Uber May Pick Up Investors, Along With Riders, in Its IPO

The ride-hailing pioneer is likely to maintain its competitive advantage via its network effect.

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Uber May Be Picking Up Moat Sources as Quickly as It Picks Up Riders

We've taken a deeper look at privately held Uber, the ridesharing service provider that sits at the number-two spot in the world (based on rides hailed) and is attempting to gain traction in what we estimate to be a $630 billion addressable market for the company by 2022. In our view, Uber's core business, the ridesharing platform, would warrant a narrow economic moat rating as it has displayed some moat sources such as network effects and intangible assets, which could position the firm to become profitable and generate excess returns on invested capital in the future.

Based on our analysis and using publicly available data on Uber's financials from *The Wall Street Journal* as a starting point, we value Uber at a $110 billion market capitalization, ahead of the company's last valuation round of nearly $62 billion in May, according to PitchBook. We project that Uber's net revenue will grow at a 27% average annual pace over the next 10 years to $82.4 billion. We foresee Uber continuing to spend on expansion and research and development but think it will become profitable by 2022. The company is likely to go public during the second half of 2019, and considering its success at raising capital, we expect the initial public offering price to value Uber between $100 billion and $110 billion.

Looking ahead, Uber may leverage its moaty ridesharing business and tap into other growth opportunities, including bikesharing, meal takeout and delivery (Uber Eats), freight brokerage (Uber Freight), and ridesharing via autonomous vehicles. In our view, autonomy is the most transformative technology set to affect the world of ridesharing; we see powerful economic forces driving autonomous vehicle adoption in the ridesharing industry, from which Uber may benefit.

On the other hand, risks remain, such as increased competition and the firm's legal issues, which gave Uber a tainted reputation under former CEO Travis Kalanick. We believe that under new CEO Dara Khosrowshahi, Uber will see better days; however, pressure brought forth by legal matters will persist.

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Key Takeaways

- Uber's core business, the ridesharing platform, has displayed some moaty characteristics such as network effects and intangible assets, which could position the firm to become profitable and generate excess returns on invested capital in the future.
- We expect Uber to grab nearly 50% of the ridesharing market by 2022 (up from 29% in 2017) as it leverages its first-mover advantage along with its network effect and data moat sources.
- We value Uber's total addressable market, which includes the aggregate of the global taxi, rideshare, and food delivery industries along with the U.S. markets for freight brokerage and the share we believe rideshare companies can take from global public transport and U.S. bikeshare, at $630 billion by 2022, representing a 26% five-year compound annual growth rate.
- We estimate a market capitalization of $110 billion for Uber as the firm is projected to increase its top line by 27% annually during the next 10 years and become profitable in 2022.

Companies Mentioned

Name/Ticker	Economic Moat	Moat Trend	Currency	Fair Value Estimate	Current Price	Uncertainty Rating	Morningstar Rating	Credit Rating	Market Cap (Bil)
Alphabet GOOGL	Wide	Stable	USD	1,200	1,213.08	High	★★★	AA	841.00
Grubhub GRUB	None	Stable	USD	61	114.91	Very High	★		10.30

How Big Is Uber? The Answer's in the Question

When wondering about Uber's size, look to its name, which means "above and beyond" in German. As of June, an Uber ride can be ordered in 65 countries and over 700 cities. Based on data from Uber and eMarketer as quoted in Reuters, Uber has U.S. ridership of over 40 million people (defined as those who use Uber at least once per year) and global ridership of 75 million. EMarketer projects U.S. ridership to increase to 64 million by 2022. Riders depend on approximately 3 million active drivers globally, with "drivers" defined as those providing more than four rides per month. According to Uber, the startup completed 4 billion trips in 2017, resulting in $36.2 billion in gross bookings and $7.8 billion in net revenue.

Uber is a location-to-location business in terms of rides and market expansion. Its largest territory is North America, while the company is also present in Central and South America, with the ridesharing app available in over 300 and 175 cities, respectively. Uber's five largest North American cities, in terms of riders, are Washington, D.C., New York City, Chicago, Los Angeles, and San Francisco.

Uber's scale is not derived only from ridesharing, however. According to Eater and Uber, Uber Eats has 8 million monthly active users in over 250 cities globally, with over 60,000 participating restaurants. This compares with current market leader Grubhub's 15 million users and over 80,000 restaurants. Uber Eats has expanded rapidly, with the number of drivers growing 24% between March 2016 and March 2017, according to *The New York Times*.

Although its drivers are considered contractors, Uber has nearly 16,000 employees. Its headquarters are in San Francisco, with major offices in five other U.S. cities: New York City, Chicago, Washington D.C., Seattle, and Los Angeles. The firm has four major international offices in London, Sao Paulo, Mexico City, and Amsterdam. Uber has over 420 offices worldwide.

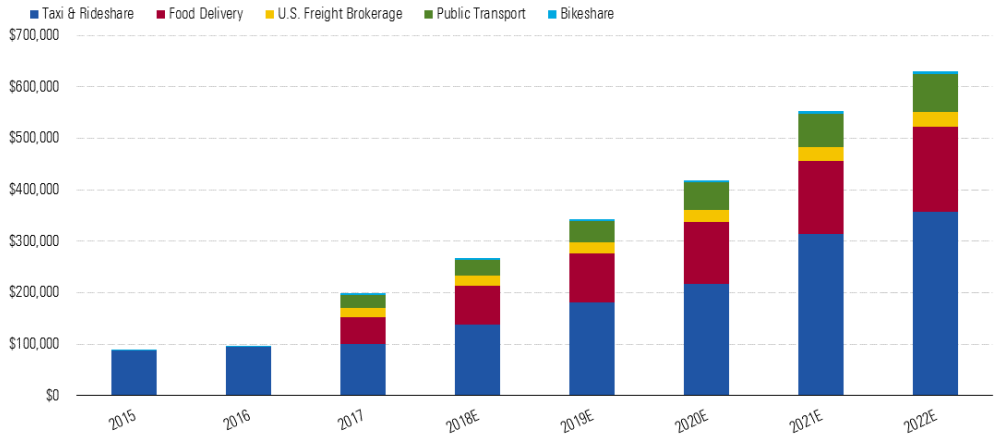
The company's expansive usership and global presence are echoed in the private equity realm. Uber is the largest venture-capital-backed private company in the world followed by competitor Didi Chuxing, based on most recent deal valuations. According to PitchBook, Uber has received $17.44 billion since its founding and has approximately 148 active investors and shareholders. Its impact in the ridesharing/hailing market expands via Grab and Baidu, as Uber holds a seat on each company's board, and through its significant share in its competitors: 28% in Grab and 20% in Didi.

The most important figure concerning Uber's size, however, is how big it can be. We estimated the startup's total addressable market to find out.

We Calculate That Uber Will Have a $630 Billion Addressable Market by 2022

We believe that Uber's market potential expands far beyond the one-off need for a ride from the car dealer or airport—and even the total taxi market. Uber leverages its network of drivers and users for logistics of transporting people, food, and cargo to create a compelling substitute for traditional means of transportation. For these reasons, we believe Uber's total addressable market is the aggregate of the global addressable markets for the taxi, rideshare, and food delivery industries along with the U.S. addressable markets for freight brokerage and the share we believe rideshare companies can take from global public transport and U.S. bikeshare. Taking these submarkets into account and adjusting for Uber's lost stake in China, we estimate Uber's total addressable market to be $630 billion by 2022, growing at a 26% CAGR from 2017 to 2022

Exhibit 1 Ridesharing, Food Delivery, and Other Submarkets Will Push Uber's TAM to $630 Billion
($ in Millions)



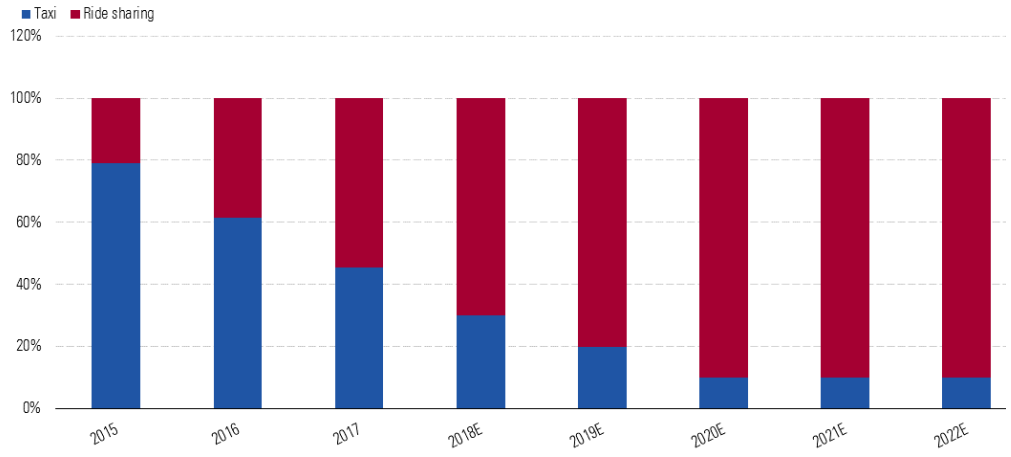
Source: TLC, NYC Open Data, Statista, UC Davis Institute of Transportation Studies, IBIS, Citi Bike, Morningstar estimates

Taxi and Rideshare

First, we estimate Uber's addressable taxi and ridesharing market growing at a 26% five-year CAGR to $357 billion by 2022. In determining Uber's total addressable market, we started by looking at one of the firm's largest markets, New York City. New York has substantial amounts of public data available for the taxi market, and we believe it is a robust rideshare and taxi market, making it a reliable base to understand market share potential in the United States for the rideshare and taxi industries.

New York City's Taxi & Limousine Commission publicly releases revenue and trip data on total taxi, Lyft, and Uber trips. We used this data as a base for the current taxi and ridesharing market size in New York. See Exhibit 2 for market share and Exhibit 10 for our estimates of total taxi versus ridesharing trips.

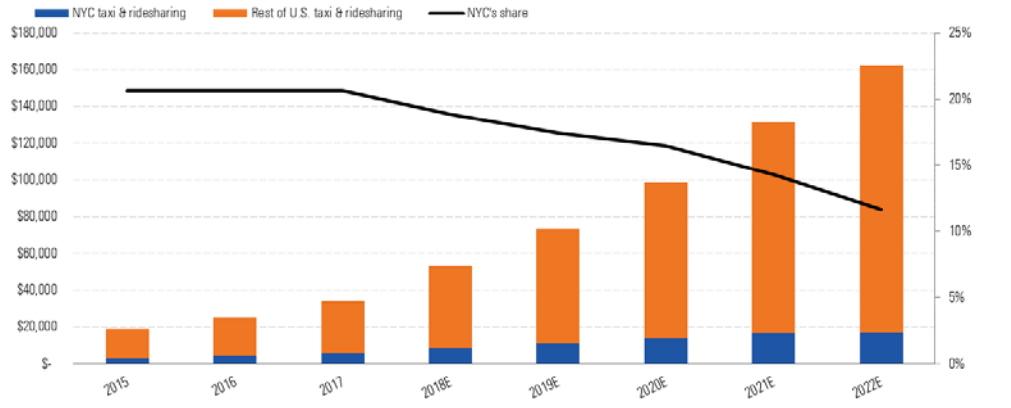
Exhibit 2 NYC Taxis Should Lose Trips Market Share to Ridesharing as Uber and Lyft Increase the Total Pie



Source: TLC, NYC Open Data, Morningstar estimates

We then compared New York City's total revenue with Statista's 2014 total U.S. taxi revenue estimates to assume New York City's 21% composition of the U.S. taxi and ridesharing market until 2018, after which we believe New York City will represent less share of the overall U.S. taxi and ridesharing market (down to 12% in 2022) as ridesharing continues to take revenue from the taxi market.

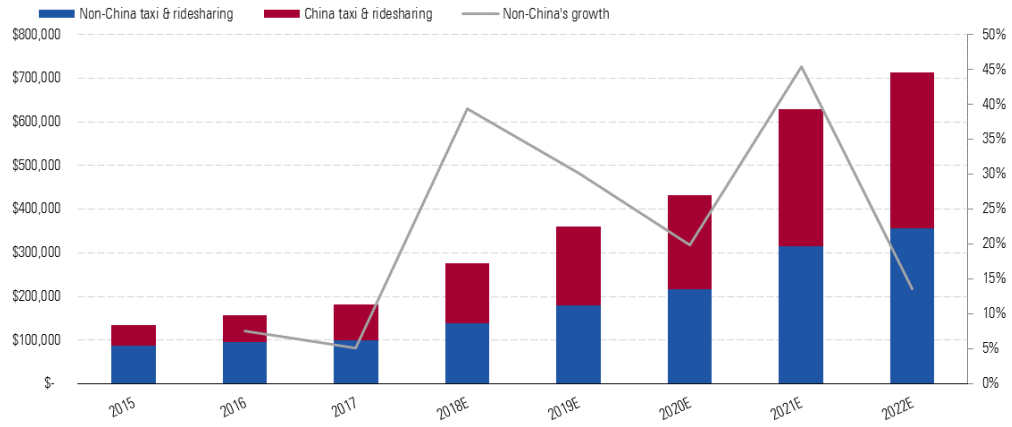
Exhibit 3 We Forecast NYC's Share of the U.S. Taxi and Ridesharing Market to Decline as Ridesharing Expands in Urban and Suburban Areas
($ in Millions)



Source: TLC, NYC Open Data, Morningstar estimates

After sizing the U.S. taxi and ridesharing market, we scaled the U.S. market to a global estimate using assumptions from Statista. Combining our global estimates for the taxi and ridesharing submarkets, we discounted this figure by excluding China's ridesharing potential, as Uber China conceded to Didi in 2016.

Exhibit 4 We Anticipate a Rapidly Rising Global Taxi and Ridesharing Addressable Market
($ in Millions)



Source: Statista, Morningstar estimates

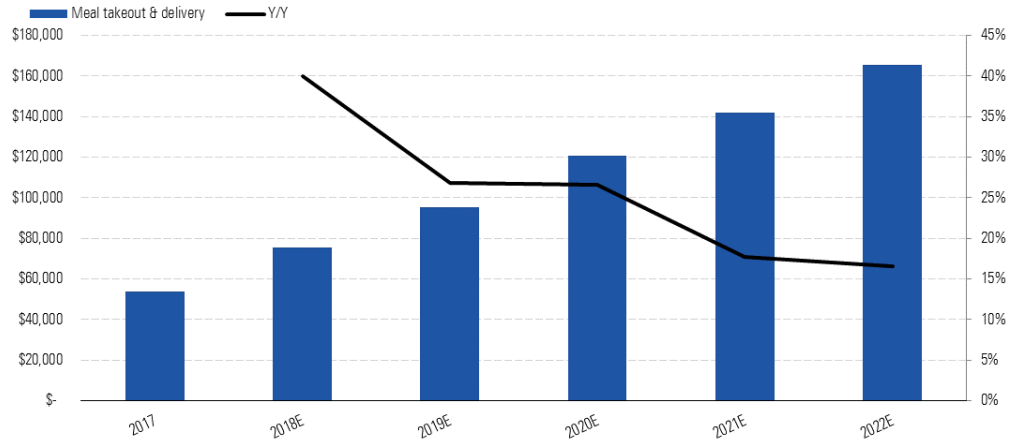
We then estimate that Uber's addressable global taxi and rideshare market will total $357 billion by 2022, growing at a 29% CAGR from 2017.

Food Delivery

After arriving at our first subestimate, we continued to focus on market share that we believe Uber is entirely exposed to by looking at the food delivery/takeout market, which we estimate will be $166 billion in five years. We based our estimate of the global addressable market for meal delivery and takeout on our U.S. market estimate used in our equity analysis of Grubhub and global estimates from Statista.

We then excluded China's share in the food delivery market as a result of Uber's Didi deal. We derived a total addressable meal delivery and takeout market of $166 billion by 2022, representing an attractive 25% five-year CAGR.

