USER AND SUBSCRIBER ECONOMICS: VALUE DYNAMICS

All about users?

The Set Up

Uber, The Global Logistics Company with a behavior problem (June 2017)

The Story

Uber is a logistics company, doubling the market size by drawing in new users. It will enjoy weak global networking benefits while seeing its slice of revenues slip (85/15), higher costs (with drivers as partial employees) and low capital intensity. *The extracurricular problems at the company, with it legal tangle with Google's Waymo division and accusations of condoning of sexual harassment will slow the company down in the near term but not damage it enough to alter its story significantly.*

The Assumptions

	Base year	Years 1-5	Years 6-10	After year 10	Story link
Total Market	$200,000	Grow 10.39% a year		Grow 1.5% a year	Delivery & Moving + Ridesharing
Gross Market Share	10.00%	10%>40%		40%	Big player
Revenue Share	20.00%	20% -> 15%		15.00%	Lower revenue share
Operating Margin	-43.08%	-43.08% ->20%		20.00%	Cost pressures continue
Reinvestment	NA	Sales to capital ratio of 3.00		Reinvestment rate = 7.5%	More capital investment model
Cost of capital	NA	10.00%	10%->8.00%	8.00%	At 75th percentile of US firms
Risk of failure	5% chance of failure, if pricing meltdown leads to capital being cut off				Cash on hand + Capital access

The Cash Flows

	Total Market	Market Share	Revenues (15% of Gross)	EBIT (1-t)	Reinvestment	FCFF
1	$ 220,780	13.00%	$ 8,826	$ (2,105)	$ 775	$ (2,880)
2	$ 243,719	16.00%	$ 11,309	$ (1,983)	$ 828	$ (2,811)
3	$ 269,041	19.00%	$ 13,930	$ (1,564)	$ 874	$ (2,438)
4	$ 296,995	22.00%	$ 16,661	$ (820)	$ 911	$ (1,731)
5	$ 327,853	25.00%	$ 19,466	$ 270	$ 935	$ (665)
6	$ 361,917	28.00%	$ 22,294	$ 1,715	$ 943	$ 772
7	$ 399,520	31.00%	$ 25,080	$ 3,511	$ 929	$ 2,583
8	$ 441,030	34.00%	$ 27,741	$ 3,884	$ 887	$ 2,997
9	$ 486,853	37.00%	$ 30,173	$ 4,224	$ 811	$ 3,414
10	$ 537,437	40.00%	$ 32,246	$ 4,514	$ 691	$ 3,823
Terminal year	$ 548,723	40.00%	$ 32,923	$ 4,609	$ 484	$ 4,125

The Value

Terminal value	$ 69,920	
PV(Terminal value)	$ 28,479	
PV (CF over next 10 years)	$ (2,103)	
Value of operating assets =	$ 26,376	
Probability of failure	5%	
Value in case of failure	$ -	
Adjusted Value for operating assets	$ 25,057	
+ Cash on hand	$ 5,000	
+ Cross holdings	$ 6,000	
Value of all assets	$ 36,057	Most recent pricing put the price at greater than $70 billion

Push back on Uber Valuation

- Input disagreement: Lots of inputs and assumptions and I could be wrong on any or all of them..
- Model debate: DCF was designed for old economy companies and not suited to new economy firms that are more focused on accumulating users & subscribers, making them stick with the firm and sell them products & services over long periods.
- DCF is flexible: DCF models are much more flexible than most people give them credit for, and that they can be modified to reflect other frameworks. If you have a problem with a DCF value, it should not be with the model but with the person using that model.

DCF: Aggregated versus Disaggregated Valuation

- DCF First Principle: The value of a business is the present value of the expected cash flows from that business, with the discount rate adjusted for risk. That is true for any business, manufacturing or service, small or large, old economy or new economy.
- Aggregated versus Disaggregated Valuation: In aggregated valuation, you value the entire company, consolidating its revenues, earnings and cash flows. You could value a company on a disaggregated business based upon
  - The Different Businesses it is in (Sum of the Parts Valuation)
  - The Different Geographies it operates in
  - The Units that it generates revenues from (Subscribers, Users)

Why disaggregated valuation?

- Incorporate key differences: In aggregated valuation, you miss key differences across disaggregated units (business, geographies, products, users) as well as the missing of competitive advantages that apply only to some units of the business and not to others. With disaggregated valuation, you can bring these in.
- Connect stories to value: If the story being told by a business person or entrepreneur is a unit-based story (users, subscribers), building a valuation that is related to those units is better.
- Connect to better business decisions: To the extent that insiders can obtain the information to value a business on a disaggregated basis, you can use that information to improve the way the company is run and to increase its value.

User Based Valuation- Structure

User Based Valuation

- To value a company, based on its users, you have to value an individual user first and then estimate the cost of acquiring new users.

