



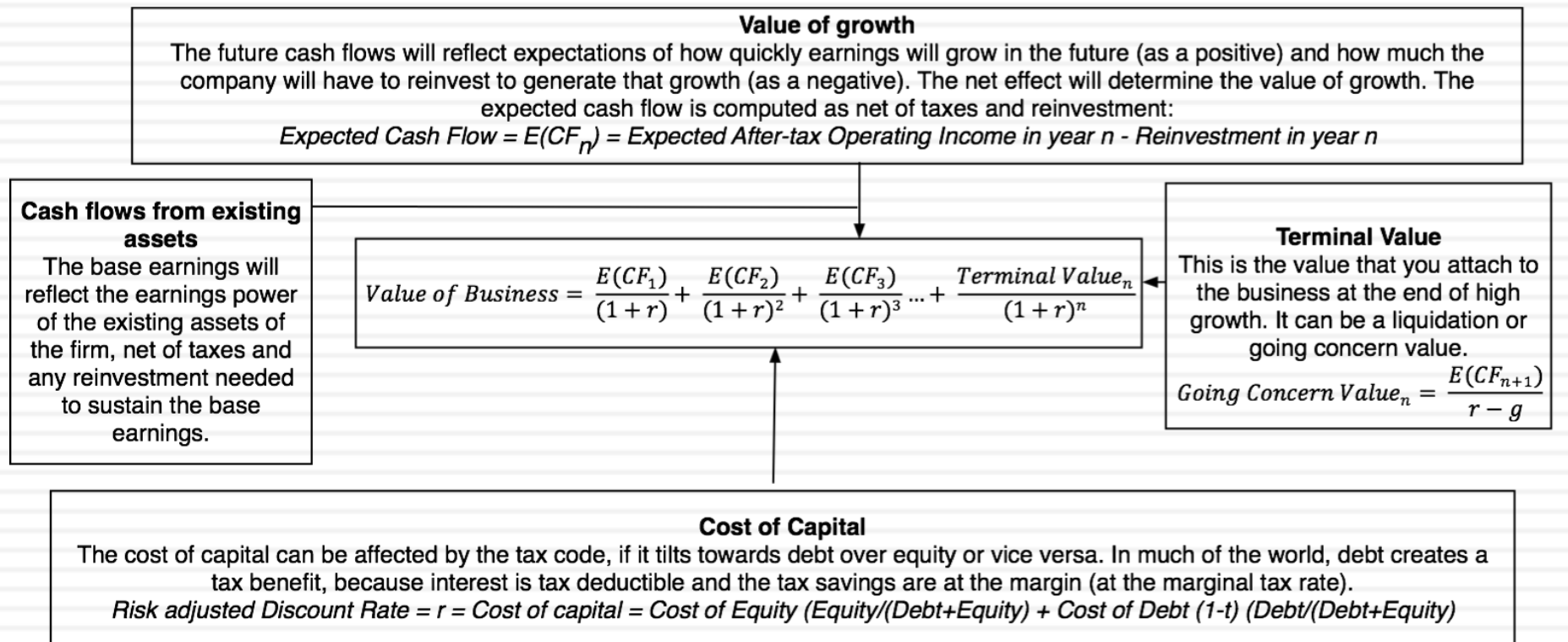
LIVING WITH NOISE: VALUING YOUNG COMPANIES

Aswath Damodaran

<http://www.damodaran.com>

Valuation is simple. We choose to make it complex!

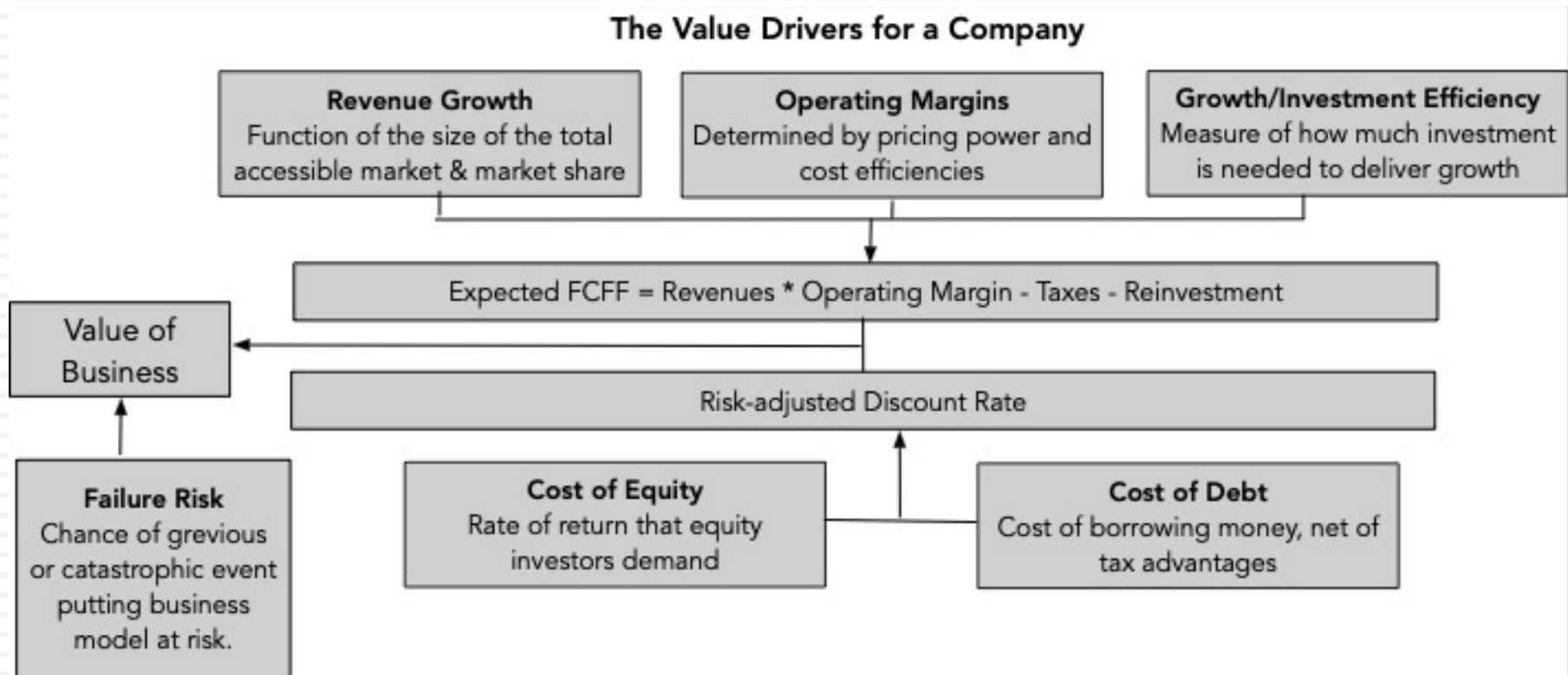
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Going Concern Value

And Business Drivers that determine value...

