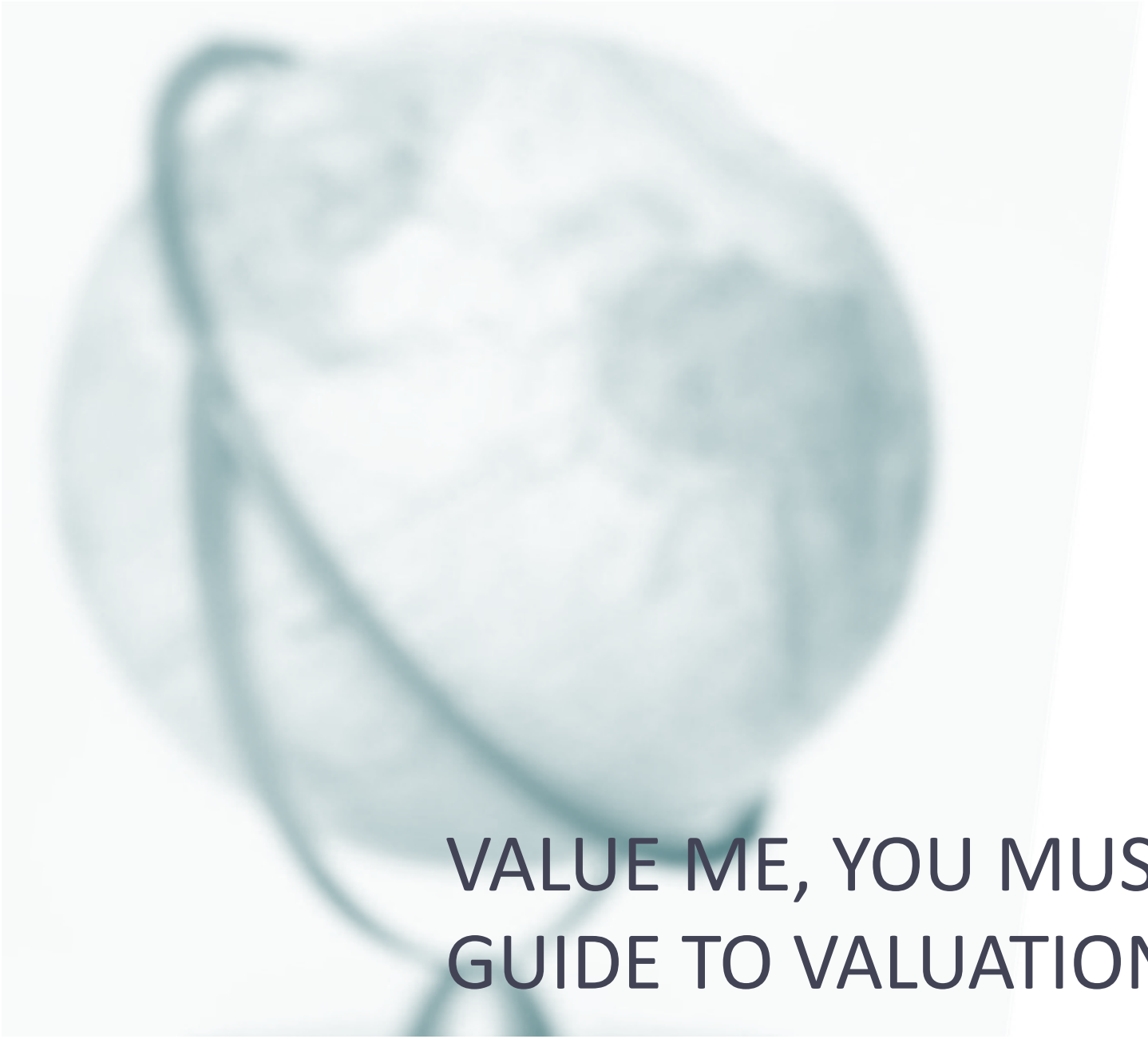


VALUE ME, YOU MUST! A JEDI GUIDE TO VALUATION

Aswath Damodaran
Stern School of Business, NYU

The Basis for Valuation

Theme 1: Characterizing Valuation as a discipline

- In a science, if you get the inputs right, you should get the output right. The laws of physics and mathematics are universal and there are no exceptions. **Valuation is not a science**.
- In an art, there are elements that can be taught but there is also a magic that you either have or you do not. The essence of an art is that you are either a great artist or you are not. **Valuation is not an art.**
- A craft is a skill that you learn by doing. The more you do it, the better you get at it. **Valuation is a craft.**

Theme 2: Valuing an asset is not the same as pricing that asset

Drivers of intrinsic value
- Cashflows from existing assets
- Growth in cash flows
- Quality of Growth

Drivers of price
- Market moods & momentum
- Surface stories about fundamentals

Accounting Estimates

Valuation Estimates

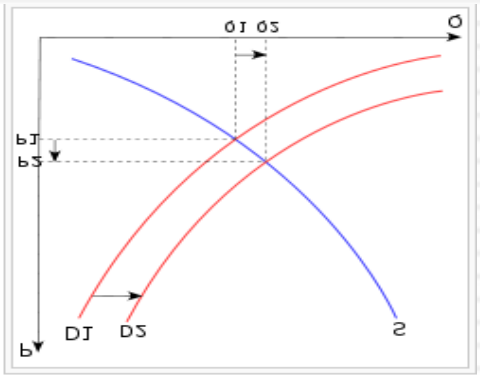
INTRINSIC VALUE

Value

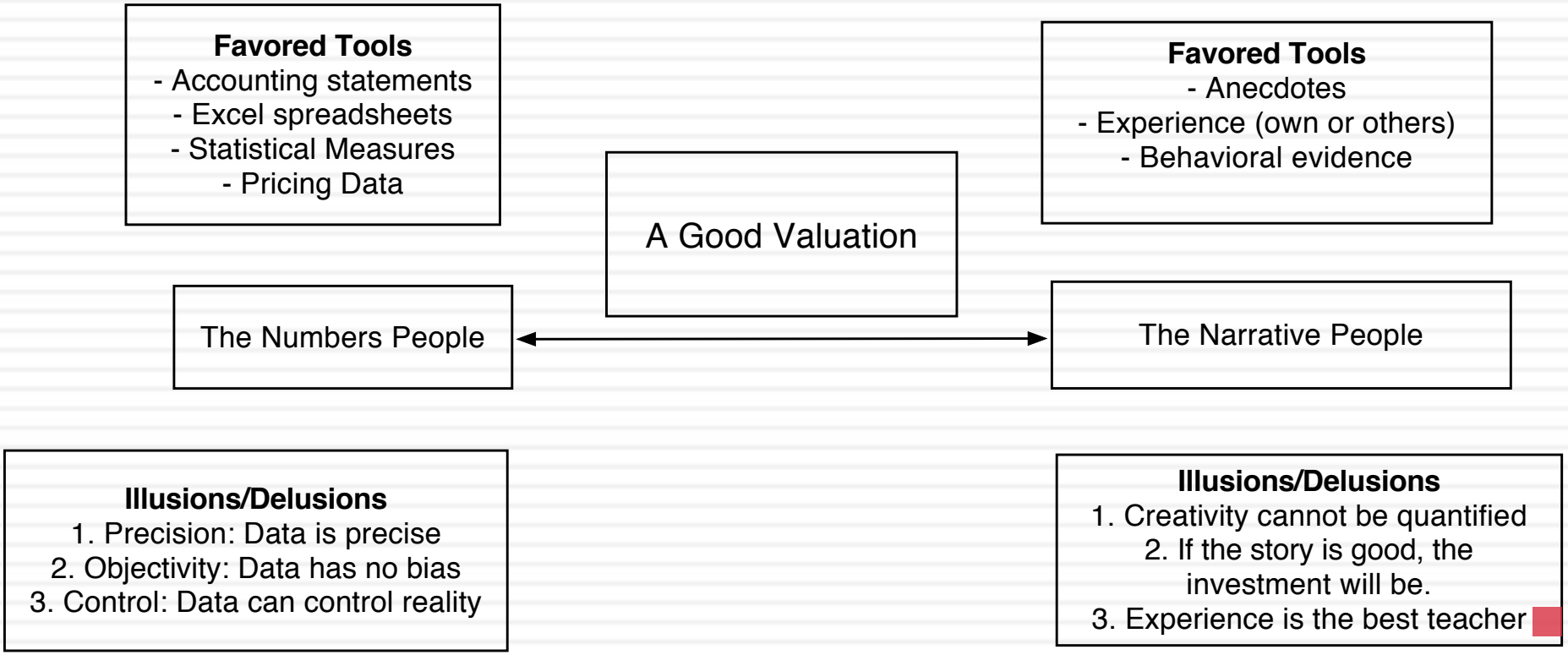
THE GAP
Is there one?
If so, will it close?
If it will close, what will cause it to close?

