Do Governments Impede Transportation Innovation?

Robert Krol

MERCATUS CENTER
George Mason University

3434 Washington Blvd., 4th Floor, Arlington, Virginia 22201
www.mercatus.org

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ABSTRACT

Government barriers often slow the adoption of new technologies. The barriers are more likely to be enacted when the performance advantage of the new technology is moderate and the costs of lobbying are low. When automobile-based jitney services threatened city railroads in the early part of the 20th century, incumbents with a financial stake successfully lobbied city officials to stop the new transportation option. The same forces are at work today as local ride-sharing options threaten the profitability of incumbent firms. Rather than imposing burdensome new regulations on ride-sharing companies, governments should reduce regulations on taxis, allowing them to adopt new technologies and compete with the firms entering the industry. Finally, as the driverless car technology advances, government officials should apply a light regulatory hand. Given the complexity of that technology, projecting the potential regulatory problems is difficult. A heavy regulatory approach would likely hamper its evolution, thereby harming consumers.

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Recent transportation innovation has been driven by new technologies. Wireless communication has enabled Uber and Lyft to compete directly with traditional taxicab companies, thus providing more flexible, cheaper, and more accessible local transportation. GPS and other complementary technologies have led Google and automobile manufacturers to develop driverless cars. Such driverless cars can be expected to increase mobility, enhance the efficient use of roads, reduce accidents, and change the way products are shipped.

In light of those welfare-improving transportation developments, companies that have invested in less profitable existing technologies are likely to resist the changes. Such companies may lobby government officials to limit or at least slow the adoption of those transportation innovations. However, it is harder for governments to block innovation when the performance advantage of the new technology is large and provides significant benefits to consumers. Furthermore, high lobbying costs can hamper attempts to block new innovations.

For example, when jitneys threatened city railroads in the early part of the 20th century, the railroads, which had large financial stakes in the existing structure, successfully lobbied city officials to impose regulations on the jitneys and ultimately eliminated the challenge to the existing mode of transportation. The same political regulatory process is at work today. Traditional taxi companies are losing business to the new ride-sharing companies. In response, taxi firms use the legal system and government regulators to hamper the new transportation entrepreneurs, thus limiting competition. Those actions benefit incumbent businesses at the expense of consumers.

As another threat to taxis, driverless cars have not yet faced similar political pressures. So far, state and federal regulators have simply been discussing rules for driverless cars in anticipation of potential safety, privacy, and liabilities issues.

The best course for government is to step aside and to allow the entrepreneurial, competitive process to play itself out. Rather than imposing traditional regulations on ride-share technology companies, governments should reform the regulation of traditional taxi companies so that they have an incentive to adopt new technologies. The resulting competition between old and new companies would offer consumers a far better transportation system.[1]

In the case of driverless cars, government officials should apply a light regulatory hand to allow the competitive innovation process to play out with only limited interference. An unfettered innovation process would result in a dramatically different and more efficient transportation system in the 21st century.[2]

This paper begins with an exploration of the role that governments play in slowing innovation and economic growth. The historical jitney experience illustrates the consequences to consumers of interference in innovation. The next section examines how government regulation can impede or support the new ride-sharing technology and driverless cars. The paper ends with a brief discussion of policy options.

ENTRY REGULATION AND INNOVATION

Productivity growth is an important driver of economic progress. Such growth can result from technological change and improvements in efficiency. Standards of living, which improve with economic progress, vary widely across nations. Differences in property rights, the rule of law, and the general quality of a country's government play key roles in explaining differences in living standards. Government institutions and policies can either facilitate or hinder the creation of an environment that is conducive to innovation, greater efficiency, and economic progress for the overall economy or for a particular sector such as transportation.[3]

