

GOVERNMENT OF THE DISTRICT OF COLUMBIA
OFFICE OF THE CHIEF FINANCIAL OFFICER



Office of Revenue Analysis
Briefing Note

May 31, 2011

Taxicab Medallions—A review of experiences in other cities
By Anna Barlett and Yesim Yilmaz*

Summary of the Findings on the Effects of a Taxi Medallion System

Introduction of a medallion system institutes entry barriers to the taxicab market by restricting the supply of taxicabs. There is broad consensus among economists that such restrictions allow a small group of private citizens—those who are among the first round of recipients of medallions—to earn windfall profits at the expense of consumers and taxicab drivers who don't receive medallions in the first round. Evidence from other jurisdictions suggests that limiting entry into a taxicab market leads to a decline in overall service: consumers pay higher fares, wait longer for an available taxicab, face more service refusals, and receive less service than they would otherwise. Service to the outlying areas of the city becomes poorer, and in order to meet the demand, an alternative off-the-books market may develop with poor safety, security, and insurance standards. This system also discourages many from entering the taxicab industry since drivers who lease taxicab medallions earn very little after paying lease dues. High lease amounts for medallions wipe out any above-normal earnings for drivers who lease medallions, and deprive them of the chance of accumulating long term wealth through ownership.

The literature on the taxicab medallions suggests that gains from such restrictions are one-time: Future taxicab owners have to pay very high prices to obtain a medallion, which virtually eliminates any possible above-market profits. Since all the revenue in the restricted taxicab market, even after years of demographic and economic growth, remain concentrated in a limited number of hands, medallion owners fiercely resist any possible threat that may challenge their advantage. So the market becomes less responsive to consumer needs in the long run.

The table presented on the next page summarizes the experience across various jurisdictions with medallions systems. The common theme across these cities is that the medallions are typically distributed at an amount much below their actual value. The high price tag of the medallions should not be interpreted as real value added. These values capture the degree to which the markets are restricted by these medallions—this is the implicit price consumers pay in the form of poor service.

It is also important to note that whatever revenues might be generated from medallions, these are offset by future losses in income tax revenue. There are two reasons for this. First, owners or lessors of medallions will reduce their profits by the amount of the capitalized value of the medallions, which now becomes an operating cost. Second, some taxicab activity will move underground, effectively eliminating any chance of taxing the income generated in these black markets.

Following the table is additional information on taxicab medallions presented in a Q&A format.

* For further information, contact Yesim Yilmaz at yyilmaz@dc.gov or (202) 741-8695

Appendix 1 – Summary of Experience in other Cities

City	New York	Boston	Chicago	San Francisco	Miami-Dade County, FL
Year Started	1937	1930	1934	1978	1981 (started with limited number of licenses)
Number of medallions	13,200	1,825	6,800	1,431	2,040
Initial number of medallions and changes	13,566 (1937); 11,787 (1940s through 1996)	1,575 (unchanged until 1980)	4,108 (1934); reduced to 3,000 in 1937	912 + 467 (from those permits issued prior to 1978)	1,504
Original fee/auction price per medallion	\$10 in 1937. When 260 medallions were auctioned for the first time after 60 years, they were sold from \$175,000 to \$200,000.		\$10	Waiting list application fee: \$354; Medallion fee: \$577; Annual renewal fee: \$498	
Number of certified drivers	44,000	6,000	10,500	7,000	4,000
Number and date of additional medallion issues/auctions	400 (1996); 300 (per year in 2004 and 2005); 308 (2006) (254 of these medallions were required to go to alternative fuel and hybrid vehicles, and 54 to handicapped-accessible cars); 150 (2007); 300 (2009)	40 for handicapped accessible vehicles (between 1930 and 1992); 260 (since 1992)	An increase of up to a maximum 4,600 (1960); additional 1,500 (1988); Additional 650 by 2002	Less than 100 new additions since 1978	323 (1988), distributed by lottery; 25 (2009) for wheelchair accessible vehicles and underserved areas
Value of medallions at specified dates	\$766,000 (2009); \$600,000 (2006); \$393,000 (2005); \$237,000 (1998); \$140,000 (1980); \$21,000 (1961)	\$380,000 (2008); \$285,000 (2006); \$95,000 (1995); \$23,000 (1967)	\$140,000 (2008); \$100,000 (2006); \$90,000 (1995); \$28,000 (1991); \$20,000 (1988); \$15,000 (1969)	\$180,000 to \$250,000 (2006); limited permits were sold up to \$16,000 in 1950s	\$52,000 to \$80,000 (1997); \$26,300 (1992)
Other notes	The medallions are issued only for cruising and cabstand cabs. The 37,000	Boston auctioned 225 new medallions between 1999 and 2001 at approximately		Since 1978 medallions are considered city property and are issued to drivers for	The cap on the number of licenses is 1 taxicab per 1,000 residents.

