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Harrisburg, Pa. -- Privatizing toll roads in the U.S. may result in significant diversions of truck traffic from privatized toll roads to "free" roads, and may result in more crashes and increased costs associated with use of other roads, according to a new study.

Peter Swan of Penn State – Harrisburg and Michael Belzer of Wayne State University will present the findings of their study, "Empirical Evidence of Toll Road Traffic Diversion and Implications for Highway Infrastructure Privatization" on Jan. 14 at the 87th annual meeting of the Transportation Research Board in Washington, D.C.

The study used data from the State of Ohio, the Federal Highway Administration, and the Ohio Turnpike to predict annual Turnpike truck vehicle miles traveled, and therefore diverted vehicle miles, based on National truck traffic and Turnpike rates. The researchers then compare estimated truck traffic diverted from the Turnpike to truck traffic on Ohio road segments on possible substitute routes.

Both economic models support the hypothesis that rate increases divert traffic from toll roads to "free" roads.

"While recently privatized roads do not have enough history to determine how high actual rates will rise, adequate data do exist to determine what happens when toll rates increase dramatically on state-run toll roads," says co-author Peter Swan, Assistant Professor of Logistics and Operations Management at Penn State's Harrisburg campus.

The study concludes that if governments allow private toll road operators to maximize profits, higher tolls will divert trucks to local roads, depending on the suitability of substitute roads. The authors estimate that for 2005, a for-profit, private operator of the Ohio Turnpike could have raised tolls to roughly three times what they were under the public turnpike authority, resulting in about a 40% diversion of trucks from the Ohio Turnpike to other roads.

"The Ohio Turnpike substantially increased tolls during the 1990s to help finance construction of a third lane in each direction over substantial portions of the Turnpike," the researchers say. "Because the Ohio Turnpike raised its rates for trucks in the 1990s and later lowered them again, sufficient data exist to calculate a demand curve for the Turnpike based on demand and the toll rate. We then use the resulting demand curve to estimate diversion of trucks caused by the changes in the toll rates and to forecast how

estimate diversion of trucks caused by the changes in the toll rates and to forecast how toll rates might affect Turnpike truck revenue."

The number of diverted trucks is important to both the State of Ohio and the Nation for economic and social reasons.

First, many of the substitute roads are two-lane highways with crash rates many times that of the Turnpike. Second, the increased traffic has reduced the quality of life for communities located along diversion routes and dramatically increased the maintenance costs of many of these roads, say the researchers.

Finally, higher truck tolls have two negative effects on the economy. Motor carriers eventually pass all tolls to consumers in the form of higher prices for goods. While higher toll rates may not decrease the efficiency of non-diverted trucks, they have raised costs. Furthermore, diversion reduces the efficiency of these trucks because they clearly are taking a second-best route. The resulting loss of efficiency can stifle economic activity, according to the study.

Many of these economic and social costs may not be considered in future leases or sales, especially when such costs are paid by people in states other than the one making the lease agreement.

The study researchers question whether it makes good policy sense to substitute the existing fuel tax-based system of funding road infrastructure with a system that uses widespread tolls and to grant long-term leases to private enterprises that will operate them for profit.

"The combination of inadequate maintenance, lack of capital for new capacity, and ever-growing demand has led to renewed calls for tolls," Swan and Belzer state. "It is curious that national policy clearly supports sales or long-term leases of roads to private parties when such negative results can be expected.

"It does not appear that the U.S. Department of Transportation has considered how far tolling and highway privatization should go ... how such a market-based system of interstate highways will affect the parallel system of publicly-owned state and local roads ... or the effect of private tolling on interstate commerce - unless U.S. DOT is already committed to the toll-based funding for all roads."

"If the true problem is that political leaders are unwilling to face the voters with the reality that there is no free lunch, then the problem we seek to solve by tolling and privatization will not solve the problem at all. In fact, our research suggests that it will only make the problem worse," Swan and Belzer say.

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