Exhibit 5 We Think the Meal Takeout and Delivery Addressable Market Is Another Growth Driver for Uber
($ in Millions)

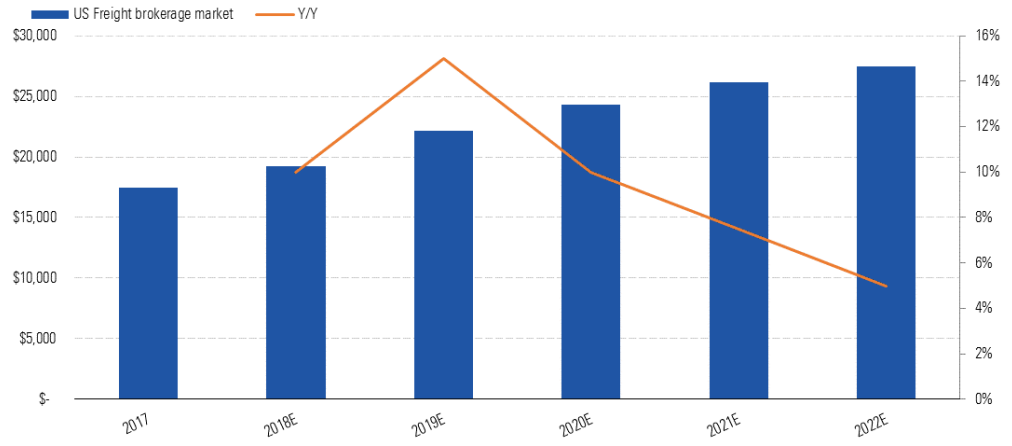


Source: Statista, Morningstar estimates

Freight Brokerage

With most freight brokerage business taking place in the U.S., we believe Uber will focus mainly on U.S. freight brokerage, giving exposure to solely U.S. potential for the freight brokerage market. We used the midpoint of Morningstar's estimate of the U.S. freight brokerage market at $15 billion-$20 billion in 2017 and expect it to grow at a 9% CAGR through 2022 to $27 billion.

Exhibit 6 U.S. Freight Brokerage Addressable Market
($ in Millions)



Source: Morningstar estimates

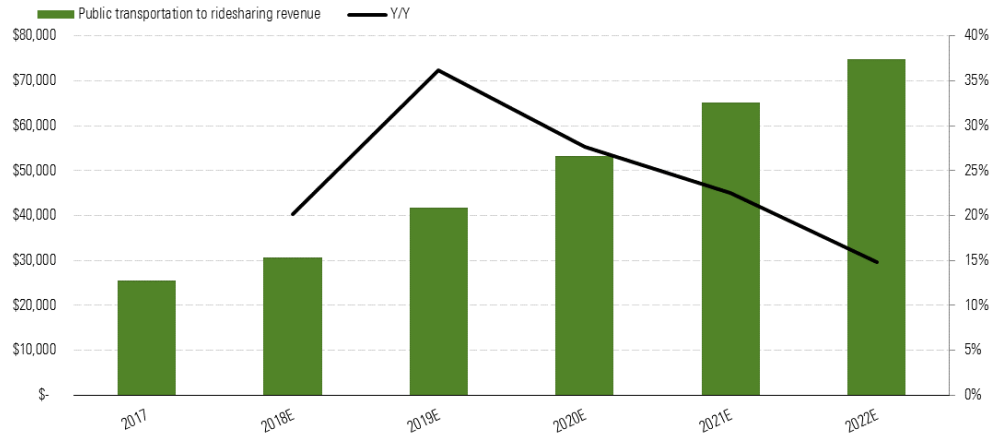
Public Transport

We estimate the global public transportation addressable market for Uber and other ridesharing service providers to be $75 billion by 2022. Based on municipal commissioned and academic reports, we identified public transportation and bikesharing to be substitute markets from which Uber takes partial

share. According to a report by the UC Davis Institute of Transportation Studies, "49% to 61% of [ridesharing] would not be made at all, or by walking, biking, or transit." Since walking does not generate revenue, we only needed to size the public transport and bikesharing markets.

According to UC Davis' study, ridesharing takes approximately 6% of the public bus share and 3% of light rail share. Considering the weighting of public buses and trains in the U.S., we estimated ridesharing took 5% of public transportation market share in 2017. Going forward, we increased this take rate based on our belief that Uber's network effect will strengthen, which will make it relatively easier for people to share rides in the future. We took IBIS' global public transport market estimate of $500 billion in 2017, along with its 2.1% CAGR assumption, to arrive at our 2022 $75 billion valuation for the global transportation market that ridesharing providers can target.

Exhibit 7 Ridesharing Global Transportation Addressable Market
($ in Millions)

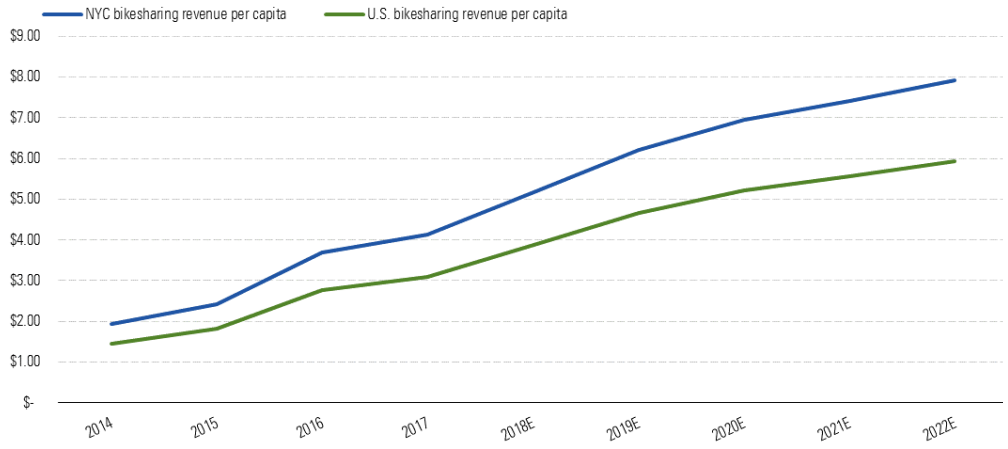


Source: UC Davis Institute of Transportation Studies, IBIS, Morningstar estimates

Bikeshare

We estimate the U.S. and Europe bikesharing addressable market for Uber and its peers at slightly below $5 billion by 2022, which represents a 15% CAGR. While Uber's recent venture into electronic bikesharing may have looked like a distraction, we considered the recent race among ridesharing apps to the bikeshare business a sign that bikeshare's potential market is worth looking into. We believe Uber's total addressable market through 2022 to consist mainly of the U.S. and European market potential for bikeshare. In calculating the total U.S. market share, we looked to Citi Bike, New York City's collection of public docked bikes, and considered its publicly disclosed total revenue to determine the total addressable market in New York City. We then calculated the revenue per capita that New York City generates from Citi Bike. Knowing that bikesharing depends on dense populations, we assumed a discounted revenue per capita for the rest of the U.S. market, for which we arrived at nearly a $2 billion valuation by 2022.

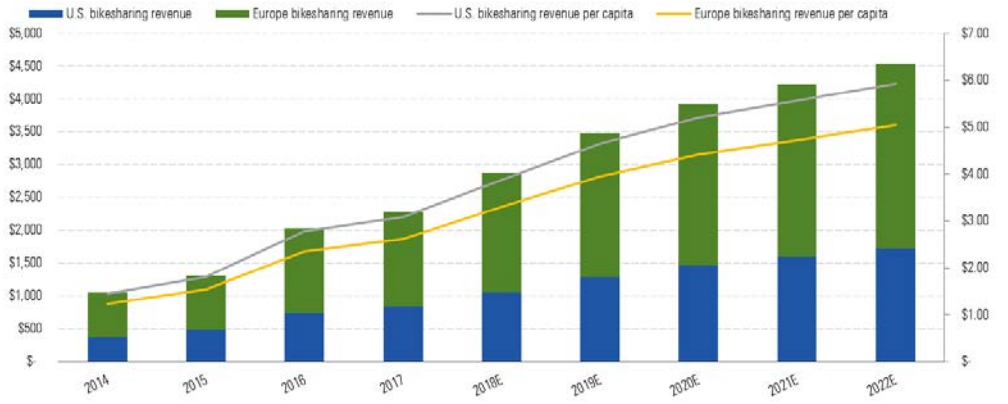
Exhibit 8 NYC and U.S. Bikesharing Revenue Per Capita



Source: Citi Bike, Morningstar estimates

We used our estimate for the U.S. market to derive a market valuation for Europe, which amounted to around $3 billion by 2022. We assumed a lower revenue per capita for Europe because while population density might be higher, overall usage and ownership of bicycles are also higher.

Exhibit 9 Uber Addressable Bikesharing Markets in U.S. and Europe
(Total Bikesharing Revenue $ in Millions)



Source: Morningstar estimates

We View Uber as a Narrow-Moat Business

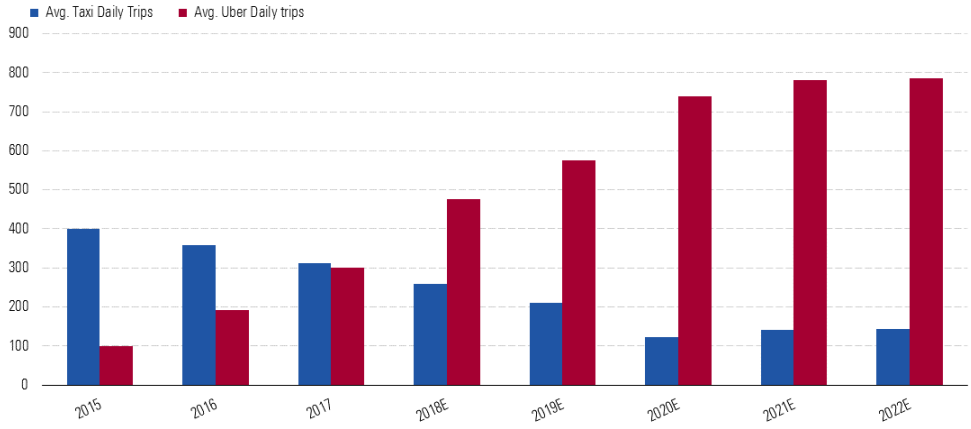
In our view, Uber's core business, the ridesharing platform, has displayed some moat sources such as network effects and intangible assets, which could position the firm to become profitable and generate excess returns on invested capital in the future. For this reason, we assign Uber a narrow moat rating.

Uber's network effects benefit drivers and riders; the benefits for each create a continuous virtuous cycle. Drivers and riders make up the supply and demand in ridesharing, respectively. As a first-mover in

this market, where requests for rides from anywhere could be made in real time via a simple-to-use mobile app, Uber began to attract riders mainly via word-of-mouth marketing. Growth in demand and further word-of-mouth marketing attracted more drivers or, in other words, increased the supply of Uber vehicles. In turn, as the number of drivers increased, the timeliness and reliability of the service improved, which drove the number of users or riders higher, which in turn attracted more drivers, all of which we believe is indicative of the network effect. Uber was able to accelerate this network effect by focusing on smaller areas, such as the city of San Francisco, before expanding into more and more cities. A comparable tech leader that profits from network effects is Facebook, which started at Harvard before expanding to all colleges and then opened up globally.

Results of such a network effect by Uber is shown in Exhibit 10, where the number of daily rides provided by Uber in New York City grew at an average of 37% per year in 2015-17. In addition, more drivers headed to provide service for Uber. As reported by the Taxi & Limousine Commission, the city's count of yellow cabs had declined to 13,587 in 2016 (from 13,635 in 2014, which was an increase from 13,437 in 2013). We think the decline accelerated in 2017 and will continue during the next three to five years, while we see Uber cars in New York City increasing. A *New York Times* article published in early 2017 said there were over 46,000 Uber-enabled vehicles in New York City in 2016, which increased to over 50,000 the year after, according to the TLC.

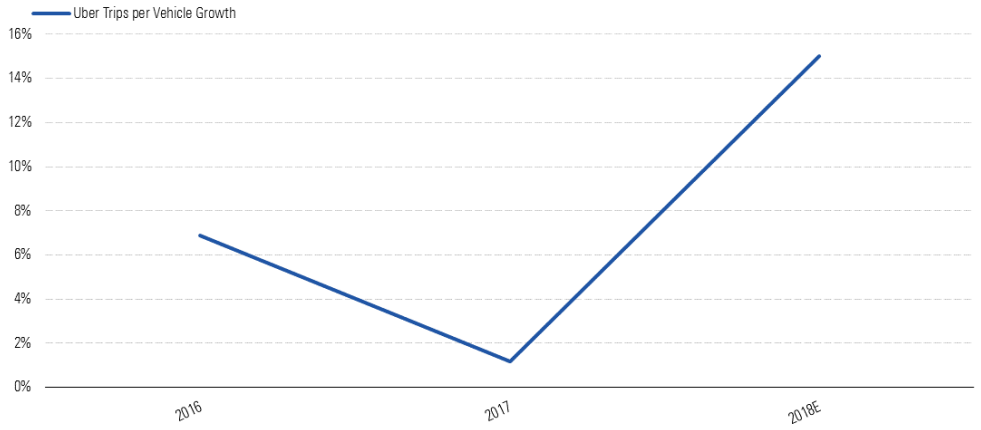
Exhibit 10 Uber's Average Daily Trips in NYC Should Overtake Taxis in 2018 and Dominate Thereafter
(in Thousands)



Source: TLC, NYC Open Data, Morningstar estimates

We must note that growth in demand is driven not only by more users, but also likely by more rides per user. Plus, increasing supply is based on more drivers and further capacity utilization of each driver and the vehicle. Therefore, what we view as Uber's network effect increases the benefits from and value of Uber's network for new and existing riders and drivers. A figure that we believe supports this and demonstrates increase in vehicle capacity utilization is growth in average number of rides dispatched per unique Uber vehicle, which has been increasing gradually from 2015 through 2018, as shown in Exhibit 11.

Exhibit 11 Annual Growth in Trips Per Unique Vehicle

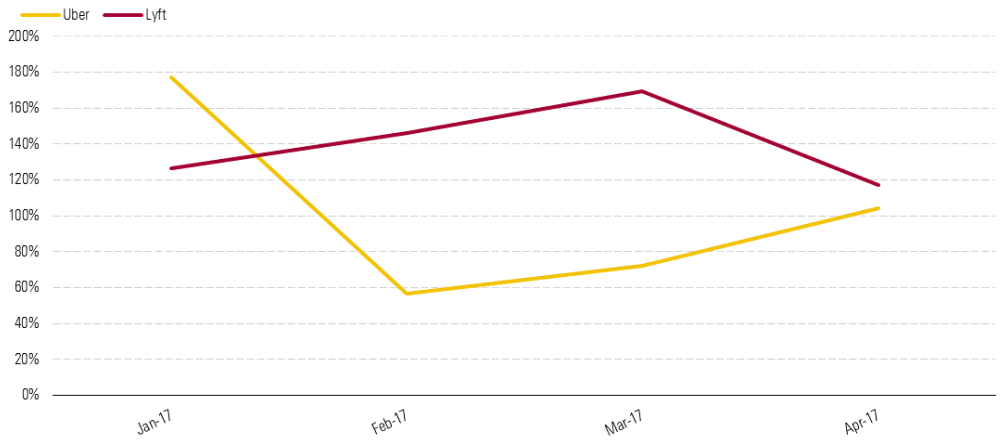


Source: TLC, NYC Open Data, Morningstar estimate

While we think Uber has benefited nicely from network effects in recent years, we don't believe it benefits from customer switching costs. In our view, the ridesharing industry currently lacks barriers to entry or exit for customers and drivers. Both customers and drivers can easily switch to Lyft, while customers have other transportation options like taxis and public transit. In general, just as firms with network effects benefit from the positive flywheel effect when a network expands, they also run the risk of a negative flywheel if customers, drivers, or both start to depart, especially if the network lacks meaningful switching costs. Networks in tech are strong when faring well but may potentially unwind quickly (think MySpace).

In early 2017, Uber faced much criticism for appearing to support an immigration order signed by President Donald Trump and attempting to profit from protests related to that event in New York City, both of which led to the #deleteUber campaign launched on Twitter. This eventually tainted the Uber brand and reputation. Then CEO Kalanick was appointed to Trump's economic advisory council, to which some employees at Uber objected. Lack of barriers to exit or switching costs for riders and drivers was on display as during the same period, other ridesharing providers such as Lyft made headway in New York City and experienced faster growth in trips as riders easily downloaded and used Lyft and other apps for ridesharing services.

Exhibit 12 Political and Leadership Issues Weighed on Ridesharing Year-Over-Year Growth in NYC, but Uber's Recovery Was Quick



Source: TLC

While we may have witnessed a slight pause in Uber's network effect in 2017, we think the firm's return to faster growth in trips serviced supports our assumption that the platform still benefits from the network effect moat source characteristic. After February 2017, growth in Uber trips reaccelerated and hit the triple-digit rate again in April (as shown in Exhibit 12). At the same time, Lyft's growth slowed a bit. In addition, Uber continues to dominate the New York City ridesharing market as its 2018 average daily trips run rate is more than 5 times that of Lyft's, based on data provided by the TLC. In 2017, Uber received 4 times more ride requests than Lyft. However, we do believe there remains risk of a reversal to what currently appears to be a strong network effect for Uber.