City	New York	Boston	Chicago	San Francisco	Miami-Dade County, FL
	<p>radio-dispatched cabs are excluded.</p> <p>60% of the medallions are issued to fleets that could rent the licenses to drivers, and 40% to individuals, to guarantee the survival of owner-drivers.</p> <p>In 2005, 45 percent of taxicabs were leased to drivers on a long term basis, 26 percent were leased on a shift basis, and 29 percent were owner driven.</p> <p>In a sealed bid auction of 150 additional independent medallions in 2007, the commission's minimum bid was \$189,000 compared to the market value of an independent medallion of \$426,000 (corporate medallions are more expensive). The highest bid was \$384,999, and the lowest accepted bid was \$277,777.</p>	<p>\$180,000 each. Proceeds from the public auction were used to finance the city's new convention center.</p>		<p>fees.</p> <p>Individuals who want a medallion put their name on a waiting list (one may need to wait 15 years or longer). Only individual drivers (not taxicab companies) can receive medallions, and each individual can receive only one medallion. Sale or transfer of medallions is prohibited.</p> <p>There is a driving requirement of 800 hours per year for all medallion holders; if it cannot be fulfilled, the medallion must be returned to the city.</p> <p>Because of the leasing income that is forgone when a driver returns his medallion to the city, medallion holders have a financial incentive to keep working as long as possible. This incentive for medallion owners to continue to drive even when they are unable or unwilling to meet the driving requirement as they get older, arguably poses a safety risk to passengers, pedestrians and other drivers.</p>	<p>The limited number of license system was converted into a medallion system in 1998.</p>

Taxicab Medallions Q&A

1. What is a taxi medallion?

A taxi medallion is a metal plaque placed on the outside of a taxicab to present physical evidence that the vehicle is licensed to be used as a taxicab. The medallion is not assigned to a driver. The owner of the medallion is entitled to receive the revenue stream generated by the medallion, and can hire a driver to operate a taxicab, or lease the right to use the medallion to a driver.

2. What is a taxi medallion system?

A taxi medallion system is one in which every taxicab must have a taxi medallion in order to operate as a taxi. The number of taxi medallions in the system and the way they are distributed and sold are determined by the jurisdiction.

A medallion system institutes barriers for taxicab ownership by limiting the number of taxicabs that could service a certain market. As a result of the artificially restricted supply, medallion holders earn significant economic rents. They are also protected from competition.

