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The Impact of Uber Technologies on the New York City Transportation Industry

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The Impact of Uber on the New York City Transportation Industry
An honors thesis submitted in partial fulfillment of the requirements for the degree of BSBA,
Finance.

By

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BSBA Finance, 2016

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Abstract

Uber Technologies (Uber) is a mobile ride request company founded in 2009 by Travis Kalanick and Garrett Camp. Initially named “UberCab”, the company began offering black car services in San Francisco via an iPhone app. Beginning in May 2011, Uber expanded to a new city each month, moving into New York City, Chicago, and Washington D.C that year. The company also expanded internationally in December 2011, moving into Paris. After only its first six months of operation, Uber had already gained nearly 6,000 users and done close to 20,000 rides. The company expanded to its first international city, Paris, in December of 2011. As of February 2016, the company operates in over 377 cities worldwide.

Uber has had a variety of economic impacts on the cities that it has moved into. This paper will focus primarily on the city of New York, New York and how Uber has changed the transportation industry there. The focus will be placed on 1) the decline in the price of taxi medallions, 2) the change in productivity and utilization of assets, 3) the inflow of new capital into the city, 4) the increased accessibility to affordable transportation for many in the city. Uber currently has over 90% market share in the smartphone-ride hailing application market, so it can be assumed that the majority of the effects discussed in this paper are by and large due to Uber, as opposed to much smaller competitors such as Lyft.

This honors thesis is approved for recommendation.

Faculty Advisor:

Michael Cawthon

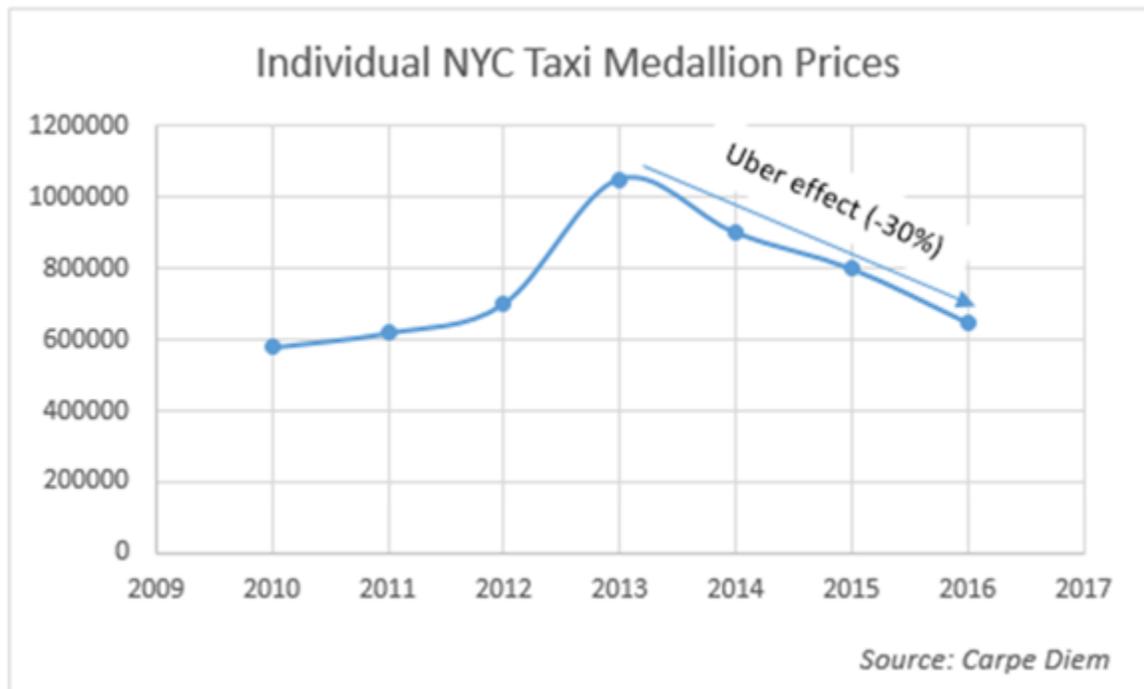
Second Reader:

Dr. Andrew Brownback

Decline in Medallion Value

Arguably the most demonstrable way that Uber has impacted the transportation sector in New York City is via the taxicab industry. Ever since Uber has arrived, the price of taxi medallions in New York has dropped quickly and considerably. According to the New York Post, Uber now has over 14,000 black and luxury vehicles in the five boroughs of New York, exceeding the amount of taxicabs (13,587) after only 4 years of operating in the city. Rides are increasing in the city by a factor of 4 times per year. Figure 1 details how dramatic the price decline of medallions has been, falling from just over \$1 million at the peak, to now approaching \$600,000 per medallion. This is a drop of over 30% in less than 3 years.

