THE DISRUPTION DILEMMA: VALUING THE DISRUPTORS & DISRUPTED

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The Disruptive Economy

- We live in disruptive times: It is true that we live in an age where the status quo is being challenged and upended by upstarts and disruptors.
- Leading to change at every level: The resulting change at both the macro and micro level has made investors nervous, but not nervous enough to stop investing.
- And questioning of current practices: It has however put existing investing metrics and valuation practices under stress, leading some to question whether they are useful.
- Conviction that this is unique: Much as we would like to believe that we are facing more change and disruption than people in other generations, it depends on your frame of reference.

And we deal with uncertainty as humans always have…

- Divine Intervention: Praying for intervention from a higher power is the oldest and most practiced risk management system of all.
- Paralysis & Denial: When faced with uncertainty, some of us get paralyzed. Accompanying the paralysis is the hope that if you close your eyes to it, the uncertainty will go away
- Mental short cuts (rules of thumb): Behavioral economists note that investors faced with uncertainty adopt mental short cuts that have no basis in reality. And here is the clincher. More intelligent people are more likely to be prone to this.
- Herding: When in doubt, it is safest to go with the crowd.. The herding instinct is deeply engrained and very difficult to fight.
- Outsourcing: Assuming that there are experts out there who have the answers does take a weight off your shoulders, even if those experts have no idea of what they are talking about.

Categorizing and Responding to uncertainty

I. Estimation versus Economic Uncertainty

- Estimation versus Economic uncertainty
  - Estimation uncertainty reflects the possibility that you could have the "wrong model" or estimated inputs incorrectly within this model.
  - Economic uncertainty comes from real sources: that markets and economies can change over time and that even the best medals will fail to capture these unexpected changes.
- Estimation uncertainty can be mitigated by doing your homework, collecting more data or building better models, but economic uncertainty is here to stay.

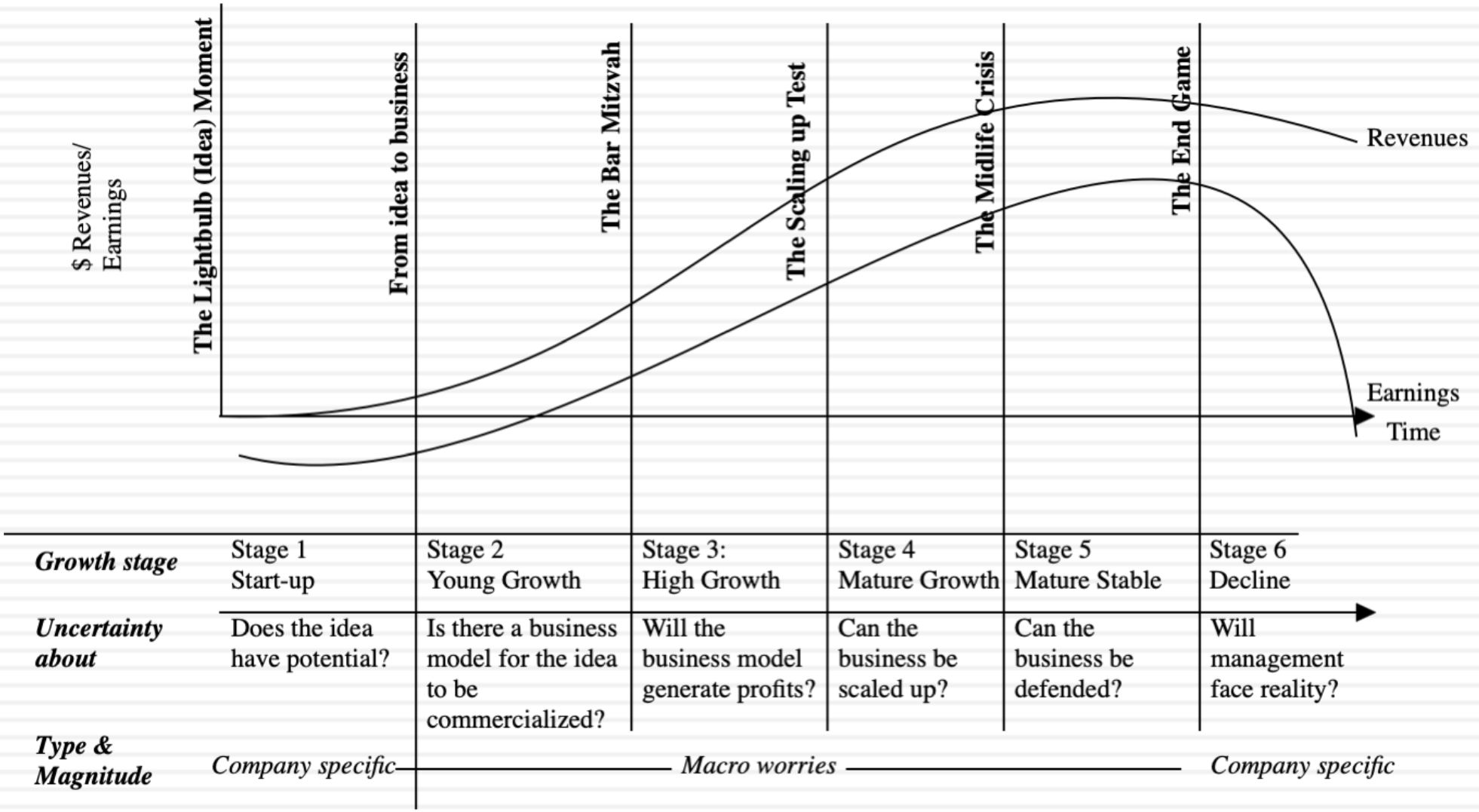
II. Micro versus Macro Uncertainty

- Micro uncertainty versus Macro uncertainty
  - Micro uncertainty refers to uncertainty about the firm you are valuing and its business model - the potential market or markets for its products, the competition it will face and the quality of its management team.
  - Macro uncertainty reflects the reality that your firm's fortunes can be affected by changes in the macro economic environment –the strength of the economy, the level of interest rates and the price of risk (equity and debt).
- Micro uncertainty can be mitigated or even eliminated by diversifying across companies but macro uncertainty will remain even in the most diversified portfolios.

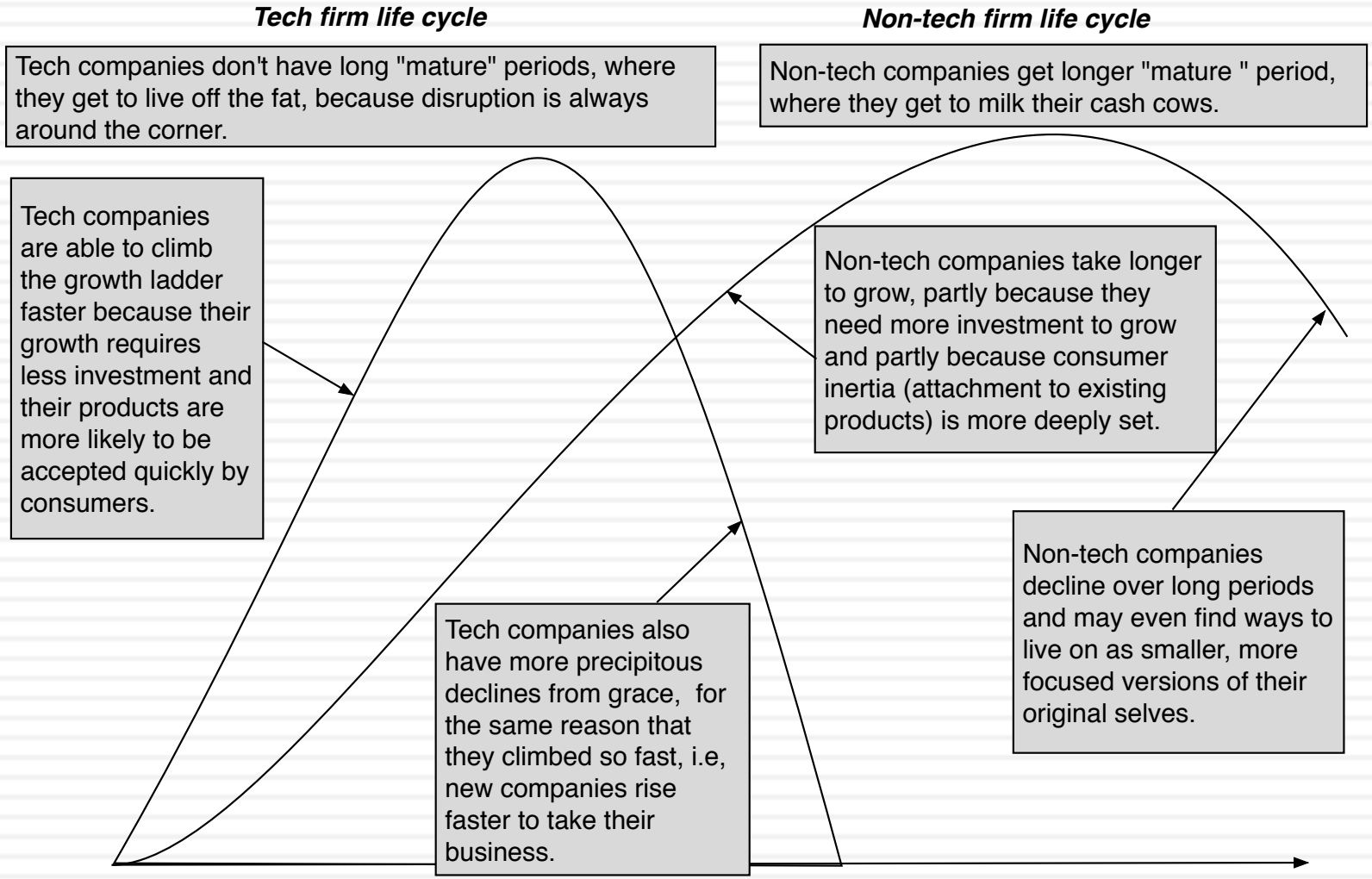
III. Discrete versus Continuous Uncertainty

- Discrete versus continuous uncertainty
  - Some events that you are uncertain about are discrete. Thus, a biotechnology firm with a new drug working its way through the FDA pipeline may see the drug fail at some stage of the approval process. In the same vein, a company in Venezuela or Argentina may worry about nationalization risk.
  - Most uncertainties, though, are continuous. Thus, changes in interest rates or economic growth occur continuously and affect value as they happen.
- In valuation, we are better at dealing with continuous risks than with discrete risks. In fact, discount rate risk adjustment models are designed for continuous risk.