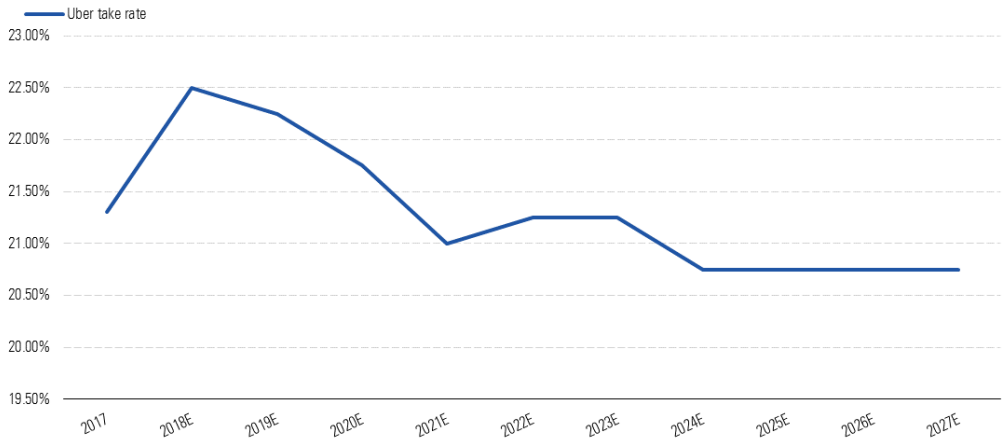
In our view, Uber's ridesharing network effect can also help the firm tap into other markets and generate additional revenue streams. An example is the meal takeout and delivery market, in which Uber has gained traction with its Uber Eats service. According to Recode, Uber Eats has grabbed share from Grubhub and currently has about 21% of the U.S. market. The same can be said about Uber's plan to extend its reach into the bikesharing and freight brokerage markets. Perhaps a good comparison for adjacent network effects, where one strong network enables a firm to expand elsewhere, is Microsoft: Its dominant network around Windows allowed the company to leverage its strength into the productivity software market with Microsoft Office.

There are certain concerns about whether Uber's network effects can remain an economic moat source if the firm is forced to incur additional costs imposed through regulations at the municipal, state, and/or federal levels. For example, given the firm's tarnished reputation and negative feedback from riders, Uber may be forced to conduct more thorough background checks on all driver applicants, such as adding fingerprinting to the process. Plus, similar to Lyft, the company is implementing an annual background check on all of its drivers. We estimate that these may add an average of $450 million annually to the firm's operating expenses and likely will lower our projected 17% 2027 operating margin

by 500-1,000 basis points. We still expect the firm to hit profitability by 2022 and generate excess returns on invested capital for at least 10 years beyond.

Other concerns include whether Uber will have to meet minimum wage requirements for its drivers. If so, we think the company will approach implementing minimum wage policies as a trade-off and will probably take a higher percentage from the gross revenue generated per ride. With this, we think the firm's take rate will remain in the 20%-30% range.

Exhibit 13 Uber Take Rate Likely to Settle Around 21% by 2027



Source: Morningstar estimate

While paying drivers a minimum wage may lower vehicles' capacity utilization, we think it may help attract drivers. The minimum wage issue also leads to the contractor-versus-employee dispute, which we discuss further on Page 28.

Additional worries surrounding Uber's network effect moat source include the potential impact of autonomous vehicle adoption on car ownership. Some believe autonomous vehicles could attract more car buyers and increase car ownership, thereby possibly lowering demand for ridesharing services, as self-driving cars may diminish annoyances and other costs currently associated with driving in traffic and/or driving long distances. We disagree, as we think the availability of autonomous vehicles on ridesharing platforms will significantly reduce the necessity of car ownership, which also lowers the return on the much higher car ownership costs. We discuss overall ridesharing and its impact on car ownership and overall transportation on Page 25.

More Data Can Get Riders There Faster and Safer

As Uber benefits from its network effect, we think it gains access to valuable intangible assets in the form of user data, which we suspect helps the firm improve its services and increase its vehicles' capacity utilization. In turn, Uber's service may become more effective over time as the company further

monetizes its riders via real-time supply and demand-driven pricing. Uber may also use this extensive data and knowledge to tap into other markets.

Uber gathers data about riders and drivers. As the firm compiles data from the rider app about the locations to which users request rides for, the times of the day that they do so, and the areas from which they request trips, Uber can get a clearer picture of its users' tendencies. When combined with the user-generated driver ratings, we think such information helps Uber improve the timeliness of matching riders with drivers. Such overall enhancement in service could help the firm strengthen its network effect by increasing users and ride requests per user, which helps Uber gather additional data, possibly further increasing the overall value of the data. Simply put, data can also be considered as an indirect network effect moat source. Google's search engine is an example of the benefits from indirect network effects associated with data, as more searches lead to better algorithms, better future results, and in turn, more searches still. Similarly, more rides with Uber may lead to better algorithms and supply/demand balance, thus reducing future wait times for riders and idle capacity for drivers, leading to still more ride requests.

Uber also collects telematics via its driver app, which can monitor car movements and location along with drivers' tendencies. The firm continues to analyze such data in order to minimize chances of crashes by addressing or preventing unsafe driving. For example, Uber's driving safety team has written code that analyzes driving tendencies such as harsh braking and unnecessary speed acceleration, which the firm views as indications of bad driving and increasing probability of crashing. According to the firm's engineering website, analysis and usage of such data is to "measure [Uber's] success by how much [Uber] can decrease car crashes, driving-related complaints, and trips during which [Uber] detects unsafe driving."

While Uber also collects its own mapping data, based on which its latest navigation app used by drivers can update new, changed, and pool routes in real time, Uber drivers still have the option to use any navigation app, such as Google Maps.

We do not view Uber's brand as an intangible asset moat source. While many no longer say they "called a cab" and instead say they "called an Uber," we think the firm's brand has been tarnished by issues that surrounded the former CEO. While demand for Uber's services has rebounded, whether such recovery is also applicable to Uber's brand remains to be seen, in our view.

We do not believe that Uber benefits from additional moat sources such as switching costs or cost advantages. Uber users can easily download other apps such as Lyft and begin requesting rides. In addition, drivers can provide service for both Uber and Lyft, as they are not exclusive contractors. Last, while the development of Uber's platform included very high fixed costs initially (according to PitchBook, the firm has raised $17.4 billion since 2009), we do not view it as a cost advantage for Uber, as other well-capitalized firms in the technology space, such as Alphabet, can replicate what Uber has created. In addition, we view Uber as an asset-light business.

We view Uber's moat trend as stable. While the network effect and data moat sources for this first-mover are strengthening, in our view (driven mainly by higher demand for and adoption of ridesharing globally), Uber continues to face the risk of no barriers to entry or exit, while Lyft continues to strive to build out a comparable network. Despite Uber's network expanding and data becoming increasingly valuable over time, other questions surrounding the company's treatment of drivers, pricing, and internal political issues serve as risks to Uber's network.

Uber Merely Enables Ridesharing and Doesn't Operate or Maintain Each Vehicle

Launched out of San Francisco in 2009 as UberCab, Uber is the world's first ridesharing app and is currently the second largest in the world behind Didi, in terms of rides hailed in 2017. The app books private vehicle rides for millions of users each day, matching them with an expansive network of contracted drivers via GPS-based routing. By making on-demand and efficient rides available, Uber has redefined the possibilities for mobility. Knowing rideshare is knowing what Uber is, first and foremost: a software platform.

Uber's Ridesharing Is a Software Business

While "ridesharing" has taken on a variety of meanings, we adopt the definition that Uber tends to use most frequently, which considers ridesharing to be the hailing of a ride via app or platform, usually met by a private vehicle and sometimes a taxi. Though "sharing" is in the name, this definition isn't restricted to pool rides or lines where passengers from different parties ride together. The term also encompasses private rides, which consist of a driver and one-trip party only. Although all Uber rides are hailed via app or an enterprise platform, Uber vehicles aren't exclusively private. In several markets, Uber rides are fulfilled via taxi partnerships under the name UberTAXI to establish name recognition in the face of regulation, such as in Japan.

While on the surface it appears that the only difference between the taxi business and the ridesharing business is that the former is hailed by hand or call rather than an app, that major difference opens doors to many others.

Uber Changes Who Can Provide a Ride

Having a sophisticated app for passengers and drivers means that a GPS system can be deployed through the app, rather than via years of street knowledge on the part of the taxi driver or even a built-in GPS. As a result, Uber drivers do not need to know the ins and outs of a city's streets or have the right equipment in their car for trip mapping or for fare computing and payment. On top of that, with driving considered common knowledge to many, there can be almost no extra technical training that is required of an Uber driver, other than understanding the Uber interface.

Ridesharing Has Revolutionized Ease of Use

The second condition that has enabled ridesharing is that by hosting an app through which passengers can request a ride, there is no need for bright yellow cars to roam about, waiting for a hand in the air to match with it. Instead, a private vehicle can pick passengers up, depending only on proximity and efficiency, rather than color, for ride matching. The fact that the only requirements are knowing how to

drive and follow GPS directions and having a private vehicle means that almost anyone can be a rideshare driver. This gives way to the gig economy and, fortunately for Uber, an asset-light business.

Few requirements and the flexibility of being an Uber driver have funneled rideshare drivers into the contractor pool. With driving a private vehicle being part of the ease and thus appeal of being an Uber driver, vehicles deployed are not owned by Uber. By removing the responsibility for drivers and vehicles, Uber is, at its core, a software platform. Uber's network of drivers and passengers is based on its ability to maintain an ubiquitous medium to connect passengers and drivers efficiently using GPS.

Uber uses Google Maps technology to make efficient trip matches and lead drivers to their trip destinations. However, Uber also has made strides to rely less on the mapping system. Currently, it has an image-mapping program that looks to improve pickup and drop-off locations. Uber has also made acquisitions to support in-house tech, such as its acquisitions of mapping startups deCarta in 2015 and Shadow Maps in 2016. Uber's Shadow Maps team improves location accuracy caused by GPS line-of-sight issues in dense cities with tall structures. Often, a GPS receiver's signal reflects off nearby buildings so the satellite assumes the reflection point is where the receiver is located, or a satellite does not pick up on a receiver at all because of obstruction. Uber's Shadow Maps team uses information on which satellites pick up a receiver, combined with a 3D map onto which satellite rays are traced to probable receiver locations based on signal strength, to give a better estimate of where a ride hailer may be. While we're encouraged by Uber's mission to improve the rider experience with location-precise technology, the science behind this is well known and can be applied by competitors.

Calling an Uber Now Could Mean Booking Anything From an UberX to a Freight Truck

Using Uber's software means "Calling an Uber," and doing just that manifests itself in a variety of ride options. UberX is Uber's standard trip option. It is a private ride requested via the Uber app for one to four passengers. For a lower-priced and often longer trip, passengers can opt for UberPOOL. By requesting an UberPOOL, passengers permit their Uber driver to pick up any other Uber passengers on the way to their destination, though sometimes that means none. Outside of UberX, there are over 10 different passenger-focused ridesharing options. These include pickups with large vehicles, such as UberXL—good for airport trips or a group of six—or premium car options such as UberBlack. Uber even offers UberESPAÑOL for Spanish-speaking passengers.

Besides the options for passenger hailing via Uber, Uber leverages its ridesharing network and technology to support other business endeavors such as Uber Eats, Uber cargo transport options, Uber Freight and Jump, a bikesharing business that Uber acquired in April for an estimated $100 million-$200 million. Uber drivers can choose to escort food rather than people if their vehicle does not meet the traditional ridesharing requirements or for a change of pace. Uber cargo options vary in name by market, but all entail a special vehicle for transferring items from place to place, often with no passenger required. Uber Freight is for serious truckloads. In this case, Uber goes through trucking companies rather than individual drivers to do the heavy lifting and therefore acts as a brokerage service rather than the service itself. In the two-wheel realm, Uber recently acquired Jump to offer a more cost-effective option for short rides.

UberAIR On-Demand Urban Air Transportation Is on the Horizon

Uber is also working on helping to reduce commuting time for many Americans by nearly 90%, especially in high-traffic urban and suburban areas. According to the company, Uber Elevate will focus on improving urban mobility by using vertical take-off and landing aircraft to provide such on-demand aviation service. We do not think Uber will be making the VTOL aircraft; rather we expect the firm to work with a variety of manufacturers such as Bell Helicopter, Pipistrel Aircraft, Mooney, ChargePoint, and Karem Aircraft. Uber expects costs associated with making and maintaining VTOLs to decline, making on-demand aviation more affordable, thereby reducing costs for passengers. In the Uber Elevate white paper, the firm said it expects the price of a 45-mile pool air trip (equivalent to a 60-mile car trip), which would take around 15 minutes, to be priced at $21. Uber will need to address many issues associated with such a service, including safety and, possibly after commercialization, air traffic congestion. The firm is will be testing UberAIR in Los Angeles and Dallas in 2020 and plans to make it available to all commuters by 2023.

How Uber's Monetization Fares

Whatever the rideshare option may be, Uber monetizes drivers by charging a fee for driving through Uber. Based on fiscal 2017 data, that fee floats around 20%-30% of the total costs paid by the passenger, not including tips, to which the driver has full claim. Under all transport options, drivers are not directly compensated for gas, maintenance, or wear and tear. However, Uber does compensate for passenger-originated inconveniences: Passengers are charged for deleting rides or requiring car cleanup.

As for other means of monetization, Uber does not license its ride-matching and image-mapping technology to strengthen its top line. Though CEO Khosrowshahi says Uber plans to license its autonomous vehicle technology, Uber recently paused some of its autonomous vehicle development due to a public pedestrian death, so we wouldn't count on its autonomous vehicle efforts as a path to significant monetization just yet. Nonetheless, Uber has other means of monetization outside its driver take rate: platforms and brokerage. Enterprises using the Uber for Business platform pay a 10% premium for each trip booked using the service, while the Uber for Health platform, which books trips for non-emergency doctor appointments, remains free. Uber also takes a share for booking external trips or vehicles sans an Uber driver, through freight brokerage or car rental.

Major operating expenses for the company include sales and marketing. In the first quarter this year, Uber disclosed that sales and marketing costs made up 37% of total operating expenses. We believe this is a sign of not only rider acquisition but also Uber's battle to retain drivers. According to a report by The Information referenced by CNBC, Uber's monthly driver retention was reported to be 4% as of 2017, which means that 96% of drivers leave the company within a year of their start date.

Hustling for Side Hustlers

Today, Uber attracts drivers by advertising the flexibility of a side hustle, a term for a job in the gig economy. Riders, on the other hand, are attracted to the app either by word of mouth, app referrals, name recognition, or having the service readily available through a third party. Uber's Ride Request

widget has allowed for Uber integration into external apps so that users can book a ride through a third party. Hilton, Citymapper, and Zomato are some of the several apps that have Uber ride request options. Additionally, Uber dabbles in the enterprise space as it partners with organizations offering an internal-use Uber platform to book and schedule rides. Uber Health and Uber for Business are two such platforms. While the former books trips for non-emergency doctor appointments, subsidized by healthcare systems, the latter books trips for business travel and office visitors.

Uber Autonomous Driving: Upside Potential Is Significant, but Competition Is Meaningful

We believe perhaps the most transformative technology set to affect the world of ridesharing is autonomy, bolstered by powerful economic forces driving adoption in the ridesharing industry. In 2017, Uber recorded $7.4 billion in total revenue, representing approximately 20% of $37 billion in gross bookings. The remaining $30 billion currently goes to drivers, but in a world with autonomous vehicles, more of the gross booking revenue could flow directly to Uber. The tightness of the labor market in the U.S. adds to Uber's troubles; across the country, companies are having difficulty hiring and retaining drivers. In 2017, the U.S. had a shortage of 51,000 truck drivers, up 41% from 2016[1]. As a result, wages are seeing upward pressure, resulting in margin compression among manufacturers and retailers utilizing freight. At this point, it appears that competition for drivers is fierce, and Uber is competing with other ridesharing apps as well as adjacent industries like freight to attract the same limited pool of workers. Khosrowshahi has spoken about rolling out benefits as a way of retaining drivers disgruntled with their current pay[2]. Clearly, the company faces a challenge in terms of protecting its commissions in the current labor environment. Overall, we see a rather large upside to revenue and margins if Uber can reduce its reliance on drivers on its network in favor of self-driving vehicles.