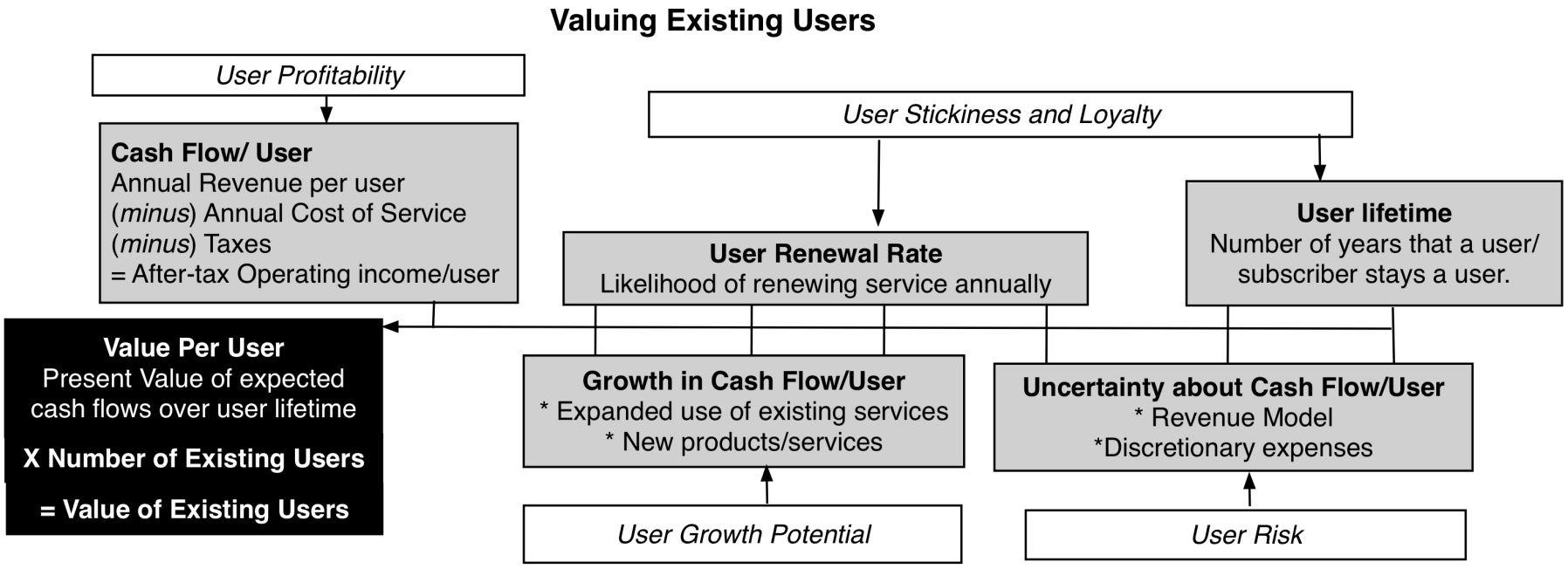
Value of user-based company's operations =

