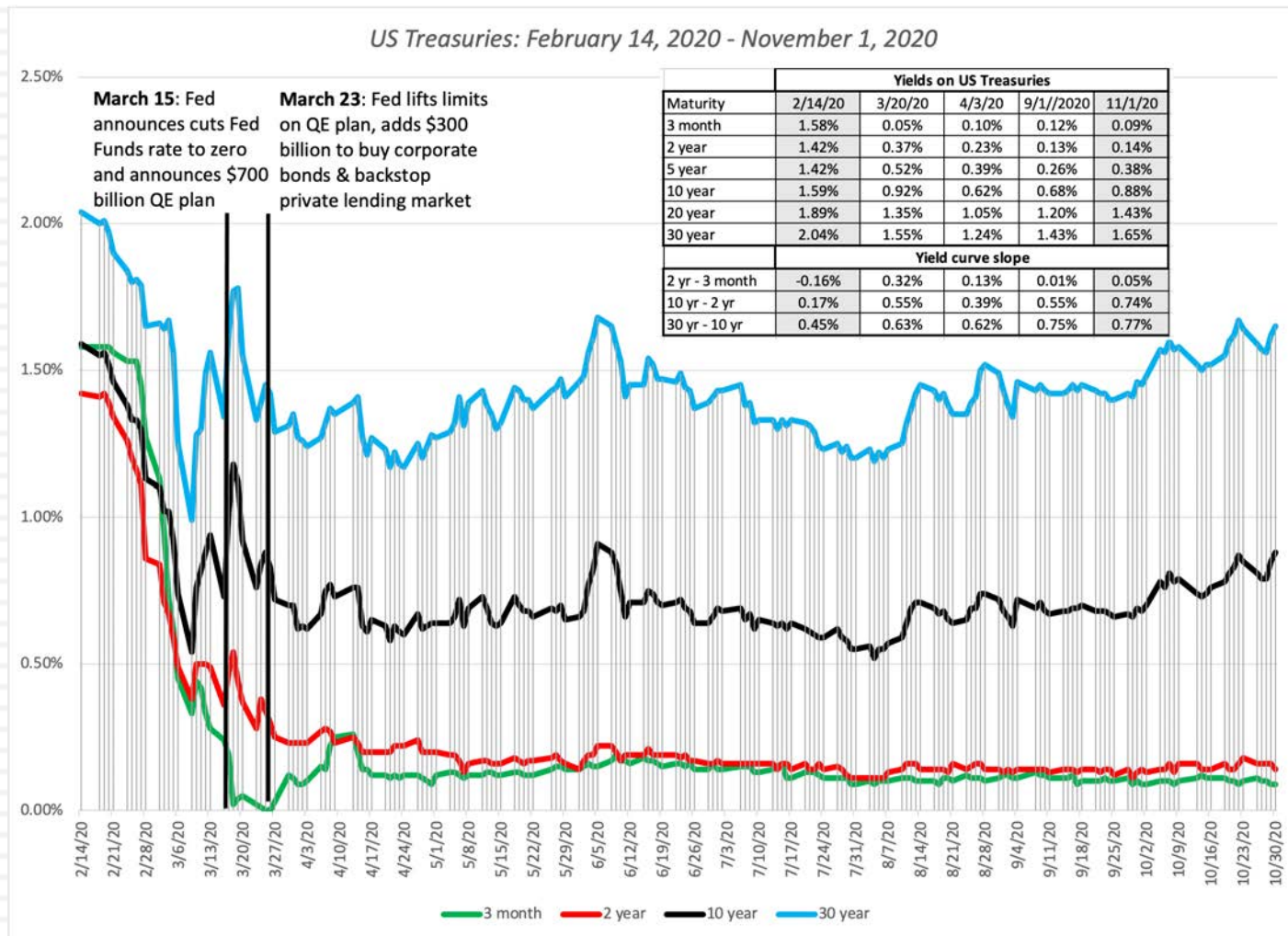
US Equities, during the crisis...



Macro Review: Equity Indices

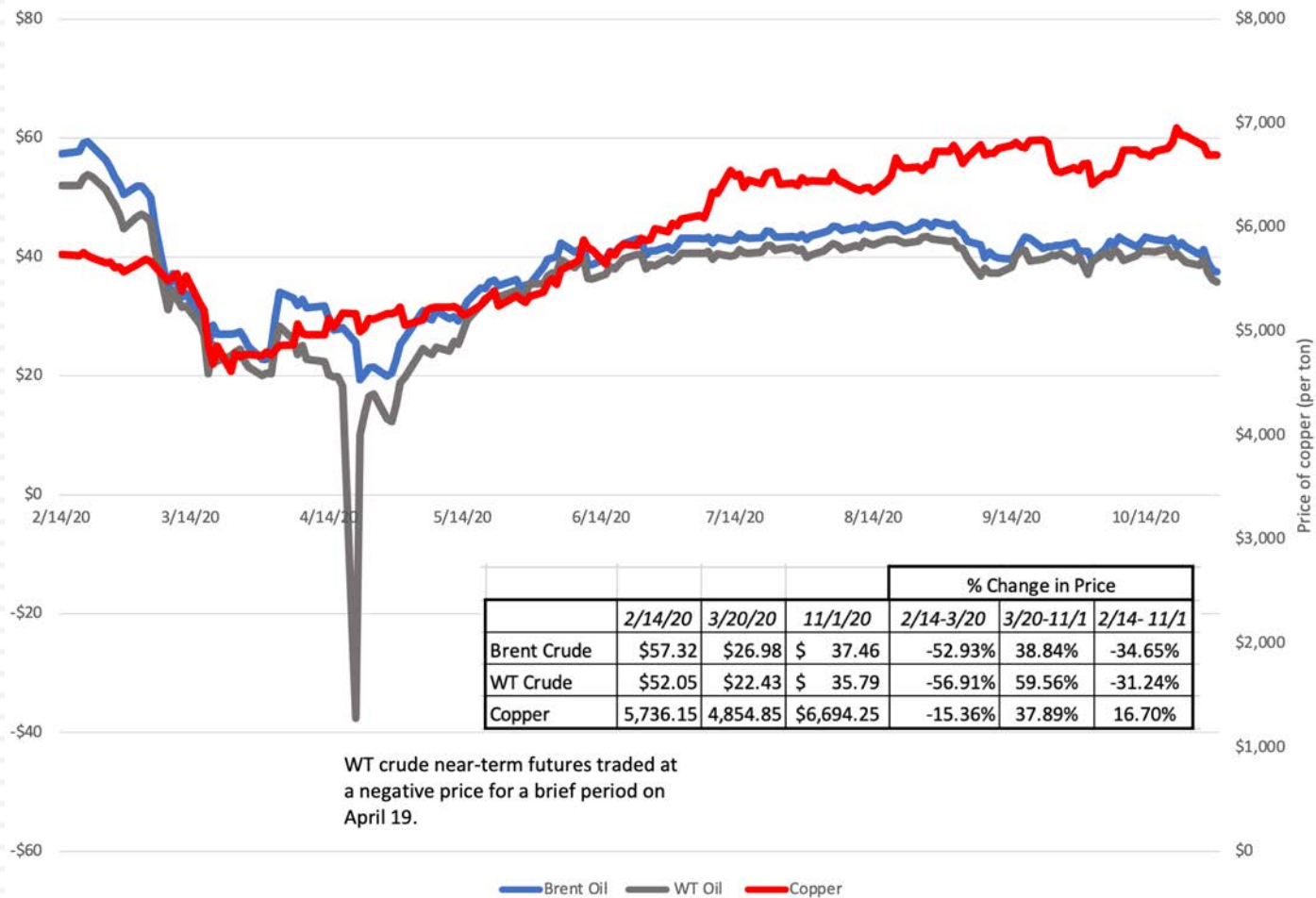
| | Index | Country/Region | Levels | | | % Change | | | | |
|----------------|-----------------|----------------|--------|--------|-------|------------|-----------|-----------|-----------|-------------|
| | | | 14-Feb | 20-Mar | 1-Nov | 10/24-11/1 | 10/1-11/1 | 2/14-3/20 | 3/20-11/1 | 2/14 - 11/1 |
| Americas | S&P 500 | US | 3374 | 2305 | 3270 | 0.74% | -3.09% | -31.68% | 41.87% | -3.08% |
| | NASDAQ | US | 9712 | 6880 | 10845 | -0.30% | -4.31% | -29.16% | 57.64% | 11.67% |
| | TSX | Canada | 17848 | 11852 | 15580 | 0.22% | -2.94% | -33.59% | 31.45% | -12.71% |
| | IPC Mexico | Mexico | 45000 | 34270 | 36802 | 0.51% | -4.44% | -23.84% | 7.39% | -18.22% |
| | iBovespa | Brazil | 114381 | 67069 | 91322 | -2.72% | -7.22% | -41.36% | 36.16% | -20.16% |
| Europe | FTSE 100 | UK | 7409 | 5191 | 5577 | 1.13% | -2.59% | -29.94% | 7.44% | -24.73% |
| | DAX | Germany | 13744 | 8929 | 11556 | 1.53% | -3.62% | -35.03% | 29.42% | -15.92% |
| | CAC 40 | France | 6069 | 4131 | 4595 | 1.77% | -2.90% | -31.93% | 11.23% | -24.29% |
| | S&P Europe 350 | Europe | 1731 | 1181 | 1357 | 0.15% | -5.53% | -31.77% | 14.94% | -21.58% |
| Asia | Nikkei 225 | Japan | 23688 | 16553 | 22977 | 1.39% | -0.85% | -30.12% | 38.81% | -3.00% |
| | Shanghai 50 | China | 2895 | 2628 | 3252 | -0.44% | -1.17% | -9.22% | 23.73% | 12.31% |
| | Hang Seng | Hong Kong | 27816 | 22805 | 24107 | 1.32% | -1.46% | -18.01% | 5.71% | -13.33% |
| | Sensex | India | 41258 | 29916 | 39615 | 0.23% | -1.10% | -27.49% | 32.42% | -3.98% |
| Australia & NZ | ASX 200 | Australia | 7133 | 4825 | 5927 | 0.40% | -3.32% | -32.36% | 22.85% | -16.90% |
| | NZX 50 | New Zealand | 11835 | 9202 | 12020 | 0.42% | -2.12% | -22.25% | 30.62% | 1.56% |
| Africa | FTSE/JSE TOP 40 | South Africa | 52050 | 36302 | 47473 | 1.94% | -3.77% | -30.26% | 30.77% | -8.79% |
| | NSE-All Share | Nigeria | 27756 | 22198 | 30428 | -0.17% | 5.91% | -20.02% | 37.07% | 9.63% |

Macro Review: US Treasuries

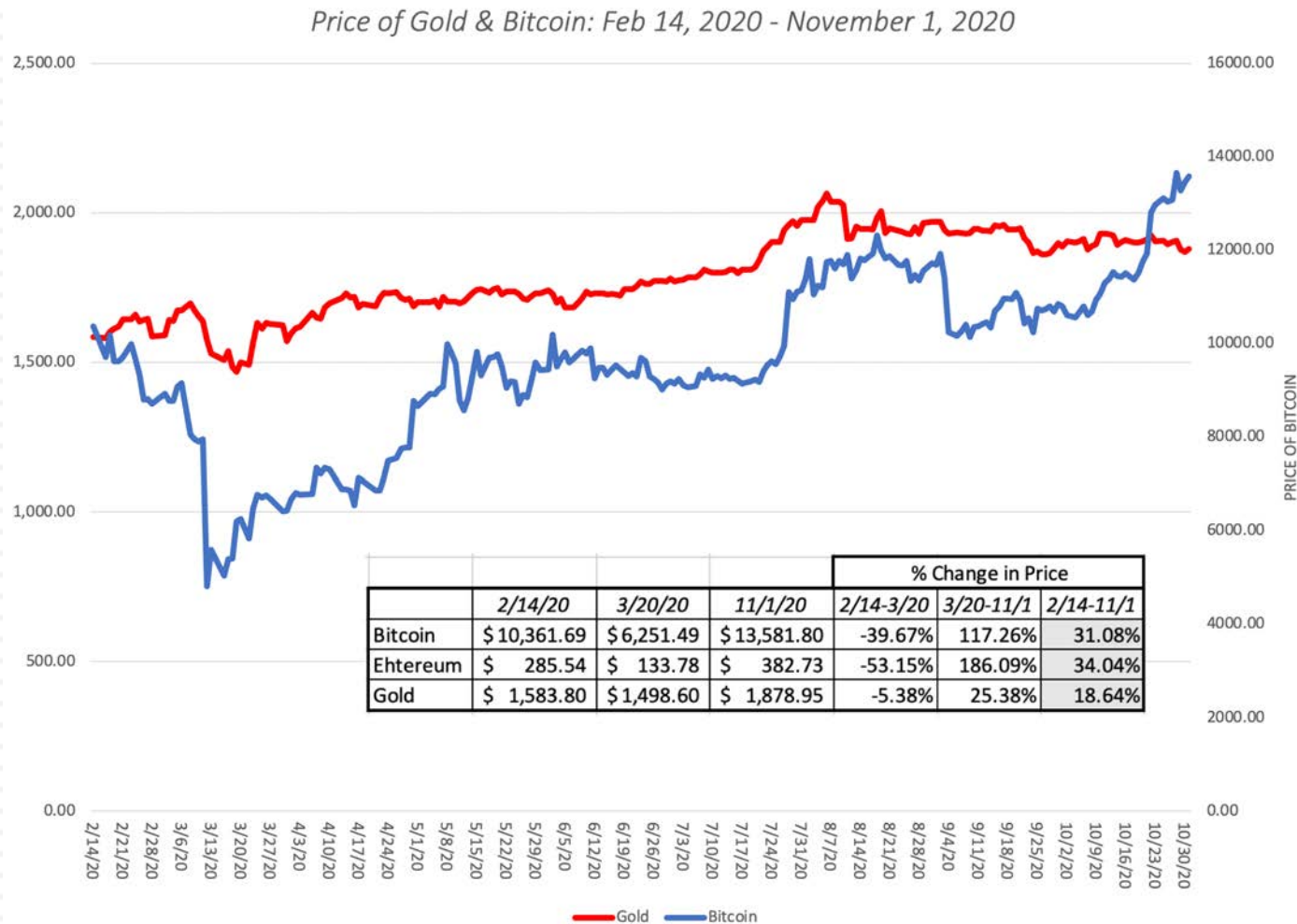


Macro Review: Oil & Copper

Oil and Copper Prices: February 14, 2020 - November 1, 2020



Macro Review: Gold & Bitcoin



Global Equities: By Region

| Sub Region | Number of firms | Market Cap (\$ Millions) | | | | \$ Change in Market Cap | | | | % Change in Market Cap | | | |
|---------------------------|-----------------|--------------------------|--------------|--------------|--------------|-------------------------|--------------|----------------|--------------|------------------------|-----------|----------|-------------|
| | | 2/14/20 | 3/20/20 | 8/28/20 | 11/1/20 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 |
| Africa | 775 | \$ 551,313 | \$ 347,724 | \$ 453,676 | \$ 450,891 | \$ (203,590) | \$ 105,953 | \$ (2,785) | \$ (100,422) | -36.93% | 30.47% | -0.61% | -18.22% |
| Australia & NZ | 1,544 | \$ 1,460,485 | \$ 867,789 | \$ 1,457,249 | \$ 1,377,797 | \$ (592,696) | \$ 589,460 | \$ (79,452) | \$ (82,688) | -40.58% | 67.93% | -5.45% | -5.66% |
| Canada | 2,396 | \$ 2,069,846 | \$ 1,263,949 | \$ 2,025,929 | \$ 1,874,426 | \$ (805,897) | \$ 761,980 | \$ (151,503) | \$ (195,420) | -38.94% | 60.29% | -7.48% | -9.44% |
| China | 6,293 | \$13,955,224 | \$12,367,237 | \$16,742,877 | \$16,405,890 | \$ (1,587,987) | \$ 4,375,641 | \$ (336,988) | \$ 2,450,666 | -11.38% | 35.38% | -2.01% | 17.56% |
| EU & Environs | 5,190 | \$13,195,783 | \$ 8,955,805 | \$12,849,117 | \$12,356,947 | \$ (4,239,979) | \$ 3,893,312 | \$ (492,170) | \$ (838,836) | -32.13% | 43.47% | -3.83% | -6.36% |
| Eastern Europe & Russia | 494 | \$ 820,322 | \$ 495,278 | \$ 630,915 | \$ 543,773 | \$ (325,044) | \$ 135,637 | \$ (87,142) | \$ (276,549) | -39.62% | 27.39% | -13.81% | -33.71% |
| India | 3,314 | \$ 2,189,647 | \$ 1,510,005 | \$ 2,137,221 | \$ 2,074,926 | \$ (679,642) | \$ 627,215 | \$ (62,295) | \$ (114,721) | -31.04% | 41.54% | -2.91% | -5.24% |
| Japan | 3,732 | \$ 5,857,677 | \$ 4,367,763 | \$ 5,806,406 | \$ 5,793,928 | \$ (1,489,914) | \$ 1,438,644 | \$ (12,479) | \$ (63,749) | -25.44% | 32.94% | -0.21% | -1.09% |
| Latin America & Caribbean | 1,164 | \$ 2,420,178 | \$ 1,418,615 | \$ 1,889,419 | \$ 1,764,617 | \$ (1,001,563) | \$ 470,804 | \$ (124,802) | \$ (655,561) | -41.38% | 33.19% | -6.61% | -27.09% |
| Middle East | 1,430 | \$ 3,072,356 | \$ 2,555,641 | \$ 3,130,835 | \$ 3,056,482 | \$ (516,716) | \$ 575,194 | \$ (74,353) | \$ (15,875) | -16.82% | 22.51% | -2.37% | -0.52% |
| Small Asia | 8,625 | \$ 4,993,589 | \$ 3,496,975 | \$ 5,048,960 | \$ 4,995,842 | \$ (1,496,614) | \$ 1,551,985 | \$ (53,118) | \$ 2,253 | -29.97% | 44.38% | -1.05% | 0.05% |
| UK | 1,130 | \$ 2,899,163 | \$ 1,826,761 | \$ 2,506,942 | \$ 2,306,805 | \$ (1,072,402) | \$ 680,181 | \$ (200,137) | \$ (592,358) | -36.99% | 37.23% | -7.98% | -20.43% |
| United States | 6,357 | \$33,844,978 | \$22,773,956 | \$35,589,058 | \$33,525,453 | \$(11,071,022) | \$12,815,102 | \$ (2,063,605) | \$ (319,524) | -32.71% | 56.27% | -5.80% | -0.94% |
| Global | 42,445 | \$87,330,562 | \$62,247,496 | \$74,920,290 | \$87,744,240 | \$(25,083,065) | \$12,672,794 | \$12,823,950 | \$ 413,679 | -28.72% | 20.36% | 17.12% | 0.47% |

Global Equities: By Sector

| Primary Sector | Number of firms | Market Cap (\$ Millions) | | | | \$ Change in Market Cap | | | | % Change in Market Cap | | | |
|------------------------|-----------------|--------------------------|---------------|---------------|---------------|-------------------------|---------------|---------------|----------------|------------------------|------------|----------|-------------|
| | | 2/14/20 | 3/20/20 | 8/28/20 | 11/1/20 | 2/14 - 3/20 | 3/20 - 9/1 | 9/1-11/1 | 2/14 - 11/1 | 2/14 - 3/20 | 3/20 - 9/1 | 9/1-11/1 | 2/14 - 11/1 |
| Communication Services | 2,079 | \$ 7,291,713 | \$ 5,460,948 | \$ 7,920,931 | \$ 7,605,693 | \$ (1,830,765) | \$ 2,459,983 | \$ (315,238) | \$ 313,980 | -25.11% | 45.05% | -3.98% | 4.31% |
| Consumer Discretionary | 5,945 | \$ 10,153,097 | \$ 7,068,864 | \$ 11,850,184 | \$ 12,063,642 | \$ (3,084,232) | \$ 4,781,319 | \$ 213,459 | \$ 1,910,546 | -30.38% | 67.64% | 1.80% | 18.82% |
| Consumer Staples | 2,847 | \$ 7,168,482 | \$ 5,729,650 | \$ 7,641,382 | \$ 7,237,898 | \$ (1,438,832) | \$ 1,911,731 | \$ (403,484) | \$ 69,416 | -20.07% | 33.37% | -5.28% | 0.97% |
| Energy | 1,654 | \$ 5,922,675 | \$ 3,847,829 | \$ 4,991,620 | \$ 4,444,401 | \$ (2,074,846) | \$ 1,143,792 | \$ (547,220) | \$ (1,478,274) | -35.03% | 29.73% | -10.96% | -24.96% |
| Financials | 4,356 | \$ 14,234,754 | \$ 9,514,353 | \$ 12,061,179 | \$ 11,412,865 | \$ (4,720,402) | \$ 2,546,827 | \$ (648,315) | \$ (2,821,889) | -33.16% | 26.77% | -5.38% | -19.82% |
| Health Care | 3,955 | \$ 8,905,753 | \$ 6,857,601 | \$ 9,949,643 | \$ 9,527,764 | \$ (2,048,152) | \$ 3,092,042 | \$ (421,879) | \$ 622,012 | -23.00% | 45.09% | -4.24% | 6.98% |
| Industrials | 7,560 | \$ 10,081,864 | \$ 6,865,944 | \$ 9,922,741 | \$ 9,576,177 | \$ (3,215,919) | \$ 3,056,797 | \$ (346,564) | \$ (505,687) | -31.90% | 44.52% | -3.49% | -5.02% |
| Information Technology | 5,577 | \$ 13,560,982 | \$ 9,707,739 | \$ 15,984,270 | \$ 14,992,176 | \$ (3,853,242) | \$ 6,276,531 | \$ (992,094) | \$ 1,431,194 | -28.41% | 64.65% | -6.21% | 10.55% |
| Materials | 5,705 | \$ 4,976,622 | \$ 3,514,149 | \$ 5,380,546 | \$ 5,200,887 | \$ (1,462,473) | \$ 1,866,397 | \$ (179,658) | \$ 224,265 | -29.39% | 53.11% | -3.34% | 4.51% |
| Real Estate | 1,842 | \$ 1,836,062 | \$ 1,353,453 | \$ 1,679,779 | \$ 1,585,009 | \$ (482,609) | \$ 326,326 | \$ (94,769) | \$ (251,053) | -26.29% | 24.11% | -5.64% | -13.67% |
| Utilities | 917 | \$ 3,196,558 | \$ 2,325,395 | \$ 2,884,510 | \$ 2,879,452 | \$ (871,163) | \$ 559,115 | \$ (5,058) | \$ (317,106) | -27.25% | 24.04% | -0.18% | -9.92% |
| Global | 42,445 | \$ 87,330,562 | \$ 62,247,496 | \$ 74,920,290 | \$ 87,744,240 | \$ (25,083,065) | \$ 12,672,794 | \$ 12,823,950 | \$ 413,679 | -28.72% | 20.36% | 17.12% | 0.47% |

