Discussion of valuing Uber. Note the wide range. The stories and the numbers

FiveThirtyEight

A smartphone displays the Uber app, which allows users to hail private-hire cars, on June 2, 2014, in London, England.

PAUL J. RICHARDS / AFP via Getty Images

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Uber Isn't Worth $17 Billion

By Aswath Damodaran

Filed under Valuations

Earlier this month, investors poured $1.2 billion into Uber, a tech company whose smartphone app connects taxi drivers to passengers. The share of the business these investors received suggests that Uber is worth $17 billion, a mind-boggling sum for a young company with only a few hundred million dollars in revenue. That said, Uber isn't the only highly valued tech company these days, with others like Airbnb and Dropbox each valued at about $10 billion by investors.

For all these companies, the key selling point is "disruption," one of the tech industry's worst buzzwords. The companies argue that they're upending existing ways of doing business — hailing a taxi, with Uber, or finding lodging, with Airbnb — and given the sizes of the businesses they're supposedly disrupting, the sky's the limit when it comes their value. But is Uber, which was founded five years ago, really worth $17 billion? My answer, as I hope to detail below, is only if we make some big assumptions about the taxi market and Uber's place in it.

The value of any business, no matter what it does and where it is in its life cycle, is based on its capacity to generate real cash flows. For young firms like Uber, the expected cash flows are in the distant future, and estimating them will require making big assumptions about how the market and the competition will evolve.

To value Uber, we first need to understand how Uber makes money. It does not own taxis or hire drivers; rather, its role is one of a matchmaker.[1]

Its value comes from its screening of drivers and cars (to ensure both safety and comfort), its pricing and payment system (customers choose the level of service, i.e. taxi, black car or SUV, are quoted a fare and pay via the app) and its convenience (customers can track, on their phones, the car that's picking them up). Customers pay Uber, and Uber takes 20 percent of the fare, while the rest goes to the drivers.[2]

Uber's growth potential rests not only on being able to claim a larger share of the car-service market but also on expanding this market by attracting those who use public transportation or drive their own cars.

As a private company, Uber is not obligated to share its financial information with the public, though leaks of revenue figures and gross receipts have played nicely into its narrative of growth. A leaked document in December, for example, suggested that the company generated gross receipts (the fares paid by customers for rides) of $1.1 billion in 2013, which would translate into revenues of $220 million.

If we buy into the assertion made by Travis Kalanick, Uber's founder and CEO, that the company's revenues are doubling every six months, updated values for both gross receipts and revenues should be higher. In estimating Uber's value, I'm going to assume $1.5 billion and $300 million as my base year's gross receipts and revenues. (There are whispers that even these numbers are too low, but as we will see below, the effect on value of using a higher starting number is less than you might think).

One way to value a company is to estimate the present value of its future cash flows. How you estimate Uber's future cash flows depends, mostly, on three things: the size of its potential market, the size of Uber's share in that market, and what percentage of gross receipts Uber takes. The assumptions you make on each question can dramatically affect Uber's valuation, so let me walk through mine.

For my base case valuation, I'm going to assume that the primary market Uber is targeting is the global taxi and car-service market. I know that there is talk (some from Uber's management and analysts) that Uber could extend its reach into other businesses such as car rentals, moving services and even driverless cars, but I don't see evidence that it has succeeded in making any breakthroughs yet.

The global market for taxis and car services may be a big one, but it's very splintered, with lots of small, local operators dominating each city. In many cities, it's also a cash business, so there's no easy way to track the total revenues generated by operators. But, there is some data we can build on. For instance, there seems to be a consensus that the most lucrative cab market in the world is in Japan, where yearly revenues are estimated to be about $20 billion to $25 billion just in Tokyo, followed by the United Kingdom with revenues of $14 billion, the bulk from London, and the U.S. with $11 billion overall and about $3 billion in New York. Assuming taxi revenues in the rest of the world add another $50 billion to this total, I arrive at a total market of $100 billion.

It's true that many cities, especially in Asia and Latin America, are underserved and that the global taxi and car-service market will continue to grow well above 2

percent to 3 percent per year — a rate that we've observed in the U.S., Japan and the U.K. It's also true that services like Uber will contribute to that faster growth. I estimate an expected growth rate of 6 percent per year for the next decade, increasing the overall market to $183 billion in 2024.

Estimating Uber's market share is a bit trickier. The taxi and limo market is regulated in most cities. In other words, local governments restrict new companies from entering the market and in return, they regulate the prices that cabs can charge their customers. While Uber has only a minuscule slice of the overall revenues today, the market share it can aspire to gain will depend on at least three factors: drivers' and passengers' openness to a different way of doing business, the competition and regulation.

The good news for Uber is that the market is splintered; there are no large and established players and very few publicly traded companies in this space. The bad news is that the market will be tough to dominate. Unlike technology companies in other businesses, like Google, Facebook and eBay, the network effect and winner-take-all benefits are limited. Having a global network of tens of thousands of cabs doesn't make a difference to a customer looking for a cab in New York City. That, along with the regulatory restrictions protecting the status quo and the competition Uber faces from Lyft, Hailo and others, lead me to estimate a market share of 10 percent.

Increased competition has already forced Uber to cut its take of gross receipts in some cities. My instincts tell me that Uber's slice will decrease over time, but I'm going to make the optimistic assumption that the company will find a way to differentiate itself and continue to claim 20 percent of gross receipts.

Other assumptions are going to affect my estimate of Uber's value: how much it costs to operate the company,[3]

how much it spends to grow the company,[4]

the tax rate it pays,[5]

and how costly it is for Uber to borrow money or attract new investors.[6]

You can see the end results of these assumptions and explore the data in this Excel file, but the narrative is a simple one. Uber not only becomes the largest and most profitable player in the car-service business, it also plays a role in expanding that business. It retains a strong competitive edge, allowing it to generate much higher profit margins than the competition, while becoming a safer investment over time. I estimate Uber's risk-adjusted value to be $5.9 billion.

In the table below, you can see how changes in my assumptions about total market size and Uber's market share, while holding everything else constant, affect the valuation. Let's allow for a potential market larger than $100 billion and Uber's market share to be more than 10 percent.

What Drives Uber's Value

Possible valuations in billions of U.S. dollars

SIZE OF POTENTIAL MARKET

UBER MARKET SHARE	$50b	$100b	$150b	$200b	$250b	$300b
5.0%	$1.5b	3.0	4.4	5.9	7.3	8.8
7.5%	2.3	4.4	6.6	8.8	11.0	13.1
10.0%	3.0	→5.9	8.8	11.7	14.6	17.5
12.5%	3.3	7.3	11.0	14.6	18.2	21.8
15.0%	4.4	8.8	13.1	17.5	21.8	26.2
17.5%	5.2	10.2	15.3	20.4	25.5	30.5
20.0%	5.9	11.7	17.5	23.3	29.1	34.9

Our Uber valuation

SCENARIOS IN WHICH UBER IS WORTH $17B OR MORE

As you can see, the market would have to be three times my estimate — about $300 billion — or Uber's market share would have to be more than double my base case estimate — more than 20 percent — to justify a $17 billion valuation. The former may hold if you see Uber's market more expansively than I do, and the latter may come to fruition if you believe Uber will have an easier time overcoming the competition and the regulatory constraints on its growth.

How Uber's Cut of Your Fare Affects Its Value

Possible valuations in billions of U.S. dollars

UBER'S CUT	SIZE OF POTENTIAL MARKET		
	$100b	$200b	$300b
5%	$1.8b	3.6	5.3
10%	3.2	6.3	9.4
15%	4.5	9.0	13.5
20%	5.9	11.7	17.5
25%	7.3	14.4	21.6

SCENARIOS IN WHICH UBER IS WORTH $17B OR MORE

Our Uber valuation

I also examined how the value would change if Uber's slice of gross receipts were to drop from my base case estimate of 20 percent, again allowing for different potential market sizes.

Not only does this table point to devastating effects on its value should competition force Uber to cut its 20 percent take, but it also reveals a danger for Uber (and its investors) in focusing too much on growth in gross receipts. Uber may be able to expand its market by charging less, but the effect on value of doing so will be negative.

This framework lends itself easily to other narratives. For instance, one of the more optimistic takes says that Uber is in the logistics market, i.e. it's a player in any business that involves moving people or things from one point to another. That would lead you to define Uber's market more broadly and come up with a much higher valuation. As you consider these possibilities, though, it's worth

keeping in mind that investing is not a game of possibilities but one of probabilities.

The list of Uber's investors includes some of the biggest names in venture capital, and you may be tempted to conclude that given their pedigree, they must know something we don't. You may be right, but I wouldn't be that quick to conclude that smart investors always make smart investment judgments.

CORRECTION (June 19, 10:23 a.m.): An earlier version of the second table in this article misstated the valuation of Uber given a potential market of $100 billion and Uber's cut of 10 percent. It would be $3.2 billion, not $5.9 billion.

This article was adapted from a June 9 post on Musing on Markets, the author's blog.

Footnotes

1. Uber has a low-cost model that should theoretically allow it to keep a large percentage of its revenues as profits. Its expenses include employee salaries, marketing and customer acquisition costs and technology investments.

2. Uber has reduced its take in some cities where it faces competition from other companies such as Lyft and Hailo.

3. Lacking specific information about expenses and profits at Uber, I will draw on the information I have on technology companies more generally, especially fast-growing ones in the social media and online space. I'll assume that Uber's pre-tax operating margin will be 40 percent, well above the median value of 20 percent for technology companies.

4. When revenues are the only operating numbers with substance, your reinvestment must be tied to them. In particular, you need to estimate how many dollars of incremental revenues each incremental dollar of investment creates (a ratio of sales to capital). There's very little that we'll learn from Uber's past on this measure, but again, drawing on the cross-sectional distribution of this measure for all technology companies, I'll use a sales-to-capital ratio of 5.0 (much higher than the median value of 2.5 for technology companies).

5. Lacking any information on the proportion of Uber's revenues that are from outside the U.S., I will assume that the company's initial tax rate will be 30 percent (close to the U.S. corporate average) and climb over time to hit 40 percent in 10 years.

6. It's inarguable that there's a lot more operating uncertainty in investing in Uber at this stage in its life cycle than there is in investing in the median public company. I will assume that the cost of capital demanded by investors

for the first five years will be 12 percent (at the 90th percentile of U.S. public companies) but that it will gradually decrease to the cost of capital of a median public company (8 percent).

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Musings on the Markets

Thoughts on finance

# The Euphoria Surrounding Uber Will be Short Lived

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Uber, the ridesharing company that is taking over the taxi industry by storm, is all over the headlines these days. Founded in 2009, the company has since expanded to 36 countries and is doubling revenue every 6 months.[1] Backed by influential investors including Google Ventures, Goldman Sachs, and Jeff Bezos, Uber completed its latest round of funding in June with a valuation of $17 billion.

The taxi industry is usually highly regulated, restricting the number of taxis operable at any given time. **Given Uber's similarity to a standard taxi, it** should be no surprise that the company is the target of numerous lawsuits. Demonstrations have been held and Ubers cars have even been attacked by taxi drivers during protests.[2] Legal issues aside, the company is welcomed by both taxi riders and Uber drivers thus far.

So why is Uber loved by most people? Along with cheaper fares, Uber also offers a review system where its drivers are rated according to customer satisfaction. In addition, Uber claimed that Uber drivers earn significantly higher than regular taxi drivers.[3] Combine all of these factors and you get a company that is seemingly working to better the taxi industry for both users and drivers.

But will the future be what its proponents think it will be? Will Uber continue to deliver? The answer **is no. Uber's high margins, increased revenue for drivers, and cheaper fares are mutually exclusive** and will be short lived.

Uber's rapid growth is the result of integrating GPS into its fleet, thereby increasing efficiency, and removing the cap on the supply of drivers. The bulk of economic value that Uber contributes to the industry is the increase in utilization (increase in productivity). As a result, we see a rise in average revenue per driver (ARPD) as waiting times are reduced. Uber then passes some of the savings resulting from this increase in efficiency to the consumers, decreasing the fare. This creates the illusion of a virtuous cycle, as illustrated below by Mr. David Sacks.[4]
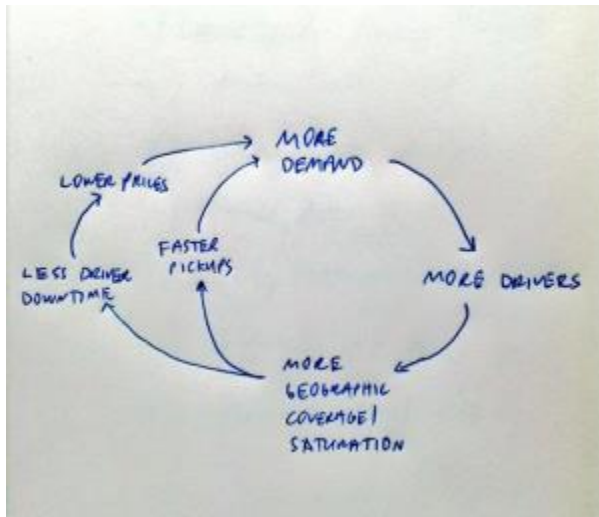
Before we delve further, I would like to make two reasonable assumptions about the industry.

1. There is a large supply of drivers
2. Ridesharing companies will compete in the same city (we are seeing this already)[5]

As prices decrease, the optimum will eventually be reached, and further decreases in the price would be uneconomical. However, Uber will still be pressured to recruit more drivers when it reaches that point. Why? If I may borrow Mr. Bill Gurley's (an Uber investor) article: the network effect is the name of the game. It improves pick-up times, increases coverage density, and ultimately increases utilization. So how can Uber increase its network effect? One key variable is the number of customers (demand), and since price is fixed at the optimum, the only other input would be the number of drivers.