The Evolution of Uncertainty



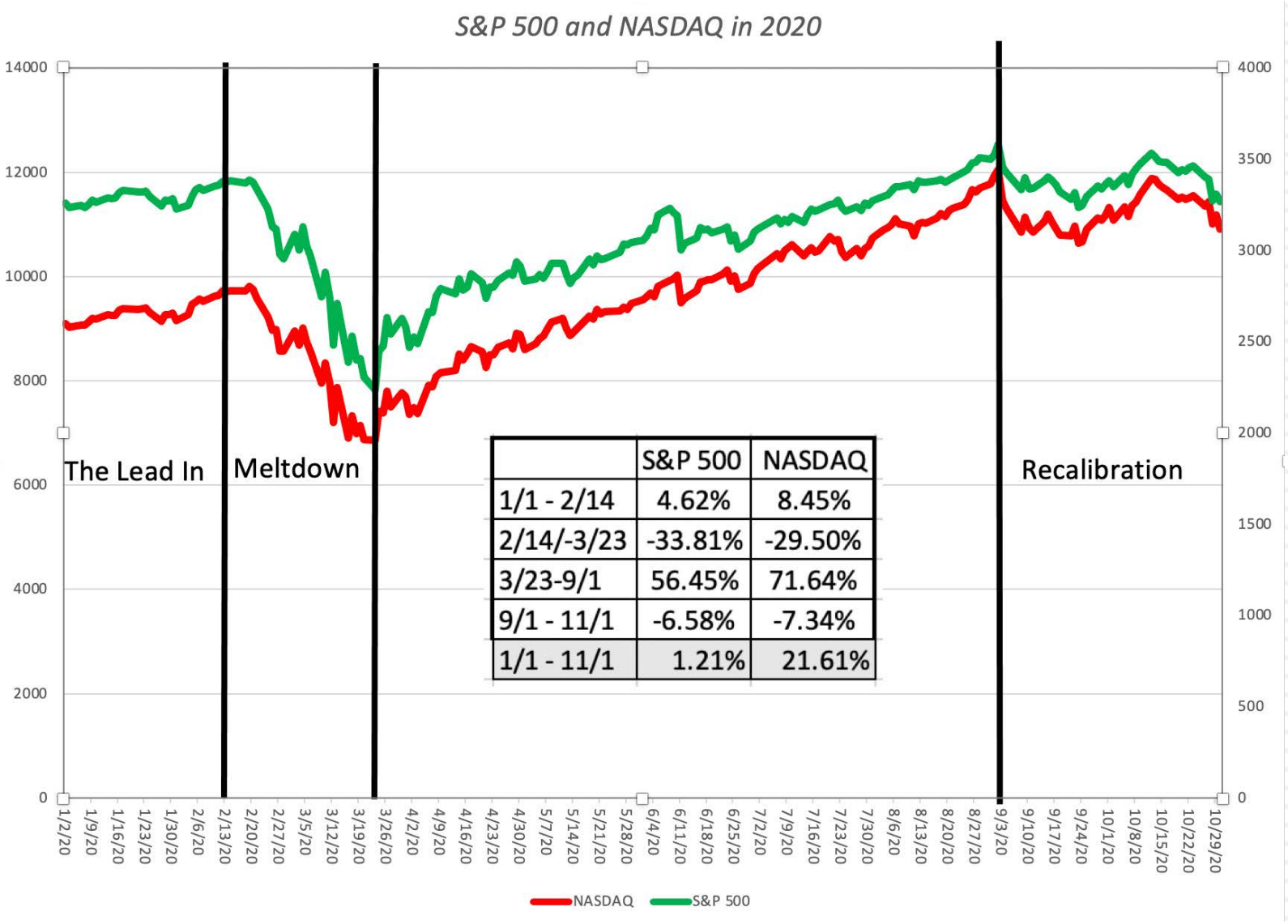
With an added complication…



A COVID Break: Market Overview

Crisis times?

The COVID Crisis: US Equities, from February 14 to November 1, 2020

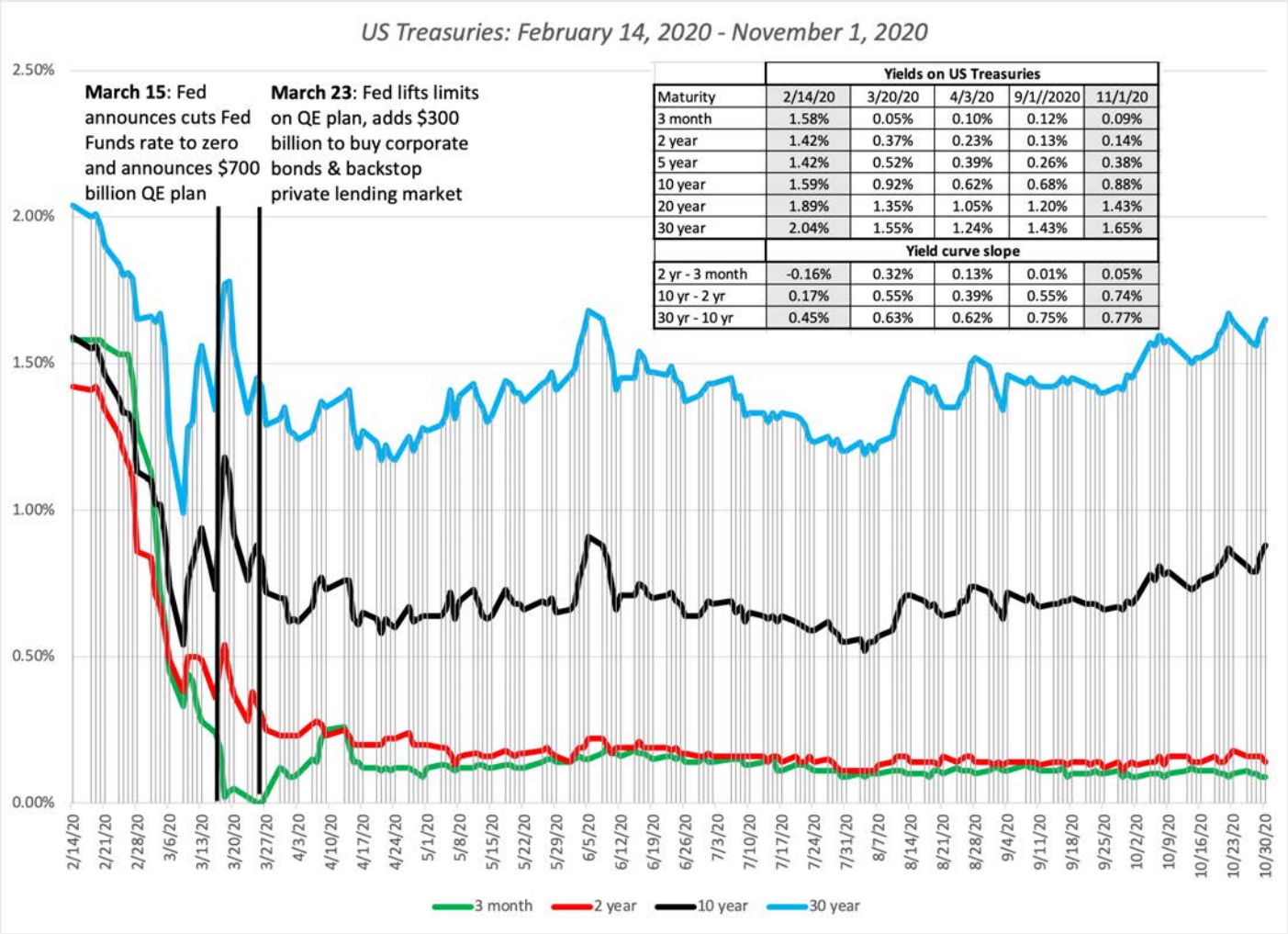


	S&P 500	NASDAQ
1/1 - 2/14	4.62%	8.45%
2/14/-3/23	-33.81%	-29.50%
3/23-9/1	56.45%	71.64%
9/1 - 11/1	-6.58%	-7.34%
1/1 - 11/1	1.21%	21.61%

Global Equities: By Region (in US $)

		Market Cap ($ Millions)				$ Change in Market Cap				% Change in Market Cap			
Sub Region	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
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 & Caribbear	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%

Macro Review: US Treasuries



	Yields on US Treasuries				
Maturity	2/14/20	3/20/20	4/3/20	9/1//2020	11/1/20
3 month	1.58%	0.05%	0.10%	0.12%	0.09%
2 year	1.42%	0.37%	0.23%	0.13%	0.14%
5 year	1.42%	0.52%	0.39%	0.26%	0.38%
10 year	1.59%	0.92%	0.62%	0.68%	0.88%
20 year	1.89%	1.35%	1.05%	1.20%	1.43%
30 year	2.04%	1.55%	1.24%	1.43%	1.65%
	Yield curve slope				
2 yr - 3 month	-0.16%	0.32%	0.13%	0.01%	0.05%
10 yr - 2 yr	0.17%	0.55%	0.39%	0.55%	0.74%
30 yr - 10 yr	0.45%	0.63%	0.62%	0.75%	0.77%

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.

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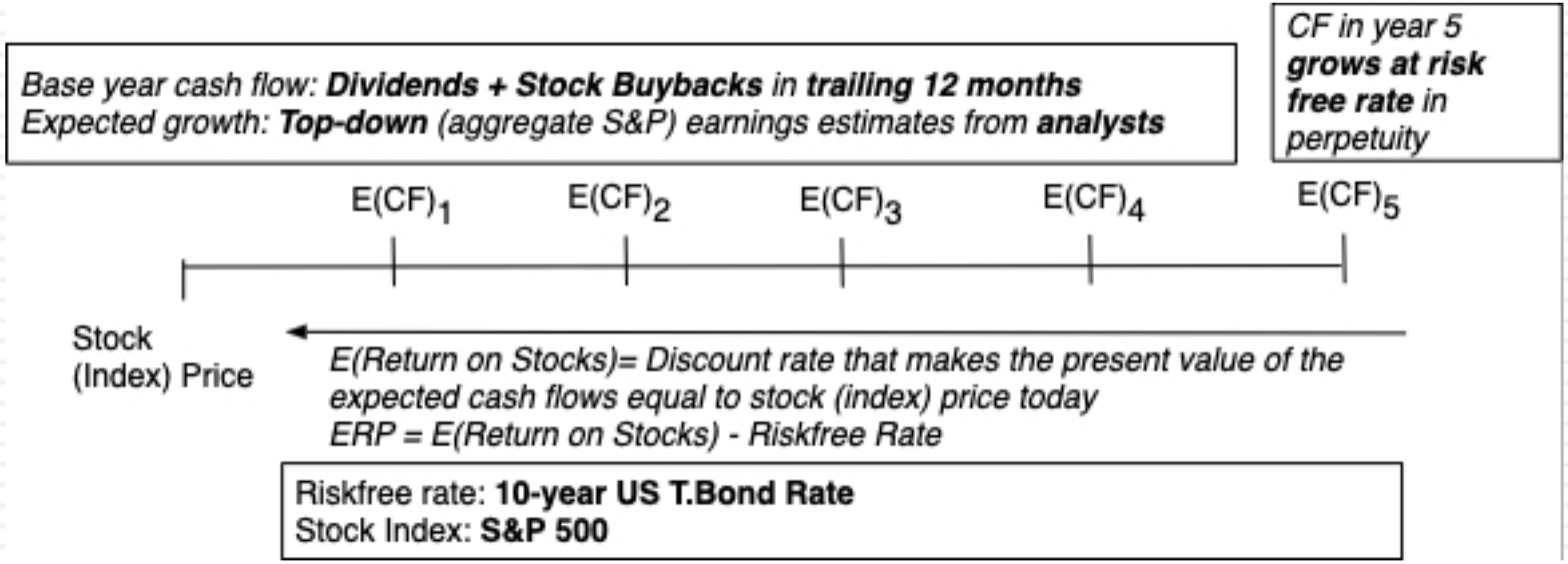
The Price of Risk

