TRANSPORTATION

A Vehicle Mileage Tax for Heavy Trucks?

Economists have long argued for replacing the gas tax with a mileage tax.

BY MICHAEL F. GORMAN

The National Defense and Highways Act of 1956 created the US Interstate Highway System (IHS). To fund this new roadway network, the legislation raised the federal gas tax from 2¢ to 3¢ per gallon and directed that the revenues be paid into the newly created Highway Trust Fund (HTF). It was the explicit intent of Congress that user fees pay for the entire construction and future maintenance of the IHS so that the beneficiaries of the new roads would bear their cost, and that individual vehicles pay something approximating the specific cost they impose on the system.

However, the HTF has struggled to achieve anything approaching a fiscal balance, and it gets further out of balance every year. Initially, reauthorizations of the HTF often increased the gasoline tax to keep the revenue aligned with the HTF's financial needs and account for inflation. However, since 1993 Congress has declined to increase fuel taxes; for more than three decades, they have remained at 18.4¢ per gallon for gasoline and 24.4¢ for diesel.

To put those numbers in perspective, gas prices have tripled since 1993. Over that period, the revenue brought in by the gas tax has been eroded both from price inflation—overall consumer prices have more than doubled in the last three decades—and cars' improved gas mileage. The incipient increase in the popularity of electric vehicles (EVs) portends further erosion of gas tax revenue relative to roadway use in the coming years. The Congressional Budget Office (CBO) estimates HTF spending will exceed the revenue from gas and diesel taxes by $240 billion over the next decade, roughly equal to 40 percent of all federal spending on highways (Shirley 2023).

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In short, a revenue source that began as something approximating a user-based fee structure has become a spectacularly ineffective one. Instead, for nearly two decades, the maintenance, repair, and expansion of our nation's highways have been subsidized by general tax revenue, paid in part by people who don't use the highways much or at all. And that general revenue subsidy is growing. The 2021 Bipartisan Infrastructure Law—the latest surface transportation reauthorization bill—specifies that fully one-third of the money allocated by the federal government to pay for the nation's roads will come from general revenues. That subsidy totals $155 billion over the six years the legislation covers. In comparison, the previous highway reauthorization, 2015's Fixing America's Surface Transportation Act, transferred $52 billion from the general fund to the HTF. Given that the gap between the HTF's revenues and expenses is projected to widen, without stopgap subsidies from the general fund the nation's economic competitiveness and the safety and quality of life of its citizens are at risk.

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Congress can remedy this situation. It can reembrace user financing—and do so more efficiently than with a fuel tax—by instituting a vehicle miles traveled (VMT) fee, assessing a price that reflects actual highway use. However, for reasons discussed below, lawmakers would likely face severe political backlash if such a fee were applied to all vehicles, even if the federal fuel tax were repealed. But the political cost would likely be much lower—and much of the benefit would still be gained—if this fee were applied only to truck freight.

There are many good reasons for policymakers to focus on truck freight. First, as a commercial endeavor, trucking benefits from an IHS that is widely perceived (correctly or not) to be a public good. Second, given that most trucks now have an installed transponder that allows them to bypass toll plazas and weigh stations, there should be negligible cost in using that transponder to track the vehicle's miles traveled. Focusing on trucks should also vastly reduce the administrative cost of implementation. Third, because trucking is a commercial undertaking, there is little or no concern regarding privacy issues from assessing a VMT fee, which is a common concern for passenger vehicles. Finally, trucks create far more pavement damage per vehicle, and there are far fewer large trucks than passenger vehicles. As a result, the cost of tracking the mileage of trucks is low and the benefit is high.

THE EFFECTS OF FREIGHT TRUCKING ON THE US ROAD NETWORK

The IHS's creation effectively led to the inception of long-haul trucking. Prior to the existence of the highway network, truck delivery services were largely local or regional because interstate shipping via truck was slow, unpredictable, and expensive. The IHS enabled trucking to be cost-efficient over large distances, which led to more goods being transported longer distances by truck as well as a migration of shipments from other modes of transportation to trucks.