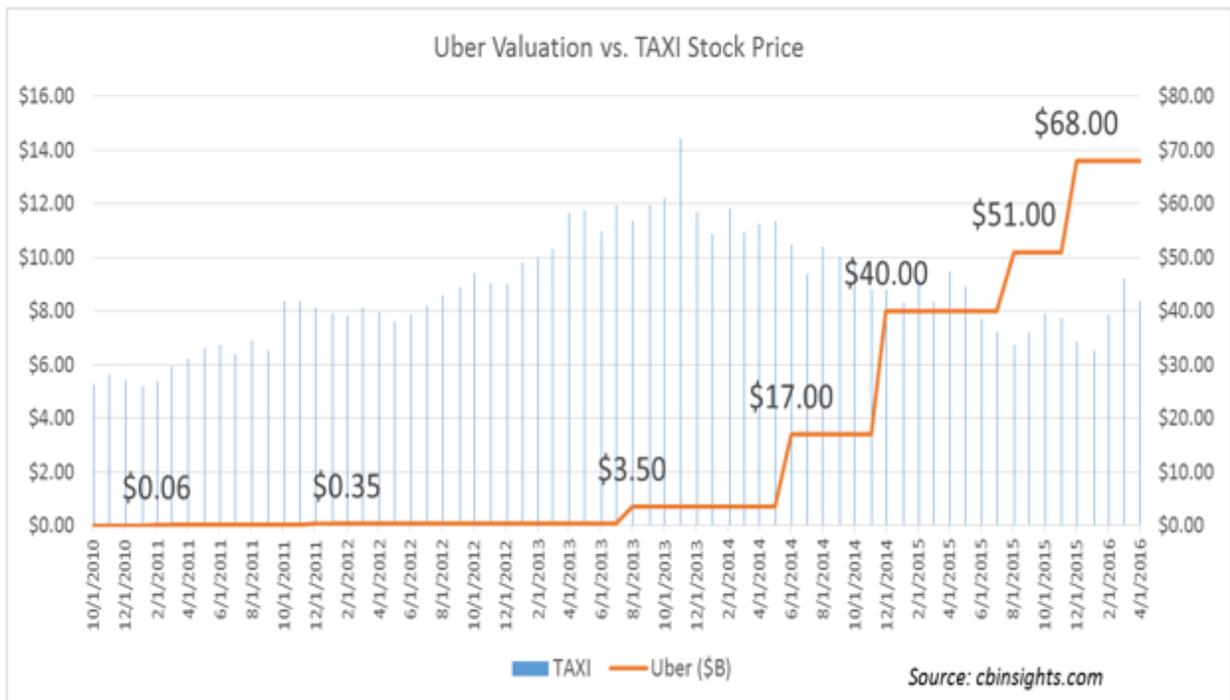
Figure 1



Another interesting observation comes via CB Insights, comparing the valuation of Uber to Medallion Financial Corp. (NASDAQ: TAXI). Medallion Financial Corp. "engages in originating, acquiring, and servicing loans that finance taxicab medallions and various types of commercial businesses." Interestingly, the company's stock price has seen an even sharper decline than the price of medallions themselves, falling 49% since Uber raised an initial round of investing at a \$3.5B valuation. This is especially interesting considering that over 58% of taxi medallions in New York City are owned by corporate entities, whereas only one-third are owned by the actual cab drivers themselves. Uber is currently valued over \$60B, which makes the company worth more than the entire taxi cab market in the United States (valued at approximately \$11B).

Figure 2 outlines the change in value of both companies over the past several years:

Figure 2



Traffic Congestion

Uber's presence in the city has led to concerns over increased traffic and congestion, an obvious economic headwind. However, an analysis done by the statistics source FiveThirtyEight indicates that rather than dramatically increasing the amount of pickups in the city, Uber is simply taking rides away from would-be taxicab riders and servicing areas that taxicabs do not normally reach. As Figure 3 outlines, rides from April – June of 2014 to the same time period in 2015 remained largely flat, increasing from 48 million to only 51 million. This is approximately a 6% increase year over year, which may seem substantial, but the majority of those rides came from the outer boroughs and places that are largely underserved by the current ride offering companies.

However, in the populous area of central and lower Manhattan, there was actually a net decrease in total pickups of approximately 12,000 over the same timeframe. Figure 3 outlines the fact that overall rides are remaining constant, while rides coming from yellow cabs are in decline.