Unfortunately for Uber, the low barriers to entry implies fierce competition, we are already seeing a multitude of ridesharing companies: Lyft, Sidecar, Summon, just to name a few. Due to competition, every company has an incentive to recruit more drivers to increase its own network effect. This is the beginning of a vicious cycle.

Each company will face constant pressure to recruit more drivers. In doing so, the overall utilization and ARPD of the industry will decrease. As more drivers sign up for Uber, the inevitable equilibrium is one where the ARPD will be at its minimum. As drivers' revenue decreases, riders will also suffer from poor service.

Can't Uber just fend off competition with its established fleet already? It is possible if Uber can somehow establish brand loyalty. However, it is highly unlikely considering that its service acts like a commodity, much like the commercial airline industry.

The $17 Billion Valuation

People rave about how fast Uber is growing, how Uber is creating jobs, and how Uber will expand into alternative markets. The exact market share that Uber will have is highly debatable. Mr. Aswath Damodaran, a renowned professor at NYU Stern, recently wrote an **article** questioning the potential market for Uber. Mr. Bill Gurley then wrote the aforementioned article in response. While the total **market size is important, I believe that Uber's operation should be scrutinized to determine its true** growth potential and profitability in the long run.

Uber essentially places a GPS on a car, and voila, its owner becomes an Uber driver. The inform**ation from the GPS is then relayed to the rider's app, where the rider can hail an Uber car.** During the ride, the GPS is again used to calculate the total fare, set by Uber.

First of all, the technology used isn't new. Without patents to protect itself, how can Uber sustain the **current margin? Secondly, Uber's continued operation is controversial because it violates the** intended goals of taxi regulations around the world. In fact, the only reason Uber expanded so quickly was because its deep pockets allowed it to waltz into any city and start operating, regardless of any laws. When being investigated, Uber can throw cash at lawyers until a favourable verdict is reached.[6] **This isn't exactly what I would call good business practice.**

We established previously that Uber will continue to face hiring pressure. Well that can't go on forever, because the ARPD will decrease to the point where no driver will work for you. Uber cannot increase the price either because that would decrease the total revenue (deviation from the optimum). Uber can try to remedy this problem only by decreasing its own cut of the fare. Thus we can see that the current commission of 20% will not be feasible in the future. In fact, the price war between ridesharing companies has already prompted Uber to take a loss on rides following this **update**.

But is Uber worth $17B? On one hand, Uber is still bringing in huge amounts of cash at little to no variable cost. Without any need for capex, Uber may continue to expand at a rapid pace. However, the same holds true for other ridesharing companies. In the long run, ride sharing companies will operate with razor thin margins, as each company struggles to keep fares low and drivers happy. In addition, the fact that governments around the world are starting to b**an ridesharing companies isn't helping Uber's case either. [7]** [8], [9]

I do not know how the VCs valued Uber, but I believe that any valuation for Uber should place heavy **emphasis on cash flows in the coming years. If the $17 Billion valuation is based on Uber's cash** flows down the line while assuming the current margin and growth rate, then investors should be in for a tough ride.

[1] http://blogs.wsj.com/digits/2014/06/06/uber-ceo-travis-kalanick-were-doubling-revenue-every-six-months/

[2] http://techcrunch.com/2014/01/13/an-uber-car-was-attacked-near-paris-as-taxi-drivers-protest-against-urban-transportation-startups/

[3] http://abovethecrowd.com/wp-content/uploads/2014/07/Screen-Shot-2014-07-07-at-6.41.45-PM.png

[4] https://twitter.com/DavidSacks/status/475073311383105536

[5] http://www.forbes.com/sites/quora/2014/06/10/whos-winning-right-now-in-the-competition-between-lyft-and-uber/

[6] http://techcrunch.com/2013/01/31/a-day-after-cutting-a-deal-with-lyft-california-regulator-reaches-an-agreement-with-uber-as-well/

[7] http://mashable.com/2014/07/21/seoul-korea-bans-uber/

[8] http://www.telegraph.co.uk/news/worldnews/europe/germany/10991089/Hamburg-breaks-ranks-and-bans-Uber-app.html

[9] http://www.engadget.com/2014/04/15/belgian-uber-ban-10k-fines/

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Monday, June 9, 2014

## A Disruptive Cab Ride to Riches: The Uber Payoff

On June 3, news reports carried the story that multiple investors (including big name institutional investors like Wellington & Fidelity) had invested $1.2 billion into Uber, a technology company that matches consumers to car services in many cities around the globe. Based on the investment (and the percentage of ownership that these investors were getting in exchange), the imputed value for Uber (pre-money, i.e., prior to the influx of $1.2 billion) was $17 billion, a mind-boggling sum for a business that generates a few hundred million in revenues and has little to show in terms of operating income. That said, Uber has lots of company in this high-value space, with Airbnb and Dropbox being two other companies that in recent months have been valued at more than $10 billion by investors. With all these companies, the key selling point is disruption, the latest buzzword in strategy, with company owners arguing that they are upending

existing ways of doing business (hailing a taxi, with Uber, and finding lodging, with Airbnb) and given the sizes of the businesses that they were disrupting, that the sky is the limit on value.

If you are old enough to remember market fevers from past booms, you are probably inclined to dismiss both the claims and the valuations as fantasy. I do believe, however, that there is a kernel of truth to the disruption argument though I think investors are being far too casual in accepting it at face value. As I attempt to attach a value to Uber, I have to confess that I just downloaded the app and have not used it yet. I spend most of my of life either in the suburbs, where I can go for days without seeing a taxi, or in New York City, where I find that the subways are a vastly more time-efficient, cheaper and often safer mode of transportation than taxis.

Uber: The business model

Uber is not in the taxi business, at least in the conventional sense, since it owns no cabs and has no cab drivers as employees. Instead, it plays the role of matchmaker, matching a driver/car with a customer looking for a ride and taking a slice of the fare for providing the service. Its value comes from the screening that it does of the drivers/cars (to ensure both safety and comfort), its pricing/payment system (where customers choose the level of service, ranging from a car to a SUV, are quoted a fare and pay Uber) and its convenience (where you can track the car that is coming to pick you up on your phone screen). The figure below captures the steps in the Uber business model, with comments on what it is that Uber offers at each stage and whether that offering is unique:
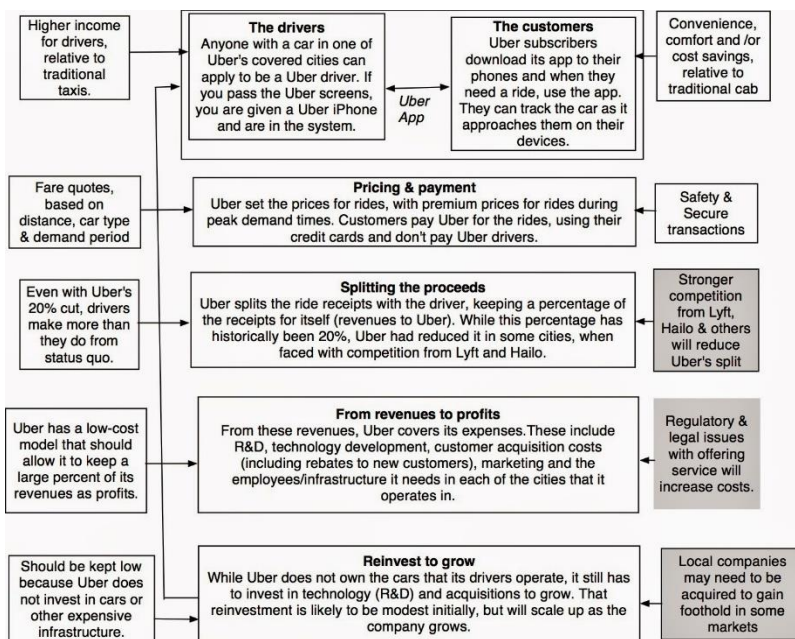
Uber has been able to grow at exponential rates since its founding in 2009 by Garrett Camp and Travis Kalanick, with the latter (who is new CEO) claiming that it is doubling its size every six months. While we have no access to the company's financials, there have been periodic leaks of information about the company that allow us to get a sense of its growth. Here, for instance, was a picture that was widely dispersed in December 2013 of a five-week period in late 2013:

| METRICS | TRIPS | DRIVERS | COMMUNITY | CITIES | VEHICLES | ENG |

Uber Global

Last updated: November 20, 2013 16:27:06 GMT-0800 (PST)

	2013-10-14	2013-10-21	2013-10-28	2013-11-04	2013-11-11	2013-11-18	Last 7 days
Revenue	$19,303,828	$20,770,801	$20,123,946	$21,023,868	$21,501,835	$6,941,013	$22,103,756
Signups	76849	79264	79432	76139	84756	28537	89976
Active Clients	401020	424894	435468	434066	453946	172355	463630
Eyeballs	1791740	1878555	1962419	1901477	2008775	668273	2104967
Zeros	209330	186583	195533	174082	176955	66865	186371
Requests	1066440	1068899	1337091	1071497	1155070	350552	1200359
Completed	720319	783685	806436	820757	862838	263294	887699

While the company claimed to be outraged by the leak, it played nicely into the narrative of growth that it was selling to its investors. In fact, the December leaks suggested that the company generated gross receipts (the fares paid by customers for cab rides) of $1.1 billion, which would translate into revenues of $220 million (based on the 20% slice that Uber claims for itself). That was a few months ago and at the rates at which the company is growing, I would not be surprised if the updated values for both numbers are higher; *I will be using $1.5 billion for the gross receipts and $300 million as revenues for Uber as base year numbers.*

There was no information that I could find on the company's expenses and income, but according to public sources, the company has 900 employees in its different locations and that it pays them reasonably well. Uber has been active in both marketing its service and offering deals to attract firms time customers and has an active technology department (doing the equivalent of R&D). In summary, these expenses are likely to have been much larger than the revenues (of $300 million) posted during the period. Since the company can legitimately argue that some of these expenses (such as the R&D and customer acquisition costs) are more in the nature of capital expenditures than operating expenses, *I will assume (generously) that the company generated an operating income of $10 million in the most recent 12 months.* (The effect on value of changing this number is relatively small).

An intrinsic valuation of Über

There are many who will argue that this too young a company and that there is too much uncertainty for an intrinsic valuation. I have argued in prior posts and in this paper that this argument is a cop-out, since not dealing with uncertainty does not make it go away. Having said that, I would hasten to add that what follows is my estimate of value for Uber, not the true value.

A. Potential Market: Size and Growth

For my base case valuation, I am going to assume that the primary market that Uber is targeting is the taxi and limo service market, globally. I know that there is talk (some from Uber's management and some from analysts) that Uber could extend its reach into other businesses (car rentals, moving and even driverless cars), but I don't see any evidence that it has succeeded in making any breakthroughs (yet) and will come back to this question later in my post.

The global market for taxis and car services may be a big one but it very splintered, with lots of small, local operators dominating each city. In many cities, this is also a cash business where there are no easy ways to track the total revenues generated by all operators. However, there is data that we can build on. For instance, there seems to be consensus that the most lucrative cab market in the world is in Japan, where revenues are estimated to be about $20-$25 billion annually just in Tokyo, followed by the UK (with revenues of $14 billion, with the bulk from London) and the US (with $11 billion overall and about $3 billion in New York). *Making a judgment that taxi revenues currently in the rest of the world will add another $50 billion to this total, I arrive at a total market for taxi and limo services of $100 billion.*

It is true that many cities, especially in Asia and Latin America, are under served currently and that the taxi business globally will continue to grow at well above the 2-3% rate that we have observed in the US, Japan and UK, and that services like Uber will contribute to the faster growth. *I will estimate an expected growth rate of 6% a year for the next decade, increasing the overall market to $183 billion in 2024.*

B. Status quo, competition, market share and Über's slice (revenues)

The taxi and limo market currently is dominated by small, local players and is regulated in most cities. The cities restrict entry into the market and in return, they regulate the prices that cabs can charge their customers (more effectively in some cities than others). While Uber has only a minuscule slice of the overall revenues currently, the market share that it can aspire to get will depend upon the following factors:

1. The efficiency of the status quo or producers/consumers: Under the existing system, cab drivers get a relatively small share of the taxi revenue pie (5-10%) and customers in many cities (which are under served) either find themselves without taxis, have to wait a long time or have to pay outlandishly high prices (as attested by the carfare from Narita airport in Tokyo into the city). Thus, both cab drivers and customers may be open to a different way of doing business.
2. Competition: Uber uses technology to deliver car services to customers, but it is not the only company that is doing so. Other competitors like Lyft aad Hailo also provide similar services and they have their own deep pocketed investors. As I said up front, I am not familiar enough with these different services to have any preferences, but this article compares the experiences of Wall Street Journal reporters with different services and does not find a dominant one.
3. Regulation: The cities where Uber and its competitors are trying to generate their revenues are regulated at the moment, and the the existing players (taxi owners, taxi drivers in traditional companies, city regulators) will make it difficult for these new players to compete. These difficulties will affect the speed with which these services are able to penetrate these markets and increase the costs of operating in the business.