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1. Christopher Koopman, Matthew Mitchell, and Adam Thierer, "The Sharing Economy and Consumer Protection Regulation: The Case for Policy Change" (Mercatus Research, Mercatus Center at George Mason University, Arlington, VA, December 2014).
2. See Adam Thierer and Ryan Hagemann, "Removing Roadblocks to Intelligent Vehicles and Driverless Cars" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, September 2014); James M. Anderson et al., "Autonomous Vehicle Technology: How to Best Realize Its Social Benefits" (Brief, RAND Corporation, Santa Monica, CA, 2014); and Daniel J. Fagnant and Kara M. Kockelman, "Preparing a Nation for Autonomous Vehicles: Opportunities, Barriers, and Policy Recommendations" (Eno Center for Transportation, Washington, DC, 2013).
3. Peter J. Boettke and Christopher J. Coyne, "Entrepreneurship and Development: Cause or Consequence?," *Advances in Austrian Economics* 6 (2003): 67–88; Hernando de Soto, *The Other Path* (New York: Basic Books, 1989); Daron Acemoglu and James A. Robinson, *Why Nations Fail: The Origins of Power, Prosperity, and Poverty* (New York: Crown Business, 2012).

Historical experience and empirical studies show that governments pick winners and losers on the basis of potential political gains. The usual justification for government regulatory action is that the market fails to allocate resources appropriately. Some governments choose to restrict entry ostensibly to ensure product quality and to protect consumers. However, a study of 85 countries by economist Simeon Djankov and his colleagues finds entry restrictions to be associated with greater corruption, a larger underground economy, and lower product quality. Consumers do not gain. Instead, the entry regulations benefit politicians, bureaucrats, and existing firms.[4]

In a similar vein, economist Harold L. Cole and his coauthors try to determine why Latin America's standard of living is so much lower than that of the United States. The authors test whether the income gap results from differences in human capital or from inefficient production. They find that the income gap is not explained by human capital differences but is caused by international and domestic entry barriers that result in inefficient production and slow productivity growth. They estimate total entry costs in Latin America to be equal to 80 percent of per capita GDP compared with only 1.7 percent per capita GDP in the United States.[5]

Governments often impose policies that restrict entry, thus slowing innovation and productivity growth, which are important engines of economic progress. Owners of incumbent businesses establish relationships with key elected officials and use the relationships to slow the adoption of new technologies.[6]

Economists Diego Comin and Bart Hobijn have investigated the factors that influence a government's ability and willingness to slow the adoption of new technologies. They examine the speed of adoption of 20 technologies in 23 Organisation for Economic Co-operation and Development (OECD) countries over the past 200 years. Comin and Hobijn point to two factors that determine the speed at which a new technology is adopted. The first is the size of the benefit or performance advantage of the new technology compared with the old technology. The larger the performance advantage of the new technology, the

4. Simeon Djankov et al., "The Regulation of Entry," *Quarterly Journal of Economics* 117, no. 1 (2002): 1–37.
5. Harold L. Cole et al., "Latin America in the Rear View Mirror," *Journal of Monetary Economics* 52, no. 1 (2005): 69–107.
6. George J. Stigler, "The Theory of Economic Regulation," *Bell Journal of Economics and Management Science* 2, no. 1 (1971): 3–21; Sam Peltzman, "Toward a More General Theory of Regulation," *Journal of Law and Economics* 19, no. 2 (1976): 211–40; Gary S. Becker, "A Theory of Competition among Pressure Groups for Political Influence," *Quarterly Journal of Economics* 98, no. 3 (1983): 371–400; Ernesto Dal Bó, "Regulatory Capture: A Review," *Oxford Review of Economic Policy* 22, no. 2 (2006): 203–25.

greater are the political costs of slowing adoption. The second is the cost of lobbying. Where lobbying costs are low, owners of incumbent technologies can more easily slow the adoption of new technologies.[7]

In some cases the performance differences between technologies are large. Railroads were 10 times faster than the horse and wagon. Steamships were considerably faster than sailing ships. In contrast, trucks were not that much faster than trains. Later, the flexibility of trucks increased their advantage, especially after the road system was improved.

"A more competitive election process makes elected officials more accountable to voters."