3

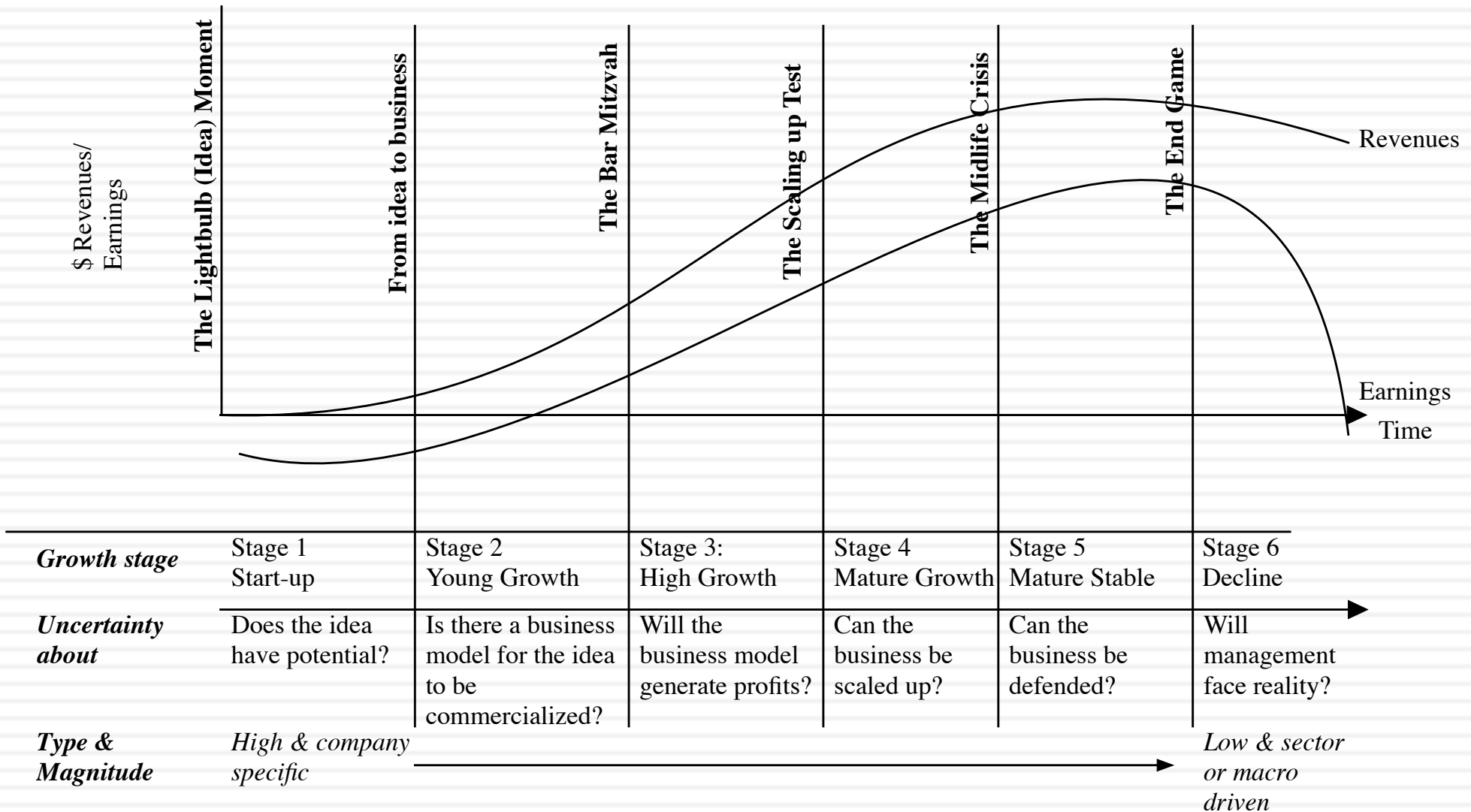


Uncertainty comes in many forms...

4

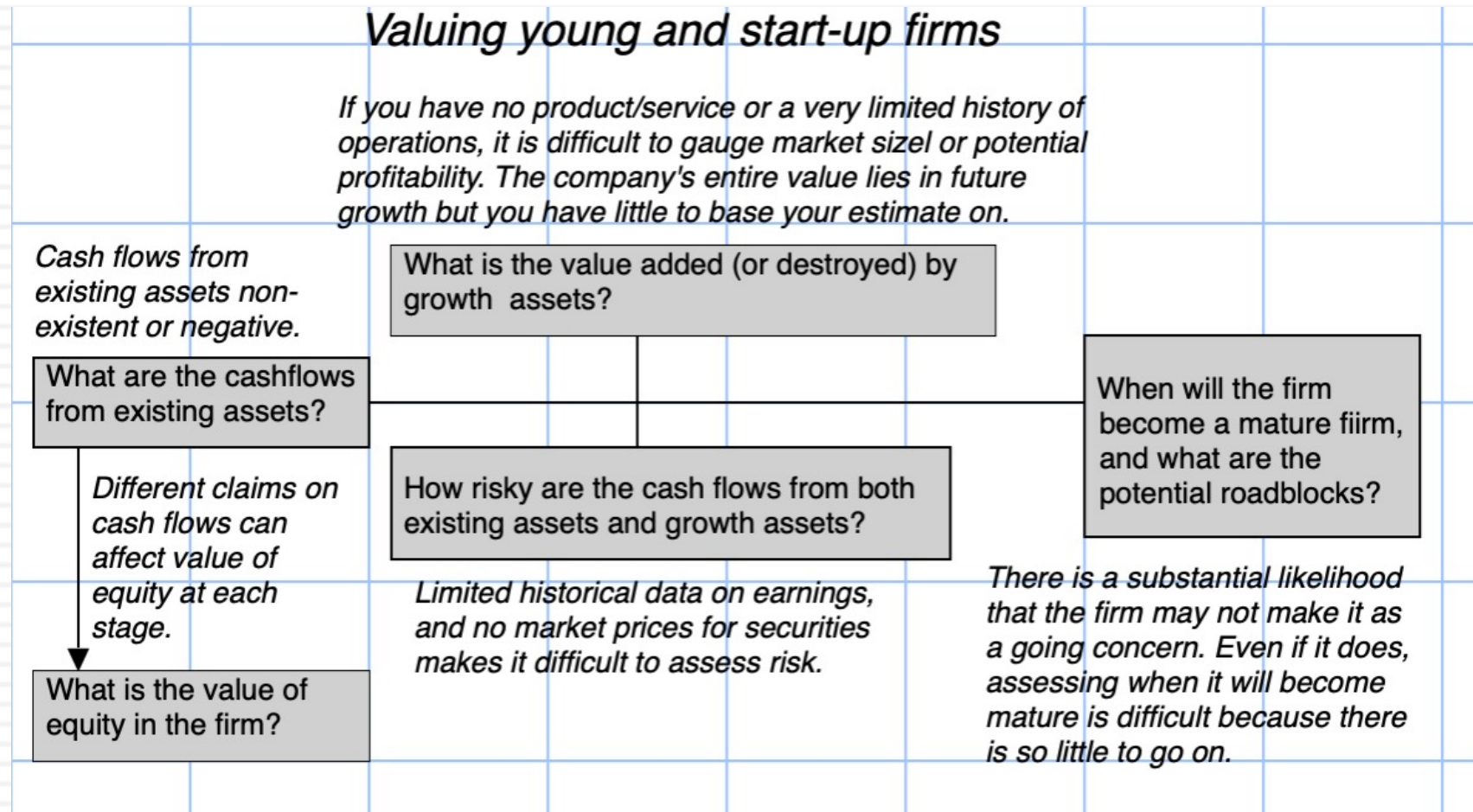
- Estimation versus Economic uncertainty
 - ▣ Estimation uncertainty reflects the possibility that you could have the “wrong model” or estimated inputs incorrectly within this model.
 - ▣ Economic uncertainty comes the fact that markets and economies can change over time and that even the best models 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.

And shifts over the corporate life cycle...



The Young Company Valuation Challenges..

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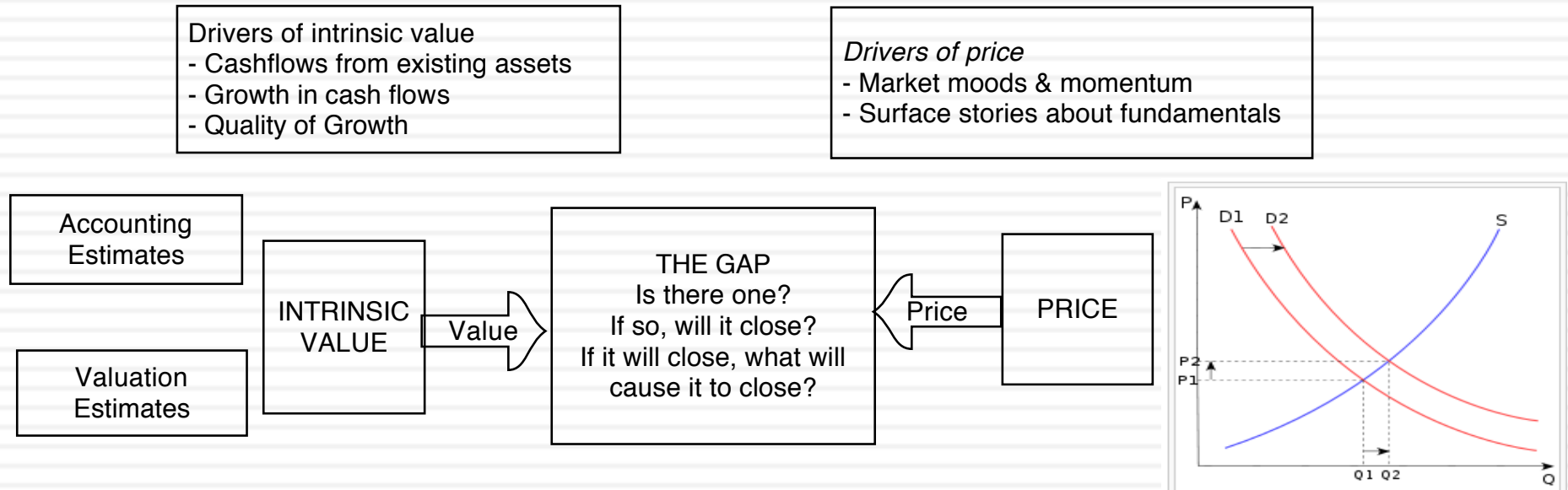


Pushing many towards pricing...