Even an optimist on Uber will have to accept that the combination of regulatory restrictions protecting the status quo and the stream of me-too competitors will make it difficult for the company to dominate this market. Even in an optimistic scenario, the former will add costs to Uber's business model and the latter will put pressure on Uber (as it already seems to be doing in some markets) to reduce it's slice of the gross receipts from 20% to 10-15% or even lower. *My estimate that Uber will get a 10% market share of the overall market is at the optimistic end of the spectrum, especially if you view it in conjunction with my assumption that Uber will continue to be able to keep its slice of these gross receipts at 20%.*

3. From revenues to profits

To get from revenues to operating profits, we have to consider what Uber's operating expenses will be, once it hits steady state, i.e., does not have to incur large expenses attracting new customers. The structure of the business is such that the operating expenses are largely on creating the infrastructure to provide taxi services in different cities and that once established, the cost of these services should decline relative to

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revenues. This should lead to healthy operating margins, similar to those earned by other established technology companies. *I will assume that Uber's operating margin, in steady state, will be 40%, towards the top decile of technology companies.*

4. Investing for growth

Right now, Uber does not own the cars that the drivers use and the bulk of the investment is in technology infrastructure (R&D and related expenses). At first sight, this would suggest that the company should be able to grow at high rates, with relatively little reinvestment. However, our experiences with technology companies (including Google, Twitter and Facebook) suggest that Uber will be forced to reinvest, especially as it scales up, and that this reinvestment will take the form of acquiring new technologies and companies. (Consider how much Facebook has spent on acquisitions just in this year)

The metric that I will using for reinvestment is one that you may be familiar with, if you have seen my other young company valuations, and it is the sales to capital ratio. This number measures how much incremental revenue you expect to generate for each incremental dollar of investment; the higher this number, the less capital investment is needed to expand this business. The median value for technology companies on this is about 2.50, the median value for all US companies is about 2.00 and a really high number would be about 10.00. *I will assume that the sales to capital ratio for Uber will be 5.00, towards the high end of the spectrum.*
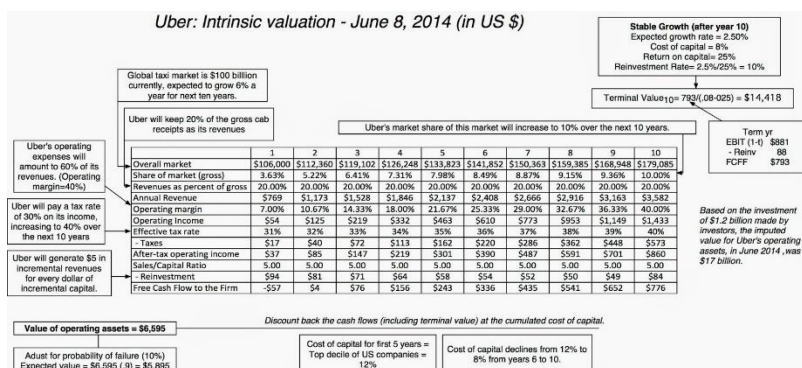
5. Risk

Is there a lot of risk in investing in a young, start-up like Uber? Of course, but much of the risk in the investment is survival risk (i.e., that the company will not make it as a going concern) and not operating risk. The discount rate, the primary mechanism for adjusting for risk in a discounted cash flow valuation, is designed to capture the latter and is ill-suited for reflecting the former, notwithstanding venture capitalists' attempts to push it into a target rates of return.

Looking at the operating risk side of the equation, the taxi business is a cyclical one, with revenues tied to economic growth. There are only a handful of publicly traded cab companies in the world, but the cost of capital of companies in the transportation business in US dollars is about 7.08% for US companies and 6.93% for global companies. *As a young, start-up with higher fixed costs, Uber is undoubtedly more risky than the average company in this sector and I will assume that its cost of capital is 12% (the top decile of US companies). As it matures and becomes a larger, more profitable company, I will assume that the cost of capital will decline towards 8%, the median for US companies. (I don't think that Uber will carry the debt that a typical transportation company carries and thus will not be able to push its capital towards the industry average of 7%.)*

On the risk of failure, Uber has passed its most critical tests. It has a product/service that is generating revenues, has relatively little debt or fixed commitments and most importantly, it has access to capital. In fact, the $1.2 billion in cash that it will raise in its latest round of capital should provide it with enough of a cash cushion to survive leaner times, at least in the near term. *As a result, I will assume that there is only a 10% chance of failure in Uber and that the company's liquidation value will be zero.*

6. The value

With these pieces in place, I arrive at a base case valuation of $5.895 billion for Uber, as shown in the figure below:

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

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

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

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

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

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

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

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

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

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

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

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

Value of operating assets = $6,595

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

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

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

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

Valuation of Uber, June 8, 2014

The value of $5,895 million is a value for the operating assets and any existing cash would have to be added back and debt netted out. Given that neither debt nor cash is likely to be a large number right now, it is directly comparable to the value that venture capital investors are attaching to the company now. As with my other valuations, you can download this one and make your own judgments on what the future holds for Uber. (This is a generic spreadsheet that you can use to value any start-up and you can try it on Airbnb and Dropbox, if you are so inclined.)

7. Break even points

The imputed value for Uber, based on what investors demanded for their $1.2 billion last week, is $17 billion, well above my estimate of value. It is entirely possible that the error is mine and that I have under estimated a key input into value. In particular, there are three key drivers of Uber's value: (a) the potential market, which I estimated to be $100 billion

(b) the market share that Uber will command of that market (my estimate is 10%) and

(c) the slice of gross receipts that Uber will get to keep (which I have left at 20%)

Changing any or all of these assumptions will change value. In the table below, I hold the gross receipt slice constant, at 20%, and change the potential market size and Uber's market share to arrive at the following numbers:

		Potential market (in millions of US$)					
		$50,000	$100,000	$150,000	$200,000	$250,000	$300,000
Target Market Share (in %)	5.00%	$1,545	$2,995	$4,445	$5,895	$7,345	$8,795
	7.50%	$2,270	$4,445	$6,620	$8,795	$10,970	$13,144
	10.00%	$2,995	$5,895	$8,795	$11,694	$14,594	$17,494
	12.50%	$3,270	$7,345	$10,970	$14,594	$18,219	$21,844
	15.00%	$4,445	$8,795	$13,144	$17,494	$21,844	$26,194
	17.50%	$5,170	$10,245	$15,319	$20,394	$25,468	$30,543
	20.00%	$5,895	$11,694	$17,494	$23,294	$29,093	$34,893

Value of operating assets for Uber, keeping revenue slice at 20% and other inputs fixed

The shaded numbers indicate the combinations of total market/market share that you would need to deliver. In particular, the total market has to be either three times bigger than my estimate (around $300 billion) or the market share has to be more than twice my estimate (20% and higher) to justify the $17 billion value.

Holding the market share fixed at 10%, I looked at the effect on value of changing the potential market and the percent of gross receipts that Uber receives, and the effects are summarized below:

		Potential market (in millions of US$)		
		$100,000	$200,000	$300,000
Uber's share of gross receipts	5%	$1,818	$3,556	$5,294
	10%	$5,895	$6,269	$9,360
	15%	$4,536	$8,982	$13,472
	20%	$5,895	$11,694	$17,494
	25%	$7,254	$14,407	$21,561

Uber operating asset value, holding market share and other inputs fixed.

The effects of a reduced market slice are more devastating to value, with even a $300 billion total market (with a 10% market share) being insufficient to break even, with a $17 billion value, if Uber keeps less than 20% of gross receipts.

The bottom line: Viewed as a car service company, even with optimistic assumptions about market growth, market share and profitability, Uber's value is about $6 billion. The combination of assumptions that you would need to get to $17 billion is improbable, at least in my view. It is possible that I am missing the value of new markets that Uber may be able to enter but I will reexamine that possibility later in this post.

Pricing Uber

As I have argued in many of my blog posts over the last two years, the value of an asset can be very different from its price. The former is determined by the interplay of fundamentals (cash flows, growth and risk) whereas the latter is a function of demand and supply. To price an asset, you follow two simple steps. In the first, you look for a metric that the market is scaling the price to; that metric can be an operating number like revenues or earnings or an intermediate number like number of users or customers. In the second, you identify "comparable" companies, i.e., companies that are like the one that you are valuing and compare the scaled price (the multiple) across these companies. Most investors and analysts are more comfortable pricing assets, rather than valuing them, and this is especially the case with young companies like Uber. So, is that what investors are doing to arrive at the $17 billion price for Uber? To make that judgment, let's look at the choices when it comes to pricing metrics and comparable firms.

Pricing Metric

You cannot compare values or market capitalizations across companies, because companies can vary in terms of size and scale. Dividing the estimated value by a scaling variable creates a multiple that can be compared across companies. With mature companies, you scale market value (equity or enterprise) to measures of earnings, dividing market capitalization by net income to get to a PE ratio or enterprise value by operating income or EBITDA to get an enterprise value multiple. With young companies, where earnings are often negative or minuscule, earnings multiples either cannot be computed or are not meaningful. In fact, the only current operating number that is consistently positive at those companies is earnings, explaining why revenue multiples are so widely used at this stage in the life cycle. The fact that revenue multiples can be computed does not necessarily mean that they are useful in valuation. Dividing Uber's value ($17 billion) by the revenues ($300 million) yields a revenue multiple of 56.67, an outlandishly high number but one that tells you little about the pricing of the company, partly because investors are pricing these young companies on potential, not current performance.

One solution to the problem with current numbers not reflecting potential is to use expected future revenues or earnings in computing multiples. Thus, you could divide the enterprise value today by the expected revenues in five or ten years and compare these forward multiples across companies. Applying this approach to Uber, I divided the enterprise value of $17 billion by my expected revenues in ten years ($3.59 billion) to yield 4.75, still a high number and one that should be compared to the same multiple (enterprise value to future sales) computed for other companies. The problem with this approach is two-fold. The first is that you need to forecast revenues for each company in your sample, not just the company that you are valuing. The second is that these multiples are only as good as your revenue forecasts, making this a joint test of the multiple and your forecasting ability.

In my post on Whatsapp and Facebook's valuation of it, I noted that the metric that best explains the difference in values across companies is not revenues or earnings, but the number of users. While that may strike some as being irrational, it is not unreasonable to assume that companies with more users are better positioned in terms of potential. If Uber, Lyft and Hailo (all of which operate in the taxicab market) were all publicly traded, what equivalent metric would investors focus on? It could be the number the subscribers to the service, the number of rides taken by these subscribers or even the number of cabs covered by the service. For the moment, though, we are still in the dark about all of these statistics for these companies.

Comparables

In pricing, the choice of companies that you compare your company to is critical. In fact, one simple way to tilt the pricing in the direction that you want it to go is to change the firms that you use in your comparison. In the case of Uber, we will first try to value it, relative to other publicly traded young technology firms and then try again, relative to private technology companies that have received venture capital infusions in the last year.

If we define Uber's comparable companies as young, technology companies that are being priced on potential, the most obvious subset of companies that we can compare it to are social media companies. In the table below, I update the numbers for social media companies, with key multiples computed in the last four columns:

Company	Market Cap	Enterprise value	Revenues	EBITDA	Net Income	Number of users (millions)	EV/User	EV/Revenue	EV/EBITDA	PE
Facebook	$160,400.00	$148,160.00	$8,920.00	$4,660.00	$1,910.00	1280.00	$115.75	16.61	31.79	83.98
Groupon	$3,980.00	$2,940.00	$2,730.00	$118.00	-$129.00	43.00	$68.37	1.08	24.92	NA
Linkedin	$19,090.00	$16,790.00	$1,680.00	$166.00	-$9.00	300.00	$55.97	9.99	101.14	NA
Netflix	$25,780.00	$25,010.00	$4,620.00	$343.00	$163.00	44.00	$568.41	5.41	72.92	158.16
Open Table	$1,660.00	$1,540.00	$198.00	$60.00	$23.00	14.00	$110.00	7.78	25.67	72.17
Pandora	$5,260.00	$4,910.00	$734.00	-$8.00	-$20.00	73.40	$66.89	6.69	NA	NA
Tripadvisor	$14,849.00	$14,749.00	$996.00	$322.00	$211.00	260.00	$56.73	14.81	45.80	70.37
Trulia	$1,460.00	$1,470.00	$174.00	-$18.00	-$31.00	35.30	$41.64	8.45	NA	NA
Twitter	$19,460.00	$17,480.00	$801.00	-$616.00	-$751.00	255.00	$68.55	21.82	NA	NA
Yelp	$4,670.00	$4,280.00	$263.00	$1.40	-$8.00	120.00	$35.67	16.27	3057.14	NA
Zillow	$4,670.00	$4,360.00	$225.00	-$7.00	-$15.00	34.50	$126.38	19.38	NA	NA
Zynga	$2,630.00	$1,850.00	$778.00	$33.00	-$102.00	27.00	$68.52	2.38	56.06	NA
Median							**$68.45**	**9.22**	**50.93**	**78.08**

Enterprise and market values from June 2014, Trailing 12 month numbers

Since the only number that we have some measure of (and a rough one at that) is Uber's revenues ($300 million), applying the median multiple of 9.22 yields a value of $2.766 billion for Uber. Even applying the highest value (Twitter's EV/Sales of 21.82) yields a value of $6,546 million, well below the $17 billion estimate. Uber reports the number of cities that it operates in, but it provides no detail on the exact number

of subscribers to the service and the number of rides that it provides. Even extrapolating from the leaked report (shown towards the top of this post), that shows up 90,000 new users signing up each week, I get 4.68 million sign ups for a year and perhaps 15 million subscribers overall. Applying the median value of $70/user to this number leaves you with $1.05 billion and even applying the high (Netflix's $568/user) yields a value of just over $8.5 billion.

