

Title: Uber and the Persistence of Market Power

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Short Abstract

Entry into the taxi industry involves few risks, entrants have lower costs than the incumbents, sunk costs are small, and modern technology makes it easy to hail a cab using the Internet. Despite large-scale entry, and low barriers-to-entry, monopoly power persists. The persistence of monopoly power illustrates that new technologies may not quickly eviscerate monopoly power.

Uber and the Persistence of Market Power

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In Harry Trebing's classic article, "Regulation of an Industry: An Institutionalist Approach," he writes that policy recommendations for public utilities should "follow from the inherent features of the industry," and that an Institutionalist does not "accept a transition to pervasive competition as inevitable or probable."²

Throughout the last quarter of the twentieth century, Trebing was the intellectual leader of the State Public Utility Commissions. Novice regulators attended his two-week summer camp at Michigan State University, during which they learned the fundamental

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² Trebing (1987) at P. 1732.

steps in establishing the cost-of-service. Then they were exposed to some of the more complex topics in regulation, such as pricing structure and levels, demand forecasting, and energy conservation.

More advanced students attended his winter conference in Williamsburg. Unlike the Lansing summer course, this venue was open to utility employees. Year after year, the conference hosted presentations by leading academics, commissioners, and utility officials, who spoke about the current problems in public utility regulation. These first-rate presentations were annually published as a book by Michigan State.³

Trebing challenged neo-classical economics at both the summer course and the winter conference. Trebing's attitude regarding Ramsey Pricey was one example of his unwillingness to accept blindly economic models. While he understood the calculus which underlay Ramsey Pricing, he was skeptical that it could be applied successfully in all conditions. Trebing was particularly concerned about the blanket use of the inverse-elasticity rule, which stated that where marginal cost pricing would lead to a deficit, the largest mark-up above marginal cost should be placed on the products with the lowest elasticity of demand. Trebing was doubtful that the inverse-pricing rule would actually maximize welfare. He was concerned that some commissions might lack the ability to measure accurately the difference between marginal costs and the revenue requirement. He also questioned the efficacy of using a theory that had been designed to price individual goods, as a method for establishing the revenue requirement for a basket of goods, such as long-distance calling, private lines, and telephone handsets. He was especially

³ The published papers were widely cited. For example, according to Google Scholar, Robert Willig's paper, "The Theory of Network Pricing," published in Trebing's *Issues in Public Utility Regulation*, has been cited 250 times.

concerned that the inverse-elasticity rule could lead to an outcome in which monopoly services would be subsidizing competitive products.⁴

Furthermore, Trebing criticized Ramsey Pricing on ethical grounds. Ramsey pricing emerged from a model that implicitly assumes that the marginal utility of an additional dollar of income is the same for all individuals. More sophisticated models assumed that taking a dollar from a low-income household would have a different welfare impact than removing the same amount of money from a wealthy family.⁵ For this reason, Trebing observed, that when Ramsey Pricing takes the form of the inverse-elasticity rule, it results in a disproportionate recovery of costs from the customers who have the fewest options. Therefore, he concluded “the equity implications of such a practice are offensive no matter what the long-term efficiency gains.”⁶

Trebing questioned the pervasive feeling in economics that the market provided sufficient protection in most capital-intensive industries, and that there was, therefore, a limited need for regulation. Many economists, especially those affiliated with AT&T, such as William Baumol, were writing that there was no need for regulation in markets in which barriers-to-entry and sunk costs were low. They believed that any market in which an entrant could enter the market with a price below that of the incumbent could potentially capture the entire market, which would make government oversight unnecessary.⁷ They believed that where hit-and-run entry was feasible, prices above the competitive level

⁴ Trebing and William Melody (1968), pp. 9, 33, 218-9, 243.

⁵ Feldstein at pp 32-36.

⁶ Trebing (1987) P. 1731.