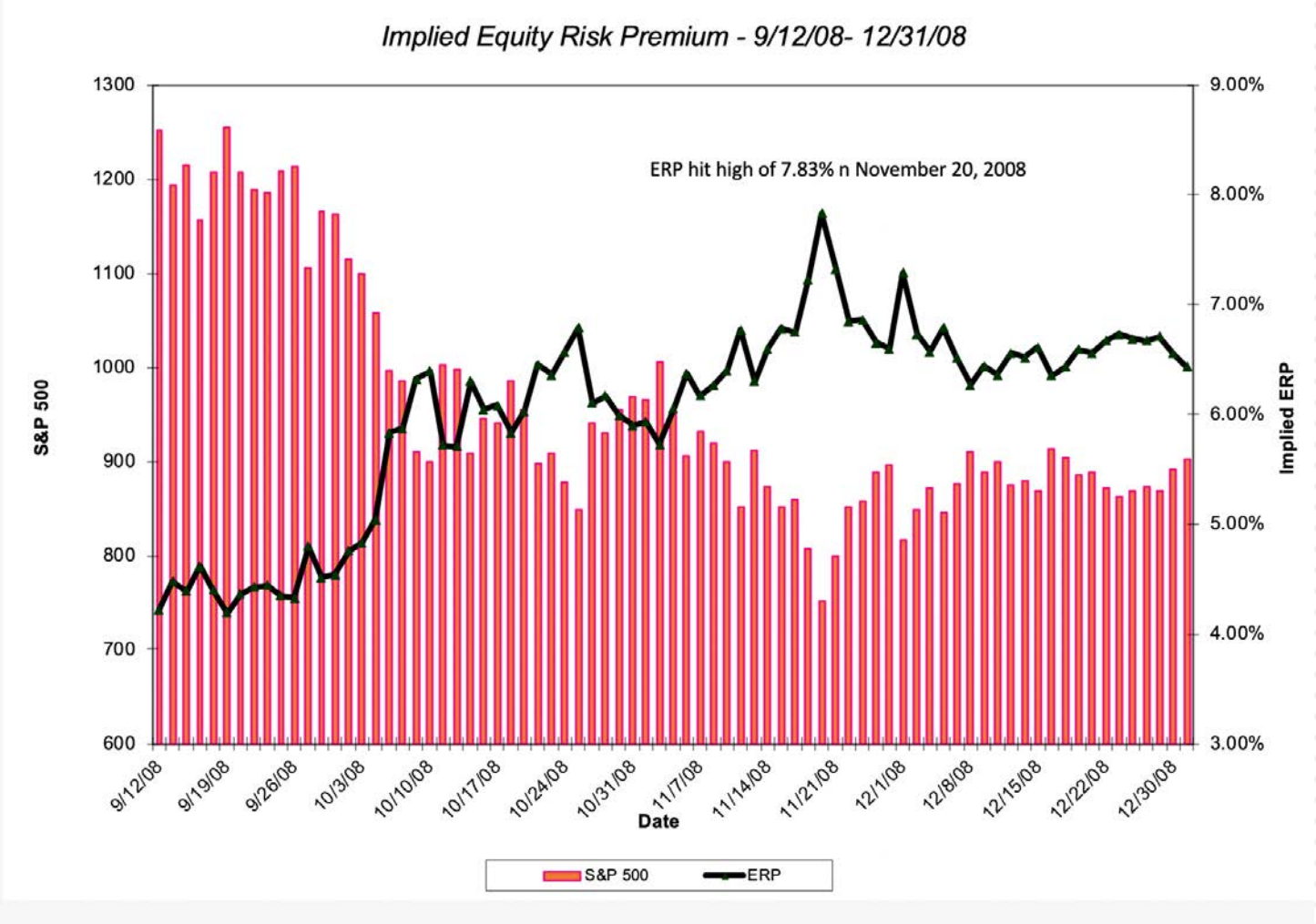
The Price of Risk: Determinants

- The price of risk changes on a day-to-day basis, and is determined by a combination of variables that encompass almost everything going on in the world from
  - uncertainty about future economic growth (more uncertainty -> higher price for risk) to
  - political stability (more instability -> higher price for risk) to
  - worries about catastrophes/disasters (more worries -> higher price for risk) to
  - investor risk aversion (greater risk aversion -> higher price for risk) to
  - information availability/reliability (less reliable and accessible information -> higher risk premiums).
- The more general point though that emerges from identifying the determinants is that changes in these determinants will play out as changing prices for risk, and since investing and valuation has to be based upon current and update prices for risk, you need measurement approaches that capture these day-to-day changes.