It is possible that the investors in Uber are comparing its pricing to the imputed pricing of the other non-public "big" companies in this space. In the table below, I have highlighted the largest private technology companies with VC investments in the last 12 months, the imputed valuations and the revenues in 2013 (or at least the best estimates that I could find):

Company	VC investment	Imputed EV	Number of VC rounds	Revenues	EV/Sales
Airbnb	$800	$10,000	7	$250.00	40.00
Box	$399	$2,000	9	$124.00	16.13
Cloudera	$160	$1,800	7	$56.00	32.14
Docusign	$267	$1,500	9	$60.00	25.00
Dropbox	$507	$10,000	5	$200.00	50.00
Jawbone	$531	$3,300	10	$600.00	5.50
Lending Club	$155	$3,000	6	$100.00	30.00
Palantir	$594	$9,000	5	$450.00	20.00
Pinterest	$200	$5,000	8	$50.00	100.00
Snapchat	$130	$2,000	3	$0.00	NA
Stripe	$120	$1,800	4	$40.00	45.00
Uber	$1,200	$17,000	5	$300.00	56.67
Median value					32.14
Average					38.22
Aggregate					29.78

VC investments, imputed valuations and revenues in 2013

Even in the rarefied air of VC valuations, Uber's $17 billion dollar value stands out as an outlier. Applying the median multiple of revenue (32.14) across just these companies to Uber's revenues would still leave you with a valuation just under $10 billion.

The bottom line: Even if I use the most favorable pricing metric (revenue) and comparable firms (other favored VC targets), it is difficult to justify a price greater than $10 billion.

Uber, the disruptor

This brings us back full circle to the disruption argument. When Clayton Christensen coined the term "disruptive innovation" a few decades ago, I am sure that he never foresaw its popularity with investors, analysts and companies. Christensen draws a contrast between sustaining innovations, which advance the status quo (and established players) and disruptive innovations, which new entrants introduce to disrupt the status quo. With the latter, Christensen's story mirrors David and Goliath, with the new entrants winning out over larger, entrenched entities, partly because they have little to lose from upending the status quo.

While I admire the big picture perspective that strategists like Michael Porter and Christensen have brought to business, I am, by nature, a skeptic and feel the urge to tie the big picture to the bottom line. As I see it, disruptive innovation affects value at two levels. In the first, it allows a new entrant to enter a targeted market, disrupt the status quo and then capture the excess profits in that market. That can be captured in a discounted cash flow valuation, which is what I attempted to do in my intrinsic valuation of Uber. The second level at which disruptive innovation affects value is more subtle. Assuming that the disruptor is able to succeed in its targeted market, success in that market may allow the disruptor to enter new and potentially

larger markets in the future. The fact that these markets are undefined at the moment and the odds of success are low mean that the intrinsic value added from this possibility is small. However, the fact that the disruptor does not have to commit to investing in these new markets until the outcome from the initial market is known, as well as the potentially large profits from this expansion, give it the characteristics of an option. I do not want to entangle myself in the mechanics of option pricing in this post, but the value of this disruption option is an add-on to the intrinsic value and will increase with the size of the potential markets, the uncertainty/risk in these markets and the competitive advantages that the disruptor brings to these markets.

	First level disruption	Second level disruption
Market	Targeted market	Potential market(s)
Market details	Specific	Diffuse
Tool for valuation	Discounted cash flow valuation	Option Pricing
Output	Intrinsic value (from DCF)	Option value, added as a premium to intrinsic value
Drivers of value	Increases with size of market, inefficiencies in status quo and competitive advantages of disruptor.	Increases with size of markets and uncertainty about the market.
Risk & Value Effects	Incorporated into discount rate, with value decreasing as risk increases.	Incorporated into volatility estimated, with value increasing as risk increases.

Applying these very general concepts to Uber, the attraction to investors is clear. Uber's contention is that it is targeting the car service market for the moment but its intention is to use success in this market to expand into other markets. While we can be skeptical and uncertain about its chances of success in these fuzzily defined markets, that uncertainty, which would reduce intrinsic value, increases the value of the disruption option. To give Travis Kalanick, the co-founder and CEO of Uber, credit, his subtle pitch that Uber is in the logistics business plays into the option narrative, as does the fog that the company has created around specifics.

It is easy to see the allure of the option argument, where uncertainty becomes your ally and big markets beckon, but as investors, we need to understand that most deep out-of-the-money options never get exercised and that the company owners/managers cannot be given free rein over narratives. I am not privy to the questions that investors in Uber asked before they made their investment, but I would hope that they pushed Mr. Kalanick to be specific about his expansion plans, the details of growth and what it is costing to deliver that growth, and most importantly, what will give Uber the exclusivity to be able to advance into new markets faster and more profitably than its competitors (both current and new).

Bottom line: Can the disruption option explain the difference between the assessed value ($17 billion) and the estimated value ($6 billion, with intrinsic valuation)? It is possible but not probable. For the option to be worth $11 billion, the potential markets that Uber can enter, assuming it is successful in the car service business, will have to be at least four times larger than the base market (the $100 billion taxicab market). I know that there is talk of Uber becoming a player in a futuristic world of driverless electric cars, but even if that scenario unfolds, I don't see why Google and Tesla would let Uber have anything more than crumbs off the table.

The end game

The numbers seem to indicate that Uber is being overpriced by investors who have valued it at $17 billion. Since these investors are presumably sophisticated players, how would I explain their pricing? I will not try, since I did not pay the price, but it is worth remembering that even smart investors can collectively make big mistakes, especially if they lose perspective. The tech world is a cloistered one, where the leading players (venture capitalists, managers, serial entrepreneurs) immerse themselves in minutiae and know and talk to each other (and often only to each other). Not surprisingly, they develop tunnel vision where technology (or at least their version of it) is the answer to every problem, the status quo is both inefficient and easily disrupted and 50 times revenues is cheap! If history is any guide, tech geeks are just as capable of greed and irrational exuberance as bankers are.

Attachments
Intrinsic Valuation of Uber
Uber Pricing: Multiples and Comparables

UBER CEO on Logistics business:

Uber Technologies, the company that allows people to order taxis and private town cars via a smartphone app, has just raised $1.2 billion in a fundraising round that values the four-year-old startup at an astounding $17 billion.

Investors include Fidelity Investments, Wellington Management, Summit Partners, BlackRock, and the venture capital firm Kleiner Perkins Caufield & Byers, in addition to previous Uber investors such as Menlo Ventures and Google's investment arm, Google Ventures.

Uber's new valuation is a record for technology startups in a direct investment round, according to my story with Serena Saitto over at Bloomberg News. The round positions the company at the front of a pack of hot Internet and mobile phone startups, such as Dropbox, Airbnb, and the Chinese smartphone maker Xiaomi, which all tout valuations in the neighborhood of $10 billion.

I spoke with Travis Kalanick, Uber's co-founder and chief executive officer, on the eve of his fundraising announcement. Some excerpts:

Bloomberg Businessweek: **How are you going to use the capital?**
Travis Kalanick: We just turned four years old this week. The growth is remarkable. We literally launched operations this week in June of 2010 in San Francisco. We are now in 128 cities, probably closing in on 40 countries if we are not there already. And so this is about capitalizing for the opportunities that we see ahead of ourselves. This is about continuing to grow in the cities we are in. Our vision is to offer a way for people to get around cities without having to drive a car. It's ground transportation as a service.

To give you an example, ground transportation just in the San Francisco Bay Area is a $22 billion spend a year. That's just one little city. When you look at the global opportunity, it's pretty massive. If you can make it economical for people to get out of their cars, or sell their cars, and turn transportation into a service, it's a pretty big deal.

Will you use this capital to branch out into offering logistics services, like package delivery?
The business as it is, the current growth, that is what was funded. The logistics, or moving things as well as people, is icing on the cake. We are doing experiments right now. It's too early to know how it all works out. The core business itself was what was pitched [to investors].

How would you explain this valuation to a skeptical outsider? You are more highly valued now than Hertz Global Holdings, for example.
It comes down to our revenue numbers, the growth of those numbers and our business model itself. … The [numbers] are incredibly compelling. We are a private company. If you were to compare the multiples of public companies, Uber is at or below those multiples, on any front. So I think it's kind of a no-brainer for the folks getting involved. When you look at a business and you are like, "wow, in six months they are going to be twice the size"—and we have a history of doing that—it's a pretty interesting opportunity.

What impact has your main rival, Lyft, had on your margins in cities where you compete head to head?
Uber has its normal margin of 20 percent. We have that margin in all cities around the world. Lyft is taking zero percent margins right now, trying to compete [with us]. I think we are just trying to build the business for the

long run and feel pretty good about it.

Would you consider buying Lyft? Are you in acquisition mode?
We have never bought a company before. We like a self-sustaining approach to innovation and growth. Does that mean we will never acquire something? No. It's just not our go-to [strategy].

In April you announced Uber Rush, a package delivery service in Manhattan. Are you considering expanding it?
That is going really well. It's super-young, only a month or two old. It's almost like I'm talking about an infant. But the growth of Uber Rush in New York is far greater than what the original Uber service was in San Francisco at the same age. There are still some things we want to do on product and operations. We want to get that playbook down. We did a year of Uber in San Francisco before we went to a second city. You get those processes down, then you really get started.

You have some new venture capital firms in this fundraising round. Did they feel like Uber was a company they had missed out on earlier, and wanted to get in,

even at a later round and a higher price?
I think a lot of folks feel like Uber was a company they missed out on. Sequoia passed on us three times. Yuri [Milner, from Russian VC firm DST] passed on us three times.

I saw an article recently that suggested the yellow cab industry in San Francisco may collapse entirely by the end of next year. Is there room for competition?
The only thing I can say is that we are 25 percent cheaper than a taxi today in San Francisco. You can make the argument we will end up at 40 to 45 or maybe 50 percent cheaper. It's a higher-quality ride and it's less expensive. But some people may still want to take a taxi.

What does this fundraising round mean for you personally?
I have never sold a share of Uber, and I didn't do so in this round either. So it doesn't mean much.

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Really good analysis, gets to the core narrative of all growth investing (future real options > current business numbers).

Smart entrepreneurs have always used this narrative to get high P/Es. What feeds into this is also the FOMO that most VC's have. Errors of omission are greater (missing on next big thing, i.e. not making 1000X on your investment) than errors of commission (losing 100% of your investment). Asymmetric payoffs drive these valuations.

June 10, 2014 at 11:52 AM

Jason DaCruz said...

Your analysis was great, professor, and I tend to agree that this valuation is overdone. Just a couple side notes -

Uber is planning on (and, I believe has already done as part of a pilot program) financing vehicles for drivers. As Uber steps in to guarantee the loans, the cars will be used as collateral. Though this may open up the company to liability issues (they may have more difficulty arguing that a driver does not work for them in between fares while driving a vehicle with title held by Uber), it will turn their company towards a more traditional asset-owning cab business.

Additionally, you seem to have left out the logistical side of the business. Some of the sky-is-the-limit valuations believe that Uber is going to be a boon to same-day delivery services. I disagre -- mostly because the standby competition may be more robust than anticipated and because Uber's mapping is woefully inefficient.

Uber relies on Foursquare for locations. Having used Uber in a number of American and international locations, I can attest to the app's convenience, but not to its accuracy. Google and other mapping

companies do a much better job and improvement will come at no small cost. The wait times are also incredibly inaccurate. The app seems to use a simple radius model when calculating ETA. While that may work in NYC's grid-like, somewhat homogeneous streets, it falls on its face in other environments.

The above will be a huge impediment to the company if they want to compete with the on-the-fly logistics technology of Fedex, UPS, etc. Those companies have complicated routing algorithms much better suited to same-day delivery service than Uber. Though the company is still young and its core business is growing, the lack of adoption for their fringe offerings (helicopter rides to the Hamptons, on-demand air conditioning, sky-writing on Valentine's day, on-demand courier service) may indicate difficulty in expanding into other businesses.

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Follow up post on UBER

Wednesday, July 16, 2014

Possible, Plausible and Probable: Big markets and Networking effects

I do not know Bill Gurley personally, but I do know of him, and I was surprised, sitting in Vienna airport waiting for a connection home on Friday morning, to get an email from him. In the email, he graciously gave me a heads-up that he was planning to post a counter to my Uber valuation and that it would not pull punches. A little while later, I started getting messages from those who had read the post, with some seeking my response and some seeming to view this as the first volley in some valuation battle. I read the post a few minutes later and the first person I wrote to after I read it was Bill Gurley and I told him that I absolutely loved his post, even though it was at complete odds with my assessment of the company, for two reasons.

1. Like anyone else, I like being right, but I am far more interested in understanding Uber's valuation, and the post provided the vantage point of someone who not only is invested in the company but knows far more about it than I do. Rather than berating me for not getting "it" (technology, the new economy, progress) or abusing valuation as a tool from the middle ages, the post focused on specifics about Uber and the basis for its high value.
2. In this earlier post of mine, I argued that good investing/valuation is the bridge between numbers and narrative and that neither the numbers nor the narrative people have an automatic right to the high ground. Bill Gurley's post brought home that message by laying out a detailed and well-thought-through narrative, backed up by numbers.

Mr. Gurley's narrative lends itself well to a more grounded discussion of Uber as a company and I am grateful to him for providing it. As a teacher, I am constantly on the lookout for "teachable moments", even if they come at my expense, and I plan to use his post in my classes.

Dueling Narratives

In my post on Uber's value (and in the Forbes and 538 versions of it), I laid out my narrative for Uber. I viewed Uber as a car service company that would disrupt the existing taxi market (which I estimated to be

$100 billion), expanding its growth (by attracting new users) and gaining a significant market share (10%). The Gurley Uber narrative is a more expansive one, where he sees Uber's potential market as much larger (drawing in users who have traditionally not used taxis and car services) and much stronger networking effects for Uber, leading to a higher market share. In many ways, this is exactly the discussion I was hoping to have when I first posted on Uber, since it allows us to see how these narratives play out in the numbers. In the table below, I contrast the narratives and the resulting values:

	Uber (Gurley)	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 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	$100 billion, growing at 6% a year
Market Share	40%	10%
Uber's revenue slice	20%	20%
Value for Uber	$53.4 billion + Option value of entering car ownership market ($10 billion+)	$5.9 billion + Option value of entering car ownership market ($2-3 billion)

You can download the valuations by clicking here. (Uber (Gurley) and Uber (Damodaran)).