Global Equities: Industry Winners & Losers

| | | Worst Performing Industries (2/14- 11/1) | | | | | | | | | | | |
|---------------------------------------|-----------------|--|-------------|-------------|-------------|-------------------------|--------------|--------------|----------------|------------------------|-----------|----------|-------------|
| | | Market Cap (\$ Millions) | | | | \$ Change in Market Cap | | | | % Change in Market Cap | | | |
| Industry | Number of firms | 2/14/20 | 3/20/20 | 8/28/20 | 11/1/20 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 |
| Oil/Gas (Production and Exploration) | 705 | \$ 683,665 | \$ 316,958 | \$ 477,802 | \$ 383,653 | \$ (366,707) | \$ 160,844 | \$ (94,149) | \$ (300,012) | -53.64% | 50.75% | -19.70% | -43.88% |
| R. E. I. T. | 80 | \$ 108,606 | \$ 49,179 | \$ 68,474 | \$ 64,681 | \$ (59,427) | \$ 19,296 | \$ (3,793) | \$ (43,925) | -54.72% | 39.24% | -5.54% | -40.44% |
| Oil/Gas Distribution | 197 | \$ 644,032 | \$ 355,094 | \$ 480,384 | \$ 424,030 | \$ (288,938) | \$ 125,290 | \$ (56,354) | \$ (220,002) | -44.86% | 35.28% | -11.73% | -34.16% |
| Reinsurance | 35 | \$ 180,669 | \$ 98,290 | \$ 141,359 | \$ 122,608 | \$ (82,379) | \$ 43,069 | \$ (18,752) | \$ (58,061) | -45.60% | 43.82% | -13.27% | -32.14% |
| Aerospace/Defense | 235 | \$1,219,943 | \$ 674,529 | \$ 939,969 | \$ 830,117 | \$ (545,414) | \$ 265,440 | \$ (109,851) | \$ (389,825) | -44.71% | 39.35% | -11.69% | -31.95% |
| Air Transport | 161 | \$ 558,878 | \$ 315,543 | \$ 418,144 | \$ 389,947 | \$ (243,335) | \$ 102,601 | \$ (28,196) | \$ (168,930) | -43.54% | 32.52% | -6.74% | -30.23% |
| Broadcasting | 139 | \$ 164,223 | \$ 93,880 | \$ 128,388 | \$ 122,024 | \$ (70,343) | \$ 34,508 | \$ (6,364) | \$ (42,199) | -42.83% | 36.76% | -4.96% | -25.70% |
| Insurance (General) | 222 | \$ 833,814 | \$ 508,265 | \$ 694,490 | \$ 620,410 | \$ (325,549) | \$ 186,225 | \$ (74,079) | \$ (213,404) | -39.04% | 36.64% | -10.67% | -25.59% |
| Bank (Money Center) | 629 | \$6,844,013 | \$4,651,769 | \$5,397,921 | \$5,107,604 | \$ (2,192,245) | \$ 746,152 | \$ (290,317) | \$ (1,736,409) | -32.03% | 16.04% | -5.38% | -25.37% |
| Food Wholesalers | 149 | \$ 94,803 | \$ 51,326 | \$ 77,791 | \$ 71,464 | \$ (43,477) | \$ 26,465 | \$ (6,327) | \$ (23,339) | -45.86% | 51.56% | -8.13% | -24.62% |
| | | Best Performing Industries (2/14- 11/1) | | | | | | | | | | | |
| | | Market Cap (\$ Millions) | | | | \$ Change in Market Cap | | | | % Change in Market Cap | | | |
| Industry | Number of firms | 2/14/20 | 3/20/20 | 8/28/20 | 11/1/20 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 |
| Software (Internet) | 133 | \$ 226,460 | \$ 166,483 | \$ 355,195 | \$ 334,679 | \$ (59,977) | \$ 188,712 | \$ (20,516) | \$ 108,219 | -26.48% | 113.35% | -5.78% | 47.79% |
| Retail (Online) | 307 | \$2,454,579 | \$1,989,255 | \$3,728,349 | \$3,585,642 | \$ (465,324) | \$ 1,739,094 | \$ (142,707) | \$ 1,131,063 | -18.96% | 87.42% | -3.83% | 46.08% |
| Healthcare Information and Technology | 374 | \$ 768,829 | \$ 604,390 | \$1,029,307 | \$1,054,953 | \$ (164,439) | \$ 424,917 | \$ 25,646 | \$ 286,124 | -21.39% | 70.31% | 2.49% | 37.22% |
| Precious Metals | 796 | \$ 419,259 | \$ 297,645 | \$ 611,235 | \$ 557,335 | \$ (121,614) | \$ 313,590 | \$ (53,900) | \$ 138,076 | -29.01% | 105.36% | -8.82% | 32.93% |
| Furn/Home Furnishings | 333 | \$ 330,673 | \$ 253,089 | \$ 383,318 | \$ 406,726 | \$ (77,583) | \$ 130,229 | \$ 23,408 | \$ 76,053 | -23.46% | 51.46% | 6.11% | 23.00% |
| Transportation | 262 | \$ 548,150 | \$ 415,190 | \$ 675,026 | \$ 668,808 | \$ (132,960) | \$ 259,836 | \$ (6,218) | \$ 120,658 | -24.26% | 62.58% | -0.92% | 22.01% |
| Software (Entertainment) | 297 | \$2,530,194 | \$1,843,089 | \$3,075,331 | \$3,059,148 | \$ (687,105) | \$ 1,232,242 | \$ (16,183) | \$ 528,954 | -27.16% | 66.86% | -0.53% | 20.91% |
| Electrical Equipment | 890 | \$ 894,227 | \$ 678,000 | \$1,041,728 | \$1,070,976 | \$ (216,228) | \$ 363,728 | \$ 29,248 | \$ 176,749 | -24.18% | 53.65% | 2.81% | 19.77% |
| Computers/Peripherals | 328 | \$2,216,118 | \$1,565,486 | \$2,912,841 | \$2,626,303 | \$ (650,632) | \$ 1,347,355 | \$ (286,538) | \$ 410,185 | -29.36% | 86.07% | -9.84% | 18.51% |
| Semiconductor | 539 | \$2,059,092 | \$1,457,139 | \$2,419,298 | \$2,407,639 | \$ (601,953) | \$ 962,159 | \$ (11,659) | \$ 348,547 | -29.23% | 66.03% | -0.48% | 16.93% |

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 Cap (\$ Millions) | | | | \$ Change in Market Cap | | | | % Change in Market Cap | | | |
|---------------------|-----------------|--------------------------|--------------|--------------|--------------|-------------------------|--------------|----------------|----------------|------------------------|-----------|----------|-------------|
| | | 2/14/20 | 3/20/20 | 8/28/20 | 11/1/20 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 |
| Bottom decile | 2,333 | \$ 1,755,010 | \$ 1,422,217 | \$ 1,774,142 | \$ 1,698,243 | \$ (332,794) | \$ 351,925 | \$ (75,899) | \$ (56,767) | -18.96% | 24.74% | -4.28% | -3.23% |
| 2nd decile | 2,334 | \$ 2,971,983 | \$ 2,262,564 | \$ 2,842,712 | \$ 2,708,398 | \$ (709,418) | \$ 580,147 | \$ (134,314) | \$ (263,585) | -23.87% | 25.64% | -4.72% | -8.87% |
| 3rd decile | 2,334 | \$ 3,798,983 | \$ 2,781,595 | \$ 3,659,654 | \$ 3,537,429 | \$ (1,017,388) | \$ 878,059 | \$ (122,225) | \$ (261,554) | -26.78% | 31.57% | -3.34% | -6.88% |
| 4th decile | 2,334 | \$ 6,130,592 | \$ 4,337,513 | \$ 5,772,392 | \$ 5,875,533 | \$ (1,793,079) | \$ 1,434,879 | \$ 103,141 | \$ (255,059) | -29.25% | 33.08% | 1.79% | -4.16% |
| 5th decile | 2,334 | \$ 7,435,170 | \$ 5,185,493 | \$ 7,227,482 | \$ 6,924,120 | \$ (2,249,677) | \$ 2,041,989 | \$ (303,362) | \$ (511,050) | -30.26% | 39.38% | -4.20% | -6.87% |
| 6th decile | 2,333 | \$ 8,806,792 | \$ 6,406,899 | \$ 8,908,535 | \$ 8,588,767 | \$ (2,399,893) | \$ 2,501,636 | \$ (319,768) | \$ (218,025) | -27.25% | 39.05% | -3.59% | -2.48% |
| 7th decile | 2,334 | \$18,241,633 | \$13,447,184 | \$20,211,926 | \$19,102,554 | \$ (4,794,449) | \$ 6,764,742 | \$ (1,109,373) | \$ 860,921 | -26.28% | 50.31% | -5.49% | 4.72% |
| 8th decile | 2,334 | \$10,112,133 | \$ 7,327,847 | \$10,526,888 | \$10,222,756 | \$ (2,784,286) | \$ 3,199,041 | \$ (304,132) | \$ 110,623 | -27.53% | 43.66% | -2.89% | 1.09% |
| 9th decile | 2,334 | \$10,213,139 | \$ 7,649,640 | \$11,653,529 | \$11,044,945 | \$ (2,563,499) | \$ 4,003,889 | \$ (608,584) | \$ 831,806 | -25.10% | 52.34% | -5.22% | 8.14% |
| Top decile | 2,334 | \$ 5,154,457 | \$ 3,549,939 | \$ 5,701,200 | \$ 5,467,262 | \$ (1,604,519) | \$ 2,151,261 | \$ (233,938) | \$ 312,805 | -31.13% | 60.60% | -4.10% | 6.07% |
| Negative Earnings | 19,107 | \$12,710,669 | \$ 7,876,605 | \$11,990,144 | \$11,357,769 | \$ (4,834,064) | \$ 4,113,539 | \$ (632,375) | \$ (1,352,899) | -38.03% | 52.22% | -5.27% | -10.64% |
| Global | 42,445 | \$87,330,562 | \$62,247,496 | \$74,920,290 | \$87,744,240 | \$ (25,083,065) | \$12,672,794 | \$12,823,950 | \$ 413,679 | -28.72% | 20.36% | 17.12% | 0.47% |

PBV and Market Returns - During Crisis

| decile(Price to Book) | Number of firms | Market Cap (\$ Millions) | | | | \$ Change in Market Cap | | | | % Change in Market Cap | | | |
|-----------------------|-----------------|--------------------------|---------------|---------------|---------------|-------------------------|---------------|----------------|----------------|------------------------|-----------|----------|-------------|
| | | 2/14/20 | 3/20/20 | 8/28/20 | 11/1/20 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 |
| Bottom decile | 3,681 | \$ 1,260,785 | \$ 899,317 | \$ 1,110,952 | \$ 1,056,434 | \$ (361,468) | \$ 211,635 | \$ (54,518) | \$ (204,351) | -28.67% | 23.53% | -4.91% | -16.21% |
| 2nd decile | 3,681 | \$ 3,413,362 | \$ 2,589,861 | \$ 3,105,410 | \$ 2,960,750 | \$ (823,501) | \$ 515,549 | \$ (144,660) | \$ (452,612) | -24.13% | 19.91% | -4.66% | -13.26% |
| 3rd decile | 3,681 | \$ 4,268,718 | \$ 2,996,777 | \$ 3,807,725 | \$ 3,624,513 | \$ (1,271,941) | \$ 810,948 | \$ (183,212) | \$ (644,205) | -29.80% | 27.06% | -4.81% | -15.09% |
| 4th decile | 3,681 | \$ 4,366,772 | \$ 2,999,277 | \$ 3,984,584 | \$ 3,780,285 | \$ (1,367,495) | \$ 985,307 | \$ (204,299) | \$ (586,488) | -31.32% | 32.85% | -5.13% | -13.43% |
| 5th decile | 3,682 | \$ 6,437,247 | \$ 4,274,820 | \$ 5,763,919 | \$ 5,409,439 | \$ (2,162,428) | \$ 1,489,099 | \$ (354,480) | \$ (1,027,808) | -33.59% | 34.83% | -6.15% | -15.97% |
| 6th decile | 3,681 | \$ 8,732,835 | \$ 5,829,486 | \$ 7,837,080 | \$ 7,395,551 | \$ (2,903,349) | \$ 2,007,594 | \$ (441,530) | \$ (1,337,285) | -33.25% | 34.44% | -5.63% | -15.31% |
| 7th decile | 3,681 | \$ 7,141,581 | \$ 4,875,853 | \$ 6,840,874 | \$ 6,616,927 | \$ (2,265,728) | \$ 1,965,022 | \$ (223,947) | \$ (524,654) | -31.73% | 40.30% | -3.27% | -7.35% |
| 8th decile | 3,681 | \$ 9,228,614 | \$ 6,507,688 | \$ 9,351,014 | \$ 9,028,522 | \$ (2,720,926) | \$ 2,843,326 | \$ (322,491) | \$ (200,092) | -29.48% | 43.69% | -3.45% | -2.17% |
| 9th decile | 3,681 | \$ 15,013,193 | \$ 11,027,034 | \$ 16,559,412 | \$ 15,956,268 | \$ (3,986,159) | \$ 5,532,377 | \$ (603,144) | \$ 943,075 | -26.55% | 50.17% | -3.64% | 6.28% |
| Top decile | 3,682 | \$ 24,271,926 | \$ 18,177,174 | \$ 28,670,652 | \$ 27,659,442 | \$ (6,094,753) | \$ 10,493,478 | \$ (1,011,210) | \$ 3,387,516 | -25.11% | 57.73% | -3.53% | 13.96% |
| Negative Book Value | 5,633 | \$ 3,195,527 | \$ 2,070,211 | \$ 3,236,984 | \$ 3,039,648 | \$ (1,125,316) | \$ 1,166,773 | \$ (197,336) | \$ (155,879) | -35.22% | 56.36% | -6.10% | -4.88% |
| Global | 42,445 | \$ 87,330,562 | \$ 62,247,496 | \$ 74,920,290 | \$ 87,744,240 | \$ (25,083,065) | \$ 12,672,794 | \$ 12,823,950 | \$ 413,679 | -28.72% | 20.36% | 17.12% | 0.47% |

Dividends and Market Returns

| quintile(Dividend Yield) | Number of firms | Market Cap (\$ Millions) | | | | \$ Change in Market Cap | | | | % Change in Market Cap | | | |
|--------------------------|-----------------|--------------------------|---------------|---------------|---------------|-------------------------|--------------|--------------|---------------|------------------------|------------|-------------|-------------|
| | | 2/14/20 | 3/20/20 | 5/22/20 | 8/14/20 | 2/14 - 3/20 | 3/20- 5/22 | 5/22 - 8/14 | 2/14 - 8/14 | 2/14 - 3/20 | 3/20- 5/22 | 5/22 - 8/14 | 2/14 - 8/14 |
| Non-dividend paying | 26,088 | \$ 24,416,274 | \$ 17,683,438 | \$ 22,096,476 | \$ 26,078,982 | \$(6,732,837) | \$ 4,413,038 | \$ 3,982,506 | \$ 1,662,708 | -27.58% | 24.96% | 18.02% | 6.81% |
| Bottom quintile | 3,576 | \$ 12,298,324 | \$ 8,992,480 | \$ 10,976,052 | \$ 13,261,223 | \$(3,305,844) | \$ 1,983,572 | \$ 2,285,171 | \$ 962,899 | -26.88% | 22.06% | 20.82% | 7.83% |
| 2nd quintile | 3,576 | \$ 17,146,283 | \$ 12,023,053 | \$ 14,984,816 | \$ 17,827,271 | \$(5,123,230) | \$ 2,961,763 | \$ 2,842,455 | \$ 680,988 | -29.88% | 24.63% | 18.97% | 3.97% |
| 3rd quintile | 3,577 | \$ 16,104,332 | \$ 11,183,049 | \$ 13,128,188 | \$ 14,992,988 | \$(4,921,283) | \$ 1,945,139 | \$ 1,864,800 | \$(1,111,344) | -30.56% | 17.39% | 14.20% | -6.90% |
| 4th quintile | 3,576 | \$ 13,396,923 | \$ 9,275,069 | \$ 10,471,358 | \$ 11,969,783 | \$(4,121,854) | \$ 1,196,289 | \$ 1,498,425 | \$(1,427,140) | -30.77% | 12.90% | 14.31% | -10.65% |
| Top quintile | 3,577 | \$ 7,036,275 | \$ 4,963,652 | \$ 5,553,475 | \$ 6,219,322 | \$(2,072,623) | \$ 589,823 | \$ 665,847 | \$ (816,954) | -29.46% | 11.88% | 11.99% | -11.61% |

Momentum and Damage

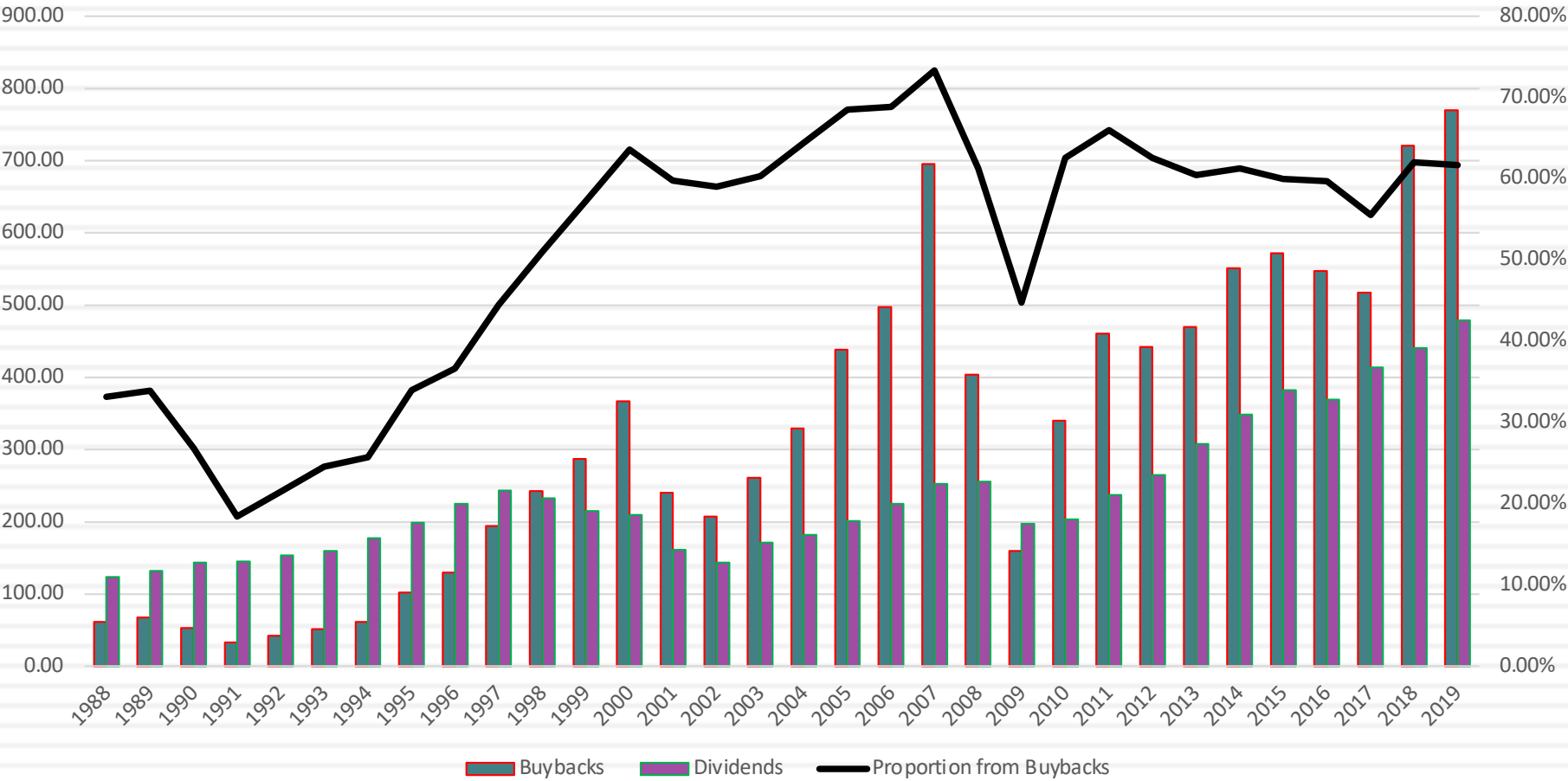
| Mkt Cap Change (2/14/19) | Number of firms | Market Cap (\$ Millions) | | | | \$ Change in Market Cap | | | | % Change in Market Cap | | | |
|--------------------------|-----------------|--------------------------|---------------|---------------|---------------|-------------------------|--------------|--------------|----------------|------------------------|------------|----------|-------------|
| | | 2/14/20 | 3/20/20 | 8/28/20 | 11/1/20 | 2/14 - 3/20 | 3/20 - 9/1 | 9/1-11/1 | 2/14 - 11/1 | 2/14 - 3/20 | 3/20 - 9/1 | 9/1-11/1 | 2/14 - 11/1 |
| Bottom decile | 3,865 | \$ 462,520 | \$ 297,389 | \$ 506,127 | \$ 488,936 | \$ (165,130) | \$ 208,738 | \$ (17,191) | \$ 26,416 | -35.70% | 70.19% | -3.40% | 5.71% |
| 2nd decile | 3,866 | \$ 1,780,767 | \$ 1,241,333 | \$ 1,669,163 | \$ 1,568,755 | \$ (539,434) | \$ 427,831 | \$ (100,408) | \$ (212,012) | -30.29% | 34.47% | -6.02% | -11.91% |
| 3rd decile | 3,866 | \$ 4,241,671 | \$ 2,830,604 | \$ 3,689,012 | \$ 3,448,320 | \$ (1,411,067) | \$ 858,408 | \$ (240,693) | \$ (793,352) | -33.27% | 30.33% | -6.52% | -18.70% |
| 4th decile | 3,866 | \$ 4,977,529 | \$ 3,394,232 | \$ 4,515,909 | \$ 4,280,305 | \$ (1,583,297) | \$ 1,121,677 | \$ (235,604) | \$ (697,224) | -31.81% | 33.05% | -5.22% | -14.01% |
| 5th decile | 3,866 | \$ 7,198,682 | \$ 5,249,535 | \$ 6,574,856 | \$ 6,208,734 | \$ (1,949,147) | \$ 1,325,321 | \$ (366,122) | \$ (989,948) | -27.08% | 25.25% | -5.57% | -13.75% |
| 6th decile | 3,865 | \$ 7,655,049 | \$ 5,368,099 | \$ 7,273,459 | \$ 6,986,724 | \$ (2,286,949) | \$ 1,905,359 | \$ (286,735) | \$ (668,324) | -29.88% | 35.49% | -3.94% | -8.73% |
| 7th decile | 3,866 | \$ 12,828,994 | \$ 9,104,464 | \$ 12,419,292 | \$ 11,814,370 | \$ (3,724,531) | \$ 3,314,828 | \$ (604,922) | \$ (1,014,624) | -29.03% | 36.41% | -4.87% | -7.91% |
| 8th decile | 3,865 | \$ 20,073,481 | \$ 14,079,065 | \$ 20,107,930 | \$ 19,647,460 | \$ (5,994,415) | \$ 6,028,865 | \$ (460,471) | \$ (426,021) | -29.86% | 42.82% | -2.29% | -2.12% |
| 9th decile | 3,867 | \$ 15,805,455 | \$ 11,408,965 | \$ 17,957,190 | \$ 17,231,036 | \$ (4,396,490) | \$ 6,548,225 | \$ (726,154) | \$ 1,425,581 | -27.82% | 57.40% | -4.04% | 9.02% |
| Top decile | 3,866 | \$ 8,719,161 | \$ 6,325,292 | \$ 11,563,695 | \$ 10,896,992 | \$ (2,393,869) | \$ 5,238,403 | \$ (666,703) | \$ 2,177,831 | -27.46% | 82.82% | -5.77% | 24.98% |