3. Who benefits from a taxi medallion system?

Those who receive medallions in the initial round of distribution are the greatest beneficiaries. Any gains in the value of the medallions, as may arise from an increase in demand due to market growth, accrue almost exclusively to the first owners. Even if they choose to exit the market and sell the medallion, the owners still benefit because the gains are usually capitalized into the medallion's sale price.²

Those who determine the allocation of medallions may also benefit from such a system if the system is open to corruption. Seekers of medallions may be willing to use part or all of their assumed future economic rents (through bribes, contributions and other types of transfers) to increase the probability or ensure that they receive a medallion during the initial distribution.¹

Lastly, lenders may also benefit. For instance, in New York, taxicab drivers are expected to make a down payment equal to 20 percent of the medallion's value³, and then take out a 15-year loan to cover the remainder of the cost.ⁱⁱ Most financing institutions view these loans as relatively safe since the medallions themselves serve as collateral. If a driver is unable to make the payments, the bank would repossess the medallion and sell it on the open market. The largest medallion financing company in NY states that taxi medallions turn over on average every 29 months, bringing them a steady flow of new customers who need loans.ⁱⁱⁱ However, it is also stated that

² In the face of restricted supply, if a city has growing demand for taxi services, as is the case in most large cities, medallion values may increase in the range of 10-18% per year, and thus may provide some gain to subsequent owners. However, since this value increase is originally anticipated, most if not all is already incorporated into the first sales price, and most of the revenue opportunities are captured by the first owner. The only unanticipated value increase may come due to unexpected changes in technology or legislation that affect supply or the demand for taxicabs and alternative means of transportation. An example would be a toll for vehicles entering downtown area, as in the case of London, and thus a restriction on the number of vehicles operating in the city, and a greater demand for taxis.

³ Medallion prices reflect net revenues derived from taxi operations, and they change fundamentally based on changes in the demand for taxicab service relative to supply. However, medallion prices may also be affected by a variety of other factors, including falling interest rates and longer amortization schedules for loans used to finance medallion purchases.

the volume of medallion sales in NY has fallen sharply over the years: in the 1980s transfer volumes exceeded 600 annually for both individual and corporate medallions; in the 1990s, transfers dropped to an average of 250 for both class of medallions; and in 2005 they declined to 199 for individual and 64 for corporate medallion sales.^{iv}

4. What about those who purchase medallions later?

Those who are able to purchase an existing medallion, either by having sufficient funds or procuring a loan, generally do not earn above normal profits. Since current and expected gains are incorporated into the sales price of a medallion, those who purchase an existing medallion earn only normal profits. The price competition for existing medallions wipes away any economic rents.

Given the price, most late entrants finance medallions through loans, which can be very expensive. A recent survey study conducted among taxicab drivers in Chicago indicates medallion-owner operators who are paying on medallion, vehicle, or both loans (about 75 percent of Chicago medallion-owner taxicab drivers) earn an average gross income of \$50,675 by working an average of 13 hours per shift, and 24 days per month. **After accounting for relevant expenses, the average earnings of medallion-owner operators who are still making medallion loan payments fall to \$0.56 per hour.**^v In New York, the expected payment on a 15-year medallion loan taken in 2004 was \$1,500, after a typical down payment of \$50,000.^{vi} The payment on a medallion mortgage is known to be the biggest business expense of a taxicab in a medallion system, more than the car itself or gasoline. **It is claimed that the interest alone can run more than \$100 per day.**^{vii}

5. Who loses from a taxi medallion system?

The main losers, in addition to the general public who must make do with a smaller taxicab market, are previous taxi owner-drivers who were not given a medallion and cannot afford to buy one, would-be entrepreneurs that would have otherwise entered the market if the medallion system had not been in place (many of whom would likely be low-skilled, low income and/or minorities).^{viii}

When taxicab ownership is limited to a smaller number than the existing number of taxi drivers in a market, many of those previous taxi owner-drivers who cannot afford a medallion either leave the taxicab industry altogether, or work as drivers—as employees for medallion owners or as independent contractors who lease from medallion owners.