The cost of lobbying legislators is higher in governments where a strong executive branch and judiciary are likely to push back in response to actions taken by legislators who act on the basis of pressures from special interests. The threat of that kind of a response raises the cost of legislative action and requires a greater lobbying effort to slow adoption of new technologies. An effective executive branch and judiciary also are able to detect and take action against bribes, further raising lobbying costs. Finally, a more competitive election process makes elected officials more accountable to voters.[8] For such officials, supporting policies that slow adoption can be politically costly.

On the basis of their examination, Comin and Hobijn suggest that small technology performance differences and low lobbying costs slow the adoption of new technology.[9] The reverse would also be true. A combination of a large technology performance gap and high lobbying costs would tend to speed up the adoption of new technology. Thus, for example, when the gains to consumers from adopting a new technology are large, the political cost (measured in terms of lost votes) of blocking the new technology is also high and will outweigh the political gains (votes and campaign contributions from special interests) associated with blocking the technology. In that case, elected officials are

7. Diego Comin and Bart Hobijn, "Lobbies and Technology Diffusion," *Review of Economics and Statistics* 91, no. 2 (2009): 229–44.
8. Ibid.
9. Ibid.

less likely to pass laws that significantly slow the adoption of new technology. The costs of ignoring special interests would need to be very low for elected officials to act against the interests of old allies.

Comin and Hobijn's study suggests that when the advantages of a new technology (a new transportation mode or service) are low, especially given the effectiveness of lobbying groups in the United States, the nation's political process is likely to try to slow the adoption of new (transportation) technologies.[10] That attempt is especially likely in the earlier stages of a new technology. Changing the way individuals travel can have significant initial transaction costs, thus reducing the net gain to the consumer. Once people become familiar with a new technology and the purchase price declines, the net benefit from adoption should increase, thereby reducing the incentive for elected officials to slow the adoption. Therefore, the process of blocking technology politically is more likely to be effective in the earlier stages of adoption.

TRANSPORTATION EXAMPLES

The reaction of governments to the establishment of jitneys in cities a century ago offers insight into the actions of elected officials today. Ride-sharing and driverless vehicles are innovations at risk of intervention from governments in the current century.

Jitneys in the Early 20th Century

At the start of the 20th century, electric street railways were the primary mode of urban transportation.[11] By 1906, the city railroads accounted for approximately 90 percent of city trips. Franchises for the rail systems resulted in monopoly providers in cities. In return for allowing the monopoly franchise, state and local officials regulated the fares that each railroad could charge. Fares were set at five cents per trip with free transfers. Under that pricing system, passengers who took short trips subsidized long-distance passengers.

The development of a more affordable automobile, the Ford Model T, provided a possible alternative transportation mode in cities. In 1914, some car owners began competing with the railroads for short-distance customers. The cars providing that transportation service were called jitneys. Jitneys charged

10. Ibid.

11. The information on the jitney story comes from Ross D. Eckert and George W. Hilton, "The Jitneys," *Journal of Law and Economics* 15, no. 2 (1972): 293–325.

the same five-cent fare. After starting in Los Angeles, jitney service quickly expanded to other cities.

Jitneys traveled faster and provided a higher-quality service by using more flexible routes. They responded to demand conditions. Their customers were generally younger and often were businessmen, whose time was valuable. The jitneys often delivered packages during off-peak hours. Within the first year of competition, railroad revenues declined, resulting in layoffs and the elimination of certain routes.

By 1915, the railroads sought protection from city governments. City governments were willing to go along because each monopoly railroad provided road maintenance services, funded street lighting, and paid taxes to the city. Local politicians feared they would have trouble extracting those subsidies from jitneys. In addition, high levels of entry into and exit from the jitney service business hampered the ability of jitney drivers to organize so they could exert political pressure to offset the railroad's influence over elected officials.

The railroads, unions, and government officials initiated a concerted effort to discredit jitneys. The alliance claimed that jitneys increased accidents and crime. Ultimately, that effort resulted in anti-jitney legislation. By the end of 1915, 125 of 175 cities had passed laws that protected city railroads from competition.