- As investors/analysts face more uncertainty about the future, they become less willing to grapple with it and make estimates for the future, a requirement for valuation.
- Instead, they choose to price companies/assets, thus anchoring what they are willing to pay to what others are paying for similar assets.
- Note that while this reaction is understandable, the uncertainty still remains.
 - You are in denial. Hiding from uncertainty does not make it go away.
 - You are letting the crowd, just as uncertain as you are, determine what you should pay.

Value versus Price

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Zomato

A Bet on India (and Indian eating habits)

Zomato is at its core a food delivery company, but with its Blinkit acquisition, it is clearly signaling that it is ambitious about growing its grocery delivery business, representing a large total market but with a much slimmer revenue share than the restaurant food deliver market. The company will continue with its acquisition-driven growth strategy and while economies of scale have been slow to show up, they will over the next few years. The restaurant-supplies business (Hyperpure) and overseas growth (Australia & Middle East) will remain marginal businesses.

The Assumptions

	Base year	Years 1-5	Years 6-10	After year 10	Story link
Total Market	\$500,000	B3. Strongly higher growth rate in first 5 years		₹ 4,000,000	Food delivery market + Grocery delivery market, in India
Gross Market Share	42.60%	->		30%	Duopoly in restaurant delivery, but more competition in grocery delivery
Revenue Share	16.95%	->		15.00%	Expansion in grocery delivery comes with lower revenue slice
Operating Margin	-42.04%	->		35.00%	Economies of scale kick in on operating expenses, as company scales up.
Reinvestment	5.00	Sales to capital ratio stays stable		39.83%	Mostly in acquisitions of small technology businesses
Cost of capital	12.50%	->		11.00%	Median Indian company cost of capital, in INR.
Risk of failure	10.00%				Improved liquidity reduces failure risk, but still a cash-burning firm.

The Cash Flows

	Total Market	Market Share	Revenues	EBIT (1-t)	Reinvestment	FCFF
1	\$ 708,089	41.34%	\$ 49,054	\$ (13,062)	\$ 2,589	\$ (15,651)
2	\$ 1,002,781	40.08%	\$ 66,567	\$ (7,470)	\$ 4,378	\$ (11,848)
3	\$ 1,420,118	38.82%	\$ 90,230	\$ 8,466	\$ 5,916	\$ 2,550
4	\$ 2,011,141	37.56%	\$ 122,159	\$ 22,640	\$ 7,982	\$ 14,657
5	\$ 2,848,135	36.30%	\$ 165,177	\$ 43,359	\$ 10,754	\$ 32,605
6	\$ 3,014,004	35.04%	\$ 166,667	\$ 43,750	\$ 372	\$ 43,378
7	\$ 3,189,533	33.78%	\$ 167,926	\$ 44,081	\$ 315	\$ 43,766
8	\$ 3,375,284	32.52%	\$ 168,934	\$ 44,345	\$ 252	\$ 44,093
9	\$ 3,571,853	31.26%	\$ 169,665	\$ 44,537	\$ 183	\$ 44,354
10	\$ 3,779,869	30.00%	\$ 170,094	\$ 44,650	\$ 107	\$ 44,542
Terminal year	\$ 4,000,000	30.00%	\$ 180,000	\$ 47,250	\$ 18,821	\$ 28,429

The Value

Terminal value	₹ 457,053.86
PV(Terminal value)	₹ 146,520.87
PV (CF over next 10 years)	₹ 94,084.86
Value of operating assets =	₹ 240,605.73
Probability of failure	10%
Value in case of failure	₹ 0.00
Adjusted Value for operating assets	₹ 216,545.15
+ Cash on hand	₹ 68,786.00
+ IPO Proceeds	₹ 35,356.00
- Debt	₹ 704.00
Value of equity	₹ 319,983.15
- Value of options	₹ 16,246.58
/ Number of shares	8502.08
Value per share	₹ 35.32

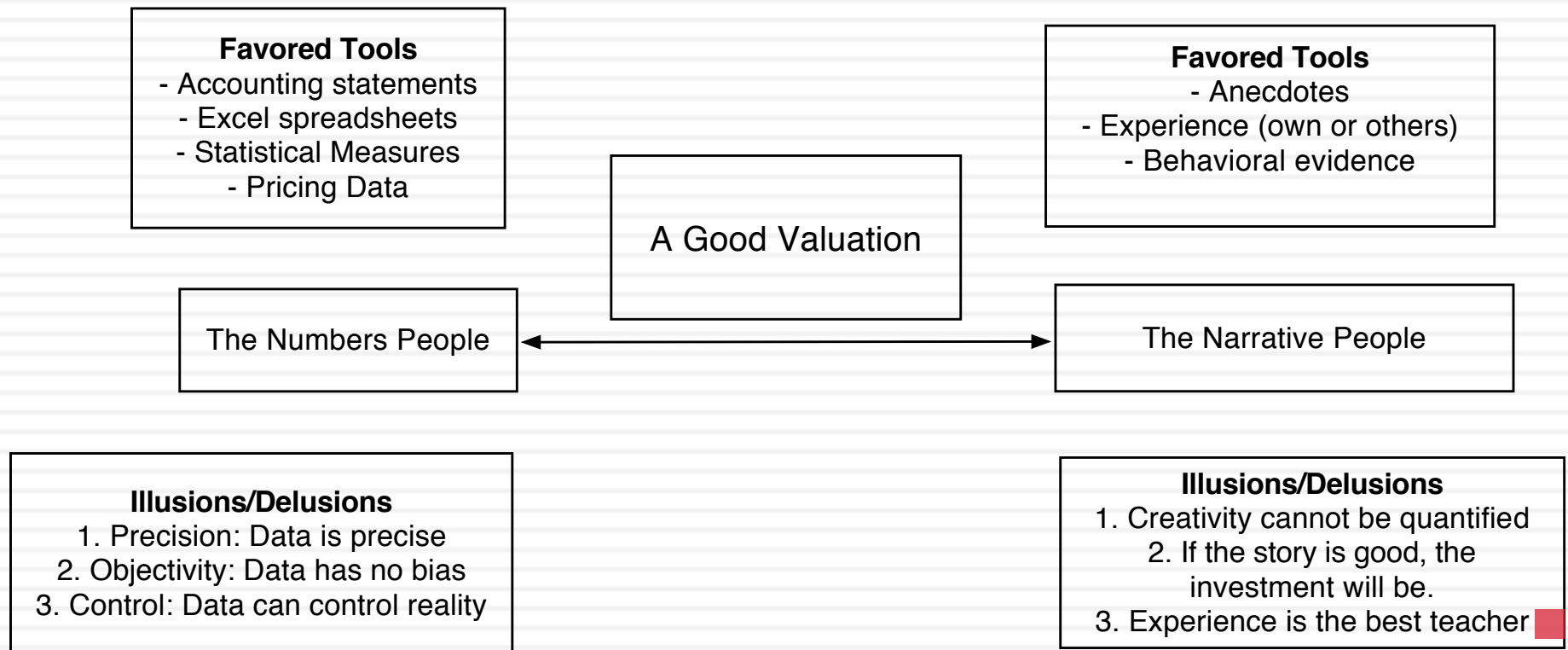
Valuing Young Companies: Ten Rules for the Road

