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WHY ROAD PRICING MATTERS

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INTRODUCTION

Road pricing — the use of fees or tolls applied to road usage — is the most promising tool we have to improve the productivity of America’s aging surface transportation infrastructure. But while transportation experts generally are enthusiastic about road pricing, voters are not.

There are exceptions. Successful toll roads have made believers out of at least some skeptical drivers, and voters in regions with particularly high congestion levels have at times been open to road pricing proposals. But political resistance to road pricing has been a huge obstacle to its spread.

That has to change. The potential benefits of road pricing to reduce congestion and air pollution, to boost economic growth and to improve the quality of infrastructure, are so great that we can ill afford to pass them up. Building support for road pricing requires changing how the public thinks about infrastructure. More broadly, it will require revamping the institutions that govern U.S. infrastructure.

In 2009, the National Surface Transportation Infrastructure Commission estimated the federal government would have

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to devote \$59 billion per year to highway and transportation spending to maintain U.S. infrastructure at current levels, and \$78 billion per year (in 2008 dollars) to meet the design standards set by transportation planners.¹ Drawing on data from the National Cooperative Highway Research Program, economists Matthew Kahn of UCLA and David Levinson of the University of Minnesota estimate maintaining and operating existing roads at current levels of performance will require \$145 billion per year (in 2007 dollars), an amount that also takes into account spending at the state level.²

The costs of actually upgrading U.S. infrastructure to reduce current congestion levels are expected to be higher still. The 2012 Texas Transportation Institute Urban Mobility Report, published by the Texas Transportation Institute at Texas A&M University, finds total congestion costs for urban areas reached approximately \$121 billion in lost productivity in 2011, a reflection of, among other things, 5.5 billion hours in travel delays. Congestion costs peaked in 2005, at \$128 billion in lost productivity, an amount that likely will be surpassed as the U.S. economy recovers in the coming years.³

INFRASTRUCTURE AS A ROAD TO GROWTH

“Gridlock and Growth,” a 2009 report from the Reason Foundation, assessed the role of traffic congestion in shaping economic outcomes across a sample of eight metropolitan regions, and found that improving access to key destinations like major malls, universities and large suburbs led to substantial increases in Gross Regional Product, ranging from 6

1. National Surface Transportation Infrastructure Finance Commission. “Paying Our Way: A New Framework for Transportation Finance,” Feb. 26, 2009, 24.

2. Kahn, Matthew & David Levinson. “Fix It First, Expand It Second, Reward It Third: A New Strategy for America’s Highways,” The Hamilton Project Discussion Paper 2011-03, The Brookings Institute. March 2011, 5.

3. David Schrank, et al, “TTI’s 2012 URBAN MOBILITY REPORT Powered by INRIX Traffic Data,” Texas A&M Transportation Institute, December 2012, 11.

to 30 percent.⁴ Reducing congestion is a relatively straightforward way for U.S. policymakers to facilitate economic growth, and to improve the quality of life of large numbers of Americans.

This economic opportunity should not be understated. Just as investments in information technology spurred organizational innovation that yielded large productivity gains in the 1990s and 2000s, the coming decades are likely to see new breakthroughs in what Marco Annunziata and Peter Evans of General Electric have called “the industrial Internet.” As the cost of instrumentation declines, sensors are being embedded in a wider array of goods and components, which in turn will create useful data that can be leveraged to improve the performance of machines, fleets and networks. Vehicle automation, pioneered by Google’s self-driving car, is the paradigmatic example of an innovation that flows from the wider use of sensors and sophisticated software analytics. To make the best use of these emerging technologies, however, it is essential that we make wise investments in infrastructure.⁵

The chief barrier to increased spending on infrastructure is that public sector budgets are constrained. The Highway Trust Fund, the chief mechanism through which the federal government finances infrastructure, has been buffeted by technological change. Approximately 90 percent of net revenues into the trust fund are from excise taxes on gasoline and diesel fuel, yet the advent of more fuel-efficient vehicles and electric vehicles has contributed to the erosion of this revenue source over time.⁶ State governments also have felt the impact of this development.

Road pricing, broadly understood, offers a way out of this dilemma. The Congressional Budget Office has estimated that road pricing would greatly reduce the cost of maintaining and improving existing infrastructure.⁷ Road usage fees can generate the revenue needed to maintain, improve and expand infrastructure, while at the same time making existing infrastructure more productive.

Voters often object to road pricing on grounds that roads have already been paid for through motor fuel taxes and other levies. This paradigm neglects the fact that the majority of

costs associated with roads are associated with their operation, maintenance and rehabilitation over time, rather than their initial construction.⁸

Robert W. Poole Jr. of the Reason Foundation, a leading advocate of road pricing, has called for a new paradigm for understanding the road network.⁹ Drawing on the work of transportation economist Gabriel Roth, he argues that highway systems ought to be understood as akin to telecommunications systems, as both are utilities that allow users to access interconnected networks developed and operated by a wide array of providers. Just as telecom providers use market prices to balance supply and demand, and to direct investment in accordance with consumer demand, highways systems would better serve the public by doing the same.