Price

PRICE



Theme 3: Good valuation = Story + Numbers

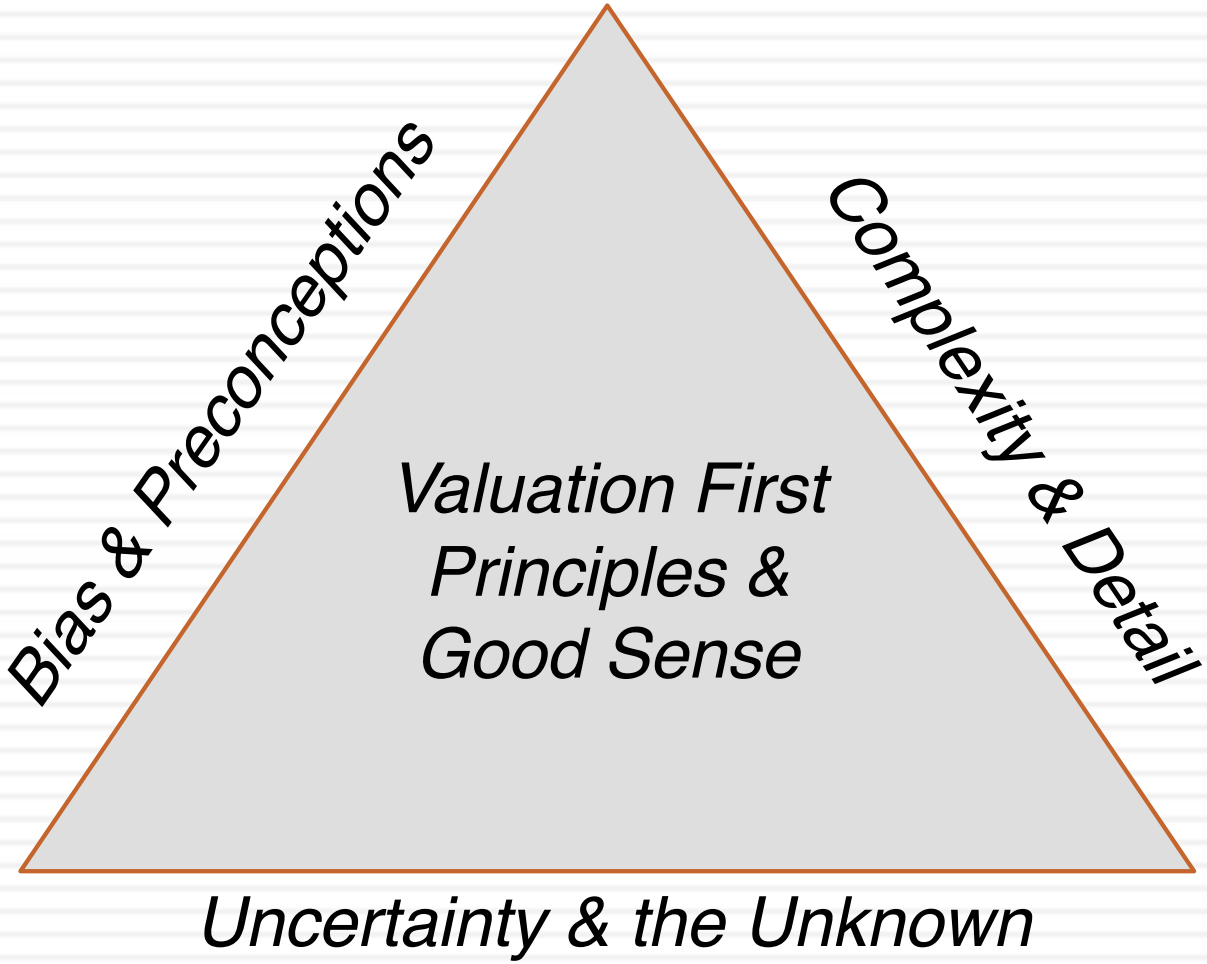


Theme 4: If you value something, you should be willing to act on it..

- There is very little theory in valuation and I am not sure what an academic valuation would like like and am not sure that I want to find out.
- Pragmatism, not purity: The end game is to estimate a value for an asset. I plan to get there, even if it means taking short cuts and making assumptions that would make purists blanch.
- To act on your valuations, you have to have faith in
  - In your own valuation judgments.
  - In markets: that prices will move towards your value estimates.

  That faith will have to be earned.

The Bermuda Triangle of Valuation



Valuing the Market

The ”One” Metric

- Investors are often in search of a single metric that will tell them whether a market is under or over valued, and consequently whether they should buying or selling holdings in that market.
- With equities, the metric that has been in use the longest is the PE ratio, modified in recent years to the CAPE, where earnings are normalized (by averaging over time) and sometimes adjusted for inflation.
  - That metric, though, has been signaling that stocks are over valued for most of the last decade, a ten-year period when stocks delivered blockbuster returns.
  - The failures of the signal have been variously attributed to low interest rates, accounting mis-measurement of earnings (especially at tech companies), and by some, to animal spirits.
- In this post, I offer an alternative, albeit a more complicated, metric that I believe not only offers a more comprehensive measure of pricing levels, but also a barometer of the ups and downs in the market in 2020.

The Price of Risk

Risk Premium	This is the "extra" return you demand for investing in a risky investment. It will be a function of (a) how risk averse you are, with premium increasing with risk aversion. (b) how much risk is perceive in the investment, with premium higher for riskier investments.
Risk free Rate	Expected return on an investment with guaranteed cash flows

The ERP on January 1, 2021

In 2020, COVID caused major drops in both earnings & cash return from 2019 levels

Expected earnings/cashflow growth in next 5 years
Earnings for next year based upon analyst estimates for 2021 and 10.15% growth in earnings from 2021-25, mostly a recovery from COVID drop in 2020.

Base year cash flow (last 12 mths)
Dividends (TTM): 58.89
+ Buybacks (TTM): 68.89
= Cash to investors (TTM): **127.78**

Actual numbers | Forecasted numbers

	2019	Last 12 months	2021	2022	2023	2024	2025	Terminal Year
Expected Earnings	$ 163.00	$123.35	138.55	152.62	168.11	185.18	203.98	205.88
Expected cash payout as % of earnings	89.76%	103.59%	89.09%	90.21%	91.33%	92.46%	93.58%	93.58%
Expected Dividends + Buybacks =	$ 146.31	$127.78	$123.43	$137.67	$153.54	$171.21	$190.88	192.66

Earnings and Cash flows grow @0.93% (set equal to risk free rate) a year forever.

S&P 500 on 1/1/21= **3756.07**

$$3756.07 = \frac{123.43}{(1+r)} + \frac{137.67}{(1+r)^2} + \frac{153.54}{(1+r)^3} + \frac{171.21}{(1+r)^4} + \frac{190.88}{(1+r)^5} + \frac{190.88\,(1.0093)}{(r-.0093)(1+r)^5}$$

The last term in this equation is the expected index level at the end of year 5 (capturing price appreciation)