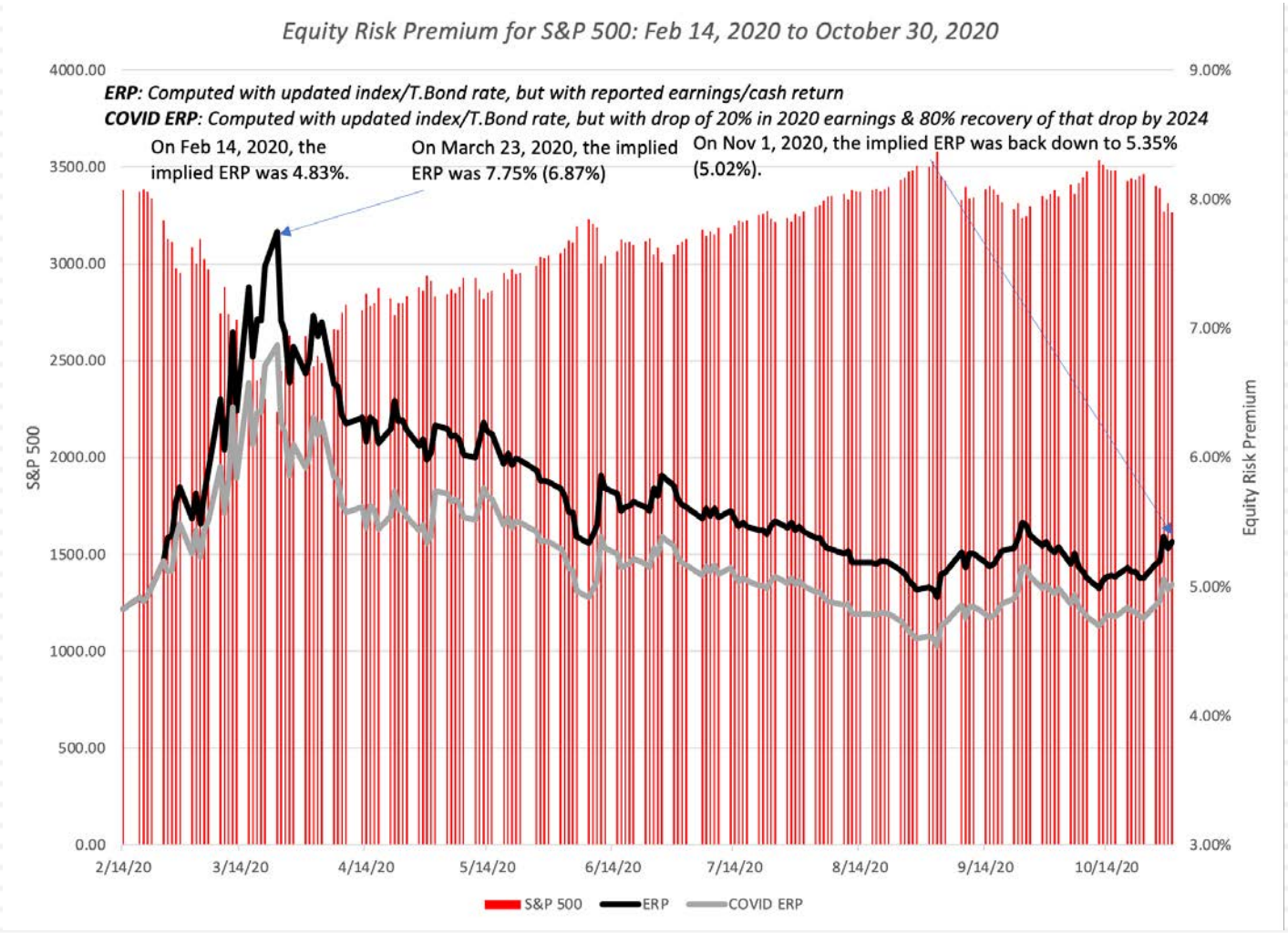
An Equity Market Price of Risk



The 2008 Crisis



The Price of Risk: The COVID crisis



ERP : July 1, 2020

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

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%

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%

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%

Aswath Damodaran

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

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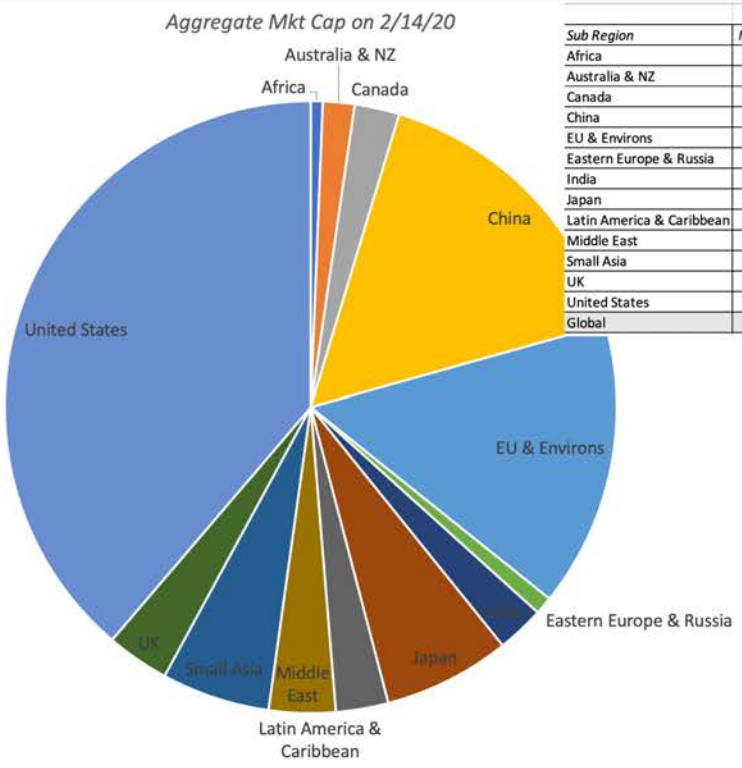
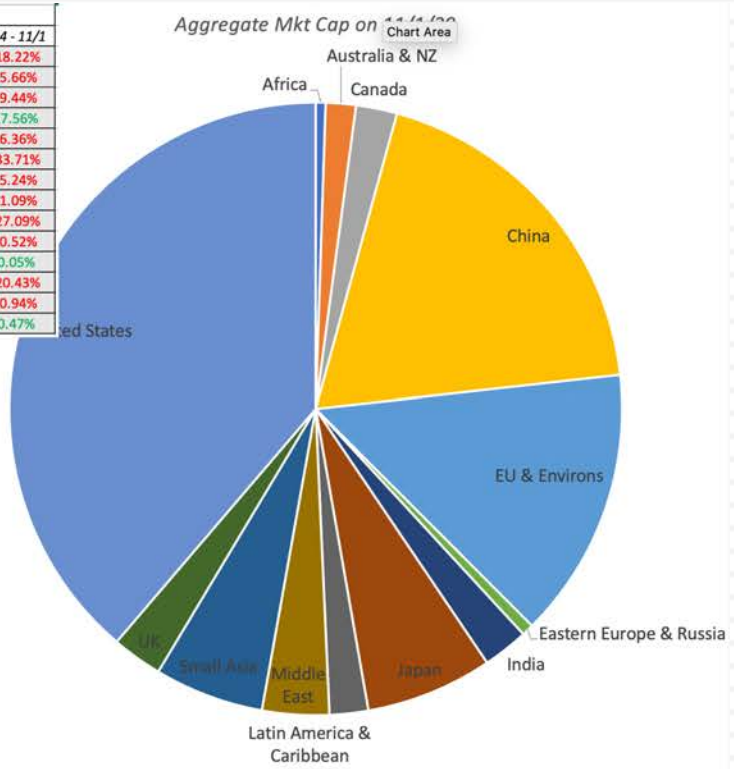
Value added, destroyed and transferred

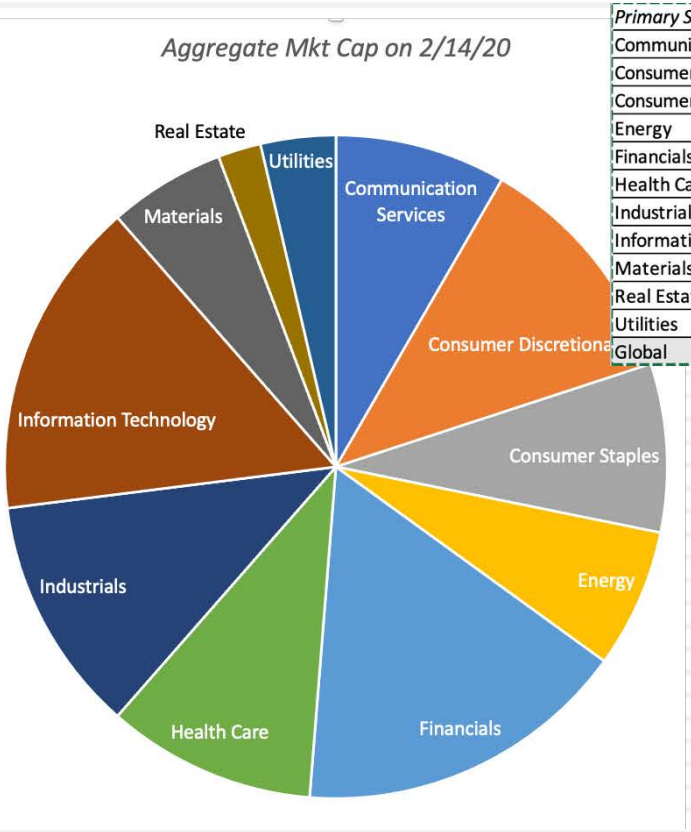
Global Equities: By Region



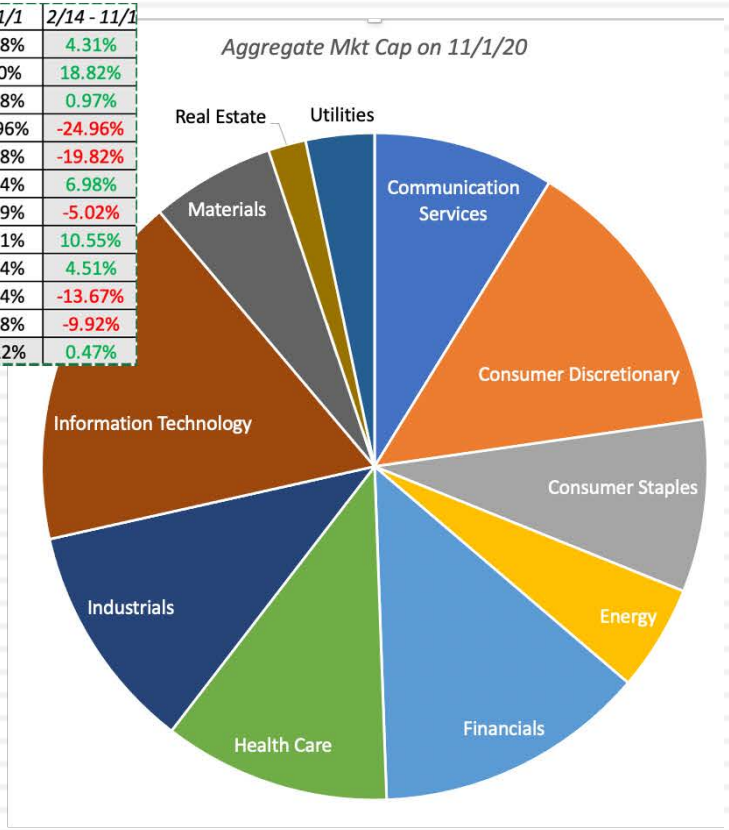
		% Change in Market Cap			
Sub Region	*Number of firms*	*2/14 - 3/20*	*3/20- 9/1*	*9/1-11/1*	*2/14 - 11/1*
Africa	775	-36.93%	30.47%	-0.61%	-18.22%
Australia & NZ	1,544	-40.58%	67.93%	-5.45%	-5.66%
Canada	2,396	-38.94%	60.29%	-7.48%	-9.44%
China	6,293	-11.38%	35.38%	-2.01%	17.56%
EU & Environs	5,190	-32.13%	43.47%	-3.83%	-6.36%
Eastern Europe & Russia	494	-39.62%	27.39%	-13.81%	-33.71%
India	3,314	-31.04%	41.54%	-2.91%	-5.24%
Japan	3,732	-25.44%	32.94%	-0.21%	-1.09%
Latin America & Caribbean	1,164	-41.38%	33.19%	-6.61%	-27.09%
Middle East	1,430	-16.82%	22.51%	-2.37%	-0.52%
Small Asia	8,625	-29.97%	44.38%	-1.05%	0.05%
UK	1,130	-36.99%	37.23%	-7.98%	-20.43%
United States	6,357	-32.71%	56.27%	-5.80%	-0.94%
Global	42,445	-28.72%	20.36%	17.12%	0.47%



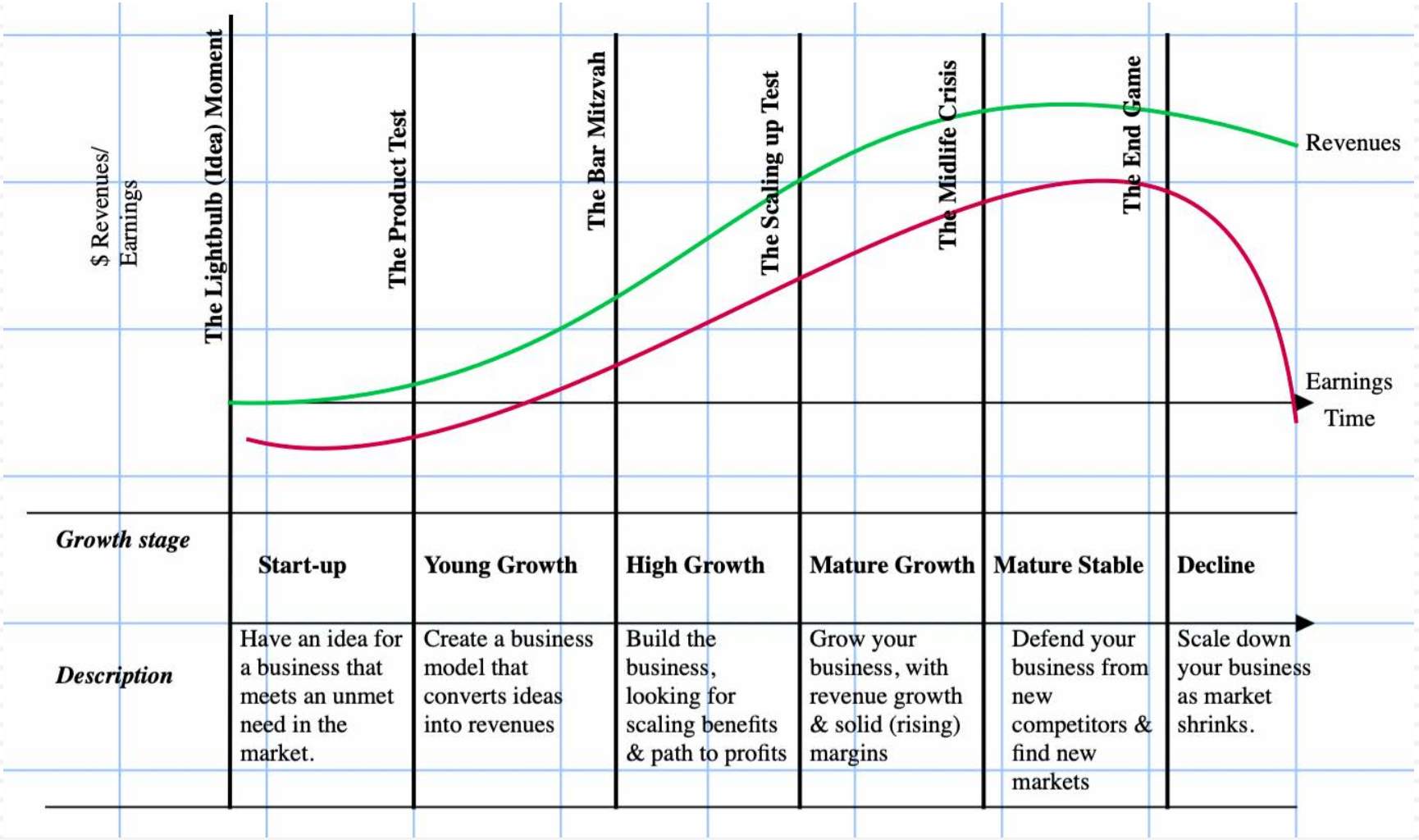
Global Equities: By Sector



Primary Sector	2/14 - 3/20	3/20- 9/1	9/1-11/1	2/14 - 11/1
Communication Services	-25.11%	45.05%	-3.98%	4.31%
Consumer Discretionary	-30.38%	67.64%	1.80%	18.82%
Consumer Staples	-20.07%	33.37%	-5.28%	0.97%
Energy	-35.03%	29.73%	-10.96%	-24.96%
Financials	-33.16%	26.77%	-5.38%	-19.82%
Health Care	-23.00%	45.09%	-4.24%	6.98%
Industrials	-31.90%	44.52%	-3.49%	-5.02%
Information Technology	-28.41%	64.65%	-6.21%	10.55%
Materials	-29.39%	53.11%	-3.34%	4.51%
Real Estate	-26.29%	24.11%	-5.64%	-13.67%
Utilities	-27.25%	24.04%	-0.18%	-9.92%
Global	-28.72%	20.36%	17.12%	0.47%