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

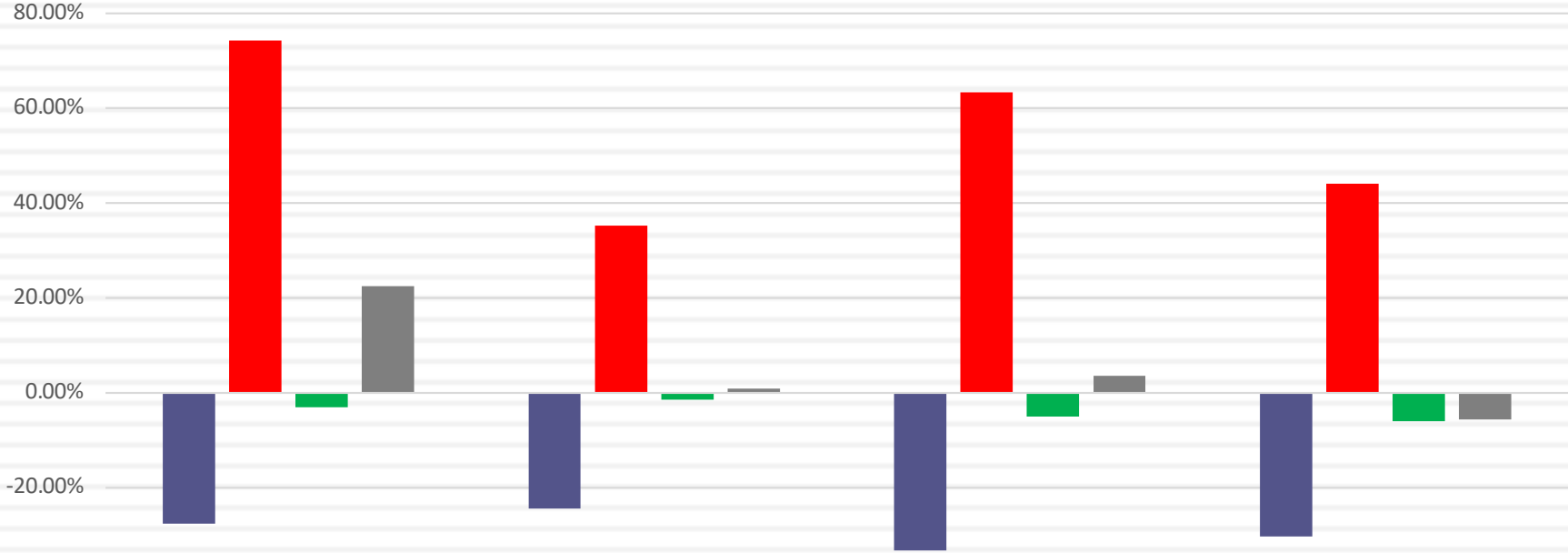


Cash Returns and the Crisis...

| <i>(Dividends + Buybacks)/ Net Income</i> | <i>Number of firms</i> | <i>Market Cap (\$ Millions)</i> | | | | <i>\$ Change in Market Cap</i> | | | | <i>% Change in Market Cap</i> | | | |
|---|------------------------|---------------------------------|----------------|----------------|----------------|--------------------------------|-------------------|-----------------|--------------------|-------------------------------|-------------------|-----------------|--------------------|
| | | <i>2/14/20</i> | <i>3/20/20</i> | <i>8/28/20</i> | <i>11/1/20</i> | <i>2/14 - 3/20</i> | <i>3/20 - 9/1</i> | <i>9/1-11/1</i> | <i>2/14 - 11/1</i> | <i>2/14 - 3/20</i> | <i>3/20 - 9/1</i> | <i>9/1-11/1</i> | <i>2/14 - 11/1</i> |
| Bottom decile | 1,455 | \$ 2,714,815 | \$ 2,014,873 | \$ 3,426,848 | \$ 3,325,984 | \$ (699,942) | \$ 1,411,976 | \$ (100,865) | \$ 611,169 | -25.78% | 70.08% | -2.94% | 22.51% |
| 2nd decile | 1,456 | \$ 7,240,150 | \$ 5,169,819 | \$ 8,368,812 | \$ 8,042,022 | \$ (2,070,331) | \$ 3,198,993 | \$ (326,790) | \$ 801,872 | -28.60% | 61.88% | -3.90% | 11.08% |
| 3rd decile | 1,455 | \$ 4,918,064 | \$ 3,671,287 | \$ 5,519,561 | \$ 5,421,179 | \$ (1,246,777) | \$ 1,848,275 | \$ (98,382) | \$ 503,116 | -25.35% | 50.34% | -1.78% | 10.23% |
| 4th decile | 1,456 | \$ 4,521,100 | \$ 3,241,253 | \$ 4,573,561 | \$ 4,325,358 | \$ (1,279,847) | \$ 1,332,309 | \$ (248,203) | \$ (195,742) | -28.31% | 41.10% | -5.43% | -4.33% |
| 5th decile | 1,455 | \$ 7,104,743 | \$ 5,141,811 | \$ 8,364,599 | \$ 7,737,265 | \$ (1,962,932) | \$ 3,222,788 | \$ (627,334) | \$ 632,522 | -27.63% | 62.68% | -7.50% | 8.90% |
| 6th decile | 1,456 | \$ 6,911,132 | \$ 5,107,648 | \$ 7,127,879 | \$ 7,298,619 | \$ (1,803,484) | \$ 2,020,230 | \$ 170,741 | \$ 387,488 | -26.10% | 39.55% | 2.40% | 5.61% |
| 7th decile | 1,455 | \$ 8,993,766 | \$ 6,699,114 | \$ 9,234,470 | \$ 8,879,913 | \$ (2,294,652) | \$ 2,535,356 | \$ (354,557) | \$ (113,854) | -25.51% | 37.85% | -3.84% | -1.27% |
| 8th decile | 1,456 | \$ 5,791,468 | \$ 4,203,912 | \$ 5,480,763 | \$ 5,276,430 | \$ (1,587,556) | \$ 1,276,851 | \$ (204,333) | \$ (515,038) | -27.41% | 30.37% | -3.73% | -8.89% |
| 9th decile | 1,455 | \$ 6,657,172 | \$ 5,068,201 | \$ 6,473,673 | \$ 6,210,816 | \$ (1,588,971) | \$ 1,405,472 | \$ (262,857) | \$ (446,356) | -23.87% | 27.73% | -4.06% | -6.70% |
| Top decile | 1,456 | \$ 4,198,491 | \$ 2,910,864 | \$ 3,792,674 | \$ 3,504,706 | \$ (1,287,627) | \$ 881,810 | \$ (287,968) | \$ (693,785) | -30.67% | 30.29% | -7.59% | -16.52% |

A Test on Buybacks..

Returns during COVID: Dividends & Buybacks in 2019



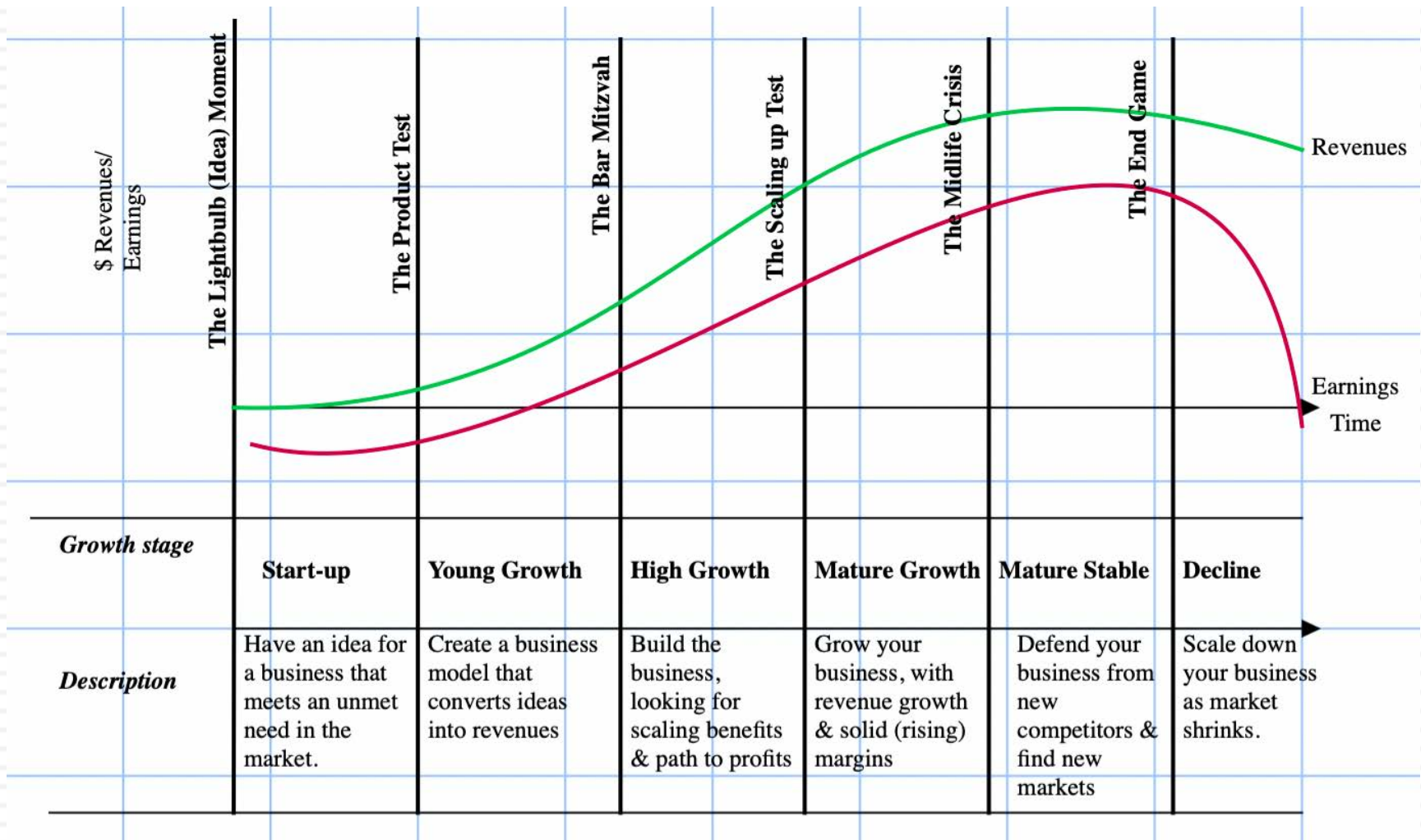
| | No dividends, No buybacks | Dividends only | Buybacks only | Dividends & Buybacks |
|---------------|---------------------------|----------------|---------------|----------------------|
| ■ 2/14 - 3/20 | -27.54% | -24.38% | -33.23% | -30.27% |
| ■ 3/20 - 9/1 | 74.25% | 35.25% | 63.36% | 44.10% |
| ■ 9/1 - 11/1 | -3.02% | -1.38% | -4.97% | -5.99% |
| ■ 2/14 - 11/1 | 22.45% | 0.87% | 3.66% | -5.54% |

■ 2/14 - 3/20 ■ 3/20 - 9/1 ■ 9/1 - 11/1 ■ 2/14 - 11/1

The Real Culprit...

| decile(Net Debt/EBITDA) | Number of firms | Market Cap (\$ Millions) | | | | \$ Change in Market Cap | | | | % Change in Market Cap | | | |
|-------------------------|-----------------|--------------------------|--------------|--------------|--------------|-------------------------|--------------|--------------|----------------|------------------------|-----------|----------|-------------|
| | | 2/14/20 | 3/20/20 | 8/28/20 | 11/1/20 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 |
| Bottom decile | 2,561 | \$ 2,526,331 | \$ 1,977,910 | \$ 3,094,261 | \$ 3,051,935 | \$ (548,421) | \$ 1,116,352 | \$ (42,326) | \$ 525,604 | -21.71% | 56.44% | -1.37% | 20.81% |
| 2nd decile | 2,562 | \$ 4,637,694 | \$ 3,571,187 | \$ 5,462,377 | \$ 5,388,956 | \$ (1,066,507) | \$ 1,891,190 | \$ (73,421) | \$ 751,263 | -23.00% | 52.96% | -1.34% | 16.20% |
| 3rd decile | 2,562 | \$ 6,936,438 | \$ 5,317,075 | \$ 8,154,861 | \$ 7,974,930 | \$ (1,619,363) | \$ 2,837,786 | \$ (179,930) | \$ 1,038,492 | -23.35% | 53.37% | -2.21% | 14.97% |
| 4th decile | 2,562 | \$ 7,230,286 | \$ 5,495,109 | \$ 8,377,444 | \$ 7,951,663 | \$ (1,735,178) | \$ 2,882,335 | \$ (425,781) | \$ 721,376 | -24.00% | 52.45% | -5.08% | 9.98% |
| 5th decile | 2,562 | \$14,151,922 | \$10,635,051 | \$16,283,389 | \$15,578,894 | \$ (3,516,871) | \$ 5,648,338 | \$ (704,495) | \$ 1,426,972 | -24.85% | 53.11% | -4.33% | 10.08% |
| 6th decile | 2,562 | \$10,105,796 | \$ 7,328,795 | \$10,362,916 | \$ 9,890,546 | \$ (2,777,001) | \$ 3,034,121 | \$ (472,370) | \$ (215,249) | -27.48% | 41.40% | -4.56% | -2.13% |
| 7th decile | 2,562 | \$11,100,170 | \$ 7,596,739 | \$10,529,678 | \$ 9,922,860 | \$ (3,503,432) | \$ 2,932,939 | \$ (606,818) | \$ (1,177,311) | -31.56% | 38.61% | -5.76% | -10.61% |
| 8th decile | 2,562 | \$ 8,377,931 | \$ 5,541,497 | \$ 7,739,240 | \$ 7,280,637 | \$ (2,836,434) | \$ 2,197,743 | \$ (458,603) | \$ (1,097,294) | -33.86% | 39.66% | -5.93% | -13.10% |
| 9th decile | 2,562 | \$ 5,026,529 | \$ 3,291,975 | \$ 4,525,750 | \$ 4,361,870 | \$ (1,734,554) | \$ 1,233,775 | \$ (163,880) | \$ (664,658) | -34.51% | 37.48% | -3.62% | -13.22% |
| Top decile | 2,562 | \$ 2,463,013 | \$ 1,557,556 | \$ 2,133,395 | \$ 2,004,414 | \$ (905,457) | \$ 575,840 | \$ (128,982) | \$ (458,599) | -36.76% | 36.97% | -6.05% | -18.62% |
| Negative EBITDA | 16,826 | \$14,774,452 | \$ 9,934,604 | \$13,605,293 | \$13,121,071 | \$ (4,839,848) | \$ 3,670,689 | \$ (484,222) | \$ (1,653,381) | -32.76% | 36.95% | -3.56% | -11.19% |
| Global | 42,445 | \$87,330,562 | \$62,247,496 | \$74,920,290 | \$87,744,240 | \$ (25,083,065) | \$12,672,794 | \$12,823,950 | \$ 413,679 | -28.72% | 20.36% | 17.12% | 0.47% |

The Corporate Life Cycle



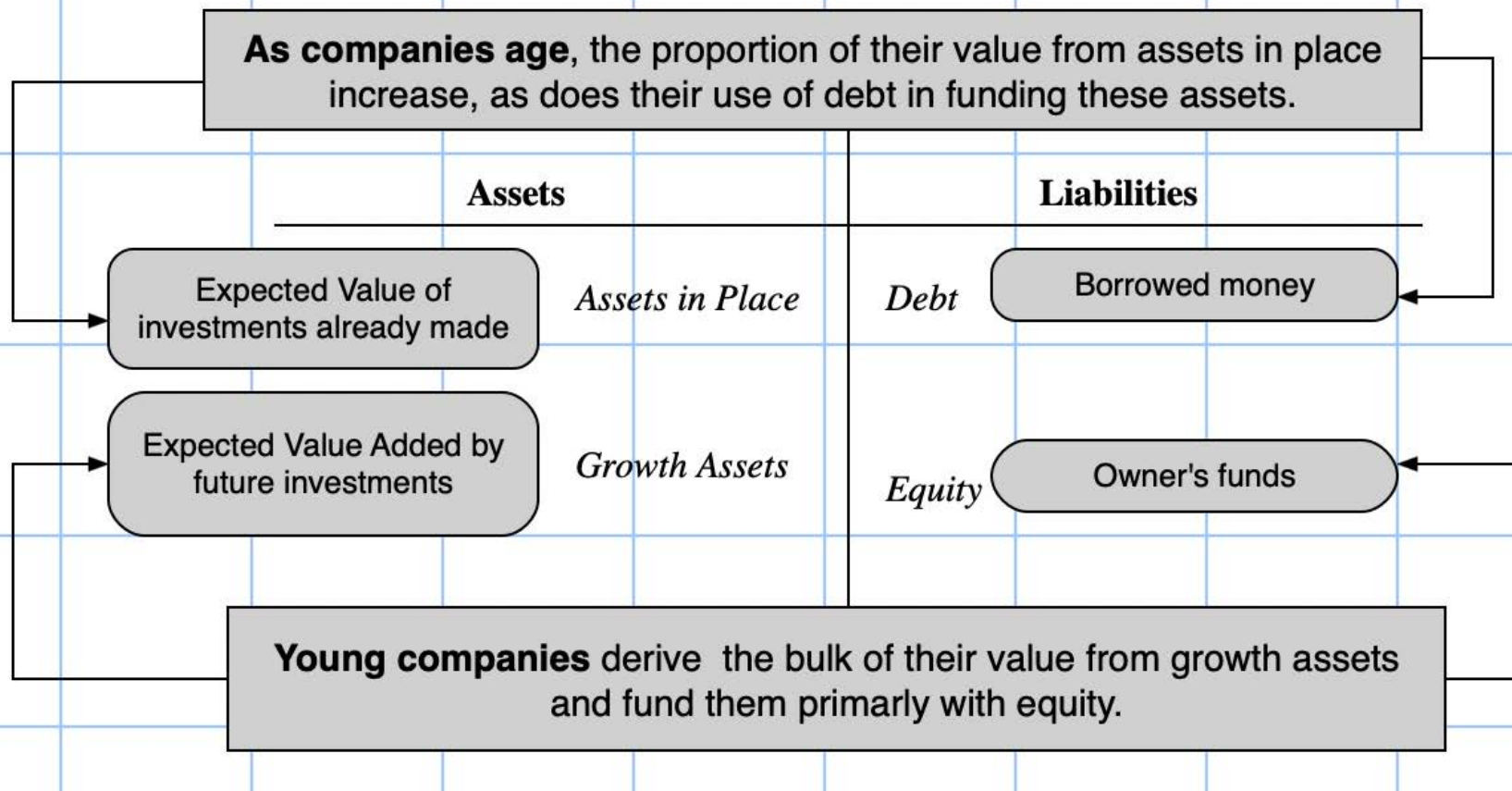
Cashflows across the life cycle...