Below we describe a number of different road-pricing concepts, and institutional innovations that might encourage their adoption.

HOT NETWORKS

In “Gaining Public Support for Freeway Congestion Pricing,” Poole argues that, for congestion pricing to succeed, it is important to pursue an incremental, bottom-up approach.¹⁰ In 2008, the National Cooperative Highway Research Program compiled public opinion data on tolls and road pricing.¹¹ One consistent finding was that voters are far more likely to resent the idea of paying tolls when they do not appear to add value to the roadway. This is despite the fact that, even in the absence of new capacity, variable tolls can greatly reduce congestion. When tolls are tied to new capacity, however, resistance tends to be less intense.

“Dynamic pricing” lanes, in which vehicles are charged tolls that vary with congestion levels, are already in use in the Atlanta, Los Angeles and Washington, D.C. metropolitan areas, and new dynamic pricing lanes are planned for Baltimore, Dallas, El Paso and Seattle.¹² Many dynamic pricing lanes also serve high-occupancy lanes open to carpoolers free of charge, and these lanes are referred to as high-occupancy toll (HOT) lanes.

4. David Hartgen & Gregory Fields. “Gridlock and Growth: The Effect of Traffic Congestion on Regional Economic Performance,” The Reason Foundation, August 2009, 4.

5. Peter C. Evans and Marco Annunziata, “Industrial Internet: Pushing the Boundaries of Minds and Machines,” GE Report, Nov. 26, 2012.

6. Committee on Transportation and Infrastructure, “Hearing on How the Financial Status of the Highway Trust Fund Impacts Surface Transportation Programs,” July 23, 2013. <http://transportation.house.gov/hearing/how-financial-status-highway-trust-fund-impacts-surface-transportation-programs>

7. Congressional Budget Office, “Using Pricing to Reduce Road Congestion,” A CBO Study, March 2009.

8. Mark Scribner, Mark, “Libertarians (And Fiscal Conservatives) Should Oppose Road Socialism,” Competitive Enterprise Institute, April 2, 2013.

9. Robert W. Poole, Jr., “Commercializing Highways: A “Road-Utility” Paradigm for the 21st Century,” reason.org, The Reason Foundation, Aug. 1, 2002.

10. Robert W. Poole, Jr., “Gaining Support for Freeway Congestion Pricing,” Policy Study, Reason Foundation, April 2012, 7.

11. National Cooperative Highway Research Program Synthesis 377, “Compilation of Public Opinion Data on Tolls and Road Pricing,” Transportation Research Board (2008)

12. Copeland, Larry and Paul Overberg, “Controversial HOT lanes spread nationally,” *USA Today*, December 4, 2012.

Rather than uniformly apply tolls across all lanes on a given road, Poole recommends creating a multi-tiered system built around the concept of dynamic pricing. Regular lanes would charge modest tolls only during peak periods. Premium lanes would guarantee an uncongested level of service at all times and would charge demand-based tolls for access. New tolled truckways would be built in areas with particularly heavy truck through-traffic.¹³

At first, only a small number of new lanes would be built, on which demand-based tolls would be imposed. If these roads proved popular, the number of premium lanes would gradually expand and, in some cases, they would replace existing regular lanes. Eventually, drivers should be given the option of using a complete HOT network of priced lanes, financed with toll revenues. Drivers eager to reach their destinations quickly would use priced lanes rather than general purpose lanes. Over time, the relative attractiveness of priced lanes will tend to reduce political resistance to their further expansion.¹⁴

THE VMT OPTION

The Oregon Department of Transportation has been experimenting with an entirely different approach to road pricing: a mileage-based tax, also known as a tax on vehicle miles traveled (VMT). Oregon's latest VMT pilot program¹⁵ charges drivers 1.5 cents per mile. Drivers can choose to pay a flat monthly tax in lieu of the mileage-based tax. If they choose to pay the mileage-based tax, they have the option of reporting their mileage through a GPS-enabled device, which will be able to tell if the vehicle is driving outside of Oregon, or through a more basic odometer-like device, which will not be able to exclude out-of-state mileage.¹⁶ Some drivers have objected to the use of GPS-enabled devices for tracking vehicle miles traveled on the grounds that they represent an unacceptable invasion of privacy, but the Oregon Department of Transportation has been careful to make the use of such devices voluntary.

The beauty of the VMT is that it is well-suited to an era in which fuel efficiency will continue to increase, and electric vehicles capture a growing share of the market. VMTs have other potential advantages as well. Heavier vehicles cause more wear-and-tear on roads than lighter vehicles, and VMTs can vary by the type and weight of vehicle. VMT systems also can incorporate congestion pricing. If vehicles are equipped with GPS-enabled devices, they can be charged

13. Poole, 13.

14. Poole, 15.

15. Ben O'Neill, "Oregon Phases in Country's First Pay-Per-Mile Program," *Next City*, July 11, 2013. <http://nextcity.org/daily/entry/oregon-phases-in-countrys-first-ever-pay-per-mile-program-vmt-tax>

16. Associated Press, "State officials propose mileage tax for fuel-efficient vehicles in Oregon," *The Oregonian*, Jan. 2, 2013.

when they access premium lanes or when they are used during peak hours.

