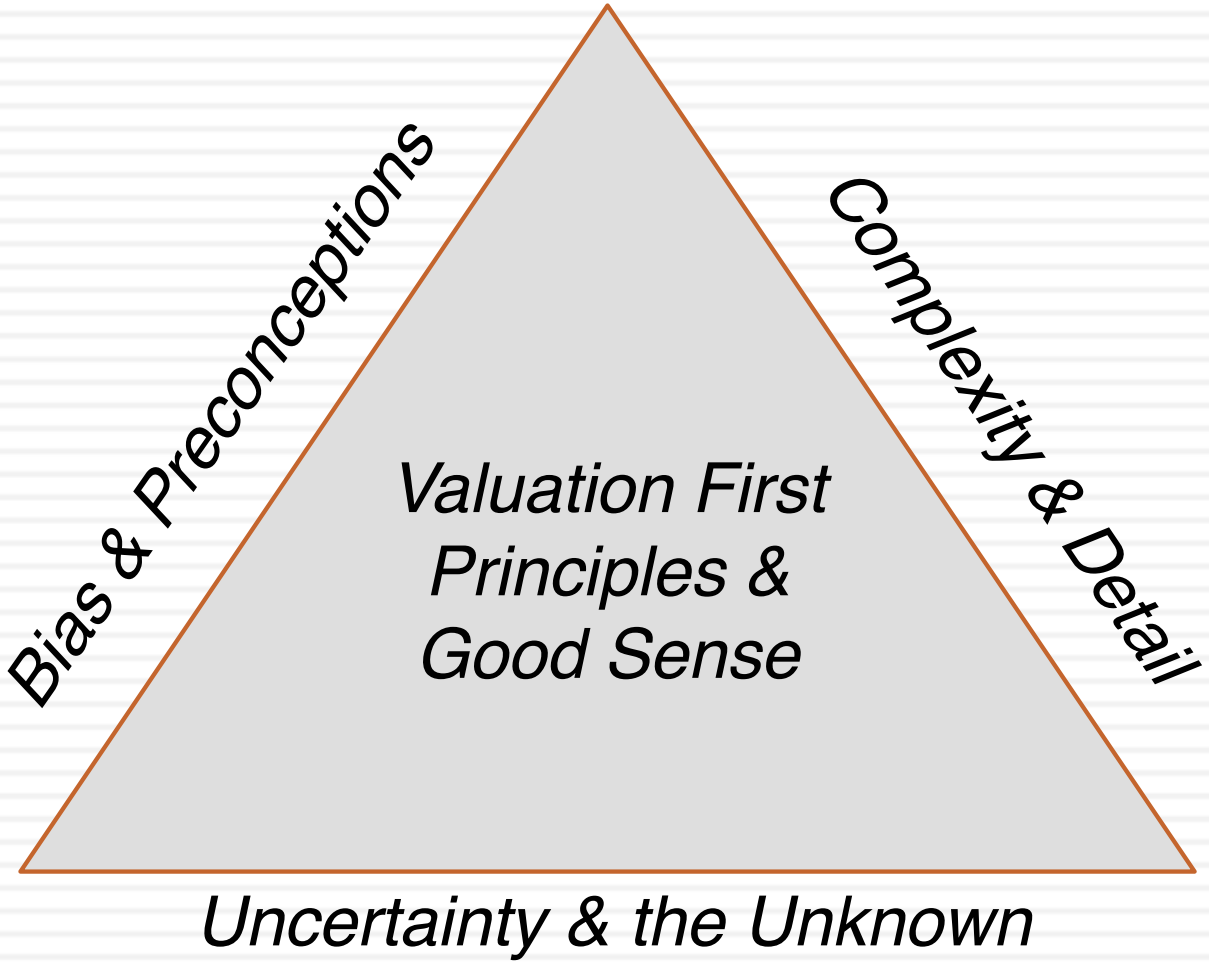
NARRATIVE AND NUMBERS: LIGHT IN THE DARKNESS!

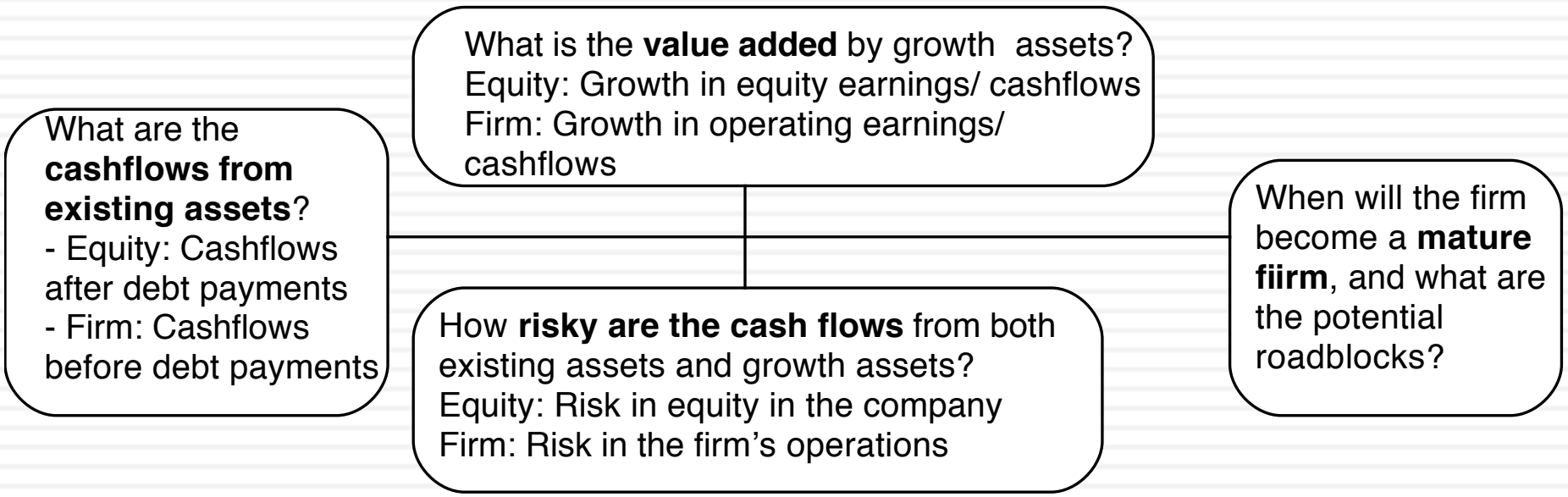
When in trouble, go back to basics!