| <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

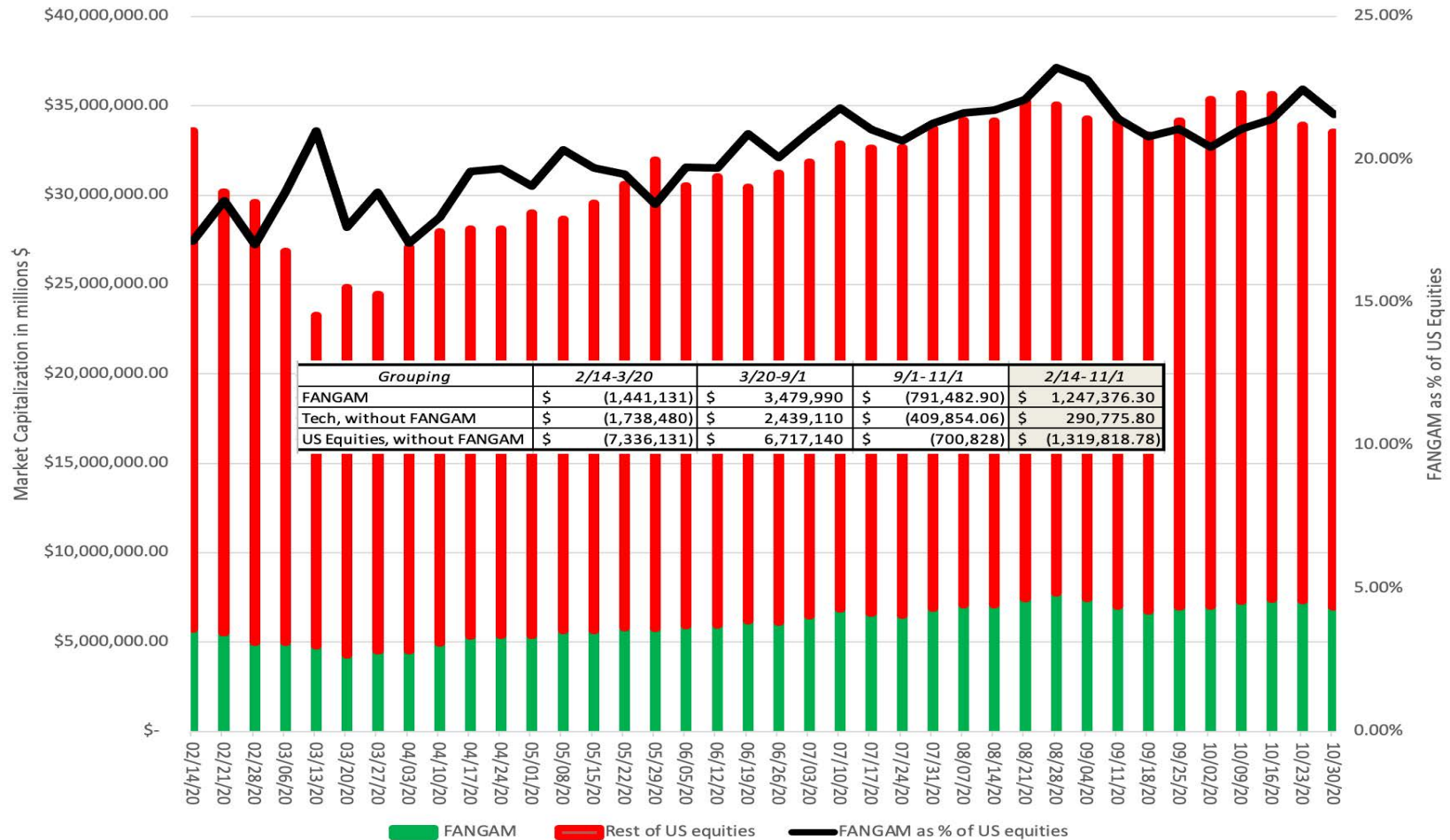
| decile(Age of company) | Number of firms | Market Cap (\$ Millions) | | | | \$ Change in Market Cap | | | | % Change in Market Cap | | | |
|------------------------|-----------------|--------------------------|---------------|---------------|---------------|-------------------------|---------------|----------------|----------------|------------------------|-----------|----------|-------------|
| | | 2/14/20 | 3/20/20 | 8/28/20 | 11/1/20 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 | 2/14 - 3/20 | 3/20- 9/1 | 9/1-11/1 | 2/14 - 11/1 |
| Bottom decile | 3,503 | \$ 2,421,697 | \$ 1,713,634 | \$ 2,826,698 | \$ 2,888,084 | \$ (708,063) | \$ 1,113,064 | \$ 61,385 | \$ 466,387 | -29.24% | 64.95% | 2.17% | 19.26% |
| 2nd decile | 3,693 | \$ 3,275,844 | \$ 2,354,837 | \$ 3,704,221 | \$ 3,622,988 | \$ (921,007) | \$ 1,349,384 | \$ (81,233) | \$ 347,144 | -28.12% | 57.30% | -2.19% | 10.60% |
| 3rd decile | 3,088 | \$ 3,796,174 | \$ 2,844,897 | \$ 4,896,346 | \$ 4,665,097 | \$ (951,277) | \$ 2,051,449 | \$ (231,250) | \$ 868,923 | -25.06% | 72.11% | -4.72% | 22.89% |
| 4th decile | 4,717 | \$ 9,227,590 | \$ 7,076,659 | \$ 10,375,119 | \$ 10,052,954 | \$ (2,150,930) | \$ 3,298,460 | \$ (322,165) | \$ 825,364 | -23.31% | 46.61% | -3.11% | 8.94% |
| 5th decile | 3,455 | \$ 5,548,369 | \$ 4,314,115 | \$ 6,673,329 | \$ 6,269,467 | \$ (1,234,254) | \$ 2,359,214 | \$ (403,862) | \$ 721,098 | -22.25% | 54.69% | -6.05% | 13.00% |
| 6th decile | 3,802 | \$ 4,439,174 | \$ 3,334,530 | \$ 4,656,948 | \$ 4,556,857 | \$ (1,104,644) | \$ 1,322,418 | \$ (100,091) | \$ 117,683 | -24.88% | 39.66% | -2.15% | 2.65% |
| 7th decile | 4,041 | \$ 8,847,988 | \$ 6,290,382 | \$ 9,540,459 | \$ 8,938,124 | \$ (2,557,606) | \$ 3,250,077 | \$ (602,335) | \$ 90,136 | -28.91% | 51.67% | -6.31% | 1.02% |
| 8th decile | 3,964 | \$ 8,798,192 | \$ 6,036,256 | \$ 9,023,653 | \$ 8,510,063 | \$ (2,761,936) | \$ 2,987,397 | \$ (513,590) | \$ (288,129) | -31.39% | 49.49% | -5.69% | -3.27% |
| 9th decile | 3,796 | \$ 10,117,591 | \$ 7,027,533 | \$ 9,792,003 | \$ 9,924,204 | \$ (3,090,058) | \$ 2,764,470 | \$ 132,201 | \$ (193,387) | -30.54% | 39.34% | 1.35% | -1.91% |
| Top decile | 3,816 | \$ 27,265,362 | \$ 18,635,738 | \$ 24,952,610 | \$ 23,458,255 | \$ (8,629,624) | \$ 6,316,872 | \$ (1,494,355) | \$ (3,807,106) | -31.65% | 33.90% | -5.99% | -13.96% |
| Missing | 4,570 | \$ 3,592,582 | \$ 2,618,915 | \$ 3,827,218 | \$ 3,641,685 | \$ (973,666) | \$ 1,208,302 | \$ (185,533) | \$ 49,103 | -27.10% | 46.14% | -4.85% | 1.37% |
| Global | 42,445 | \$ 87,330,562 | \$ 62,247,496 | \$ 74,920,290 | \$ 87,744,240 | \$ (25,083,065) | \$ 12,672,794 | \$ 12,823,950 | \$ 413,679 | -28.72% | 20.36% | 17.12% | 0.47% |

COVID: High Growth versus Low Growth

| decile (Est. Annual Revenue) | Number of firms | Market Cap (\$ Millions) | | | | \$ Change in Market Cap | | | | % Change in Market Cap | | | |
|------------------------------|-----------------|--------------------------|---------------|---------------|---------------|-------------------------|---------------|---------------|----------------|------------------------|------------|------------|-------------|
| | | 2/14/20 | 3/20/20 | 8/28/20 | 11/1/20 | 2/14 - 3/20 | 3/20 - 9/1 | 9/1 - 11/1 | 2/14 - 11/1 | 2/14 - 3/20 | 3/20 - 9/1 | 9/1 - 11/1 | 2/14 - 11/1 |
| Bottom decile | 1,358 | \$ 8,033,306 | \$ 4,958,887 | \$ 6,421,657 | \$ 5,814,363 | \$ (3,074,419) | \$ 1,462,770 | \$ (607,294) | \$ (2,218,943) | -38.27% | 29.50% | -9.46% | -27.62% |
| 2nd decile | 1,357 | \$ 7,372,479 | \$ 4,733,248 | \$ 6,206,061 | \$ 5,850,825 | \$ (2,639,231) | \$ 1,472,813 | \$ (355,236) | \$ (1,521,654) | -35.80% | 31.12% | -5.72% | -20.64% |
| 3rd decile | 1,358 | \$ 9,513,228 | \$ 6,361,069 | \$ 8,483,436 | \$ 7,986,898 | \$ (3,152,158) | \$ 2,122,367 | \$ (496,538) | \$ (1,526,330) | -33.13% | 33.36% | -5.85% | -16.04% |
| 4th decile | 1,353 | \$ 10,851,227 | \$ 7,463,872 | \$ 9,981,228 | \$ 9,407,862 | \$ (3,387,354) | \$ 2,517,356 | \$ (573,366) | \$ (1,443,364) | -31.22% | 33.73% | -5.74% | -13.30% |
| 5th decile | 1,360 | \$ 10,077,446 | \$ 7,379,681 | \$ 9,934,055 | \$ 9,473,061 | \$ (2,697,765) | \$ 2,554,374 | \$ (460,994) | \$ (604,385) | -26.77% | 34.61% | -4.64% | -6.00% |
| 6th decile | 1,360 | \$ 8,893,613 | \$ 6,421,250 | \$ 8,932,329 | \$ 8,636,950 | \$ (2,472,364) | \$ 2,511,079 | \$ (295,379) | \$ (256,664) | -27.80% | 39.11% | -3.31% | -2.89% |
| 7th decile | 1,349 | \$ 8,263,269 | \$ 6,019,432 | \$ 9,694,771 | \$ 9,021,311 | \$ (2,243,837) | \$ 3,675,339 | \$ (673,460) | \$ 758,042 | -27.15% | 61.06% | -6.95% | 9.17% |
| 8th decile | 1,357 | \$ 6,949,329 | \$ 5,137,478 | \$ 7,972,869 | \$ 7,738,244 | \$ (1,811,851) | \$ 2,835,391 | \$ (234,625) | \$ 788,914 | -26.07% | 55.19% | -2.94% | 11.35% |
| 9th decile | 1,372 | \$ 8,461,941 | \$ 6,697,267 | \$ 11,446,466 | \$ 11,552,523 | \$ (1,764,674) | \$ 4,749,199 | \$ 106,056 | \$ 3,090,582 | -20.85% | 70.91% | 0.93% | 36.52% |
| Top decile | 1,361 | \$ 3,197,077 | \$ 2,428,102 | \$ 5,230,861 | \$ 5,246,910 | \$ (768,975) | \$ 2,802,759 | \$ 16,049 | \$ 2,049,834 | -24.05% | 115.43% | 0.31% | 64.12% |
| Global | 42,445 | \$ 87,330,562 | \$ 62,247,496 | \$ 74,920,290 | \$ 87,744,240 | \$ (25,083,065) | \$ 12,672,794 | \$ 12,823,950 | \$ 413,679 | -28.72% | 20.36% | 17.12% | 0.47% |

The Strong get stronger... The FANGAM stocks...