The Corporate Life Cycle



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

		Market Cap ($ Millions)				$ Change in Market Cap				% Change in Market Cap			
decile(Age of company)	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
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

		Market Cap ($ Millions)				$ Change in Market Cap				% Change in Market Cap			
decile(Est. Annual Revenue	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
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%

Value Transfers

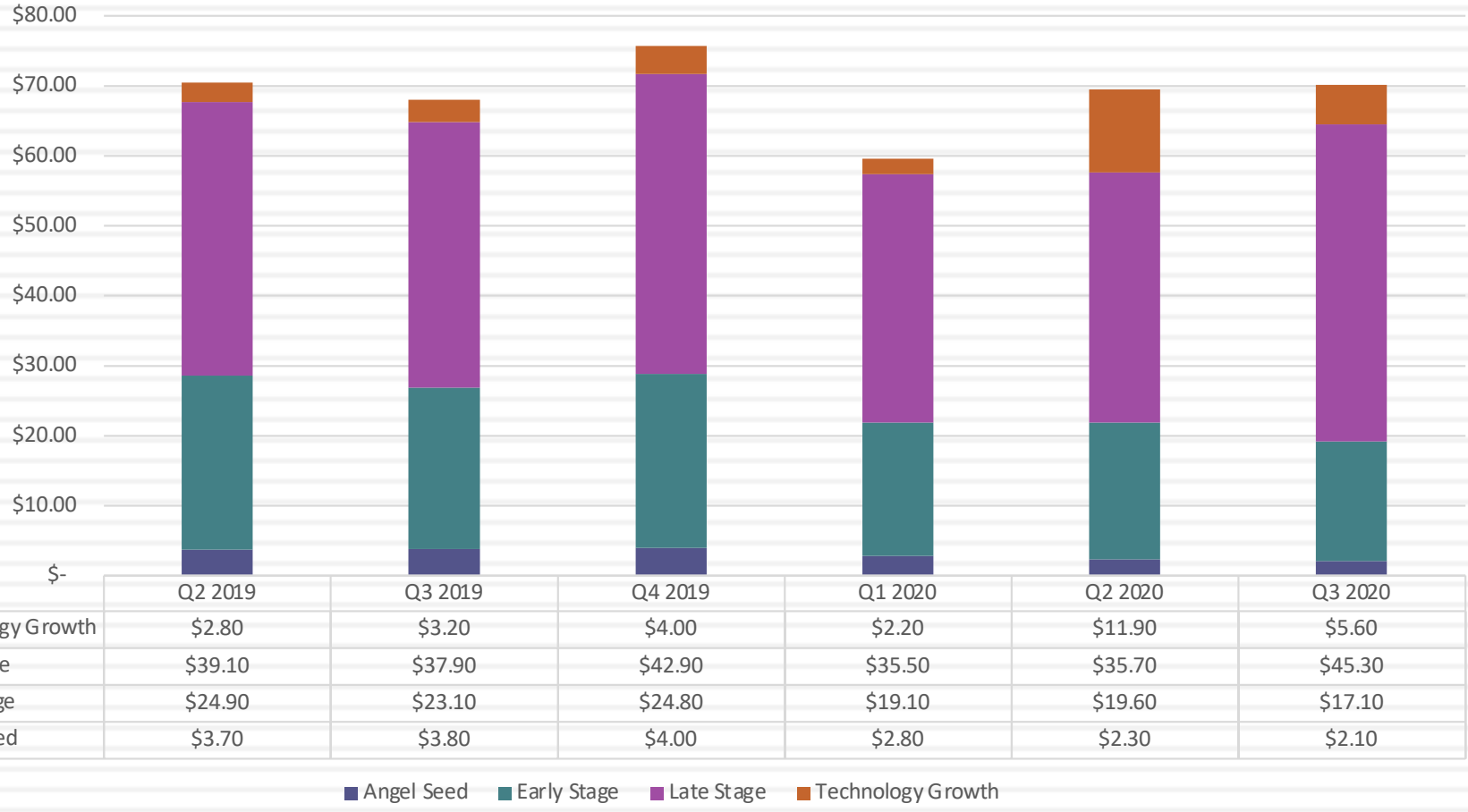
		Returns (2/14/20 - 11/1/20)			Returns (2/14/20 - 11/1/20)	
Grouping	*Risk On*	*% Change*	*$ Change (billions)*	*Risk Off*	*% Change*	*$ Change (billions)*
PE	High PE	6.07%	$313.00	Low PE	-3.23%	-$57.00
PBV	High PBV	13.96%	$3,387.00	Low PBV	-16.21%	-$204.00
Dividend Yield	No or low Dividends	5.20%	$1,546.00	High Dividend Yields	-16.06%	-$1,448.00
Corporate Age	Young companies	19.26%	$466.00	Old companies	-13.96%	-$3,807.00
Growth	High growth	64.12%	$2,049.00	Low growth	-27.62%	-$2,218.00
Size	Small Market Cap	100.40%	$4,119.00	Large Market Cap	-1.50%	-$1,150.00
Debt	High debt	-18.62%	-$459.00	Low debt	20.81%	$526.00
Returns reported for firms in the highest and lowest deciles of each grouping, except for dividends, reported in quintiles.						

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.

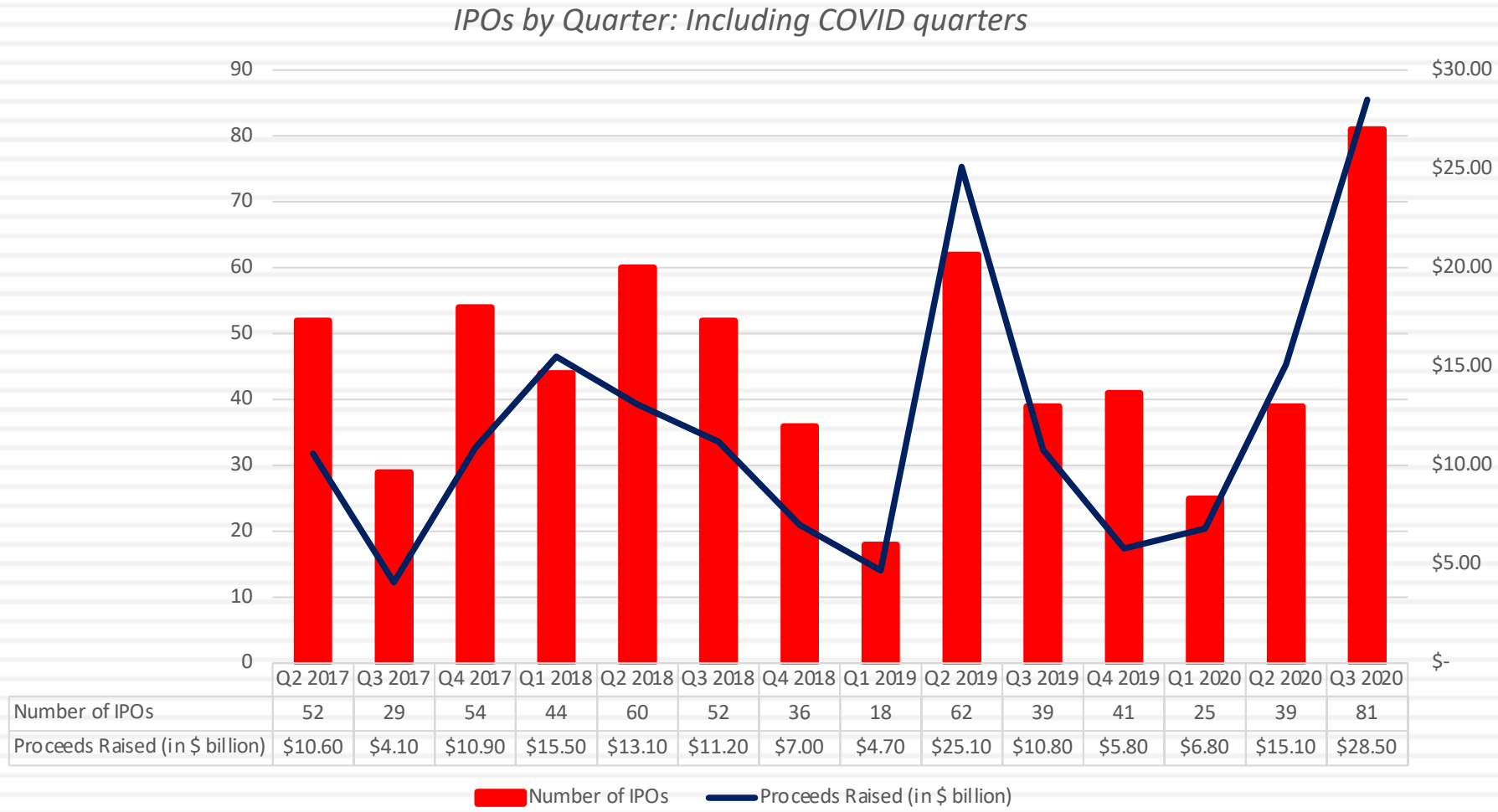
Venture Capital: The COVID effect

VC Investing during COVID: By Type



	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020
Technology Growth	$2.80	$3.20	$4.00	$2.20	$11.90	$5.60
Late Stage	$39.10	$37.90	$42.90	$35.50	$35.70	$45.30
Early Stage	$24.90	$23.10	$24.80	$19.10	$19.60	$17.10
Angel Seed	$3.70	$3.80	$4.00	$2.80	$2.30	$2.10