The Lead In

The Bermuda Triangle of Valuation



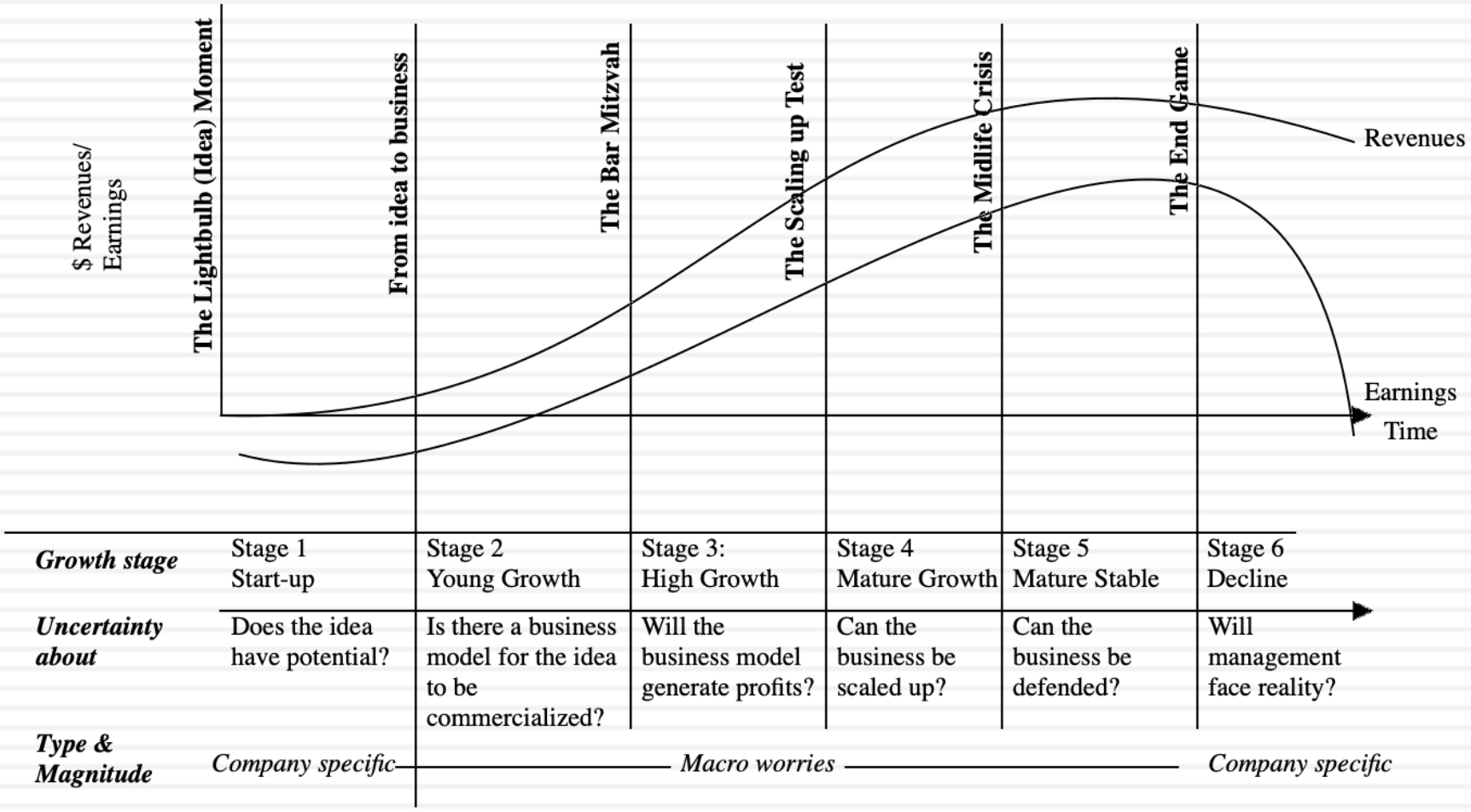
Valuation Uncertainty



The sources of uncertainty

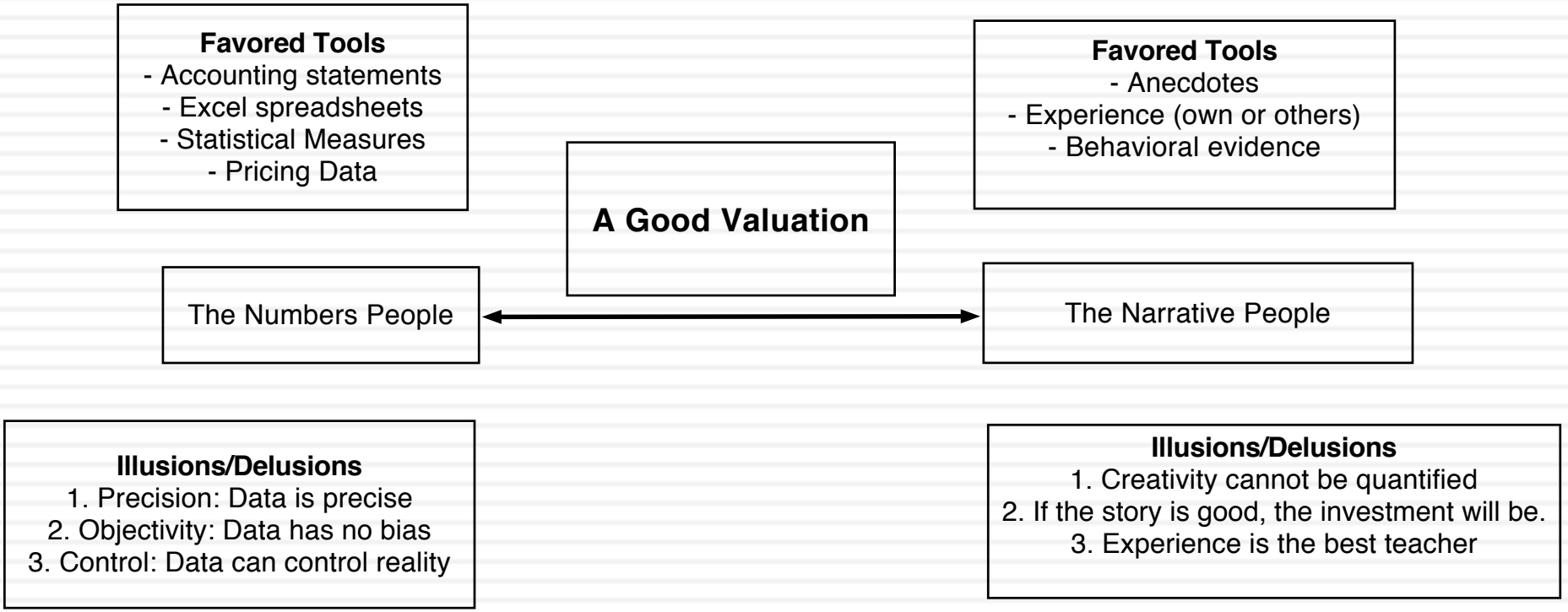
- Estimation versus Economic uncertainty
  - Estimation uncertainty reflects the possibility that you could have the "wrong model" or estimated inputs incorrectly within this model.
  - Economic uncertainty comes the fact that markets and economies can change over time and that even the best medals will fail to capture these unexpected changes.
- Micro uncertainty versus Macro uncertainty
  - Micro uncertainty refers to uncertainty about the potential market for a firm's 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.
- Discrete versus continuous uncertainty
  - Discrete risk: Risks that lie dormant for periods but show up at points in time. (Examples: A drug working its way through the FDA pipeline may fail at some stage of the approval process or a company in Venezuela may be nationalized)
  - Continuous risk: Risks changes in interest rates or economic growth occur continuously and affect value as they happen.