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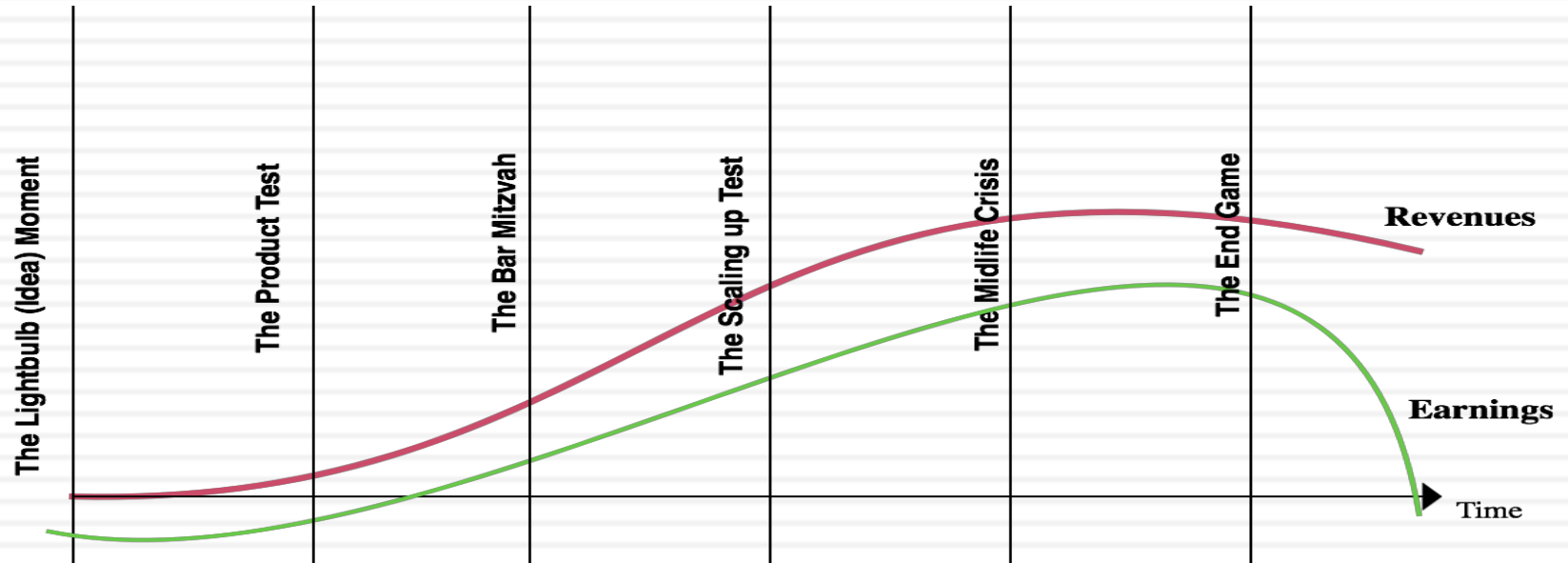
1. Start with a story that you tie to numbers
2. Less is more (the rule on detail....) (Revenue & margin forecasts) and build in internal checks on reasonableness... (reinvestment and ROC)
3. Use the offsetting principle (risk free rates & inflation at Tata Motors)
4. Draw on economic first principles (Terminal value at all the companies)
5. Use the “market” as a crutch (equity risk premiums, country risk premiums)
6. Use the law of large numbers (Beta for all companies)
7. Don't let the discount rate become the receptacle for all uncertainties.
8. Confront uncertainty, if you can
9. Don't look for precision
10. You can live with mistakes, but bias will kill you...

1. Tell a story

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And particularly so for young companies..

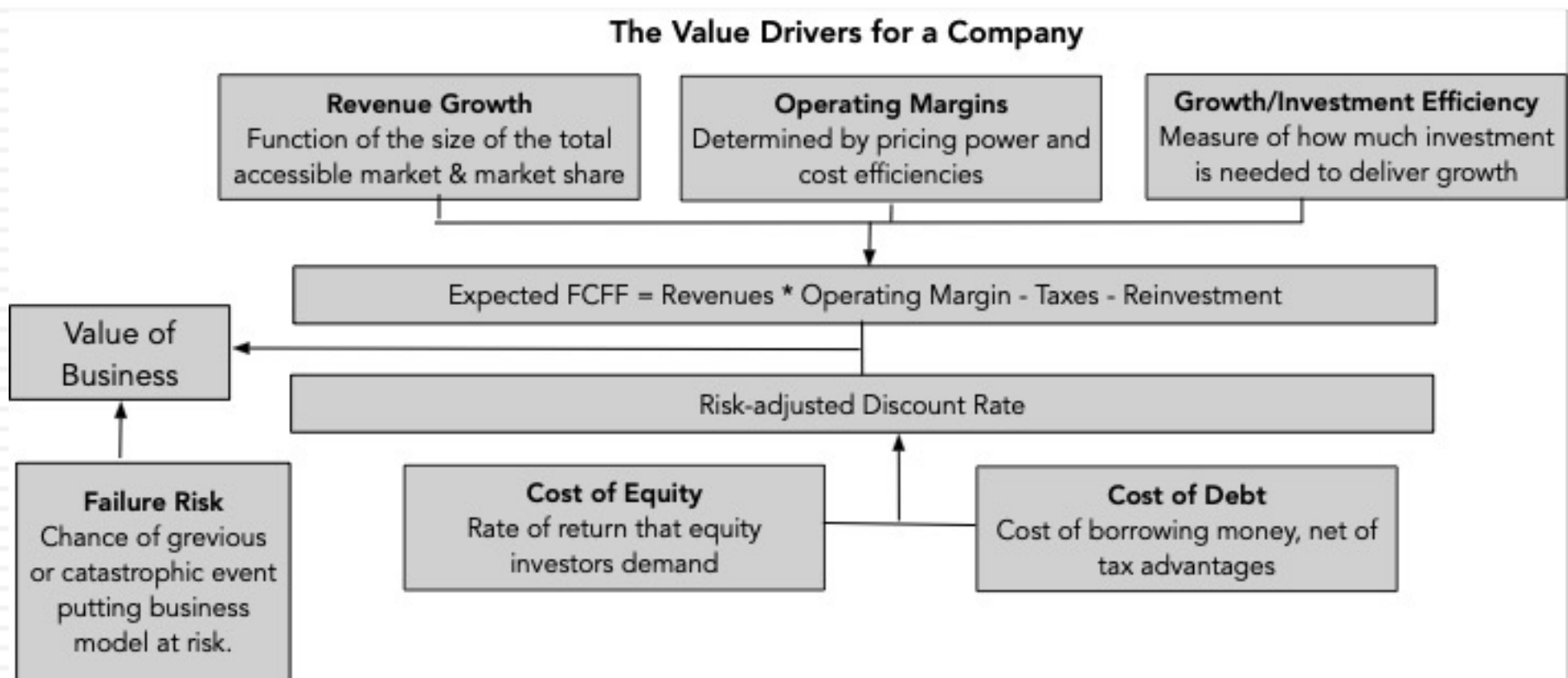


<i>Lifecycle stage</i>	Start-up	Young Growth	High Growth	Mature Growth	Mature Stable	Decline
<i>Narrative versus Numbers</i>	All Narrative	Mostly narrative	Narrative + Numbers	Numbers + Narrative	Mostly Numbers	All Numbers
<i>Narrative Drivers</i>	How big is the narrative?	How plausible is narrative?	How profitable is narrative?	How scalable is narrative?	How sustainable is narrative?	How happy is the ending?
<i>Narrative Differences</i>	Unconstrained & Large differences	<i>Constraints mount as numbers build up</i>				Constrained & Narrow differences
		<i>Differences across investors narrow, as history deepens</i>				