⁷ Baumol at pp 1-15.

would be unsustainable, and that, therefore, economic profits would by necessity “be zero or negative.”⁸

The theoretical proposition that the threat of competition drives the market price to the competitive level is logical, but the reality of the market adjustment process is glaringly missing from that viewpoint. As noted at the beginning of this article, Trebing’s professional focus was public utilities, and he was skeptical that “pervasive competition (w)as inevitable or probable” in utilities.⁹ Competition is more likely to emerge in industries where there are not substantial fixed costs, and public utilities are characterized by significant fixed costs. This lack of competition would make regulation seem advisable. In order to illustrate that the movement towards a competitive outcome can be a slow process, even in an industry without substantial fixed costs, this paper will examine an industry with trivial fixed costs. The remainder of this article will address the evolution of the pricing and economic profits in the taxi business, an industry that is not characterized by high-fixed costs. The recent large scale entry of transportation network companies (TNC), such as Uber, Lyft, and SideCar, into the hackney business provides an interesting narrative on the market adjustment process.¹⁰ While there are a number of entrants into this business, the remainder of this article will focus on the impact of the largest firm, Uber, because it has had the greatest effect on the incumbents.¹¹

⁸ Id., p. 4.

⁹ Trebing (1987) P. 1732.

¹⁰ A TNC uses an online application to connect passengers with drivers that use non-commercial vehicles.

¹¹ Hickman.

Taxi Industry

A taxi medallion authorizes a given automobile to operate as a taxi, within a given area. Historically, cities have sold a limited number of medallions, in order to restrict the number of taxis. This policy was adopted in order to reduce traffic congestion and to maximize the revenues obtained through the sale of medallions.

However, the supply of hackney vehicles increased radically with the entrance of Uber in 2011. By using a mobile app, Uber allows its customers to submit a trip request that is then transmitted to nearby Uber drivers. These drivers use their own cars and their fees vary with the level of demand relative to the level of supply. The price of an Uber ride is generally cheaper than a traditional taxi ride would be, although Uber prices are higher during the peak demand periods.¹²

Uber's lower prices have the potential to attract a substantial portion of the taxi business. Unlike the airline industry, in the hackney business there are no loyalty programs, such as frequent flyer programs, that would tie taxi customers to an incumbent provider. Also, in general, a taxi rider has no sustained relationship with any particular medallion driver. These conditions result in a potentially high inter-firm demand elasticity for transportation services.

Uber is able to provide its service at a lower price, in part, because its drivers are subject to less regulation. For example, yellow cab drivers are required to carry expensive commercial, rather than personal insurance, obtain a chauffeur's license, and their vehicles

¹² Sullivan.

must undergo more comprehensive safety inspections, while than Uber's drivers and cars are exempt from these regulations.¹³

One fundamental reason that Uber can provide service at a lower rate is because the price of a medallion ride has been regulated to exceed the economic cost-of-production. Cities set supra-competitive prices in order to increase the revenue derived from the sale of medallions. If barriers-to-entry are low, or non-existent, the price of service should drop to the economic cost-of-production.¹⁴ This should, in turn, eliminate the economic rent that is earned by medallion holders.

An Uber driver not only has lower costs than a medallion cab, but the Uber driver also, most likely, incurs fewer sunk costs. The sunk costs are low because becoming an Uber driver involves little training and the automobile can be used for other purposes. This absence of significant sunk costs makes the hackney market more susceptible to hit-and-run entry. Furthermore, since the incumbent's prices are regulated yellow cabs cannot easily lower their prices to compete with the/in response to the entrant's prices.

The combination of the low sunk costs of entry, a larger number of potential entrants, an incumbent's prices being sticky downward, and the entrant's lower production costs, would suggest that entry, as well as the threat of entry, should eliminate the economic rent earned by the incumbents. This should mean that economic rents would disappear, not so much from the reduction in the retail price of a yellow cab ride, as from

¹³ Daus. Starting January 2016, the yellow fleet will begin converting to wheel chair accessible vehicles.

¹⁴ Incumbent firms have a strategic advantage if the entrant must incur costs that are not part of the forward-looking opportunity costs of the incumbent. These additional costs create a barrier to entry because the incumbent firm's opportunity costs are lower than the entrants are and, therefore, he will be able to underprice his potential rival. Baumol, Panzar, and Willig, at Page 282. In the hackney vehicle market, the incumbent's costs are higher than the entrants.

the reduction in the amount of business which drives up average production costs and reduces total revenue.

