Can the Trucking Industry Benefit From Distance-Based Fees?

Ferrol O. Robinson, Research Fellow
David Coyle, Research Assistant
University of Minnesota

Presented by:
Kenneth Buckeye
Minnesota Department of Transportation

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Presentation Outline

- Funding Problem
- Research Question and Assumptions
- Industry Objections/Concern
- German Experience
- Industry Related Issues
- Next Steps

The Transportation Funding Problem

- Fuel taxes are insufficient to keep federal HTF afloat: $51.7 billion transferred from general funds and ARRA (2008-10)
- Reasons for deficit:
  - Using more fuel efficient vehicles; paying less in fuel taxes to travel
  - Growth in alternative fuel and electric vehicles
  - Federal fuel tax not raised since 1993
  - Decline in purchasing power due to inflation
- Conclusion: Fuel tax is neither adequate nor sustainable now, and it is expected to worsen in the future
- Optional Approach: Mileage-based pricing

Basic Research Question

Will benefits of mileage-based pricing to the trucking industry exceed the charges?

Study Premise

- It is estimated that transportation costs account for 40 percent of freight logistics costs
- To the extent that distance-based pricing can reduce transportation costs, the industry will experience measurable cost benefits

Assumptions

- Distance-based pricing: A stand-in for charges by weight, distance, time of day, emissions, or fuel efficiency, since fees can vary—if desired—by each of these
- It's anticipated that we are 10-15 years away from fully implementing distance-based pricing.
- In the interim, distance-based pricing would coexist with fuel taxes

Underlying Pricing Principle: User Pays

- The cost of road & bridge construction/maintenance is a function of road use (VMT) and weight (per axle & GVW)
- Vehicles of similar VMT and weight, regardless of fuel type or consumption, cause the same road damage as those that use more fuel
- Heavy trucks cause more damage to roads and bridges than cars and light trucks
- With distance-based charges, users should pay for use of the road and the impact caused, but should also benefit

Selected Industry Objections

1. Truckers already pay a lot (or too much) in transportation taxes

Observations**:**

- Trucks pay a lot in transportation taxes but also cause more damage to roads
- Studies show that most categories of trucks pay less than their cost responsibility, while autos and light trucks pay more (Federal CAS, 1997, 2000; Gupta, 2010)
- Trucks and cars don't cover all direct costs, and few external costs (est. long-term HTF revenues: $32B/year; required: $100 B/year (Infrastructure Financing Commission)

Industry Objections and Concerns

2. We have already paid for the Interstate and other highways

Observations:

- Initial capital and ongoing maintenance costs were paid for
- The system is beyond its 50-year life, and needs to be reconstructed and expanded--this hasn't been paid for
- Original capital cost: $129 billion (over 30 years); today's reconstruction cost estimate: $1.3 to $2.5 trillion (Wilbur-Smith)

Industry Objections and Concerns

3. The industry supports a user fee system such as the fuel tax, and a fair registration fee based on weight, but not a weight-distance tax

Observations:

- The fuel tax is not a fair user fee system: many categories of trucks pay less than their cost responsibility; and many types of cars pay less than fair share
- A once-a-year truck registration based on weight does not reflect ongoing operations and recurring weight impacts
- Trucks occupy a lot of roadway capacity (size, accel & decel)

Industry Objections and Concerns

4. Fuel efficiency improvements and alternative fuel use apply to autos, not to trucks. Implication: Distance-based charges should apply to autos, not trucks

Observations:

- Schwan Foods (MN) have a fleet of more than 5,000 vehicles that use propane gas as fuel
- Proposed NHTSA fuel-consumption standards for heavy combination tractors for 2017: Range 6.3 to 11.4 gal/1000 ton-miles (depending on roof height and cab class)

Industry Objections and Concerns

5. Fuel taxes work well and are more efficient to collect, administer and enforce. Just increase the fuel tax

Findings of a Humphrey School study comparing fuel taxes and distance-based fees on five transportation funding principles:

Principle	Fuel Taxes	Distance-based
Efficiency	Weak	**Strong**
Equity	Moderate	**Strong**
Revenue Adequacy & Sustainability	Moderate	**Strong**
Environmental Sustainability	Moderate	Moderate
Feasibility (including cost)	**Strong**	Weak

Comment: Cost is important, but not the only factor to consider

Industry Objections and Concerns

6. Distance-based charge approach would be too costly to implement, operate and enforce

Observations:

- Will likely be costlier than the fuel tax, but can also correct many shortcomings of the fuel tax
- High cost estimate assumes implementation today, and the need to retrofit vehicles with new and costly technology
- In the 10- to15-year timeframe, most vehicles will be factory-equipped with needed technology, and prices are likely to continue to fall
- Most trucks are equipped with the needed technology

Industry Objections and Concerns

7. Privacy is a concern

Observations:

- Privacy is a bigger issue for autos than for trucks. Fleet owners already use current technology to establish location of trucks
- A bigger issue may be to ensure that information is not divulged to competitors

Germany's Experience With Tolling Heavy Trucks

- Electronic and GPS–based toll system implemented in 2005 for trucks over 26,000 GVW using the Autobahn
- Applies to domestic and foreign trucks (about one-third)
- Charges based on distance, weight, and emissions level

Outcomes

- By 2006, experienced 20% decrease in empty truck trips (load consolidation)
- Decrease in high-emission trucks: from 50% of fleet to 36%
- Reliability rate: 99.7%
- Evasion rate: 1.7%

Germany (cont).

- First-year total cost: 25% to 35% of revenues
- Current cost: 10% to 15% of revenues

  Note: Total costs include debt repayment, interest, depreciation, profit, enforcement, maintenance and operations
- Truckers have passed on the toll costs to customers

Industry Transportation-Related Problems and Concerns

1. **Congestion/Bottlenecks**
   - Costly in terms of delays, time lost and higher operating expenses
   - Annual congestion costs for shippers: $7 billion (Winston, 2004)
   - Annual congestion costs for trucks: $33.3 billion (439 urban areas, TTI 2010) to $60 billion (large urbanized areas, Global Insights, 2008)

Industry Transportation-Related Problems and Concerns

Observations:

- Congestion pricing in London, Stockholm and Singapore have reduced congestion by 20% or more (Litman, Robinson, Oh)
- Model simulations with real data show cost savings of 24 cents per-mile (refrigerated dry vans) and 52 cents per mile (less-than-full-load carriers) in urban areas (Global Insights, 2008)
- Cost savings imply willingness-to-pay value

Industry Transportation-Related Problems and Concerns

2. **Travel time reliability/predictability:** How high does freight industry value trip-time reliability?

Observations:

Study of freight industry value of travel time reliability (Fowkes, 2004) found that VOT was highest for:

- Average valuation: $1.57/minute (delays resulting from increased trip time for a fixed departure time)
- Average valuation: $1.34 per minute (increase in spread of arrival times for a fixed departure time)

Industry Transportation-Related Problems and Concerns

3. Reduction in operating expenses

- Time savings and lower congestion can lead to lower operating expenses(fuel & tires) and wear-and-tear (maintenance)
- Could also help reduce driver stress
- Congestion reduction could lead to fewer crashes (Zhou, 1997)
- Industry is likely to see lower inventory and logistics costs if mileage-based fees are used for highway improvements (Winston, 2004)

Industry Transportation-Related Problems and Concerns

4. **Ability to pass on VMT charges to customers**
   - Predictability of VMT fees makes it easier to pass on costs
   - Congestion-related charges not as predictable, but fee payment records are available
   - In time-distance pricing, tolls enter into marginal costs. Implication: Carriers will be able to pass them to receivers (Holguin-Veras, 2009)

Industry Transportation-Related Problems and Concerns

5. **Better roads:** Lead to lower vehicle maintenance costs and less damage to cargo . **Question:** Are the right roads being improved?

Observations:

- Perception of roads as “free” results in overuse and congestion—which can lead to inefficient investment to correct overuse (expansion)
- Priced roads that are still congested reflect truer demand: A signal of where to invest that results in better prioritization of system improvements

Industry Transportation-Related Problems and Concerns

6. **Benefits of better data**
   - Distance-based charges are a means to accurately collect truck travel data needed to satisfy requirements of the International Fuel Tax Agreement (IFTA) (Sorensen, 2009)
   - Additional benefits: Fleet owners are better able to manage their fleet using the distance-based technology infrastructure

Study Status and Next Steps

The study is at its midpoint:

- Literature search has been completed
- Analysis of issues and benefits is underway
- Interviews and discussion sessions are planned with shippers, carriers and receivers (middle July)
- Study will be completed this Fall

For questions and comments, contact:

Ferrol Robinson
Humphrey School of Public Affairs
robin684@umn.edu

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