FANGAM versus Rest of US Equities: February 14, 2020 to November 1, 2020

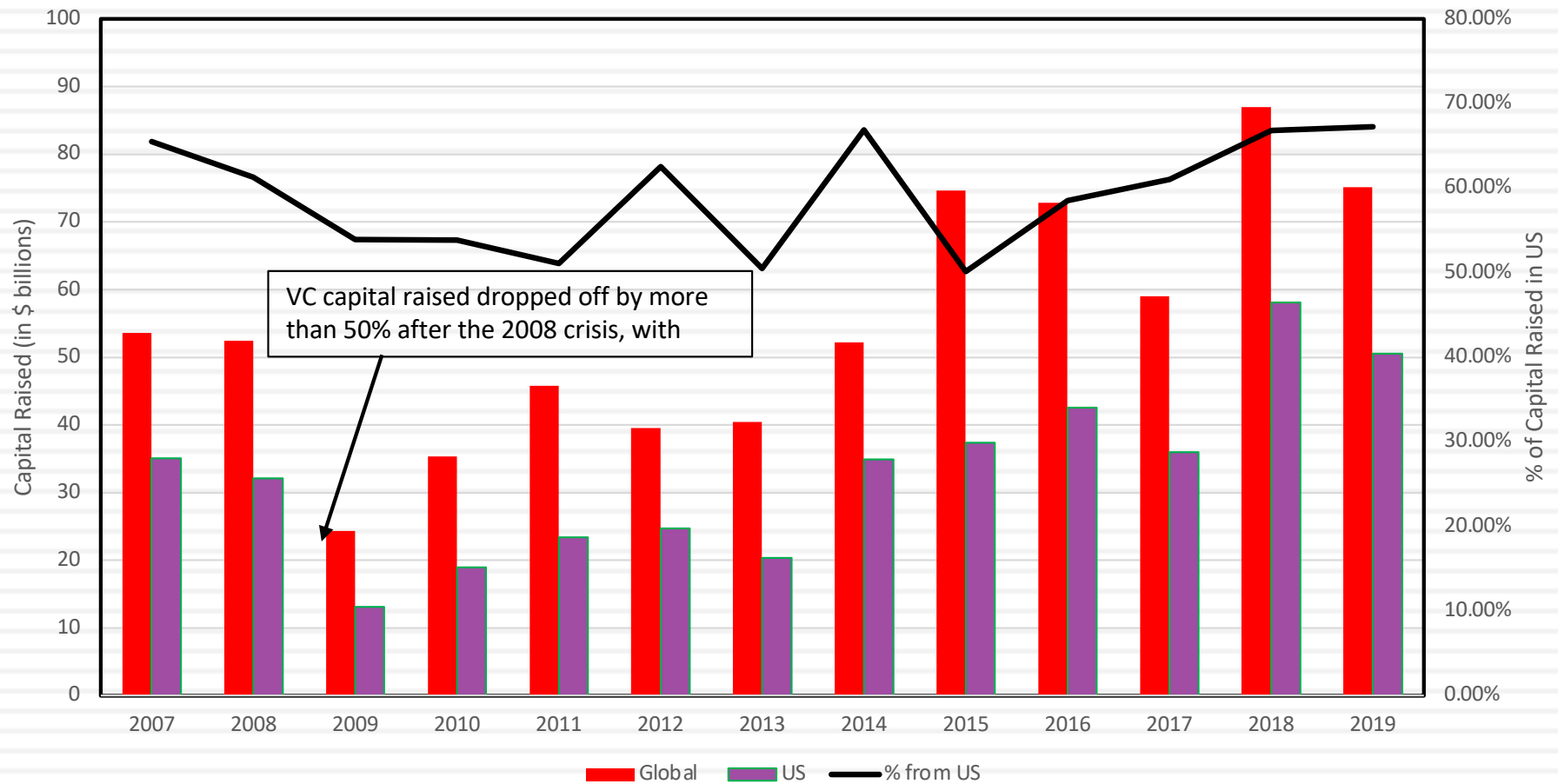


The Resilience of Risk Capital

- 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

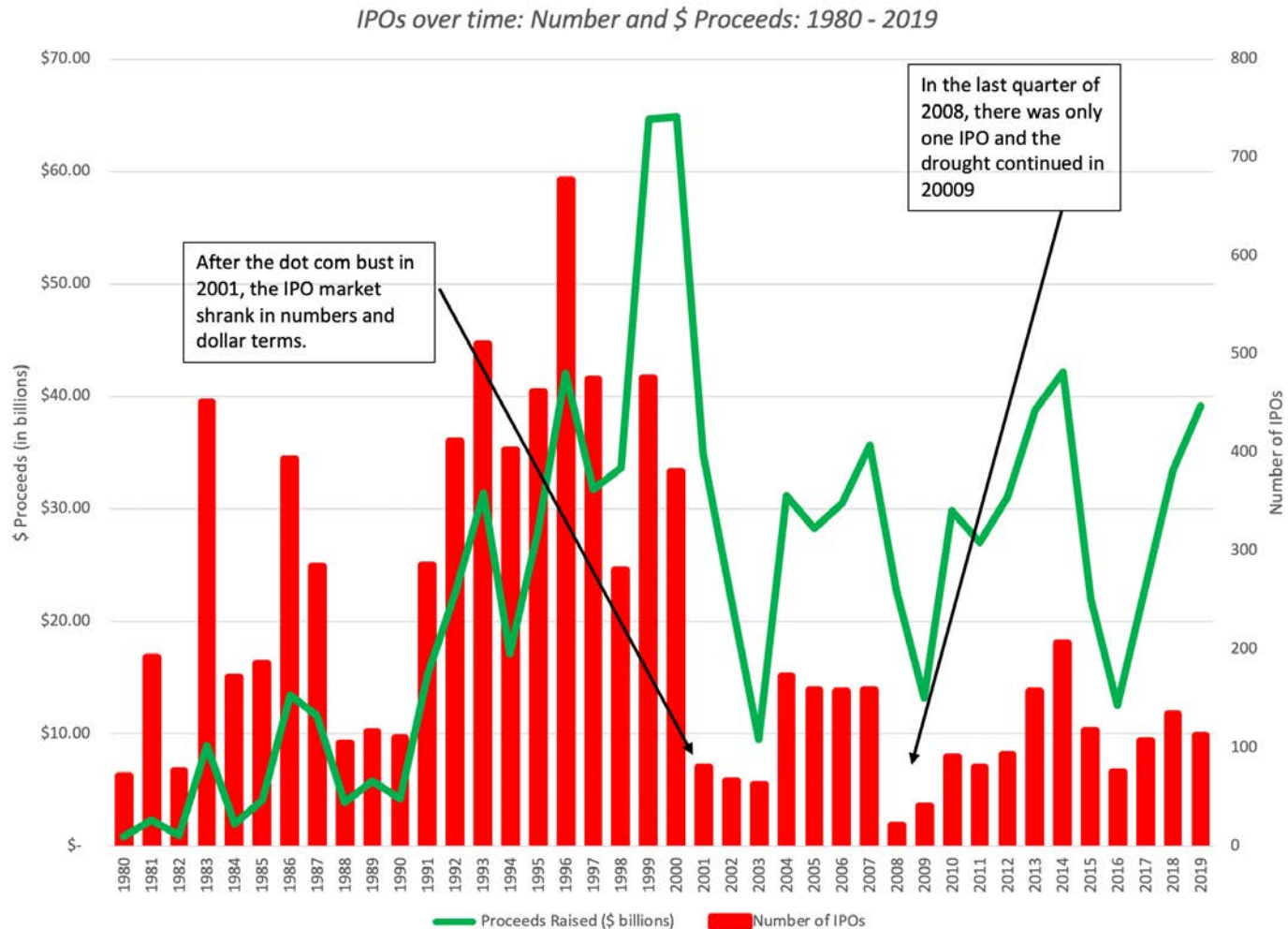


Venture Capital: The COVID effect

VC Investing during COVID: By Type

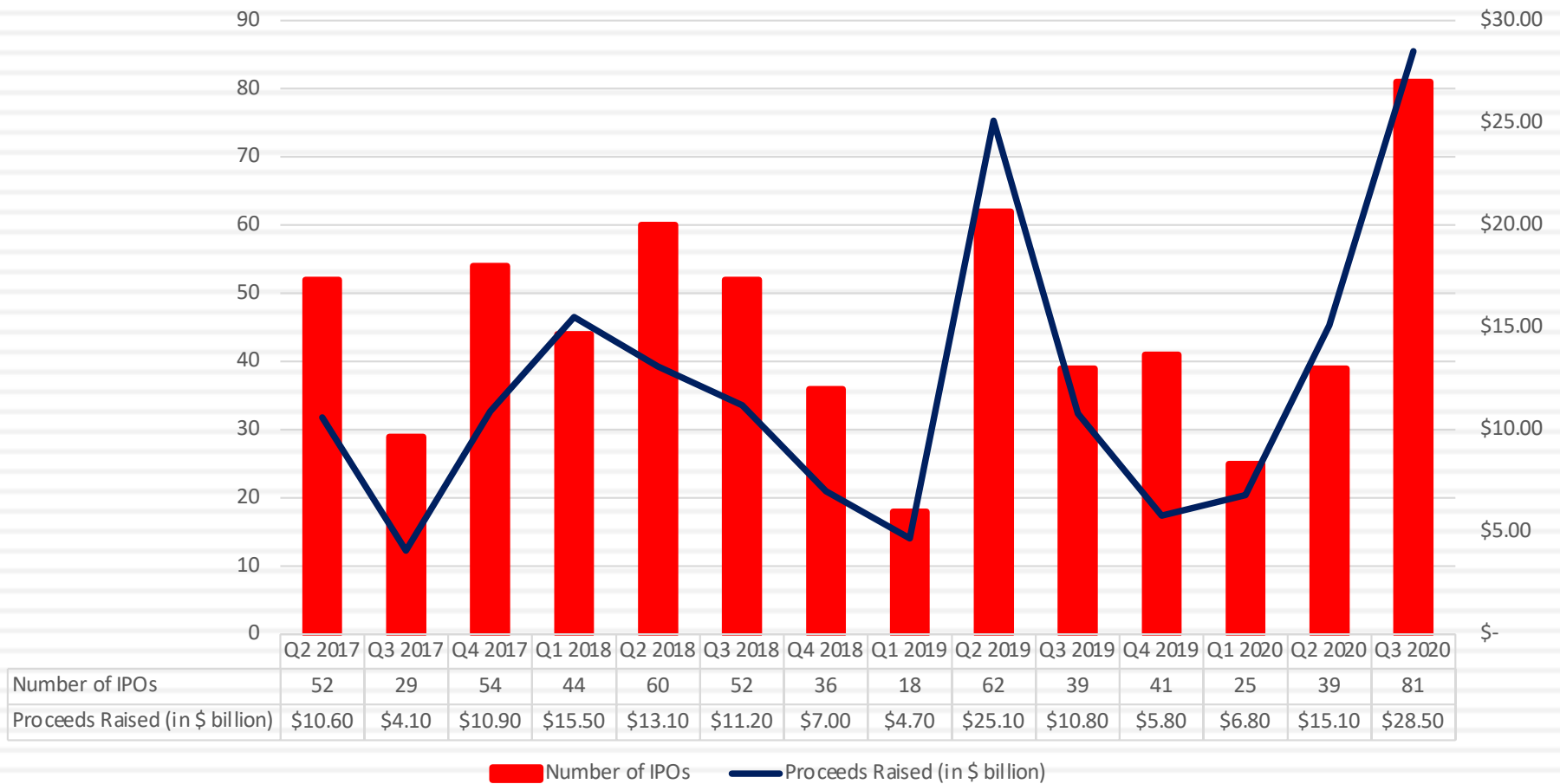


IPOs: A Historical Perspective

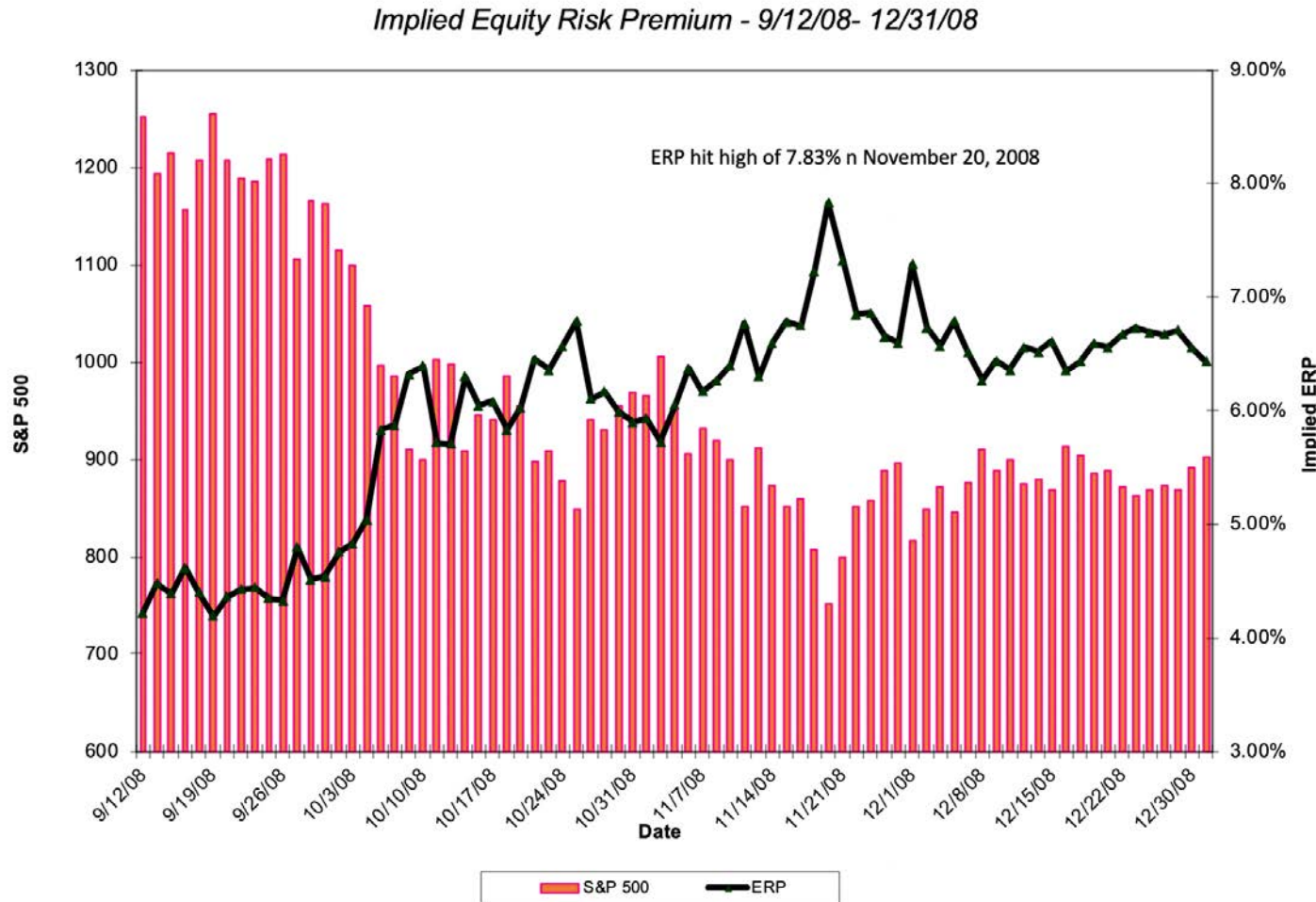


IPOs: The COVID effect

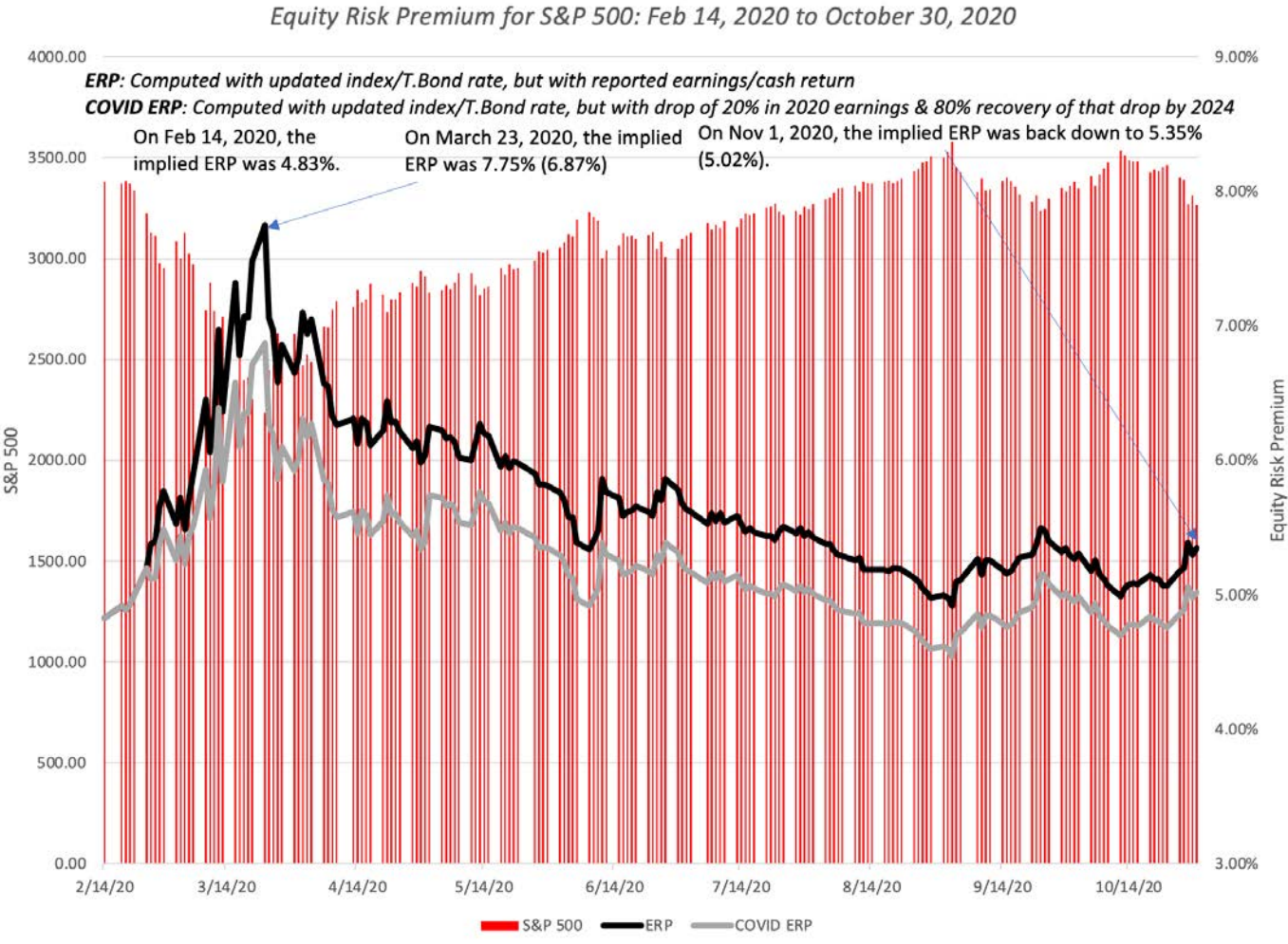
IPOs by Quarter: Including COVID quarters



The Price of Equity Risk: The 2008 Crisis



The Price of Equity Risk: COVID



| | | | | | | | |
|-------------|-------|--------|--------|----------------|-------|--------|--------|
| Andorra | 7.08% | 9.49% | 8.03% | Italy | 7.37% | 10.04% | 8.46% |
| Austria | 5.59% | 6.74% | 5.81% | Jersey | 5.89% | 7.30% | 6.12% |
| Belgium | 5.80% | 7.12% | 6.12% | Liechtenstein | 5.20% | 6.01% | 5.23% |
| Cyprus | 8.16% | 11.51% | 9.64% | Luxembourg | 5.20% | 6.01% | 5.23% |
| Denmark | 5.20% | 6.01% | 5.23% | Malta | 6.04% | 7.56% | 6.48% |
| Finland | 5.59% | 6.74% | 5.81% | Netherlands | 5.20% | 6.01% | 5.23% |
| France | 5.69% | 6.92% | 5.96% | Norway | 5.20% | 6.01% | 5.23% |
| Germany | 5.20% | 6.01% | 5.23% | Portugal | 7.37% | 10.04% | 8.46% |
| Greece | 9.64% | 14.25% | 11.84% | Spain | 6.77% | 8.93% | 7.58% |
| Guernsey | 6.77% | 8.93% | 6.12% | Sweden | 5.20% | 6.01% | 5.23% |
| Iceland | 6.04% | 7.56% | 6.48% | Switzerland | 5.20% | 6.01% | 5.23% |
| Ireland | 6.04% | 7.56% | 6.48% | Turkey | 9.64% | 14.25% | 11.84% |
| Isle of Man | 5.69% | 6.92% | 5.96% | United Kingdom | 5.69% | 6.92% | 5.96% |

| Country | 1/20 | 4/20 | 7/20 |
|---------------|--------|--------|--------|
| Angola | 11.62% | 17.91% | 14.79% |
| Benin | 10.63% | 16.08% | 13.32% |
| Botswana | 6.04% | 7.56% | 6.48% |
| Burkina Faso | 10.63% | 16.08% | 13.32% |
| Cameroon | 10.63% | 16.08% | 13.32% |
| Cape Verde | 10.63% | 16.08% | 13.32% |
| Congo (DR) | 12.59% | 19.73% | 16.25% |
| Congo (Rep) | 14.08% | 22.49% | 18.46% |
| Côte d'Ivoire | 8.75% | 12.60% | 10.52% |
| Egypt | 10.63% | 16.08% | 13.32% |
| Ethiopia | 9.64% | 14.25% | 13.32% |
| Gabon | 12.59% | 19.73% | 16.25% |
| Ghana | 11.62% | 17.91% | 14.79% |
| Kenya | 10.63% | 16.08% | 13.32% |
| Mali | 11.62% | 17.91% | 14.79% |
| Morocco | 7.66% | 10.58% | 8.90% |
| Mozambique | 14.08% | 22.49% | 18.46% |
| Namibia | 8.16% | 11.51% | 9.64% |
| Niger | 11.62% | 17.91% | 14.79% |
| Nigeria | 10.63% | 16.08% | 13.32% |
| Rwanda | 10.63% | 16.08% | 13.32% |
| Senegal | 8.75% | 12.60% | 10.52% |
| South Africa | 7.37% | 10.58% | 8.90% |
| Swaziland | 10.63% | 16.08% | 13.32% |
| Tanzania | 9.64% | 14.25% | 11.84% |
| Togo | 11.62% | 17.91% | 14.79% |
| Tunisia | 10.63% | 16.08% | 13.32% |
| Uganda | 10.63% | 16.08% | 13.32% |
| Zambia | 14.08% | 27.97% | 22.86% |

| | | | |
|---------------|-------|-------|-------|
| Canada | 5.20% | 6.01% | 5.23% |
| United States | 5.20% | 6.01% | 5.23% |

| | | | |
|-------------|--------|--------|--------|
| Argentina | 14.08% | 27.97% | 22.86% |
| Belize | 11.62% | 17.91% | 16.25% |
| Bolivia | 8.75% | 14.25% | 11.84% |
| Brazil | 8.16% | 11.51% | 9.64% |
| Chile | 5.89% | 7.30% | 6.26% |
| Colombia | 7.08% | 9.49% | 8.03% |
| Costa Rica | 9.64% | 16.08% | 13.32% |
| Ecuador | 11.62% | 24.30% | 19.92% |
| El Salvador | 11.62% | 17.91% | 14.79% |
| Guatemala | 7.66% | 10.58% | 8.90% |
| Honduras | 9.64% | 14.25% | 11.84% |
| Mexico | 6.38% | 8.21% | 7.58% |
| Nicaragua | 10.63% | 17.91% | 14.79% |
| Panama | 6.77% | 8.93% | 7.58% |
| Paraguay | 7.66% | 10.58% | 8.90% |
| Peru | 6.38% | 8.21% | 6.99% |
| Suriname | 10.63% | 16.08% | 14.79% |
| Uruguay | 7.08% | 9.49% | 8.03% |
| Venezuela | 22.89% | 29.46% | 27.14% |

| | | | |
|------------------------|--------|--------|--------|
| Albania | 9.64% | 14.25% | 11.84% |
| Armenia | 8.75% | 12.60% | 10.52% |
| Azerbaijan | 8.16% | 11.51% | 9.64% |
| Belarus | 11.62% | 17.91% | 14.79% |
| Bosnia and Herzegovina | 11.62% | 17.91% | 14.79% |
| Bulgaria | 7.08% | 9.49% | 8.03% |
| Croatia | 8.16% | 11.51% | 9.64% |
| Czech Republic | 5.80% | 7.12% | 6.12% |
| Estonia | 5.89% | 7.30% | 6.26% |
| Georgia | 8.16% | 11.51% | 9.64% |
| Hungary | 7.37% | 10.04% | 8.46% |
| Kazakhstan | 7.37% | 10.04% | 8.46% |
| Kyrgyzstan | 10.63% | 16.08% | 13.32% |
| Latvia | 6.38% | 8.21% | 6.99% |
| Lithuania | 6.38% | 8.21% | 6.99% |
| Macedonia | 8.75% | 12.60% | 10.52% |
| Moldova | 11.62% | 17.91% | 14.79% |
| Montenegro | 9.64% | 14.25% | 11.84% |
| Poland | 6.04% | 7.56% | 6.48% |
| Romania | 7.37% | 10.04% | 8.46% |
| Russia | 7.37% | 10.04% | 8.46% |
| Serbia | 8.75% | 12.60% | 10.52% |
| Slovakia | 6.04% | 7.56% | 6.48% |
| Slovenia | 6.77% | 8.93% | 7.58% |
| Tajikistan | 11.62% | 17.91% | 14.79% |
| Ukraine | 12.59% | 19.73% | 14.79% |
| Uzbekistan | 9.64% | 14.25% | 11.84% |

| | | | |
|-----------------------------|--------|--------|--------|
| Abu Dhabi | 5.69% | 6.92% | 5.96% |
| Bahrain | 10.63% | 16.08% | 13.32% |
| Iraq | 12.59% | 19.73% | 16.25% |
| Israel | 5.89% | 7.30% | 6.26% |
| Jordan | 9.64% | 14.25% | 11.84% |
| Kuwait | 5.69% | 6.92% | 5.96% |
| Lebanon | 14.08% | 27.97% | 22.86% |
| Oman | 7.66% | 11.51% | 10.52% |
| Qatar | 5.80% | 7.12% | 6.12% |
| Ras Al Khaimah (Emirate of) | 12.59% | 19.73% | 6.48% |
| Saudi Arabia | 5.89% | 7.30% | 6.26% |
| Sharjah | 6.38% | 9.49% | 8.03% |
| United Arab Emirates | 5.69% | 6.92% | 5.96% |

| Region | Weighted Average: ERP |
|---------------------------|-----------------------|
| Africa | 12.42% |
| Asia | 6.78% |
| Australia & New Zealand | 5.23% |
| Caribbean | 13.37% |
| Central and South America | 10.70% |
| Eastern Europe & Russia | 8.42% |
| Middle East | 7.70% |
| North America | 5.23% |
| Western Europe | 6.44% |
| Global | 6.76% |

| Country | PRS | 1-Jan | 1-Apr | 1-Jul |
|-----------------|------|--------|--------|--------|
| Algeria | 55 | 11.62% | 17.91% | 22.86% |
| Brunei | 80 | 5.59% | 6.74% | 6.48% |
| Gambia | 63.5 | 11.62% | 17.91% | 14.79% |
| Guinea | 54 | 15.06% | 24.30% | 22.86% |
| Guinea-Bissau | 62 | 11.62% | 17.91% | 16.25% |
| Guyana | 65 | 11.62% | 17.91% | 13.32% |
| Haiti | 54.5 | 14.08% | 22.49% | 22.86% |
| Iran | 58.5 | 11.62% | 17.91% | 18.46% |
| Korea, D.P.R. | 50.3 | 17.03% | 27.97% | 22.86% |
| Liberia | 53.5 | 21.71% | 31.93% | 22.86% |
| Libya | 58.3 | 8.16% | 11.51% | 18.46% |
| Madagascar | 63 | 10.63% | 16.08% | 14.79% |
| Malawi | 57.8 | 11.62% | 17.91% | 18.46% |
| Myanmar | 62.8 | 11.62% | 17.91% | 14.79% |
| Sierra Leone | 59 | 15.06% | 24.30% | 18.46% |
| Somalia | 50.5 | 17.03% | 27.97% | 22.86% |
| Sudan | 36.3 | 21.71% | 31.93% | 27.14% |
| Syria | 53.8 | 17.03% | 27.97% | 22.86% |
| Yemen, Republic | 50 | 17.03% | 27.97% | 27.14% |
| Zimbabwe | 51.3 | 17.03% | 27.97% | 22.86% |

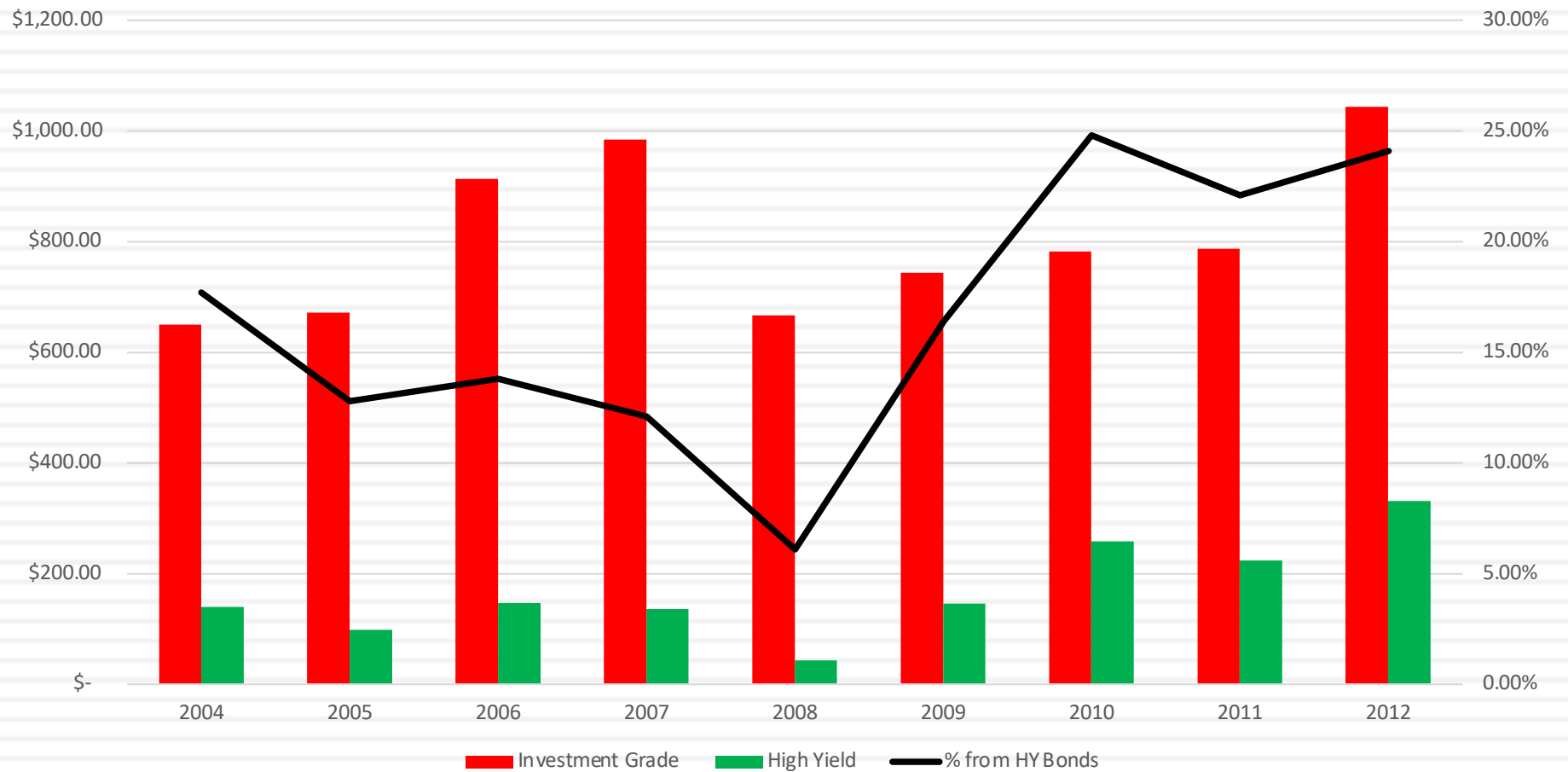
| | | | |
|------------------|--------|--------|--------|
| Bangladesh | 8.75% | 12.60% | 10.52% |
| Cambodia | 10.63% | 16.08% | 13.32% |
| China | 5.89% | 7.30% | 6.26% |
| Fiji | 8.75% | 12.60% | 10.52% |
| Hong Kong | 5.69% | 7.12% | 6.12% |
| India | 7.08% | 9.49% | 8.46% |
| Indonesia | 7.08% | 9.49% | 8.03% |
| Japan | 5.89% | 7.30% | 6.26% |
| Korea | 5.69% | 6.92% | 5.96% |
| Laos | NA | 8.21% | 6.99% |
| Macao | 5.80% | 7.12% | 6.12% |
| Malaysia | 6.38% | 8.21% | 6.99% |
| Maldives | 10.63% | 16.08% | 14.79% |
| Mauritius | 6.77% | 8.93% | 7.58% |
| Mongolia | 11.62% | 17.91% | 14.79% |
| Pakistan | 11.62% | 17.91% | 14.79% |
| Papua New Guinea | 10.63% | 16.08% | 13.32% |
| Philippines | 7.08% | 9.49% | 8.03% |
| Singapore | 5.20% | 6.01% | 5.23% |
| Solomon Islands | 11.62% | 17.91% | 14.79% |
| Sri Lanka | 10.63% | 16.08% | 13.32% |
| Taiwan | 5.80% | 7.12% | 6.12% |
| Thailand | 6.77% | 8.93% | 7.58% |
| Vietnam | 8.75% | 12.60% | 10.52% |

| | | | |
|--------------|-------|--------|--------|
| Australia | 5.20% | 6.01% | 5.23% |
| Cook Islands | 9.64% | 14.25% | 11.84% |
| New Zealand | 5.20% | 6.01% | 5.23% |