The new legislation required jitneys to be licensed and to provide the same services as railroads. The regulation was designed to reduce the jitneys' comparative advantage in providing flexible, fast, and specialized services. City governments required owners to purchase liability bonds and to pay taxes greater than those paid by the railroads. The governments regulated routes and schedules, thereby reducing the flexibility of jitneys. They excluded jitneys from the most profitable, densely populated downtown areas of the cities.[12] By 1917, the jitney industry was effectively gone.

Rather than allowing the jitneys to provide a superior service for short city trips and adjusting the railroad rate fares to more accurately reflect the cost of long trips, cities imposed regulations that eliminated the advantages of jitneys. Moreover, the governments passed up the opportunity to impose fees to reflect the road maintenance costs associated with jitneys. Instead, cities ended up with inflexible linear railroad transportation systems that became unprofitable over time because of their inability to compete with cheaper and

12. Steven C. Salop and David T. Scheffman, "Raising Rivals' Costs," *American Economic Review* 73, no. 2 (1983): 267–71.

more flexible cars. Railroad unprofitability eventually led cities to lobby for federal aid to keep the systems operating.

The case of jitneys illustrates the model in which a low initial benefit to consumers and a low cost of lobbying leads to restrictions on an emerging industry. The superior performance of jitneys benefited only a subset of residents: businessmen and younger people living downtown. People living outside the central city did not benefit as much. Given the monopoly position of the railroads and the subsidies they provided the cities, effective lobbying was low cost. As a result, elected city officials decided to block the jitneys rather than to allow them to compete with the railroads.

Ride-Sharing and Driverless Cars

A similar story is starting to play out in cities today. Using wireless communication technologies, new companies such as Uber, Lyft, and Sidecar are able to provide cheaper, better-quality, and more convenient local transportation services. Uber has grown rapidly over the past four years and in 2014 provided local transportation services in 230 cities in 50 countries.[13] That growth includes Saudi Arabia, where the prime beneficiaries of the new local transportation service are women, who are banned from driving in the country.[14] Uber is now worth more than $40 billion and is the most valuable technology-based start-up in the United States.[15]

Those new companies compete directly with city taxicab companies. Taxicab companies in Los Angeles and San Francisco have complained about the dramatic drop in their business over the past few years. Although stories of bad experiences with the ride-sharing companies have been a source of newspaper headlines, the dramatic growth in those companies in the United States and abroad suggests that they provide quality service at a competitive price.[16]

Much like the railroads in the jitney case, taxicab companies are using the regulatory process to block or handicap their new competition. Virginia banned Uber and Lyft from providing their services in 2014. However, there

13. Christopher Mims, "Uber and a Fraught New Era for Tech," *Wall Street Journal*, November 25, 2014, B1.
14. Rory Jones and Ahmed Al Omran, "Uber's Most Avid Users: Saudi Women," *Wall Street Journal,* October 18, 2014, B1.
15. Douglas MacMillan, Sam Schechner, and Lisa Fleisher, "Investors Push Uber's Valuation Past $40 Billion," *Wall Street Journal*, December 5, 2014, A1.
16. Paresh Dave, "Complaints Mount against Ride-Hailing Service Uber," *Los Angeles Times*, November 20, 2014, B5; Matthew Feeney, "Is Ridesharing Safe?" (Policy Analysis no. 767, Cato Institute, Washington, DC, 2015).