Those who lease often end up working a great deal more than they would have under the old system in order to pay the high leasing fees.⁴ In San Francisco and New York, for example, drivers start out of the garage everyday minus \$100, the daily rent they have to pay to the medallion owner for the right to drive the cab for one 10- to 15-hour shift.^{ix} As a result, they work more hours and barely make the minimum wage. In Chicago, those who lease a medallion weekly, work an average of 13.26 hours per shift, 25 days per month, and including both tips and fares, earn on average \$4.81 per hour. This is compared to the Illinois minimum wage of \$7.75 per hour.^x

⁴ Under a lease agreement, a driver pays the taxi owner a flat amount for each shift or each week. The driver then has exclusive use of the taxicab for that period and the owner is guaranteed the lease fee, regardless of how much time the driver actually works or how much money the driver makes.

Leasing may also hurt a driver's financial wellbeing in several other ways:⁵ drivers could lose most, if not all fringe benefits and suffer from an additional instability due to lease prices that are subject to increase at the whim of the lessor.^{xi}

Taxi cab customers and the general public also lose. By restricting supply and creating high barriers to entry, there is an unmet demand for taxi service, longer wait time for taxis, more non-responses to phone requests, less clean vehicles, poorer quality of service, and higher fares. Taxicab drivers would refuse service to certain types of customers (for example, based on race) or to certain parts of the city.

6. Do medallions affect taxicab fares?

Studies comparing taxicab fares in limited entry and free entry or deregulated taxi markets conclude that effective control of entry is likely to increase the fares.^{xiii} **The fares in limited entry markets were up to 25 percent above free market rates because of restricted entry and price controls.**⁶

7. Why were taxi medallion systems initially introduced?

The first medallions were issued in the 1930s in the US. The argument was that excessive, "ruinous competition" caused by the excess supply of taxis during the Great Depression decreased efficiency, led to fare wars and run-down taxicabs, and lack of insurance and financial responsibility among drivers harmed the public.^{xiii} Therefore, limiting entry was seen as a response to benefit the public.

While large taxi companies welcomed regulation in hopes of limiting the number of part-time drivers and increasing fares and their profits, streetcar operators and bus companies also sought to restrict the entry of taxis in the market in most cities to lessen their competition.^{xiv} Pressure for restrictions on the taxi industry came from the American Transit Association, public transit firms, the National Association of Taxicab Owners (which passed a resolution favoring entry and minimum fare controls), and the established taxi fleets^{xv}.

⁵ In New York in 2005, 45 percent of taxicabs were leased to drivers on a long term basis, 26 percent were leased on a shift basis, and 29 percent were owner driven. (B. Schaller, *The New York City Taxicab Fact Book*, 2006)

⁶ J. Kramer and W. Mellor, *Opening Boston's Taxicab Market*, Pioneer Institute for Public Policy Research, Institute for Justice for the Pioneer Institute, 1999: "A comparison conducted in 1995 of Boston's taxicab fares with three deregulated cities shows that Boston's fares average 11 percent higher (Telephone surveys conducted August 18, 1995 with the Indianapolis mayor's office, the Cincinnati Public Vehicles Department, and the Colorado Public Utilities Commission). A study published in 1982 of Boston's taxicab industry as it was in 1970 estimated that Boston's medallion system had kept taxi fares as much as 25 percent above market rates because of its restricted entry and price controls (Kennedy School of Government Case Study, "Boston's Taxicab Problems, 1970," 1982, p. 3). A 1974 study by the United States Department of Transportation found that regulations restricting entry of new cabs and preventing discounting of fares cost consumers millions (nearly \$800 million if annually adjusted for inflation to 1992 dollars) and estimated that removal of these restrictions would have created 38,000 new jobs in the taxi industry (Original figures from A. Webster, E. Weiner, and J. Wells, "The Role of the Taxicab in Urban Transportation," U.S. Department of Transportation, December 1974)."

In 1937, New York City concluded that the taxicab industry could no longer exist without regulation and limitation on entry because of certain “public hazards,” such as undue and needless traffic congestion, long hours and inadequate income for taxicab drivers, and excessive competition due to the large number of needless taxicabs. Interestingly enough, the legislation initiating the medallions maintained the ratio between individual and fleet (company) ownership in order to safeguard the public against the ultimate possibility of monopolistic control.^{xvi} However, the actual result was the creation of, if not a monopoly, a very concentrated ownership.