Given that the values delivered by the narratives are so different, the question, if you are an investor, boils down to which one has a higher probability of being closer to reality. If you had to pick one right now, I think Mr. Gurley's has the advantage over mine for at least three reasons. The first is that as a board member and insider, he knows far more about Uber's workings than I do. Not only are his starting numbers (on revenues, operating income and other details) far more precise than mine but he has access to how Uber is performing in its test markets (with the new users that he lists). The second is that as an investor in Uber, he has skin in the game, and more at stake than I do and should therefore be given more credence. The third is that he not only has experience investing in young companies, but has been right on many of his investments.

Does that mean that I am abandoning my narrative and the valuation that goes with it? No, or at least not yet, and there are three reasons why. First, it is difficult, if not impossible, for someone on the inside not to believe the best about the company that he directs, the managers he listens to and the products that it offers. Second, an investor in a company, especially one without an easy exit route (at least at the moment), is more attached to his or her narrative than someone who has little to lose (other than pride) from abandoning or altering narratives. Third, as Kahnemann notes in his book on investor psychology, experience is not a very good teacher in investing and markets. As human beings, we often extract the wrong lessons from past successes, don't learn enough from our failures and sometimes delude ourselves into remembering things that never happened. I am not suggesting that Bill Gurley is guilty of any of these sins, but I am, by nature, a cautious convert and I will wait to buy into his narrative, compelling though it may be.

**The Acid Test: Probable, Plausible and Possible**

As I noted at the start of this post, I liked Bill Gurley's post because it offers a coherent narrative that leads to a higher value. The narrative has two key building blocks and I think that there is much to be gained by taking a closer look at them. The first is that Uber is pursuing a much larger market than just taxi service and that it may very well redefine the nature of car ownership. The second is that Uber will have networking effects that will allow it to capture a dominant market share of this larger market, well above the 10% that I estimated in my original value. In the sections below, I hope to stress test these assumptions, more as a friendly observer than antagonist.

Market Breakthrough

Companies like Amazon, Google and Netflix owe their success and immense market values to their capacities to redefine markets (retail, advertising and entertainment respectively) and it is true that in these and other cases, investors and analysts have under estimated these capacities and have paid a price for doing so. Unfortunately, it is also true that there have just been many cases where managers and investors have over estimated the capacity to expand markets and lost money in the process. The Gurley narrative for Uber makes a good case that the convenience and economics of Uber will expand the car service market initially to include light users and non-users (suburban users, rental car users, aged parents and young children), but it does have three key barriers it has to overcome:

1. Reason to switch: Uber has to provide users with good reasons to switch from their existing services to Uber. For taxi services, the benefits from using Uber are documented well in the Gurley narrative. Uber is more convenient (an app click away), more dependable, often safer (because of the payment system) and sometimes cheaper than taxi service. However, the trade off gets murkier as you look past taxi services. Since mass transit will continue to be cheaper than Uber, it is comfort and convenience that will be the reasons for switching. With car rentals, Uber may be cheaper and more convenient in some senses (you don't have to worry about picking up a rental car, parking it or worrying about it breaking down) and less convenient in others (especially if you have multiple short trips to make). With suburban car service (the aged parents, the dating couple and school bound kids), the problem that Uber may face is that a car is usually more than just a transportation device. Any parent who has driven his or her kids to school will attest that in addition to being a driver, he or she has to play the roles of personal assistant, private investigator, therapist and mind reader. As for date nights, whether Uber succeeds will be largely a function of how much the car itself is an integral part of the date, especially with younger couples.
2. Overcome inertia: Even when a new way of doing things offers significant benefits, it is difficult to overcome the unwillingness of human beings to change the way they act, with that inertia increasing with how set they are in their ways. It should come as little surprise that Uber has been most successful with young people, not yet set in their ways, and that it has been slower to make inroads with older users. That inertia will be an even stronger force to overcome, as you move beyond the car service market. The articles that point to young people owning fewer cars are indicative of larger changes in society, but I am not sure that they can be taken as an indication of a sea change in car ownership behavior. After all, there have been almost as many articles on how many young people are moving back in with their parents, and both phenomena may be the results of a more difficult economic environment for young people, who come out of college with massive student loans and few job prospects.
3. Fight off the status quo: The empire, hobbled and inefficient though it may be, will fight back, since there are significant economic interests at stake. As both Uber and Lyft have discovered, taxi service providers can use regulations and other restrictions to impede the new entrants into their businesses. Those fights will get more intense as car rental and car ownership businesses get targeted.

In summary then, the difference in market size in the narratives boils down to a simple calculus of what is probable, what is plausible and what is possible, a distinction that to me is at the center of value:
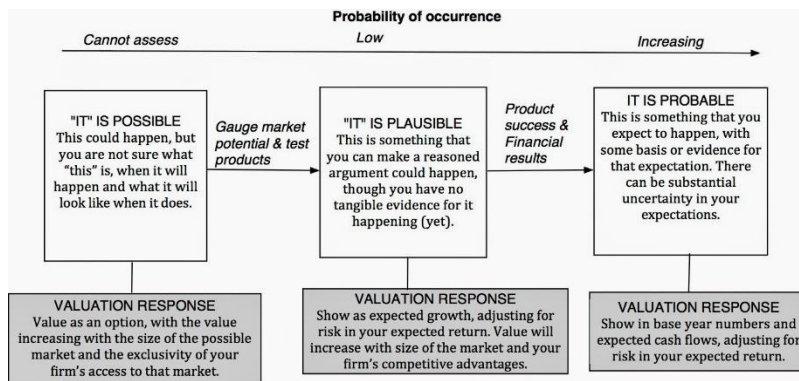
Not everything that is possible is plausible, and not all plausible opportunities make the transition to the probable. As I see it, the divergence between the my narrative and Bill Gurley's are captured in where we draw the lines between the probable and the plausible and the value that we attach to the possible. At the risk of mischaracterizing Mr. Gurley's thoughts, I have tried to contrast these differences:
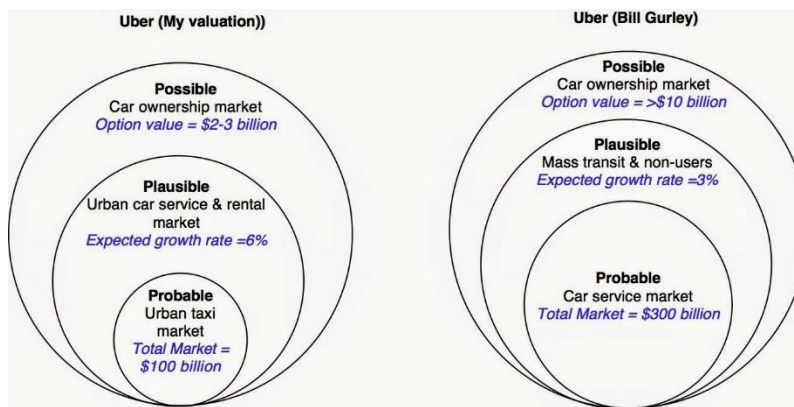
Here again, Bill Gurley has two advantages to work with. The first is that as an investor and insider, he has access to information on Uber's experiences and experiments in its frontier markets (mass transit and suburban users), that may have led him to shift these markets from the plausible to the probable. The second is that as a board director and advisor to management, he is in a position to influence Uber's potential in these markets. For all we know, the Uber Momcar and the Uber Datecar have been already conceived, market tested and are ready to go.

I think Bill Gurley and I agree on the car ownership market more than we disagree. I see it as a possibility right now and attach an option value of about $2-3 billion to it, partly because it is in the more distant future and partly because Uber's business model in this market is unformed. From Bill Gurley's description of the market, I think he sees it as a possibility as well, though I think he attaches a larger value to it than I do. The reason for the higher value is that it is a conditional possibility, with the likelihood of it happening increasing with the success that Uber has in the car service market.

Network Benefits

The second part of the Gurley Uber narrative rests on the company having network benefits that allow it to capture a dominant market share. As Mr. Gurley notes, a networking effect shows up any time you, as a

user of a product or service, benefit from other people using the same product and service. If the networking effect is strong enough, it can lead to a dominant market share for the company that creates it and potentially to a 'winner take all' scenario. The arguments presented in his post for the networking effects, i.e., pick up times, coverage density and utilization, all seem to me to be point more to a local networking effect rather than a global networking one. In other words, I can see why the largest car service provider in New York may be able to leverage these advantages to get a dominant market share in New York, but these advantages will not be of much use in Miami. There are global networking advantages listed, such as stored data that can be accessed by users in a new city and partnerships with credit car, smartphone and car companies, but they seem much weaker.

In fact, if the local networking advantages dominate, this market could very quickly devolve into a city-by-city trench warfare among the different players, with different winners in different markets. Thus, it is possible that Uber becomes the dominant car service company in San Francisco, Lyft in Chicago and a yet-to-be-created company has the largest market share in London. For the Gurley Uber narrative to hold, the global networking advantages have to become front and center and here again, it is possible that I am unaware of a management initiative designed to do exactly this.

The   **Verdict**   **Awaits**

I know that this may be hard to believe but I have less of an interest in making the case that Uber is over priced than I am in understanding what it is that drives its value. I have learned a great deal about why Bill Gurley is so excited about the company but I am inherently cautious, not because I don't find his arguments to be plausible, but because I have seen how often the plausible does not make the transition to the probable and how frequently the probable fails to show up in the actuals. That quality may make me a bad venture capitalist but I am sure that there are plenty of good ones out there to take up the slack.

Crowd Valuation

Tuesday, December 2, 2014

Up, up and away! A crowd-valuation of Uber!

In June 2014, I tried to value Uber and arrived at an estimated value for the firm of $6 billion, an impressive number for a young firm, but well below the VC estimates of value of $17-$18 billion at the time of my post. Much of the reaction was predictable, with readers whose priors were confirmed by my assessment of value liking it and those whose priors were different disagreeing,and sometimes vehemently. Disagreement and debate don't bother me in the least, since they can only advance the valuation narrative, but I do think that putting my narrative and valuation front and center undercut my objective in two ways. First, it made for passive analysis, where you could pick and choose which one of my valuation inputs you agreed with and which ones that you found erroneous, the justifying your prior biases. Second, some who disagreed took the easy way out, arguing that it was my use of an intrinsic value (DCF) model that had led me down the wrong path and that it was therefore unfixable.

Now that Uber is in the news again, with value estimates of $40 billion and higher floating around, I decided to revisit the valuation, but from a different angle. Rather than presenting my valuation, I want to open the

process up and I would like to invite you along for the journey. Like a book or movie where you get to write not just the ending but the entire story, I will provide the architecture and you can build your own valuation story (and value) for Uber. The good news is that this valuation will reflect your views (not mine) on Uber. The bad news is that if you don't like the value, you cannot blame me.

When Narrative drives Value

While my original valuation of Uber was all about the numbers, I followed it up with a post where I argued that if you disagreed with my value, it was not because you had a problem with my estimates (of growth or risk) but because you were taking issue with my narrative. Underlying my original valuation was a story that I was telling about *Uber as an urban cab/limo service company that would continue to attract new users into the market, while maintaining its high profit margins*. In response to a post by Bill Gurley, venture capitalist investor (and director) in Uber, where I was accused of missing the story by a mile, I conceded that I knew far less than he did about the company and that his narrative for the company - Uber as a car-service for the masses with global networking benefits - would lead to a much higher value for the company.

While that may sound abstract, the best way to see the link between story telling and number crunching is to take Uber on the valuation process, with you making your judgments at each step of the way. As you make this journey, a few (gentle) reminders of issues that you will face along the way:

1. <u>This is your valuation</u>: Contrary to what you might have been taught in your valuation classes, valuations are and should never be just about the numbers. To the extent that you will be making choices on these number, this will be your estimate of valuation, reflecting not only what you know about the company (and its products, management etc.) but also your personal biases (whether you like the company or not).
2. <u>You are almost certainly wrong</u>: Lest you view this is an insult, so is my assessment of value and so are the VC's valuations. It is not because we don't understand valuation or have not done our homework, it is because we are trying to play God and forecast the future.
3. <u>You should be open to revisiting it</u>: Following up on the last proposition, it stands to reason that the choices you make in valuing Uber today will not be the choices that you will make tomorrow or a week from now. So, keep the door open for changes not just at the margins but in your central narrative.
4. <u>Be willing to act on it</u>: There is no point to valuing companies, if you are not willing to act on your valuations. With Uber, it is true that you and I are restricted in what we can do, since the company is still private. However, it is also clear that the explosive growth in the estimated value of the company sets it on a path to being public (sooner, rather than later), at which point our valuations will become actionable.

Setting the stage
The first step in valuation is assessing where the company is right now and we start off at a

disadvantage, because it is amazing how little we know about the operating details of a company that is in the news as much as Uber. According to the company's website, it operates in 51 countries and in about 230 cities on six continents, and it has also expanded its product offerings, both within the car service market (with U4B, directed at businesses and UberPool, allowing for car pooling)and in new markets (with

UberRUSH, its delivery service in New York City).