Zomato: Story Pieces

- Total Market: I find it hard to see the *total market exceeding \$40 billion, with US \$20-\$30 billion, in ten years*, being a more likely outcome. (In rupee terms, this will translate into a market that is roughly 1800-2000 billion INR.)
- Market Share: Expecting any company to have a *market share that exceeds 40%* of this market is a reach, and I will assume that Zomato will be one of the winners/survivors
- Revenue Share: That number was 23.13% in FY 2020, but dropped to 21.03% in FY 2021, as shut downs put a crimp on business. I will assume a *partial bounce back to 22% of GOV*, starting in 2022, but the presence of Amazon Food will prevent a return to higher values in the future.
- Profitability: I will assume that *pre-tax operating margins will trend towards 30%*, largely because I believe that the market will be dominated by a few big players, but with the very real possibility that one rogue player that is unwilling to play the game can upend profitability.
- Reinvestment: One of the advantages of being an intermediary business is that you can grow with relatively little capital investment, defined in conventional form (as plant, equipment or manufacturing facilities). That said, reinvestment takes a different form for online intermediaries, like Zomato, with investments in technology and in acquisitions, driving future growth.
- Risk: In terms of operating risk, the company, in spite of its global ambitions, is still primarily an Indian company, dependent on Indian macroeconomic growth to succeed, and my rupee cost of capital will incorporate the country risk. Zomato is a money losing company, but it is no start-up, facing imminent failure. On the plus side, its size and access to capital, as well as its post-IPO augmented cash balance, push down the risk of failure. Overall, I will attach a likelihood of failure of 10%, reflecting this balance.

2. Less is more



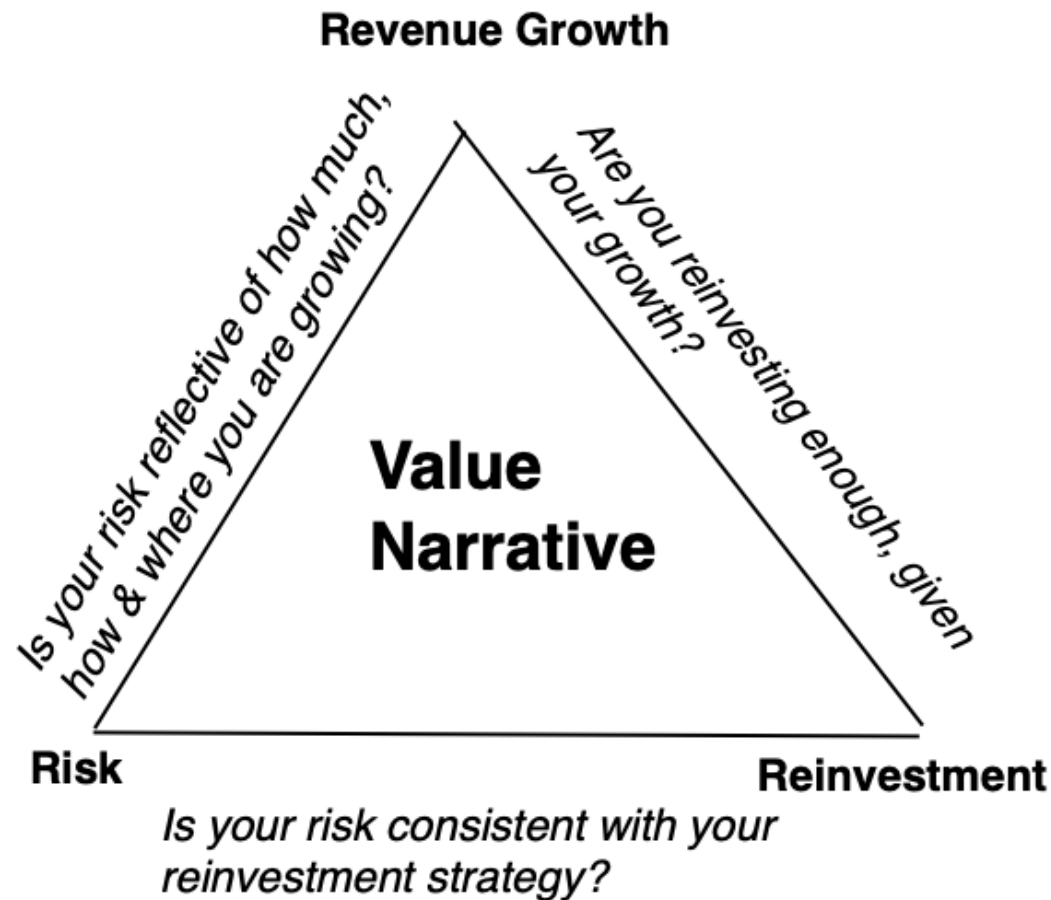
From story to numbers

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The Assumptions						
	Base year	Next year	Years 2-5	Years 6-10	After year 10	Link to story
Indian Food Delivery	₹ 500,000	₹ 700,000	30.00%	15.72%	₹ 4,149,008	Indian food market rebounds in 2021 and grows to about \$25 billion in year 10
Market Share	42.60%	40.08%	→	30.00%	30.00%	Zomato is one of two or three lead players in Indian food delivery market
Revenues as % of GOV	16.95%	16.76%			15.68%	
Revenues (a)	₹ 36,110.00	₹ 47,016	Total Market * Market Share* Revenue as % of GOV		₹ 195,182	COVID rebound in 2021 + Growth in food delivery market in India long term
Operating margin (b)	-42.04%	-10.0%	-10.00%	→ 35.00%	35.00%	Margins improve as growth wanes
Tax rate	25.00%		25.00%	→ 25.00%	25.00%	Indian corporate tax rate over time
Reinvestment (c)		5.00	2.50	3.00	39.83%	Acquisitions & technology investments needed to sustain growth
Return on capital	-15.65%	Marginal ROIC =	157.92%		12.00%	Newworking benefits allow for high ROIC, near and long term.
Cost of capital (d)			13.56%	→ 11.00%	11.00%	Cost of capital reflects Indian country risk

3. Consistency is key in the numbers...

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4. Draw on economic first principles and mathematical limits...

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Myth 5.1: The only way to estimate terminal value is to use the perpetual growth model.

Myth 5.2: The perpetual growth model can give you an infinite value.

Myth 5.3: The growth rate is your biggest driver of terminal value.

Myth 5.4: Your growth rate cannot be negative in a perpetual growth model.

Myth 5.5: If your terminal value is a high proportion of your DCF value, it is flawed.

$$\text{Value of an asset with life } > n \text{ years} = \frac{E(CF_1)}{(1+r)^1} + \frac{E(CF_2)}{(1+r)^2} + \dots + \frac{E(CF_n)}{(1+r)^n} + \frac{\text{Terminal Value}_n}{(1+r)^n}$$

Truth 5.1: The terminal value can be based on annuities or a liquidation value.

Truth 5.2: Not if growth forever is capped at the growth rate of the economy.

Truth 5.3: Growth is not free & increasing growth can add or destroy value.

Truth 5.4: Growth can be negative forever & is often more reflective of reality.

Truth 5.5: The terminal value should be a high percent of value today.