Figure 3

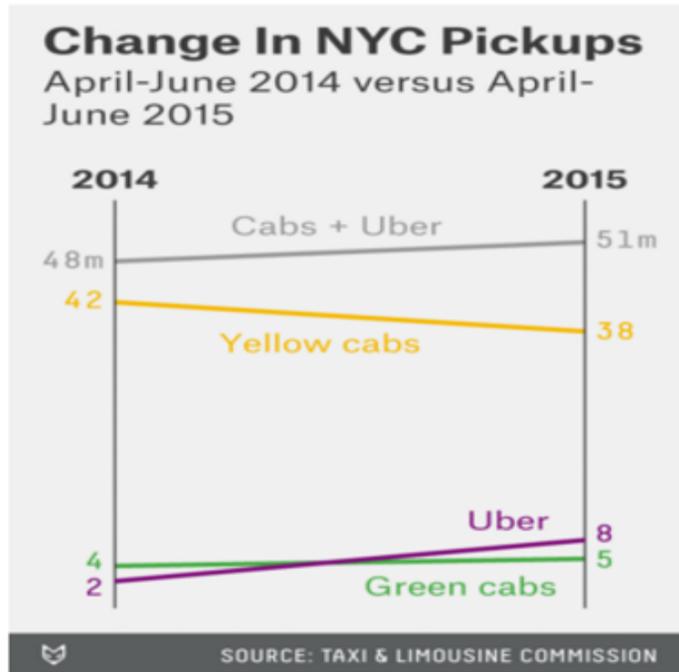
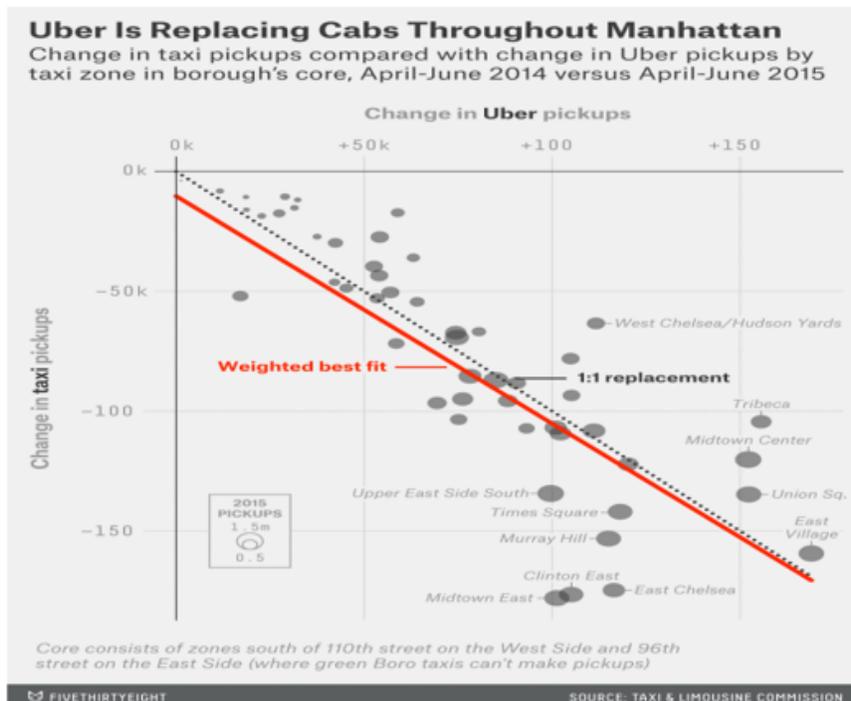


Figure 4 details the almost perfectly correlated relationship of decreasing taxicabs with increasing Uber rides in the city:

Figure 4



From 2013 – 2015, Taxi pickups have dropped from over 14 million to about 12 million per month.

Increased Accessibility to Affordable Transportation

As previously mentioned, much of Uber's growth in the New York City area has come on the edges of the city, in more underserved and economically disadvantaged areas. A study done by the Manhattan Institute found the following observations:

- *In 2014, only 6 percent of yellow-taxi pickups were outside Manhattan or outside city airports—compared with 22 percent for UberX.*
- *In 2014, of UberX rides in noncore Manhattan and non-airport zip codes in December, 60 percent were in zip codes with median household income below the noncore Manhattan median—up from 54 percent in January.*
- *In 2014, in the 29 noncore Manhattan and non-airport zip codes with one or more UberX pickups per household, neighborhoods served ranged from Greenpoint and Park Slope—where less than 5 percent of households are black—to Crown Heights and Harlem, where more than 75 percent of households are black.*