Value of existing users

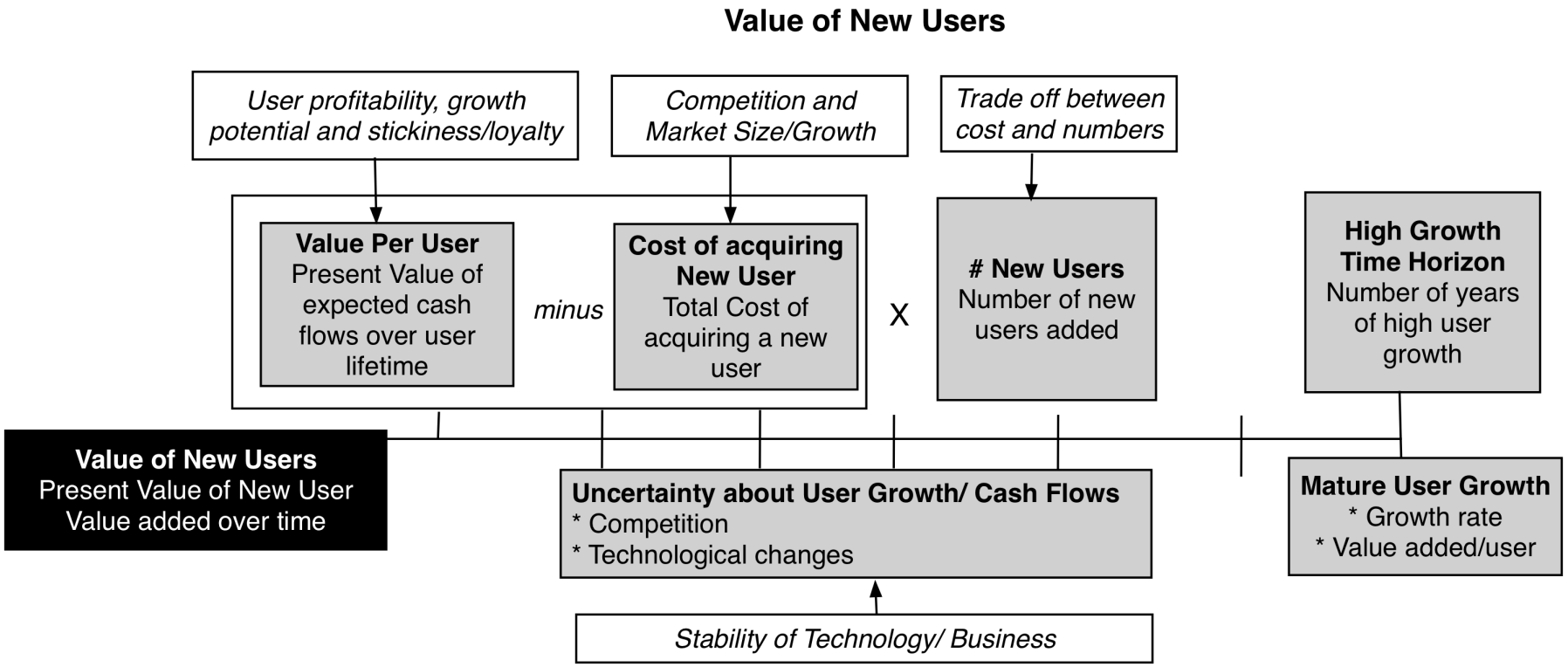
+ Value added by new users

- Value drag from corporate expenses

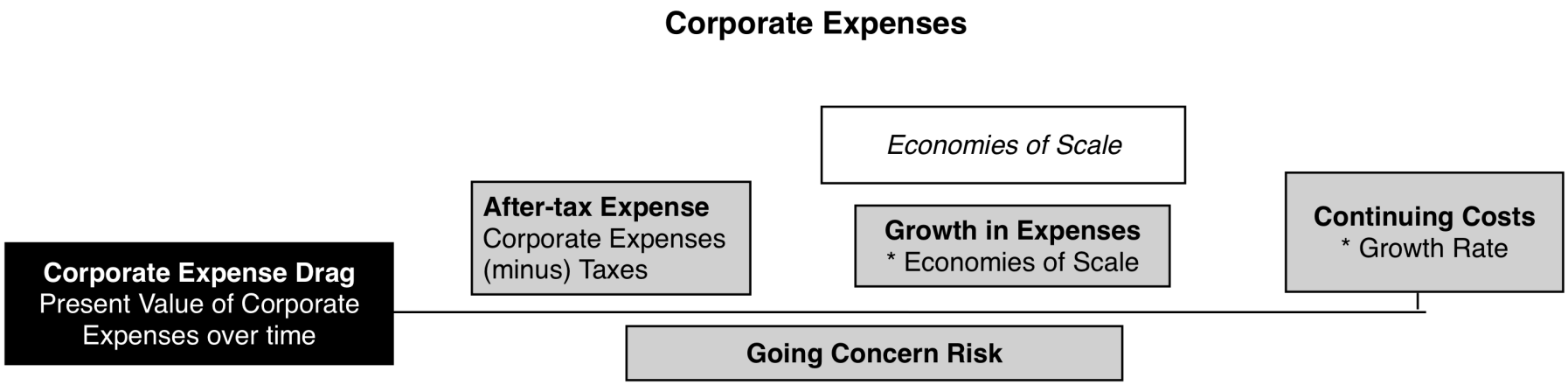
Valuing Existing Users



Valuing New Users

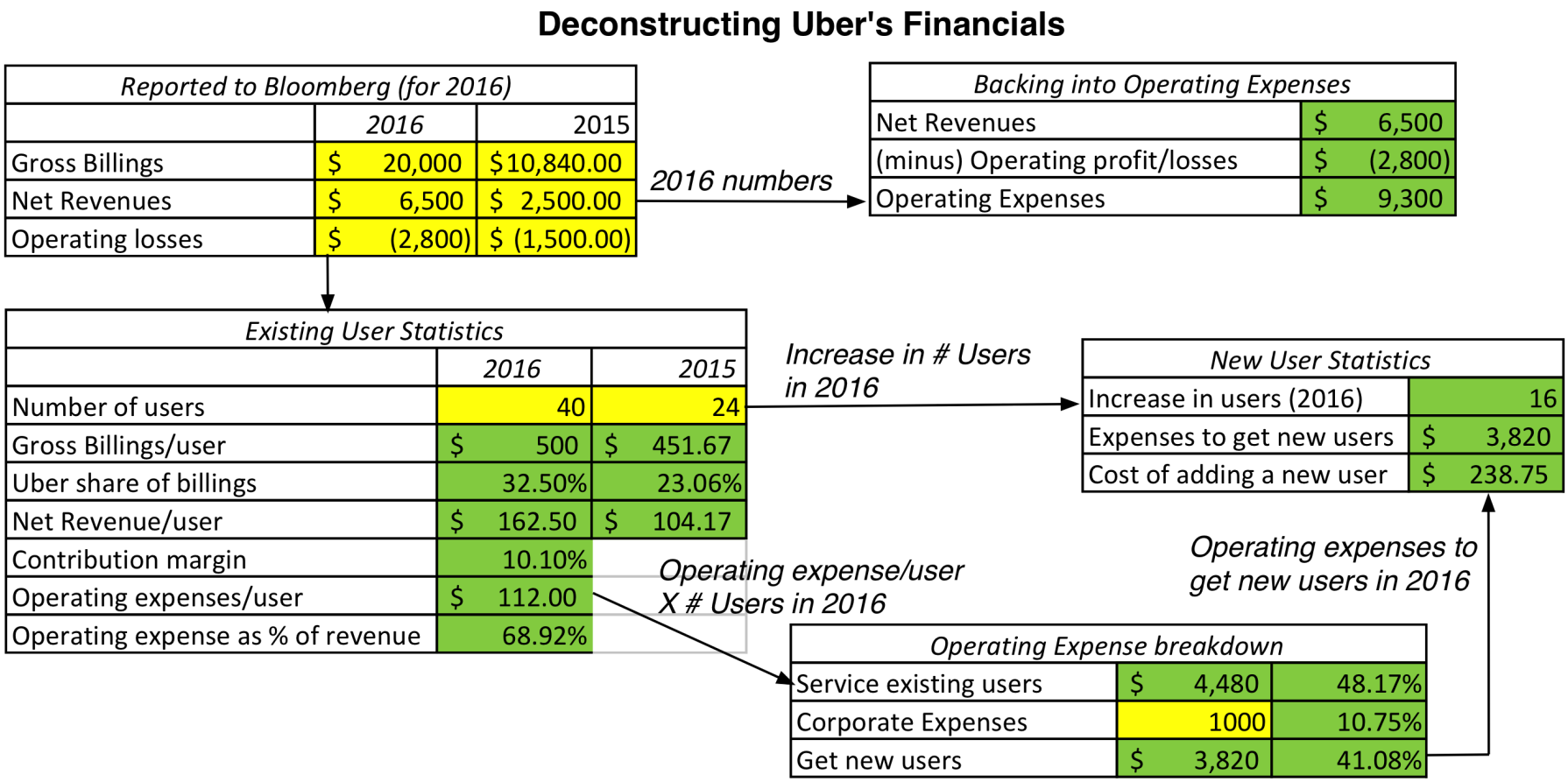


Valuing Corporate Expenses



A User-based Valuation of Uber

Uber: Deconstructing the Financials



Uber's Existing User Value

Growth rate in Operating Expenses
Assumed that 80% of operating expenses are variable. Growth rate is 9.9% /year.

