

global warming problem, some of the country's leaders—pre-Copenhagen—pointed precisely to an estimated 30 percent of China's emissions attributable to production destined for Western consumers. This table-turning argument—that it's the West's responsibility to offset such emissions—was reported to have been sympathetically greeted by other developing countries.

Summing Up

Looking ahead, rapid economic growth in China, India, and elsewhere could signal perhaps inescapable real price increases for energy and other resources, not to mention accompanying environmental stress. In both cases, smart anticipatory policies—in R&D, conservation, and technology—could blunt such outcomes. What seems more problematic is the logic and success of strategies to lock in or guarantee resource supply availability through investments in resource-rich countries. Given the efficacy of transactions on relatively open international energy and other resource markets over a period of some 60 years, the argument for a resurgent resource war seems therefore tenuous. Still, without more rigorous analysis of the issue, it may be unreasonable to expect the press and some in the public-policy community to, any time soon, ease up on the more single-minded and alarmist perspective on the matter. ■

Further Reading

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RFF POLICY COMMENTARY

When Fuel Taxes No Longer Get the Job Done

The future of transportation finance

Martin Wachs



The principle of paying for roads and transit by charging those who use the system has served our nation well, but in its current form it will soon outlive its usefulness. Americans are driving more but paying less fuel tax, creating a crisis in transportation financing. For economic, environmental, and political reasons, this is the moment to transition to a new and better approach to charging for road use.

History

Before 1920, state governments faced fiscal crises because of growing demands for infrastructure resulting from burgeoning use of autos and trucks. States could not afford to build and maintain their growing networks of roads needed to connect cities. Oregon, long an innovator in transportation finance, was the first to respond by inventing the concept of user financing. It shifted from using general government revenues, as other states were doing,

reasoning instead that drivers of trucks and cars should pay more directly for roads and bridges because users both imposed the costs of these facilities on the states and benefited from them most directly.

Tolls were seen as the most direct and appropriate form of user fee. But toll booths had to be built and staffed around the clock, even where roads carried only light traffic. The costs of toll collection in many locations could be a third or more of the revenue. In response, Oregon adopted a "second best" solution: taxes levied on gasoline and diesel fuel. Collected at a handful of wholesale distribution points and passed on to road users at the fuel pumps, fuel taxes per gallon had collection costs of only a small percentage of the revenues. Users of fuel paid more when they drove more, roughly proportional to the tolls they might have paid.

By 1940, all states and the federal government had motor fuel taxes. The federal motor fuel tax was the largest source of revenue sup-

porting development of the National System of Interstate and Defense Highways. To emphasize that user fees were not general taxes, most states and the federal government created dedicated "trust funds" into which fuel tax revenues were deposited and funds were disbursed for transportation projects.

A new crisis in transportation finance

Today, antitax sentiment, combined with the high price of gasoline, makes governments reluctant to raise the per-gallon tax on motor fuels. The federal tax has been 18.4 cents per gallon since 1993. Inflation has, over time, robbed the trust fund of much of its value. Improvements in vehicle fuel economy have even more dramatically reduced the effectiveness of fuel taxes because we drive more miles than ever before per penny of fuel tax we pay. Federal regulations require that the average of all cars sold by a particular manufacturer achieve fuel economy of 35 miles per gallon by 2016. Many observers look beyond the next decade and foresee vehicles that use no petroleum at all.

We will still need to pay for road building and maintenance, but fuel taxes are no longer sufficient to get the job done. That is, of course, a good thing but for different reasons. The United States wants to reduce its carbon footprint and dependency on foreign energy sources, which clearly suggests promoting greater fuel efficiency. Under the current transport finance system, however, the government also has a dominating but conflicting interest in selling more gasoline and diesel fuel in order to raise the money it needs for highways and transit.

Unwilling to raise gasoline and diesel taxes—and faced with a federal trust fund in deficit—Congress has in recent months appropriated to the trust fund \$19.5 billion from general funds to bail out the national highway and transit programs. Charging users higher taxes on fuel would encourage the purchase of more fuel-efficient vehicles and might cause Americans to drive less, whereas increasing reliance on general funds contributes nothing to energy efficiency and adds to the ballooning national deficit.

A moment of opportunity

Congress will soon debate the next multiyear transportation bill, and its recent actions have caused many to speculate that the end of user financing of transportation is in sight.

Policymakers should recognize that recent technological advances allow for the gradual introduction of user fees that more directly charge for road travel. Americans have increasingly been paying tolls electronically, using FasTrak and E-Zpass. In several countries trucks have for years been paying to use roads via a central billing system linked with global positioning satellites (GPS) that allows vehicles to record information on where and when they have traveled.

In Oregon, where user-fee financing was pioneered, an experiment was recently completed in which hundreds of motorists were charged for travel using devices in their vehicles that metered their travel between gasoline fill-ups. The devices tracked both the fuel tax payments that would be due and the number of miles driven since they last refueled, then calculated the difference between them. The experiment worked technically and was acceptable to the motorists who were involved.

A national trial of the options

Several technologies are nearly ready that would meter travel and charge fees for road use on a national scale. But larger-scale testing is required in order to compare the technical merits of each technology and test acceptability. In principle, systems almost ready for deployment can charge per-mile road use rates for travel that differs by jurisdiction, vehicle type, road type, time of day, and even current level of service or congestion. A proposed system of user fees could also charge for automobile insurance based on miles and location of driving and provide a technological pathway for the introduction of "congestion pricing," which is advocated by many to control the growth of urban traffic.

Charging users more directly than we do today could save some travelers money while rewarding greener options such as public transit, walking, and cycling. Knowing more precisely

where travel actually takes place, the federal government could more accurately fund jurisdictions for road maintenance. Because vehicle miles of travel are growing faster than consumption of petroleum fuel, a revenue-neutral switch to vehicle miles traveled (VMT) charges would cause revenue to grow without increasing the rates charged over time. In contrast, gas taxes would have to rise over time to keep pace with inflation and road costs.

Many are concerned that VMT fees would lead to an invasion of privacy, while others worry that they will be inequitable in comparison with current methods of charging some groups of travelers, like rural residents who must drive longer distances than urban residents. Though several trials so far have been encouraging, VMT systems haven't been tested on a sufficiently large scale to know how to counter attempts at breaching privacy or security, whether they can be as reliable when operating at a national scale as in local experiments, or what the system failure rates and operating costs will be when tens or hundreds of millions of vehicles are involved.

A time for action

Other countries are implementing charges for trucks on the basis of VMT using GPS systems and central monthly billing. If this country is to transition to a new system of user fees, the next transportation reauthorization bill should include a program of trials at a substantial scale—perhaps one or more whole states or entire classes of vehicles. It is vital that the trial carefully evaluate at least a few of the most promising technologies.

The cost of a realistic test would be substantial, perhaps hundreds of millions of dollars. Participation might be voluntary, and costs could be shared among the federal government, states, and vehicle and monitoring equipment manufacturers. But failure to move forward might end a century of user-fee financing of transportation, just when it is most needed and most technically feasible. ■