The only updated revenue numbers came from an article in Business Insider, which seems to be one the company's preferred venues for leaking selective information. According to the article, the company projects gross receipts of $10 billion in 2015, up three times from gross receipts in 2014, which in turn more than tripled relative to receipts in 2013. While the company originally kept 20% of these receipts as revenues, it is unclear whether that number has slipped in recent months, as it has gone aggressively for new growth. While I am normally loath to value companies based upon second-hand information, and especially so if the information comes from a leaked corporate document, I am going to assume that the company will generate $3.5 billion in gross receipts for 2014 and that its slice has stayed at 20%, giving it revenues of $700 million for the year. I have no idea whether it is profitable after covering its operating costs, but the impact on the final value of these initial numbers is small enough that it is worth moving forward.

Building your Uber narrative

To set up the link between the narrative that you will be telling for Uber and its value, I will borrow the set-up that I used in this post on narrative and numbers, where I took the key inputs into my valuation and connected them to stories told about companies:
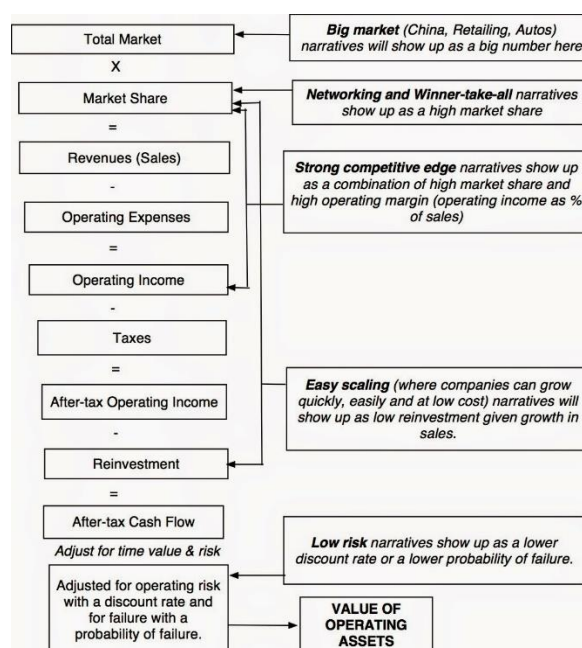
There are thus six steps to the narrative process and your choices at each step will determine the numbers from which we estimate value.

Step	Narrative	Numbers
1	*What market(s) is (are) Uber's products targeting?* a. Is Uber just a car service company? b. If not, what other markets do you see Uber competing in?	*Potential Market* This sets the limits of growth for the company, and the more broadly defined the market, the larger the potential growth (and the higher the value).
2	*How will Uber & like products affect market growth?* a. Given the potential market defined in step 1, how many new users will Uber & like products/services attract into the market? b. What effect will these new users have on overall market growth?	*Potential Market Growth* The more new users that a company attracts into the market, the higher the expected growth rate in that market.
3	*Will Uber derive any network benefits as it grows?* a. As Uber grows in an existing market, will that make further growth in that market easier (local network effects)? b. If Uber goes into a new market, how much does success in existing markets help it? (global network effects)	*Market Share* If there are no network effects in the market, it will stay splintered with no company claiming a significant market share. If there are only local network effects, multiple companies will get significant market shares, but none will be dominant. With global network effects, a company will be able to get a dominant market share.
4	*What are Uber's competitive advantages?* a. What are Uber's competitive advantages over existing competitors? b. Will these competitive advantages hold up as the market growth (and new competitors enter)?	*Cut of gross receipts & Operating Costs* The slice of revenue that Uber claims of the gross receipts (on cab rides, local delivery etc.) will depend on how strong and sustainable its competitive advantages are, with stronger/more sustainable advantages going along with larger slices of revenues/higher operating margins.
5	*What will Uber have to invest to generate growth?* a. Will Uber continue with its existing model (low capital intensity) as it grows? b. Will the growth be organic or acquired?	*Reinvestment* The more Uber will have to invest to generate new growth, the less cash flow will be left over for investors (and the lower the value).
6	*How risky is Uber as an investment?* a. How much risk is there in Uber's operating businesses? b. What is the chance that Uber will not survive?	*Risk Adjustment* The higher the risk in the operating businesses, the higher will be the rate of return (cost of capital) you demand for investing in the company. If failure risk is high, the value will be adjusted down even further.

Step 1: Potential Market

In my initial valuation of Uber, I treated it as an urban car-service company and was taken to task rightly for having too cramped a vision of the company. It is quite clear from both its words and actions that Uber has much larger designs and I will leave it to your judgment whether it will succeed. Based on rudimentary research of the potential markets that Uber could be in, here is what I get as a list:

Potential Market	Market Size	Industry structure
Taxi & Limo Market	Roughly $100 billion (based upon city-specific estimates).	Highly splintered (top 50 companies account for 35% market share), localized and private.
Rental Car Market	Approximately $36 billion just for the US and $50 billion globally.	Three companies (Enterprise, Hertz and Avis) account for 60% of the overall market.
Moving Services	Approximately $20 billion in the US (and no data is available for global).	A few large companies but none with dominant market share, with lots of localized, small movers.
Local Delivery business	Approximately $35 billion (more guesstimate than estimate).	Historically, it has been a localized, splintered business but Amazon and Google have entered the business recently.
Mass Transit	Approximately $60 billion for the US.	Barring a few privately owned bus companies, mostly government owned and subsidized.
Car Sharing	Approximately $20 billion, bigger in Europe than in the US, but growing fast.	A mix of young businesses, some tech based, trying to match needs to resources.

The potential starting market can range from $100 billion (for urban car service) to close to $300 billion (if you treat it as transportation company, going after all of the markets above). Since this is your narrative, its your choice to make and it will have significant value consequences.

Based on what you know (and think about) Uber, which of the following do you think is its potential market?

Potential Market	Market size (in millions)	Description
A1. Urban car service	$100,000	Taxi cabs, limos & car services (urban)
A2. All car service	$150,000	+ Rental Cars+ Non-urban car service
A3. Logistics	$205,000	+ Moving + Local Delivery
A4. Mobility Services	$285,000	+ Mass Transit + Car Sharing

Step 2: Market Growth
Uber is not only disrupting the existing players in the market that it disrupts but it is also attracting new users into the market, either by attractive non-cab users to try Uber or increasing the usage of car services, in general. Assuming that this process continues, the growth rates in these markets could increase if Uber's services (or Uber-like services) become more widely accessible. Here again, the choice is yours.
Based on the potential market(s) you chose for Uber in step 1, what effect do you see Uber (and Uber-like services) having on the expected growth rate in the market?

New user effect on market growth	Annual growth rate (next 10 years)
B1. No new users (no growth effect)	3.00%
B2. Increase total market by 25% over next 10 years	5.32%
B3. Increase total market by 50% over next 10 years	7.26%
B4. Double market size over next 10 years	10.39%

Step 3: Market Share
Having chosen a potential market and a growth rate in that market, the third step is making a judgment on what market share you would expect Uber to command once the market hits steady stay (in ten years). That choice will depend in large part on whether you think Uber's products/services have network effects, where increased usage of Uber by customers in a market makes it more attractive to other potential customers, and whether you think these network effects are local (in the city/region of usage) or global (in other cities/regions). The arguments for local network effects are easy (the more Uber users there are, the more Uber cars there are, which in turn makes it easier/quicker to get an Uber ride) but the ones for global network benefits may be more of a stretch (links to credit cards, inertia, uniformity of service, staying with the known). Once you have assessed the pluses and minuses, here are your choices.
Based on your assessment of Uber, what type of network effect (if any) do you see for its products and services?

Network Effect	Market Share	Description
C1. No network effects	5%	*Open competition in every market*
C2. Weak local network effects	10%	*Dominance in a few local markets*
C3. Strong local network effects	15%	*Dominance in multiple local markets*
C4. Weak global network effects	25%	*Weak spillover benefits in new markets*
C5. Strong global network effects	40%	*Strong spillover benefits in new markets*

Step 4: Revenue Slice & Operating Costs
Uber gets to keep a portion of the gross receipts paid by users for an Uber service, representing their revenues. That slice was initially set at 20% of the receipts but whether it can stay at that level will depend upon both the markets that Uber decides to operate in and the competition within each market. Thus, if Uber decides to go into the logistics market (moving and local delivery), it will have to accept a much lower slice of revenues, since competition is more intense. Even within the urban car service market, more intense competition from existing players (Lyft) or new entrants could put Uber's revenue slice under pressure. This choice again is yours to make:
Given the markets that you see Uber entering and the competition it faces within those markets, how strong and sustainable are Uber's competitive advantages?

Competitive Advantage	Revenue Slice	Description
D1. None	5%	*Unrestricted entry + No pricing power*
D2. Weak	10%	*Unrestricted entry+ Some Pricing Power*
D3. Semi-strong	15%	*Unrestricted entry + Pricing Power*
D4. Strong & Sustainable	20%	*Restricted entry + Pricing Power*

Step

Step 5: Reinvestment Needs
Uber's existing business model, where it acts as an intermediary and does not invest in cars or equipment, has low capital intensity and as a consequence, much of its growth has come with relatively low

reinvestment. That could change, if Uber decides to change its business model or if it has to do acquisitions to continue to generate growth.

Based on the business model that you see Uber adopting as it goes for the market share (that you forecast) in your potential market, which of the following reinvestment policies best fits the company?

Reinvestment	Sales/Capital Ratio (Higher number= Less investment)
E1. Minimal capital needs, no acquisitions	10.00
E2. Minimal capital needs, small acquisitions	5.00
E3. Service company median	3.00
E4. Technology company median	2.50
E5. US company median	2.00
E6. Capital intensive company median	1.50

Step 6: Risk (Cost of capital & Survival risk)

As I noted in the table above, there are types of risk that you have to grapple with in valuation. The first is the risk in operations, which causes revenues and earnings to be volatile over time, and that risk is captured in the risk-adjusted return you demand for investing in the company. In valuation, the cost of capital becomes the measure of this risk-adjusted return and is generally

estimated by looking at publicly traded companies (even though Uber is privately held still). Rather than wrestle with the minutiae of inputs into the model, you can make a judgment on where in the cross-sectional distribution of costs of capital across all companies you would put Uber.

Based on your assessment of the risk in the market that Uber is entering and where the company is in its life cycle, what cost of capital would you pick for the company?

Risk Profile	Cost of Capital
F1. Lowest decile of US companies	7.00%
F2. 25th percentile of US companies	7.50%
F3. Median of US companies	8.00%
F4. 75th percentile of US companies	10.00%
F5. Ninth decile of US companies	12.00%

The

The other risk for a young company is survival risk, i.e., the risk that you are one disaster from shutting operations. That risk increases for smaller companies with small cash holdings, large cash needs and limited access to capital. Given Uber's capacity to raise capital and cash holdings, this risk should be lower.

Your Uber value

Once you have made the choices on the potential market, growth in that market, Uber's market share and revenue slice, the valuation follows. While the number of combinations of assumptions is prohibitively high to show value estimates under each one, I have summarizes the value estimates for at least a subset of plausible choices. (using a sales to capital ratio of 5.00 and a cost of capital of 12% for all the cases)>

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

If your set of assumptions is not listed above, you can download the spreadsheet, enter your choices and see what the value of Uber is with those choices. If you don't like the value that you get with your narrative choices, I am afraid that it is just a reflection of your choices.

Looking at the range of values that you can obtain ($799 million to $90.5 billion), you may find your worst fears about DCF models, i.e., that they can be used to deliver whatever number you want, vindicated, but that is not the way I see it. Instead, here are four lessons that I draw from this table:

1. Soaring narratives, soaring values: I know that some people view DCF models as inherently conservative and thus unsuited to valuing young companies with lots of potential. As you can see in the table above, if you have a soaring narrative of a huge market, a dominant market share and hefty profit margins, the model will deliver a value to match. Put differently, if you found my original valuation of Uber too low, the fault lies with me for having a cramped vision of what Uber can accomplish and not with the model. It also stands to reason that when you have big differences in value estimates, it is almost always because you have different narratives for a company, not because you have a disagreement on an input number.
2. Not all narratives are made equal: While I have listed out multiple narratives, some of which deliver huge values and some not, not all are equal. Looking forward as investors, some narratives are more plausible than others and thus have better odds of succeeding. Looking back ten years from now, reality will have delivered its own story line for Uber and the narrative that came closest to that reality will be the winner.
3. Narratives need reshaping: The narratives for Uber that you developed are based on what you know today. As events unfold, it is critical that you check your narrative against the facts and tweak, change or even replace the narrative if the facts require those adjustments, which was the point that I made in this post.
4. Narratives matter: Success, when investing in young companies, comes from getting the narrative right, not the numbers. That may explain why some successful venture capitalists can get away being surprisingly sloppy with they numbers. After all, if your skill set includes finding start-ups with

strong narratives and picking founders/entrepreneurs who can deliver on those narratives, the fact that you cannot tell the difference between EBITDA and free cash flow or compute the cost of capital will be of little consequence.

If you are waiting for me to reveal my narrative choices, you will be disappointed. This is your valuation, not mine, and I hope that you like it. If you could please go in and put your narrative choices and resulting value for Uber into this shared Google spreadsheet, we can get a crowd valuation of Uber!

Attachments

1. My post on Uber in June 2014
2. My follow-up post on Uber
3. Valuation of Uber (December 2014)
4. Google Shared Spreadsheet of Uber values

Above the Crowd

By Bill Gurley
How to Miss By a Mile: An Alternative Look at Uber's Potential Market Size

July 11, 2014: On June 18, Aswath Damodaran, a finance professor at NYU's Stern School of Business, published an article on FiveThirtyEight titled "Uber Isn't Worth $17 Billion." This post was a shortened version of a more detailed post he had written for his own blog titled "A Disruptive Cab Ride to Riches: The Uber Payoff." Using a combination of market data, math, and financial analysis, Professor Damodaran concluded that his best estimate of the value of Uber is $5.9 billion, far short of the value recently determined by the market. This estimate of value was tied to certain "assumptions" with respect to TAM (total available market) as well as Uber's market share within that TAM. And as you would expect, his answer is critically dependent on these two assumptions.