Growth rate in Revenues
Assumed 12% growth in annual revenues/user over next 15 years

User Lifetime
Assumed to be 15 years, with an annual renewal probability of 95%.

Value of Existing Users: Uber

	Base	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Gross Billings	$ 500.00	$560.00	$627.20	$702.46	$786.76	$881.17	$986.91	$1,105.34	$1,237.98	$1,386.54	$1,552.92	$1,739.27	$1,947.99	$2,181.75	$2,443.56	$2,736.78
Net Revenue	$ 100.00	$112.00	$125.44	$140.49	$157.35	$176.23	$197.38	$ 221.07	$ 247.60	$ 277.31	$ 310.58	$ 347.85	$ 389.60	$ 436.35	$ 488.71	$ 547.36
Cost of Service	$ 48.17	$ 52.94	$ 58.18	$ 63.94	$ 70.27	$ 77.23	$ 84.87	$ 93.27	$ 102.51	$ 112.66	$ 123.81	$ 136.07	$ 149.54	$ 164.34	$ 180.61	$ 198.49
Operating Profit	$ 51.83	$ 59.06	$ 67.26	$ 76.55	$ 87.08	$ 99.01	$112.51	$ 127.79	$ 145.09	$ 164.65	$ 186.78	$ 211.79	$ 240.06	$ 272.01	$ 308.10	$ 348.87
Operating Profit after tax	$ 36.28	$ 41.34	$ 47.08	$ 53.59	$ 60.96	$ 69.31	$ 78.76	$ 89.46	$ 101.56	$ 115.26	$ 130.74	$ 148.25	$ 168.04	$ 190.41	$ 215.67	$ 244.21
PV of operating profit		$ 37.58	$ 38.91	$ 40.26	$ 41.63	$ 43.03	$ 44.46	$ 45.91	$ 47.38	$ 48.88	$ 50.41	$ 51.96	$ 53.54	$ 55.15	$ 56.79	$ 58.46
Value of user (full life)	$ 714.36															
Probability of full life	46.33%															
Expected life of dropouts	3.75															
Value per existing user	$ 410.31															
Number of existing users	40.00															
Value of existing users	**$ 16,412**															

Adjustment for drop outs
Users who don't make it through full life are assigned an expected life of 25% of the full life, an approximation.

Risk Adjusted Discount Rate
Used a 10% cost of capital, set at 75th percentile of US companies.

Uber's New User Value

Base year Value/ New User
Value of User = $410.31
Cost of adding New User = $238.78
Value added by new user = $171.53

Value Added by New Users: Uber in June 2017

	Base Year	1	2	3	4	5	6	7	8	9	10
Total Users	40.00	48.00	60.10	75.75	95.56	120.57	129.57	137.56	145.88	154.70	164.04
New Users	0.00	10.00	14.50	18.65	23.60	29.79	15.04	14.46	15.20	16.11	17.08
Value per new user	$171.53	$174.11	$176.72	$179.37	$182.06	$184.79	$187.56	$190.38	$193.23	$196.13	$199.07
Value added by new users		$1,741	$2,562	$3,345	$4,296	$5,505	$2,820	$2,753	$2,937	$3,159	$3,400
Terminal Value											$7,031
Present Value		**$ 1,555**	**$ 2,043**	**$ 2,381**	**$ 2,730**	**$ 3,124**	**$ 1,429**	**$ 1,245**	**$ 1,186**	**$ 1,139**	**$ 3,359**
Value Added by New Users	**$ 20,191**										

User Growth rates
Years 1-5: 25%
Years 6-10: 10%

Cost of capital
Used 12%, the 90th percentile of US companies

Beyond year 10
User growth continues at 2.1% a year

Uber Corporate Expense Value (Drag)

Base year number
Absent information, assumed

Tax Rate
Assumed =30%

Cost of capital
Used 10%

	Base year	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Corporate Expenses	-$1,000	-$1,040	-$1,081	-$1,125	-$1,170	-$1,216	-$1,265	-$1,316	-$1,368	-$1,423	-$1,480
After-tax Corporate Expenses		-$728	-$757	-$787	-$819	-$851	-$886	-$921	-$958	-$996	-$1,036
Terminal Value											-$13,388
PV of Corporate Expenses		-$662	-$626	-$591	-$559	-$529	-$500	-$473	-$447	-$422	-$5,561
Value drag from expenses	-$10,369										

Uber Valuation

	User Value	*Asset value*	*Company Value*	*Equity Value*
Existing Users	$16,412.49			
New Users	$20,190.70			
User Value	$36,603.19	**$36,603.19**		
- Corporate Expense Drag		$(10,369.28)		
Uber Operating Assets		$26,233.91	**$26,233.91**	
+ Cash			$5,000.00	
+ Didi Cross Holding			$6,000.00	
Uber Firm Value			$37,233.91	**$37,233.91**
- Debt				$-
Value of Equity				**$37,233.91**

User-based Value Dynamics

I. User Cost Propositions

- Profits are better than losses: If you are an investor in a business, you would rather that the business make money than lose money.
- Young companies lose money: If you have a young company, you should expect the company to make losses, even if it is a valuable business.
- Not all losses are created equal: For young growth companies, dependent upon users or subscribers, there are good ways to lose money and bad ways to lose money.
- Investor beware: To invest in these companies, you need to know why they lost money, not just how much.

a. Existing User versus New User Costs

User Value Proposition 1: A money-losing company that is losing money providing service to existing users/customers is worth less than a company with equivalent losses, where the primary expenses are coming from customer acquisitions.