"Approximately 93 percent of traffic accidents are the result of human error."

was a strong negative consumer reaction to the ban. As a result, a temporary agreement allowed the companies to operate so long as they followed all state regulations.[17] The legislature passed and the governor correctly signed a bill in early 2015 making the agreement permanent.[18] The California Public Utilities Commission has passed rules that allow those companies to operate legally, but they are subject to new regulations.[19] To protect the profits they earn, taxicab companies have a strong incentive to promote government regulation of the new entrants. For example, in New York City, where entry is severely restricted, taxicab licenses have been worth more than $1 million.[20]

The argument for taxicab regulation is the need to protect consumers, especially out-of-town customers, from being overcharged for a ride.[21] A visitor who is new to the city is unlikely to know the fares and the best route to get to a particular destination. Uber has figured out a way around that problem. Customers rate drivers on the basis of their service, and those ratings are available to potential customers. Wireless communication technology enables the out-of-town customer to ascertain driver quality. Drivers with low quality ratings are dropped from the pool.

Companies that provide higher-quality services can be expected to grow at the expense of low-quality companies, including traditional taxicab companies. Entrepreneurial competition can be expected to force surviving taxi companies and new companies to provide higher-quality service in order to prosper. Consumers of local transportation services have the potential to experience an improvement

17. Kathryn Watson, "VA to Uber, Lyft: You Can Do Business for Now If You Follow the Rules," VirginiaWatchdog.org, August 7, 2014, http://watchdog.org/163765/uber-lyft-virginia/.
18. Luz Lazo, "Uber and Lyft Are Now Legal in Virginia," *Washington Post,* February 18, 2015, http://wpo.st/2ntL0.
19. Maura Dolan and Laura J. Nelson, "Uber, Others May Face Action," *Los Angeles Times*, September 27, 2014, AA1.
20. See Watson, "VA to Uber, Lyft."
21. Edward C. Gallick and David E. Sisk, "A Reconsideration of Taxi Regulation," *Journal of Law, Economics, and Organization* 3, no. 1 (1987): 117–28.

in economic welfare as a result of that transportation innovation—unless the innovation is blocked by the government.[22]

As customers become familiar with the new companies, assuming the new companies demonstrate superior service, then blocking the innovation will become more difficult. Unfortunately, taxicab companies have a long-established relationship with elected city officials; lobbying costs are likely to be low. That low cost increases the chance that taxi companies, with significant profits at stake, will be able to slow transportation innovation.

The development of driverless cars or intelligent vehicles represents a second transportation innovation that will significantly change how people and goods move through the economy. Although many of today's cars have already incorporated some of the technology, such as lane-change warnings and automatic stopping features, fully automated vehicles may become commercially available in the next 10 to 15 years. The widespread adoption of those vehicles will take time. Once the vehicles become a significant share of the automobile stock, they will generate large benefits because they will reduce crashes, potentially reduce congestion, and alter travel behavior.[23]

The benefits from improved safety can be quite significant.[24] The economic cost of traffic accidents in the United States is $300 billion annually. Approximately 93 percent of traffic accidents are the result of human error. Driverless cars would reduce the number of accidents by eliminating the human error component of crashes. In addition, driverless intelligent cars can improve lane usage, choose optimal routes to avoid traffic problems, and anticipate braking and speeding up on highways. Those abilities can improve fuel economy, reduce air pollution, and decrease congestion. The new vehicles could increase options for the young and elderly, groups previously unable to travel independently using a traditional vehicle. Further, if the new technology enables trucks to drive in tight convoys, highway usage could improve, thus effectively increasing the capacity of the existing highway stock. The driverless smart vehicle has the potential to significantly improve the efficiency of the highway system and improve consumer welfare.

That technology can be disruptive to existing industries. Some mining and farming operations are already using the new technology.[25] Widespread adoption would lead to a dramatic reduction in the demand for drivers and farm workers. In the case of long-haul trucking, unions and railroads are likely

22. See Mims, "Uber and a Fraught New Era for Tech."
23. See Thierer and Hagemann, "Removing Roadblocks to Intelligent Vehicles and Driverless Cars."
24. See Fagnant and Kockelman, "Preparing the Nation for Autonomous Vehicles."
25. Ibid.

to lobby against such changes. The decline in accidents (and traffic violations in general) suggests consumers would need fewer automobile body repair specialists, so additional opposition to driverless cars may come from the autobody industry and perhaps other groups with an interest in the status quo.[26]

The speed at which the price of self-driving vehicles—or the cost of modifying existing automobiles and trucks—declines will ultimately determine how quickly driverless cars can penetrate the market. Manufacturers will have to show that the new vehicles can operate safely (better than human-operated vehicles). Finally, given the disruptive nature of the new technology, groups that expect to be harmed economically will likely lobby the government to impose entry restrictions to slow adoption. As with other innovations, the effectiveness of lobbying efforts will depend on the size of the performance advantage of driverless cars and the cost of lobbying.