Solve for r

r = Implied Expected Return on Stocks = 5.65%

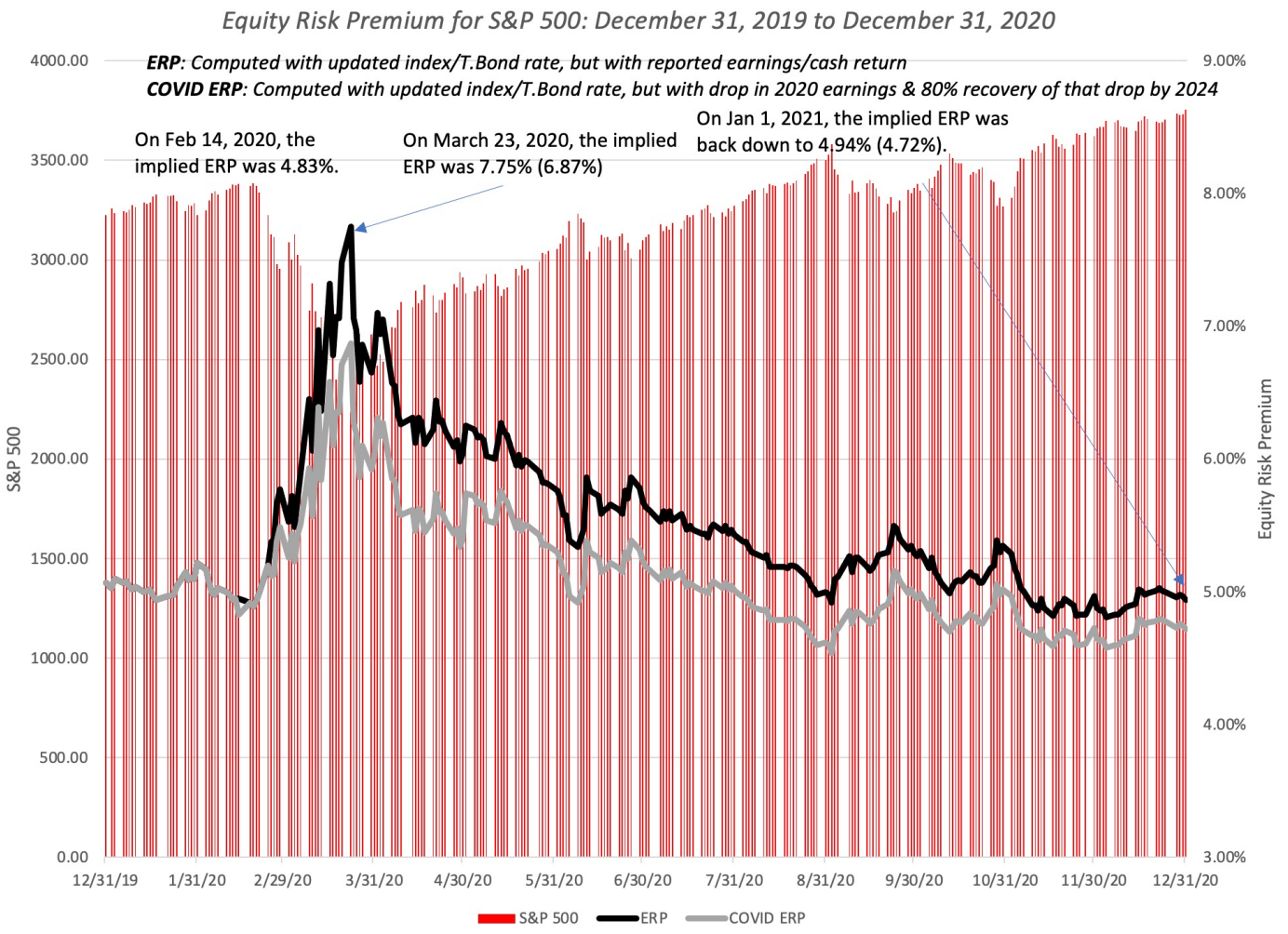
Minus

Risk free rate = T.Bond rate on 1/1/21= 0.93%

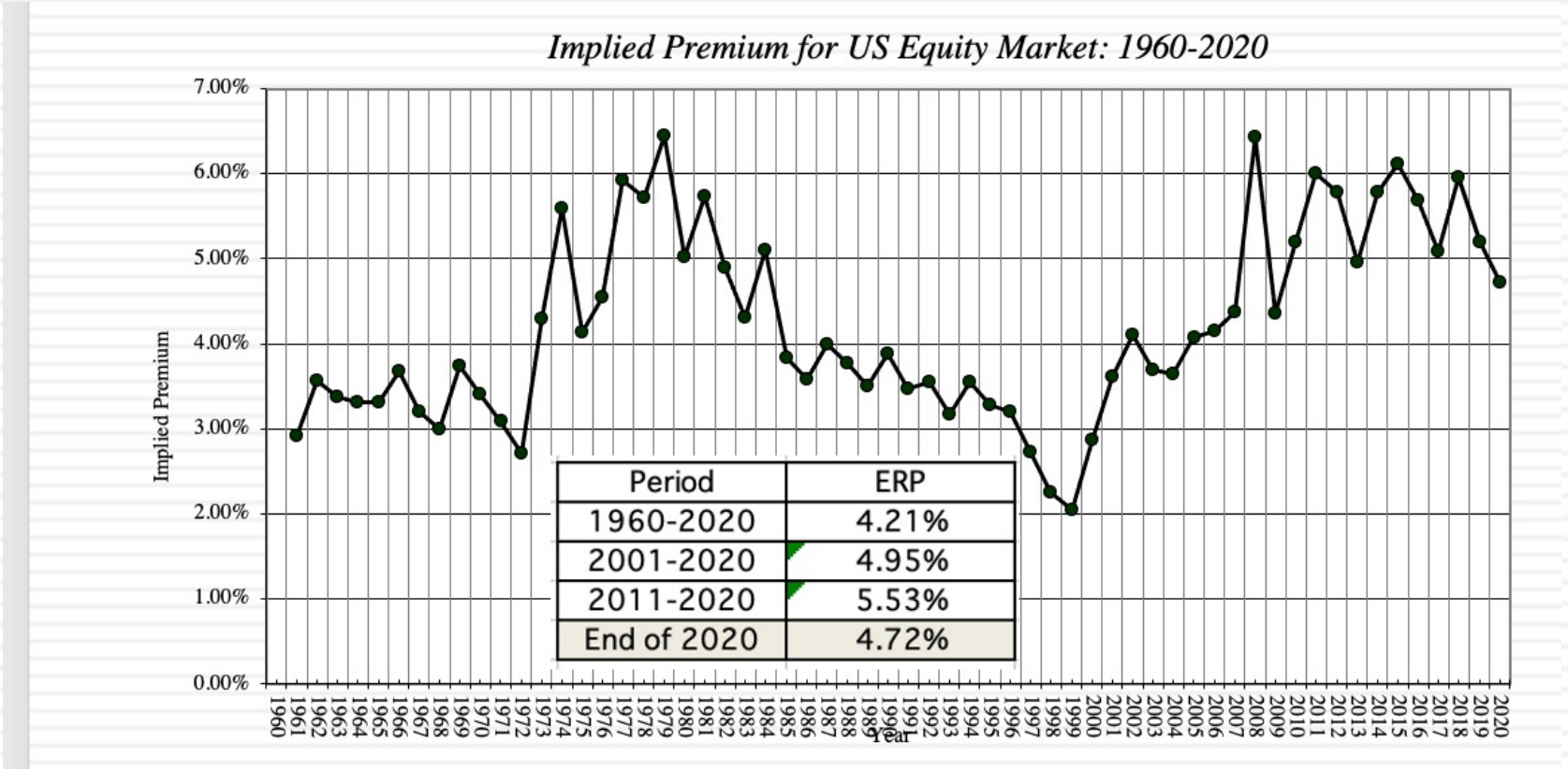
Equals

Implied Equity Risk Premium (1/1/21) = 5.65% - 0.93% = 4.72%

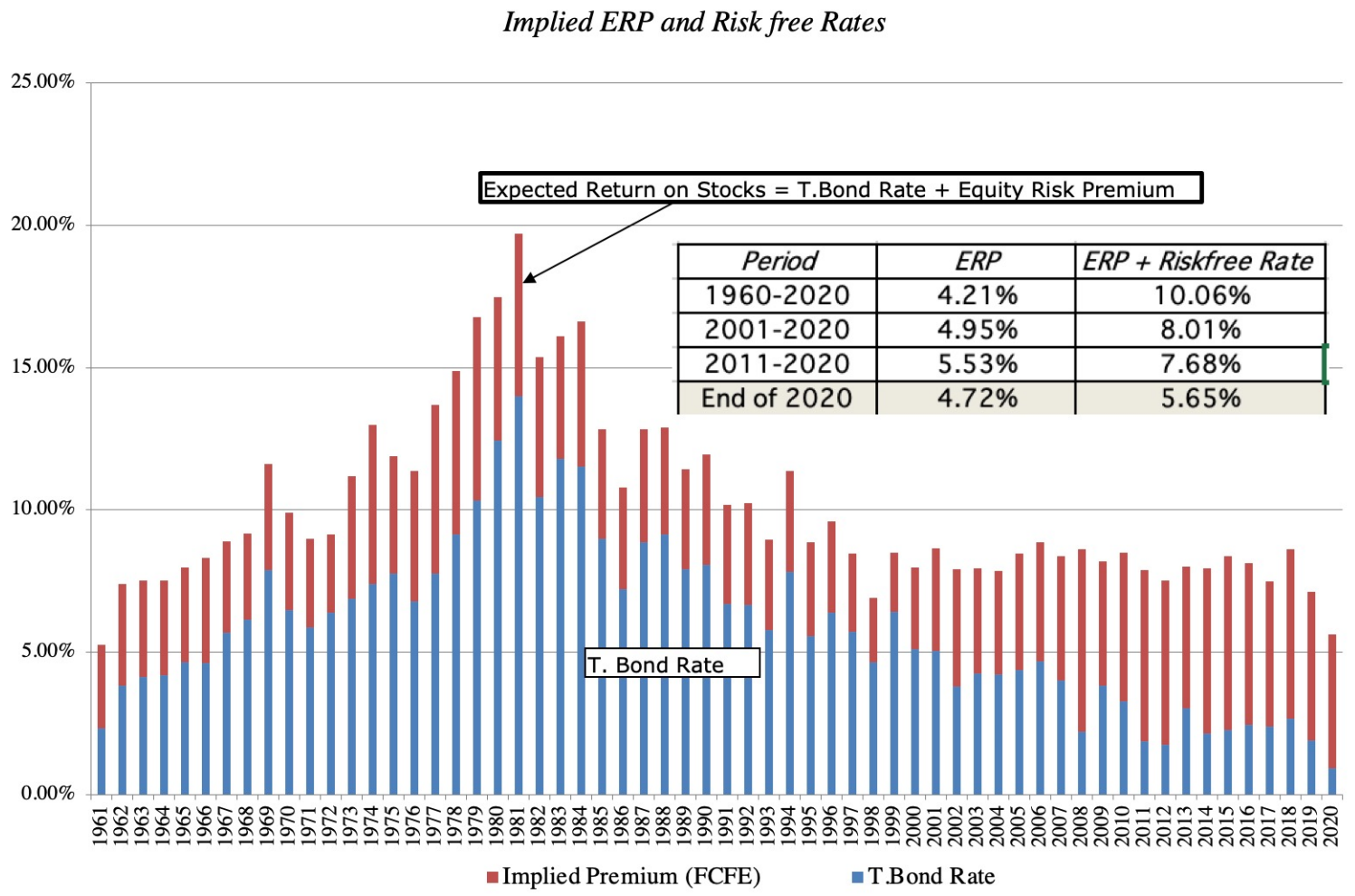
And the wild ride in 2020…



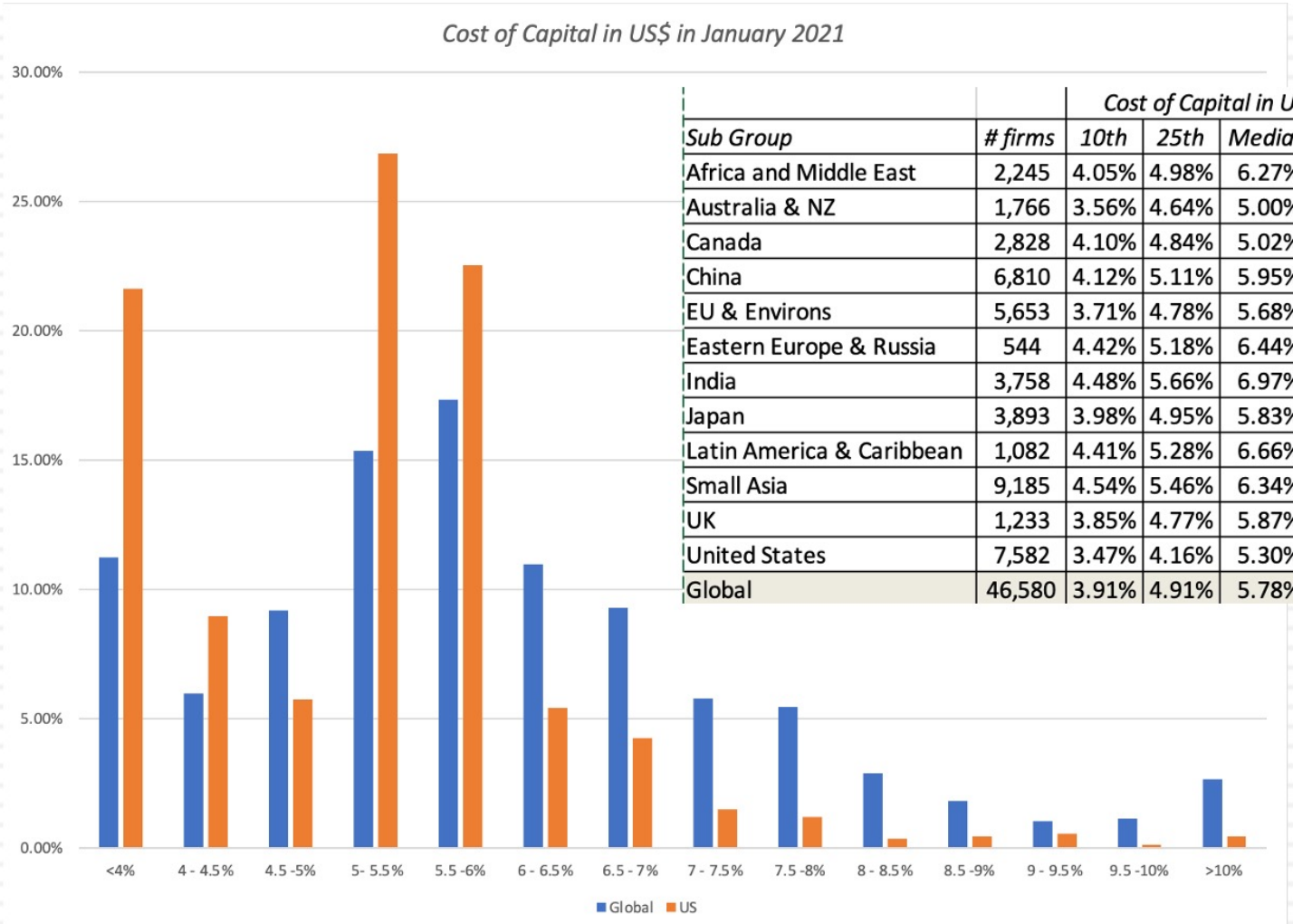
Comparison to History



But, there is a cautionary note….



Playing out in costs of capital



		Cost of Capital in US$: Percentiles				
Sub Group	*# firms*	*10th*	*25th*	*Median*	*75th*	*90th*
Africa and Middle East	2,245	4.05%	4.98%	6.27%	8.01%	10.14%
Australia & NZ	1,766	3.56%	4.64%	5.00%	5.33%	5.93%
Canada	2,828	4.10%	4.84%	5.02%	5.35%	5.98%
China	6,810	4.12%	5.11%	5.95%	6.64%	7.60%
EU & Environs	5,653	3.71%	4.78%	5.68%	6.72%	8.28%
Eastern Europe & Russia	544	4.42%	5.18%	6.44%	7.67%	8.71%
India	3,758	4.48%	5.66%	6.97%	7.69%	8.25%
Japan	3,893	3.98%	4.95%	5.83%	6.44%	7.03%
Latin America & Caribbean	1,082	4.41%	5.28%	6.66%	8.29%	10.92%
Small Asia	9,185	4.54%	5.46%	6.34%	7.51%	8.94%
UK	1,233	3.85%	4.77%	5.87%	6.37%	6.81%
United States	7,582	3.47%	4.16%	5.30%	5.73%	6.32%
Global	46,580	3.91%	4.91%	5.78%	6.73%	7.90%

To value the market…

- Earnings on the index: You cannot value a market based upon last year's earnings (though many do so). Investing is about the future, and uncomfortable as it makes you, you have to make estimates for the future. With an index like the S&P 500, you can even outsource these estimates, by looking at consensus forecasts from analysts tracking the index.
- Cash returned, relative to earnings: Since it is cash returned to stockholders that drives value, you also have to make judgments on what percent of earnings will be returned to stockholders, either in dividends or buybacks. To this, you can look to history, but recognize that it is also a function of the confidence that companies have about the future, with more confidence leading to higher cash being returned.
- Risk free rates over time: While it is generally not a good idea to play interest rate forecaster, we are in unusual times, especially because your views on future growth in the economy are intertwined with what will happen to risk free rates.
- An acceptable ERP: As I noted in the last section, equity risk premiums have been volatile over time, and particularly so in years in 2020. The equity risk premium, added to the risk free rate, will determine what you need stock returns to be, to break even on a risk-adjusted basis.

My S&P 500 valuation on Jan 1, 2021

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 garudally 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**	*Present value of expected cash flows & terminal value*					
Intrinsic Trailing PE =	**19.86**	*Based upon estimated earnings for 2020*					
Intrinsic CAPE =	**29.49**	*Based upon 10-year average earnings, adjusted for inflation*					
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 freee rate and a ROE of 16.20% (2019 estimate for the S&P 500):
Payout ratio = 1 - g/ ROE