% of Operating Expenses spent on acquiring new users	*Value of Existing Users*	*Value of New Users*	*Uber User Value*	*% of Value from Existing users*
0%	$ 6,167	$ 18,147	$ 24,314	25.36%
20%	$ 10,619	$ 19,035	$ 29,654	35.81%
40%	$ 15,071	$ 19,923	$ 34,994	43.07%
60%	$ 19,523	$ 20,811	$ 40,334	48.40%
80%	$ 23,974	$ 21,699	$ 45,673	52.49%
100%	$ 28,426	$ 22,587	$ 51,013	55.72%

b. Fixed versus Variable Costs

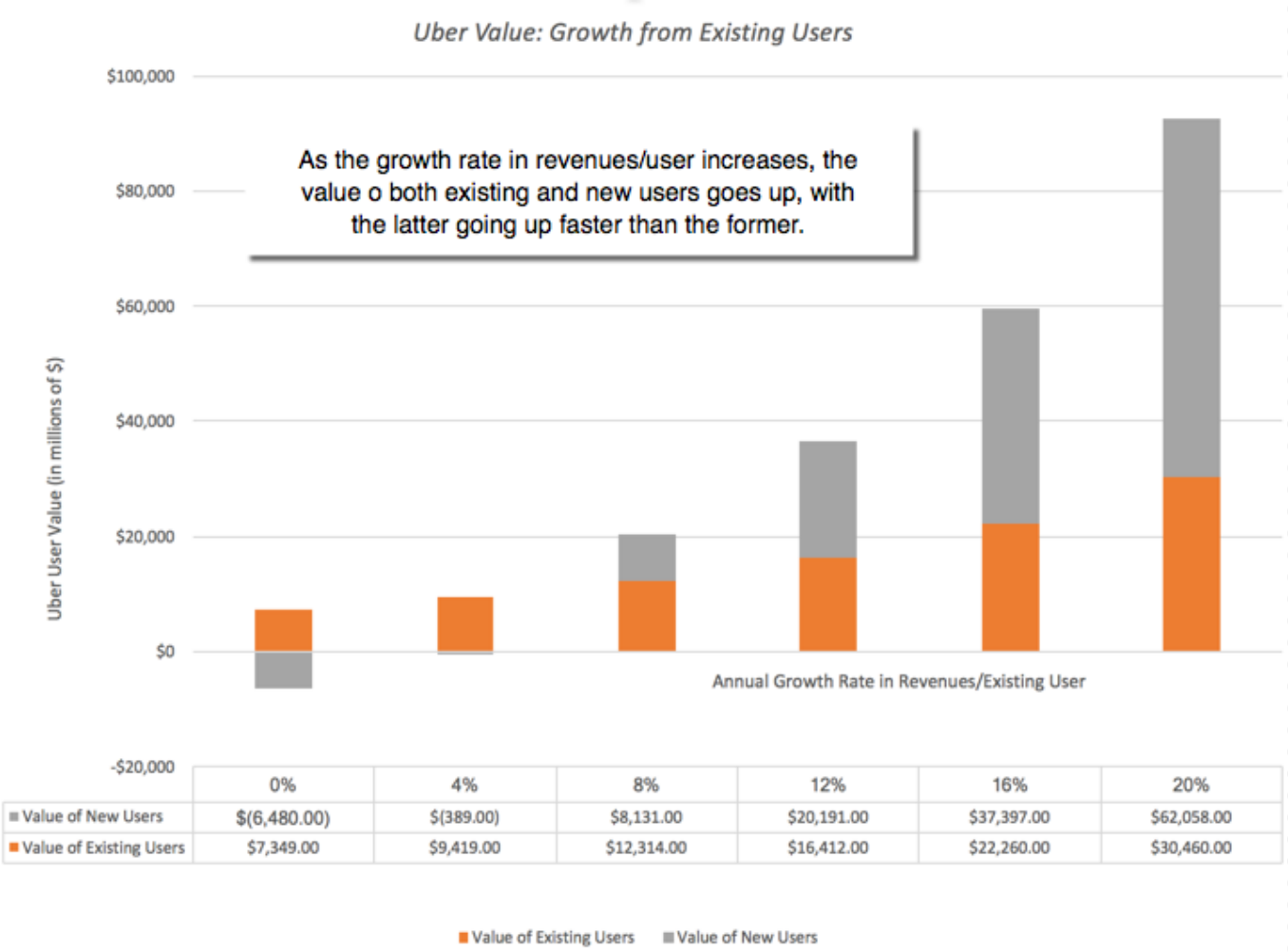
- **User Value Proposition 2**: A company whose expenses are primarily fixed (will not grow with revenues) will be worth more than an otherwise identical company whose expenses are variable (track revenues).

% of current expenses that are fixed	Value of Existing Users	Value of New Users	Uber User Value	% of Value from Existing users
0%	$ 14,733	$ 15,250	$ 29,983	49.14%
20%	$ 16,412	$ 20,191	$ 36,603	44.84%
40%	$ 17,834	$ 24,373	$ 42,207	42.25%
60%	$ 19,040	$ 27,924	$ 46,964	40.54%
80%	$ 20,068	$ 30,949	$ 51,017	39.34%
100%	$ 20,947	$ 33,536	$ 54,483	38.45%