IPOs: The COVID effect

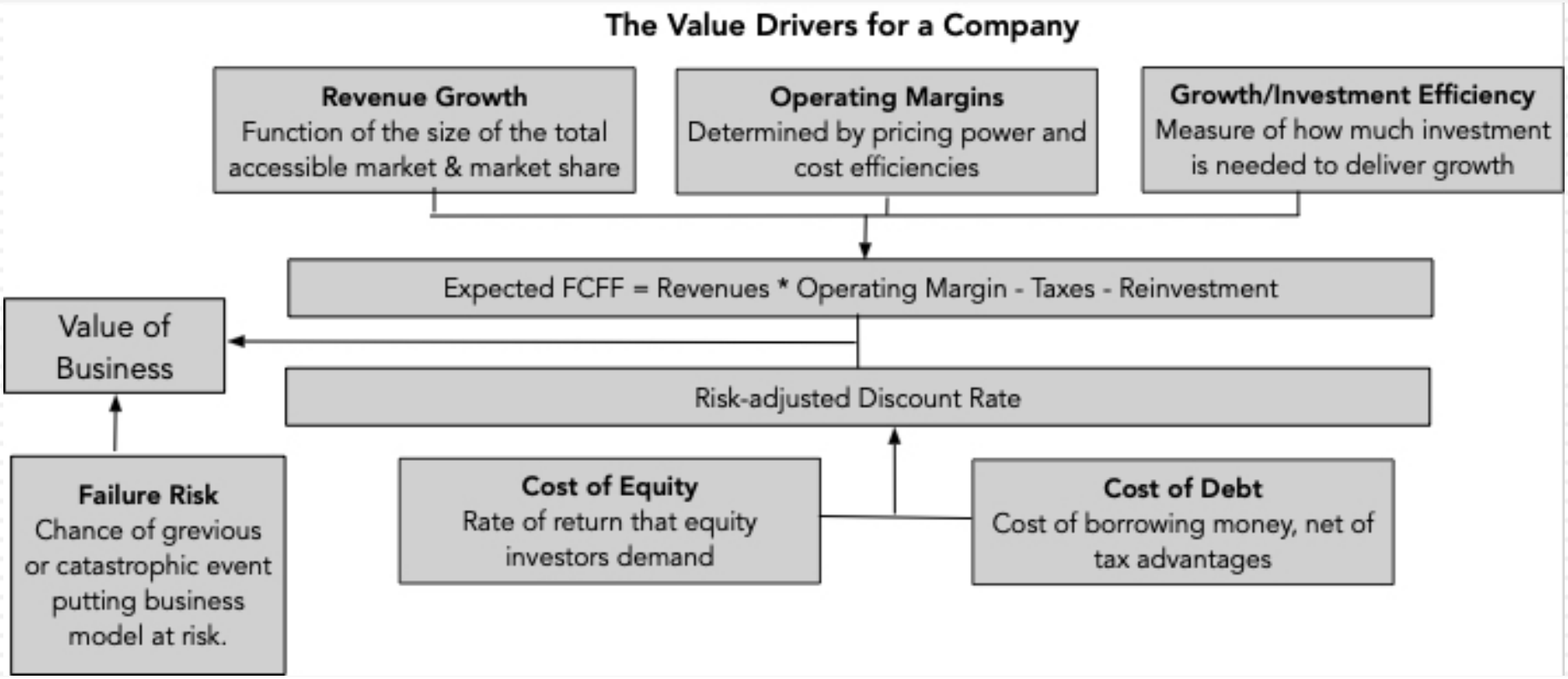


	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020
Number of IPOs	52	29	54	44	60	52	36	18	62	39	41	25	39	81
Proceeds Raised (in $ billion)	$10.60	$4.10	$10.90	$15.50	$13.10	$11.20	$7.00	$4.70	$25.10	$10.80	$5.80	$6.80	$15.10	$28.50

Back to Basics: Valuation in the face of uncertainty

When there are winners, there will also be losers…

The Drivers of Value



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.

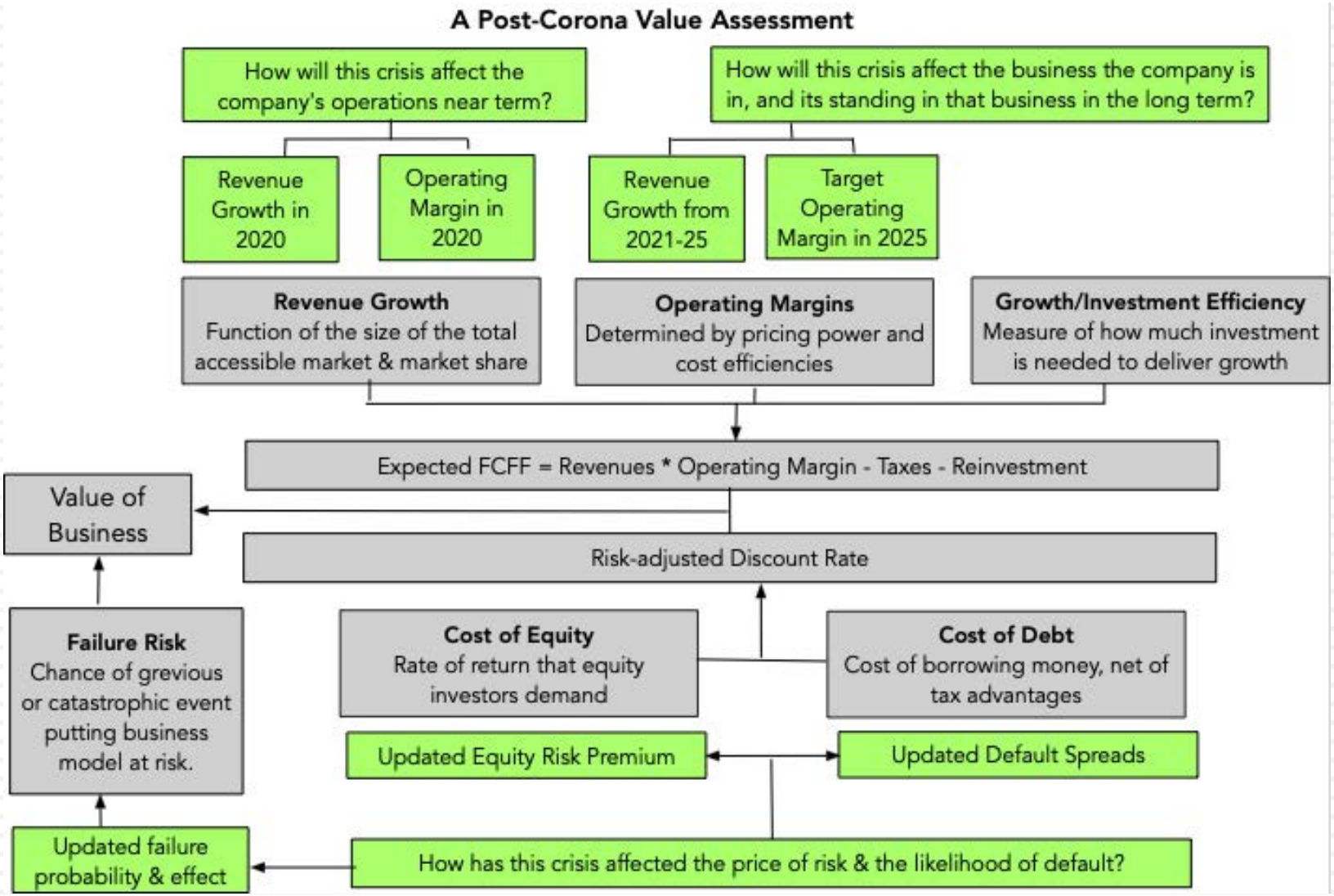
How crises affect stories…

- 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 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



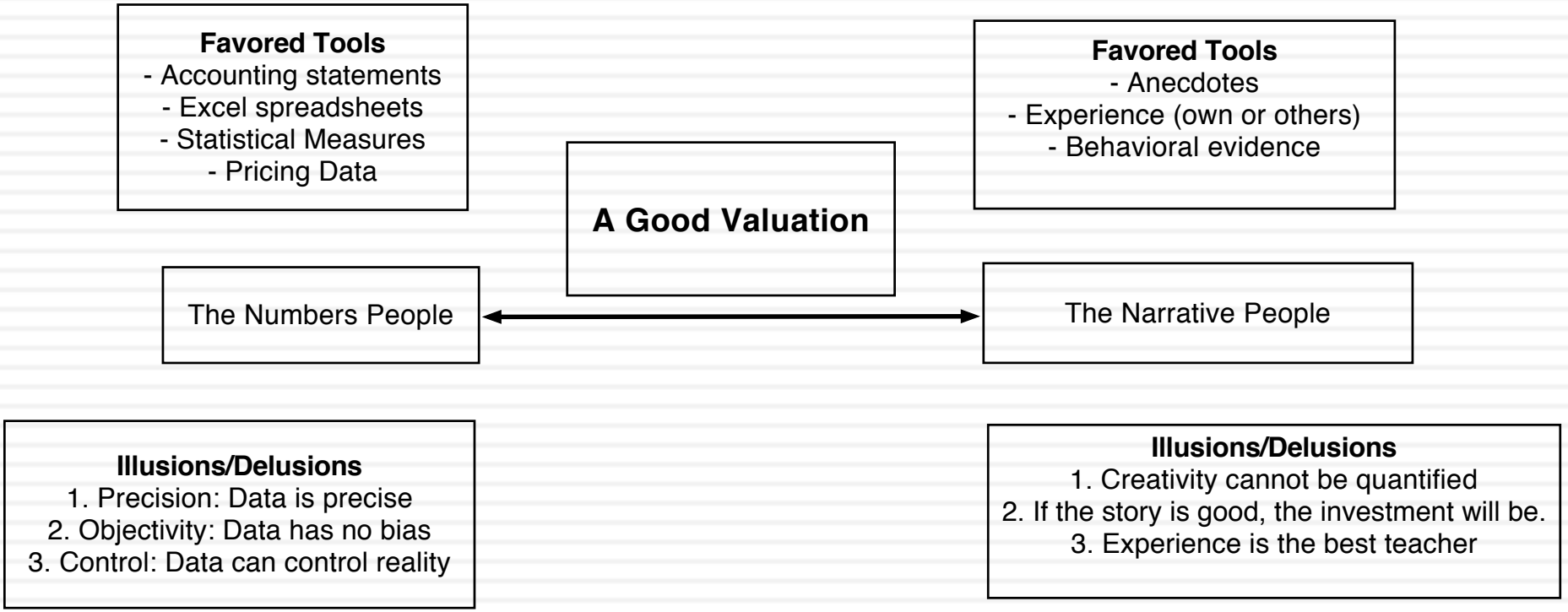
The Disruptor and Disrupted

- The Disruption Dance: There are two sides to disruption, the disruptor (who challenges the status quo with a new way of doing things) and the disrupted (which is targeted by the disruptor).
- Characteristics of Disruptors: While anyone can be a disruptor, you generally are more likely to be the disruptor, if you have nothing to lose. Disruptors tend to be
  - Younger businesses, often with younger management & employees
  - With no or very little to gain from the status quo
- Characteristics of Disrupted: In general, businesses are more likely to be disrupted if they are
  - Large, with established practices
  - Inefficient, either because of inertia, design or regulations.
  - Tied to the status quo, but unhappy with it at the same time.