However, economic rent has not been eliminated, as is illustrated by the following chart. Medallion Financial Corp. (TAXI) is a publicly traded firm that buys and sells taxi medallions in several large cities. The firm rents its medallions to Yellow cab drivers. The price of the stock reflects the discounted value of the future stream of earnings from use of the medallions.

INSERT FIGURE ONE

The stock price of TAXI has decreased significantly since the entry of Uber and other TNCs.¹⁵ The decline reflects the observed declines in the medallion price in different areas of the country. In New York City, the price fell from \$1.3m to approximately \$750,00 between April 2014 and October 2015. In Chicago, the price declined from \$375,000 to \$240,000 between 2014 and 2015, while during the same time period in Boston the price declined from \$666,000 to \$400,000.¹⁶

It is striking how the peak price for the medallions occurred in these three cities three years after Uber entered the market. The persistence of non-zero economic profits is inconsistent with the proposition that potential and actual entry quickly eliminates economic rents.

Uber has a large number of drivers in New York City, a number that exceeds the quantity of Yellow cab medallions.¹⁷ The explosion in the number of ride providers was a

¹⁵ CB Insights.

¹⁶ Sullivan and HVM Capital.

¹⁷ Myers, No more than 20% of the 20,448 Uber drives were active during any hour, and about half of those cars were operating in Manhattan below 59th Street.

key factor in the 12% decline in revenue per yellow cab drivers between June 2013 and March 2015.¹⁸ Nevertheless, Yellow cabs still account for 90% of the rides in New York City.¹⁹

There are other supply-side factors that contributed to the decline in the value of a medallion.²⁰ In NYC, for example, concurrent with TNC's ramping up their operations, the City authorized the deployment of green all-borough taxis, and the addition of more Yellow cabs.²¹ Furthermore, between 2012 and 2013 the number of black car liveries increased from 7,700 to 23,700. During the same time period, the number of licensed chauffer drivers increased from 108,000 to 135,000.²²

The reduction in the value of the medallion may also reflect that the risk associated with the investment has increased and, all else being equal, this has caused the discounted value of the future stream of earnings to decline.

Despite all of these value-reducing influences, the value of the medallion has remained positive, because yellow cab drivers have continued to be able to earn a wage that significantly exceeds the \$8.00 minimum wage.²³ Hickman calculated that, in June

¹⁸ Hickman. In Boston, according to Sullivan, revenue per cab increased slightly in 2013 and then declined by seven percent in 2014.

¹⁹ Meyers.

²⁰ The financial markets may also have overvalued the medallions in 2014. Some writers contend that a portion of the decline in the price of the medallion is due to inflated pre-2015 prices. See, for example, Isidore.

²¹ Hickman. As mentioned by Fanelli and Mays, In 2013 the City of New York auctioned off 350 new taxi medallions for \$359 million. Currently there are 13,605 medallion cab in NYC.

²² Joshi. Uber drivers do not require a chauffer license.

²³ See, <http://www.labor.ny.gov/workerprotection/laborstandards/workprot/minwage.shtm>. Accessed December 13, 2015.

2013, the effective wage for a medallion driver was \$18.81, and that it had declined to \$14.23 by March 2015.²⁴

The Gig Economy and the Demise of the Medallion Taxi

There is a widely held belief that transportation network companies, like Uber, will quickly kill the medallion yellow taxi business.²⁵ At this juncture, these forecasts are reminiscent of Mark Twain's comment that reports of his death were "greatly exaggerated." Yellow cab rides and revenues are down, but not significantly.

The evolution of the local transportation market illustrates how a close substitute may not be able to eviscerate an incumbent due to what appears to be a small difference in the quality of the product. Uber proponents have declared that it is more convenient for riders to arrange pickup using a smartphone than it is to hail a taxi. Uber and other TNC's cannot legally accept street hails. This regulatory constraint has left the incumbents with market power. Furthermore, the yellow and other livery cabs are able to serve a portion of the community that is not reached by Internet based services, individuals who do not own smartphones.