As the Series A investor and board member at Uber, I was quite intrigued when I heard that there was a FiveThirtyEight article specifically focused on the company. I have always loved the deep, structured analysis that Bill Simmons and Grantland bring to sports, and when Nate Silver also joined ESPN, I was looking forward to the same thoughtful analysis applied to a much broader range of subjects. Deep research and quantitative frameworks are sorely lacking in today's short attention span news approach. I could hardly wait to dive in and see the approach.

The funny thing about "hard numbers" is that they can give a false sense of security. Young math students are warned about the critical difference between precision and accuracy. Financial models, especially valuation models, are interesting in that they can be particularly precise. A discounted cash flow model can lead to a result with two numbers right of the decimal for price-per-share. But what is the true accuracy of most of these financial models? While it may seem like a tough question to answer, I would argue that most practitioners of valuation analysis would state "not very high." It is simply not an accurate science (the way physics is), and seemingly innocuous assumptions can have a major impact on the output. As a result, most models are used as a rough guide to see if you are "in the ball park," or to see if a particular stock is either wildly under-valued or over-valued.

So here is the objective of this post. It is not my aim to specifically convince anyone that Uber is worth any specific valuation. What Professor Damodaran thinks, or what anyone who is not a buyer or seller of stocks thinks, is fairly immaterial. I am also not out to prove him wrong. I am much more interested in the subject of critical reasoning and predictions, and how certain assumptions can lead to gravely different outcomes. As such, my goal is to offer a plausible argument that the core assumptions used in Damodaran's analysis may be off by a factor of 25 times, perhaps even more. And I hope the analysis is judged on whether the arguments I make are reasonable and feasible.

Damodaran uses two primary assumptions that drive the core of his analysis. The first is TAM, and the second is Uber's market share within that market. For the market size, he states, "For my base case valuation, I'm going to assume that the primary market Uber is targeting is the global taxi and car-service

market." He then goes on to calculate a global estimate for the historical taxi and limousine market. The number he uses for this TAM estimate is $100 billion. He then guesses at a market share limit for Uber – basically a maximum in terms of market share the company could potentially achieve. For this he settles on 10%. The rest of his model is rather straightforward and typical. In my view, there is a critical error in both of these two core assumptions.

TOTAL AVAILABLE MARKET ANALYSIS

Let's first dive into the TAM assumption. In choosing to use the historical size of the taxi and limousine market, Damodaran is making an implicit assumption that the future will look quite like the past. In other words, the arrival of a product or service like Uber will have zero impact on the overall market size of the car-for-hire transportation market. There are multiple reasons why this is a flawed assumption. When you materially improve an offering, and create new features, functions, experiences, price points, and even enable new use cases, you can materially expand the market in the process. The past can be a poor guide for the future if the future offering is materially different than the past. Consider the following example from 34 years ago that included the exact same type of prediction error:

"In 1980, McKinsey & Company was commissioned by AT&T (whose Bell Labs had invented cellular telephony) to forecast cell phone penetration in the U.S. by 2000. The consultant's prediction, 900,000 subscribers, was less than 1% of the actual figure, 109 Million. Based on this legendary mistake, AT&T decided there was not much future to these toys. A decade later, to rejoin the cellular market, AT&T had to acquire McCaw Cellular for $12.6 Billion. By 2011, the number of subscribers worldwide had surpassed 5 Billion and cellular communication had become an unprecedented technological revolution." (article via @trengriffin)

The tweet included here from Aaron Levie highlights the key point we are making – Uber's potential market is far different from the previous car-for-hire market, precisely because the numerous improvements with respect to the traditional model lead to a greatly enhanced total available market. We will now walk through those key differences, dive deep on the issue of price, and then consider a range of expanded use cases for Uber, including one that changes the game entirely.

A RADICALLY DIFFERENT EXPERIENCE

1. **Pick-up times**. In cities where Uber has high liquidity, you have average pick-up times of less than five minutes. For most of America, prior to Uber it was impossible to predict how long it would take for a taxi to show up. You also didn't have visibility into its current location; so having confidence about the taxi's arrival time was nearly impossible. As Uber becomes more established in a market, pick-up times continue to fall, and the product continues to improve.

2. **Coverage density**. As Uber evolves in a city, the geographic area they serve grows and grows. Uber initially worked well primarily within the San Francisco city limits. It now has high liquidity from South San Jose to Napa. This enlarged coverage area not only increases the number of potential customers, but it also increases the potential use-cases. Uber is already achieving liquidity in geographic regions where consumers rarely order taxis, which is explicitly market expanding.

3. **Payment**. With Uber you never need cash to affect a transaction. The service relies solely on payment enabled through a smartphone application. This makes it much easier to use on the spur of the moment. It also removes a time consuming and unnecessary step from the previous process.

4. **Civility**. The dual-rating system in Uber (customers rate drivers and drivers rate customers) leads to a much more civil rider/driver experience. This is well documented and understood. With taxis, users worry about being taken advantage of, and many

drivers spend all day with riders accusing them of such. This can make for an uncomfortable experience on both sides.

5. **Trust and safety**. Most Uber riders believe they are safer in an Uber than in a traditional taxi. This sentiment is easy to understand. Because there is a record of every ride, every rider, and every driver, you end up with a system that is much more accountable than the prior taxi market (it also makes it super easy to recover lost items). The rating system also ensures that poor drivers are removed from the system. Many of the women I know have explicitly stated that they feel dramatically safer in an Uber versus a taxi.

DIFFERENT ECONOMICS

I find it surprising that a finance professor like Damodaran did not consider the impact of price on demand. As Uber becomes more and more liquid, its drivers enjoy higher and higher utilization. Utilization is a measure of the percentage of time drivers are working versus waiting. Think about rides per hour as a similar measurement. As utilization rises, Uber can lower price, and the drivers still make the same amount. Uber does in fact choose to do this, and has done it many times. Just last week, the following email went out to all users in Los Angeles (see graphic below). If you look at the bottom of the graphic, you will see that Uber is now priced dramatically below a taxi. The relationship between price and demand is well understood, and while Damodaran may not have the numbers he would need to calculate Uber's specific price elasticity, let me assure you that it is high. This only makes sense – lowering the price of car-for-hire transportation will increase the usage.
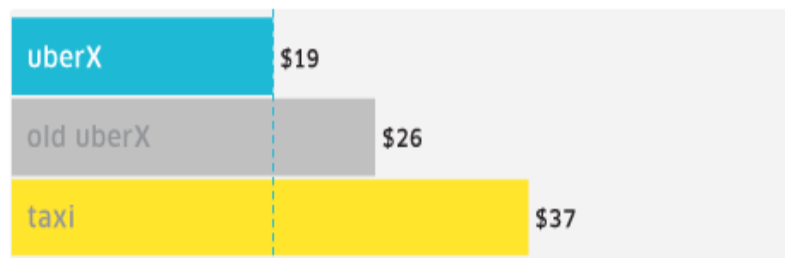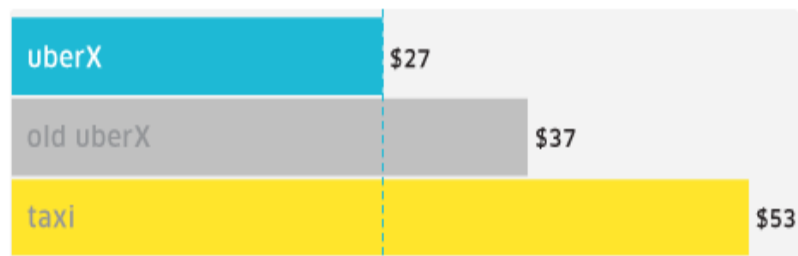
uberX FARES JUST GOT **25% CHEAPER**

We just dropped uberX fares by 25%, making it 50% cheaper than a taxi. From Venice to WeHo and everywhere in between, uberX is the most affordable ride on the road.
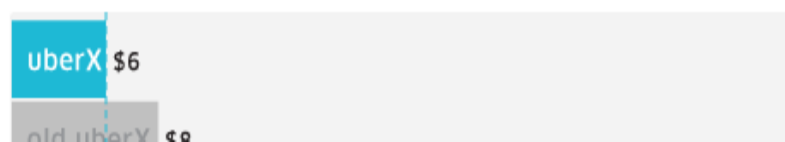
HOW THESE PRICES COMPARE

WeHo to LAX

uberX	$19
old uberX	$26
taxi	$37

Santa Monica to Downtown LA

uberX	$27
old uberX	$37
taxi	$53

Hermosa Beach to Manhattan Beach

uberX	$6
old uberX	$8

Most taxi services in the majority of U.S. cities have a fixed supply through some type of medallion system. In NYC today there are 13,605 licensed taxis. In 1937, when the modern system was created, there were 11,787. Additionally, prices only go up, they never go down. How could one possibly know if this is the appropriate supply of taxis and an optimal price point? Doesn't the high-value of medallions (over $1mm in some markets) implicitly prove that the market is undersupplied and that prices are above true market clearing prices? What if someone could run a more convenient, safer service at a much lower price and with much higher availability? You would end up with dramatically more rides – and that is exactly what is happening.

NEW USE CASES

1. **Use in less urban areas**. Because of the magical ordering system and the ability to efficiently organize a distributed set of drivers, Uber can operate effectively in markets where it simply didn't make sense to have a dense supply of taxis. If you live in a suburban community, there is little chance you could walk out your door and hail a cab. And if you call one of the phones, it is a very spotty proposition. Today, Uber already works dramatically well in many suburban areas outside of San Francisco with pick up times in less than 10 minutes. This creates new use cases versus a historical model.

2. **Rental car alternative**. When I used to travel to Los Angeles and Seattle on business I would use a rental car. Today I only Uber. It is materially better. I do not have to wait in lines, and I avoid the needless bus rides on each end of the trip. I don't have to map routes. I don't have to find parking. I don't have to pay for parking. The rental car market is $27B in the U.S. The global market would obviously be much larger. And you are also eating into the parking market here.

3. **A couple's night out**. The liquidity is so high in the San Jose Peninsula that a couple living in Menlo Park will Uber to a dinner in Palo Alto (perhaps 3 miles away) to avoid the risk of driving after having a glass of wine. This was not a use case that existed for taxis historically. It's also great for getting from San Francsico back home to the suburbs after a night on the town. This was a historic black car market, but the ease and convenience greatly increases the number of times it is now done, by a multiple.

4. **Transporting kids**. An article in the New York Times titled "Mom's Van Is Called Uber" suggests that parents are using Uber to send their kids to different events. I don't think very many people put young kids into taxis (due to trust), but they are quite

comfortable doing this in an Uber. It is also common for parents with teenagers to encourage taking Uber when they go out, to reduce the risk that they end up in a car with someone who may have been drinking.

5. **Transporting older parents**. I know many people who are looking after older parents, who have insisted their parents put Uber on their phones to have an alternative to driving at night or in traffic. Convincing them to use Uber is much easier a task than suggesting they call a taxi due to both convenience, ease of use, and social acceptance.

6. **Supplement for mass transit**. If you are someone who primarily uses mass transit, you are likely to consider UberX (low price offering) for exceptions such as when you just miss a train, or when you might be late for a meeting. Lower price points than a taxi and more reliability make this possible. A study from the city of San Francisco argues that more taxis will result in more mass transit use, as it makes it easier not to need a car.

THE GAME CHANGER: UBER AS A CAR-OWNERSHIP ALTERNATIVE

Damodaran likely never considered this possibility: Could Uber reach a point in terms of price and convenience that it becomes a preferable alternative to owning a car? Farhad Manjoo wrote a compelling piece for the New York Times ("With Uber, Less Reason to Own a Car") making just this argument. And Gregory Ferenstein at VentureBeat dove a little deeper in terms of the math of how this would work. According to Ferenstein, "AAA estimates that the average cost of car ownership per year is about $9,000." If you take that number and divide it by your average Uber fare you can calculate number of rides you could afford a year, and compare that with what you need. For many, the math is already working. I know numerous people who have already given up their cars, and several people have anecdotally sent photos to Uber of the check they received for selling their car.

Some interesting demographic trends are also underway that favor Uber's opportunity in this market. First, there is the continuing trend of urbanization in America. But more importantly, America's youth have fallen out of love with the notion of owning a car. Kids are no longer rushing to obtain their license on the day they turn 16, and according to Edmunds, car ownership among 18-34

year olds has fallen a full 30% in recent years. Here are just a few of many articles published over the past two years on this topic:

- Why Don't Young Americans Buy Cars? The Atlantic (3/25/12)
- Young Americans ditch the car CNN (9/17/12)
- The End of Car Culture The NYTimes Sunday Review (6/23/13)
- Young Americans Are Abandoning Car Ownership and Driving The Daily Beast (7/5/13)
- The Auto Industry's Hard Sell to Convince Your Kids They Need a Car Time (1/24/14)
- Millennials Don't Care About Owning Cars, And Car Makers Can't Figure Out Why Fast Company (3/26/14)

There are two other points worth considering with respect to Uber as a car ownership alternative. First, the consumer is most likely to replace their "extra" car first. You may see an urban family going from two cars to one. Or perhaps a suburban family will reduce its fleet from four to three or three to two. The fixed costs of this marginal car are very high (DMV registration, insurance, depreciation), yet the usage of that car is much lower. The second point worth nothing is that for certain people the benefits of not driving are so high that they will switch to Uber before the economic case is specifically advantageous, choosing to pay a premium for the convenience. This would include people that consume alcohol after work and do not want to risk driving, people that are frequent users of smartphones when they commute (now considered a bigger risk than DUI), and people that loathe spending time parking their vehicle.