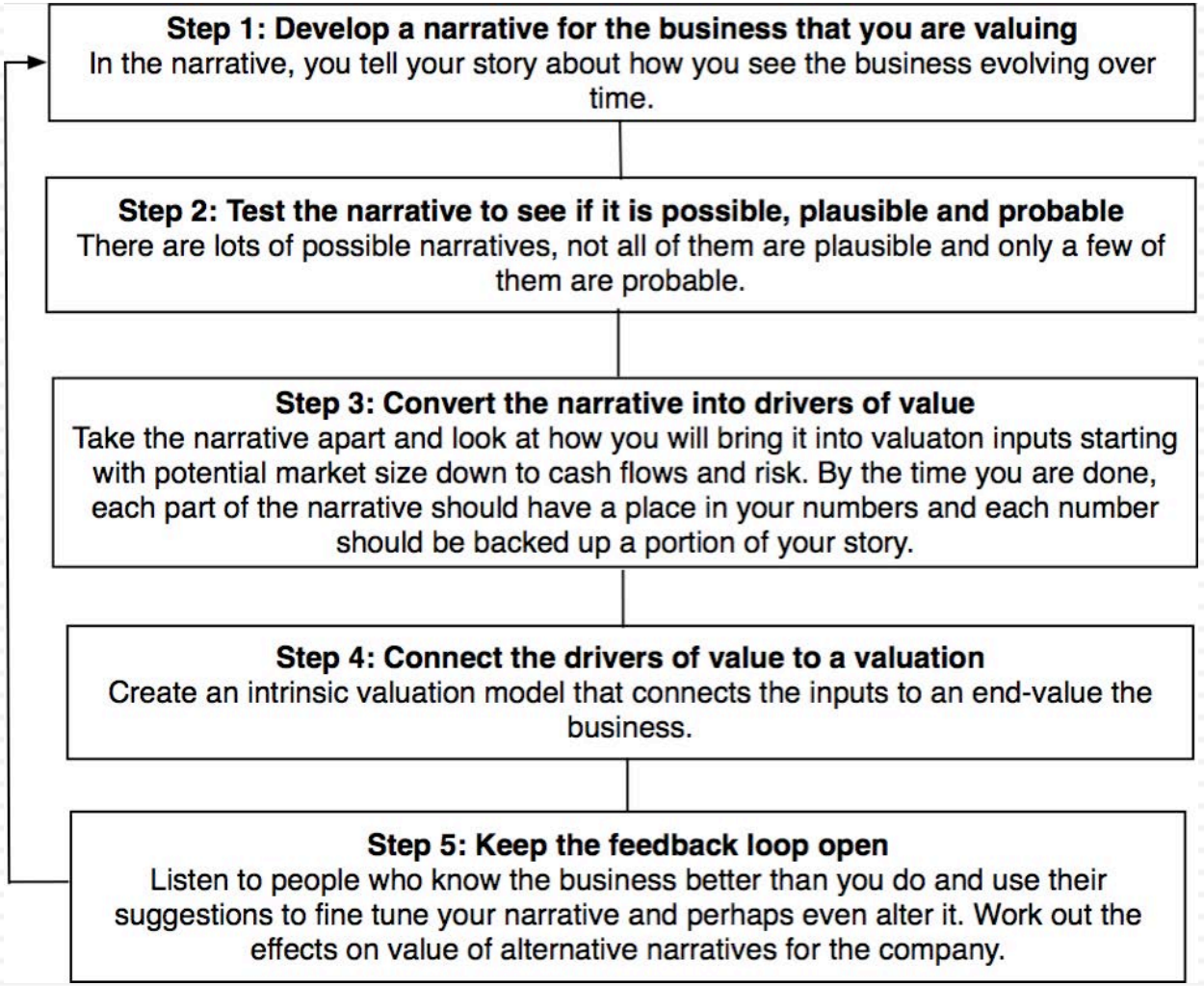
Valuing a Disruptor

- No history, large losses, small or no revenues: In general, valuing disruptors is difficult because they tend to be small, money losing and with little or no history.
- Business model in flux: With many disruptors, there is no workable business model in place (yet).
- No models: There are no grown up examples that you can use as your basis for valuation.
- Disruption is easy, making money on disruption is hard: There is always the risk that while disruption may succeed, many disruptors (especially early ones) do not benefit from the disruption.

A Key Tool: Story Telling



The Steps

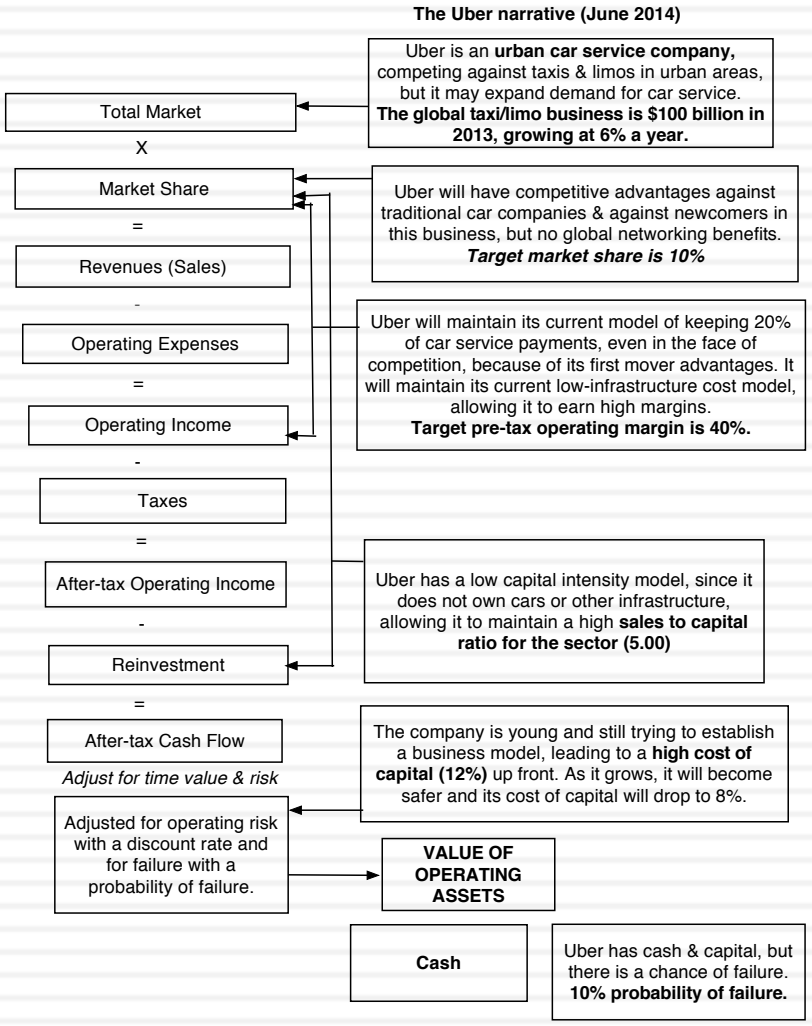

Step 1: Develop a narrative for the business that you are valuing
In the narrative, you tell your story about how you see the business evolving over time.
Step 2: Test the narrative to see if it is possible, plausible and probable
There are lots of possible narratives, not all of them are plausible and only a few of them are probable.
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.

My Story for Uber in June 2014

In June 2014, my initial narrative for Uber was that it would be

1. An urban car service business: I saw Uber primarily as a force in urban areas and only in the car service business.
2. Which would expand the business moderately (about 40% over ten years) by bringing in new users.
3. With local networking benefits: If Uber becomes large enough in any city, it will quickly become larger, but that will be of little help when it enters a new city.
4. Maintain its revenue sharing (20%) system due to strong competitive advantages (from being a first mover).
5. And its existing low-capital business model, with drivers as contractors and very little investment in infrastructure.

Connecting Stories to Inputs



And inputs to value

Uber: Intrinsic valuation - June 8, 2014 (in US $)

Stable Growth (after year 10)
Expected growth rate = 2.50%
Cost of capital = 8%
Return on capital= 25%
Reinvestment Rate= 2.5%/25% = 10%

Terminal Value$_{10}$= 793/(.08-025) = $14,418

Term yr
EBIT (1-t) $881
- Reinv 88
FCFF $793

Global taxi market is $100 billlion currently, expected to grow 6% a year for next ten years.

Uber will keep 20% of the gross cab receipts as its revenues

Uber's market share of this market will increase to 10% over the next 10 years.

Uber's operating expenses will amount to 60% of its revenues. (Operating margin=40%)

Uber will pay a tax rate of 30% on its income, increasing to 40% over the next 10 years

Uber will generate $5 in incremental revenues for every dollar of incremental capital.

	1	2	3	4	5	6	7	8	9	10
Overall market	$106,000	$112,360	$119,102	$126,248	$133,823	$141,852	$150,363	$159,385	$168,948	$179,085
Share of market (gross)	3.63%	5.22%	6.41%	7.31%	7.98%	8.49%	8.87%	9.15%	9.36%	10.00%
Revenues as percent of gross	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
Annual Revenue	$769	$1,173	$1,528	$1,846	$2,137	$2,408	$2,666	$2,916	$3,163	$3,582
Operating margin	7.00%	10.67%	14.33%	18.00%	21.67%	25.33%	29.00%	32.67%	36.33%	40.00%
Operating Income	$54	$125	$219	$332	$463	$610	$773	$953	$1,149	$1,433
Effective tax rate	31%	32%	33%	34%	35%	36%	37%	38%	39%	40%
- Taxes	$17	$40	$72	$113	$162	$220	$286	$362	$448	$573
After-tax operating income	$37	$85	$147	$219	$301	$390	$487	$591	$701	$860
Sales/Capital Ratio	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
- Reinvestment	$94	$81	$71	$64	$58	$54	$52	$50	$49	$84
Free Cash Flow to the Firm	-$57	$4	$76	$156	$243	$336	$435	$541	$652	$776

Based on the investment of $1.2 billion made by investors, the imputed value for Uber's operating assets, in June 2014 ,was $17 billion.

Value of operating assets = $6,595

Adust for probability of failure (10%)
Expected value = $6,595 (.9) = $5,895

Discount back the cash flows (including terminal value) at the cumulated cost of capital.

Cost of capital for first 5 years = Top decile of US companies = 12%

Cost of capital declines from 12% to 8% from years 6 to 10.

Zoom						Mar-20

The Streaming Story

With its technology and ease of use, Zoom is uniquely positioned to take advantage of a boom in online business/other meetings, driven partly by increased comfort on the part of managers with the technology and partly by costs. The Corona Virius will accelerate this shift to online meetings, increasing the overall market size, and while competitors will emerge, the networking benefits that Zoom builds up will allow it to keep a significant market share. Along the way, Zoom's margins will converge on the lofty margins earned by business and applidation software companies and the cost of capital will decline to reflect the fact that once mature it will be a diversified business services company, giving it the cost of capital of a mature company (at today's riskfree rate of 0.67%).