The IHS is used intensively as a network for commerce, and trucking companies profit from its use. Yet, the diesel taxes they pay do not come close to covering their costs in terms of highway safety, road deterioration, pollution emissions, and congestion, let alone pay off the enormous subsidies to the HTF from general taxes. In effect, taxpayers currently subsidize the trucking industry to the tune of billions of dollars a year.

A 2000 Federal Highway Administration (FHWA) report estimated that for each mile traveled, combination trucks (a tractor with one or

more trailers) imposed a road repair cost average of 66¢ a mile (FHWA 2000). For all trucks, the estimated road maintenance cost per mile traveled ranged from 4¢ to 40¢ (in 2024 dollars) depending on the weight of the load. According to Bureau of Transportation Statistics (BTS) calculations, trucks today effectively pay 4¢ per mile (calculated at 24.4¢ per gallon and 6.1 miles per gallon average).

The total external costs imposed by trucks go beyond their effect on road deterioration. Trucks contribute significantly to traffic congestion, which increases emissions of both smog and carbon dioxide. Increased congestion robs commuters and other drivers of billions of hours a year of time that they could otherwise devote to work or leisure, and the number and size of trucks make it more dangerous for people in automobiles to drive on our roads.

The BTS estimates that the size of the highway system has increased 7 percent since 1993, when the tax was last increased, while truck miles have increased over 75 percent. Of course, the sharp increase in the number of trucks on the road has contributed to a significant increase in the amount of traffic congestion. The American Society of Civil Engineers estimates that congestion delays increase 1–3 percent annually, resulting in road congestion costing the nation an estimated $166 billion in wasted time and fuel. The Texas Transportation Institute reports the cost of congestion-related delays quadrupled in the last three decades, from $47 billion to $190 billion.

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Along those lines, the FHWA estimated that the total cost per mile of a truck's negative effects on society (including road congestion, traffic safety, air pollution, and noise) is as high as 70¢ per mile for the heaviest trucks (FHWA 2000). Economist David Forkenbrock has estimated that to compensate for all externalities imposed by the trucking industry, the total fees assessed on it would need to triple the status quo (Forkenbrock 1999).

Transporting freight on highways effectively imposes proportionally higher societal costs than via other modes, yet we subsidize this mode much more than goods transported by rail or ship. An FHWA report estimates that the external costs (e.g., traffic, carbon emissions, pavement damage) for transporting goods by truck are at least six times the cost of shipping goods by rail (FHWA 2015). A CBO report estimates that the unpriced external costs per ton-mile of transporting freight by truck are about eight times the unpriced external costs of transporting freight by rail (Austin 2015). Those costs, net of existing taxes, represent about 20 percent of the cost of truck transport and about 11 percent of the cost of rail transport. Forkenbrock estimates that the external costs of transporting goods by rail are less than a quarter of the external costs of truck transport (Forkenbrock 1999).

VMT FEE AND NEGATIVE EXTERNALITIES

Policymakers can employ a user fee to address both the chronic HTF deficit and the negative external costs that trucks impose on the broader society. One especially precise user fee would be a VMT fee adjusted for a particular vehicle's weight per axle. The damage created by a vehicle on a roadway is primarily a function of the distance traveled and the vehicle weight per axle of the vehicle. A per-mile fee would more directly capture the resource usage, provided the fee factors in vehicle weight.

The idea of a VMT fee is not new. Over a century ago, economist Edward Manson discussed the concept (Manson 1906). His paper observed that the Romans funded their roads with something akin to a VMT fee—an idea that just makes sense, yet we do not follow that model.

Several states have conducted pilot studies to test this concept's feasibility: New York, New Mexico, Kentucky, and Oregon each conducted pilot VMT fee programs (CBO 2019), and they all still have a VMT in place for some trucks. Kentucky imposed a 2.8¢ per mile fee for all vehicles 60,000 pounds and above in addition to diesel taxes. New York begins taxing heavy trucks at 18,000 pounds and collects over $100 million from this tax. New Mexico assesses a VMT fee that begins at 1¢ per mile for vehicles of 26,000 pounds and grows to a maximum of 4.5¢ per mile for the heaviest trucks, providing 21 percent of the New Mexico State Road Fund's annual revenue.