II. User Growth Propositions

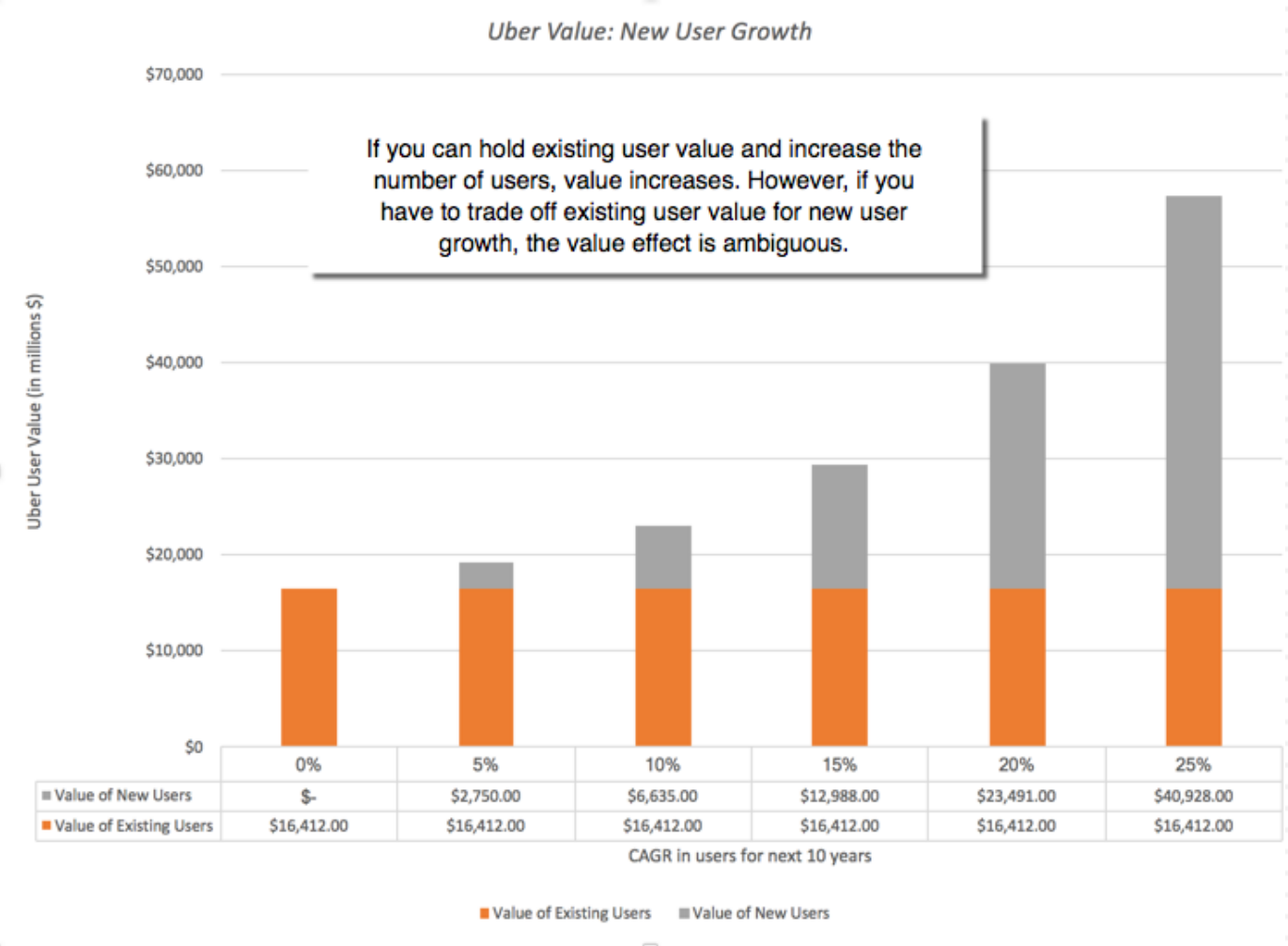
- For young companies, we generally view growth as good and reward companies with higher growth rates with higher value.
- Not all growth is created equal. Some growth strategies create more value than others and some may even destroy value.
- In a user or subscriber based model, there are two ways you can grow your revenues. One is to get existing users to buy more or your product or service or perhaps other products and services that you come up with. The other is by trying to acquire new users.

a. Growth from Existing Users



	0%	4%	8%	12%	16%	20%
Value of New Users	$(6,480.00)	$(389.00)	$8,131.00	$20,191.00	$37,397.00	$62,058.00
Value of Existing Users	$7,349.00	$9,419.00	$12,314.00	$16,412.00	$22,260.00	$30,460.00

b. Growth from New Users



Growth and Value

- **User Value Proposition 3**: A company that is growing revenues by increasing revenues/user is worth more than an otherwise similar growth company that is deriving growth from increasing the number of users/customers.
  - Young companies face trade offs and the question of whether to allocate resources to get new users or try to sell more to existing users is one of those.
  - At least in the case of Uber, the numbers seem to indicate that if you have to put priorities, it should be on getting existing users to use the service more than to keep looking for new users.

III. User Business Propositions

- Looking at a company as a user or subscriber based company can be useful in deciphering how and why they make the strategic and business choices that they do.
  - From Buzz words to value: A user-focus can help us make sense of the focus on “big data” and “networking benefits” that many of these companies have and link them more directly to value.
  - Revenue Models: A user focus can help determine what type of revenue model (subscription, advertising or transaction) will optimize value for a company.
  - Real Options: Does a company with a large and loyal customer user base have optionality (leading to a premium being added to its value)? While real options are notoriously difficult to value, in this context, a user focus can give us direction.

a. The Great, the Good, the Bad and the Ugly!