Economists who study market restrictions point out that such regulations operate imperfectly, leading to undesirable outcomes such as higher fares, degraded service, and fewer cabs and longer wait times for customers. .^{xvii} The costs of these outcomes are not easily observed, since it is hard to compare an existing market to what it would have been without these restrictions.

8. How about costs imposed on other parties? Is that a reason for implementing a medallion system?

Since taxicabs and their users do not pay for the congestion and pollution costs they impose (a market failure), it is argued that the number of taxi rides produced and the amount of cruising under congested conditions would be inefficiently high in the absence of government intervention,^{xviii} and limiting the numbers of taxicabs would allow the consumers and drivers to collectively internalize these external costs.

It is not clear whether the restriction on the number of taxicabs would make a significant contribution towards eliminating this externality, since taxicabs are a small portion of the sources of pollution and congestion.^{xix, xx} Moreover, taxicab restrictions may not even bring a decline in congestion if they create an inefficient increase in the number of private automobiles and accompanying parking problems. Furthermore, restrictions on the number of taxicabs reduce the use of taxis in parts of the city and at times of day for which congestion is not a serious problem, and thus may not yield any congestion-reduction benefits.

Price regulation—keeping fares at relatively high levels—could act like a tax on air pollution and traffic congestion. A more efficient approach may be to reduce the amount of pollution per vehicle mile or hour through emission standards or charges.^{xxi} And it may be more sensible to apply these standards to all vehicles, and not just one category of vehicles, i.e. taxicabs.

9. Can a medallion system help improve service in the outlying areas of large cities?

Empirical studies on the impact of medallion systems in improving service to outlying neighborhoods are limited. However, even the proponents of entry restrictions state that when regulatory controls on entry try to eliminate the geographical imbalances in taxicab service, this outcome is rarely achieved. Entry restrictions reduce taxicab availability, particularly in outlying areas.^{xxii} One study finds that shortage of medallion cabs in the outlying areas and minority neighborhoods of New York City have resulted in livery cars (cars for hire, for which the service is arranged in advance usually by phone) illegally cruising.^{xxiii} In 1972, when the number of medallions was restricted to 11,787, the estimated number of such illegal taxicabs in New York City was 15,000.^{xxiv}

10. What other rationales are used in justifying the need for a medallion system?

Improved quality of service

Proponents of taxicab medallions have claimed that high trip densities provided by entry restrictions make it feasible for taxicabs to achieve higher quality standards, such as newer cars, higher levels of auto insurance coverage, and extensive driver training.^{xxv} Finally, some have even suggested that entry restrictions can encourage taxicabs to compete for customers by offering higher quality service in terms of more comfortable taxicabs—similar to airline service prior to deregulation.

Economists typically argue that regulations that increase the profitability of taxicab service would not provide firms with an incentive to increase the quality of service, and therefore cannot be a substitute for direct quality standards, such as requirements to equip taxis with airbags, seatbelts, and adequate bumpers.^{xxvi} Also, cruising cabs or cabs using first-in-first-out taxicab stands do not compete on the basis of quality since consumers cannot easily evaluate the quality based on the brief time they have to examine the cab between hailing and entering it. A study of cities in England reports that restrictions on the quantity of taxi service did not noticeably increase quality of service as measured by passenger complaints but only led to operation of higher-value vehicles.^{xxvii} Furthermore, the benefits from a uniform quality of taxicabs are not clear: it might be efficient to have different qualities of taxicab service available at different fares.^{xxviii}

Reduced cost of enforcing regulations

Another argument used to support entry barriers that enable existing taxicabs to earn above-normal returns, particularly in the case of transferable medallions, is that they might reduce the cost of enforcing regulations^{xxix} or increase compliance with other regulations that have an efficiency justification. This is because firms have a very large incentive to comply with all regulations in order to avoid losing their medallion, which allows them to earn above-normal profits. Regulators might also have a more manageable workload when they implement quality regulations for taxicabs across a smaller market.