We believe that Uber is committed to investing to capture this opportunity. In January, Khosrowshahi expressed his belief that Uber would have autonomous vehicles deployed commercially within 18 months[3]. According to the CEO, autonomous vehicles could eventually reduce the price per mile for riders from $2.50 today to around $1.00, representing a 60% price cut[4]. Although this would result in gross bookings per mile shrinking, we believe that increased miles traveled as well as expanded margins will offset this to drive profitability. Uber is taking steps to make this vision a reality; it has struck a deal with Volvo to purchase as many as 24,000 Volvo XC90 SUVs in the 2019-21 time frame[5]. We believe this represents a total capital investment of over $1.4 billion, financed through a combination of equity and debt. This figure is based on a per-vehicle price of $59,000, which includes the vehicle being sold for $42,000 ($50,000 manufacturer's suggested retail price with a 15% fleet discount) as well as $17,000 in autonomous equipment (lidar, cameras, radar, chips) at scale. This is a significant investment for a company that has already burned $10.7 billion over the past nine years[6].

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[1] https://www.washingtonpost.com/news/wonk/wp/2018/05/21/america-doesnt-have-enough-truckers-and-its-starting-to-cause-prices-of-about-everything-to-rise/?utm_term=.23e14ed7c899

[2] https://www.theverge.com/2018/5/31/17406956/uber-ceo-dara-khosrowshahi-waymo-self-driving-code-conference-2018

[3] https://techcrunch.com/2018/01/23/uber-ceo-hopes-to-have-self-driving-cars-in-service-in-18-months/

[4] https://www.theinformation.com/articles/uber-seeks-deal-for-waymo-cars

[5] https://www.reuters.com/article/us-volvocars-uber/volvo-cars-to-supply-uber-with-up-to-24000-self-driving-cars-idUSKBN1DK1NH

[6] https://www.bloomberg.com/news/articles/2018-03-06/uber-spent-10-7-billion-in-nine-years-does-it-have-enough-to-show-for-it

We cannot say that Uber is far ahead of other technology firms in terms of autonomous driving, most notably exemplified by the tragic autonomous vehicle crash in Tempe, Arizona. On March 18, a 49-year-old woman was struck and killed by a self-driving Uber-operated XC90 as she crossed a street at night. This incident marked the first pedestrian death caused by an autonomous vehicle and immediately provoked a range of reactions. Overall, we believe the Uber crash was largely indicative of a failure in process rather than a failure in technology. In May, the National Transportation Safety Board revealed its initial findings: The vehicle had in fact identified the pedestrian six seconds before impact but failed to stop or even slow[7]. According to footage released by the police, the vehicle had an operator in the driver's seat, but neither the car nor the operator took any actions to brake until the impact occurred. Whereas other autonomous driving companies such as Alphabet's autonomous vehicle unit, Waymo, utilize two operators—one to drive and one to monitor data—Uber had just one operator (who was distracted at the time of the crash) doing both. Moreover, Uber had disabled the car's emergency braking, probably because of an unacceptably high number of false positives causing "erratic behavior." The governor of Arizona suspended Uber's ability to test autonomous vehicles in the state pending the investigation, and Uber subsequently pulled out of the state. The company expects to resume testing in August in Pittsburgh and potentially San Francisco as it implements changes to reduce the risk of future collisions[8].

Nevertheless, the crash showcases that Uber's autonomous vehicle platform is not foolproof relative to other players in the industry. Competitors in self-driving technology include Cruise Automation, which was acquired by General Motors for $1 billion. Despite some analyst criticism at the time, we think these fears proved to be unfounded with the company's latest infusion of development capital: a total of $3.35 billion, consisting of a $2.25 billion investment from SoftBank and an additional $1.1 billion from GM, valuing Cruise at $11.5 billion. Under GM's leadership, Cruise has improved and expanded its testing and development efforts and is working to reach commercialization in 2019. Overall, GM's acquisition of Cruise appears to be a strategic win to the detriment of Lyft, whose partnership with GM appears to have waned, as exemplified by the recent departure of GM's Dan Ammann from Lyft's board.

Among the players in the autonomous vehicle space, we think Waymo might be leading in terms of technological superiority and potential scalability. This is perhaps not surprising, given Waymo's first-mover advantage—originally part of Google's self-driving project, the team has been researching and developing autonomous vehicles since 2009. Waymo has also invested a significant amount of capital in self-driving cars. According to leaked court filing documents, Alphabet spent $1.1 billion developing self-driving software and hardware between 2009 and 2015[9]. Moreover, the company recently announced agreements to purchase as many as 62,000 Chrysler Pacifica minivans and 20,000 Jaguar I-Pace SUVs over the next three years for self-driving applications. This represents a potential investment of over $4 billion, dwarfing Uber's announced investments in the space. At 50 trips a day, this fleet could complete over 4 million trips a day.

[7] https://www.ntsb.gov/news/press-releases/Pages/NR20180524.aspx

[8] https://www.theinformation.com/articles/how-ubers-self-driving-car-unit-plans-to-move-forward

[9] https://spectrum.ieee.org/cars-that-think/transportation/self-driving/google-has-spent-over-11-billion-on-selfdriving-tech

Exhibit 14 Potential Capital Investment in Self-Driving Fleet

	Miles Driven (M)	Miles per Intervention	Potential Fleet Size	Est. Cost per Car	Capital Investment (M)
Waymo	7	5,600	85,000	$47,000	$4,364
Cruise	1	1,250	72,360	$46,296	$3,350
Uber	3	13	24,000	$59,500	$1,428

Source: Waymo, Uber, General Motors, The New York Times, Volvo, Chrysler, Jaguar, PitchBook estimates

Waymo's investment in self-driving vehicles may propel it to a leadership position in the autonomous vehicle space, from which it will likely be first to market. Since 2009, Waymo's self-driving vehicles have driven over 7 million miles, compared with Uber's 3 million miles[10]. Waymo's self-driving cars completed more than 2.7 billion simulated miles in 2017 alone. Simulated mileage is often cited as being key to self-driving technology, and we believe that Uber has not invested much in this space[11]. California tracks average miles traveled per disengagement (when human operators have to take over control) for self-driving cars. When looking at this data, Waymo is in the lead, with 5,600 miles traveled per disengagement, followed by GM's Cruise, with 1,250 miles per disengagement[12]. Uber is significantly behind with just 13 miles traveled per disengagement[13].

Waymo has also significantly reduced the single-largest cost of a self-driving car: lidar, or light detection and ranging. In recent court proceedings, Waymo revealed that it has lowered the cost of its in-house lidar system, Grizzly Bear 3, to just $4,000 per unit, compared with $75,000 per unit for a comparable top-shelf Velodyne lidar system in 2012[14]. The cost of these components is high right now, but we believe that once manufacturing ramps up and achieves economies of scale, Waymo's proprietary long-range lidar, midrange lidar (Grizzly Bear 3), short-range lidar, and accompanying computer chips, cameras, and radar equipment will add approximately $13,000 to the cost of a vehicle, down from $150,000 in 2012[15]. ARK Invest sees the cost of autonomous sensors and computer systems declining to $1,000- $2,000 by the time self-driving vehicles are commercialized[16]. Moreover, we see equipment costs declining further as manufacturing scales. Given its decision to in-house self-driving equipment, we believe Waymo has the most technologically advanced and scalable self-driving solution today.

We believe that for Uber to win from this transportation revolution, it must find a way to gain and maintain access to autonomous vehicles. Despite its own internal investments, even if Uber is in fact behind in the autonomous vehicle race, we still think there is a path for it to benefit from autonomous vehicles: through partnering with an established player. That seems to be the path Uber is on currently;

[10] https://spectrum.ieee.org/cars-that-think/transportation/self-driving/google-has-spent-over-11-billion-on-selfdriving-tech

[11] https://www.theinformation.com/articles/uber-neglected-simulation-testing-on-self-driving-cars-insiders-say?eu=cnew4gefOD8fsgBDONvFPg&utm_medium=email&utm_source=sg&utm_campaign=article_email

[12] https://arstechnica.com/cars/2018/03/leaked-data-suggests-uber-self-driving-car-program-years-behind-waymo/

[13] https://www.nytimes.com/2018/03/23/technology/uber-self-driving-cars-arizona.html

[14] https://www.theverge.com/2018/2/8/16993208/waymo-v-uber-trial-trade-secrets-lidar

[15] http://content.usatoday.com/communities/driveon/post/2012/06/google-discloses-costs-of-its-driverless-car-tests/1#.WzamwKdKiUk

[16] https://research.ark-invest.com/hubfs/1_Download_Files_ARK-Invest/White_Papers/Self-Driving-Cars_ARK-Invest-WP.pdf

SoftBank Group is a major shareholder in Uber, and its recently acquired 19.6% stake in Cruise could bring the two companies together. And in May, Khosrowshahi revealed that Uber is in talks to get Waymo vehicles on Uber's network[17]. The CEO believes that autonomous vehicles represent a "horizontal technology" available to everyone in the industry. If this is indeed the case, and Uber is able to partner with self-driving vehicle providers like Waymo or Cruise to get their vehicles on its network, it stands to benefit tremendously. If Uber cannot gain access to autonomous vehicles, it risks being disrupted by an autonomous vehicle player entering its market.

There is also potential for Waymo to disrupt Uber in its core competency: ridesharing. Waymo, which has tested in over 20 U.S. cities, has talked about launching a ridesharing service in Phoenix as early as year-end. For Waymo to have a meaningful impact on the world of ridesharing, it will need to build out a network of its own, which may not be as insurmountable a task as it seems at first glance. We believe investors are probably underestimating the potential for Google to optimize and monetize its Google Maps offering for ridesharing. Whereas Uber currently has over 75 million monthly active users[18], Google Maps has over 1 billion monthly active users, a huge pool that could be tapped into. The application, which is not currently monetized in a meaningful way, already offers ridesharing as an option by linking to Uber/Lyft and giving fare estimates. Google could integrate Waymo as a ridesharing option once the company's fleet is established. By leveraging the billion-strong user base of Google Maps as well as the strength of its parent company's (Alphabet's) balance sheet, Waymo's entrance into the ridesharing market has the potential to put significant competitive pressure on Uber. Alphabet could integrate Waymo as a ridesharing option once the company's fleet is established.

We believe Waymo is likely to deploy vehicles on networks like Uber and Lyft in conjunction with building out its own network, utilizing a hybrid model of automated and human operators. In addition to its possible Phoenix launch in a few months, the company expects to eventually launch in Europe under a partnership with a European car brand[19]. Our view is that if Waymo were to exclusively focus on its own ridesharing network, its autonomous vehicles would probably not be able to service demand, considering that there are routes the vehicles still can't complete, given inclement road and weather conditions. However, if Waymo partnered with a ridesharing service, it could selectively deploy its vehicles in conditions and routes where it made sense to do so and roll out its offering in stages to various local markets. Of the various ridesharing networks Waymo could choose, there are economic incentives to choose Uber; given that Uber has the largest ridesharing network, a partnership would allow Waymo to achieve a high utilization rate on its autonomous vehicles. Furthermore, Waymo would benefit from Uber's success over Lyft, as Waymo owns approximately 5% of the company from a 2013 investment. In the background, Waymo is likely to continue build out its own network. As such, gaining and maintaining access to autonomous vehicle technology will be key to Uber's success.

[17] https://www.theverge.com/2018/5/31/17406956/uber-ceo-dara-khosrowshahi-waymo-self-driving-code-conference-2018

[18] https://www.recode.net/2018/1/5/16854714/uber-four-billion-rides-coo-barney-harford-2018-cut-costs-customer-service

[19] https://www.reuters.com/article/us-waymo-europe/waymo-needs-large-number-of-cars-for-european-robo-taxis-ceo-idUSKBN1JO0KO

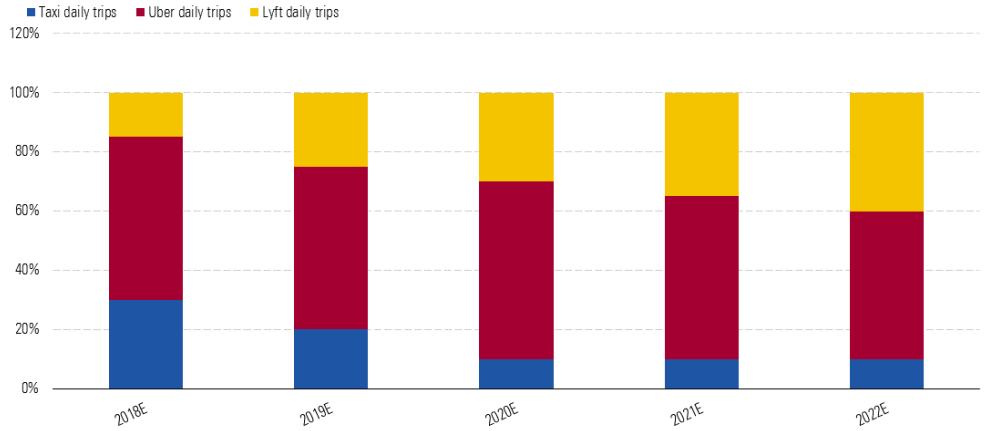
Uber's Competition: A Never-Ending Ride

Rideshare Rivals From Point A to Point B

While Uber was the first rideshare app to hit the market, it wasn't the last. In June 2012, two years after Uber gave its first ride, Uber's main U.S. rival, Lyft, and soon-to-be global competitor, Didi Chuxing, were founded. Since then, an array of rideshare apps have hit the market, all promoting variations of the traditional rideshare experience. We believe competition is inherent in the rideshare industry, given low barriers to entry, the prospect of high returns, and comparable intangible assets among competitors. However, we think Uber's competition extends beyond traditional rideshare to all of its exposed markets, including taxi hailing, food delivery apps, and bikeshare.

In the U.S., Uber's main rideshare opponent is Lyft. Like Uber, Lyft offers a variety of rides via private vehicles, including traditional private rides, shared rides, and luxury ones. Lyft operates solely in the U.S. and Toronto and, according to *USA Today* and eMarketer data quoted by Reuters, has a total active ridership of 21.2 million, about half of Uber's U.S. active ridership of 40.7 million. Lyft gave a total of 375 million rides in North America and brought in net revenue of $1 billion in 2017, approximately an eighth of Uber's global net revenue. In the passenger's seat, the duo's close competition in the U.S. has led to nearly identical features and offerings, whether it's Lyft Line versus UberPOOL, Lyft Plus versus UberXL, or Lyft x Concur versus Uber Health. Our estimates of Uber's and Lyft's daily trip market share in New York City are provided in Exhibit 15.

Exhibit 15 Uber Is Likely to Remain the Ridesharing Leader in NYC



Source: TLC, NYC Open Data, Morningstar estimates

In the driver's seat, the two companies remain locked in a struggle to win over drivers, enticing them with benefits like driver hubs with refreshments, sleeping nooks, and car service options. Lyft is attempting to lessen the battle for riders by adding monthly stickiness. Lyft is experimenting with a subscription model, so hopping from Uber to Lyft rides would become a monthly decision. Despite the imitation game, there remain differentiators between the two, such as Lyft's staying clear of food delivery services.

There are plenty of other rideshare apps in the U.S. to get around with—like Via, Juno, and Curb—but their user numbers and geographical exposure shuttle them into a fragmented market. A Recode article quoting Second Measure data said that as of August 2017, Gett, Juno (now acquired by Gett), Sidecar, and Via made up 2.2% of the U.S. rideshare market. Additionally, few tangible differentiators have left most U.S. share to those with name recognition: Uber and Lyft. We believe the most differentiated rideshare app in the U.S. market outside Uber and Lyft is Via. Via, which operates in New York, Washington, D.C., and Chicago, only picks up and drops off rides from predetermined street corners. While this often has passengers walking a block or two out of their way, the technology lends itself to efficient rides and, consequently, more rides per hour. Via licenses this technology for municipal on-demand transportation logistics. Apart from rideshare apps that hail private vehicles, we don't dismiss exclusive taxi hailing apps like Curb and Arro. While Curb is available in over 65 cities in the States and has over 100,000 drivers available, Arro is limited to six cities across the U.S.