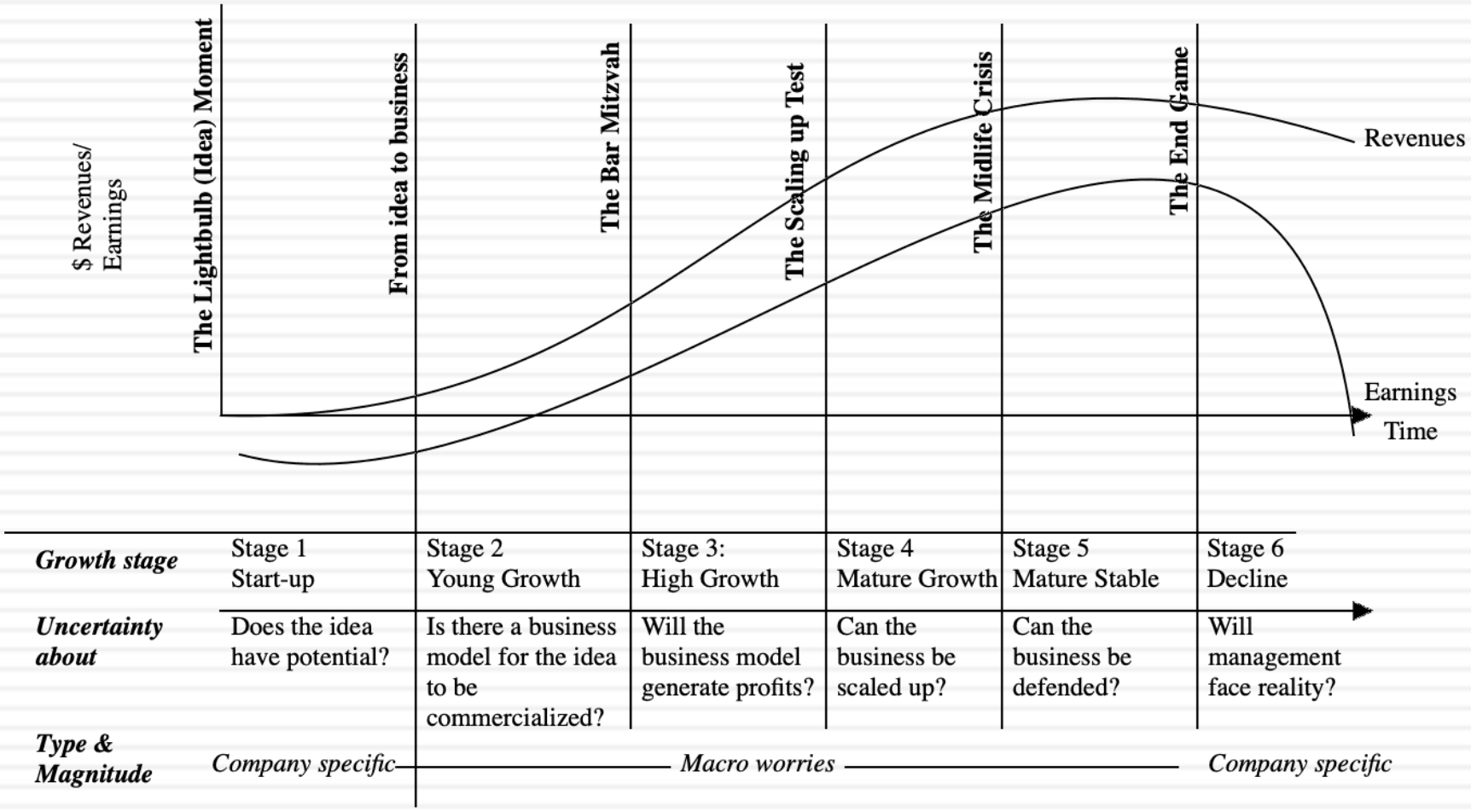
Required Return = T.Bond Rate + ERP. I am using a 5% ERP, higher than the 4.21% average from 1960-2020, but lower than the 5.5% average in the last decade.

The Drivers.. And Scenarios

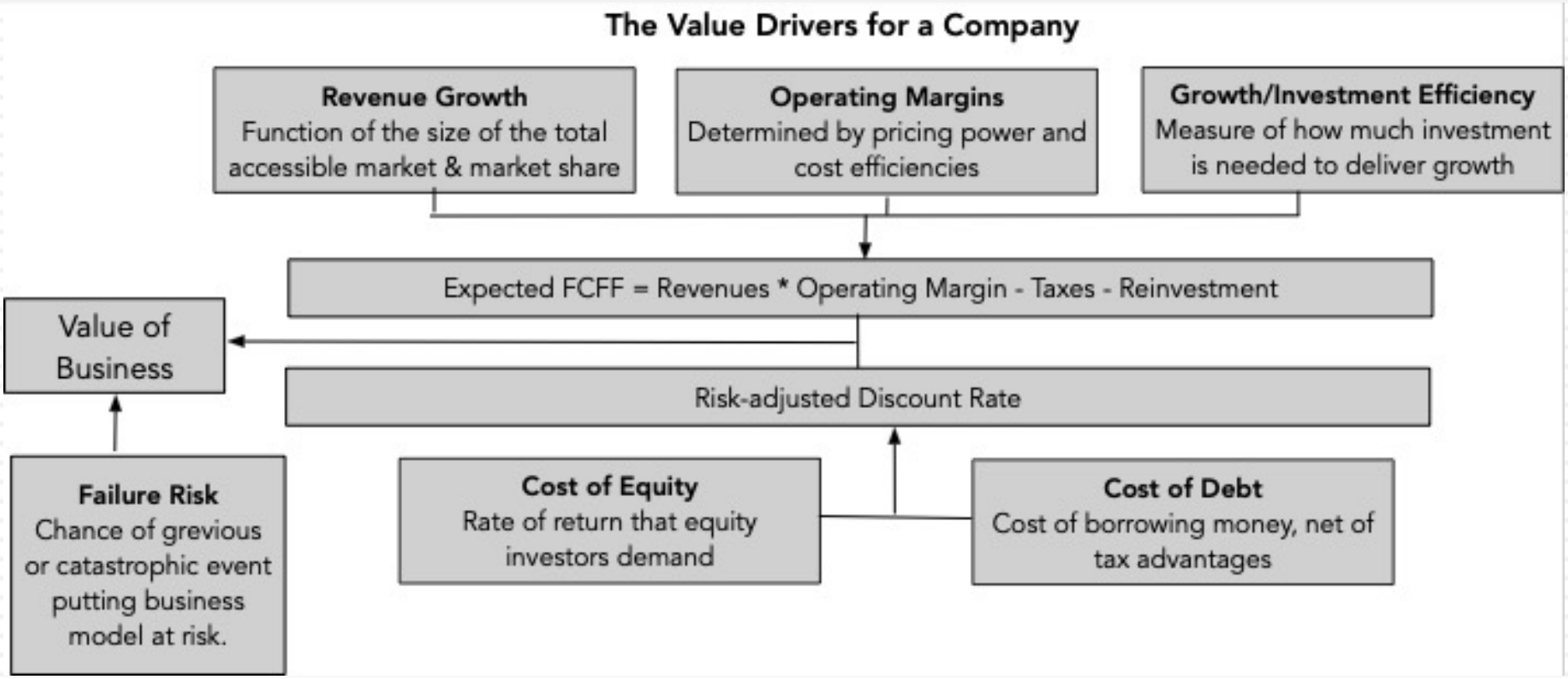
	Economy strong	Economy weak
Interest rates stay low	Goldilocks market, with interest rates staying low (1%), earnings above expectations (+10%) and ERP drifting back to historic norms (4.2%). Index is undervalued by 19.83%	Big Bear market, with interest rates low (1%), earnings below expectations (-5%)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