A Life Cycle View

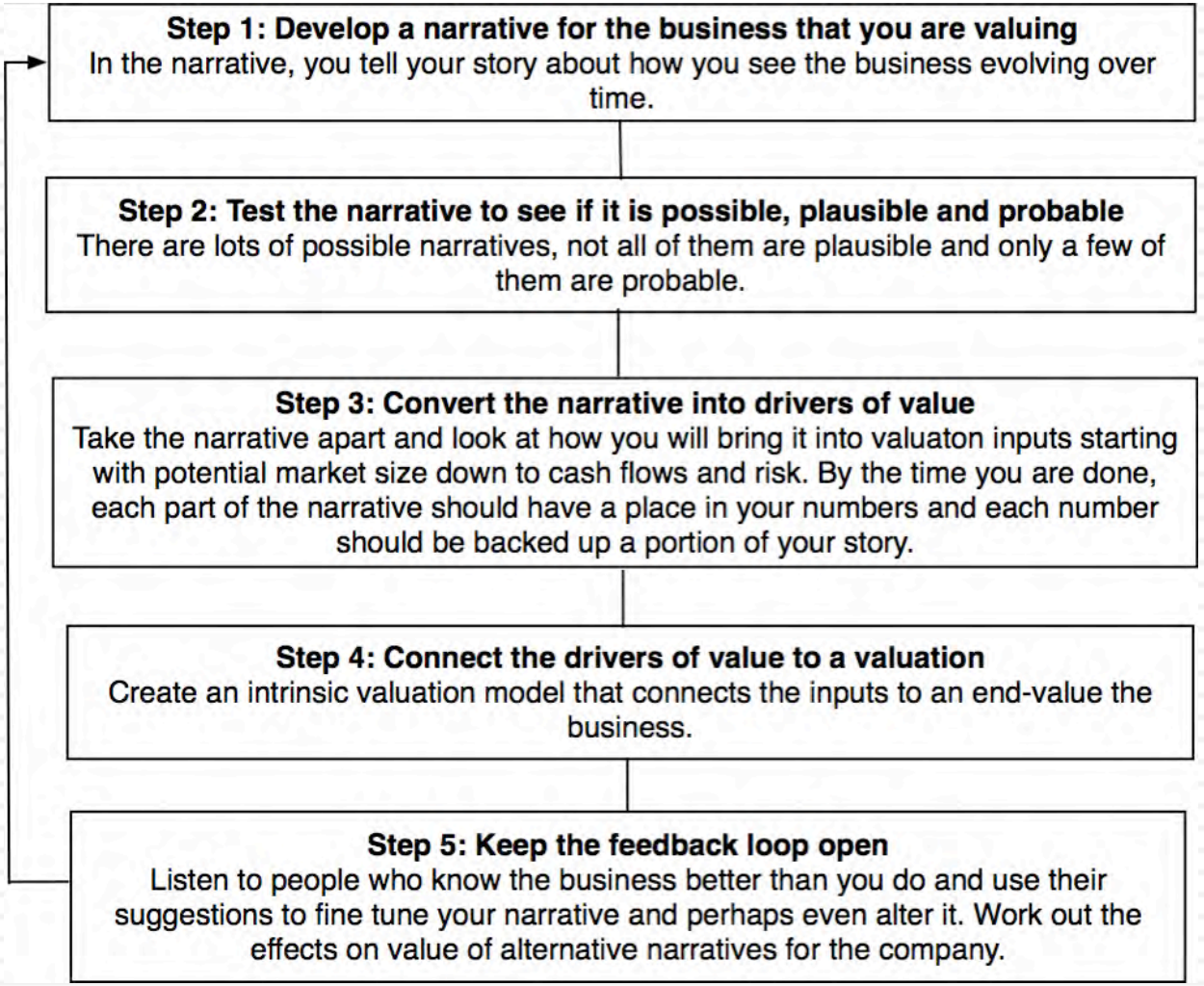


Narrative and Numbers: Mechanics

Healthy Valuation

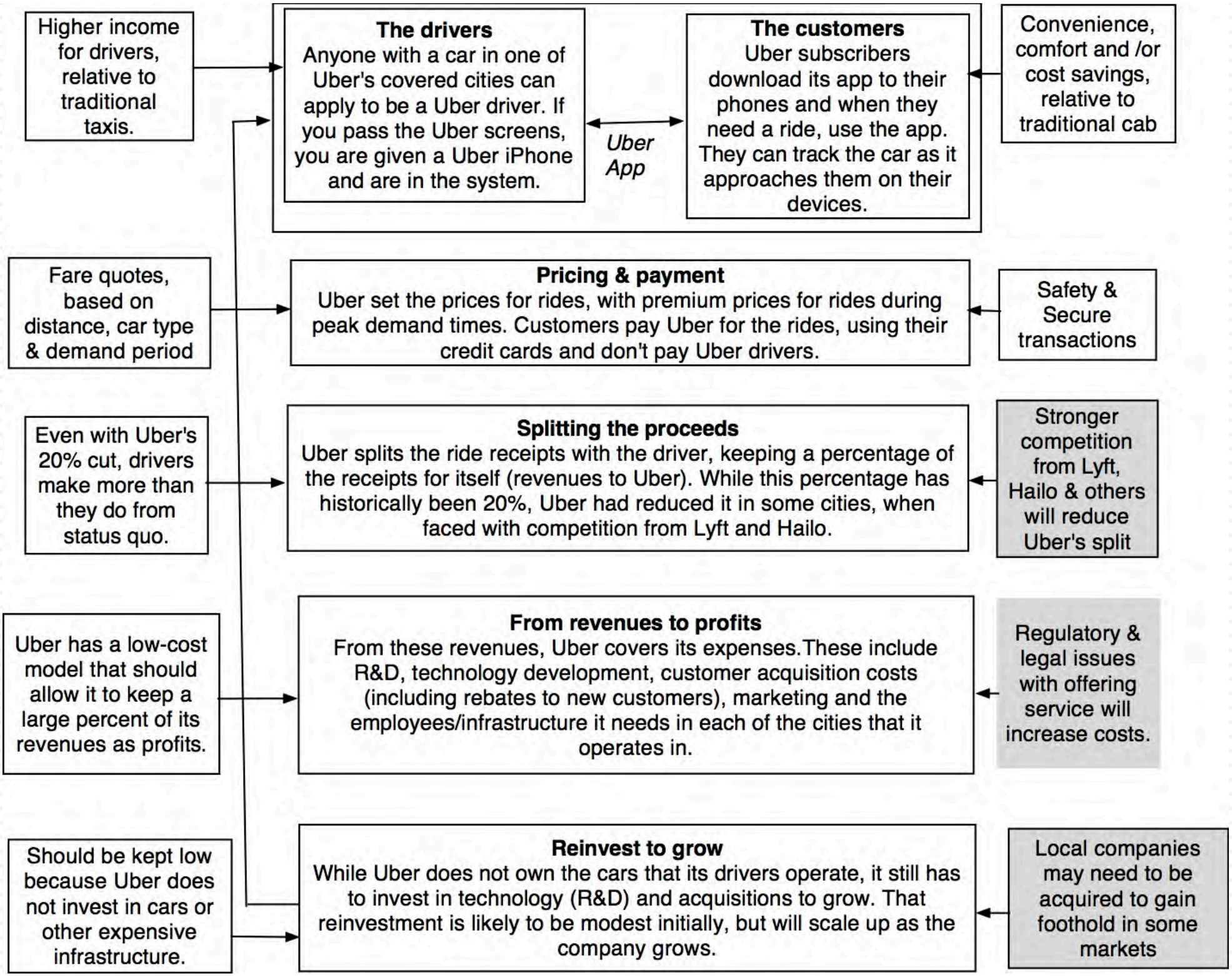


The steps in valuation



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

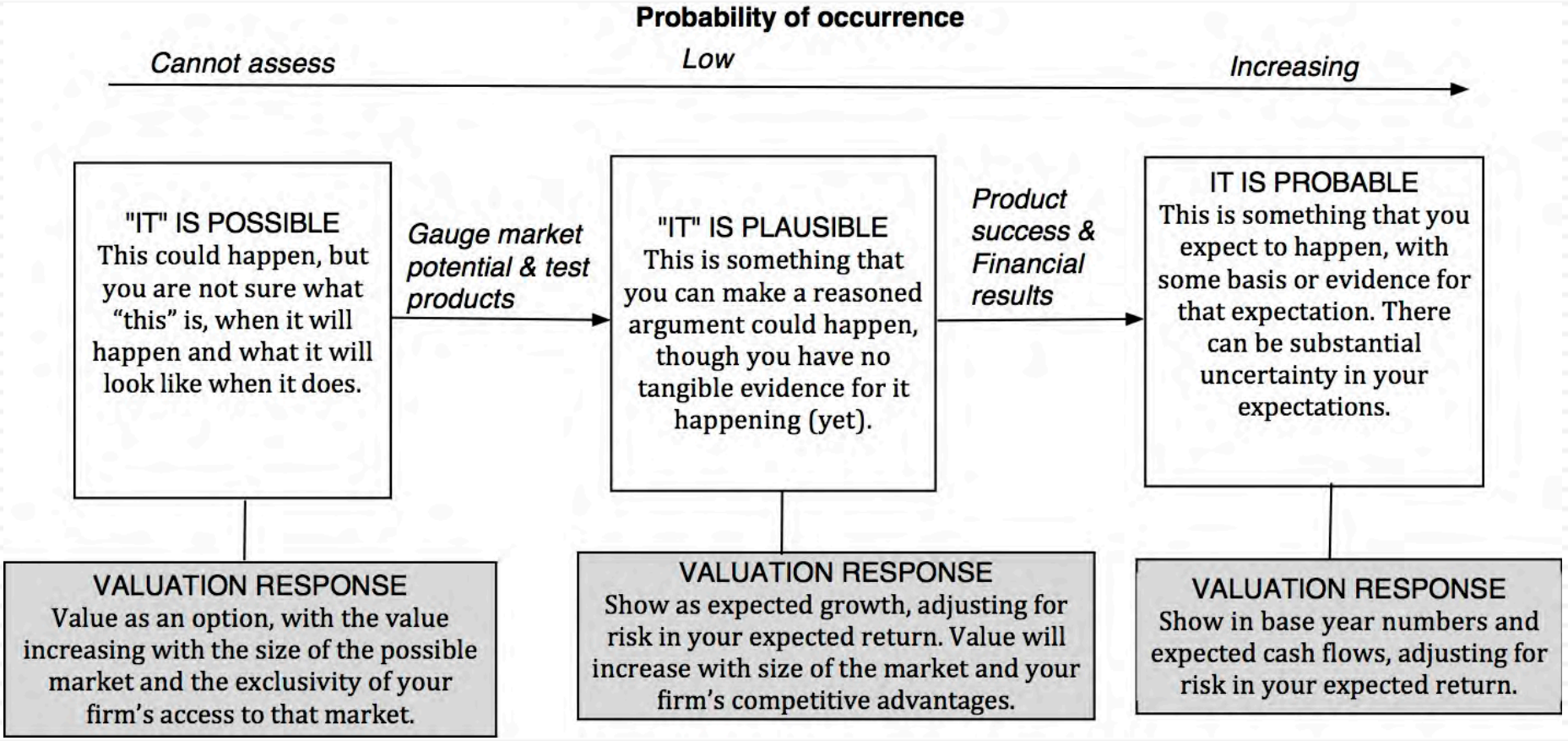
- Every valuation starts with a narrative, a story that you see unfolding for your company in the future.
- In developing this narrative, you will be making assessments of your company (its products, its management), the market or markets that you see it growing in, the competition it faces and will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



The Impossible, The Implausible and the Improbable

The Impossible

Bigger than the economy
Assuming Growth rate for company in perpetuity> Growth rate for economy

Bigger than the total market
Allowing a company's revenues to grow so much that it has more than a 100% market share of whatever business it is in.

Profit margin > 100%
Assuming earnings growth will exceeds revenue growth for a long enough period, and pushing margins above 100%

Depreciation without cap ex
Assuming that depreciation will exceed cap ex in perpetuity.

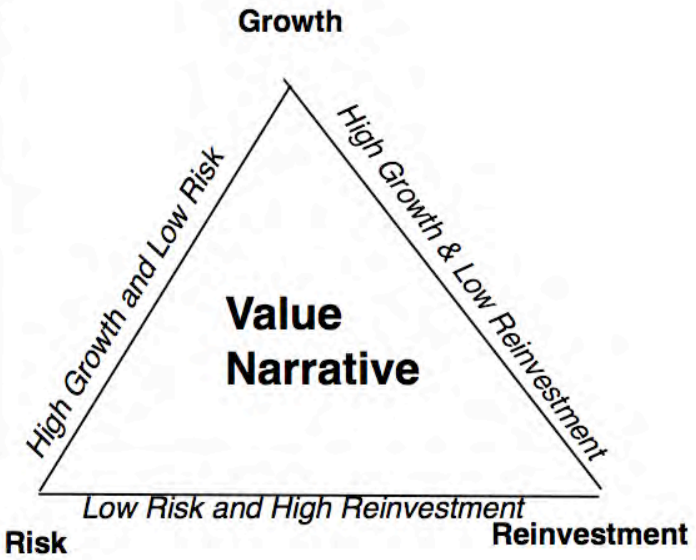
The Implausible

Growth without reinvestment
Assuming growth forever without reinvestment.