However, others reject this argument because license suspension and revocation do not seem to be used in practice to prevent violations of taxi ordinances.^{xxx}

11. Can a medallion policy be easily altered or ended?

A taxi medallion system is nearly impossible to end even if it proves to be providing unfairly high gains to a limited number of original medallion owners at the expense of riders, ex-taxicab owners who were left out of the medallion market, and small-scale business owners who would otherwise be future taxicab owners. The original owners would undoubtedly fight to retain their economic rents. Those who purchased medallions from the original owners would also fight since ending the program would prohibit them from realizing the economic returns they paid for and they would suffer a huge economic loss. There would also be strong opposition by the taxicab owners to any increases in the number of medallions, as it is estimated that a 1 percent increase in the number of medallions reduces revenue per taxicab by 0.53 percent^{xxxi}.

12. What has been New York City's experience with the medallion system?

In NYC, originally 13,566 medallions were issued in 1937 and offered to all taxi operators at a nominal fee of \$10. In July 2009, they were selling for an average price of \$766,000.^{xxxii} Since the original allotment, there have been only two changes in the number of medallions. During the Second World War, the number was reduced to 11,787 as a result of holders returning their medallions as they went to fight. This number was kept constant until 1996, at which time only 400 additional medallions were issued, after long debates that started in 1987.

In NYC, neither the fares nor the number of medallions issued was determined on the basis of what was needed to achieve economic efficiency in city transport. The changes in rates that have taken place from 1937 to the present were made not for regulating cab occupancy and availability. The shortage of cabs that started in 1963 could have been avoided if either prices had been raised or the number of medallions had been increased. The number of medallions was not increased, however, because of resistance from the industry and because a moral obligation was felt to protect the value of existing medallions.^{xxxiii}

13. What type of regulation should the government implement?

The answer depends on the problem the regulation is trying to address. A report by the Federal Trade Commission maintains any particular government regulation is justified depending on its success in increasing the efficiency of resource allocation (i.e., creating benefits that exceed its costs), and concludes that restrictions on the total number of firms and vehicles and on minimum fares waste resources and impose a disproportionate burden on low income people. However, potential market failures provide a credible theoretical rationale for some other types of regulations, including fare ceilings and regulations dealing with vehicle safety and liability insurance.^{xxxiv}

In addition, some of the arguments against entry barriers rest on the principle that government should not protect for-profit taxi companies from competition to the detriment of the riding public as well as would-be entrepreneurs,^{xxxv} and the proper role for the government should be to ensure public safety by regulating driver qualifications, including background checks, vehicle safety inspections, and inspection for adequate liability insurance coverage.^{xxxvi}

14. What kind of legal aspects regarding property should be considered?

Under a medallion system, a medallion takes on aspects of private property. For instance, it can be used as collateral in obtaining a loan to actually purchase the medallion. Additionally, an owner can choose to lease it, while still retaining ownership rights. As a result, taxicab owners, investors, or drivers may lobby for a Fifth Amendment compensable property interest⁷ in a taxicab license.

Based on previous cases, a major criterion in considering a taxicab license as a compensable property interest is the question of who holds final control over the use of the taxicab license in cases involving foreclosure or revocation of medallions. If after a taxicab license expires, is revoked, or is suspended, it returns to the regulating government agency, it is not compensable private property interest. The government agency has the final control and discretion over the use of the license, whether to reissue or dispose of it. If the license returns to the public market for purchase by a qualified third party, then it is private property, similar to real or personal property.⁸

One study argues that even though a taxicab license under a medallion system is intangible property, a regulating government agency may still retain the power to change licensing criteria or regulations pertaining to subsequent transfers of taxicab licenses, and such changes could

⁷ The Takings Clause of the Fifth Amendment of the Constitution protects private property from appropriation by the government without just compensation.