The Mediocre
Low Value Added + Low cost of adding new user

The Disaster
Low Value Added + Hight cost of adding new user

		Cost of acquiring a new user				
		$100	**$200**	**$300**	**$400**	**$500**
Value per user	**$ 150**	$1,516	-$10,255	-$22,025	-$33,796	-$45,566
	$ 300	$25,172	$13,401	$1,631	-$10,140	-$21,911
	$ 450	$48,828	$37,057	$25,287	$13,516	$1,745
	$ 600	$72,484	$60,713	$48,943	$37,172	$25,401
	$ 750	$96,140	$84,369	$72,599	$60,828	$49,057
	$ 900	$119,796	$108,025	$96,255	$84,484	$72,713

The Great
High value per user + Low cost of adding new user

The Good
High Value per user + High cost of adding new user

Network Benefits and Big Data: Keys to being exceptional

- **User Value Proposition 4:** The exceptional firm will be the one that is able to find a pathway to high value per user and a low cost to adding a new user in a market where its competitors struggle with either low value per user or high costs of acquiring users.
- The keys to being an exceptional user-based company lie in utilizing:
  - Network Benefits, to reduce your cost per new user, as you get bigger.
  - Big Data that you have accumulated on your users to (a) customize existing products/services to meet user preferences, (b) create new products or services that meet perceived user needs or (c) for differential pricing

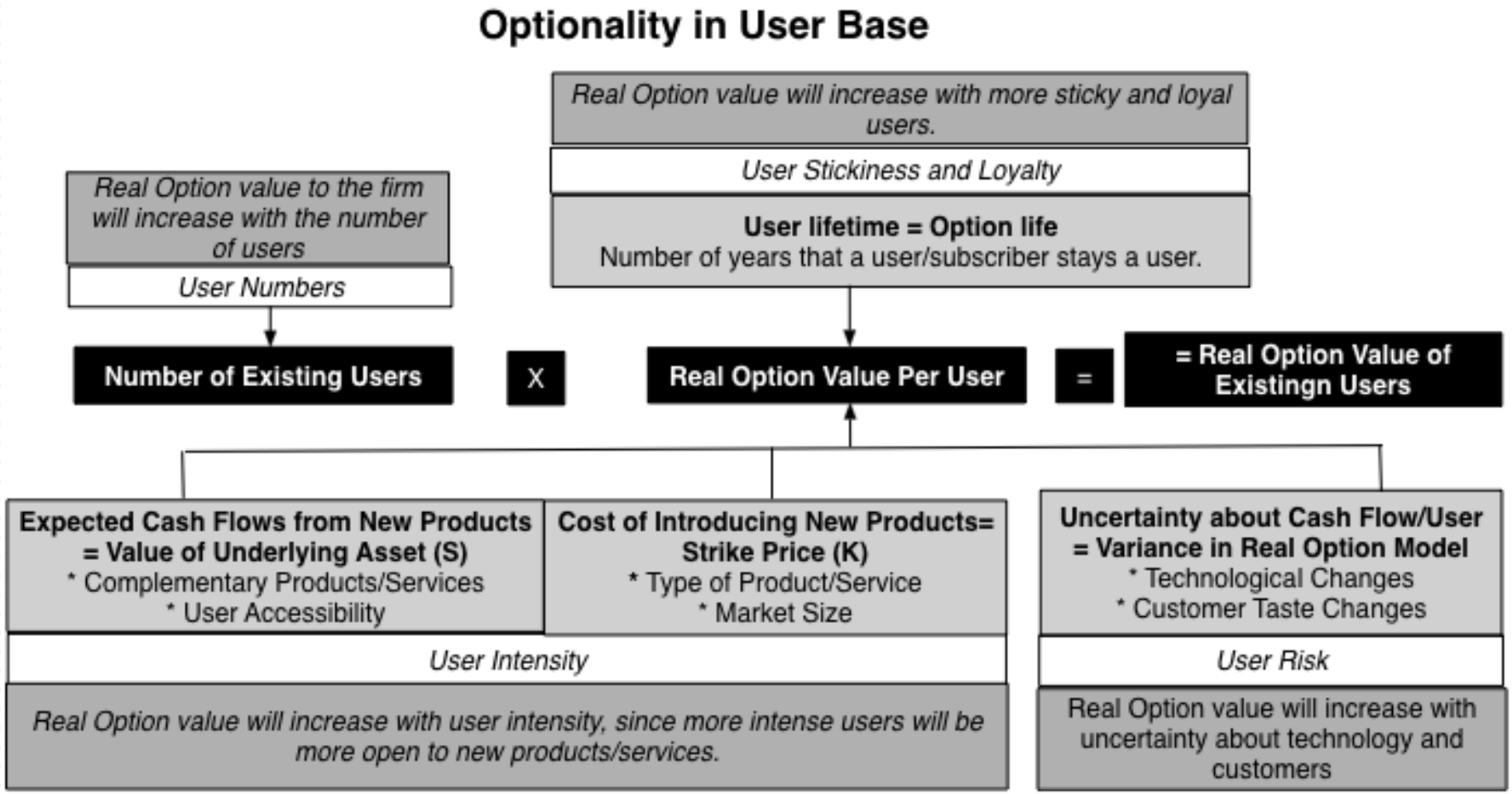
b. Revenue Models

	Subscription	*Transaction*	*Advertising*
User Stickiness (User life & Renewal Probability)	High (High life & renewal probability)	Intermediate (Intermediate life & renewal probability)	Low (Low life & renewal probability)
Revenue per User Predictability (Discount rate)	High (Low Discount Rate)	Low Predictability (High Discount Rate)	Intermediate (Average Discount Rate)
Revenue per User Growth (Annual Growth Rate)	Low (Low growth rate in revenues/user)	Low (High growth rate in revenues/user)	Intermediate (Intermediate growth rate in revenues/user)
Growth rate in users (CAGR in # Users)	Low (Low CAGR in # users)	Intermediate (Intermediate CAGR in # users)	High (High CAGR in # users)
Cost of adding new users (Cost/New User)	High (High Cost/New User)	Intermediate (Middling Cost/New User)	Low (Low Cost/New User)

The “best” revenue model

- **User Value Proposition 5**: The "optimal" revenue model will vary across firms depending upon where they are in the life cycle, the product or service offering and whether they are focused on user growth, revenue growth or revenue sustainability.
- An advertising-based model will allow for much more rapid growth in a firm's early years, a subscription-based model will generate more sustainable growth and a transaction-based model has the greatest potential for revenue growth from existing users.

c. Real Options



The Value of Optionality

- **User Value Proposition 6**: The value of optionality from a user base will be greatest at firms with lots of sticky, intense users in businesses where the future is unpredictable because of changes in product/service technology and customer tastes.
- The value of a real option comes from exclusivity, and to the extent that you have sticky, intense users, you have a base that you can use to experiment with other products and services, with the value scaling up with the number of uses.