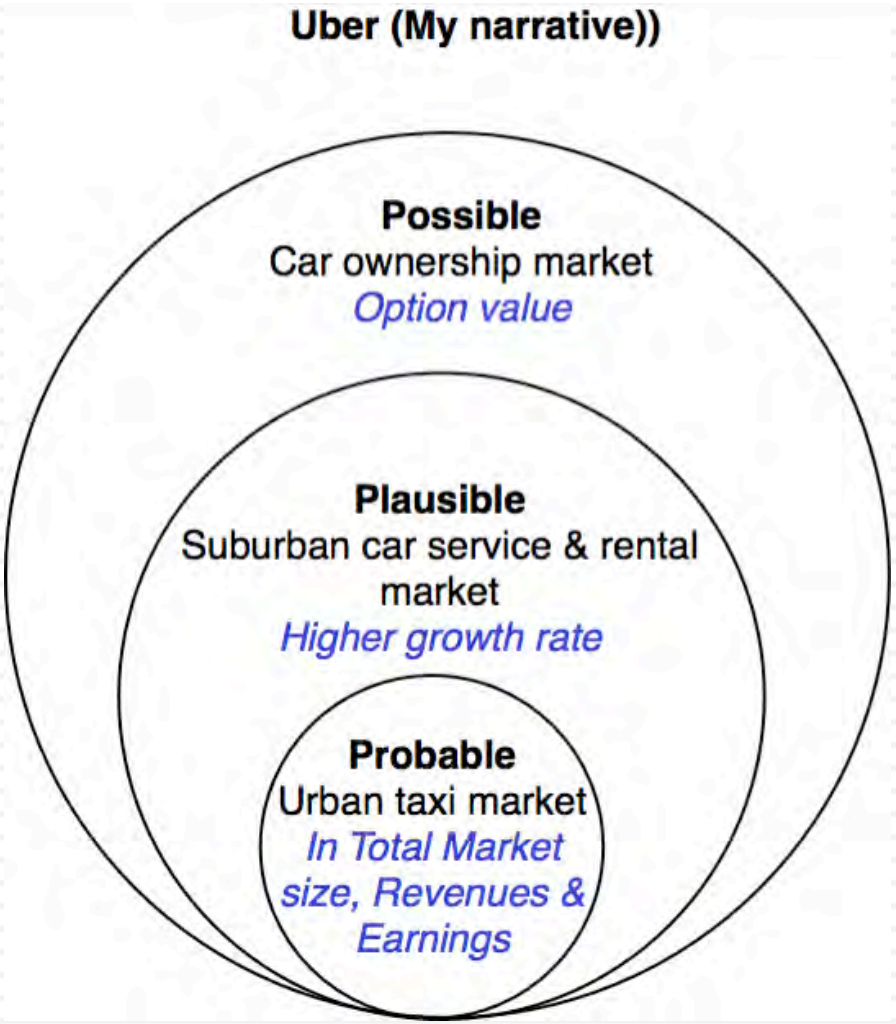
Profits without competition
Assuming that your company will grow and earn higher profits, with no competition.

Returns without risk
Assuming that you can generate high returns in a business with no risk.