⁸ In New York, for example, where a taxicab medallion is intangible property, when the City revokes a license, the owner must divest himself of any interest in the license; however, the City never regains possession of the license.

affect a lender's willingness to lend money for taxicab licenses. However, if compensatory property interests are recognized, government might be reluctant to make such changes because of the monetary impact that could result.^{»xxxvii}

15. Finally, are there too many cabs in the District of Columbia?

The answer depends on how you believe the ideal level of cabs is determined. Under a market-based system, this would be determined by the supply and demand for taxicabs. In the District, there are over 3000 people on a waiting list for a taxicab driver's license. Thus, there is still a strong demand, which provides some evidence that there must be returns or profits to be garnered in the market compared to the opportunities outside of the taxicab industry.

ⁱ A. Gifford, Book Review: Poor Policy: How Government Harms the Poor, by D. Eric Schansberg (Boulder, CO, Westview Press, 1996), Public Choice, 1999, p. 154.

An example of bribery is that New York first attempted to limit the number of taxicabs in 1932 "*under the sponsorship of Mayor Jimmy Walker, but when Walker was forced to resign when it was discovered that he had been bribed by one of the taxi companies, the attempt failed.*" (J. E. Kramer & W. H. Mellor, Opening Boston's Taxicab Market, Pioneer Institute for Public Policy Research, Institute for Justice for the Pioneer Institute, 1999, excerpt from G. Gilbert & R. Samuels, The Taxicab: An Urban Transportation Survivor, The University of North Carolina Press, 1982, p. 70.)

ⁱⁱ D. Lam, K. Leung, et al, University of California, Berkeley, The Richard & Rhoda Goldman School of Public Policy Report, The San Francisco Taxicab Industry: An Equity Analysis, 2006.

ⁱⁱⁱ R. Julavits, Medallion Financial Comes to Crossroads, American Banker, Sept. 3, 2002, p.1.

^{iv} B. Schaller, the New York City Taxicab Fact Book, 2006, p. 40.

^v R. Bruno, Driven Into Poverty: A Comprehensive Study of the Chicago Taxicab Industry, The University of Illinois, School of Labor and Employment Relations, 2009, p. 11.

^{vi} B. Schaller, The New York City Taxicab Fact Book, 2006, p. 39; M. Luo, On Auction: Tin Medallions and Hundreds of Dreams, New York Times, March 3, 2004, p. B. 2.

^{vii} E. Lotterman, Taxi Limits Hurt Poor, Knight Ridder Tribune Business News, July 6, 2006, p. 1.

^{viii} M. Frankena and P. Pautler, An Economic Analysis of Taxicab Regulation, Federal Trade Commission Bureau of Economics Staff Report, 1984, pp. 7, 104; J. Kramer & W. Mellor, 1999.

^{ix} Letters to the Editor, Providing More Cab Service for San Francisco Riders, San Francisco Chronicle, July 31, 1998. Leasing a medallion can reach \$700 a week in Boston (R. Thompson, In Pursuit of Fare Gains, More Cabbies Defy Rules, Globe, May 25, 2008, p. 1). Daily lease of a New York taxicab medallion was also \$100 in 2004 (M. Luo, On Auction: To Cabbies, Piece of Tin is a Golden Opportunity, The New York Times, April 13, 2004, p. A. 1.)

^x R. Bruno, 2009, p. 7.

^{xi} B. Schaller and G. Gilbert, Villain or Bogeyman? New York's Taxi Medallion System, Transportation Quarterly, 1996, pp. 91-101.

^{xii} J. Foerster and G. Gilbert, Taxicab Deregulation: Economic Consequences and Regulatory Choices, Transportation, 1979, p. 380.

^{xiii} P. Dempsey, Taxi Industry Regulation, Deregulation, and Reregulation: The Paradox of Market Failure, Transportation Law Journal, 1996, p. 77.