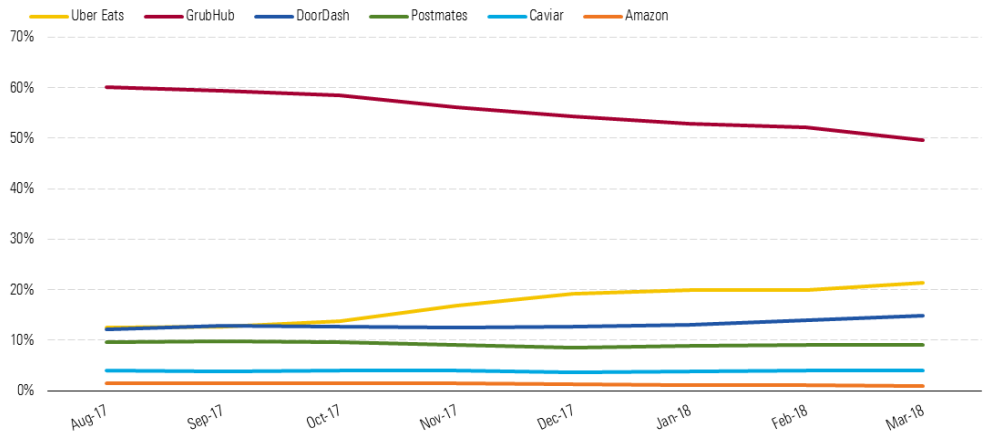
Uber competes with private vehicle hailing and taxi hailing apps on a global scale as well. Didi Chuxing remains Uber's greatest threat globally. Uber sold its business in China to Didi for a 20% stake in the Chinese company in August 2016. From then until April 2018, Didi and Uber did not meaningfully intersect in any markets. However, in April, Didi launched in Mexico, where Uber currently has approximately 7 million users, according to Reuters, and a virtual monopoly. In June, Didi made its next international move by launching in Australia, another Uber market. We believe the moves outside China mark a forthcoming substantial threat from Didi. The Chinese firm claims to have hailed 7.4 billion rides in 2017—3.4 billion rides more than Uber's record for the year—with the help of 21 million drivers and a total ridership of 450 million, all in China and all in excess of Uber's global market.

China is not the only market that Uber has conceded to a competitor. Uber sold its share in Southeast Asia to Grab in May, giving up markets that included Singapore, Thailand, and Vietnam for a 28% stake in the company. On a global scale, Uber's greatest competitors outside Didi and Ola are Gett, Careem, and 99 Taxis. Careem operates in the Middle East and Northern Africa. Ola hails rides in India and Australia, while Gett operates in Russia, the United Kingdom, the U.S., and Israel. 99 Taxis operates in Brazil, hailing taxis and private vehicles, and is majority-owned by Didi. We do not believe Uber will concede any more markets in the near term, unless forced to by legal restrictions.

Food Delivery: Late to the Table, but Strong Growth Remains

In the food delivery space, Uber came home late for dinner but has recovered, and its growth is supersized compared with its U.S. competitors. According to a Recode article referencing Second Measure data, Uber managed to increase its share of the U.S. food delivery market from 12% to 21% between August 2017 and March 2018. Uber's share came mostly from Grubhub, which experienced a decline in market share to 50% from 60% in the period, while other delivery apps remained relatively constant. Uber is the only rideshare company to venture into food delivery other than Grab.

Exhibit 16 Uber Eats Gaining Ground on Grubhub



Source: Second Measure, Recode

In food hailing, there are currently two types of apps: those that provide the drivers and those that act as brokers in the transaction. While Uber sticks to the former, we believe both are sources of competition for the company. In the U.S. takeout market, Uber's competitors are Postmates, DoorDash, Caviar, and Grubhub. Unlike Uber Eats, early movers in the U.S. have not strayed too far from home. Grubhub operates in the U.S. and London, Postmates delivers in the U.S. and Mexico City, and DoorDash is available in the U.S. and Toronto. Caviar sticks solely to the States.

Uber Eats operates in more than 30 countries. The U.K. is one of its largest international markets, with over 8,000 restaurants on board in approximately 40 cities, according to a *Business Insider* article. There and in other international markets, Uber Eats' biggest competition is U.K.-based Just Eat and Delivery Hero. Just Eat is the largest food delivery service in the world in terms of revenue, though not by much, and operates in 13 countries. In 2017, according to Statista, the app had 21.5 million active users worldwide and net revenue of GBP 546 million ($725 million using an exchange rate of GBP 0.75/$1) beating Germany-based Delivery Hero, which had net revenue of EUR 544 million ($632 million using an exchange rate of EUR 0.86/$1). Delivery Hero operates in 47 countries. According to *Business Insider*, Uber Eats is estimated to have brought in $3 billion in gross revenue. We estimate that this lends itself to approximately $600 in net revenue, based on a 20% take rate.

Spinning Wheels on Bikeshare Acquisitions

New to bikeshare, Uber bought Jump in April for an estimated $250 million, according to PitchBook. Uber claimed a desire to offer more modes of transportation to users and a mindset that it could supersede competition through intangible assets. Uber plans to use its ride data to place Jump dockless bicycles more strategically throughout cities. While we believe Uber's use of data will benefit the bikeshare network, we believe competition in docked and dockless bike programs will thrive, especially as other rideshare apps integrate bikeshare networks. In the U.S., Motivate operates city-sponsored docked bike programs and was acquired by Lyft in July; we expect it will be the biggest bikeshare threat

to Jump. Uber will expand outside the U.S. with Jump's launch in Berlin this summer. There, Jump will rival docked bikeshare company Nextbike. Throughout the rest of Europe, Uber will have to compete with Asian companies that have recently moved in, such as Ofo and Mobike.

Mapping Ridesharing: A Solution for Economic Inefficiencies in Transportation

Ridesharing has risen to prominence partially driven by a demographic shift away from car ownership. In general, millennials seem to be less interested in driving than prior generations. The percentage of 20- to 24-year-olds with driver's licenses has steadily decreased from 91.8% in 1983 to 76.7% in 2014[20]. This trend appears to extend to car ownership; the proportion of new-car purchases by young adults has trended down since the recession, with members of Generation Y 29% less likely to own a car than members of Generation X[21]. Given increasing student loan debts and housing costs, it is becoming increasingly difficult for young adults to justify the cost of car ownership. In 2017, the average cost to own a car in the U.S. was $860 per month, and that number increases significantly in cities[22]; in New York City, the average cost to own a car is almost $1,600. Meanwhile, the average monthly amount adults in New York City spend on Uber and Lyft is $84 and $54, respectively[23]. Clearly, there are economic incentives for urban dwellers, many of whom are young adults, to forgo car ownership in favor of public transportation and other alternatives, such as ridesharing.

Ridesharing Likely to Remain Popular During Economic Downturns

Demographic shifts are not the only factor lending optimism to the ridesharing industry. We believe that during an economic contraction, ridesharing is relatively well positioned to gain share over private car ownership because of the cost advantage inherent in utilizing assets efficiently.

During the Great Recession, the taxi industry was significantly affected by the decrease in discretionary spending. In London, trips decreased 7% and average daily passenger miles decreased 14% in 2009 compared with 2006[24]. The Las Vegas taxi industry saw revenue drop 14% year over year[25]. This was part of a broader decrease in discretionary spending on travel; in the U.S., the average number of domestic trips declined 9% in 2009 compared with 2006[26]. Uber and Lyft have only seen mass adoption within the last business cycle and have yet to be tested by an economic downturn. Although ridesharing companies would probably see some impact from a decrease in discretionary spending, there is precedent for ridesharing increasing in popularity during periods of economic stress. During the energy crisis of the 1970s, carpooling clubs gained popularity among consumers[27] until oil prices declined in the 1980s and 1990s and car ownership once again became the norm. Although ridesharing did not last in popularity, this period demonstrates that consumers in the U.S. are willing to change their behaviors,

[20] https://nypost.com/2016/01/31/why-are-fewer-young-people-getting-drivers-licenses/

[21] https://uspirg.org/blogs/blog/usp/don%E2%80%99t-believe-hype-%E2%80%93-millennials%E2%80%99-transportation-habits-are-changing

[22] http://fortune.com/2018/04/10/expensive-cities-car-ownership/

[23] https://www.cnbc.com/2018/05/11/how-much-americans-spend-on-uber-and-lyft.html

[24] https://www.london.gov.uk/sites/default/files/gla_migrate_files_destination/All%20responses%20final_0.pdf

[25] http://articles.latimes.com/2009/jan/29/nation/na-vegas-taxi-wars29

[26] https://www.bls.gov/opub/mlr/2015/article/travel-expenditures-2005-2013-domestic-and-international-patterns-in-recession-and-recovery.htm

[27] https://rideamigos.com/ridesharing-shifting-the-transportation-paradigm/

given the right economic incentives. When incomes shrink, consumers become much more cost-sensitive, and for many currently living in cities and urban areas, an economic contraction would make it difficult to justify owning a car or multiple vehicles. According to the U.S. Census Bureau, nearly 60% of U.S. households own two or more cars. Privately owned vehicles aren't typically used in an efficient manner; the average car is parked 95% of the time and spends most of its life depreciating in value[28]. It is our view that an economic contraction could result in ridesharing's cost-effectiveness prompting a trade-down from owning vehicles to utilizing ridesharing applications (in conjunction with public transportation), lending resiliency to the revenue stream of these companies, especially among households with multiple vehicles.

Bikesharing Is Also on the Rise

Ridesharing competes with more than just traditional car ownership. Other solutions to the problem of getting from Point A to Point B in the most economically efficient manner have arisen in recent years, most notably bike- and scooter-sharing startups. These companies have grown rapidly across many U.S. cities, raising billions of dollars in funding from investors. U.S.-based bike and scooter startups Bird, Lime, and Spin have raised a cumulative $460 million in venture funding, while Chinese counterpart Ofo has raised over $1.4 billion, according to PitchBook. Lime is currently raising $335 million in a round led by GV, putting the company at a $1.1 billion post-money valuation. These startups seek to tackle the "last mile" pain point of transportation common in congested cities, where vehicular transportation is not ideal but a more compact form of transportation can be a major time saver. Currently, last-mile trips are dominated by automobiles; according to the National Household Travel Survey, privately owned vehicles account for 60% of trips a mile or less in length[29]. Disruptive compact sharing solutions have the potential to gain a significant amount of share in this market. Uber is paying close attention to this space; in April, it acquired electric bikesharing startup Jump for approximately $250 million. Since then, Uber has submitted applications to deploy electric scooters in San Francisco and has announced a partnership with Lime, including an investment in the company's recent financing round, which will allow users to rent Lime scooters through the Uber app[30]. Clearly, ridesharing companies see last-mile mobility solutions as being a potentially important part of the transportation revolution.

Carsharing May Be Another Option for Consumers and Another Opportunity for Rental Car Firms

Other adjacent markets competing with ridesharing include auto rental companies subverting incumbents through innovative solutions, like Zipcar and Turo. Zipcar, which was purchased by Avis Budget Group in 2013, offers an urban carsharing network for its members. Turo, which raised $104 million in Series D funding in a deal led by Daimler and SK Group in April, putting its pre-money valuation at $630 million, provides an online car rental marketplace matching renters to car owners who want to make extra money by renting out their typically underutilized vehicles. These marketplaces are typically priced more affordably than incumbent car rental companies, which have costs associated with fleet turnover and administrative overhead.

[28] https://www.reinventingparking.org/2013/02/cars-are-parked-95-of-time-lets-check.html

[29] http://www.bikeleague.org/content/national-household-travel-survey-short-trips-analysis

[30] https://www.bloomberg.com/news/articles/2018-07-09/uber-will-rent-scooters-through-its-app-in-partnership-with-lime

Mapping Uber's Legal Terrain

Uber's legal issues under former CEO Kalanick gave Uber a tainted reputation, involving everything from data breaches swept under the rug to a culture of sexual misconduct and accusations of not addressing internal racial discrimination issues, for which Uber's head of human resources, Liane Hornsey, recently resigned. While we believe Uber will see better days under new CEO Khosrowshahi, legal matters remain. Uber's regulatory issues today involve how the company runs its everyday business, from background checks to its classification of drivers. We believe Uber will need to make compromises in confronting these legal debates.

Permit Potential?

Uber has created a rideshare market based on a philosophy of asking for forgiveness rather than permission. While the taxi industry has used medallions as capped permits for taxi vehicles, rideshare does not have the equivalent for the individual Uber vehicle. But that doesn't mean Uber is immune from regulation. Uber is regulated through statewide legislation, such as in Texas, or through localities, like in cities in Illinois. States and cities have established ordinances for Uber that include guidelines on everything from consecutive driving hours to vehicle inspections. For example, in Illinois, although the state attempted to regulate ridesharing in 2014, such regulation eventually was left to localities. As a result, Chicago requires that Uber drivers' vehicles are inspected once a year. Inspections are done at either Uber Greenlight hubs or Jiffy Lube locations. In New York City, vehicle inspections are required every four months at Department of Motor Vehicles inspection facilities. While several cities (including New York) have discussed capping Uber vehicles, we believe it will be difficult for localities to justify the cap based solely on sympathy for taxi medallion investors. However, capping Uber vehicles could be justified by arguing that the city may have to endure higher costs due to the increased traffic congestion brought on by too many Uber cars. After meeting local demands, Uber self-regulates with app features. Countrywide, Uber enforces a 12-hour limit in driving time by turning the app offline for 6 hours for every 12 hours driven.

Other states have long-term goals to regulate emissions. In California, Senate Bill 1014 features a 2023 mandate for 20% of rideshare miles traveled to come from zero-emission vehicles, leading to 50% by 2026 and 100% by 2030. Uber has its own goals as well. In London, Uber claims that over half of its miles traveled are with hybrid or electric cars. Uber will require all vehicles to be electric by 2025.

Uber is accepted by most local regulators across the U.S. but is currently under review by the U.S. Department of Justice for avoiding transportation regulators when the rideshare app was not permitted in some locations. Uber's Greyball operation used software to avoid hailing rides from regulators based on credit card information. The company claimed to have started using the filter to avoid violence from the taxi industry.

Outside of rideshare, there has been little discussion or implementation of Uber Eats regulation other than in Australia. In April, the Australian Competition and Consumer Commission announced its plan to investigate Uber Eats' contracts with restaurants after reports of restaurants' complaints of reportedly

unfair practices, such as restaurants paying the price for late deliveries despite Uber Eats doing the actual delivery.

Regarding bikeshare, the more visual effects—a mass of dockless bikes strewn throughout cites—have led some cities to draft quick policies. In the U.S., cities have adopted either a bikeshare permit fee based on the number of bikes in a network or a hands-off approach—at least for now. Washington, D.C., has pondered imposing fines on dockless bikeshare apps; according to *The Washington Post*, the fines would be the most extreme in the country, $80,000 per bike annually. Now the city has decided to stay in a trial period, testing out dockless bikes sans fees.

Uber's Hands-Off Background Check

Uber's minimum requirements to be a driver in the U.S. include being 21 years of age or older, holding a U.S. driver's license for at least one year (or three if younger than 23), and meeting vehicle requirements, like ensuring the rideshare vehicle has four doors. Driver screening entails a review of the prospective driver's driving record and criminal history done through startup Checkr. Many states require either an internal background check or fingerprinting. Uber's standard Checkr process meets the former but not the latter requirement. Uber has complied in markets where fingerprinting is mandated, though with much resistance. Uber and Lyft exited the Austin market in 2015 due to mandated fingerprinting. Uber re-entered the market when Texas ruled for statewide regulation, which does not require fingerprinting.

The fingerprinting debate is more pressing given a continuous slew of crimes committed by Uber drivers, as with many other rideshare apps. This has caused some states to conduct their own investigations into Uber's driver base retroactively. Other localities require their own background checks from the get-go, as Boston does. We expect Uber will increasingly be subject to more regulation concerning background checks, such as fingerprinting, that will raise the cost of business.

Drivers' Rights in a Heightened Contractor vs. Employee Debate

We believe the legal debate that imposes the most risk for Uber's business model is the contractor versus employee debate for drivers, which has heightened in recent years. While few markets have succeeded in classifying drivers as employees, the change would significantly increase Uber's operational costs and could force the firm to pass those costs on to riders by charging higher fees. Uber benefits from contracting drivers who, because of their current classification, are not subject to minimum wage requirements, robust insurance benefits, or, more important, trip-related expenses. According to Quartz, Uber has saved approximately $730 million in combined sample markets California and Massachusetts from 2009 to 2016 due to the classification's implications—specifically, not compensating drivers for vehicle depreciation, gasoline and car maintenance, and phone usage.

Some states have taken matters into their own hands, however. In April, the California Supreme Court ruled that contracted drivers of delivery business Dynamex Operations should be considered employees. The decision will potentially make it difficult for Uber to continue its business model, which is heavily dependent on contracting drivers. Yet on federal grounds, Uber seems safe for now. In a Philadelphia case in April, U.S. District Judge Michael Baylson deemed Uber limo drivers to be contractors under the

Fair Labor Standards Act. Without recognition as employees, Uber drivers cannot unionize. However, organizations have found loopholes for the next best thing. In New York, the Independent Drivers Guild was created to offer benefits and protections to rideshare drivers outside of unionization. The guild provides representation in legal trials and insurance options. On the legal side, the guild is responsible for Uber drivers' ability to contact Uber management after deactivation. Previously, drivers who were deactivated without warning due to reports by riders had no way of directly contacting Uber management. Another guild win is responsible for implementing a tip setting in the app for New York City users. The success eventually led to a rollout of the tip option across the U.S. in July 2017.