As this data indicates, those who previously had little access or means of transportation now have the access to a source of mobility that is affordable, which can have dramatic impacts in improving the lives of the people in these communities. Nearly 20% of African-American households, and 14% of Latino households live without a car. New York's population is over 50% black and Latino or Hispanic, which means that approximately 9,549,277 people in the more underserved boroughs of New York (Brooklyn, Queens, Bronx, Staten Island) do not live with a car and have been underserved by the taxicab industry. This coincides with the fact that an increasing number of jobs are moving away from the urban center of cities, into places that are less traversed by public transportation options. According to the Brookings Institute,

approximately 45% of jobs in the 98 largest metro areas are located more than 10 miles from the core of the city. Uber's arrival has helped to increase accessibility to affordable transportation options for people living a considerable distance from public transportation options.

Cost Comparison

Another factor to consider when comparing Uber with taxi is the cost for the consumer. Uber's cost structure is fairly similar to taxi and is as follows: a base rate, charge per mile, and charge per minute. However, the difference lies in the fact that taxi cabs charge riders per mile when moving and per minute when idling, i.e. when at a red light or stopped in traffic. Uber charges per mile and minute, regardless if the car is moving or idle. Also, this comparison becomes even trickier when factoring in Uber's surge pricing when demand for rides surpasses the number of drivers on the street. Also, taxi drivers typically receive tips whereas Uber drivers are far less likely to. Figure 5 outlines the cost for a 10-minute, 5-mile trip and a 20 minute, 10-mile trip for each car service.

Figure 5



Another item to consider when making this comparison comes via the cost structure.

Because Uber charges per mile and per minute constantly, whereas taxi charges per mile when moving and per minute when idle, Uber becomes the more affordable option as the speed increases over 20 miles per hour. However, when minutes idle time increases, then taxicab becomes the more affordable option.

There is also the opportunity cost via the time it takes to hail a taxi or Uber. According to the 2012 New York City Taxi and Limousine Commission Annual report, riders typically wait five to nine minutes for a ride. The average wait time for an Uber passenger in Manhattan is 2.25 minutes.

Uber passengers also have the added cost benefit of not paying for the maintenance, insurance, and other expenses associated with owning their own vehicle. For example, people who typically use alternative forms of transit than their own vehicle save approximately \$1,400 per year.

Increased Income for Drivers

In addition to helping the underserved gain access to transportation, Uber also employs many drivers in the New York City area. As previously mentioned, there are over 14,000 Uber drivers in New York City, all of which make some percentage of every ride they perform.

According to data published by the company, Uber drivers on average (nationwide) make \$6 more per hour than taxi drivers and chauffeurs. However, in New York City, on average, drivers make \$30.35 per hour, as opposed to just \$15.17 per hour of taxicab drivers and chauffeurs.

Figure 6

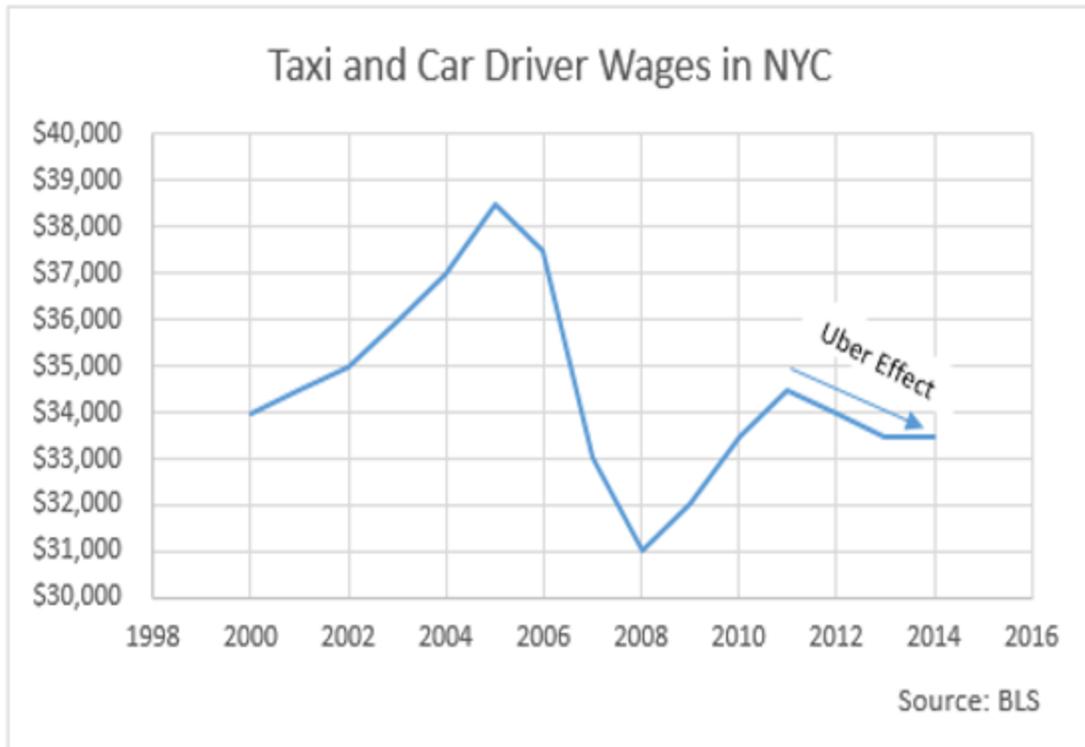
	Earnings Per Hour or Hourly Wages	
	Uber Driver-Partners (Earnings Per Hour)	OES Taxi Drivers and Chauffeurs (Hourly Wages)
BOS	\$19.06	\$12.31
CHI	\$16.20	\$11.87
DC	\$17.79	\$13.10
LA	\$16.98	\$11.73
NY	\$30.35	\$15.17
SF	\$23.52	\$13.72
BSG Survey Uber Market	\$19.04	\$12.90