^{xiv} R. Cervero, 1985, p. 224. Stigler (1971) claims as a rule, regulation is acquired by the industry and is designed and operated primarily for its benefit, and that every industry or occupation that has enough political power to utilize the state will seek to control entry. (G. Stigler, The Theory of Economic Regulation, The Bell Journal of Economics and Management Science, 1971, pp. 3-21)

^{xv} M. Frankena and P. Pautler, An Economic Analysis of Taxicab Regulation, Federal Trade Commission Bureau of Economics Staff Report, 1984, p. 75.

^{xvi} P. Verkuil, The Economic Regulation of taxicabs, Rutgers Law Review, 1970, p. 689.

-
- ^{xvii} R. Coffman and C. Shreiber, 1977, p. 293.
- ^{xviii} C. Shreiber, 1975, pp. 274-275.
- ^{xix} M. Frankena & P. Pautler, 1984, pp. 38-41.
- ^{xx} J. Foerster and G. Gilbert, *Taxicab Deregulation: Economic Consequences and Regulatory Choices*, Transportation, 1979, p. 381.
- ^{xxi} M. Frankena & P. Pautler, 1984, pp. 42-43. Additionally, price regulation could be used to internalize externalities caused by air pollution and traffic congestion, and that there is no compelling economic efficiency rationale for entry controls. For additional information, see J. Foerster and G. Gilbert, *Taxicab Deregulation: Economic Consequences and Regulatory Choices*, Transportation, 1979, p. 381.
- ^{xxii} B. Schaller, 2007, pp. 501-502.
- ^{xxiii} C. Shreiber, 1975, pp. 277-279.
- ^{xxiv} C. Shreiber, 1975, p. 277.
- ^{xxv} B. Schaller, *Entry Controls in Taxi Regulation: Implications of US and Canadian Experience for Taxi Regulation and Deregulation*, Transport Policy, 2007, p. 500.
- ^{xxvi} M. Frankena & P. Pautler, 1984, pp. 71-72.
- ^{xxvii} M. Frankena & P. Pautler, 1984, p. 90.
- ^{xxviii} M. Frankena & P. Pautler, 1984, p. 67.
- ^{xxix} E. Gallick & D. Sisk, 1987, p. 124; Cairns & Liston-Heyes, 1996, pp. 9-11.
- ^{xxx} M. Frankena & P. Pautler, 1984, pp. 5-6, 63-65.
- ^{xxxi} D. Flores-Guri, *An Economic Analysis of Regulated Taxicab Markets*, *Review of Industrial Organization*, 2003, p. 264. Orr (1969) also shows mathematically how an expansion in the medallion supply depresses the individual operator's profits (D. Orr, *The "Taxicab Problem": A Proposed Solution*, *The Journal of Political Economy*, 1969, pp. 141-147).
- ^{xxxii} T. McGraw, *NYC Taxi Medallions worth Hailing; Value Rises to an Average \$766,000*, USA Today, Money, August 6, 2009 Thursday. p. 3B.
- ^{xxxiii} C. Shreiber, 1975, pp. 278-279.
- ^{xxxiv} M. Frankena & P. Pautler, 1984, pp. 1, 37-39. The authors claim that some regulations might conceivably be justified on efficiency grounds because of distortions created by other taxi regulations. Fare regulations that underprice certain categories of trips might provide a "second best" rationale for prohibitions on service refusal, requirements to offer service at certain times or places, or minimum levels on the numbers of cabs operated by firms. However, surcharges for unprofitable services would be more efficient than such service requirements. (p. 2)
- ^{xxxv} J. Kramer & W. Mellor, 1999.
- ^{xxxvi} R. Cervero, 1985, p. 226; J. E. Kramer & W. H. Mellor, 1999.
- ^{xxxvii} S. Oxenhandler, 2000, *Transportation Law Journal*, p. 158.