Blue: ERP on 7/1/20
 Red: ERP on 4/1/20
 Green: ERP on 1/1/20

Corporate Bond Issuance: The 2008 Crisis

Corporate Bond Issuances: The 2008 Crisis

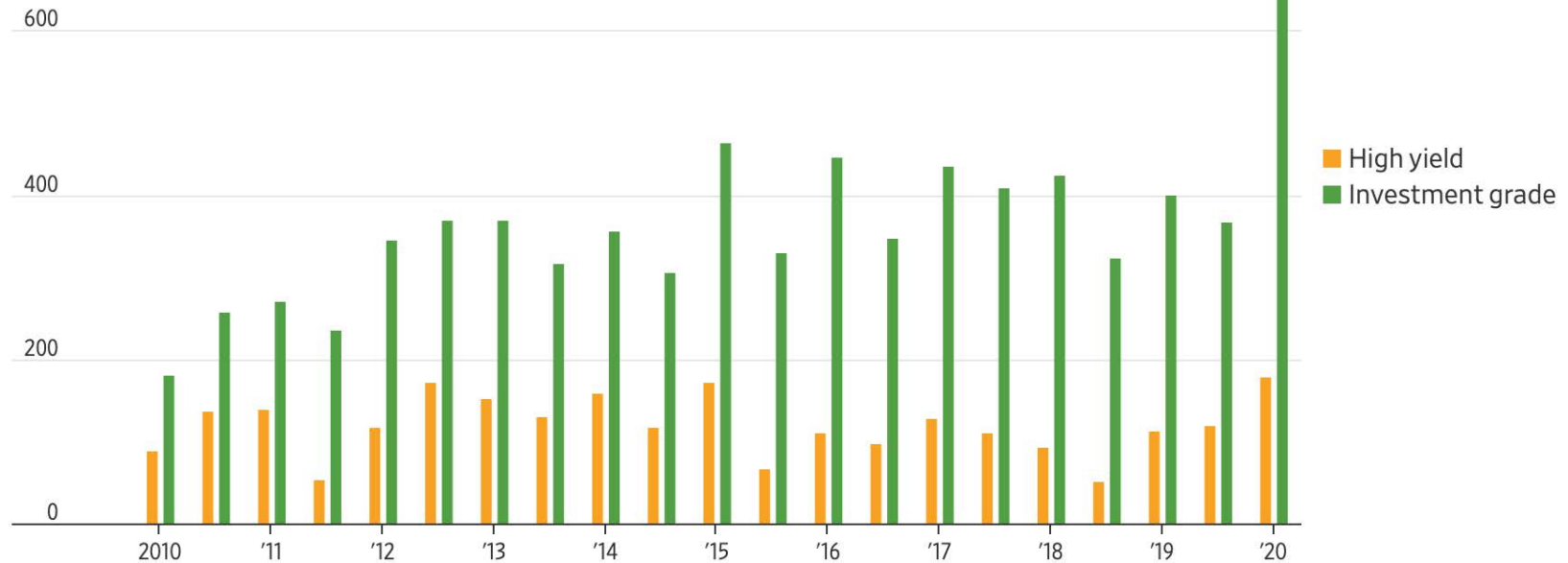


Corporate Bond Issuance: The COVID effect

Corporate bond issuance*

\$800 billion

High yield bond issuances hit an all-time high in June 2020

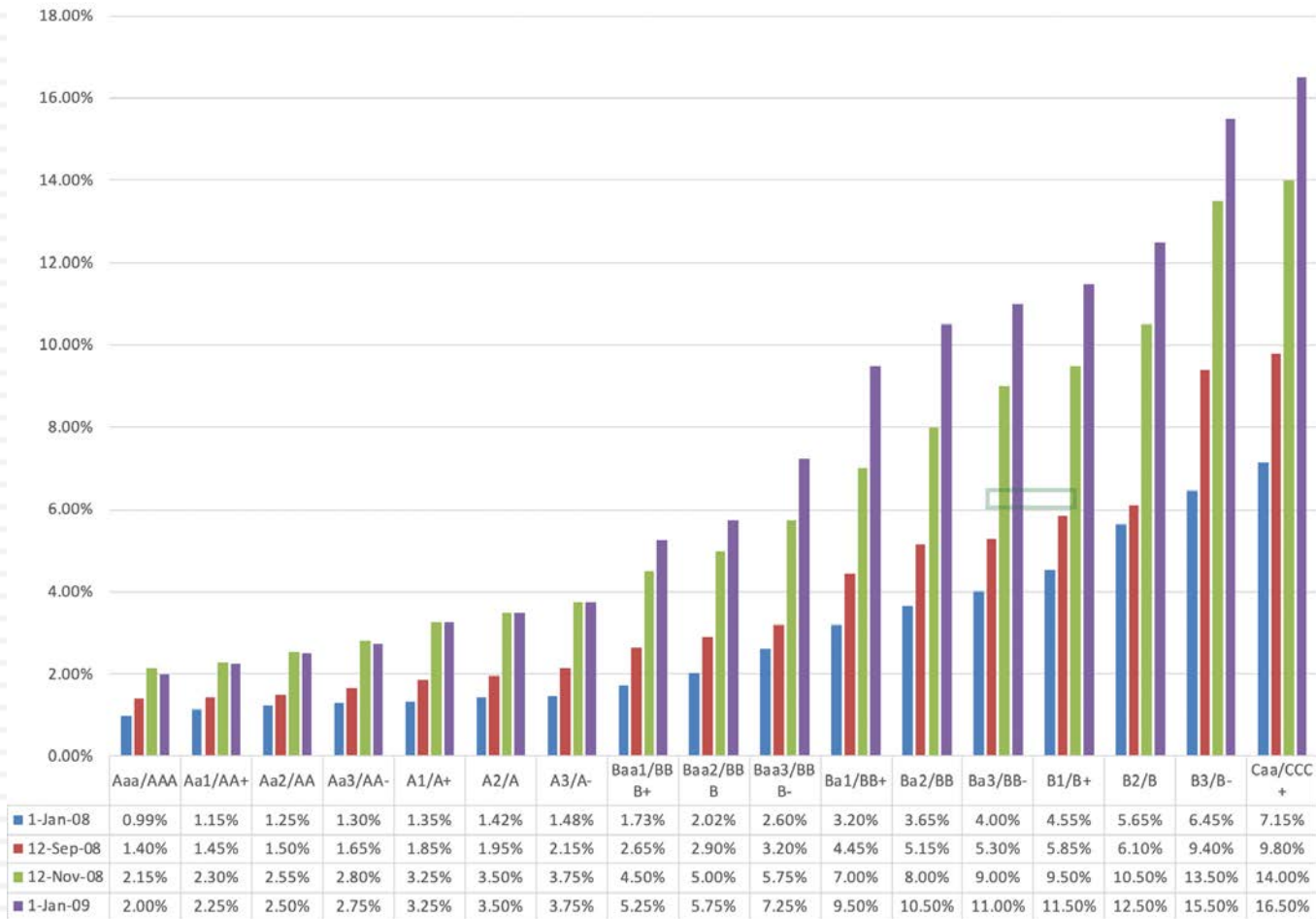


*Deal value, half-year data

Source: Dealogic

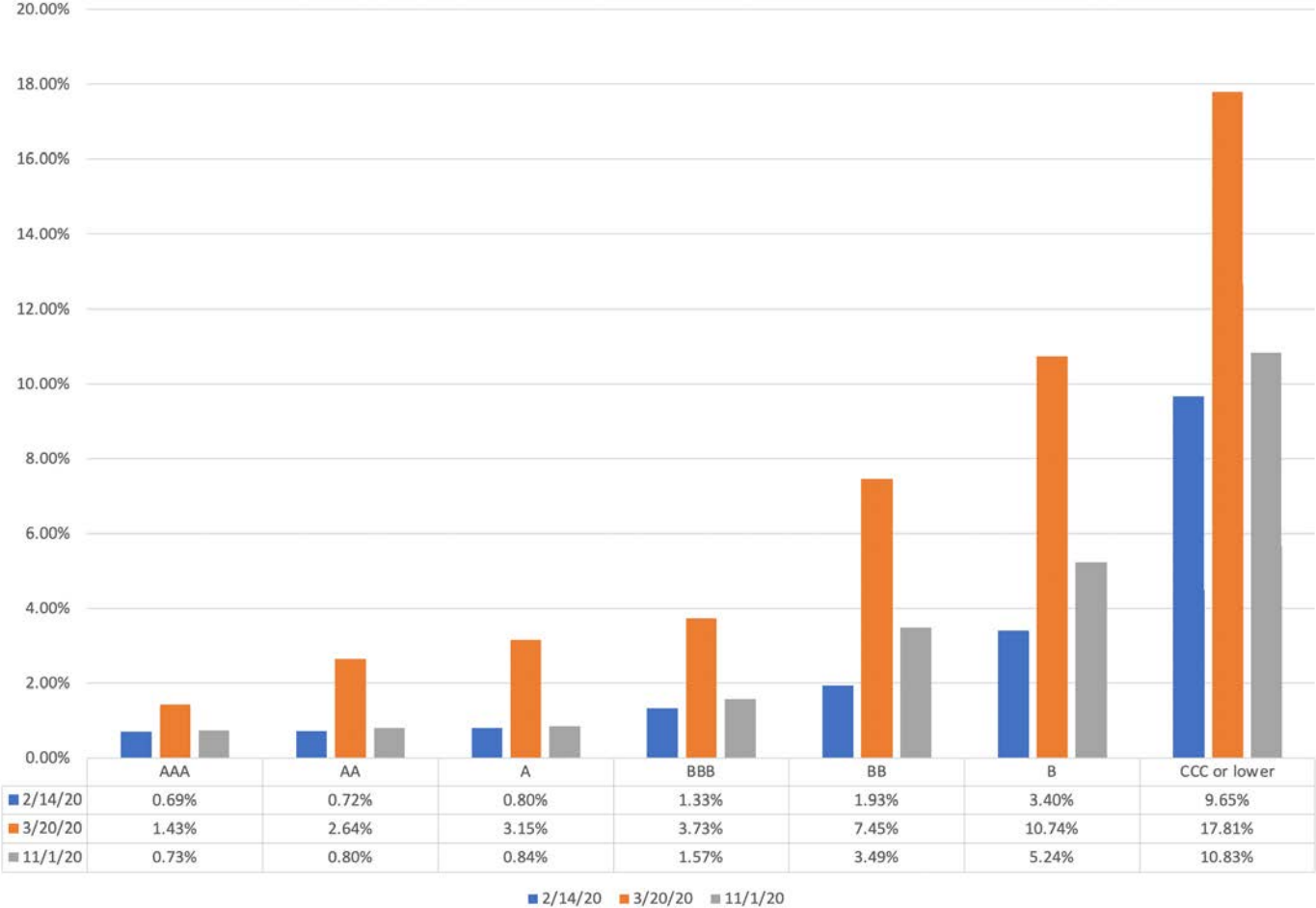
The Price of Bond Market Risk: The 2008 Crisis

Default Spreads during the 2008 Crisis



The Price of Bond Market Risk: The COVID effect

Corporate Bond Default Spreads: 2/14 - 11/1



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.
- Investor Composition: Investors have become more global and more willing to use passive investment vehicles, allowing for momentum to feed on itself more easily.

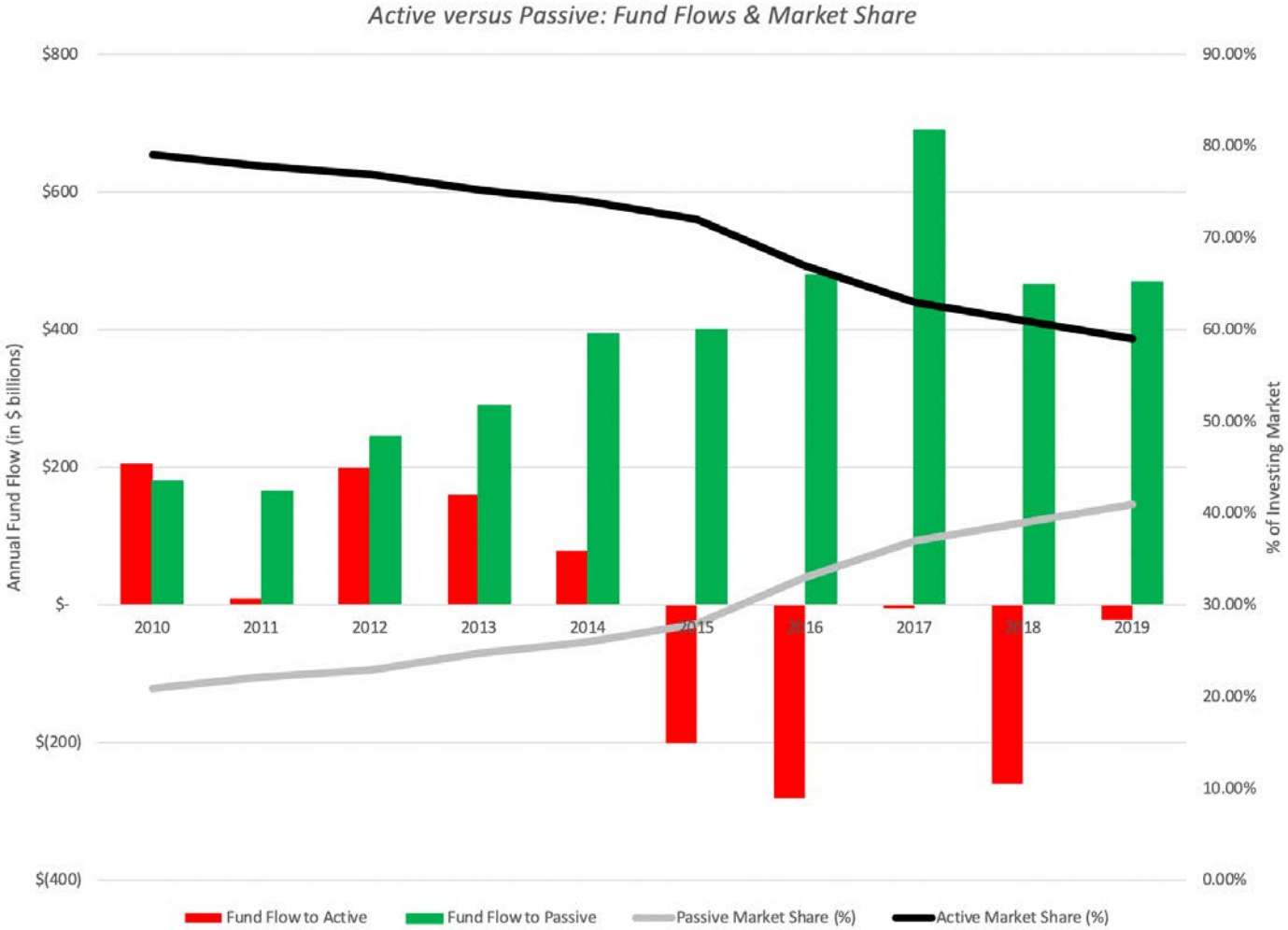
Lesson 3: There is no smart money...

- 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

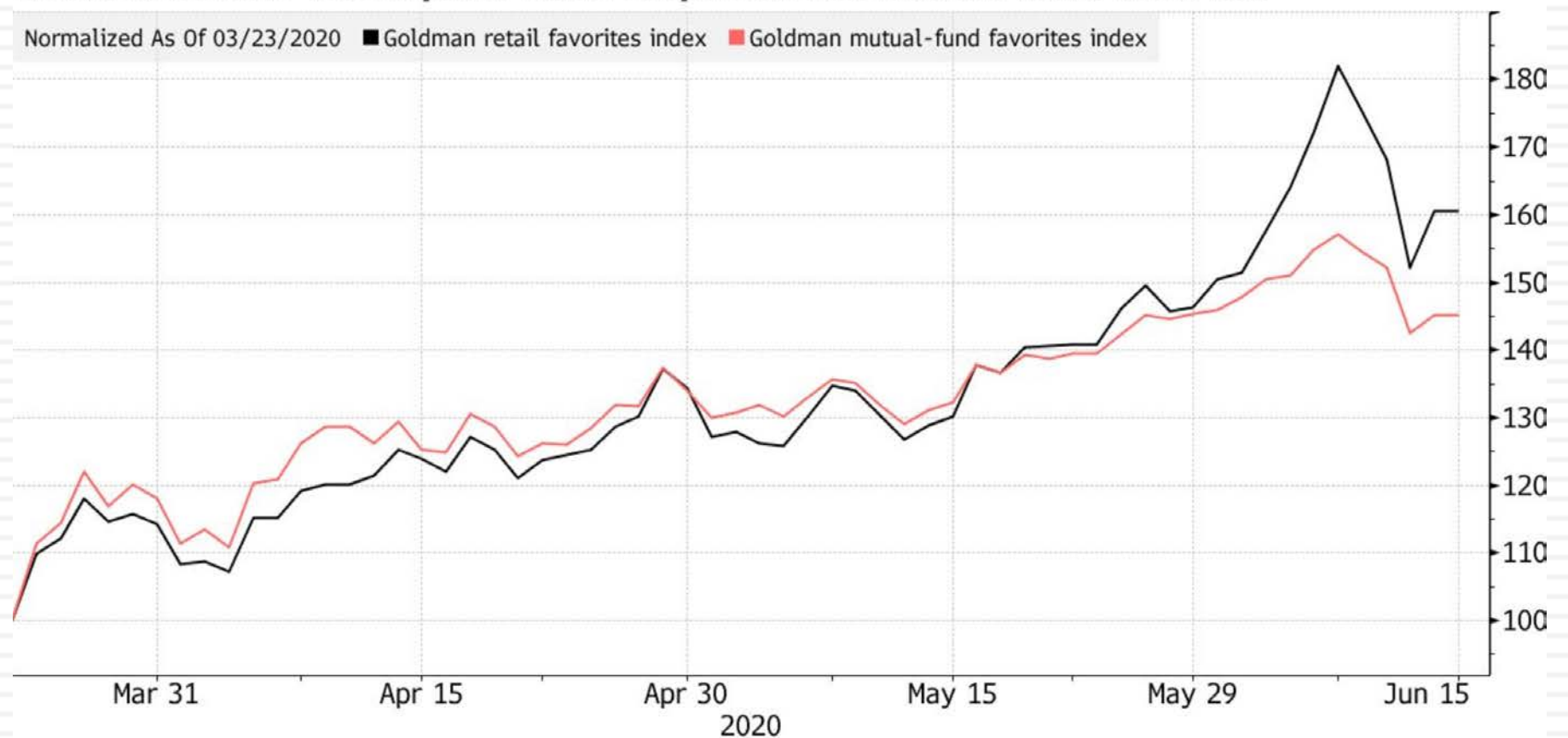


Notes: The figure plots the performance of the average equity mutual fund against the S&P 500 from February 20 to April 30, 2020. Both price indices are initialized at 100 on February 19, 2020 and are computed by compounding daily returns. The shaded blue area represents 95% confidence intervals.

And "dumb" money is beating "smart" money

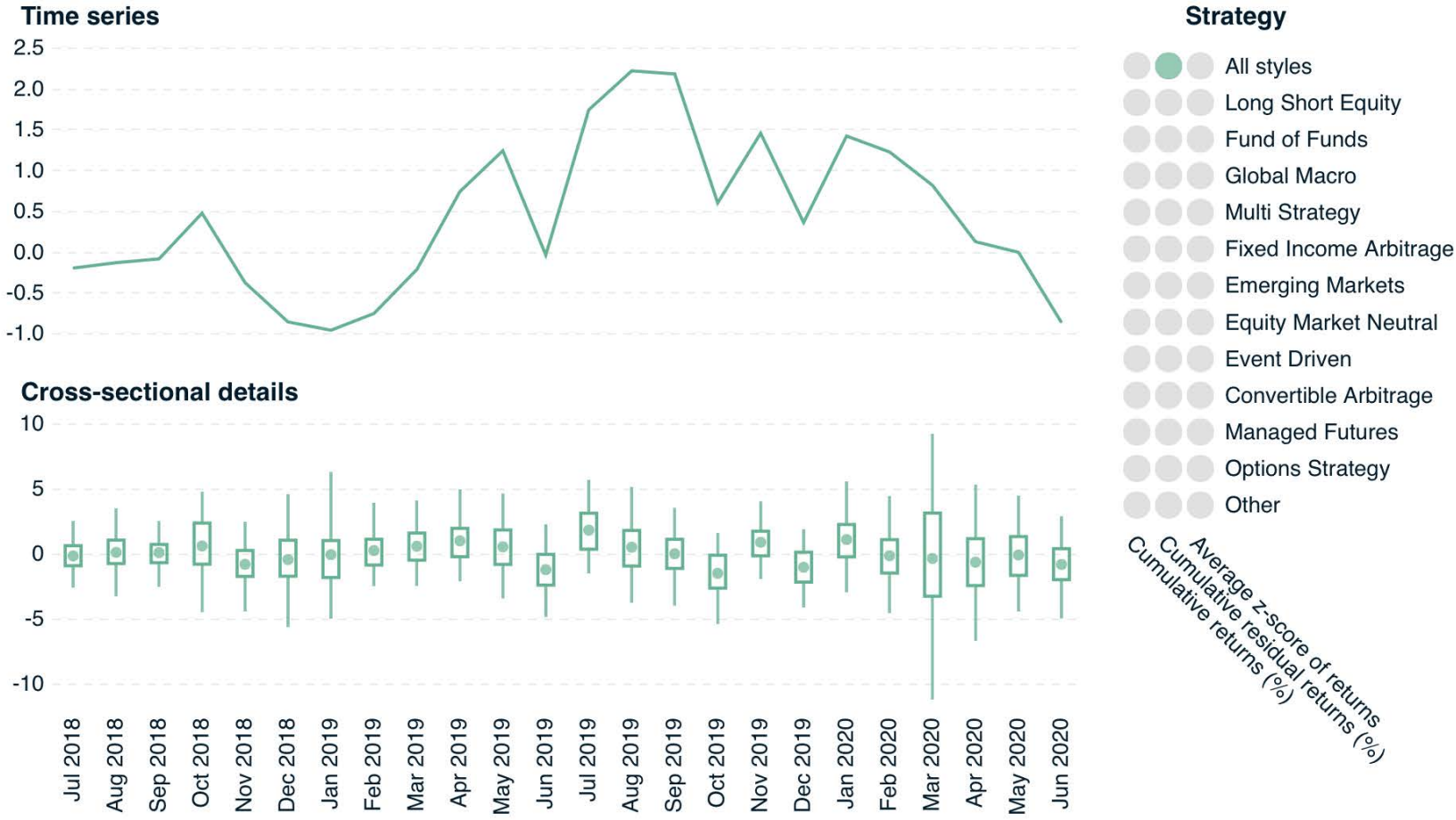
All Hail Retail

Small investors' stock picks have outperformed mutual-fund favorites



Source: Bloomberg

The Crisis Test: Hedge Funds



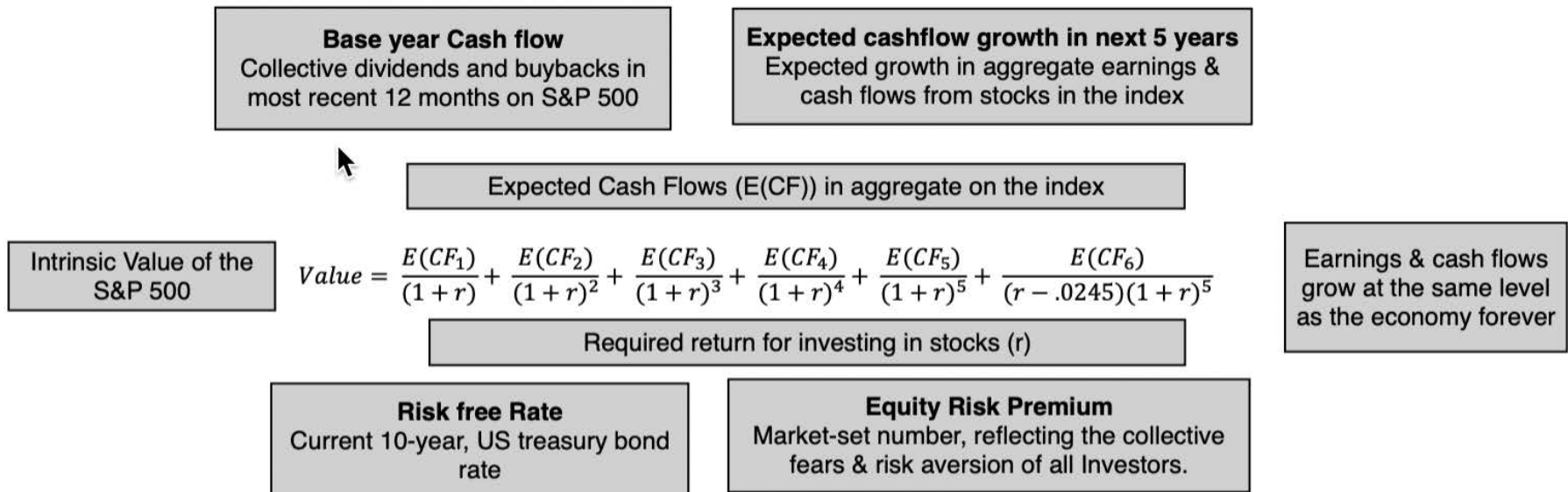
The Robinhood Phenomenon



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.