Ride-sharing and driverless smart cars are already a reality. As adoption of the new technology advances, concerns intensify about whether government regulations will limit the potential benefits or preclude entry entirely. Given the uncertainty surrounding the survival of any new technology, the government should, as much as possible, let the competitive entrepreneurial process move forward.[27]

POLICY CONCLUSIONS

Ride-sharing and driverless cars will improve productivity in the transportation sector and in the overall economy by using new technology to increase the efficient use of resources, thereby raising the standard of living. Governments can implement policies that either facilitate or hinder innovation. Unfortunately, governments often do the latter. Traditionally, the willingness of elected officials to block a new technology often depends on the performance advantage of the new technology compared with the old technology and on the cost of lobbying for the status quo.

The appropriate approach for dealing with increasing competition by ride-sharing firms is to deregulate the taxicab industry. Rather than restricting entry and new technologies in the taxicab industry, the companies should be allowed to flourish. Existing taxicab companies would move quickly to improve service by adopting the same technologies used by the ride-sharing

26. Theo Francis, "The Driverless Car, Officially, Is a Risk," *Wall Street Journal,* March 3, 2015.
27. See Thierer and Hageman, "Removing Roadblocks to Intelligent Vehicles and Driverless Cars"; Alistair Barr, "Google's Self-Driving Cars Hit Regulatory Traffic," *Wall Street Journal*, March 18, 2015.

companies.[28] In that environment, competition can be expected to improve the quality of service and even lower the cost of local transportation services.

The driverless car is still in the research and development stage. It remains unclear how that technology will develop. Given the uncertainty, state and local governments should refrain from imposing regulations that might ultimately hinder efficient innovation. Policymakers need to focus on facilitating the resolution of liability and privacy issues.[29] The National Highway Traffic Safety Administration might want to provide guidelines for state regulators or to facilitate a discussion of the best way that governments can enhance the potential of the driverless car. Given the potential for driverless cars to improve the efficiency of highways, all levels of government should rethink—and perhaps freeze—construction of fixed-rail transit systems.[30]

Ride-sharing and driverless cars represent new technologies that will dramatically transform the transportation system in the 21st century. They offer exciting potential to raise standards of living and consumer welfare. The key is to avoid government intervention that would block innovation.

28. Laura J. Nelson, "L.A. Seeks to Keep Taxis Competitive with Uber, Lyft," *Los Angeles Times*, December 23, 2014.
29. See Thierer and Hagemann, "Removing Roadblocks to Intelligent Vehicles and Driverless Cars."
30. Randal O'Toole, "Policy Implications of Autonomous Vehicles" (Policy Analysis no. 758, Cato Institute, Washington, DC, 2014).

ABOUT THE AUTHOR

Robert Krol is a professor of economics at California State University, Northridge. He received his PhD in economics from Southern Illinois University, Carbondale, in 1982. His recent research has focused on transportation infrastructure issues, the forecasting bias of government agencies, and the impact of economic policy uncertainty on exchange rate volatility. His research has been published in leading economics journals, including the *Review of Economics and Statistics*, the *Journal of Econometrics*, the *Journal of Urban Economics*, *Regional Science and Urban Economics*, *Public Finance Review*, the *International Journal of Forecasting*, and the *Cato Journal*. He has also published opinion articles in the *Los Angeles Times*, the *Washington Times*, the *Cleveland Plain Dealer*, *Investor's Business Daily*, *The Hill*, *Real Clear Markets*, and *National Review Online*.

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