ERP : July 2022

Andorra (Principality of)	Baa2	2.28%	8.67%	Italy	Baa3	2.64%	9.08%
Austria	Aa1	0.48%	6.57%	Jersey (States of)	Aaa	0.00%	6.01%
Belgium	Aa3	0.72%	6.85%	Liechtenstein	Aaa	0.00%	6.01%
Cyprus	Ba1	3.00%	9.51%	Luxembourg	Aaa	0.00%	6.01%
Denmark	Aaa	0.00%	6.01%	Malta	A2	1.02%	7.19%
Finland	Aa1	0.48%	6.57%	Netherlands	Aaa	0.00%	6.01%
France	Aa2	0.59%	6.70%	Norway	Aaa	0.00%	6.01%
Germany	Aaa	0.00%	6.01%	Portugal	Baa2	2.28%	8.67%
Greece	Ba3	4.31%	11.04%	Spain	Baa1	1.92%	8.24%
Guernsey (States of)	Aaa	0.00%	6.01%	Sweden	Aaa	0.00%	6.01%
Iceland	A2	1.02%	7.19%	Switzerland	Aaa	0.00%	6.01%
Ireland	A1	0.85%	7.00%	Turkey	B2	6.60%	13.70%
Isle of Man	Aa3	0.72%	6.85%	United Kingdom	Aa3	0.72%	6.85%
				Western Europe		1.16%	7.17%

Canada	Aaa	0.00%	6.01%
United States	Aaa	0.00%	6.01%
US & Canada		0.00%	6.01%

Caribbean		9.06%	15.07%
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Argentina	Ca	14.39%	22.79%
Belize	Caa3	12.00%	19.99%
Bolivia	B2	6.60%	13.70%
Brazil	Ba2	3.61%	10.22%
Chile	A1	0.85%	7.00%
Colombia	Baa2	2.28%	8.67%
Costa Rica	B2	6.60%	13.70%
Ecuador	Caa3	12.00%	19.99%
El Salvador	Caa3	12.00%	19.99%
Guatemala	Ba1	3.00%	9.51%
Honduras	B1	5.40%	12.30%
Mexico	Baa1	1.92%	8.24%
Nicaragua	B3	7.80%	15.10%
Panama	Baa2	2.28%	8.67%
Paraguay	Ba1	3.00%	9.51%
Peru	Baa1	1.92%	8.24%
Suriname	Caa3	12.00%	19.99%
Uruguay	Baa2	2.28%	8.67%
Venezuela	C	17.50%	26.41%
Latin America		5.20%	11.21%

Country	Rating	CRP	ERP
Angola	B3	7.80%	15.10%
Benin	B1	5.40%	12.30%
Botswana	A3	1.44%	7.69%
Burkina Faso	Caa1	8.99%	16.49%
Cameroon	B2	6.60%	13.70%
Cape Verde	B3	7.80%	15.10%
Congo (Democratic Republic of)	Caa1	8.99%	16.49%
Congo (Republic of)	Caa2	10.80%	18.60%
Côte d'Ivoire	Ba3	4.31%	11.04%
Egypt	B2	6.60%	13.70%
Ethiopia	Caa2	10.80%	18.60%
Gabon	Caa1	8.99%	16.49%
Ghana	Caa1	8.99%	16.49%
Kenya	B2	6.60%	13.70%
Mali	Caa2	10.80%	18.60%
Mauritius	Baa2	2.28%	8.67%
Morocco	Ba1	3.00%	9.51%
Mozambique	Caa2	10.80%	18.60%
Namibia	B1	5.40%	12.30%
Niger	B3	7.80%	15.10%
Nigeria	B2	6.60%	13.70%
Rwanda	B2	6.60%	13.70%
Senegal	Ba3	4.31%	11.04%
South Africa	Ba2	3.61%	10.22%
Swaziland	B3	7.80%	15.10%
Tanzania	B2	6.60%	13.70%
Togo	B3	7.80%	15.10%
Tunisia	Caa1	8.99%	16.49%
Uganda	B2	6.60%	13.70%
Zambia	Ca	14.39%	22.79%
Africa		7.36%	13.37%

Albania	B1	5.40%	12.30%
Armenia	Ba3	4.31%	11.04%
Azerbaijan	Ba2	3.61%	10.22%
Belarus	Ca	14.39%	22.79%
Bosnia and Herzegovina	B3	7.80%	15.10%
Bulgaria	Baa1	1.92%	8.24%
Croatia	Ba1	3.00%	9.51%
Czech Republic	Aa3	0.72%	6.85%
Estonia	A1	0.85%	7.00%
Georgia	Ba2	3.61%	10.22%
Hungary	Baa2	2.28%	8.67%
Kazakhstan	Baa2	2.28%	8.67%
Kyrgyzstan	B3	7.80%	15.10%
Latvia	A3	1.44%	7.69%
Lithuania	A2	1.02%	7.19%
Macedonia	Ba3	4.31%	11.04%
Moldova	B3	7.80%	15.10%
Montenegro	B1	5.40%	12.30%
Poland	A2	1.02%	7.19%
Romania	Baa3	2.64%	9.08%
Russia	Ca	14.39%	22.79%
Serbia	Ba2	3.61%	10.22%
Slovakia	A2	1.02%	7.19%
Slovenia	A3	1.44%	7.69%
Tajikistan	B3	7.80%	15.10%
Ukraine	Caa3	12.00%	19.99%
Uzbekistan	B1	5.40%	12.30%
E. Europe & Russia		8.85%	14.86%

Abu Dhabi	Aa2	0.59%	6.70%
Bahrain	B2	6.60%	13.70%
Iraq	Caa1	8.99%	16.49%
Israel	A1	0.85%	7.00%
Jordan	B1	5.40%	12.30%
Kuwait	A1	0.85%	7.00%
Lebanon	C	17.50%	26.41%
Oman	Ba3	4.31%	11.04%
Qatar	Aa3	0.72%	6.85%
Ras Al Khaimah (Emirate of)	A1	0.85%	7.00%
Saudi Arabia	A1	0.85%	7.00%
Sharjah	Baa3	2.64%	9.08%
United Arab Emirates	Aa2	0.59%	6.70%
Middle East		2.02%	8.03%

Country	PRS	CRP	ERP
Algeria	66.75	6.29%	12.30%
Brunei	79.25	1.18%	7.19%
Gambia	66.25	6.29%	12.30%
Guinea	58	12.59%	18.60%
Guinea-Bissau	63.5	9.09%	15.10%
Guyana	75.75	2.23%	8.24%
Haiti	56	13.98%	19.99%
Iran	66.25	6.29%	12.30%
Korea, D.P.R.	51.25	16.78%	22.79%
Liberia	58.25	12.59%	18.60%
Libya	71	4.21%	10.22%
Madagascar	63.25	9.09%	15.10%
Malawi	56.75	13.98%	19.99%
Myanmar	57.75	12.59%	18.60%
Sierra Leone	54.75	16.78%	22.79%
Somalia	52	16.78%	22.79%
Sudan	47	20.40%	26.41%
Syria	45.25	20.40%	26.41%
Yemen, Republic	48.25	20.40%	26.41%
Zimbabwe	60.75	10.48%	16.49%

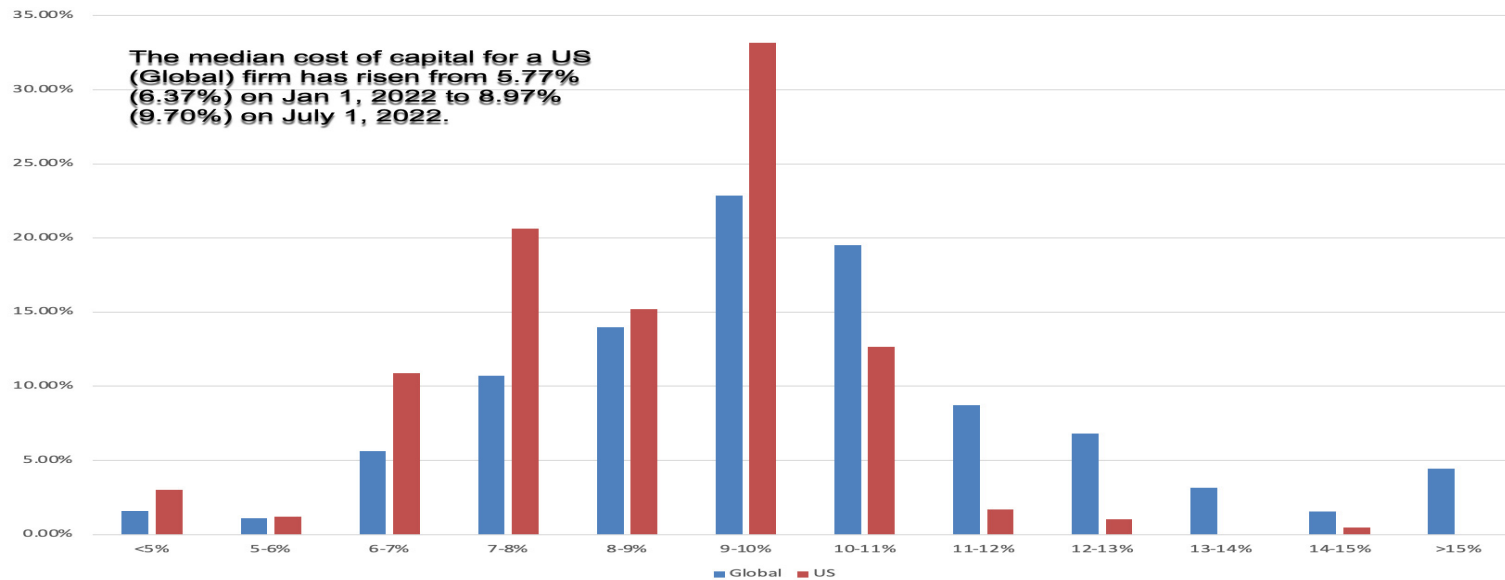
Bangladesh	Ba3	4.31%	11.04%
Cambodia	B2	6.60%	13.70%
China	A1	0.85%	7.00%
Fiji	B1	5.40%	12.30%
Hong Kong	Aa3	0.72%	6.85%
India	Baa3	2.64%	9.08%
Indonesia	Baa2	2.28%	8.67%
Japan	A1	0.85%	7.00%
Korea	Aa2	0.59%	6.70%
Laos	Caa3	12.00%	19.99%
Macao	Aa3	0.72%	6.85%
Malaysia	A3	1.44%	7.69%
Maldives	Caa1	8.99%	16.49%
Mongolia	B3	7.80%	15.10%
Pakistan	B3	7.80%	15.10%
Papua New Guinea	B2	6.60%	13.70%
Philippines	Baa2	2.28%	8.67%
Singapore	Aaa	0.00%	6.01%
Solomon Islands	Caa1	8.99%	16.49%
Sri Lanka	Ca	14.39%	22.79%
Taiwan	Aa3	0.72%	6.85%
Thailand	Baa1	1.92%	8.24%
Vietnam	Ba3	4.31%	11.04%
Asia		1.56%	7.57%