HOW BIG IS THE CAR-OWNERSHIP-ALTERNATIVE MARKET?

1. According to this NADA report, total dealership sales (including service) is about $730 billion annually. However, that really isn't what car replacement is all about. Car replacement includes all the costs of owning a car – not just the car purchase, but also insurance, DMV registration, parking, gasoline, repairs, oil changes, etc.

2. The number of cars in circulation in the world is just over 1 billion, with 25% of those in the United States. AAA estimates that the average annual cost of owning a car is $9,000. While this number may seem high, if you read the report you will see that the key drivers: the rising costs of gasoline and raw materials and insurance alone averages $1000/year. It is hard to imagine a scenario where these costs fall (most are

rising), and many of these costs are now consistent on a global basis. But we will conservatively cut that number by 33% to $6,000.

3. One billion global cars multiplied by a $6,000 annual cost of ownership results in a $6 trillion market for annual car ownership costs. How much of that market Uber can take is an interesting question to ponder (which we will), but the fact that 25% of that market is in the U.S. is a huge advantage for the company.

Driving home the point – Uber's potential market is far different from the previous for-hire market precisely because the numerous improvements over the traditional model lead to a greatly enhanced TAM.

WHY ONLY 10%?

Now let's turn our attention to the 10% maximum market share number that Damodaran chose for his analysis. He argues that regulatory restrictions and competition will limit Uber's market share. He also makes the point that there are no advantages that cross from city-to-city, a point we will dispute later.

Eighteen years ago, Brian Arthur published a seminal economic paper in the Harvard Business Review titled, "Increasing Returns and the Two Worlds of Business." If you have not read it, I highly recommend that you do. His key point is that certain technology businesses, rather than being exposed to diminishing marginal returns like historical industrial businesses, are actually subject to a phenomenon called known as "increasing returns." Gaining market share puts them in a better position to gain more market share. Increasing returns are particularly powerful when a network effect is present. According to Wikipedia, a network effect is present when "… the value of a product or service is dependent on the number of others using it." In other words, the more people that use the product or service, the more valuable it is to each and every user.

So the right questions are, *"is Uber exposed to some form of network effect where the marginal user sees higher utility precisely because of the number of previous customers that have chosen to use it,and would that lead to a market share well beyond the 10% postulated by Damodaran?"*

There are three drivers of a network effect in the Uber model:

1. **Pick-up times**. As Uber expands in a market, and as demand and supply both grow, pickup times fall. Residents of San Francisco have seen this play out over many years. Shorter pickup times mean more reliability and more potential use cases. The more people that use Uber, the shorter the pick up times in each region.

2. **Coverage Density**. As Uber grows in a city, the outer geographic range of supplier liquidity increases and increases. Once again, Uber started in San Francisco proper. Today there is coverage from South San Jose all the way up to Napa. The more people that use Uber, the greater the coverage.

3. **Utilization**. As Uber grows in any given city, utilization increases. Basically, the time that a driver has a paying ride per hour is constantly rising. This is simply a math problem – more demand and more supply make the economical traveling-salesman type problem easier to solve. Uber then uses the increased utilization to lower rates – which results in lower prices which once again leads to more use cases. The more people that use Uber, the lower the overall price will be for the consumer.

David Sacks of Yammer and Paypal, recently tweeted a napkin-sketch captioned, "Uber's virtuous cycle. Geographic density is the new network effect" that succinctly highlights the points just mentioned.
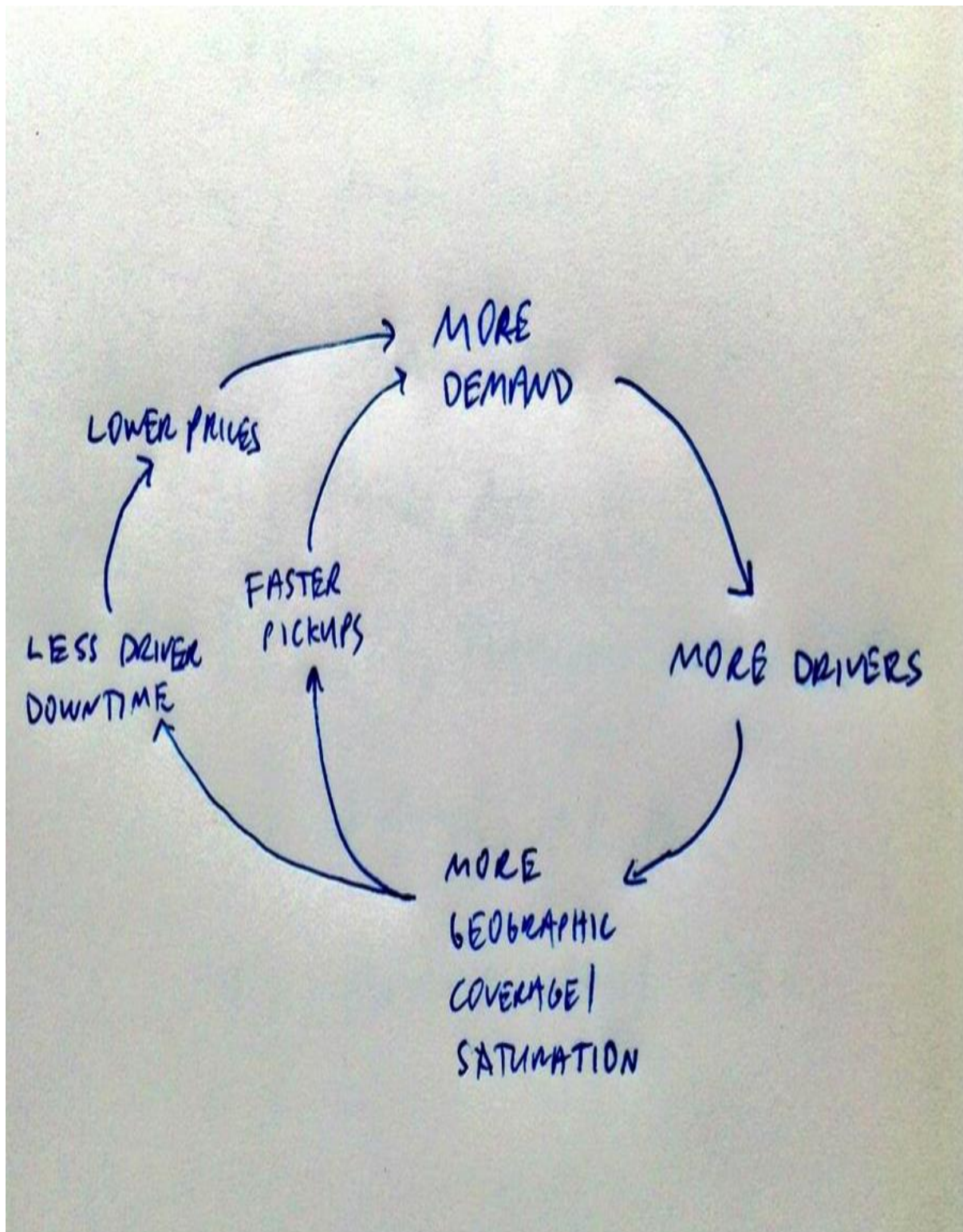
Uber also enjoys economies of scale that span across city borders. Many people who travel have experienced Uber for the first time in another city. When the

company enters a new city they have the stored data for users who have opened the application in that area to see if coverage is available. These "opens" represent eager unfulfilled customers. They also have a list of residents who have already used the application in another city and have a registered credit card on file. This makes launching and marketing in each additional city increasingly easier.

There are other economies of scale that come with being the market leader. When you consider that Uber is partnering with smartphone vendors, credit card companies, car manufacturing companies, leasing companies, and insurance companies, you can imagine that being larger is a distinct advantage. As an example, on May 28th Uber announced a partnership with AT&T to embed Uber on all its Android phones. Then on June 9th, they announced a partnership where American Express users will get 2X loyalty points on all Uber rides. Additionally, Membership Rewards users can use those points to pay for rides directly in the application. It is also easy to imagine a future where Uber drivers receive discounts on things like leases, gasoline and car repair. Scale clearly matters for these types of opportunities.

UNDISCOVERED CLUES

There are clues to be found, if you know where to look. In this video recorded in October of 2012 (about 20 months ago), Uber's CEO, Travis Kalanick, notes that when Uber launched its services in 2010 there were about 600 total black cars in San Francisco. At the time of this video, Travis notes that more than 600 black cars were active on Uber and the company was still growing at 20% month over month (at the time, UberX had just launched, so Uber's fleet was all black cars). So 20 months ago in San Francisco, Uber was already at 100% of Damodaran's historic market, and growth was still tilting up and to the right. The only way this is possible is if the market is expanding at rapid pace, beyond the historical limit.

More recently in a WSJ interview dated June 6, 2014, Travis notes "When we got this company started (in 2009) we were pitching the seed round and we pulled a bunch of research from this report that showed that San Francisco total spend on taxi and limo was like 120 million bucks. But we're a very healthy multiple

bigger than that right now, just Uber in SF. So it's not about the market that exists, it's about the market we're creating." He then goes on to note that the San Francisco market for car ownership is closer to $22 billion. So today, less than two years after the video, he is highlighting that Uber's San Francisco revenues are a "healthy multiple" bigger than the historic market for both limousines and taxis. And Uber is still growing quite nicely in that market. Plus there are other competitors in the market. So Damodaran's math simply does not hold up. This cannot be yesterday's market.

There is another quite simplistic methodology that might have helped Professor Damodaran avoid his unnecessary error. He could have simply asked his friends that were moderate to heavy Uber users the following question: "How does your current annualized Uber expenditures compare to your spend on taxis plus limousines two years ago?" For most of the people I know, the answer to this question is somewhere north of three times as large. That data point alone implies that this is an entirely new market.

OUR PROPOSED ESTIMATES (25X)

So now let's consider scenarios whereby Uber's potential market could be 25 times higher than Damadoran's original estimate. His original estimate was based on Uber topping out at 10% of a $100 billion market. We would argue, for the reasons included herein, that the features and functions of Uber's new car-for-hire service significantly expands the core market. Based on San Francisco alone, it appears that that market is already potentially 3X the original. For two reasons, I would consider this 3X market multiplier the low end of the range. First, Uber is still growing aggressively in San Francisco, so this new market is far from saturated. Also, when you consider that these services are succeeding in areas where taxis were previously not prevalent, this would imply a higher multiplier as well. In our model below, we assume that the expanded car-for-hire market is 3-6X bigger than the historic market.

Now we consider Uber-like services as a car ownership alternative. This trend is just beginning, but because of the points highlighted herein, we believe this to be a real opportunity. For our model, we assume that Uber-like services will encroach on a mere 2.5%-12.5% of this market. This represents a potential

opportunity of $150-$750 billion depending on how aggressively one believes these services can succeed as a car alternative.

Expanded Car-for-hire Market	Multiplier	Car-Ownership Alternative Market				
		2.5%	5.0%	7.5%	10.0%	12.5%
		$ 150	$ 300	$ 450	$ 600	$ 750
3X	$300	$450	$600	$750	$900	$1,050
4X	$400	$550	$700	$850	$1,000	$1,150
5X	$500	$650	$800	$950	$1,100	$1,250
6X	$600	$750	$900	$1,050	$1,200	$1,350

Combining these two opportunities, you end up with a potential range of new TAM estimates from $450 billion all the way up to $1.3 trillion. Now we calculate the market share Uber would need against these new TAM estimates to arrive at an opportunity that is 25X that of Damadoran's $10B. The table below shows those estimates. In the most bearish case (Scenario A) where the expanded market opportunity is capped at 3X and these new services only marginally impact car ownership, Uber would need a market share of 56%. Arguably it already has that share today, and this number is not unreasonable in a world of network effects (a point that Damadoran cedes in a more recent post). In the case I think is more likely (Scenario G), the expanded market multiplier is 6X and you see a 10% impact on global car ownership, Uber's market share need only be in the 20% range. Once again, the fact that the U.S. represents 25% of the car-ownership market adds more likelihood to Uber's ability to capture that opportunity.

Scenario	Market Size Uber-like Services ($billions)	Uber Market Share Needed
A	$ 450	56%
B	$ 600	42%
C	$ 750	33%
D	$ 900	28%
E	$ 1,050	24%
F	$ 1,200	21%
G	$ 1,350	19%

As discussed up front, the key objective of this exercise is to present a reasonable and plausible argument that Uber's market opportunity might be 25X higher. Interestingly, this case is made without any consideration for whether Uber can impact the logistics market or expands into any incremental services whatsoever. We have simply taken a structured look at how traditional human car transportation can change as a result of today's technology.

There are many biases that can come into play when making estimates. For example, as an investor and board member at Uber one might conclude that I am biased to see things in a more positive light. That would only make sense. In the conclusion to his original post, Damadoran made a similar argument, "it is worth remembering that even smart investors can collectively make big mistakes, especially if they lose perspective." Somewhere in the editing process between Damadoran's original post on his web site, and the version that ended up on FiveThrityEight, this little nugget was left out:

"As I attempt to attach a value to Uber, I have to confess that I just downloaded the app and have not used it yet. I spend most of my of life either in the suburbs, where I can go for days without seeing a taxi, or in New York City, where I find that the subways are a vastly more time-efficient, cheaper and often safer mode of transportation than taxis."