Three Lessons for Policy Makers

The preservation of the medallion's value is explained largely by the regulatory prohibition that bans TNCs from picking up street fares. While, on the surface, it would appear that hailing a ride on the street or using a smartphone to arrange pick up would be

²⁴ Hickman, Hickman's calculations take into account both direct costs, as well as the cost of financing the acquisition of the medallion.

Hills, Hills points out that little is known about the hourly earnings of Uber drivers. Presumably, due to lower regulatory costs, the Uber drivers earnings are higher. The opportunity to earn a wage that exceeds the minimum wage suggests that drivers should continue to enter the market, further driving down the rent earned on the medallion.

²⁵ See, for example, Rohin Dhar's article "The Tyranny of the Taxi Medallions."

near-perfect substitutes, it turns out that the prohibition against TNCs accepting street fares has created significant market power. This illustrates a common business practice—using the regulatory process to inhibit competition and to sustain supra-competitive prices.

Second, proponents of the deregulation of utilities have argued that the threat-of-entry would drive prices down to a competitive level. We see in the local transportation market that the threat of entry is not a sufficient condition for obtaining competitive rates. While the theory of contestable markets has suggested that entrants would capture the entire market through prices that are epsilon lower than the incumbents' prices, the taxi industry illustrates that incumbents do not necessarily reduce their output when faced with rivalry. As a result, the entrants, rather than capturing the entire market, may be left serving the residual portion of the demand curve.

Finally, property taxes are set based on the value of the property. Property value is based on cost, discounted cash flow, or the sale of comparable assets. Cost is often measured by estimating the cost of a similar property that employs state-of-the-art technology.²⁶ Modeling the cost of using state-of-the-art technology often results in a lower cost estimate than would be obtained by using currently employed technology. The recent history of the taxi industry illustrates how markets frequently do not quickly embrace new technologies and therefore a valuation based on new technology may not properly reflect the worth of the property.

It is conceivable that, in the future, the Internet-based call service could eliminate the rents earned by medallion owners. Still, while it seems that there is only a trivial difference

²⁶ American Society of Appraisers, at p. 39. During the first part of the twentieth century utility regulators relied on these type of replacement cost studies to determine the rate-base.

in the convenience associated with hailing a cab, versus arranging for service through an app., the persistence of monopoly power suggests that estimating value by modeling state-of-the-art technology could result in underestimating the economic value of an asset.

That the adjustment process to a new equilibrium has not been properly anticipated is not surprising, in light of the way in which technical change is modeled in economics textbooks. More efficient technology is modeled as a shifting outward of the supply curve to a new equilibrium, in which price has fallen and output has increased. However, microeconomics textbooks do not address the path from one equilibrium to another, or the time involved in this transition.

Conclusion

The field of transportation is apropos for testing the impact of hit-and-run entry on a market's prices. The proponents of the theory of contestable markets used the airline industry as a clear example of how the threat of entry could constrain market power. Their contention was that, since planes are capital on wings, an airline could move its business to any market in which price exceeds the economic cost-of-production. This threat of entry would drive price down to the cost-of-production. However, evidence has emerged, since the deregulation of the airline industry that the threat of entry did not drive airline ticket prices to a level that was equal to the cost-of-production.²⁷ Nor has the entry of an Internet-based hackney service eliminated the market power of the medallion-taxi business. Monopoly power has been sustained because of the toxic, but apparently innocuous rule,

²⁷ Michael Levine, *Yale Journal on Regulation*, "Airline Competition in Deregulated Markets: Theory, Firm Strategy, and Public Policy", 1987, Pages 393-494, at note 163.

that TNC's cannot pick-up a passenger that is hailing a cab. It turns out that this market is not so susceptible to hit-and-run entry. This market story illustrates that in order to fully understand the price and profit trajectory of an industry, we must, as suggested by Harry Trebing, master the "inherent features of the industry."

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Stock Price TAXI vs. S&P 500