Australia	Aaa	0.00%	6.01%
Cook Islands	Caa1	8.99%	16.49%
New Zealand	Aaa	0.00%	6.01%
Australia & NZ		0.00%	6.01%

Blue: Moody's Rating
Red: Added Country Risk
Green #: Total ERP

6. Draw on the law of large numbers...

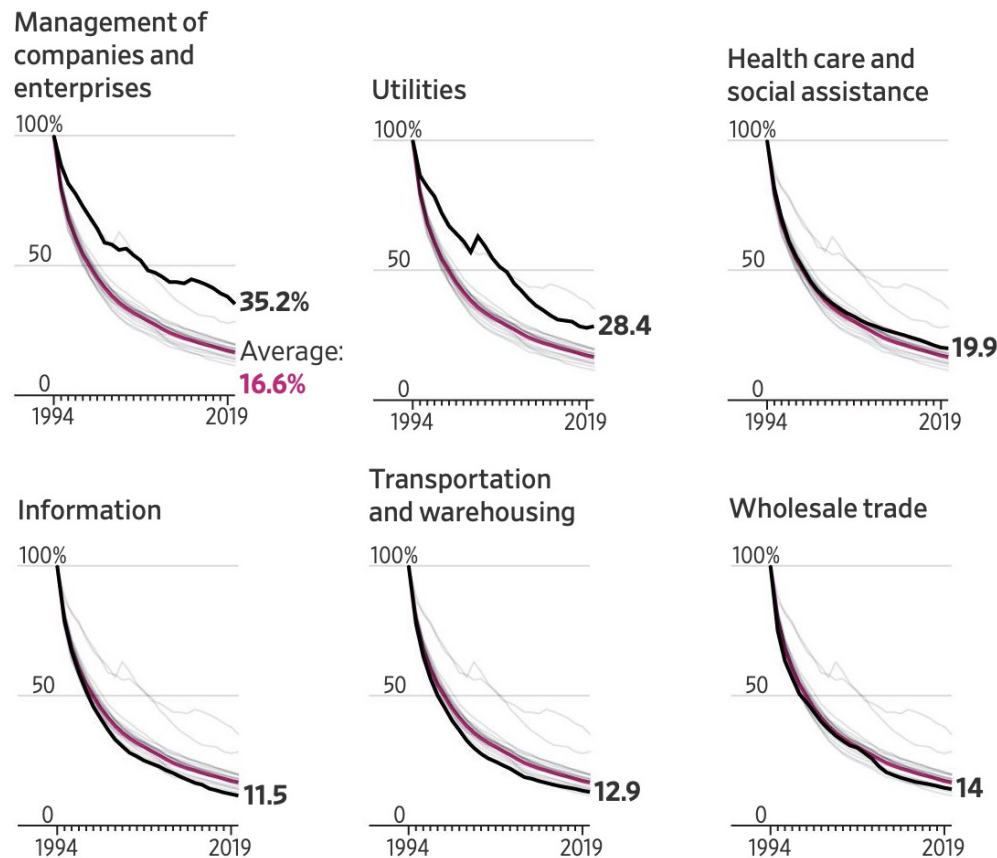
Costs of Capital in US \$: Global & US firms in July 2022



Sub Group	# firms	1st Decile	1st Quartile	Median	3rd Quartile	9th Decile
Africa and Middle East	2,356	7.30%	8.61%	10.60%	13.12%	16.42%
Australia & NZ	1,878	7.08%	8.26%	9.09%	9.27%	10.21%
Canada	2,937	7.34%	8.78%	9.07%	9.23%	10.21%
China	7,043	7.32%	8.83%	10.09%	10.73%	12.00%
EU & Environs	6,000	6.99%	8.31%	9.61%	10.94%	13.39%
Eastern Europe & Russia	528	8.07%	9.55%	12.13%	20.32%	28.61%
India	3,982	7.32%	9.55%	11.19%	12.43%	13.18%
Japan	3,947	6.99%	8.44%	9.83%	10.63%	11.52%
Latin America & Caribbean	1,043	7.86%	9.09%	10.99%	13.83%	18.27%
Small Asia	9,408	7.81%	9.20%	10.37%	12.04%	14.68%
UK	1,255	7.51%	8.25%	9.95%	10.61%	11.30%
United States	7,229	6.76%	7.34%	8.97%	9.62%	10.24%
Global	47,606	7.20%	8.58%	9.70%	10.98%	12.84%

7. Don't let the discount rate become the receptacle for all your uncertainty...

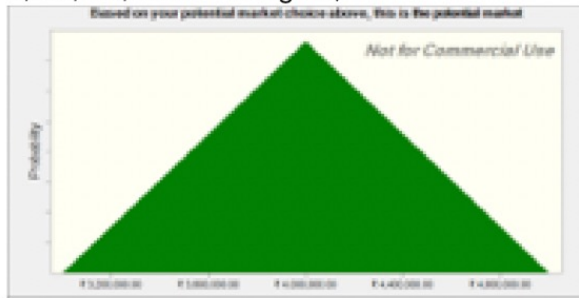
Sectors with highest and lowest annual survival rate, compared to all sectors



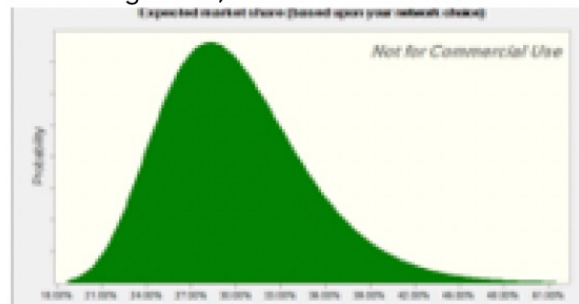
Source: Bureau of Labor Statistics, Business Employment Dynamics data

8. Confront uncertainty, if you can...

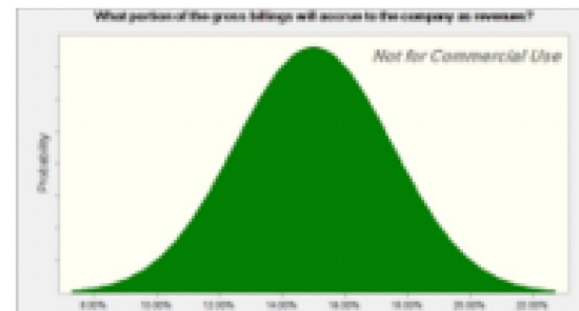
Total Market in 2032 (Range = 3,000,000 - 5,000,000, DISTR = Triangular)