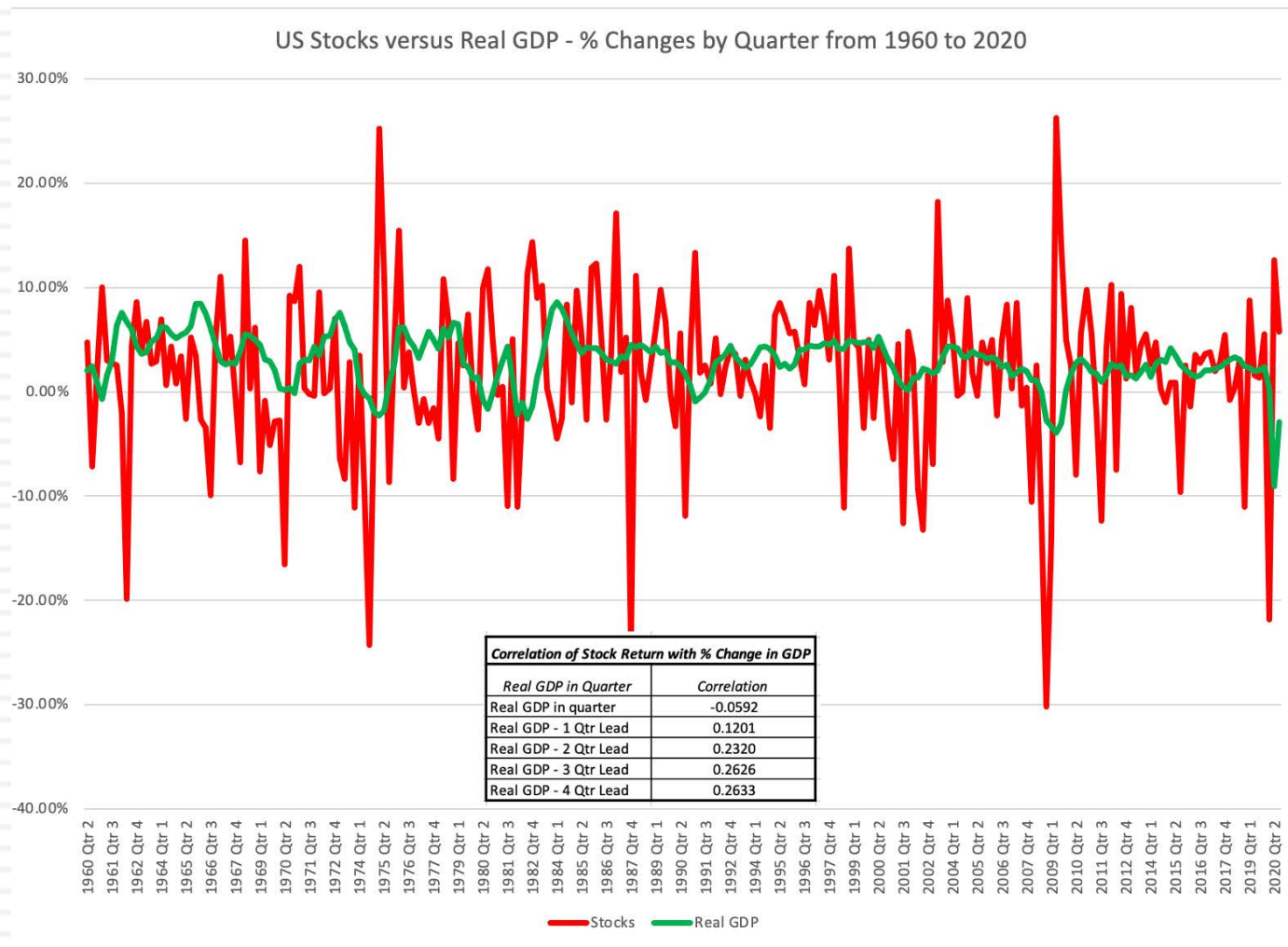
Lesson 4: The fundamentals matter, more than ever... in a crisis



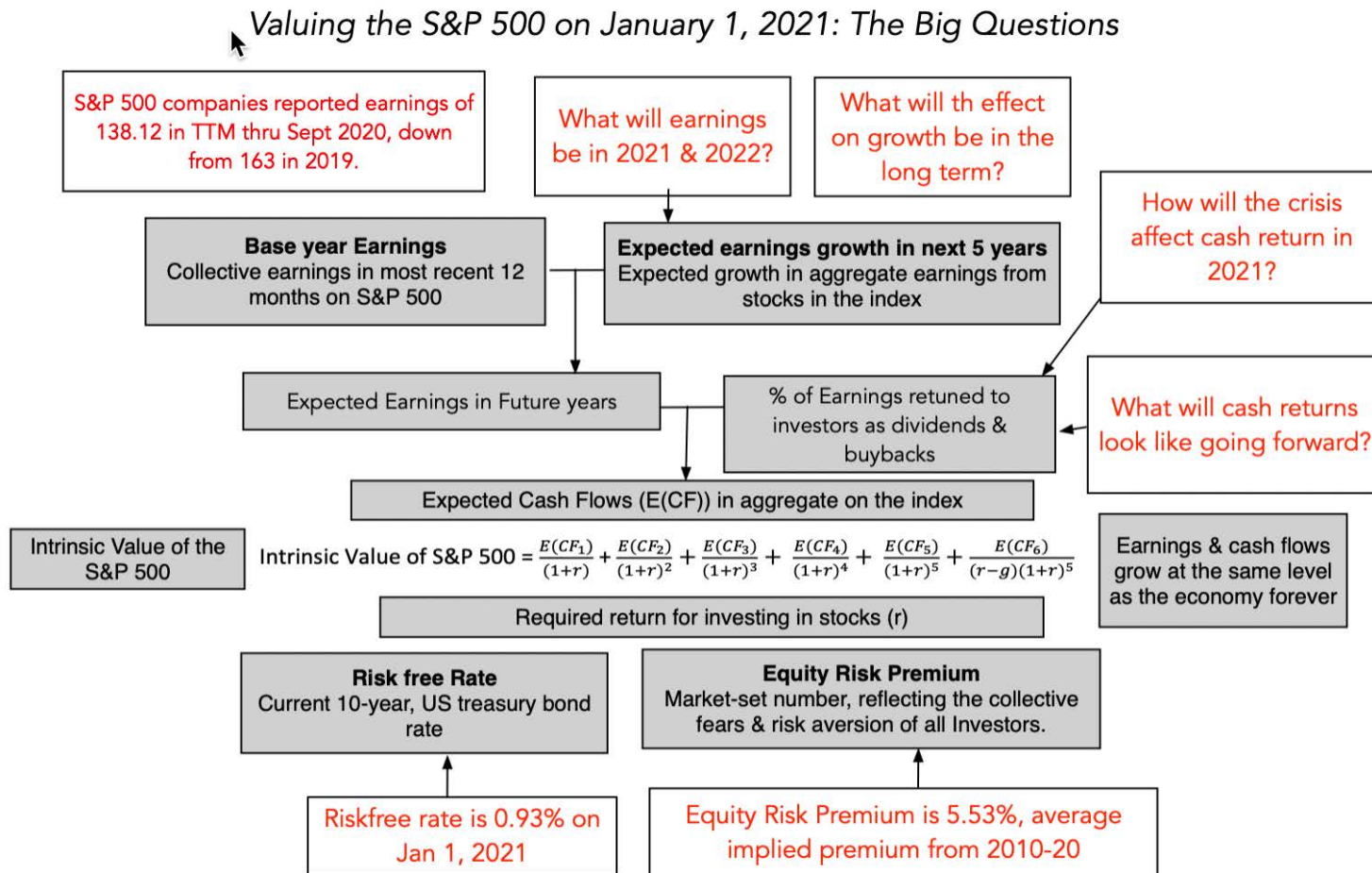
Market Worries

- 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...



The Big Questions for Value: January 1, 2021



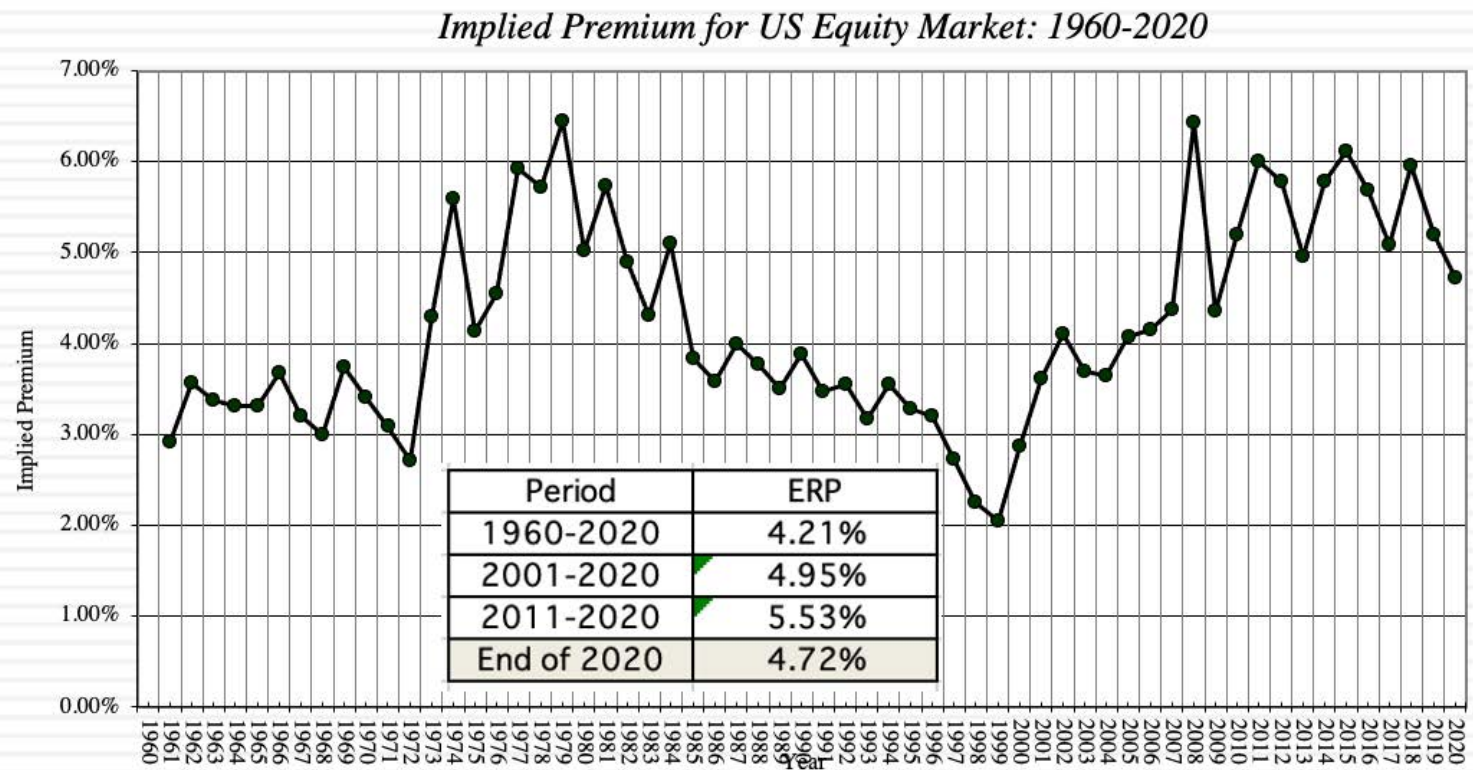
1. Earnings

| Top Down Estimates (Yardeni on 12/14/20) | | | Analyst Consensus on 12/14/20 | | | |
|--|----------------------|------------------------|-------------------------------|--------------------------|-------------------------|--|
| Year | Earnings on Index | | Year | Earnings on Index | | |
| 2019 | | 163 | 2019 | | 162.97 | |
| 2020 | -14.11% | 140 | 2020 | -15.25% | 138.12 | |
| 2021 | 21.43% | 170 | 2021 | 22.49% | 169.18 | |
| 2022 | 14.71% | 195 | 2022 | 16.56% | 197.2 | |
| 2023 | 7.82% | | 2023 | 8.75% | | |
| 2024 | 0.93% | | 2024 | 0.93% | | |
| Compound | 5.42% | | Compounded | 5.84% | | |
| Market Strategist | | | Predicted in June 2020 | | Predicted in Jan 2021 | |
| <i>Institution</i> | <i>Analyst</i> | <i>For end of 2020</i> | <i>Earnings in 2020</i> | <i>Level end of 2021</i> | <i>Earnings in 2021</i> | |
| BANK OF AMERICA | Savita Subramanian | 3250 | \$125.00 | 3800 | 165.00 | |
| BARCLAYS | Maneesh Deshpande | 3100 | \$137.00 | 4000 | 173.00 | |
| BMO | Brian Belski | 3650 | \$130.00 | 4200 | 175.00 | |
| BTIG | Julian Emanuel | 3000 | \$127.00 | 4000 | 167.00 | |
| CFRA | Sam Stovall | 3465 | \$129.84 | 4080 | 166.00 | |
| CITI | Tobias Levkovich | 3300 | \$137.00 | 3800 | 167.00 | |
| CREDIT SUISSE | Jonathan Golub | 3200 | \$125.00 | 4200 | 175.00 | |
| DEUTSCHE BANK | Binky Chadha | 3250 | \$141.00 | 3950 | 194.00 | |
| GOLDMANSACH | David Kostin | 3700 | \$136.00 | 4300 | 178.00 | |
| JPMORGAN | Dubravko Lakos-Bujas | 3600 | \$136.00 | 4400 | 178.00 | |
| MORGAN STANLEY | Mike Wilson | 3350 | \$130.00 | 3900 | 175.00 | |
| PENNY WELLS | John Stoltzfus | NA | NA | 4300 | 175.00 | |
| RBC | Lori Calvasina | 3450 | \$126.00 | 4100 | 168.00 | |
| UBS | Keith Parker | 3580 | \$130.00 | 4100 | 178.00 | |
| WELLS FARGO | Darrell Cronk | | | 4100 | 175.00 | |
| Average | | 3376.54 | 131.53 | 4082.00 | 173.93 | |
| Median | | 3350.00 | 130.00 | 4100.00 | 175.00 | |

2. Cash Flows

| <i>Year</i> | <i>Earnings</i> | <i>Dividends</i> | <i>Buybacks</i> | <i>Cash Returned</i> | <i>Cash Payout %</i> |
|--------------------------------|-----------------|------------------|-----------------|----------------------|----------------------|
| 2001 | 38.85 | 15.74 | 14.34 | 30.08 | 77.43% |
| 2002 | 46.04 | 15.96 | 13.87 | 29.83 | 64.78% |
| 2003 | 54.69 | 17.88 | 13.70 | 31.58 | 57.74% |
| 2004 | 67.68 | 19.01 | 21.59 | 40.60 | 59.99% |
| 2005 | 76.45 | 22.34 | 38.82 | 61.17 | 80.01% |
| 2006 | 87.72 | 25.04 | 48.12 | 73.16 | 83.40% |
| 2007 | 82.54 | 28.14 | 67.22 | 95.36 | 115.53% |
| 2008 | 49.51 | 28.45 | 39.07 | 67.52 | 136.37% |
| 2009 | 56.86 | 21.97 | 15.46 | 37.43 | 65.82% |
| 2010 | 83.77 | 22.65 | 32.88 | 55.53 | 66.28% |
| 2011 | 96.44 | 26.53 | 44.75 | 71.28 | 73.91% |
| 2012 | 96.82 | 31.25 | 44.65 | 75.90 | 78.39% |
| 2013 | 104.92 | 34.90 | 53.23 | 88.13 | 84.00% |
| 2014 | 116.16 | 39.55 | 62.44 | 101.98 | 87.79% |
| 2015 | 100.48 | 43.41 | 64.94 | 108.35 | 107.83% |
| 2016 | 106.26 | 45.70 | 62.32 | 108.02 | 101.66% |
| 2017 | 124.51 | 48.93 | 60.85 | 109.78 | 88.17% |
| 2018 | 152.78 | 54.39 | 96.11 | 150.50 | 98.51% |
| 2019 | 157.18 | 58.50 | 87.81 | 146.31 | 93.08% |
| 2020: TTM | 123.35 | 58.89 | 68.89 | 127.78 | 103.60% |
| Average | | | | | 86.21% |
| Average - Last 10 years | | | | | 89.38% |

3. Equity Risk Pricing



My Valuation of the Index

Valuing the S&P 500 on January 1, 2021

Expected earnings in 2021 & 2022 represent consensus estimates for earnings on the S&P 500 from analysts. After 2022, earnings grow at the same rate as the riskfree rate.

Assume that the **10-year T.Bond rate** will rise gradually over the next 5 years to 2%.

| Intrinsic Value Estimate (based on your choice of ERP) | | | | | | | |
|--|----------------|--|-----------|-----------|-----------|-------------|---------------|
| | 2020 | 1 | 2 | 3 | 4 | 5 | Terminal Year |
| Expected Earnings | \$138.12 | 169.18 | 197.20 | 200.36 | 203.96 | 208.04 | 212.20 |
| Expected cash payout as % of earnings | 70.00% | 75.00% | 78.16% | 81.33% | 84.49% | 87.65% | 87.65% |
| Expected Dividends + Buybacks = | \$96.68 | \$126.89 | \$154.14 | \$162.94 | \$172.33 | \$182.36 | 186.00 |
| Expected Terminal Value = | | | | | | \$ 3,720.08 | |
| Riskfree Rate | 1.00% | 1.20% | 1.40% | 1.60% | 1.80% | 2.00% | 2.00% |
| Required Return on Stocks | 6.00% | 6.20% | 6.40% | 6.60% | 6.80% | 7.00% | 7.00% |
| Present Value = | | \$ 119.48 | \$ 136.41 | \$ 135.27 | \$ 133.96 | \$ 2,835.03 | |
| Intrinsic Value of Index = | 3360.14 | <i>Present value of expected cash flows & terminal value</i> | | | | | |
| Intrinsic Trailing PE = | 24.33 | <i>Based upon estimated earnings for 2020</i> | | | | | |
| Intrinsic Forward PE = | 19.86 | <i>Based upon expected earnings in 2021</i> | | | | | |
| Intrinsic CAPE = | 28.50 | <i>Based upon 10-year average earnings, adjusted for inflation</i> | | | | | |
| Level of the Index (1/1/21) | 3756.07 | | | | | | |
| % Under or Over Valuation | 11.78% | | | | | | |

Expected cash payout of 75% in 2021 is well below the 93% returned in 2019 & the 88% ten-year average but a step above the 70% returned in 2020. Over 2022-25, it moves to the payout in the terminal year, which is based upon a growth rate = risk free rate and a ROE of 16.20% (2019 estimate for the S&P 500):

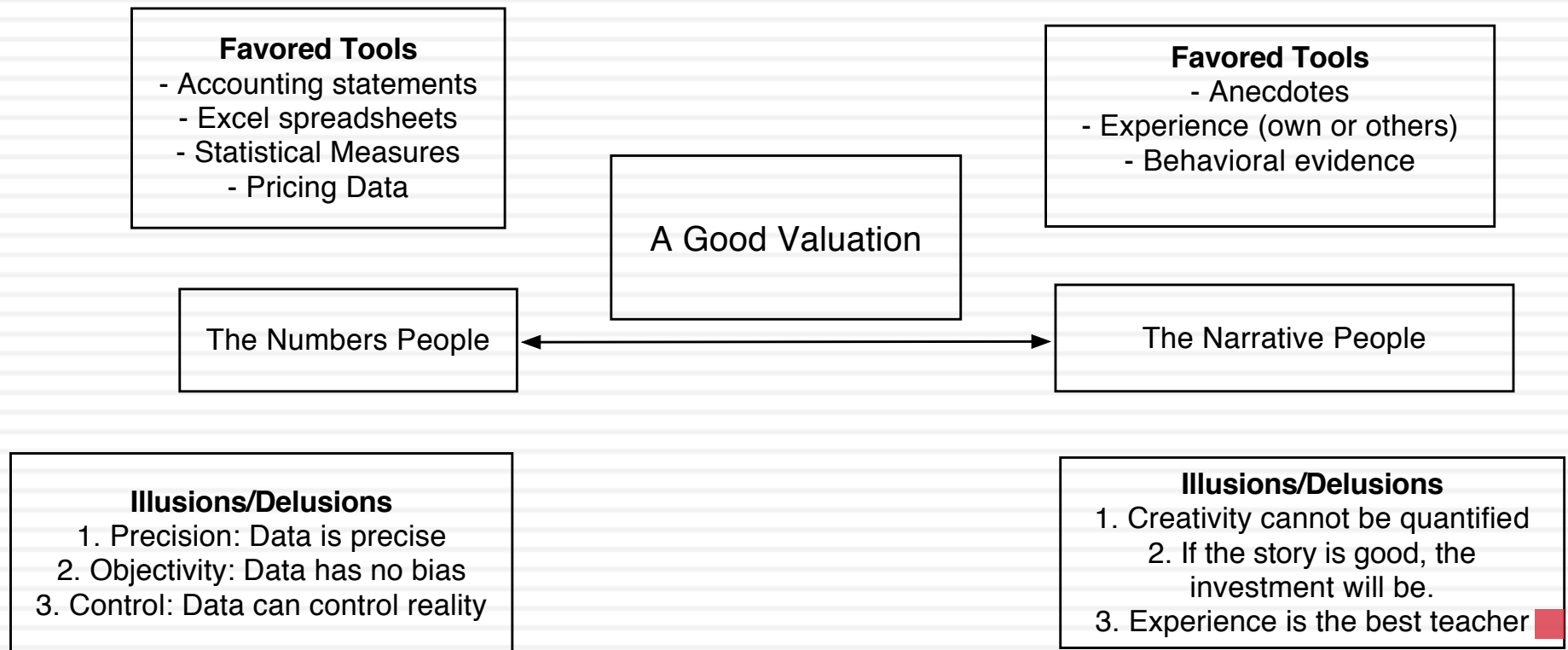
$$\text{Payout ratio} = 1 - g / \text{ROE}$$

Required Return = T.Bond Rate + ERP. I am using a 5% ERP, higher than the 4.21% average from 1960-2020, but lower than the 5.5% average in the last decade.