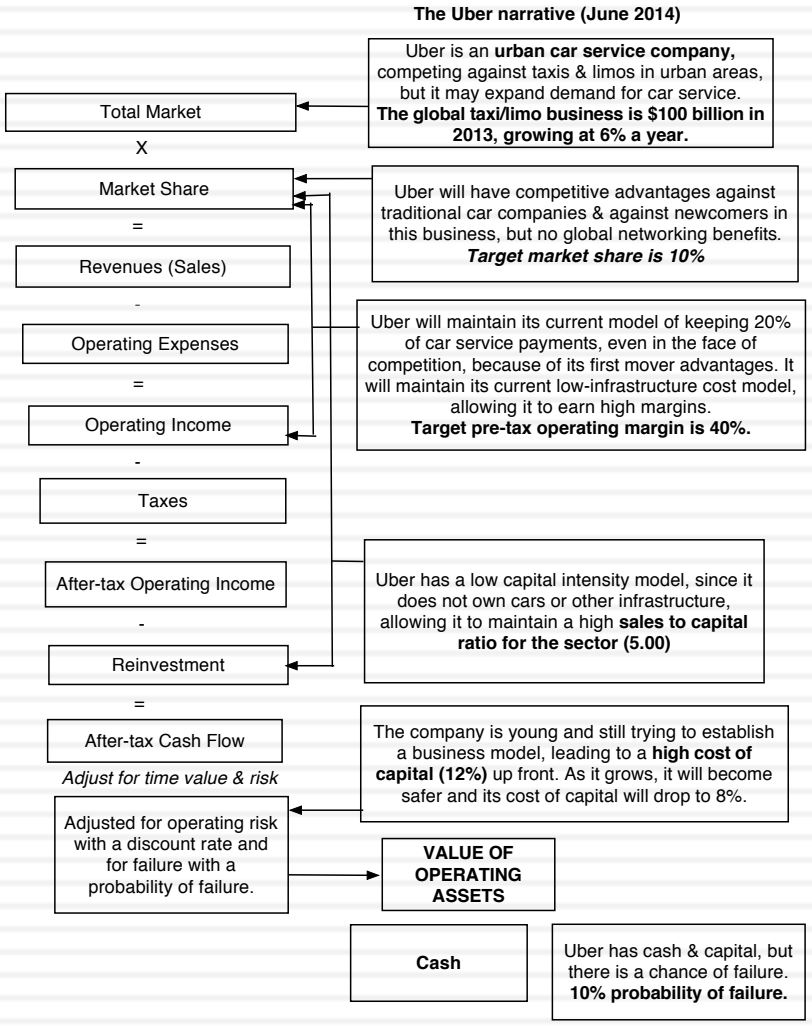
The Improbable



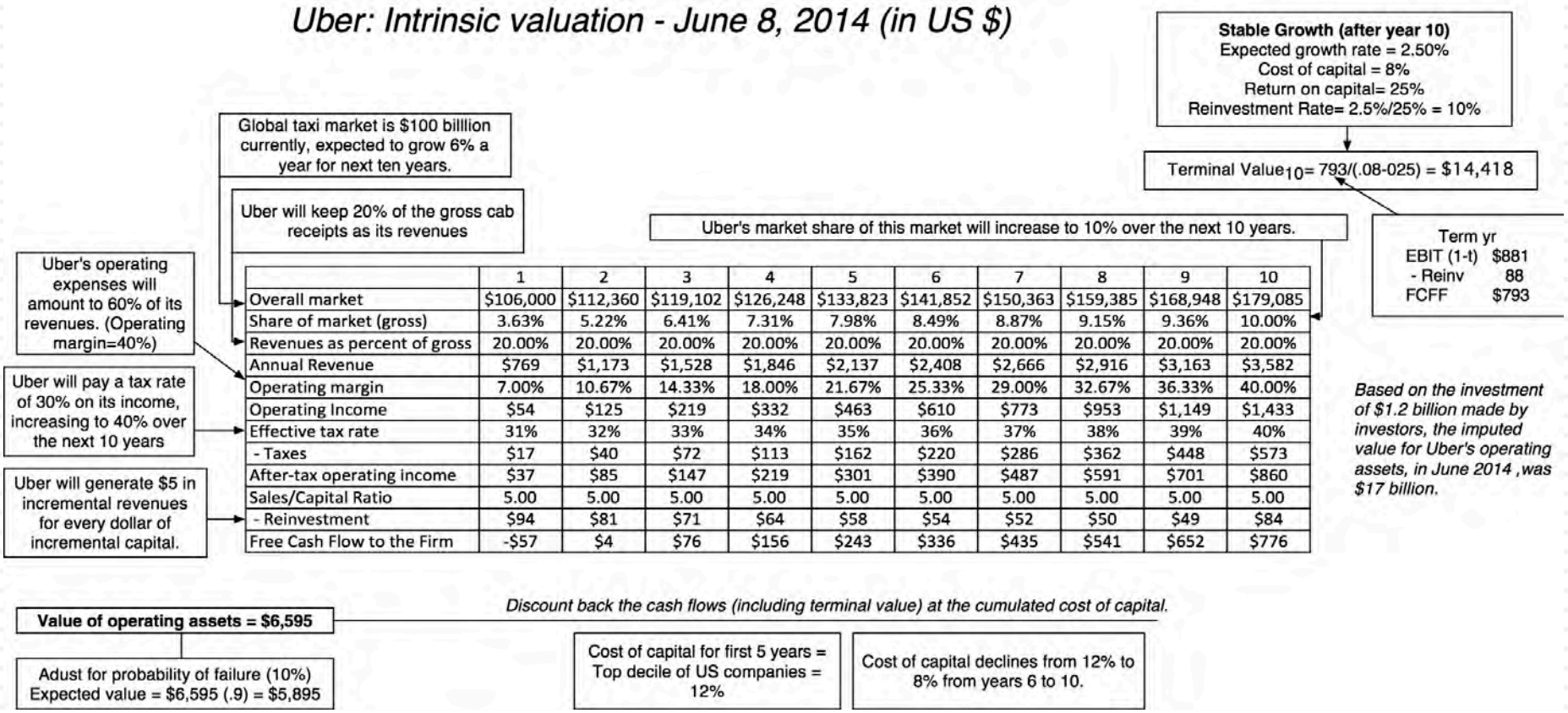
Uber: Possible, Plausible and Probable



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

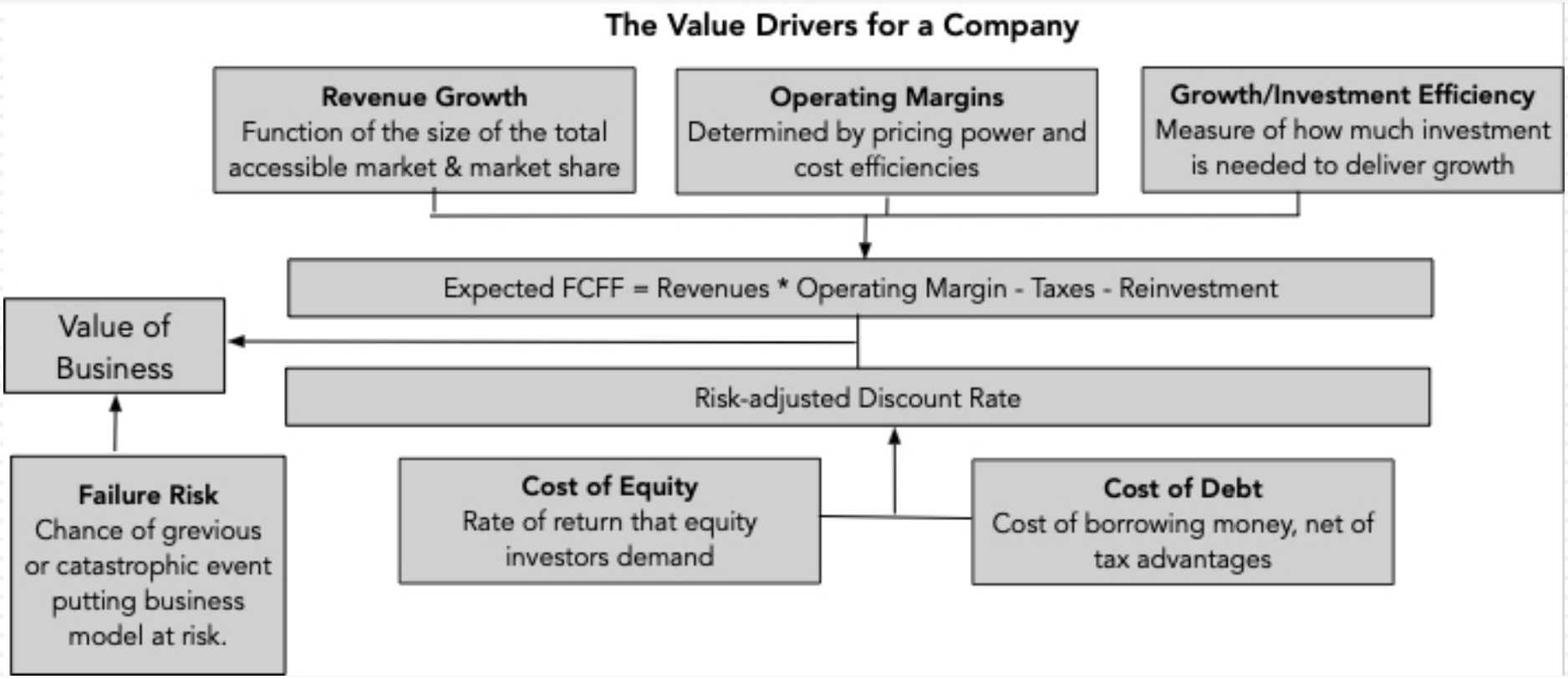
	Uber (Gurley)	*Uber (Gurley Mod)*	*Uber (Damodaran)*
Narrative	Uber will expand the car service market substantially, bringing in mass transit users & non-users from the suburbs into the market, and use its networking advantage to gain a dominant market share, while maintaining its revenue slice at 20%.	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)

Different narratives, Different Numbers

Total Market	*Growth Effect*	*Network Effect*	*Competitive Advantages*	*Value of Uber*
A4. Mobility Services	B4. Double market size	C5. Strong global network effects	D4. Strong & Sustainable	$90,457
A3. Logistics	B4. Double market size	C5. Strong global network effects	D4. Strong & Sustainable	$65,158
A4. Mobility Services	B3. Increase market by 50%	C3. Strong local network effects	D3. Semi-strong	$52,346
A2. All car service	B4. Double market size	C5. Strong global network effects	D4. Strong & Sustainable	$47,764
A1. Urban car service	B4. Double market size	C5. Strong global network effects	D4. Strong & Sustainable	$31,952
A3. Logistics	B3. Increase market by 50%	C3. Strong local network effects	D3. Semi-strong	$14,321
A1. Urban car service	B3. Increase market by 50%	C3. Strong local network effects	D3. Semi-strong	$7,127
A2. All car service	B3. Increase market by 50%	C3. Strong local network effects	D3. Semi-strong	$4,764
A4. Mobility Services	B1. None	C1. No network effects	D1. None	$1,888
A3. Logistics	B1. None	C1. No network effects	D1. None	$1,417
A2. All car service	B1. None	C1. No network effects	D1. None	$1,094
A1. Urban car service	B1. None	C1. No network effects	D1. None	$799

Let’s try this on Uber in early 2020

The Drivers of Value



Tesla						Jun-19
A Teenage Phenom faces growing (up) pains!						
Tesla will grow as a high-end auto company, deilivering $100 billion in revenues in year 10. In the face of stronger competition, Tesla's brand name and batter technology will allow it to deliver on profitability (with margins in the 75th percentile of auto firms) and raise enough capital to cover its large reinvestment needs for much of the next decade. While Tesla's operating risk will move towards average over time, its debt burden puts it at risk of default, and that risk has risen to 20%. There is a floor to operating value at $35-$40 billion, at which the firm will be attractive as an acqusition target to an auto or (more likely) a large tech firm. Overlying all of this is the danger that Elon Musk will put the company's potential at risk, by either over reaching on product offerings or committing financial malpractice.						
The Assumptions						
	Base year	*Years 1-5*	*Years 6-10*		*After year 10*	*Link to story*
Revenues (a)	$ 22,594	30.00%	→ 2.26%		2.26%	
Operating margin (b)	1.98%	1.98%	→ 10.00%		10.00%	
Tax rate	25.00%	25.00%	→ 25.00%		25.00%	
Reinvestment (c)		Sales to capital ratio 2.00		RIR =	22.60%	
Return on capital	1.67%	Marginal ROIC = 24.53%			10.00%	
Cost of capital (d)		7.87%	→ 8.00%		8.00%	
The Cash Flows						
	Revenues	*Operating Margin*	*EBIT*	*EBIT (1-t)*	*Reinvestment*	*FCFF*
1	$ 29,372	3.58%	$ 1,053	$ 1,053	$ 3,389	$ (2,337)
2	$ 38,184	5.19%	$ 1,981	$ 1,981	$ 4,406	$ (2,425)
3	$ 45,821	6.79%	$ 3,112	$ 3,112	$ 3,818	$ (706)
4	$ 54,985	8.40%	$ 4,616	$ 3,751	$ 4,582	$ (831)
5	$ 65,982	10.00%	$ 6,598	$ 4,949	$ 5,498	$ (550)
6	$ 76,837	10.00%	$ 7,684	$ 5,763	$ 5,428	$ 335
7	$ 86,752	10.00%	$ 8,675	$ 6,506	$ 4,958	$ 1,549
8	$ 94,869	10.00%	$ 9,487	$ 7,115	$ 4,058	$ 3,057
9	$ 100,379	10.00%	$ 10,038	$ 7,528	$ 2,755	$ 4,773
10	$ 102,647	10.00%	$ 10,265	$ 7,699	$ 1,134	$ 6,564
Terminal year	$ 104,967	10.00%	$ 10,497	$ 7,873	$ 1,779	$ 6,093
The Value						
Terminal value			$ 106,156			
PV(Terminal value)			$ 49,594			
PV (CF over next 10 years)			$ 2,461			
Value of operating assets =			$ 52,055			
Adjustment for distress			$ 5,206	Default probability (based on rating) = 20.00%		
- Debt & Mnority Interests			$ 14,658			
+ Cash & Other Non-operating assets			$ 2,198			
Value of equity			$ 34,389			
- Value of equity options			$ 805	32 million options (CEO package & convertibles), deep out of the money right now.		
Number of shares			176.42			
Value per share			$ 190.36	Stock was trading at = $185.50		

Tesla

Silence is golden!