In Europe, more tension exists in demands for Uber drivers to be considered employees. To cool the debate, Uber upped its benefits for drivers. On June 1, Uber Europe rolled out Partner Protection, an insurance plan partnership with insurer AXA. To be eligible, drivers needed to fulfill 150 trips within eight weeks, or Uber Eats drivers need to deliver 30 orders within eight weeks. The plan, which costs GBP 2 a week, provides coverage for trip-related injuries and grants maternity leave as well as leave for severe illnesses. Uber plans to extend the optional insurance plan to other countries.

In the U.S., all drivers are currently insured when waiting for a request and at fault for an accident, up to $100,000 for bodily injury per accident and up to $25,000 for property damage per accident. If in the process of picking up passengers or dropping them off, drivers are insured up to $1 million per accident for third parties outside the vehicle during the accident and up to $1 million per accident for up to a driver's car value whether at fault or not, with a $1,000 deductible.

Despite the Partner Protection olive branch, Uber took a step back in its attempt to add drivers to its network sans private-hire vehicles, as is the case in the U.S. In December 2017, the European Union ruled that Uber be regulated as a transportation service, not simply an app. This means that Uber cannot offer services like UberPOP, which is like the UberX service but does not require drivers to have private-hire vehicle licenses. Otherwise in Europe, traditional UberX services require drivers to have private-hire licenses, unlike in the U.S. UberX will be able to continue with the ruling, but in March, Uber delisted UberPOP from any European countries still offering the service.

With the U.K. in Europe's line of sight, the battle for more drivers' rights seems feasible. In November 2017, Uber lost to the British employment tribunal, which ruled that Uber must consider drivers in the U.K as employees and thus pay minimum wage and for time off. After the ruling, Uber continues to operate in the U.K. We note that Uber has faced opposition regarding operating in London in the past. In 2017, Transport for London did not renew the firm's license to provide ridesharing services in the city. However, after Khosrowshahi apologized, the firm was granted a temporary license renewal from London in mid-2018.

From providing tipping options to sick leave, we believe Uber will continue to be subject to the increasing demands of drivers and markets other than Europe, the U.K., and U.S. However, we believe these will not have lasting effects, with Uber expected to adopt a network of autonomous vehicles in the future.

Demographic Speculation and Price Opacity

Uber is currently under investigation by the U.S. Department of Justice for using tools such as Cascade and Firehouse, which potentially violated federal law that prohibits price discrimination on demographics. Cascade and Firehouse calculated ride rates using assumptions about what riders would pay for a ride based on the destination they selected as well as starting location. Now, Uber calculates fares as a function of time and distance traveled combined with a base pickup fee and surge pricing charge during popular times. Additional fees, such as late fees, can be added to this calculation.

Slipping a Data Breach Under the Floormat

Uber's largest debacle concerning data privacy occurred in 2016, when data from 57 million users was stolen. The data did not include Social Security or credit card information nor location details. However, it did include contact information and license plate numbers. The breach was the 16th-worst data breach in the 21st century in terms of the number of people affected. While the data compromised wasn't as bad as it could've been, Uber's improper handling of the situation led to a settlement with the U.S. Federal Trade Commission. Under an obligation to notify those affected by the breach, Uber paid hackers $100,000 to sweep the issue under the rug. The breach was reported in November 2017, more than a year after the initial incident.

Antitrust Allegations

When Uber ceded eight countries in Southeast Asia to Grab, it left before local competition commissions could review the merger. According to *The Economic Times* of India, the Competition and Consumer Commission of Singapore said Uber and Grab did not disclose the merger details to the commission before the deal's announcement, as they should have. After Singapore's claim, other countries affected by the deal opened their own antitrust investigations. While inquiries are still underway in assessing the merger's potential violation of antitrust laws, as of June, Uber has said it won't return. We believe Uber will maintain this decision despite what findings come from local investigations. According to Rappler, the Philippine Competition Commission said Uber and Grab may offer to remedy the negative effects of the consequent rideshare monopoly if the PCC determines the startups violated antitrust laws.

Cases to Follow

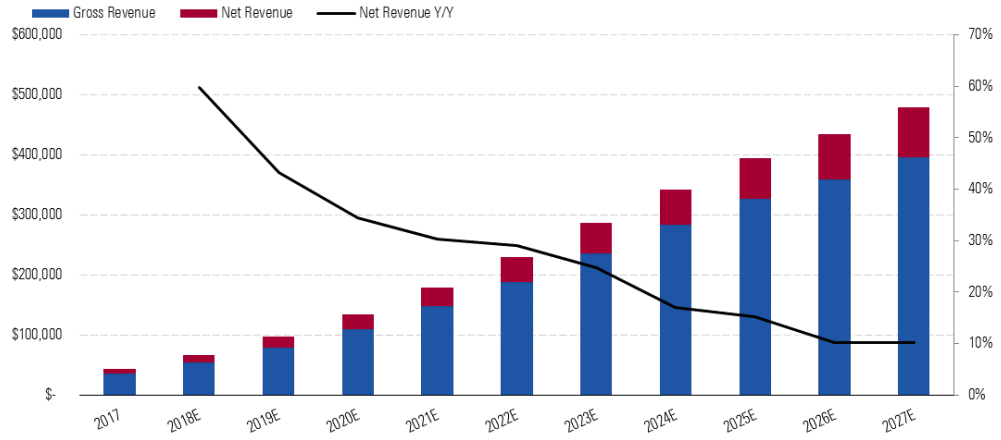
Since its founding, Uber has suffered from several legal cases, internal and external. The startup has had a history of practicing mandatory arbitration, which forces cases to be tried privately rather than in courts, resulting in little detail exposed to the public. In May, Uber ended mandatory arbitration in the U.S. only for claims concerning sexual misbehavior. Shortly after that announcement, Lyft ended its mandatory arbitration policy as well. The change came after Uber experienced accusations concerning sexual misconduct by drivers or fellow employees. CNN found that in the past four years, over 100 Uber drivers have been accused of sexual assault or abuse of passengers. Additionally, former Uber employee Susan Fowler's reports of sexual misconduct and the company's improper handling of such aided in the demand for change, which led to Uber's reversal of the mandatory arbitration policy.

We Assign Uber a Fair Value Estimate of $110 Billion

We have taken a look into Uber's valuation as best as possible, given that the company is private and has not filed an S-1 or other Securities and Exchange Commission documents as part of a public offering. Based on publicly available data as a starting point, we derive a fair value estimate for Uber of $110 billion, which represents enterprise value/net sales multiples of 9, 6, and 5 in 2018, 2019, and 2020, respectively. On an EV/gross billings basis, our valuation represents net revenue multiples of 2.0, 1.4, and 1.0. Our valuation is about 77% above the valuation implied by Uber's last round of funding. We project that Uber's net revenue over the next five years could grow at a 39% CAGR, ahead of the 26% growth rate we assume for Uber's $630 billion total addressable market.

We expect strong net revenue growth for Uber at a 27% 10-year CAGR through 2027, resulting in net revenue of $82 billion (equivalent to $397 billion gross revenue or bookings) in 2027, up from $7.8 billion (equivalent to $36 billion gross revenue) in 2017, based on figures published by *The Wall Street Journal*.

Exhibit 17 Uber Gross and Net Revenue
($ in Millions)



Source: Company, The Wall Street Journal, Morningstar estimates

Our gross revenue growth rates imply that Uber has 18% of its total addressable market today but will capture 34% of the $630 billion addressable market we estimate by 2022. From there, we model growth at a 16% rate through 2027.

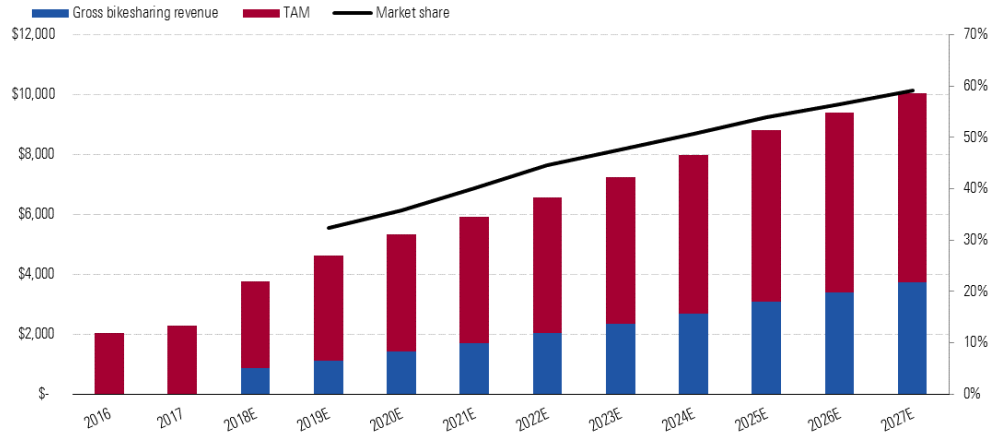
We project that Uber will stay atop the ridesharing market (excluding certain regions such as China) and the narrow-moat firm's ridesharing revenue growth will outpace the overall market by growing at a 39% five-year CAGR compared with our estimate of 28% for the total ridesharing market for the same period. We think such growth will be driven by Uber's continuing expansion in more cities and regions globally, plus an increasing adoption rate as the company attracts more users. As ridesharing also represents a substitute for public transportation, we think it can take revenue from public transportation, which we account for in our projections. Our 10-year gross revenue CAGR for ridesharing is 18%.

Exhibit 18 Uber Will Have Approximately 55% Ridesharing Market Share by 2027 (Excluding China)
($ in Millions)

Source: Company, The Wall Street Journal, Morningstar estimates

We expect Uber to increase its presence in the bikesharing market (U.S. and Europe), which we value at $4.5 billion by 2022 (based on gross revenue) based on a 15% average annual growth assumption. We think Uber will gradually take a bigger piece of that pie in the U.S. and Europe, which will drive the 11% 10-year CAGR we assume for this business, resulting in bikesharing gross revenue of $6.3 billion by 2027.

Exhibit 19 Nearly 60% Market Share of U.S. and Europe Bikesharing by 2027
($ in Millions)



Source: Citi Bike, Morningstar estimates

While the meal takeout and delivery services market remains fragmented and Grubhub is the current market leader in the U.S. , we think Uber can solidify its position, given its success in ridesharing. In addition, unlike Grubhub, Uber has expanded its Uber Eats services worldwide. In our view, Uber's network effects moat source can help provide more timely deliveries for restaurants and enhance its

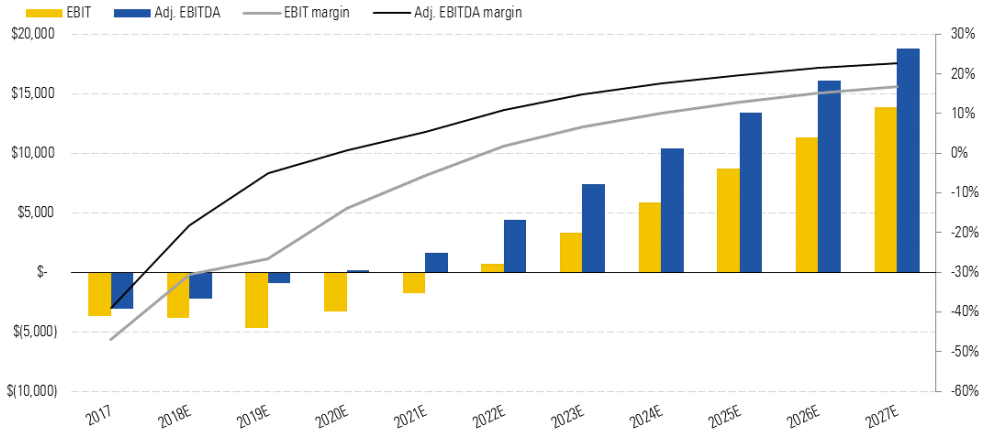
position in the market as it attracts more drivers in what we estimate will be a $166 billion space (excluding China) by 2022. We model 39% five-year average revenue growth for Uber Eats compared with our estimate of the industry's 25% average annual growth. We apply a 10-year 29% gross revenue CAGR assumption for Uber Eats, compared with our 14% assumption for Grubhub.

Regarding the freight brokerage side of the business, Uber Freight, we think the company will face fierce competition from market leaders such as C.H. Robinson. We also assume that Uber Freight will be mainly pursuing the U.S. freight brokerage market, which we think may be valued at $27 billion by 2022 with average annual growth of 9%. While our model calls for Uber Freight gross revenue to grow 20% annually through 2027, that business will continue to account for less than 1% of Uber's total gross revenue.

As Uber continues to attract more riders and assign drivers to requests more quickly, we think overall vehicle capacity utilization will increase, possibly widening the firm's gross margin to 62% during the next 10 years from 49% in 2017. Besides the driver take rate, which is netted out of Uber's net revenue, we believe a portion of Uber's cost of goods sold is fixed and revenue will grow at a faster pace than these costs, leading to gross margin expansion. We also project that Uber will benefit from operating leverage in the years ahead. The firm might be able to increase revenue at a faster pace than selling, general, and administrative costs, especially in the sales and marketing lines, while also having to spend relatively less on operations and support costs. However, we anticipate that R&D will remain elevated as Uber invests in new ventures, resulting in only slight declines in R&D as a percentage of net revenue.

We think Uber is likely to begin generating adjusted EBITDA in 2020. Within our 10-year discounted cash flow model, we assume the firm will turn its current operating loss to operating income in 2022, while expanding operating margin to nearly 17% by 2027.

Exhibit 20 Margin Expansion and Profitability on the Horizon
($ in millions)



Source: Company, The Wall Street Journal, Morningstar estimates

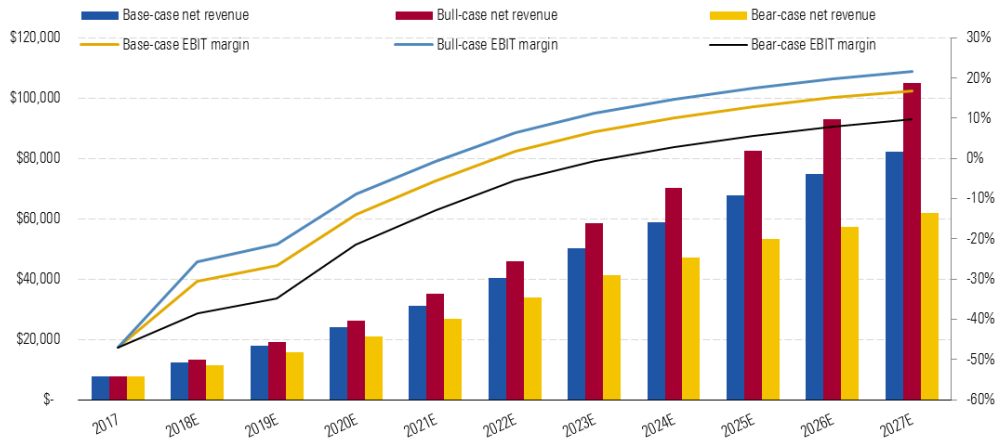
In addition to our discounted cash flow model, we looked at how current investors in the private market value Uber. Data provided by PitchBook indicates that the latest secondary transaction in the private market announced May 24 implies a $62 billion valuation of Uber. The firm completed its Series G funding in January, which at the time indicated nearly a $70 billion valuation.

We must note that Uber's valuation during the past 12 months has been volatile. In fact, according to PitchBook, in January 2018, another secondary transaction valued Uber at only $48 billion. Such volatility in the valuation of the firm in the private market is expected; however, we think additional uncertainties may have hindered growth of Uber's valuation. These include questions surrounding the safety of the firm's drivers and riders and the overall questionable reputation of former CEO and cofounder Kalanick.

Scenarios

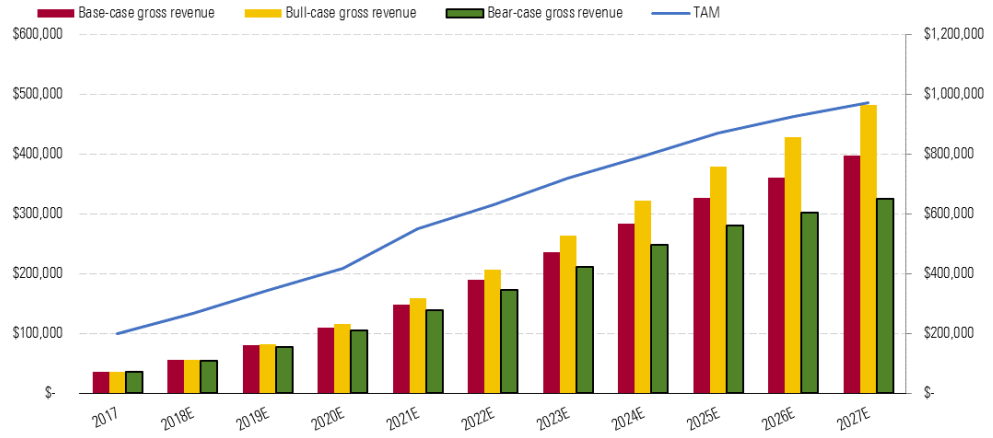
In our bull-case scenario for Uber, we model a 30% 10-year net revenue CAGR, driven mainly by a much faster adoption rate of ridesharing and the company's success in taking U.S. market share from Grubhub while more aggressively expanding in other markets. We also assume that a lower take rate for drivers will helps the firm expand margins. Further operating leverage is likely to come from less need for Uber to spend on sales and marketing as the network effects moat source strengthens. In this scenario, we expect the firm to become profitable in 2022 and see operating margin expanding to 22% by 2027. Our bull-case fair value estimate for Uber is $176 billion.