URBAN CONGESTION PRICING

One of the more tried-and-true uses of road pricing is in so-called "Vickrey rings," named for the American economist William Vickrey, which surround central business districts in London, Singapore, Stockholm and a number of other cities.¹⁷ Modern congestion charges rely primarily on cameras that monitor license plates at entrances and exits to congestion charge zones, and within the zones themselves, rather than tollbooths or barriers. These license plates are linked to a database that details who has and has not paid, and who is exempt from the congestion charge. In 2007, New York City's government, working in concert with the U.S. Department of Transportation, pursued a congestion charge. The proposal failed when the New York State Assembly chose not to take action before the April 2008 deadline for securing federal funds, as Bruce Schaller, deputy commissioner of the New York City Department of Transportation, recounted in a 2010 paper. The congestion charge was expected to raise \$491 million after operating expenses, and the funds were to be committed to transit enhancements.¹⁸

Unfortunately, the failure of New York City's congestion pricing proposal seems to have deterred other U.S. cities from pursuing congestion pricing initiatives of their own. Charles Komanoff, a New York-based policy analyst, contends that the reason the congestion charge failed politically is that New York voters failed to see a tangible connection between the charge and improved transit, and so he has proposed creating a congestion charge that would be dedicated to lowering, if not eliminating, transit fares.¹⁹ The Komanoff proposal is quite expensive and would require a level of interagency cooperation that would be difficult to achieve under the best of circumstances. The basic idea that the benefits of congestion pricing need to be very visible is, however, important and compelling.

FOSTERING PUBLIC SECTOR ENTREPRENEURSHIP

Ultimately, the best way to encourage the spread of road pricing might be to change the structure of state-level departments of transportation. In a controversial op-ed, Rohit Aggarwalla, a former aide to New York City Mayor Michael

17. William C. Vickrey, "Pricing in Urban and Suburban Transport," *American Economic Review*, 52(2): 452-465, 1963.

18. Bruce Schaller, "New York City's Congestion Pricing Experience and Implications for Road Pricing Acceptance in the United States," New York City Government, Transport Policy 17, 2010, 6.

19. Felix Salmon, "The Man Who Could Unsnarl Manhattan Traffic," *wired.com*, *Wired*, May 24, 2010.

Bloomberg, called for abolishing the federal gasoline tax and devolving responsibility for surface transportation to state governments.²⁰ State governments with greater responsibility for surface transportation would be forced to embrace more innovative approaches to delivering high-quality infrastructure, and they would no longer be able to blame the federal government for various transportation woes.

In a related vein, David Levinson of the University of Minnesota has argued that roads should be managed by independent enterprises, and that the best way to achieve this goal is to transition state-level departments of transportation into regulated public utilities.²¹ These regulated public utilities could have a variety of ownership structures, from state-ownership to investor-ownership, but the underlying goal would be to depoliticize transportation decisions while making the road enterprise more responsive to the needs of road users. An essential element of Levinson's proposal is that the new road enterprises be permitted to make use of user fees, including mileage-based fees and electronic tolls. Levinson cites the success of Australia's publicly regulated, self-financing road enterprises, including New South Wales' Roads and Traffic Authority (RTA) and Victoria's VicRoads, as examples for the United States to embrace.

CONCLUSION

Road pricing is hardly a panacea, but it offers an attractive alternative to motor fuel taxes while also promising an improvement in the quality of U.S. infrastructure. Road pricing will tend to reduce idling, which could produce environmental benefits, although it might also make driving a more attractive option, so that traffic volumes would actually increase. By linking road pricing to tangible benefits, like increased capacity, reduced congestion, and, in dense urban areas, improved transit service, policymakers can largely overcome political objections.

In the near term, however, the most powerful impetus for the spread of road pricing in the United States may well be its potential to reduce the federal budget deficit. In "Funding Transportation Infrastructure with User Fees," Jack Basso of the American Association of State Highway and Transportation Officials and Tyler Duvall of McKinsey & Co. estimate that embracing user fees in surface transportation could yield \$312 billion in deficit reduction over the next decade.²²

As the costs associated with financing old-age social insurance programs increase, and as they threaten to crowd out other vital government functions, road pricing might prove an irresistible "win-win" strategy.

ABOUT THE AUTHOR

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Reihan is a 2001 graduate of Harvard University, with a bachelor's in social studies. He lives in New York.

20. Rohit Aggarwala, "Want Better Roads? Kill the Gas Tax," Bloomberg View, Bloomberg.com, Jan. 23, 2013.

21. David Levinson, "Enterprising Roads: Improving the Governance of America's Highways," reason.org, The Reason Foundation, Jan. 22, 2013.

22. Jack Basso and Tyler Duvall, "Funding Transportation Infrastructure with User Fees," The Hamilton Project, Brookings Institution, February 2013.