Source: For Uber Driver-Partners: Uber. Data aggregated at the driver-month level. UberX and UberBLACK driver-partner that drove at least one hour a week during the month of October 2014. For OES Taxi Drivers and Chauffeurs: OES from May 2013. OES average for all areas is weighted by total drivers by city. This was the most recently available data.

The average income of Uber drivers in the New York City area is \$90,000 per year, prior to insurance, car maintenance, gas, and other operating expenses, which the driver must pay out of pocket. Conversely, the average taxi cab driver in the city makes about \$30,000 per year. Assuming that the majority of these roughly 14,000 drivers were formerly taxi cab drivers, that is an inflow of approximately \$60,000 per driver, or a gross total of over \$840 million in increased wages for these drivers. Figure 7 illustrates the decline in taxicab wages since the arrival of Uber.

Another interesting observation arises when the pay structure of each party is examined. For Uber, drivers make 80% of each fare, while the company makes 20%. For taxis, drivers must pay about one-third of gross income to the taxi company and get to keep the remainder. Due to this cost structure, we can project the revenue redistribution that is occurring from taxicab companies to Uber. Uber currently has approximately 21% of the total New York City ride-servicing market, which accounts for roughly \$400M in revenue, a large portion of which was, presumably, going to taxicabs, although much of Uber's revenue comes from servicing outer areas. Conservatively assuming that 70% of that is former taxi revenue, then Uber has taken \$280M in revenue from taxicab companies. Prior to Uber's arrival, drivers were taking home approximately 70% of that, or \$196M, but after Uber, drivers now keep 80% of that gross total, or \$224M. This amounts to redistribution from taxicab companies to Uber drivers of approximately \$28M.

Figure 7



Conclusion

The data outlined in this paper leads to several conclusions. First, and most notably, Uber has had a material impact on the taxicab industry. The price of taxicab medallions has declined precipitously since the arrival of Uber in the city, by a factor of approximately 30% in 3 years. After only 4 years, the company has more cars on the streets of the city than there are taxi cabs. This contrast is also outlined when comparing the valuations of taxi companies with that of Uber. Another steady, albeit less dramatic, decline can be seen in the wages for taxicab and car drivers in New York since the arrival of Uber.

A second conclusion that can be drawn from the data is that while Uber has provided an alternate transportation source for New York City passengers, it has not materially increased traffic congestion in the city. As opposed to simply adding massive amounts of traffic on to the streets of New York City, Uber has provided services to areas underserved by taxis. Moreover, Uber drivers have simply replaced many taxi cab drivers completely.

A third conclusion comes via the increased amount of capital flowing into the city via higher wages for drivers as well as the reduced cost for New York passengers. According to the data and after making some assumptions, it is estimated that over \$600 million in new wages have flown into the city on an annual basis. As illustrated earlier in the paper, Uber at times can prove to be more affordable than taxi, especially when considering the opportunity cost of wait time. Uber's arrival has also led to a significant amount of capital redistribution from taxicab companies back to drivers, a trend that is expected to continue as Uber becomes more entrenched and popular in the city.

It is evident that Uber has had a variety of impacts on the city of New York. The company has been a destructive force to the taxicab industry that has dominated this space for several decades, and has brought in new opportunities for employment for the passengers of New York. The arrival of Uber is a fascinating case study on the effects of revolutionary technology confronting traditional industry powerhouses.

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