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

The Assumptions

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

The Cash Flows

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

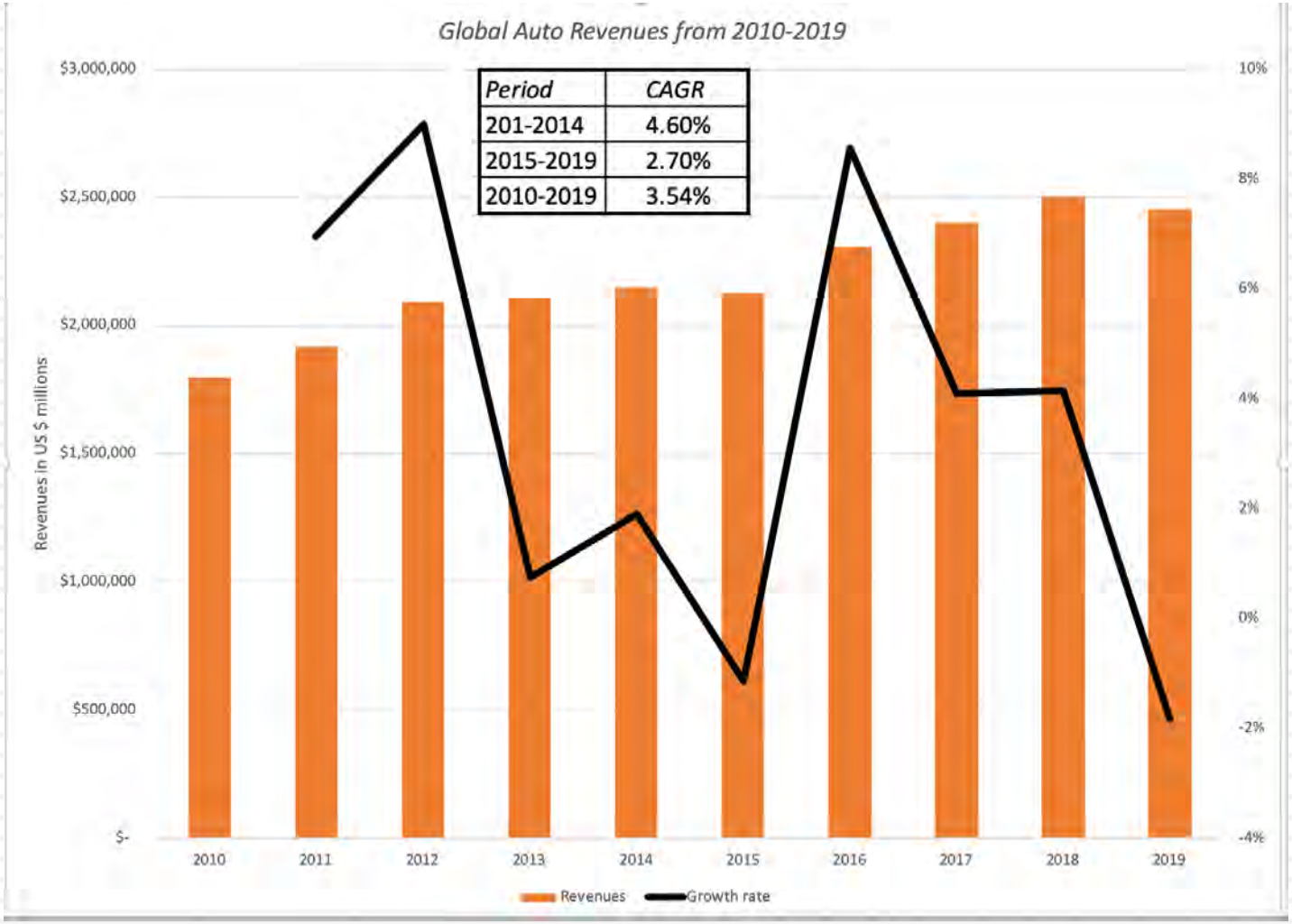
The Value

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

The drivers of value

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

The Growth Lever



The Biggest Auto Companies

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

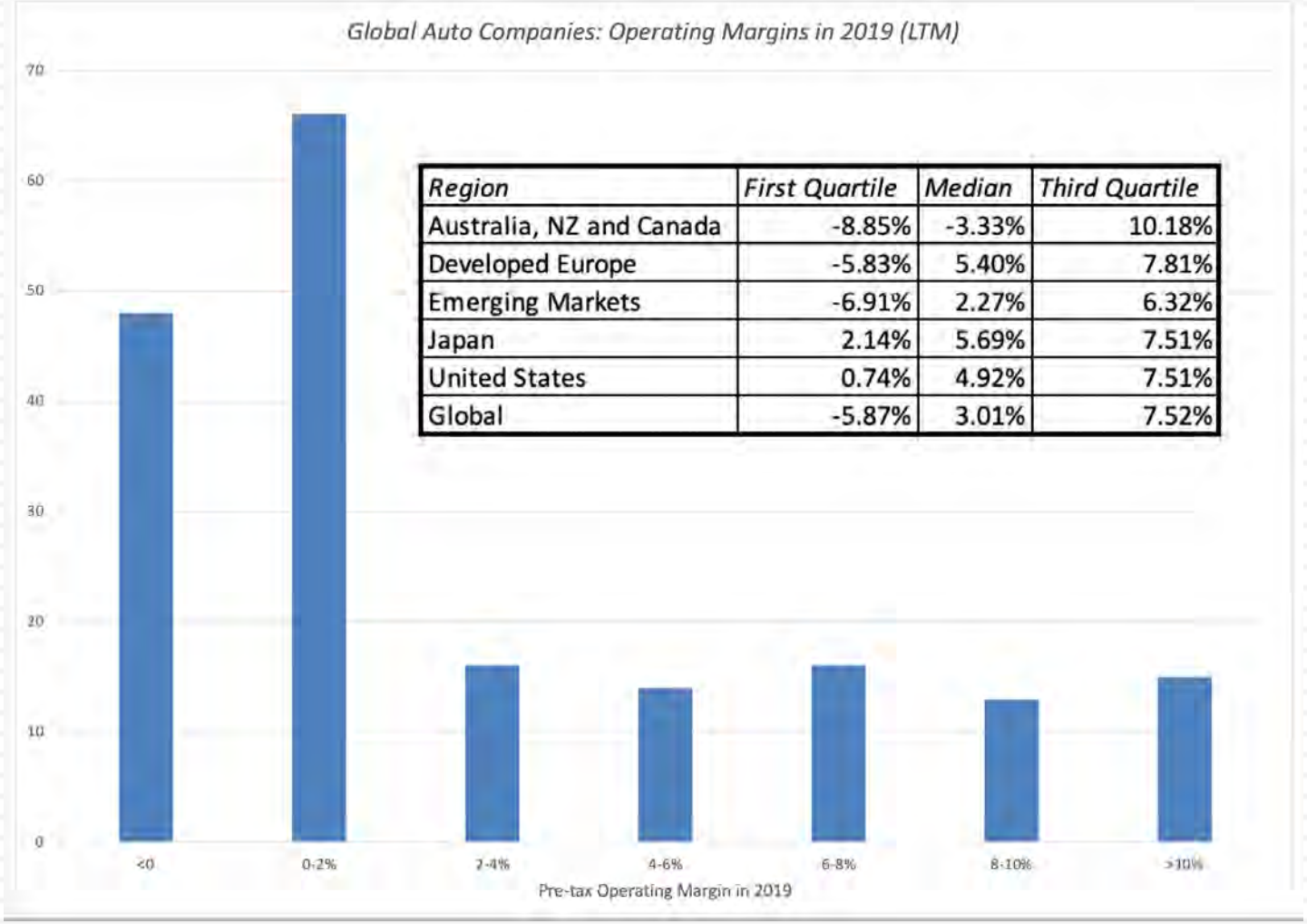
A tech company twist?

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

Your growth choice

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

The Profitability Lever



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

A tech twist?