With room for differences...

| | Economy strong | Economy weak |
|-------------------------------|---|--|
| Interest rates stay low | <p>Goldilocks market, with interest rates staying low (1%), earnings above expectations (+10%) and ERP drifting back to historic norms (4.2%).</p> <p>Index is undervalued by 19.83%</p> | <p>Bear market, with interest rates low (1%), earnings below expectations (-5%) and ERP moving to crisis levels (5.5%).</p> <p>Index is overvalued by 23.07%</p> |
| Interest rates rise gradually | <p>Reality-check market, with interest rates rising gradually (to 2%), earnings above expectations (+5%) and ERP settling in at 5%.</p> <p>Index is overvalued by 6.46 %</p> | <p>Bigger Bear market, with interest rates rising gradually (to 2%), earnings below expectations (-5%) and ERP moving to crisis levels (5.5%).</p> <p>Index is overvalued by 30.42%</p> |
| Interest rates rise quickly | <p>Rate Shock market, with interest rates rising quickly (to 2%), earnings at expectations and ERP settling in at 5%.</p> <p>Index is overvalued by 13.21%</p> | <p>Meltdown market, with interest rates rising quickly (to 2%), earnings below expectations (-10%) and ERP moving to crisis levels (5.5%).</p> <p>Index is overvalued by 39.41%</p> |

Lesson 5: Stories + Numbers



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 battery 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% | |
| 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 & 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

| | <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) | \$ 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

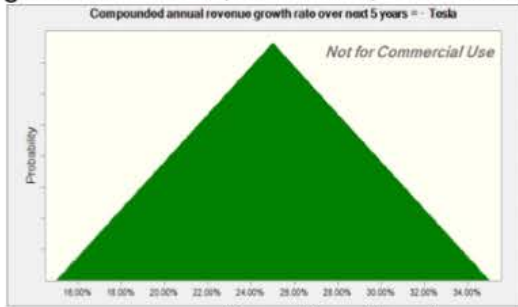
| | <i>Revenues</i> | <i>Operating Margin</i> | <i>EBIT</i> | <i>EBIT (1-t)</i> | <i>Reinvestment</i> | <i>FCFF</i> |
|---------------|-----------------|-------------------------|-------------|-------------------|---------------------|-------------|
| 1 | \$ 30,723 | 3.68% | \$ 1,132 | \$ 849 | \$ 2,048 | \$ (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 & Minority 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 |

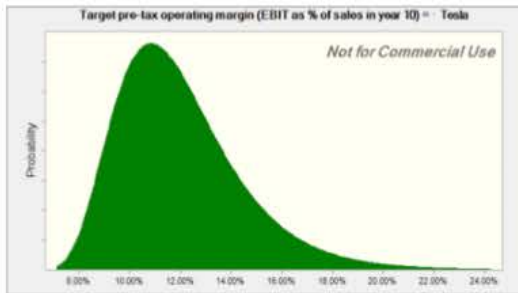
Revenue Growth

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



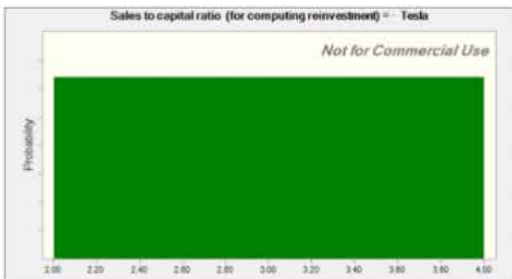
Operating Margin

Log Normal: Mean = 12%



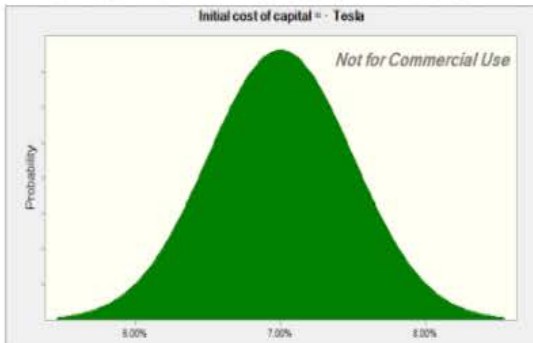
Sales to Capital

Uniform: Min = 1.00 Max = 3.00



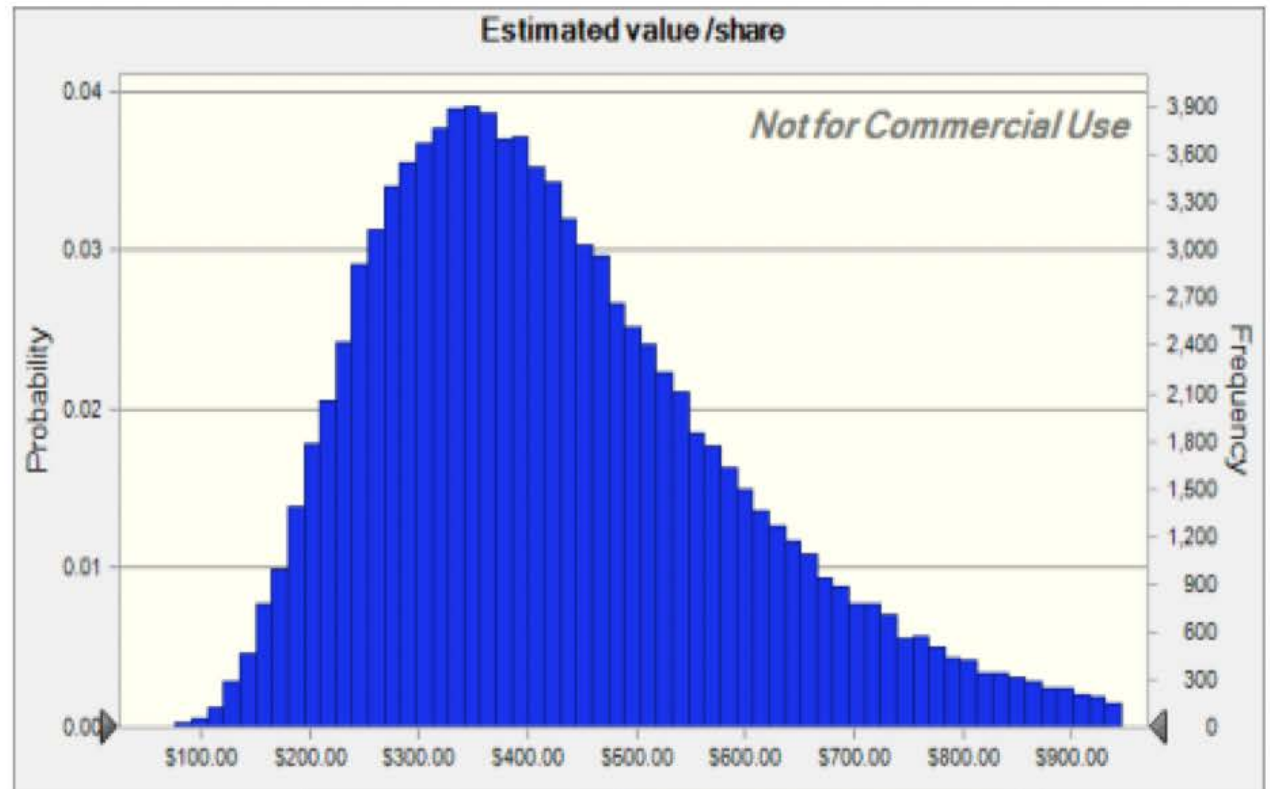
Cost of Capital

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 |

When a crisis hits, the dark side beckons...

- During a crisis, you will be told that you can no longer value companies with fundamentals, and that you have to play the trading game.
 - ▣ 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, they are right.
 - ▣ If your notion of valuation is more dynamic and forward-looking, it is precisely at times like these that you need to go back to basics.
- More importantly, your story for the company matters more than ever before, since the numbers can no longer be used as a crutch.

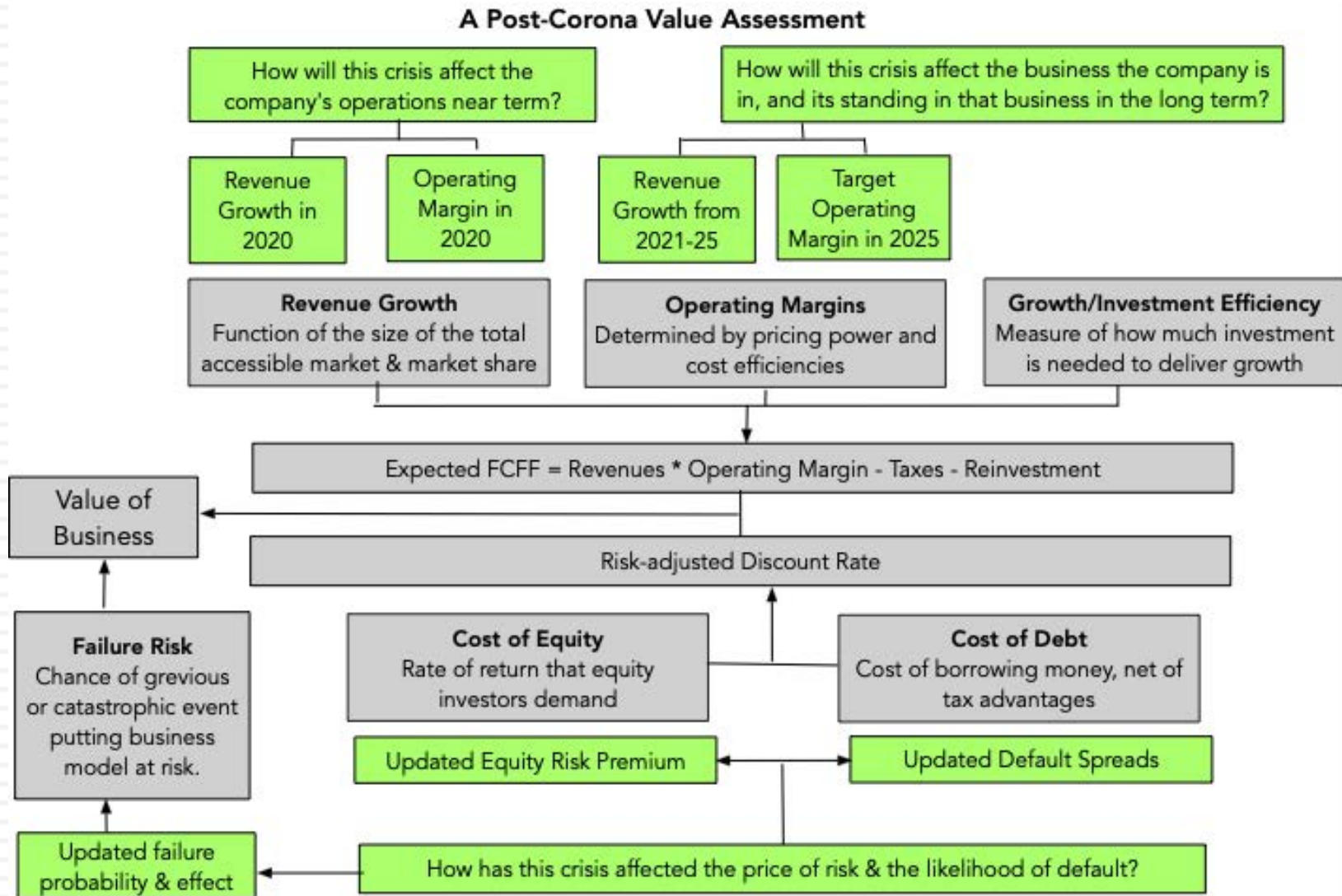
How crises affect stories...

- Stories can expand: For some companies, a crisis can expand stories
 - ▣ By allowing them to reach new customers and devise new business models that have staying power (Zoom, Peloton)
 - ▣ By being in the right place at the right time (Moderna)
 - ▣ By handicapping or damaging the competition (Tesla, Airbnb)
- Stories can contract: For other companies, a crisis can shrink stories
 - ▣ By making their markets smaller (cruise lines definitely, airlines maybe)..
 - ▣ By being in the wrong place at the wrong time (commodity companies)
- And the risk of failure becomes real and un-ignorable: And for all companies, a crisis can increase the likelihood of failure (story break).

A Roadmap to Story Telling & Valuation in a crisis

1. Separate the near term from the long term: During a crisis, the near-term effects are likely to be both large and unpredictable (negative for most companies, but positive for a few). Estimate the near term effects on earnings and cash flows, using all of the information you have and bringing in views on how the macro economy will evolve.
2. Revisit your story for the company: Evaluate how your story for the company has changed as a result of the crisis, and play out its effect on your long term value inputs (revenue growth, margins and reinvestment)
3. Bring in failure risk: For your story to play out, the company has to survive. Incorporate, as best as you can, the likelihood that your company will not make it through.

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

Boeing is in deep trouble. Already exposed to significant pain because of its mishandling of the Boeing 737 Max, which caused revenues to plummet in 2019, the company is facing a mountain of pain with the Corona Virus decimating the airline business (Boeing's customers). I assume more pain the year to come, with revenues dropping even with the 737 Max returning to the fold and increased losses. After that, I assume that there will be higher growth, as airlines start playing catch up and buy more aircraft from a duopoly. I assume that margins will revert back to pre-2018 levels over the next 5 years and that during the next year, Boeing is exposed to a risk of failure, not so much because it will go out of business (it is too big to fail) but from needing a bailout from the government that is large enough to wipe out equity (as was the case with GM in 2009).

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% | |
| Operating margin (b) | -2.75% | -2.75% | → 9.60% | | 9.60% | |
| Tax rate | 25.00% | 25.00% | → 25.00% | | 25.00% | |
| Reinvestment (c) | | Sales to capital ratio 3.79 | | RIR = | 20.00% | |
| Return on capital | -10.42% | Marginal ROIC = | 74.72% | | 10.00% | |
| Cost of capital (d) | | 9.25% | → 7.50% | | 7.50% | |

The Cash Flows

| | Revenues | Operating Margin | EBIT | EBIT (1-t) | Reinvestment | FCFF |
|---------------|------------|------------------|------------|------------|--------------|------------|
| 1 | \$ 68,903 | -5.00% | \$ (3,445) | \$ (3,445) | \$ (2,019) | \$ (1,426) |
| 2 | \$ 79,239 | 4.73% | \$ 3,751 | \$ 3,675 | \$ 2,726 | \$ 949 |
| 3 | \$ 91,124 | 9.60% | \$ 8,749 | \$ 6,562 | \$ 3,135 | \$ 3,427 |
| 4 | \$ 104,793 | 9.60% | \$ 10,061 | \$ 7,546 | \$ 3,605 | \$ 3,941 |
| 5 | \$ 120,512 | 9.60% | \$ 11,571 | \$ 8,678 | \$ 4,146 | \$ 4,532 |
| 6 | \$ 135,455 | 9.60% | \$ 13,005 | \$ 9,754 | \$ 3,941 | \$ 5,813 |
| 7 | \$ 148,730 | 9.60% | \$ 14,280 | \$ 10,710 | \$ 3,501 | \$ 7,209 |
| 8 | \$ 159,439 | 9.60% | \$ 15,308 | \$ 11,481 | \$ 2,824 | \$ 8,657 |
| 9 | \$ 166,773 | 9.60% | \$ 16,012 | \$ 12,009 | \$ 1,934 | \$ 10,075 |
| 10 | \$ 170,108 | 9.60% | \$ 16,333 | \$ 12,249 | \$ 880 | \$ 11,370 |
| Terminal year | \$ 173,510 | 9.60% | \$ 16,659 | \$ 12,494 | \$ 2,499 | \$ 9,996 |

The Value

| | | | |
|-------------------------------------|------------|--------------------------|----------|
| Terminal value | \$ 181,737 | | |
| PV(Terminal value) | \$ 78,764 | | |
| PV(CF over next 10 years) | \$ 29,119 | | |
| Value of operating assets = | \$ 107,883 | | |
| Adjustment for distress | \$ 10,788 | Probability of failure = | 20.00% |
| - Debt & Minority Interests | \$ 28,580 | | |
| + Cash & Other Non-operating assets | \$ 10,030 | | |
| Value of equity | \$ 78,545 | | |
| - Value of equity options | \$ - | | |
| Number of shares | 566.00 | | |
| Value per share | \$ 138.77 | Stock was trading at = | \$127.68 |

| Company | Base Year Numbers | Valuation Story | Valuation Inputs | Value per Share (Simulation) | | Pricing per share | |
|---------------------|-----------------------------|---|------------------------------------|------------------------------|-------------|-------------------|--------------|
| Facebook | Revenues = \$75 B | User Base pays off: Immense & Intense user base allows for continued ad growth & new business potential. | Rev Growth = 10% | 10th: | \$ 267.77 | | |
| | EBIT = \$27.9 B | | Target Margin = 40% | 25th: | \$ 293.89 | Price = | \$262.59 |
| | Oper. margin =44.3% | | Sales to capital = 2.64 | Median: | \$ 327.68 | Under/Over = | Under valued |
| | Rev Growth (LTM) = 13.02% | | Cost of capital = 6.08% | 75th: | \$ 364.79 | % under/over | -19.86% |
| | | | | 90th: | \$ 398.85 | IRR | 7.16% |
| Amazon | Revenues = \$ 322 B | Disruption Platform rolls on: Continue to expand into new businesses, delaying profitability to deliver higher growth. | Rev Growth = 20% | 10th: | \$1,479.65 | | |
| | EBIT = \$16.7 B | | Target Margin = 12% | 25th: | \$ 1,969.46 | Price = | \$3,260.48 |
| | Oper. margin = 7.99% | | Sales to capital = 1.94 | Median: | \$ 2,778.22 | Under/Over = | Over valued |
| | Rev Growth (LTM) = 31.58% | | Cost of capital = 6.11% | 75th: | \$ 3,617.74 | % under/over | 17.36% |
| | | | | 90th: | \$ 4,295.58 | IRR | 5.77% |
| Netflix | Revenues = \$ 22.6 B | Streaming Player: Wiith new competitors, will continue to add subscribers, but struggle to control content costs. | Value/Existing Subscriber = \$446. | 10th: | \$ 312.79 | | |
| | # Subscribers = 192.3 mil | | Growth in Subscribers = 12% | 25th: | \$ 372.49 | Price = | \$484.53 |
| | Growth in LTM = 27.3% | | Growth in Content Costs = 5% | Median: | \$ 445.53 | Under/Over = | Over valued |
| | Cost/New Subscriber = \$103 | | Cost of capital (Existing)= 6.5% | 75th: | \$ 519.34 | % under/over | 8.75% |
| | Content Cost = \$9.95 B | | Cost of capital (New) = 7.5% | 90th: | \$ 585.58 | IRR | 6.16% |
| Google/ Alphabet | Revenues = \$166 B | More than a Search Engine: While the search box will continue to be the money-maker, other bets will start to pay off in growth. | Rev Growth = 8% | 10th: | \$ 1,165.57 | | |
| | EBIT = \$33.4 B | | Target Margin = 24% | 25th: | \$ 1,267.31 | Price = | \$1,544.61 |
| | Oper. margin = 23.8% | | Sales to capital = 2.64 | Median: | \$ 1,406.96 | Under/Over = | Over valued |
| | Rev Growth (LTM) = 5.22% | | Cost of capital = 6.25% | 75th: | \$ 1,551.26 | % under/over | 9.78% |
| | | | | 90th: | \$ 1,676.02 | IRR | 5.87% |
| Apple | Revenues = \$274 B | Cash Machine revs up: The iPhone will keep the cash machine going up, but services business will be growth driver. | Rev Growth = 8% | 10th: | \$ 285.67 | | |
| | EBIT = \$52.6 B | | Target Margin = 26% | 25th: | \$ 312.28 | Price = | \$462.83 |
| | Oper. margin = 25.9% | | Sales to capital =4.00 | Median: | \$ 350.22 | Under/Over = | Over valued |
| | Rev Growth (LTM) = 7.07% | | Cost of capital = 6.58% | 75th: | \$ 390.66 | % under/over | 32.15% |
| | | | | 90th: | \$ 425.04 | IRR | 5.30% |
| Microsoft | Revenues = \$143 B | Old company Reborn: Cloud/software business mix will continue to deliver growth with high margins. | Rev Growth = 12% | 10th: | \$ 143.98 | | |
| | EBIT = \$52.6 B | | Target Margin = 40% | 25th: | \$ 157.81 | Price = | \$209.70 |
| | Oper. margin =40.1% | | Sales to capital = 1.44 | Median: | \$ 176.66 | Under/Over = | Over valued |
| | Rev Growth (LTM) = 13.65% | | Cost of capital = 7.11% | 75th: | \$ 196.77 | % under/over | 18.70% |
| | | | | 90th: | \$ 214.83 | IRR | 6.32% |