Of Disruption and Value

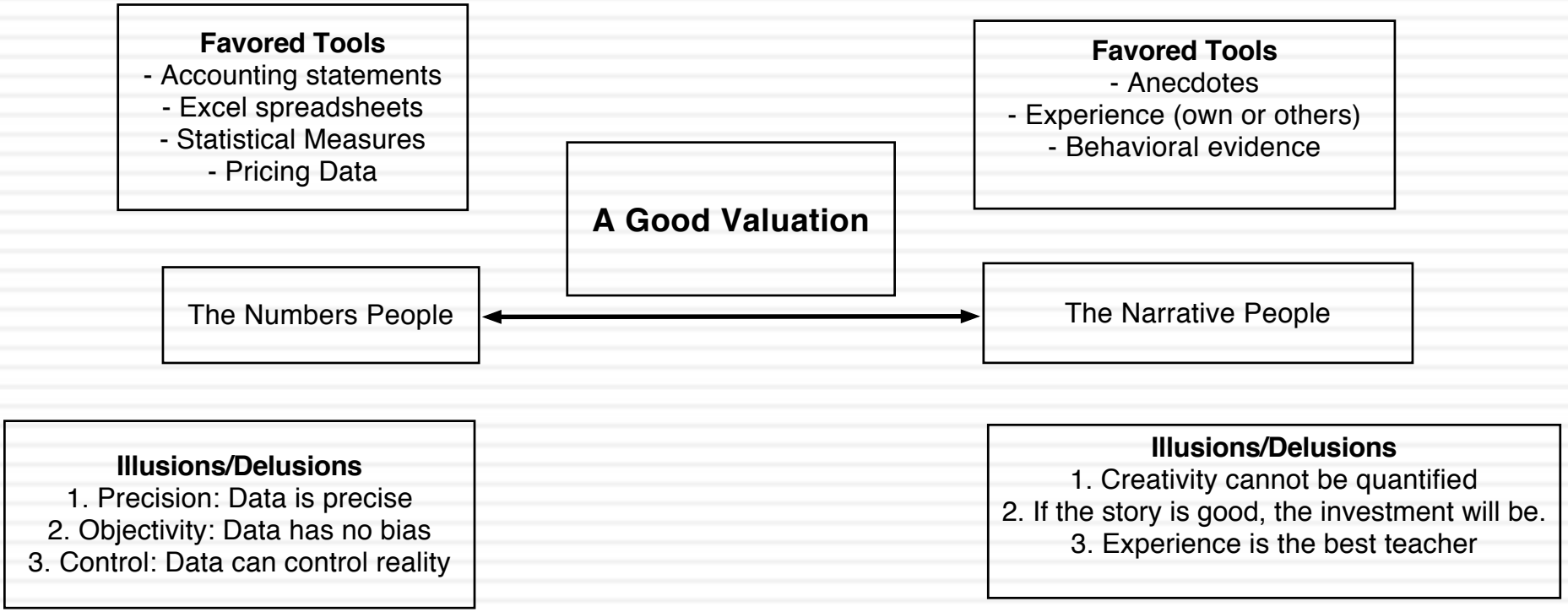
A Life Cycle View of Uncertainty



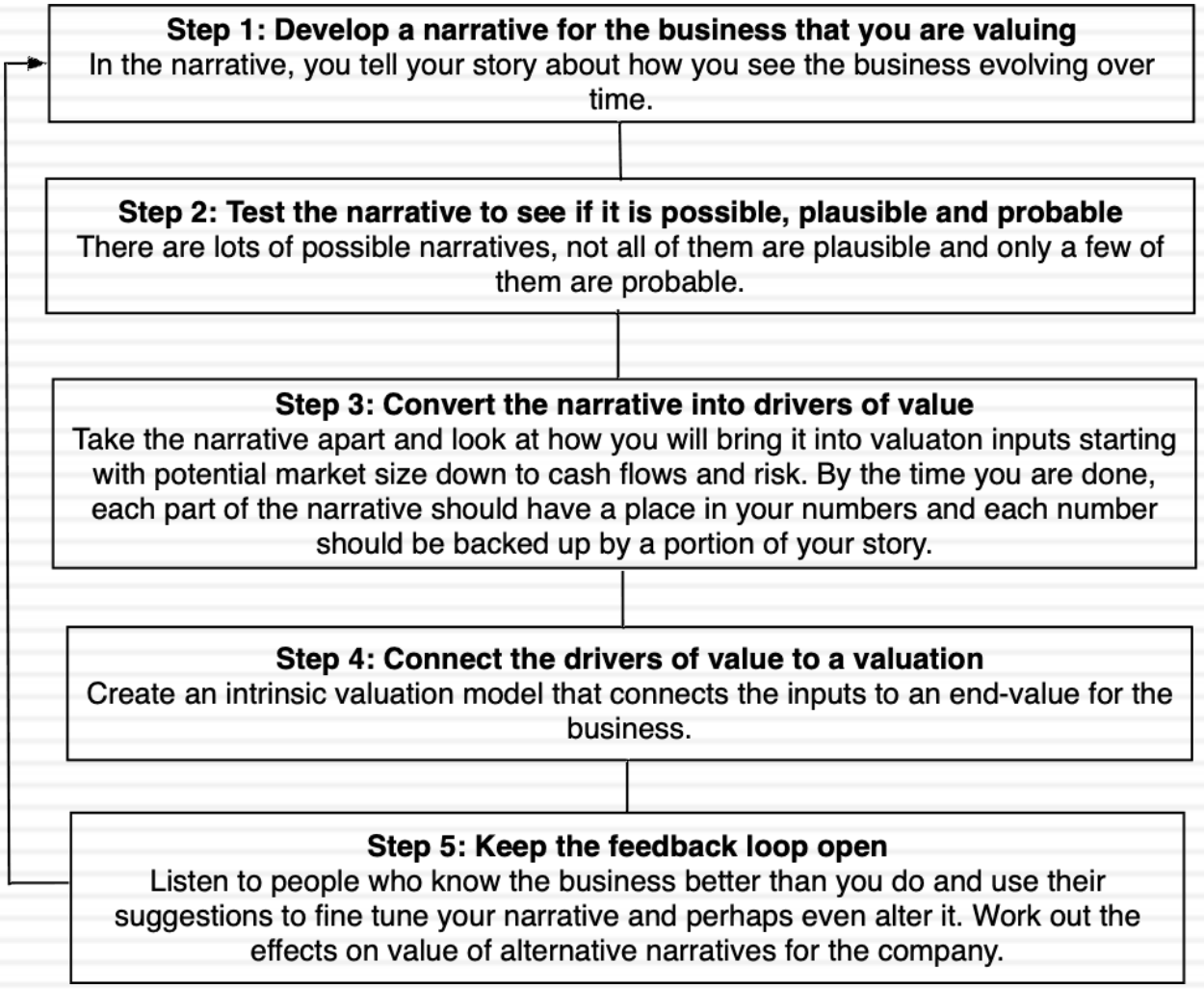
Value: The Drivers



Healthy Valuation = Story + Numbers

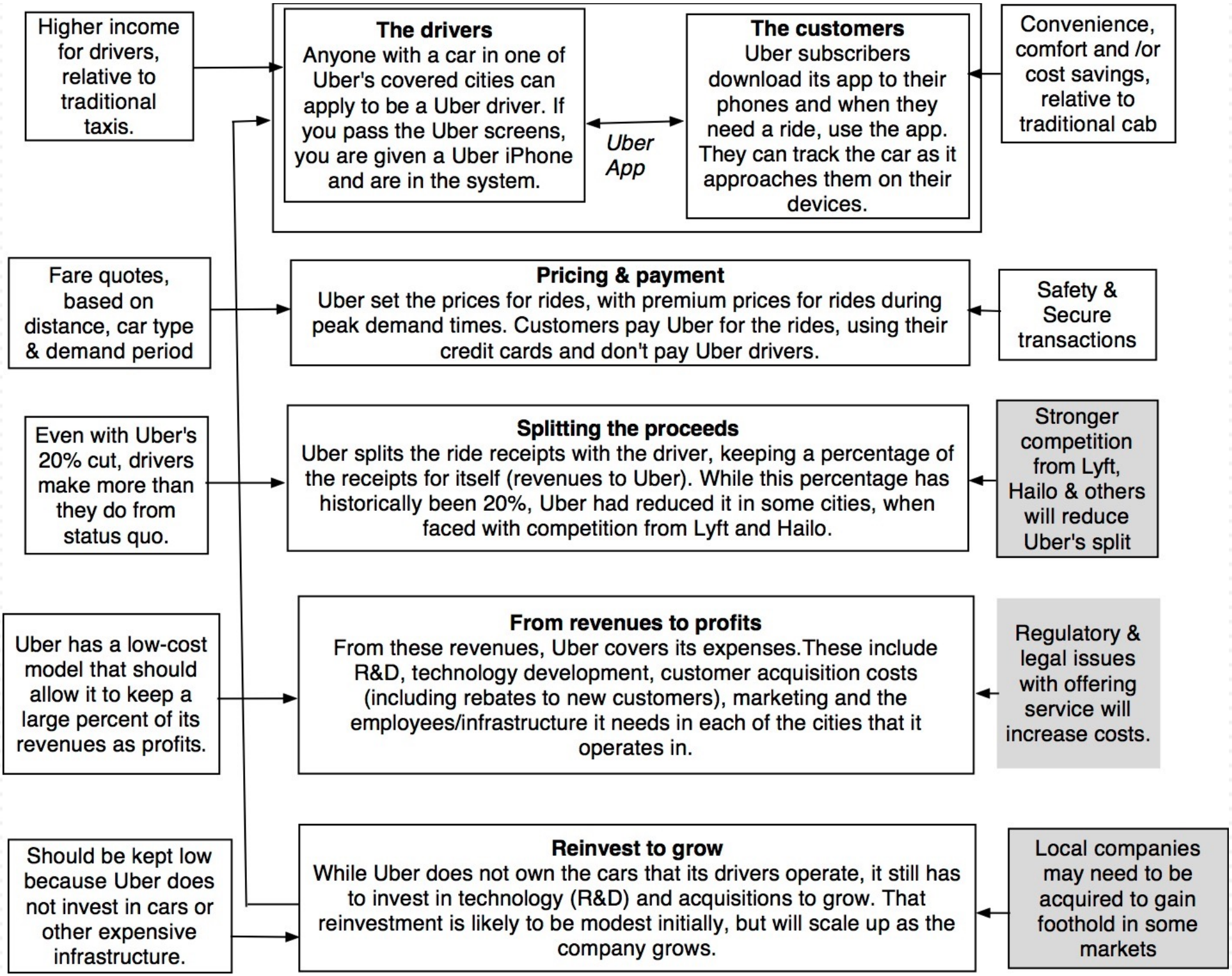


The steps in valuation



Step 1: Survey the landscape

- Every valuation starts with a narrative, a story that you see unfolding for your company in the future.
- In developing this narrative, you will be making assessments of
  - Your company (its products, its management and its history.
  - The market or markets that you see it growing in.
  - The competition it faces and will face.
  - The macro environment in which it operates.