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

Your choice on profitability

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

3. The Investment Efficiency Lever

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

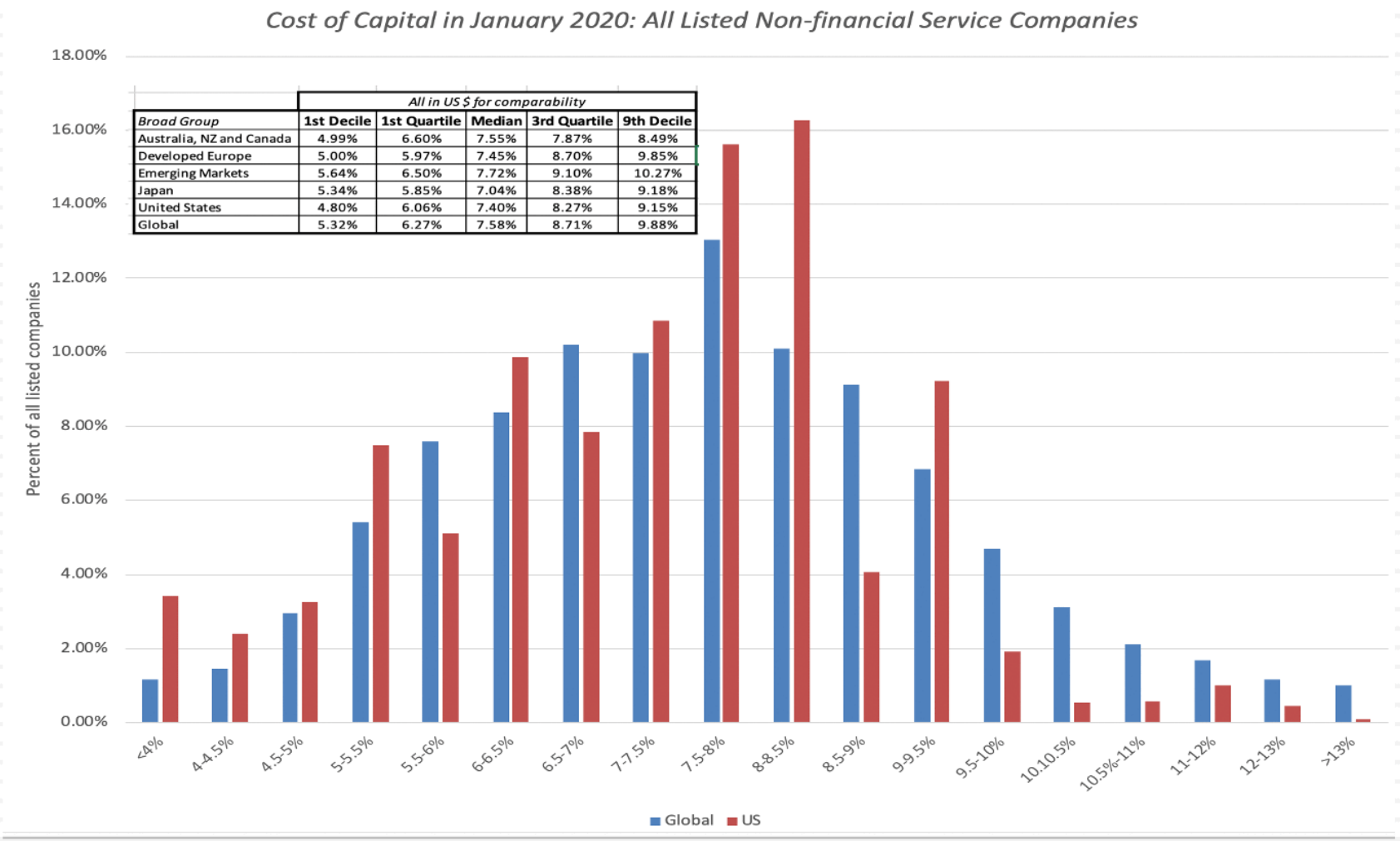
More on investment efficiency

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

Your choice on investment efficiency

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

4. Risk: The Cost of Capital - Global



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

Your choice on cost of capital & the failure rate

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

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

Valuation Stories

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

The Stories

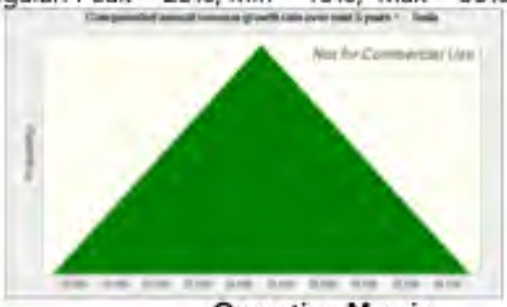
- The Big Auto Story: If your story is that Tesla will emerge from its growth period as one of the largest auto companies in the world (revenues of $100- $300 billion in year 10), with top-tier auto company margins (7.42%), investment efficiency (2.42) and cost of capital (6.94%), the value per share ranges from $106/share (with BMW like revenues) to $227/share (with Daimler-like revenues) to $333/share (with VW/Toyota like revenues).
- The Techy Auto Company Story: Tesla is an auto/software/services company with tech company characteristics, giving it higher margins (10.25%) and a higher cost of capital (8.86%). With this story, the value per share ranges from $111/share (with BMW like revenues) to $212/share (with Daimler-like revenues) to $298/share (with VW/Toyota like revenues). Put simply, the higher risk nullifies the benefits of higher profitability.
- The FAANGy Auto Company: Tesla not only develops a tech twist, but becomes as successful as the most successful tech companies (I use the FAANG stocks + Microsoft). In this story, the margins approach 18.97% and with a tech cost of capital, the value per share ranges from $459/share (with BMW like revenues) to $855/share (with Daimler-like revenues) to $2,106/share (with VW/Toyota like revenues).
- The Make-your-best Company: I give Tesla the best possible outcomes on each variable, revenues like VW/Toyota, margins like pure software companies (21.24%), a sales to capital ratio that is higher than any of the sector averages (4.00) and a cost of capital of an auto company (6.94%), and arrive at a value per share of $2106.

Possible? Plausible? Probable?

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

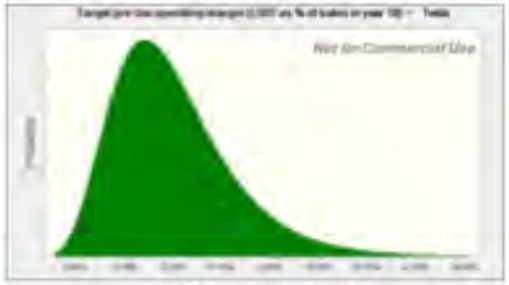
Revenue Growth

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



Operating Margin

Log Normal: Mean = 12%

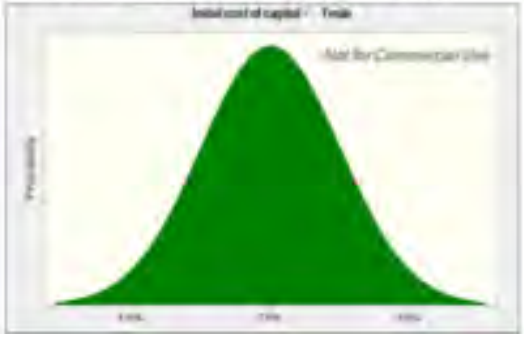


Sales to Capital

Unirform: Min =1.00 Max = 3.00

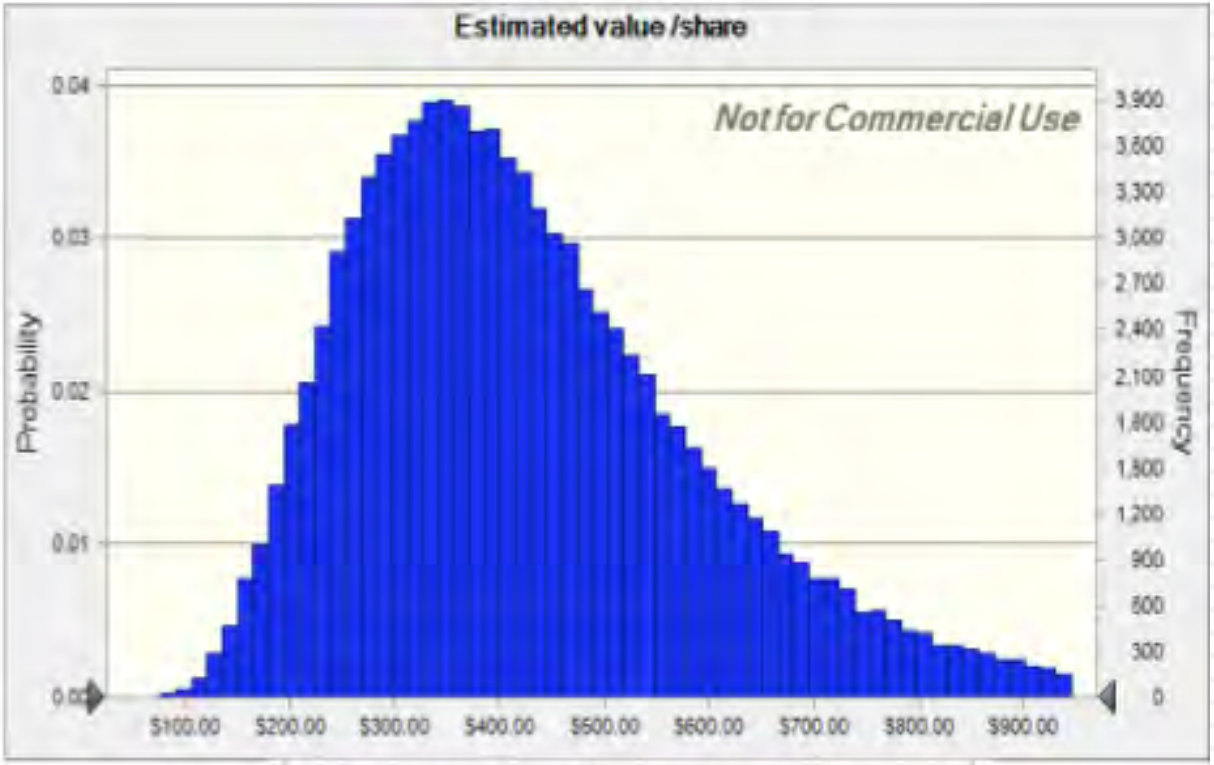
Cost of Capital

Normal: Mean = 7% Std dev = 0.5%



Tesla Value/Share in January 2020

Across 100,000 Simulations



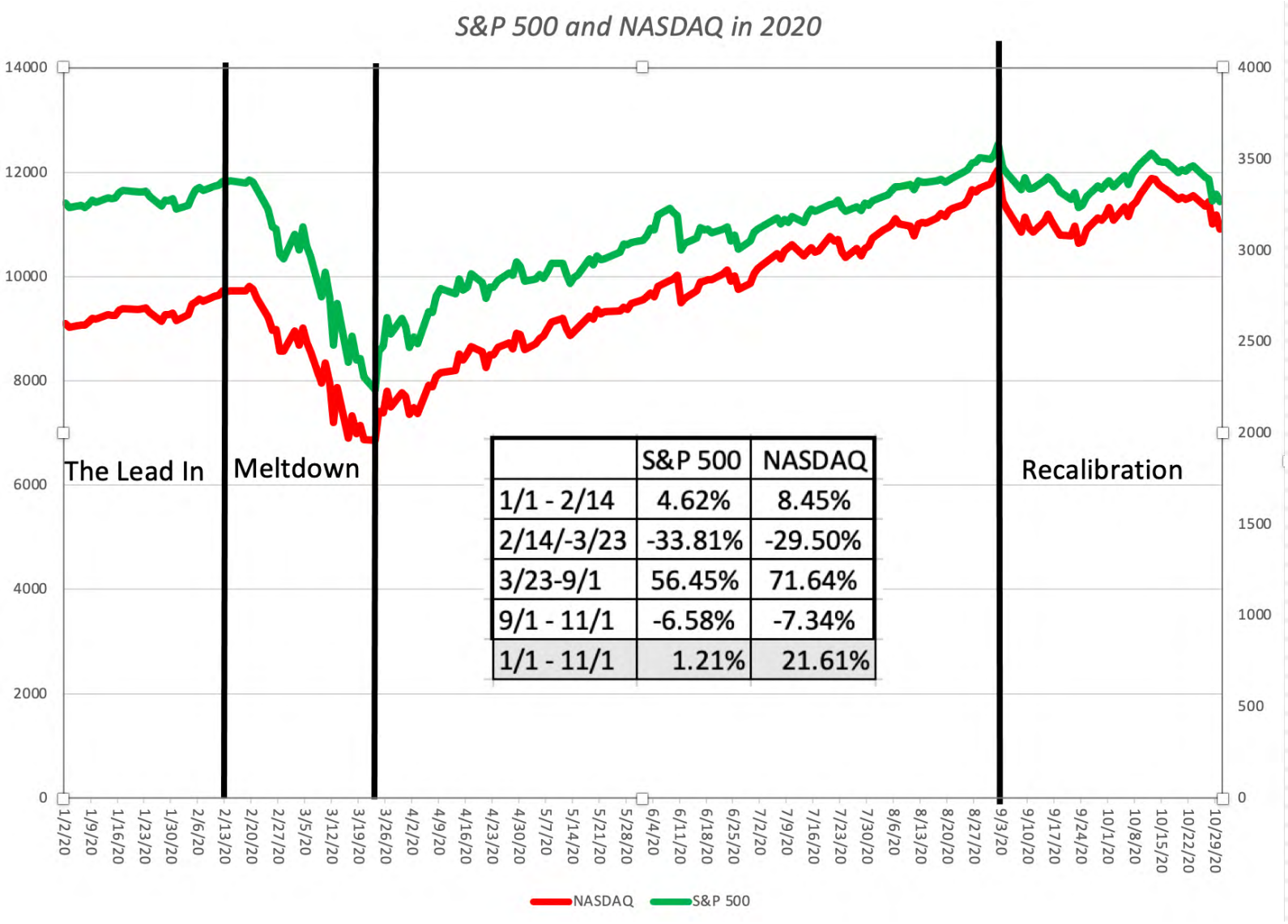
Percentile	Value/Share
0%	$47.04
10%	$236.52
20%	$283.69
30%	$324.12
40%	$361.82
50%	$401.33
60%	$444.87
70%	$496.96
80%	$564.30
90%	$673.09
100%	$2,210.68