In 2015, Oregon instituted the most precise weight-mile fee on commercial operations, applying to vehicles of 26,000 pounds or more and using a graduated rate per pound. The mileage tax rate grows exponentially with the registered weight of the truck, with a linear approximation estimate of approximately 3¢ for each additional 10,000 pounds. The CBO observes that Oregon's tax rate comes closest to internalizing the costs of the actual damage created by trucks on roads (CBO 2019). The state funds 32 percent of its highway fund through its weight-based tax on trucks.

The administrative costs of a broad VMT fee were a source of concern, but such fears proved unfounded in the pilot

programs. In Oregon's case, the administrative costs were less than 10 percent of the revenue generated (CBO 2019). While the initial set-up costs were significant, the ongoing administrative costs were slight.

THE POSITIVE EFFECTS OF A VMT

If truck transportation were more expensive, trucks would be driven less and shorter hauls would shift to rail. The reduction in miles traveled would reduce congestion and lessen wear and tear on the roads as well as reduce emissions. The CBO estimates that adding unpriced external costs to the rates charged by each mode of transport via a weight-distance tax plus an increase in the tax on diesel fuel would result in a 4 percent shift of ton-miles from truck to rail and a 1 percent reduction in the total amount of tonnage transported (Austin 2015).

In previous research, I noted that such a modal shift creates net aggregate benefits for taxpayers and road users (Gorman 2008). Transporting relatively more goods by rail—which has fewer negative externalities (railroads bear nearly all the cost of building and maintaining their infrastructure and are much less polluting and less dangerous to US residents than transporting goods via trucks)—would reduce congestion, emissions, and the amount of road deterioration.

A mechanism that ensured trucks paid their true societal costs of being on the road would reduce the amount of freight traffic on the road and, in turn, would reduce road deterioration and maintenance costs. Of course, improved safety on roadways and reduced pollution would also result from more fuel-efficient rail shipments moving on private networks, which are largely isolated from drivers. Such a fee would be unambiguously good for the US public.

ARGUMENTS AGAINST A VMT FEE

Many in the trucking industry oppose a VMT fee even though it has the potential to reduce congestion and speed up freight travel on roads. The VMT effectively forces the industry to internalize its cost to society. While imposing a price on a free good would benefit society at large, it is not certain that the benefits for the trucking industry would exceed the cost of the VMT fee.

There are several objections raised by the industry that go beyond the industry cost–benefit calculus. For instance, some critics have suggested that if trucks pay for all the external costs they impose via a VMT fee, that would exacerbate inflation and increase consumer costs. But inflation is an increase in the general price level, not a change in relative prices. While some of the additional costs would be shifted to consumers, these price increases also would induce some shippers to shift to rail or barge. And the public currently bears the costs imposed but not paid for by the trucking industry via regular transfers from the general fund to the HTF, which is not inflation, per se, but a direct cost on US taxpayers.

There have also been suggestions that the administrative burden of a VMT fee would eat up much of the fee's efficiency gains. While a VMT fee may be harder to administer than a diesel tax, technology is already making its administration easier. The trucking industry currently makes broad use of transponders, which would be vital equipment for assessing the fee, so many trucks are already largely equipped with what would be needed to efficiently collect the fee.

CONCLUSION

The US highway system has two fundamental problems: the increasing congestion and worsening condition of the roads are costing both commuters and freight companies time and inconvenience, and the current user fees intended to pay for its upkeep are both inadequate and not exceptionally good as user fees. Implementing a VMT fee on freight trucks—which contribute proportionally more than passenger trucks to the deterioration of our roads—would more fully capture the actual usage and subsequent damage of trucks on US roadways, avoiding the current underpricing of the road resource and concomitant HTF shortfall.

Implementing a VMT fee on the national level is the fastest path to making the HTF solvent and avoiding transfers from the general fund. The fee would be immune to future shortfalls from the increasing prevalence of alternative energy trucks and improved gas mileage.

The fact that several states have conducted successful VMT pilot projects for trucks suggests that a federal system would deliver tangible benefits for truckers, commuters, and taxpayers, who have been increasingly subsidizing trucks for the last three decades. *R*

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