Market Share in 2032 (Mean = 30%, Std Dev = 5%, DISTR = Lognormal)

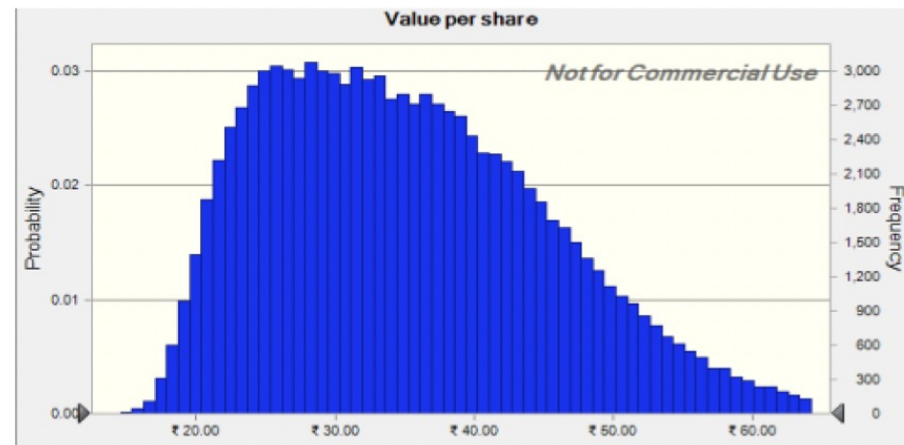


Operating Margin (Mean = 15%, Std Dev = 2.5%, DISTR = Normal)



Correlation = 0.50

Zomato: Valuation in July 2022



Percentile	Value per share
0.0%	₹ 13.78
10.0%	₹ 22.86
20.0%	₹ 25.75
30.0%	₹ 28.50
40.0%	₹ 31.29
50.0%	₹ 34.12
60.0%	₹ 37.11
70.0%	₹ 40.33
80.0%	₹ 44.12
90.0%	₹ 49.43
100.0%	₹ 89.43

9. Don't look for precision..

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- No matter how careful you are in getting your inputs and how well structured your model is, your estimate of value will change both as new information comes out about the company, the business and the economy.
- As information comes out, you will have to adjust and adapt your model to reflect the information. Rather than be defensive about the resulting changes in value, recognize that this is the essence of risk.

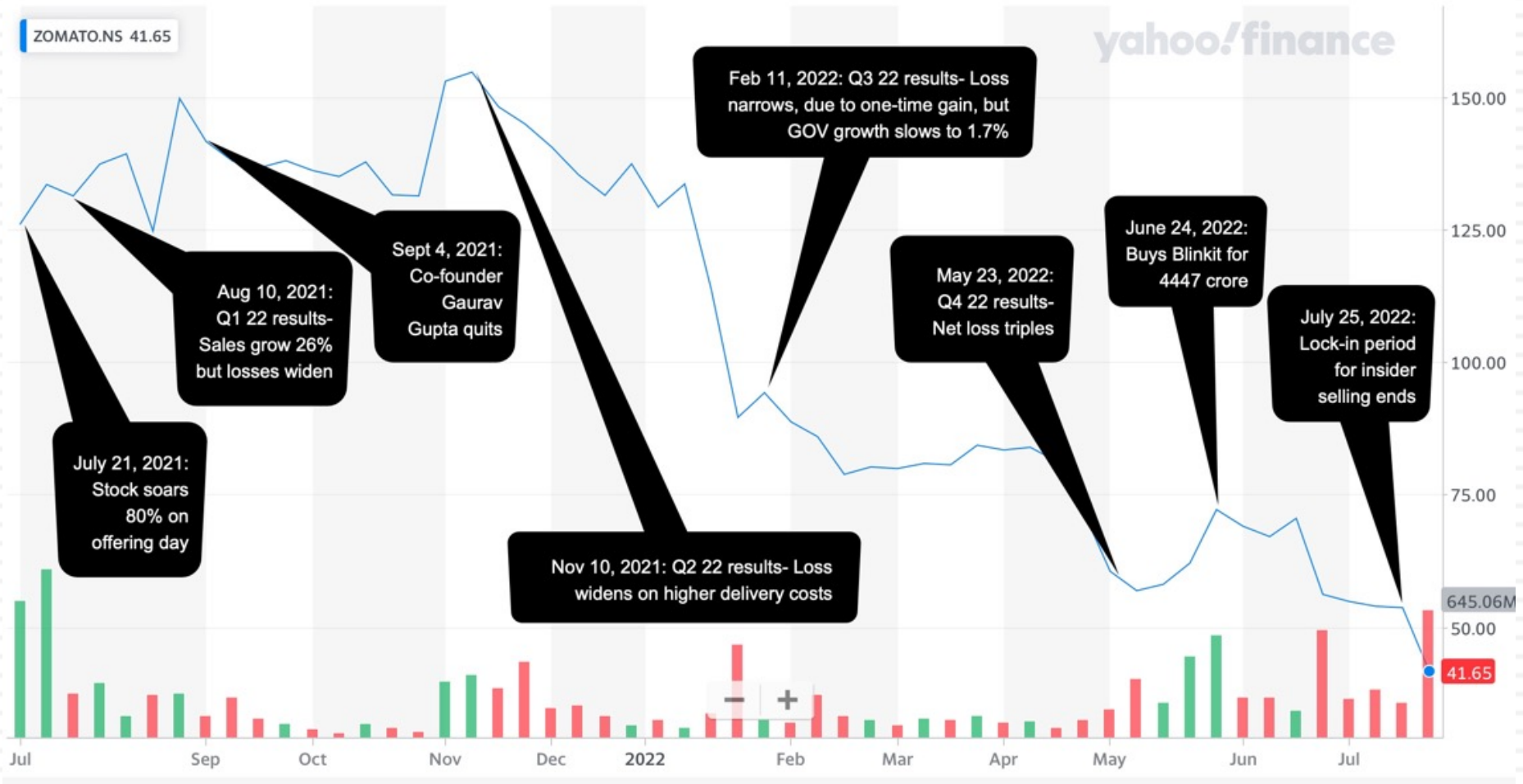
Remember that you don't have a monopoly on the truth...

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Story	TAM (in ₹ millions)	Market Share	Revenue Slice	Target Margin	Cost of Capital	Value/share	
Delivery Juggernaut	₹ 5,000,000.00	40%	25%	45%	9.50%	₹ 150.02	Plausible
Delivery Star	₹ 5,000,000.00	40%	22%	35%	9.50%	₹ 93.00	
Delivery Leader + Competition	₹ 5,000,000.00	40%	15%	35%	10.99%	₹ 61.55	
Restaurant Delivery Juggernaut + High Growth India	₹ 3,000,000.00	40%	25%	45%	9.50%	₹ 94.31	Probable
Restaurant Delivery Star + High Growth India	₹ 3,000,000.00	40%	22%	35%	9.50%	₹ 59.02	
Restaurant Delivery + Competition + High Growth India	₹ 3,000,000.00	40%	20%	25%	10.99%	₹ 35.52	
Base Case, Positive	₹ 2,000,000.00	40%	25%	45%	10.25%	₹ 56.66	
Base Case	₹ 2,000,000.00	40%	22%	35%	10.25%	₹ 39.48	
Base Case, Negative	₹ 2,000,000.00	40%	20%	25%	10.25%	₹ 26.16	Plausible
Restaurant Delivery Juggernaut + Low Growth India	₹ 1,125,000.00	40%	25%	45%	9.50%	₹ 36.48	
Restaurant Delivery Star + Low Growth India	₹ 1,125,000.00	40%	22%	35%	9.50%	₹ 24.02	
Restaurant Delivery + Competition + low Growth India	₹ 1,125,000.00	40%	20%	25%	10.99%	₹ 16.58	

And respect the market, even as you disagree with it..

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10. You can make mistakes but try to keep bias out..