The COVID Effect

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.

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%

Global Equities: By Sector

		Market Cap ($ Millions)				$ Change in Market Cap				% Change in Market Cap			
Primary Sector	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
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%

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.

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).

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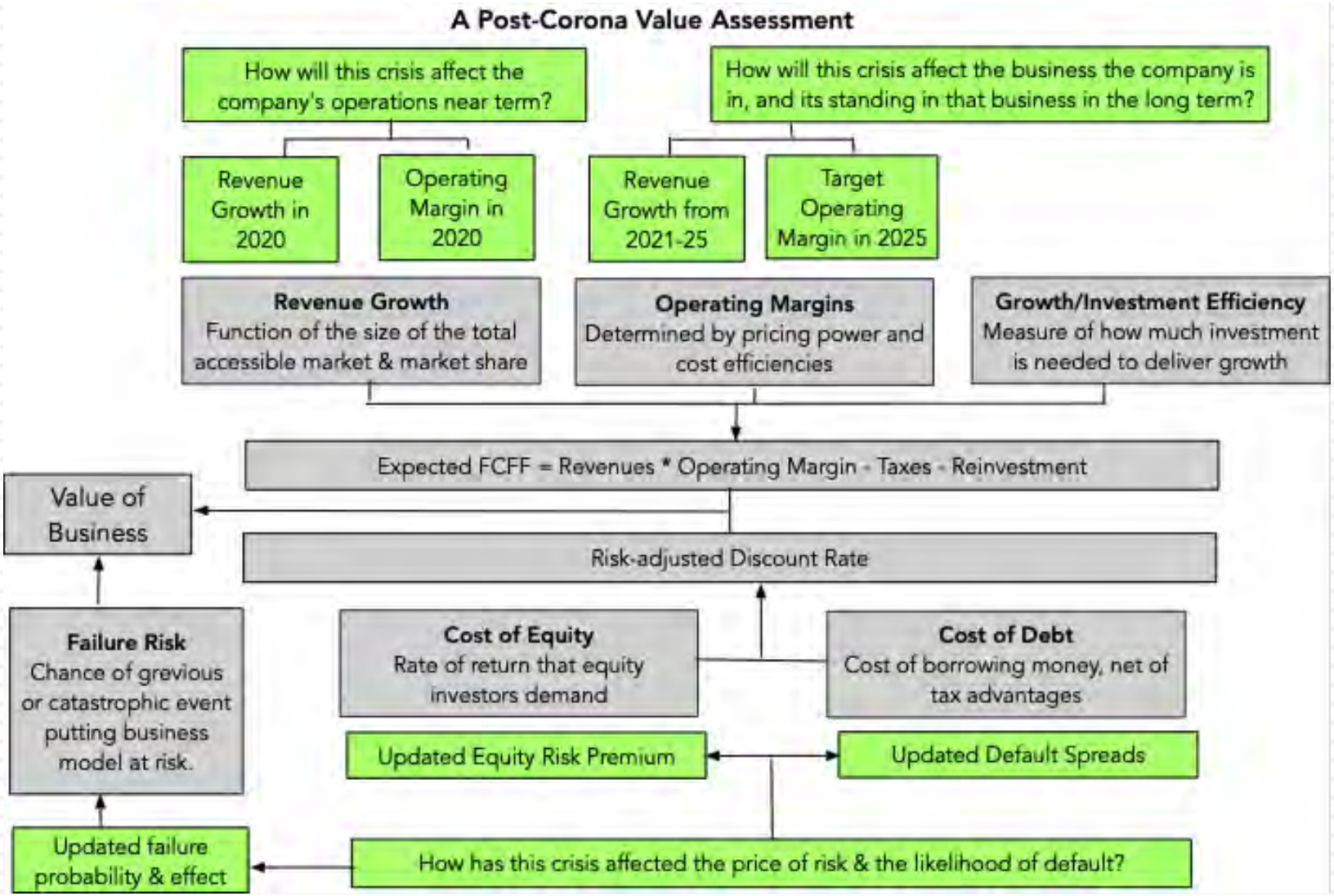
A Roadmap to Story Telling & Valuation in a crisis

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 flexibile 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

	Base year	*Years 1-5*	*Years 6-10*		*After year 10*	*Link to story*
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

	Revenues	*Operating Margin*	*EBIT*	*EBIT (1-t)*	*Reinvestment*	*FCFF*
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

Zoom						5/11/20

The Story

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

The Assumptions

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

The Cash Flows

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

The Value

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

Boeing						03/21/20
Slip, slipping away!						
In the face of the Covid-19 pandemic, the protracted impact on the airline industry, and the struggles in the past of the 737 Max, BA faces a tough path forward over the next 5 years. With the assumption that air travel will not return to its pre- Covid-19 levels for the next 4-6 quarters, BA will have negative growth. Furthermore, given BA's debt-heavy balance sheet, there will also be limited re-investment given that that paying down the debt is the priority. Thus, risk remains high						
The Assumptions						
	Base year	*Years 1-5*	*Years 6-10*		*After year 10*	*Link to story*
Revenues (a)	$ 76,559	-15.00% →	2.00%		2.00%	Continued slowing of growth
Operating margin (b)	-2.82%	-2.82% →	11.00%		11.00%	With pressure on margins
Tax rate	25.00%	25.00% →	25.00%		25.00%	& Convergence to global tax rate
Reinvestment (c)		Sales to capital ratio	0.00	RIR =	16.67%	Business stays capital intensive
Return on capital	-9.31%	Marginal ROIC =	121.07%		12.00%	But competitive advantages fade
Cost of capital (d)		7.40% →	7.00%		7.00%	As cost of capital stays low
The Cash Flows						
	Revenues	*Operating Margin*	*EBIT*	*EBIT (1-t)*	*Reinvestment*	*FCFF*
1	$ 65,075	-5.00%	$ (3,254)	$ (3,254)	$ -	$ (3,254)
2	$ 60,195	4.09%	$ 2,462	$ 2,462	$ (1,952)	$ 4,414
3	$ 72,233	7.54%	$ 5,450	$ 4,434	$ 2,866	$ 1,568
4	$ 86,680	11.00%	$ 9,535	$ 7,151	$ 3,440	$ 3,711
5	$ 95,348	11.00%	$ 10,488	$ 7,866	$ 2,064	$ 5,802
6	$ 103,357	11.00%	$ 11,369	$ 8,527	$ 1,907	$ 6,620
7	$ 110,386	11.00%	$ 12,142	$ 9,107	$ 1,673	$ 7,433
8	$ 116,126	11.00%	$ 12,774	$ 9,580	$ 1,367	$ 8,214
9	$ 120,306	11.00%	$ 13,234	$ 9,925	$ 995	$ 8,930
10	$ 122,712	11.00%	$ 13,498	$ 10,124	$ 573	$ 9,551
Terminal year	$ 125,167	11.00%	$ 13,768	$ 10,326	$ 1,721	$ 8,605
The Value						
Terminal value			$ 172,104			
PV(Terminal value)			$ 85,215			
PV (CF over next 10 years)			$ 31,867			
Value of operating assets =			$ 117,082			
Adjustment for distress			$ 8,781		Probability of failure =	15.00%
- Debt & Mnority Interests			$ 28,371			
+ Cash & Other Non-operating assets			$ 10,886			
Value of equity			$ 90,816			
- Value of equity options			$ 153			
Number of shares			564.20			
Value per share			$ 160.69		Stock was trading at =	$132.40

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%