Higher income for drivers, relative to traditional taxis.
The drivers
Anyone with a car in one of Uber's covered cities can apply to be a Uber driver. If you pass the Uber screens, you are given a Uber iPhone and are in the system.
Uber App
The customers
Uber subscribers download its app to their phones and when they need a ride, use the app. They can track the car as it approaches them on their devices.
Convenience, comfort and /or cost savings, relative to traditional cab
Fare quotes, based on distance, car type & demand period
Pricing & payment
Uber set the prices for rides, with premium prices for rides during peak demand times. Customers pay Uber for the rides, using their credit cards and don't pay Uber drivers.
Safety & Secure transactions
Even with Uber's 20% cut, drivers make more than they do from status quo.
Splitting the proceeds
Uber splits the ride receipts with the driver, keeping a percentage of the receipts for itself (revenues to Uber). While this percentage has historically been 20%, Uber had reduced it in some cities, when faced with competition from Lyft and Hailo.
Stronger competition from Lyft, Hailo & others will reduce Uber's split
Uber has a low-cost model that should allow it to keep a large percent of its revenues as profits.
From revenues to profits
From these revenues, Uber covers its expenses.These include R&D, technology development, customer acquisition costs (including rebates to new customers), marketing and the employees/infrastructure it needs in each of the cities that it operates in.
Regulatory & legal issues with offering service will increase costs.
Should be kept low because Uber does not invest in cars or other expensive infrastructure.
Reinvest to grow
While Uber does not own the cars that its drivers operate, it still has to invest in technology (R&D) and acquisitions to grow. That reinvestment is likely to be modest initially, but will scale up as the company grows.
Local companies may need to be acquired to gain foothold in some markets

Step 2: Create a narrative for the future

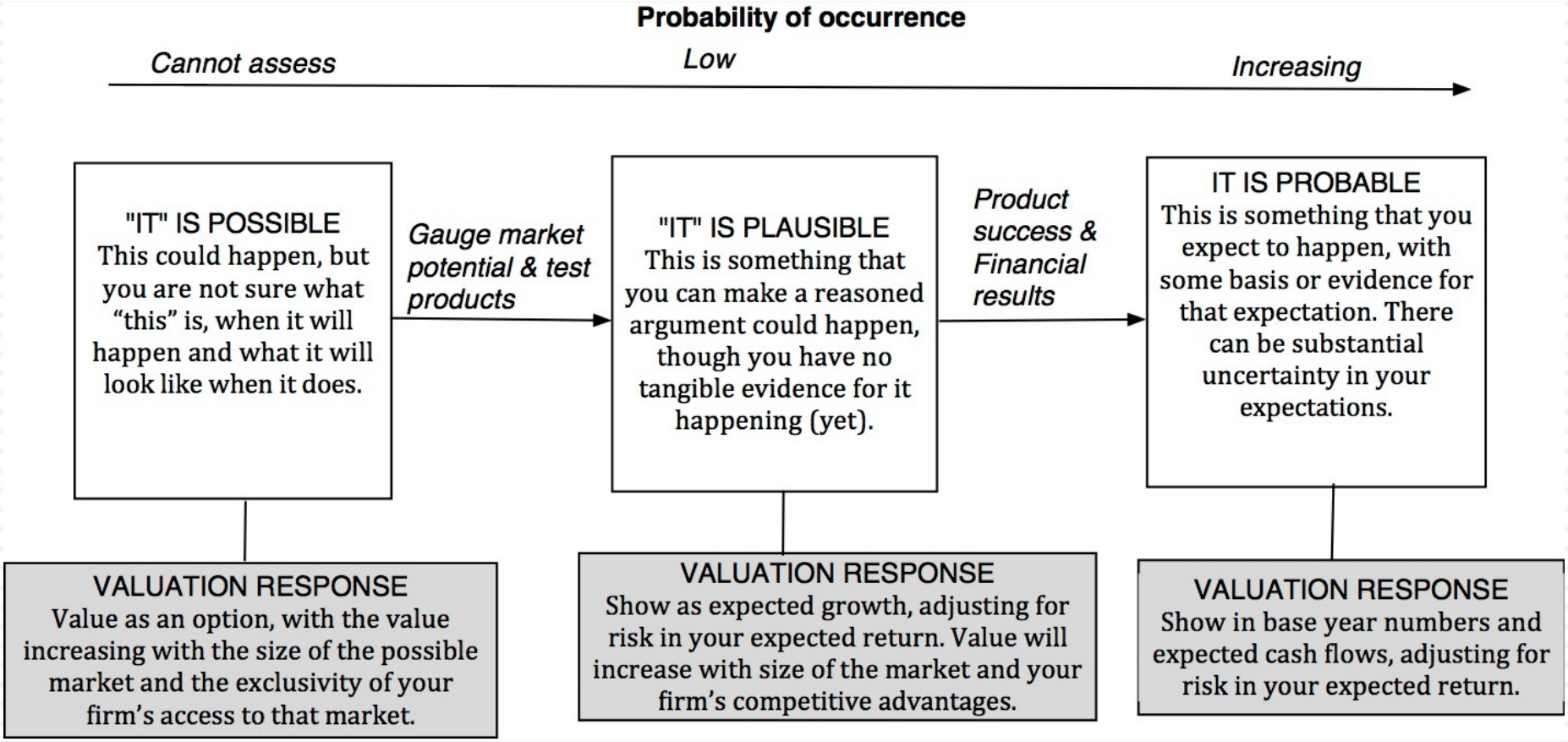
- Every valuation starts with a narrative, a story that you see unfolding for your company in the future.
- In developing this narrative, you will be making assessments of your company (its products, its management), the market or markets that you see it growing in, the competition it faces and will face and the macro environment in which it operates.
  - Rule 1: Keep it simple.
  - Rule 2: Keep it focused.

The Uber Narrative

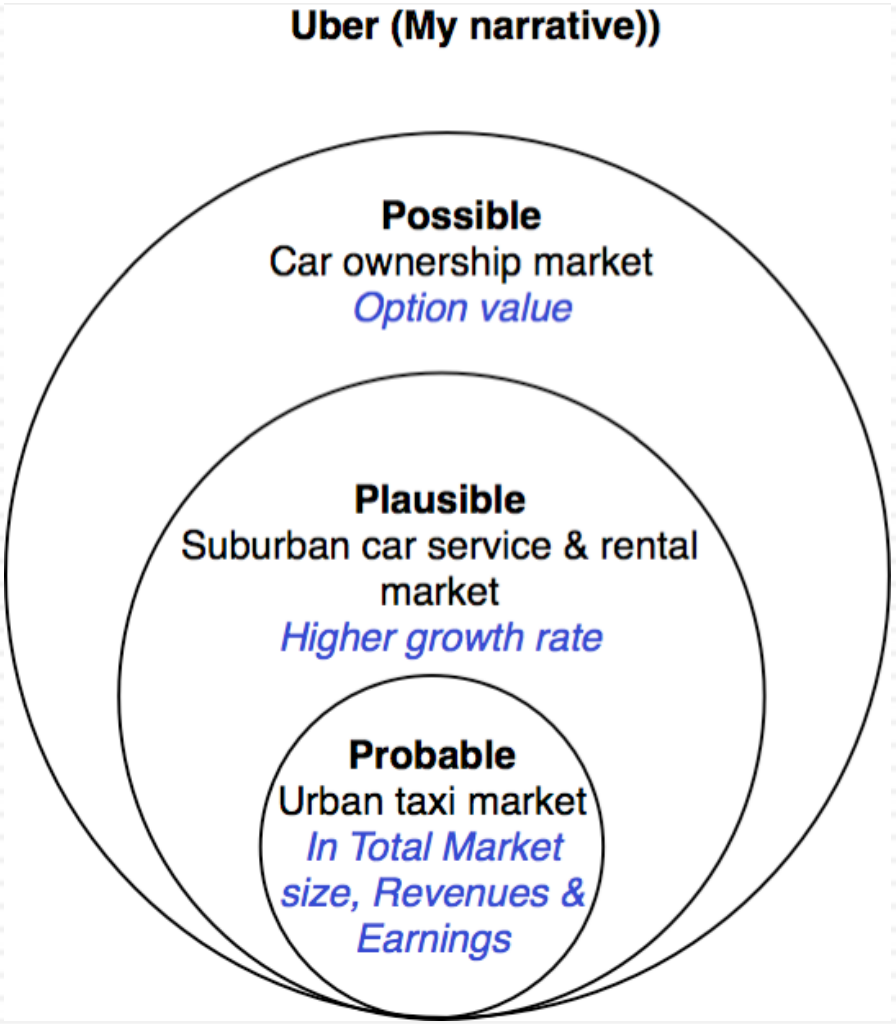
In June 2014, my initial narrative for Uber was that it would be

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.