Exhibit 21 Net Revenue and Operating Margin per Scenario
($ in Millions)



Source: Company, The Wall Street Journal, Morningstar estimates

Exhibit 22 Uber Likely to Increase Market Share in All Scenarios
($ in Millions)



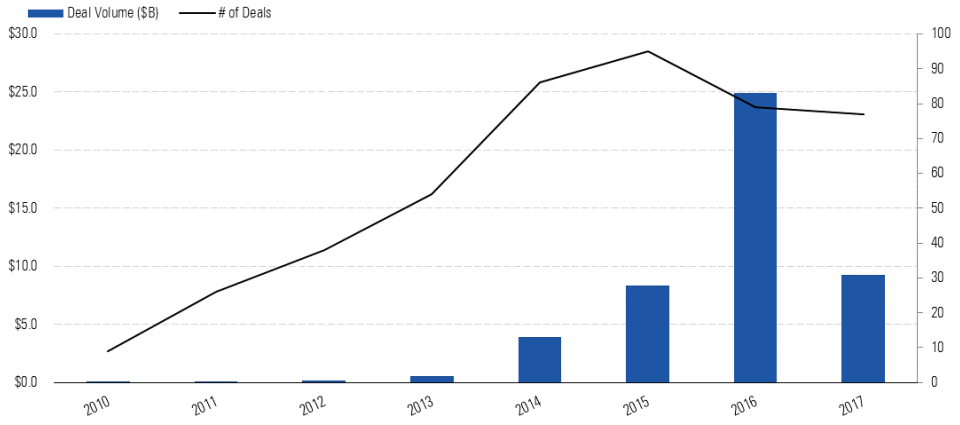
Source: Company, The Wall Street Journal, Morningstar estimates

In a bear-case scenario, we estimate Uber to have a $49 billion fair value. We model only a 25% CAGR in net revenue during the next 10 years, as pricing pressures from additional competition, along with possibly more regulatory measures, may inhibit the firm from expanding and growing at the base-case rate. The firm may also have to lower its take rate in order to more easily attract drivers, while spending more on sales and marketing to maintain high ridesharing demand. This will probably hinder margin expansion a bit. In this case, we project the company to remain unprofitable until 2024 and assume operating margin will widen to only 10% by 2027.

Considering Uber's Success at Raising Capital, a $107 Billion IPO Valuation Is Reasonable

Ridesharing has seen a significant influx of venture capital in recent years. Since 2010, a total of $58.7 billion has been invested across 509 ridesharing deals. In the past five years, annual capital invested has seen a compound average growth rate of 101%, while annual deal count has risen to 77 in 2017 from 9 in 2010. So far in 2018, 45 deals have been completed, putting the ridesharing venture space on pace to eclipse the previous year in terms of deal flow.

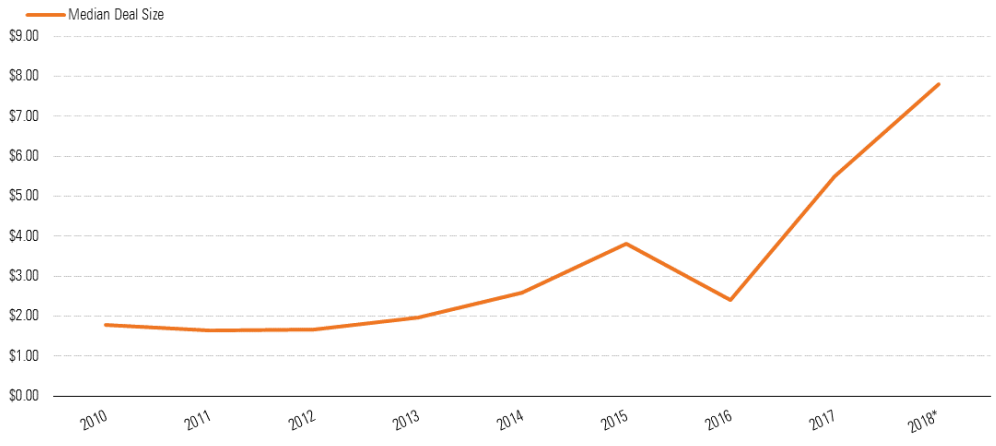
Exhibit 23 Ridesharing VC Deal Flow by Year Has Leveled Off
($ in Billions)



Source: PitchBook

Ridesharing venture deal sizes have seen an upward trend over the past few years. Since 2010, median deal sizes have grown at a compound average growth rate of 20% annually to $7.8 million in 2018.

Exhibit 24 Ridesharing VC Deal Size Is Trending Higher
($ in Millions)



Source: PitchBook

Top active investors in this burgeoning industry include venture capital firms such as Sequoia Capital, conglomerates such as SoftBank and Google, and corporate venture capital arms of ridesharing incumbents like Didi Chuxing.

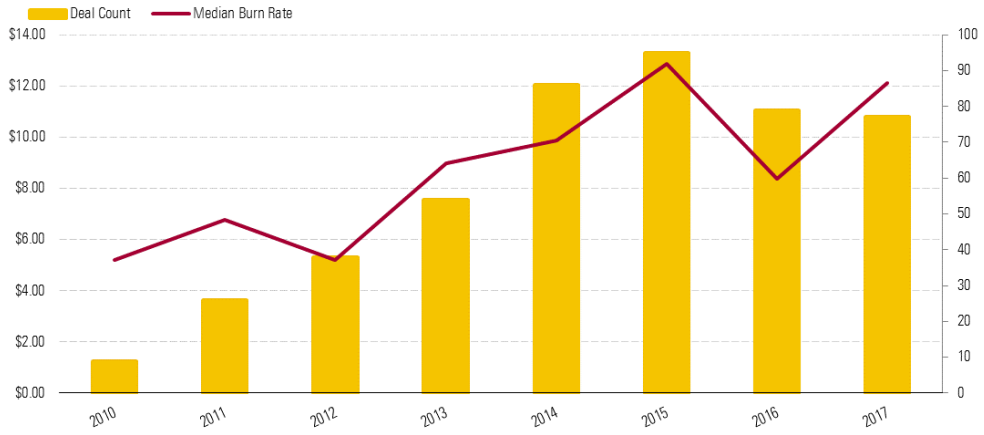
Exhibit 25 Top VC Investors in Ridesharing (2010-18)

Investor PBID	Investor Name	# of Investments	Investor Type	Investor HQ State	Investor HQ Country
11295-73	Sequoia Capital	13	Venture Capital	California	United States
42873-94	Tiger Global Management	13	Asset Manager	New York	United States
11300-50	SoftBank Capital	12	Corporate Venture Capital	New York	United States
118715-14	Didi Chuxing	12	VC-Backed Company		China
51022-00	Kima Ventures	10	Venture Capital		France
49063-60	GV	10	Corporate Venture Capital	California	United States
51322-24	SOSV	9	Venture Capital	New Jersey	United States
11216-98	Index Ventures (UK)	8	Venture Capital	England	United Kingdom
166304-08	Rakuten Capital	7	Corporate Venture Capital		Japan
11132-38	August Capital	7	Venture Capital	California	United States
11201-59	Upfront Ventures	6	Venture Capital	California	United States
55254-79	Winklevoss Capital Management	6	Venture Capital	New York	United States
52206-94	Fontinalis Partners	6	Venture Capital	Michigan	United States
52120-00	Tencent Holdings	6	Corporation		China
52363-99	Hillhouse Capital Group	6	Venture Capital		China
11279-08	Qualcomm Ventures	6	Corporate Venture Capital	California	United States
40692-61	SoftBank Group	6	Corporation		Japan
167489-20	Sequoia Capital India	6	Venture Capital		India
11203-21	GGV Capital	6	Venture Capital	California	United States

Source: PitchBook

Ridesharing valuations have also seen increases in recent years. From 2010 to 2017, median post-money venture capital ridesharing valuations rose from a median of $6 million to $62 million, representing a compound annual growth rate of 40%.

Exhibit 26 Median Burn Rate of Ridesharing Companies Trending Higher
($ in Millions)



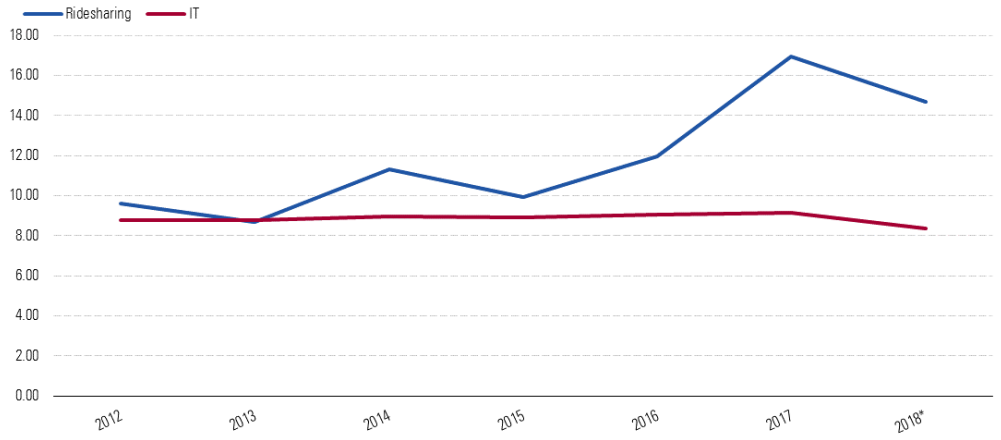
Source: PitchBook

Among its ridesharing peers, Uber stands out as being very successful at raising capital from investors. Since 2009, Uber has raised $17.4 billion compared with $16.9 billion and $4.9 billion raised by Didi Chuxing and Lyft, respectively. In May, reports suggested that a consortium of investors had entered talks to sell their stake in the company for approximately $500 million, putting Uber's pre-money

valuation at $61.5 billion. Meanwhile, Lyft was most recently valued at $15.1 billion[31], and Didi was valued at $57.3 billion. More recent entrants to ridesharing have also been receiving investor interest: Grab, a ride-hailing platform in Southeast Asia in which Uber owns a minority stake, was most recently valued at over $10 billion based on a deal led by Toyota.

Given the up-front investment required to enter this market from scratch, as well as the established nature of the incumbents, we think there are hurdles for investors looking to deploy capital in early-stage ridesharing companies. In the U.S., Uber and Lyft are juggernauts, holding roughly 70% and 30% share of the ridesharing market, respectively[32], leaving very little remaining share on the table for new entrants. The large footprint of Uber and Lyft gives these companies significant network advantages over new entrants. Despite their dominance, even the incumbents are currently failing to generate operating profits as they continue to invest in R&D and future expansion in the land grab for these nascent markets. While we believe there are few barriers to entry in ridesharing, it is becoming increasingly difficult for early-stage venture capitalists to justify backing new players against the scale and footprint of the incumbents in the space

Exhibit 27 VC Late-Stage Company Age



Source: PitchBook

Moreover, we believe investors are likely to have an aversion to the long holding period inherent to ridesharing companies at this stage of the investing cycle. The average age of an early-stage VC information technology company is 3.7 years. However, the average age of an early-stage VC ridesharing company is 5.9 years. Whereas the average age of a late-stage VC IT company is 8.4 years, the average age of a late-stage VC ridesharing company is 14.7 years. This is a holding period longer than many investors would be comfortable with and probably contributes to investors seeking alternative verticals in the technology space. Exceptions include ridesharing startups providing some kind of differentiated

[31] https://pitchbook.com/news/articles/lyft-is-still-worth-just-a-fraction-of-uberbut-its-closing-the-gap-with-its-latest-fundraise
[32] https://www.cnbc.com/2018/05/14/lyft-market-share-051418-bosa-sf.html

value or services in geographies not yet penetrated by the major global ridesharing companies. Regardless, investor hesitance this late in the investment cycle serves to insulate the incumbents from potential competition from disruptive startups.

Uber's success at raising capital is perhaps matched only by its success at spending it—the company is in a league of its own in terms of burning cash. It is not profitable, and over the past nine years, it has burned through $10.7 billion[33].

Precedent suggests that there are clear liquidity paths for Uber's existing shareholders and employees looking for an exit before the company's eventual initial public offering. In January, Benchmark Capital, Menlo Ventures, and First Round Capital sold their stakes in Uber to a SoftBank Group-led consortium of investors including Dragoneer Investment Group, TPG Growth, Tencent Holdings, and Sequoia Capital for approximately $8 billion. In addition, Kalanick sold a third of his 10% stake in the company for $1.4 billion. In May, investors participating in Uber's secondary round of funding of approximately $500 million included Coatue, Altimeter, and TPG[34]. Uber employees were also able to participate in the offering, provided they did not sell more than $10 million of shares. Overall, outside investors have demonstrated a willingness to cash out employees and existing shareholders for stakes in the company.

Our fair value estimate for the firm does not necessarily represent the price or valuation at which Uber may come public. Recent venture capital-backed software initial public offerings provide insight into the price Uber could receive for its upcoming IPO. Currently, the plan is for Uber to commence an IPO in the second half of 2019. This would provide existing shareholders with an exit strategy while allowing the company to raise a large amount of capital with which it can finance its aggressive growth plans. Examining recent IPOs of American VC-backed software companies provides insight into what market price Uber could debut at. In 2017, 19 VC-backed software companies went public at a median post-money valuation of $746 million, or 6.4 times revenue. In 2018 so far, 15 VC-backed software companies have gone public at a median post-money valuation of $1.47 billion, or 8.6 times revenue. In the past five years, median valuations as well as valuation/revenue multiples have steadily increased. We believe that 8.6 represents a fair multiple; this is similar to the 8.5 multiple DocuSign received for its IPO in April. And although many software companies are profitable at Uber's current stage, few can match its growth profile. Assuming an 8.6 revenue multiple, we anticipate that an initial public offering valuing the company at approximately $107 billion would be reasonable.

[33] https://www.bloomberg.com/news/articles/2018-03-06/uber-spent-10-7-billion-in-nine-years-does-it-have-enough-to-show-for-it

[34] https://techcrunch.com/2018/05/23/uber-q1-2018/

Exhibit 28 Median Valuation/Revenue Multiple for VC-Backed Software IPOs Inching Higher
($ in Millions)

Year	Deal Count	Capital Invested	Revenue	Pre-Money Valuation	Post Valuation	Valuation/ Revenue
2018	15	$180.0	$171.2	$1,314.3	$1,466.3	8.6
2017	19	98.1	111.9	575.4	746.4	6.4
2016	8	99.8	106.0	716.6	843.1	5.5
2015	6	92.1	98.0	407.4	604.6	5.5
2014	7	100.8	112.7	452.6	553.4	4.9
2013	5	105.0	128.5	327.8	432.8	6.4
2012	4	336.5	174.7	3,851.1	4,488.1	5.5
2011	2	87.2	74.2	343.0	430.2	6.2
2010	2	54.6	83.9	164.3	212.9	2.5
2009	2	83.6	79.8	224.8	313.0	2.2

Source: PitchBook

We also analyzed the initial public offerings of other firms, including Facebook, Alibaba, and Grubhub, as displayed in Exhibit 29. Our fair value estimate for Uber represents net revenue multiples a bit higher than the median of what the IPO prices of the companies represented at that time.