Uncertainty: A Feature, not a Bug!

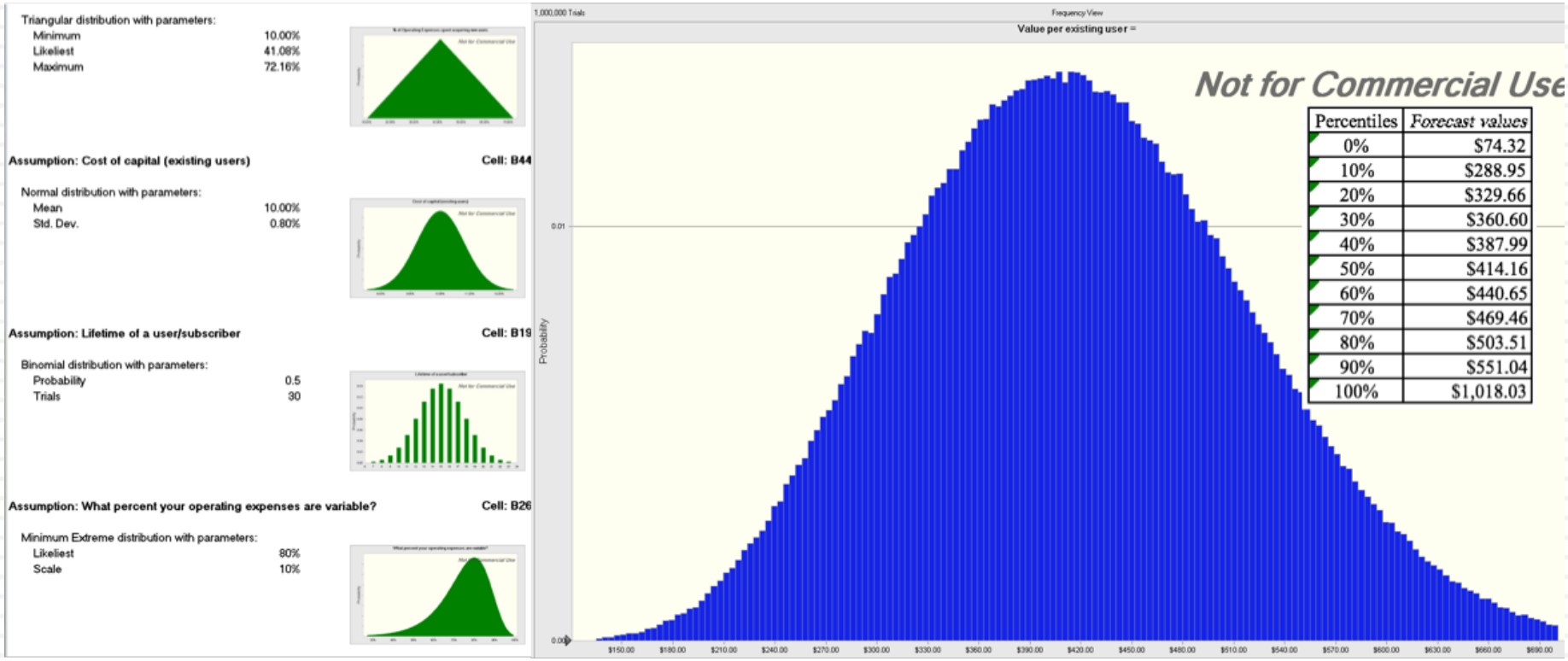
1. Estimation versus Economic Uncertainty

- Estimation uncertainty comes from incomplete, missing or misleading information provided by the company that you are valuing.
- Economic uncertainty is driven by forthcoming changes in the business that the company operates in, as well as macro economic factors.
- The first can be reduced by obtaining better and more complete information but the latter will remain, no matter how time you put in and data analysis that you do.
- With Uber, it is economic uncertainty that is the dominant source. So, getting better information from Uber (either as an investor or when it goes public) is going to do little to reduce uncertainty.

2. Uncertainty is a fact of life (and business)

- Uncertainty is part and parcel of doing business and you cannot wish it, pray it or analyze it away.
- You have two choices when it comes to uncertainty.
  - You can deal with it frontally by making explicit assumptions. You will be wrong 100% of the time, but you will be able to see where you are wrong and adjust your valuation.
  - You can go into "denial" model and make implicit assumptions about variables. When pricing by looking at what others are paying for users in similar companies, you are making assumptions about all of the variables as well, but those assumptions are implicit.

3. Uncertainty can be visualized



Bottom Line

- The most direct applications of a user or subscriber based model is in the valuation of companies like Uber, Facebook and Netflix.
- That said, more and more companies are seeing benefits in shifting from their traditional business models to user-based ones. Apple's billion iPhone users, Amazon's seventy million Prime members and Microsoft's hundred million 365 users are all giving these companies their versions of user-based models.
- Understanding user economics is key to investing in these companies (valuing or pricing) and in managing them.