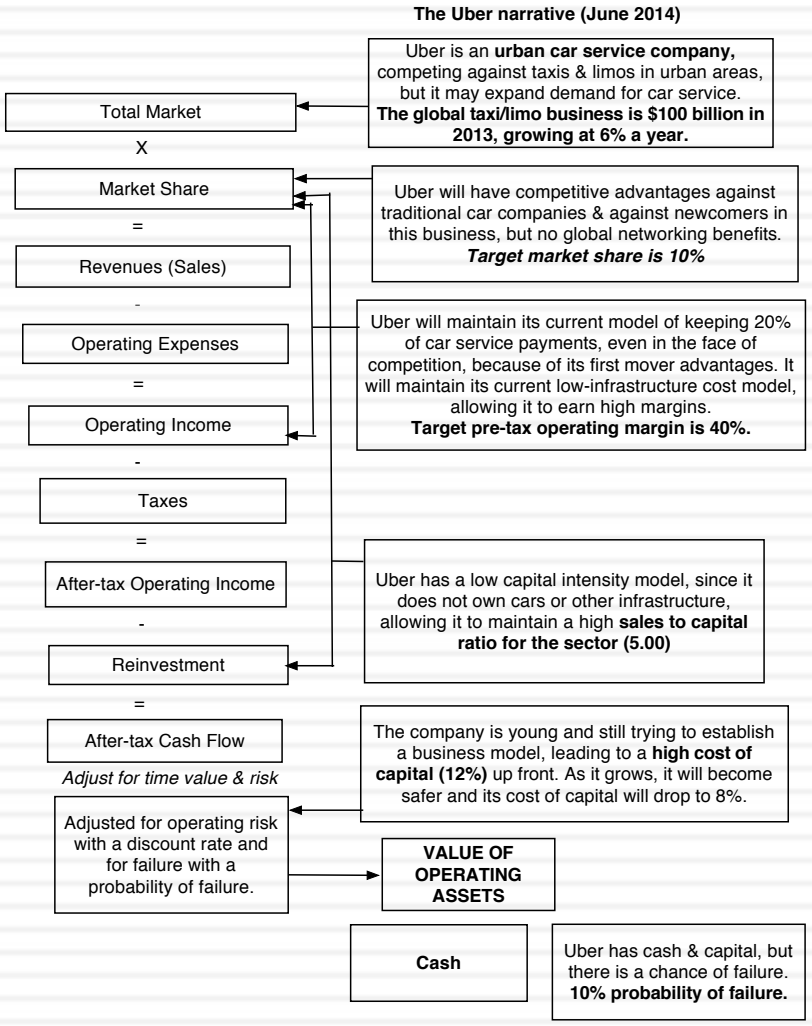
Step 3: Check the narrative against history, economic first principles & common sense



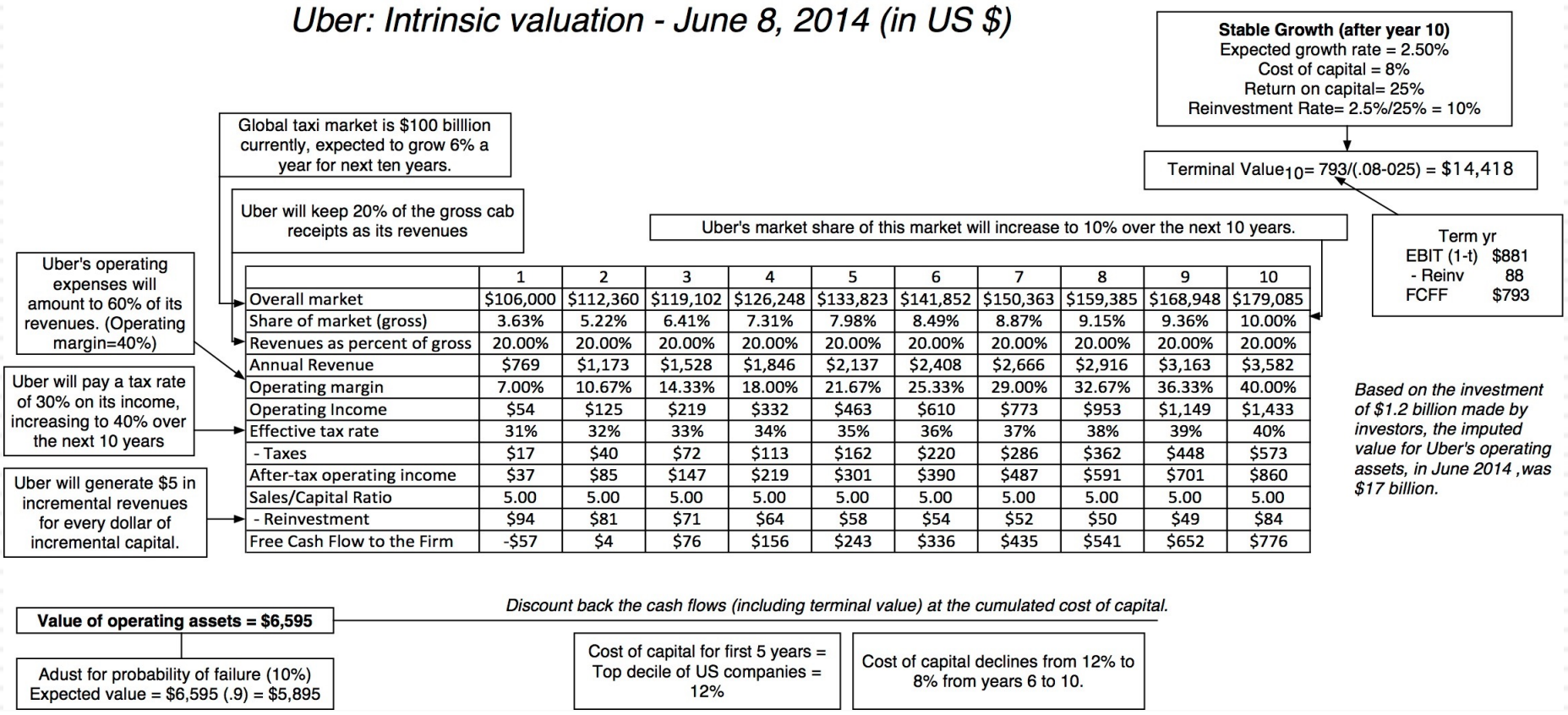
Uber: Possible, Plausible and Probable



Step 4: Connect your narrative to key drivers of value



Step 4: Value the company (Uber)



	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

Step 5: Keep the feedback loop open

- When you tell a story about a company (either explicitly or implicitly), it is natural to feel attached to that story and to defend it against all attacks. Nothing can destroy an investor more than hubris.
- Being open to other views about a company is not easy, but here are some suggestions that may help:
  - Face up to the uncertainty in your own estimates of value.
  - Present the valuation to people who don't think like you do.
  - Create a process where people who disagree with you the most have a say.
  - Provide a structure where the criticisms can be specific and pointed, rather than general.

The Uber Feedback Loop: Bill Gurley

1. Not just car service company.: Uber is a car company, not just a car service company, and there may be a day when consumers will subscribe to a Uber service, rather than own their own cars. It could also expand into logistics, i.e., moving and transportation businesses.
2. Not just urban: Uber can create new demands for car service in parts of the country where taxis are not used (suburbia, small towns).
3. Global networking benefits: By linking with technology and credit card companies, Uber can have global networking benefits.

Valuing Bill Gurley's Uber narrative

	Uber (Gurley)	*Uber (Gurley Mod)*	*Uber (Damodaran)*
Narrative	Uber will expand the car service market substantially, bringing in mass transit users & non-users from the suburbs into the market, and use its networking advantage to gain a dominant market share, while maintaining its revenue slice at 20%.	Uber will expand the car service market substantially, bringing in mass transit users & non-users from the suburbs into the market, and use its networking advantage to gain a dominant market share, while cutting prices and margins (to 10%).	Uber will expand the car service market moderately, primarily in urban environments, and use its competitive advantages to get a significant but not dominant market share and maintain its revenue slice at 20%.
Total Market	$300 billion, growing at 3% a year	$300 billion, growing at 3% a year	$100 billion, growing at 6% a year
Market Share	40%	40%	10%
Uber's revenue slice	20%	10%	20%
Value for Uber	$53.4 billion + Option value of entering car ownership market ($10 billion+)	$28.7 billion + Option value of entering car ownership market ($6 billion+)	$5.9 billion + Option value of entering car ownership market ($2-3 billion)

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.

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

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

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%