The Assumptions

	Base year	*Years 1-5*	*Years 6-10*		*After year 10*	*Link to story*
Revenues (a)	$ 623	50.00%	→ 0.67%		0.67%	
Operating margin (b)	9.70%	9.70%	→ 22.25%		22.25%	
Tax rate	25.00%	25.00%	→ 25.00%		25.00%	
Reinvestment (c)		Sales to capital ratio	3.25	RIR =	6.70%	
Return on capital	23.66%	Marginal ROIC =	74.66%		10.00%	
Cost of capital (d)		7.39%	→ 6.00%		6.00%	

The Cash Flows

	Revenues	*Operating Margin*	*EBIT*	*EBIT (1-t)*	*Reinvestment*	*FCFF*
1	$ 934	12.21%	$ 114	$ 86	$ 96	$ (10)
2	$ 1,401	14.72%	$ 206	$ 155	$ 144	$ 11
3	$ 2,102	17.23%	$ 362	$ 272	$ 215	$ 56
4	$ 3,152	19.74%	$ 622	$ 467	$ 323	$ 144
5	$ 4,729	22.25%	$ 1,052	$ 789	$ 485	$ 304
6	$ 6,626	22.25%	$ 1,474	$ 1,106	$ 584	$ 522
7	$ 8,632	22.25%	$ 1,921	$ 1,441	$ 617	$ 824
8	$ 10,393	22.25%	$ 2,313	$ 1,734	$ 542	$ 1,193
9	$ 11,488	22.25%	$ 2,556	$ 1,917	$ 337	$ 1,580
10	$ 11,565	22.25%	$ 2,573	$ 1,930	$ 24	$ 1,906
Terminal year	$ 11,643	22.25%	$ 2,591	$ 1,943	$ 130	$ 1,813

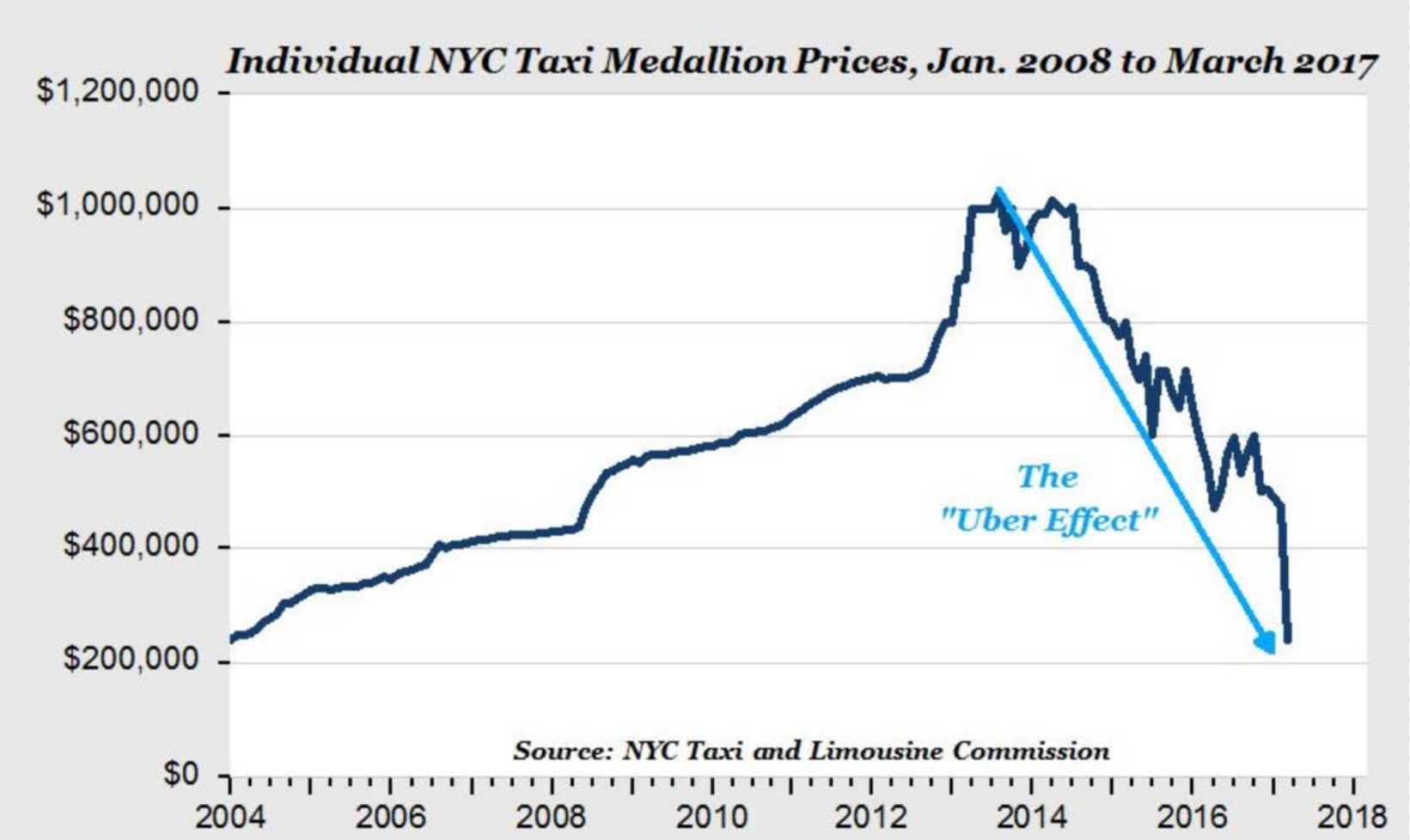
The Value

Terminal value	$ 34,011		
PV(Terminal value)	$ 17,331		
PV (CF over next 10 years)	$ 3,721		
Value of operating assets =	$ 21,052		
Adjustment for distress	$ -	Probability of failure =	0.00%
- Debt & Minority Interests	$ 119		
+ Cash & Other Non-operating assets	$ 855		
Value of equity	$ 21,789		
- Value of equity options	$ 868		
Number of shares	276.40		
Value per share	$ 75.69	Stock was trading at =	$113.75

Dealing with the Disrupted

- When valuing companies that are being disrupted, you have to use both intrinsic value and pricing tools more flexibly, often changing established practices.
- In discounted cash flow valuation, this will require
  - Telling stories that are dark and with no good ending
  - Allowing revenues to decline over time and margins to shrink
  - Ending your valuation with a liquidation rather than a terminal value, or having a terminal value with a negative growth rate.
- In pricing, you will need to adjust your pricing metric for the characteristics of your company. You have to be able to estimate what the PE or EV/EBITDA should be for a risky, negative growth firm. You can use either:
  - Intrinsic multiple models (where you link the multiple to company characteristics)
  - Statistical tools, where you compare PE ratios for companies in a sector, controlling for differences in growth and risk.

Winners and Losers: Uber's Rise = Taxi Cab's Fall



Valuing the Disrupted: A More Depressing Exercise

- Long history, but not relevant: Disrupted companies often have long and profitable histories. Those histories, though, may not be useful in valuing these companies.
- Mean reversion will fail you: Any valuation built on extrapolation of the past will find these companies to be:
  - Under valued, if you use intrinsic value models
  - Under priced, based upon pricing metrics (PE, EV/EBITDA)
- Value Traps: Investing in them on the basis of extrapolating the past will give you value traps that will continue to look cheap and get even cheaper, the longer you hold them.

To value the disrupted, be ready to break the rules, but not first principles…

- Revenues may, and often will, shrink: While we almost automatically assume that revenues and earnings will grow, at least in the near term, that assumption can be a dangerous one.
- Margins will continue to come under pressure: By the same token, there will be no quick bounceback in margins to historical levels.
- And how management reacts to disruption can have a significant effect on value: Management can go into denial and continue to do what they have always done, which will accelerate value destruction, or learn to live with disruption, which may lead to a much smaller company.

And a valuation of JC Penney in 2016…

JC Penney in 2016: Road to Nowhere?

Declining business: Revenues expected to drop by 3% a year fo next 5 years, and then contine to drop in perpetuity..

	Base year	1	2	3	4	5	6	7	8	9	10	Terminal year
Revenue growth rate		-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.40%	-4.04%	-4.62%	-4.92%	-5.00%	-5.00%
Revenues	$ 12,522	$ 12,146	$ 11,782	$ 11,428	$ 11,086	$ 10,753	$ 10,387	$ 9,968	$ 9,508	$ 9,040	$ 8,588	$ 8,158
EBIT (Operating) margin	1.32%	1.82%	2.31%	2.80%	3.29%	3.79%	4.28%	4.77%	5.26%	5.76%	6.25%	6.25%
EBIT (Operating income)	$ 166	$ 221	$ 272	$ 320	$ 365	$ 407	$ 444	$ 476	$ 501	$ 520	$ 537	$ 510
Tax rate	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%	36.00%	37.00%	38.00%	39.00%	40.00%	40.00%
EBIT(1-t)	$ 108	$ 143	$ 177	$ 208	$ 237	$ 265	$ 284	$ 300	$ 310	$ 317	$ 322	$ 306
- Reinvestment		$ (188)	$ (182)	$ (177)	$ (171)	$ (166)	$ (183)	$ (210)	$ (230)	$ (234)	$ (226)	$ (127)
FCFF		$ 331	$ 359	$ 385	$ 409	$ 431	$ 467	$ 509	$ 540	$ 552	$ 548	$ 433
NOL	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Cost of capital		9.00%	9.00%	9.00%	9.00%	9.00%	8.80%	8.60%	8.40%	8.20%	8.00%	8.00%
Cumulated discount factor		0.9174	0.8417	0.7722	0.7084	0.6499	0.5974	0.5501	0.5074	0.4690	0.4342	
PV(FCFF)		$ 304	$ 302	$ 297	$ 290	$ 280	$ 279	$ 280	$ 274	$ 259	$ 238	

PV(Terminal value)	$ 3,136.70
PV (CF over next 10 years)	$ 2,802.95
Sum of PV	$ 5,939.65
Probability of failure =	20.00%
Proceeds if firm fails =	$2,969.82
Value of operating assets =	$ 5,345.68

High debt load and poor earnings put survival at risk. Based on bond rating, 20% chance of failure and liquidation will bring in 50% of book value

Margins improve gradually to median for US retail sector (6.25%)

As stores shut down, cash released from real estate.

The cost of capital is at 9%, higher because of high cost of debt.

Boeing						Mar-20
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

The Bottom Line

- Much as we would like to believe otherwise, disruption is neither new nor novel. It is part of how economies evolve and change.
- Disruption does create uncertainty but more importantly, it changes the underlying structure of businesses and entire economies.
- Those structural changes imply that investing, valuing or managing companies assuming that mean reversion always works and that mechanical models/ metrics are the answer is dangerous.