Exhibit 29 Uber FVE Sales Multiple Is Comparable to Multiples of Other Large Technology Firms' IPOs

	IPO or Spin-off	FY multiples		FY+1 multiples		FY+2 multiples	
		Sales	EBITDA	Sales	EBITDA	Sales	EBITDA
AMZN	May-97	2.9	NA	0.7	NA	0.3	NA
EXPE	Nov-99	4.0	6.6	2.4	31.0	0.9	3.3
EXPE	Aug-05	1.4	10.3	1.4	11.9	6.2	59.5
TRIP	Dec-11	5.2	11.3	4.2	10.6	3.2	8.5
FB	May-12	16.2	28.3	10.5	17.1	6.6	10.1
GRUB	Apr-14	8.0	26.4	5.6	19.7	4.1	14.3
BABA	Sep-14	13.6	25.5	10.8	20.8	7.3	15.5
SNAP	Mar-17	23.8	NA	15.1	NA	9.8	NA
SPOT	Apr-18	5.6	NA	4.4	NA	3.5	252.5
Median		*6*	*18*	*4*	*18*	*4*	*14*
UBER	**Jul-19**	**9**	**NA**	**6**	**NA**	**5**	**622**

Source: Company, PitchBook, Morningstar estimates

Exhibit 30 A Glance at Uber Financials and Morningstar Estimates

Morningstar Equity Research 1 August 2018

Uber Technologies Inc. (UBER)

★★★

Last Price	Fair Value	Uncertainty	Stewardship	Economic Moat	Moat Trend	Morningstar Credit Rating
78.76 USD	79 USD	Very High	Standard	Narrow	Stable	N/A

Analyst	Ali Mogharabi	Five-Star Price	39.50	Estimated COE	9.0%	Adjusted P / E	(35.7)	(35.8)
Phone & Email	312-696-6056	Fair Value Estimate	79.00	Pre-Tax Cost of Debt	5.3%	EV / Adjusted EBITDA	(48.4)	(48.6)
ali.mogharabi@morningstar.com		One-Star Price	138.25	Estimated WACC	8.9%	EV / Sales	8.8	8.8
Sector	Technology	Market Price	78.76	ROIC *	-143.9%	Price / Book	198.2	198.8
Industry	Media - Diversified	P / FVE	1.00	Adjusted ROIC *	-156.0%	FCF Yield	-2.3%	-2.3%
				* 5-Yr Projected Average		Dividend Yield	0.0%	0.0%
						(2018 Estimates)	(Price)	(Fair Value)

All values (except per share amounts) in: USD Millions	3-Yr Historical CAGR/AV	2017	Forecast 2018	2019	2020	2021	2022	5-Yr Projected CAGR/AVG
Income Statement								
Revenue		7,778	12,420	17,801	23,950	31,203	40,247	
Gross Profit		3,777	6,955	10,146	13,651	18,098	23,746	
Operating Income		(3,791)	(3,802)	(4,720)	(3,310)	(1,738)	690	
Net Income		(4,469)	(3,088)	(3,814)	(2,693)	(1,430)	534	
Adjusted Income		(4,469)	(3,088)	(3,814)	(2,693)	(1,430)	534	
Adjusted EPS		(3.19)	(2.21)	(2.72)	(1.92)	(1.02)	0.38	
Adjusted EBITDA		(3,168)	(2,244)	(908)	177	1,667	4,364	
Growth (% YoY)								
Revenue			59.7%	43.3%	34.5%	30.3%	29.0%	38.9%
Gross Profit			84.1%	45.9%	34.5%	32.6%	31.2%	44.4%
Operating Income			0.3%	24.2%	-29.9%	-47.5%	-139.7%	NM
Net Income			-30.9%	23.5%	-29.4%	-46.9%	-137.4%	NM
Adjusted EPS			-30.9%	23.5%	-29.4%	-46.9%	-137.4%	NM
Adjusted EBITDA			-29.2%	-59.5%	-119.5%	841.7%	161.8%	NM
Profitability (%)								
Gross Margin		48.6%	56.0%	57.0%	57.0%	58.0%	59.0%	57.4%
Operating Margin		-48.7%	-30.6%	-26.5%	-13.8%	-5.6%	1.7%	-15.0%
Net Margin		-57.5%	-24.9%	-21.4%	-11.2%	-4.6%	1.3%	-12.2%
Adjusted EBITDA Margin		-40.7%	-18.1%	-5.1%	0.7%	5.3%	10.8%	-1.2%
Return on Equity		-87.6%	-147.0%	282.4%	58.5%	21.4%	-7.5%	41.6%
Adjusted ROIC			-351.5%	73.9%	-7.3%	-74.0%	-421.3%	-156.0%
Adjusted RONIC			-24.7%	-30.8%	-271.5%	125.1%	168.7%	-6.7%
Leverage								
Debt / Capital		45.5%	84.6%	-1455.7%	-105.0%	-70.4%	-80.2%	NM
Debt / EBITDA		(0.9)	(1.2)	(1.2)	(2.9)	6.0	1.0	0.3
EBITDA / Interest Expense		(6.5)	(16.7)	(16.2)	(7.0)	3.4	20.3	NM
FCFE / Total Debt		(1.26)	(0.84)	(0.56)	(0.24)	0.23	1.10	NM
Cash Flow								
Dividends per Share		0.00	0.00	0.00	0.00	0.00	0.00	
Free Cash Flow to the Firm		(3,453)	(50)	17	1,805	3,980	7,585	
FCFE (CFO-Capex)		(3,846)	(2,572)	(1,712)	(723)	704	3,357	
Dividend Franking		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Dividend Payout Ratio		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Source: Morningstar; data as of July 6, 2018

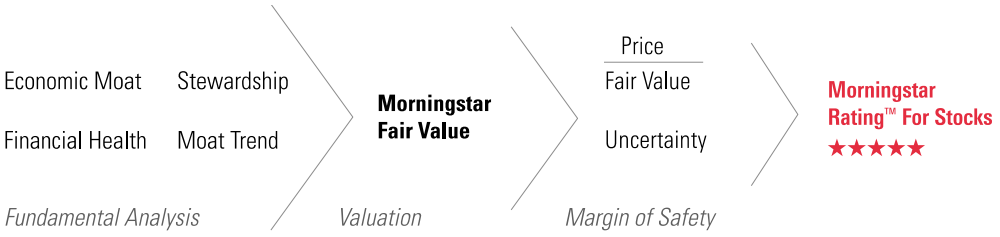
Research Methodology for Valuing Companies

Overview

At the heart of our valuation system is a detailed projection of a company's future cash flows, resulting from our analysts' research. Analysts create custom industry and company assumptions to feed income statement, balance sheet, and capital investment assumptions into our globally standardized, proprietary discounted cash flow, or DCF, modeling templates. We use scenario analysis, in-depth competitive advantage analysis, and a variety of other analytical tools to augment this process. Moreover, we think analyzing valuation through discounted cash flows presents a better lens for viewing cyclical companies, high-growth firms, businesses with finite lives (e.g., mines), or companies expected to generate negative earnings over the next few years. That said, we don't dismiss multiples altogether but rather use them as supporting cross-checks for our DCF-based fair value estimates. We also acknowledge that DCF models offer their own challenges (including a potential proliferation of estimated inputs and the possibility that the method may miss short-term market-price movements), but we believe these negatives are mitigated by deep analysis and our long-term approach.

Morningstar's equity research group (we", "our") believes that a company's intrinsic worth results from the future cash flows it can generate. The Morningstar Rating for stocks identifies stocks trading at a discount or premium to their intrinsic worth—or fair value estimate, in Morningstar terminology. Five-star stocks sell for the biggest risk-adjusted discount to their fair values, whereas 1-star stocks trade at premiums to their intrinsic worth.

Morningstar Research Methodology



Source: Morningstar.

Four key components drive the Morningstar rating: (1) our assessment of the firm's economic moat, (2) our estimate of the stock's fair value, (3) our uncertainty around that fair value estimate and (4) the current market price. This process ultimately culminates in our single-point star rating.

Economic Moat

The concept of an economic moat plays a vital role not only in our qualitative assessment of a firm's long-term investment potential, but also in the actual calculation of our fair value estimates. An economic moat is a structural feature that allows a firm to sustain excess profits over a long period of time. We define economic profits as returns on invested capital (or ROIC) over and above our estimate of a firm's cost of capital, or weighted average cost of capital (or WACC). Without a moat, profits are more susceptible to competition. We have identified five sources of economic moats: intangible assets, switching costs, network effect, cost advantage, and efficient scale.

Companies with a narrow moat are those we believe are more likely than not to achieve normalized excess returns for at least the next 10 years. Wide-moat companies are those in which we have very high confidence that excess returns will remain for 10 years, with excess returns more likely than not to remain for at least 20 years. The longer a firm generates economic profits, the higher its intrinsic value. We believe low-quality, no-moat companies will see their normalized returns gravitate toward the firm's cost of capital more quickly than companies with moats.

To assess the sustainability of excess profits, analysts perform ongoing assessments of the moat trend. A firm's moat trend is positive in cases where we think its sources of competitive advantage are growing stronger; stable where we don't anticipate changes to competitive advantages over the next several years; or negative when we see signs of deterioration.

Estimated Fair Value

Combining our analysts' financial forecasts with the firm's economic moat helps us assess how long returns on invested capital are likely to exceed the firm's cost of capital. Returns of firms with a wide economic moat rating are assumed to fade to the perpetuity

period over a longer period of time than the returns of narrow-moat firms, and both will fade slower than no-moat firms, increasing our estimate of their intrinsic value.

Our model is divided into three distinct stages:

Stage I: Explicit Forecast
In this stage, which can last five to 10 years, analysts make full financial statement forecasts, including items such as revenue, profit margins, tax rates, changes in working-capital accounts, and capital spending. Based on these projections, we calculate earnings before interest, after taxes (EBI) and the net new investment (NNI) to derive our annual free cash flow forecast.

Stage II: Fade
The second stage of our model is the period it will take the company's return on new invested capital—the return on capital of the next dollar invested ("RONIC")—to decline (or rise) to its cost of capital. During the Stage II period, we use a formula to approximate cash flows in lieu of explicitly modeling the income statement, balance sheet, and cash flow statement as we do in Stage I. The length of the second stage depends on the strength of the company's economic moat. We forecast this period to last anywhere from one year (for companies with no economic moat) to 10–15 years or more (for wide-moat companies). During this period, cash flows are forecast using four assumptions: an average growth rate for EBI over the period, a normalized investment rate, average return on new invested capital (RONIC), and the number of years until perpetuity, when excess returns cease. The investment rate and return on new invested capital decline until a perpetuity value is calculated. In the case of firms that do not earn their cost of capital, we assume marginal ROICs rise to the firm's cost of capital (usually attributable to less reinvestment), and we may truncate the second stage.

Stage III: Perpetuity
Once a company's marginal ROIC hits its cost of capital, we calculate a continuing value, using a standard perpetuity formula. At perpetuity, we assume that any growth or decline or investment in the business neither creates nor destroys value and that any new investment provides a return in line with estimated WACC.

Because a dollar earned today is worth more than a dollar earned tomorrow, we discount our projections of cash flows in stages I, II, and III to arrive at a total present value of expected future cash flows. Because we are modeling free cash flow to the firm—representing cash available to provide a return to all capital providers—we discount future cash flows using the WACC, which is a weighted average of the costs of equity, debt, and preferred stock (and any other funding sources), using expected future proportionate long-term, market-value weights.

Uncertainty around that fair value estimate
Morningstar's Uncertainty Rating captures a range of likely potential intrinsic values for a company and uses it to assign the margin of safety required before investing, which in turn explicitly drives our stock star rating system. The Uncertainty Rating represents the analysts' ability to bound the estimated value of the shares in a company around the Fair Value Estimate, based on the characteristics of the business underlying the stock, including operating and financial leverage, sales sensitivity to the overall economy, product concentration, pricing power, and other company-specific factors.

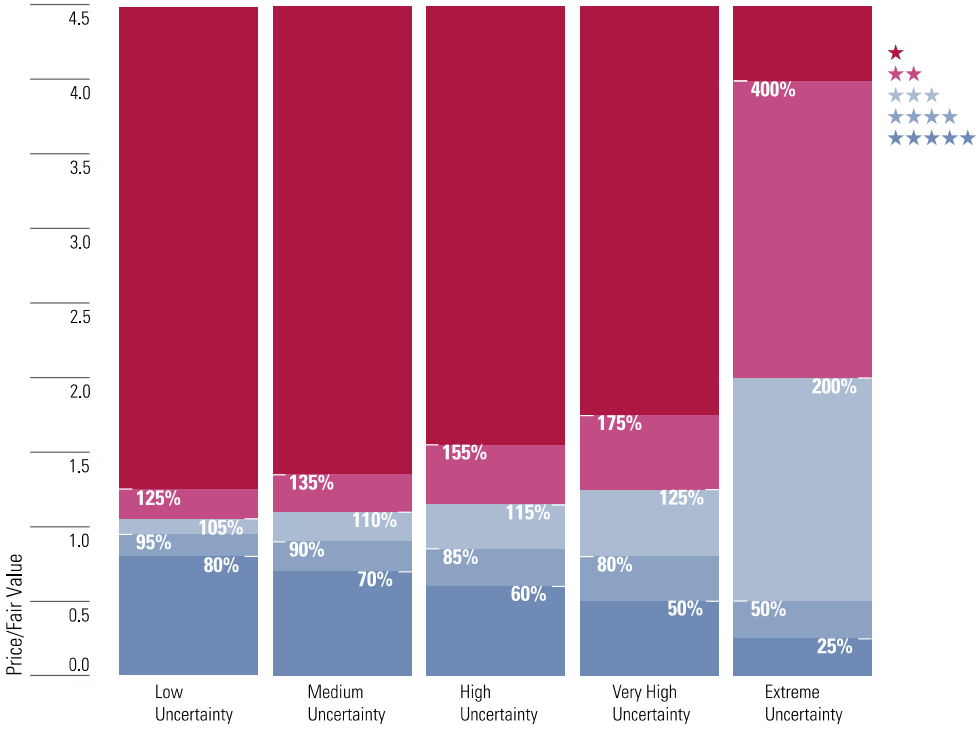
Analysts consider at least two scenarios in addition to their base case: a bull case and a bear case. Assumptions are chosen such that the analyst believes there is a 25% probability that the company will perform better than the bull case, and a 25% probability that the company will perform worse than the bear case. The distance between the bull and bear cases is an important indicator of the uncertainty underlying the fair value estimate.

Our recommended margin of safety widens as our uncertainty of the estimated value of the equity increases. The more uncertain we are about the estimated value of the equity, the greater the discount we require relative to our estimate of the value of the firm before we would recommend the purchase of the shares. In addition, the uncertainty rating provides guidance in portfolio construction based on risk tolerance.

Our uncertainty ratings for our qualitative analysis are low, medium, high, very high, and extreme.

- Low–margin of safety for 5-star rating is a 20% discount and for 1-star rating is 25% premium.
- Medium–margin of safety for 5-star rating is a 30% discount and for 1-star rating is 35% premium.
- High–margin of safety for 5-star rating is a 40% discount and for 1-star rating is 55% premium.
- Very High–margin of safety for 5-star rating is a 50% discount and for 1-star rating is 75% premium.
- Extreme– margin of safety for 5-star rating is a 75% discount and for 1-star rating is 300% premium.

Morningstar Equity Research Star Rating Methodology



Market Price

The market prices used in this analysis and noted in the report come from exchange on which the stock is listed which we believe is a reliable source.

For more details about our methodology, please go to https://shareholders.morningstar.com.

Morningstar Star Rating for Stocks

Once we determine the fair value estimate of a stock, we compare it with the stock's current market price on a daily basis, and the star rating is automatically re-calculated at the market close on
every day the market on which the stock is listed is open. Our analysts keep close tabs on the companies they follow, and, based on thorough and ongoing analysis, raise or lower their fair value estimates
as warranted.

Please note, there is no predefined distribution of stars. That is, the percentage of stocks that earn
5 stars can fluctuate daily, so the star ratings, in the aggregate, can serve as a gauge of the broader market's valuation. When there are many 5-star stocks, the stock market as a whole is more undervalued, in our opinion, than when very few companies garner our highest rating.

We expect that if our base-case assumptions are true the market price will converge on our fair value estimate over time, generally within three years (although it is impossible to predict the exact time frame in which market prices may adjust).

Our star ratings are guideposts to a broad audience and individuals must consider their own specific investment goals, risk tolerance, tax situation, time horizon, income needs, and complete investment portfolio, among other factors.

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★★★★★ We believe appreciation beyond a fair risk-adjusted return is highly likely over a multiyear time frame. Scenario analysis developed by our analysts indicates that the current market price represents an excessively pessimistic outlook, limiting downside risk and maximizing upside potential.

★★★★ We believe appreciation beyond a fair risk-adjusted return is likely.

★★★ Indicates our belief that investors are likely to receive a fair risk-adjusted return (approximately cost of equity).

★★ We believe investors are likely to receive a less than fair risk-adjusted return.

★ Indicates a high probability of undesirable risk-adjusted returns from the current market price over a multiyear time frame, based on our analysis. Scenario analysis by our analysts indicates that the market is pricing in an excessively optimistic outlook, limiting upside potential and leaving the investor exposed to Capital loss.

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