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Motor fuel taxes at state and federal levels have traditionally been earmarked for transportation investments, supporting road construction, maintenance, and operations, and increasingly public transit. Recently, elected officials have been reluctant to raise fuel taxes despite increases in the cost of transportation programs. Other forms of support, especially borrowing and local sales taxes are playing larger roles in transportation finance. Raising fuel taxes would be more effective, efficient and equitable than the alternatives that are increasingly more popular.

It is difficult to find support among elected officials for proposals to raise taxes of any sort. Yet, from whatever direction I approach transportation policy, I uncover reasons that motor fuel taxes should be higher. Unless the community represented by readers of this journal make these arguments they are likely to be completely unknown to governors, legislators, and citizens who have a great deal to gain from higher motor fuel taxes. Here are a dozen reasons for supporting higher motor fuel taxes.

1. Motor Fuel Taxes Are Lower Now Than In The Past.

The federal gasoline tax stands at 18.4 cents per gallon, and state gas taxes average 20.3 cents per gallon among the fifty states, ranging from a low of 7.5 cents per gallon in Georgia to a high of 29 cents per gallon in Rhode Island.¹ In 1957 the average state gasoline tax was 5.7 cents per gallon. Had state gasoline taxes grown with the consumer price index, the average for the fifty states would today be 9.7 cents higher than it is. The California gas tax would have to be raised by 14.5 cents per gallon, while the Alabama tax would have to be 19.9 cents higher than it is just to have kept pace with inflation.

Not only have these taxes failed to keep up with inflation, but roads carry more goods and passengers than they did a few decades ago. Miles driven are a good measure of how much service we get from highways, and over time fuel economy has steadily improved. While new cars were doing well if they went twelve miles to a gallon in the fifties, average new car fuel efficiency is over twenty miles per gallon today, and even SUVs get better gas mileage than standard sedans did forty years ago. Taking into account both the

¹ Taxes differ on gasoline and diesel fuel. Gasoline is used for simplicity, though similar analysis could be done for diesel fuel.

decline in value due to inflation and increased fuel efficiency, the fuel tax in Virginia, for example, today is 42.4% below what it was in 1957, when measured in terms of revenue in constant dollars per mile of driving.

2. Fuel Taxes Are Well Below Levels In Other Countries.

It is often enlightening to compare American policy with what is done in other countries, recognizing that comparisons have their limits. On average among the fifty states, the fuel tax including federal and state charges, is just below forty cents per gallon. It is well known that our fuel tax rate is among the lowest in the world. By comparison, the gas tax in Britain (fifty pence per liter) is equivalent to \$2.80 per U.S. gallon. Thus, while the tax on fuel in the United States is approximately one-third of the wholesale price of gasoline, in England the tax is three times the wholesale pre-tax price. The British government, which does not earmark fuel tax proceeds for use on highway programs, defends its much higher rates of fuel taxation on the basis of its contribution to the reduction in traffic congestion, greenhouse gas emissions, and local air pollutants, and as a significant source of government revenues which it considers fairer and more politically acceptable than alternative forms of taxation.

3. Fuel Taxes Are Well Below Their Theoretical Optimum.

Parry and Small recently attempted to arrive at an “optimal” gasoline tax, reasoning that the socially optimal charge would be one that levied against drivers the full costs their travel imposes upon society. They carefully enumerated the externalities of automobile travel, including the cost of congestion that drivers impose upon others, air pollution, and costs due to accidents. They took into consideration that charging the optimal fuel tax would cause a change in the amount of driving. They concluded that the optimal fuel tax in the United States should be about \$1.01 per gallon, while the optimal tax in Britain should be about \$1.34 per gallon. In other words, their findings suggest that the American tax on motor fuels is far too low, while the British tax rate is much too high. The authors acknowledge that their calculations are extremely sensitive to assumptions, but their findings and those of many similar studies suggest that substantial increases in the fuel tax are justified by considerations of economic efficiency.

A survey of 40 leading US economists in 1998 found that that there is little agreement among them as to which of thirteen national tax and regulatory reforms are desirable public policies, with the exception that all support a proposed 25¢ per gallon fuel tax increase. This indicates that there is strong consensus among a wide range of political and professional perspectives that fuel and vehicle use are underpriced, and that fuel tax increases provide overall economic development benefits.

4. Drivers Show Remarkable Tolerance For Fuel Price Changes.

Although politicians who would have to enact motor fuel tax increases seem loath to support even small changes in tax levels for fear of enraging the electorate, we see

quite often much larger changes in the retail price of gasoline which seem to have only small impacts on the attitudes of consumers. The pump price of gasoline and other motor fuels depends on changes in response to many factors in addition to tax rates: changes in crude oil prices, seasonality in the relationship between supply and demand, unusual geopolitical events. Beyond this, there are variations in price from region to region that reflect different market conditions and also respond to costs induced by differences in environmental conditions and federal regulations that specify changes in the formulation of fuels for different seasons at different locations.

Over the last few years, the price of gasoline has risen and fallen in several different seven-or-eight week periods by half a dollar per gallon in different American sub-markets. In the face of continual price volatility, it does not seem reasonable that elected officials would oppose a change of five cents per gallon in the federal or state motor fuel tax for fear that it will cost them reelection. While motorists have not been thrilled by price increases, neither have they rebelled. In part, this reflects the fact that the cost of fuel is only a small part of the total cost of driving. The fixed costs of insurance and the capital cost of the vehicle are higher for most drivers.

Why is it assumed to be a political liability to raise fuel taxes by a few pennies when fuel prices routinely change by more than that several times every year; why is it not a political liability to allow worsening traffic congestion and growing numbers of potholes?

5. The Cost Of Transportation Projects Continues To Rise Faster Than Revenue.

The cost of roads and other transportation facilities has risen dramatically even as the revenue to support them has declined. Building and maintaining roads and transit facilities require spending on land, labor, capital equipment, and materials, all of which cost more than they used to. The Engineering Newsrecord Construction Cost Index, for example, tracks over time the average cost in twenty cities of a mix of major ingredients in the cost of transportation facilities: common labor, steel, lumber and concrete. Between 1957 and the end of 2002, the index rose by 817 percent. While there was undoubtedly a gain in the productivity of construction expenditures during this time period, it is nonetheless clear that revenues have declined dramatically in relation to costs.

6. Congestion Is Growing In Part Because We Are Not Spending Enough On New Capacity.

Traffic congestion has existed for centuries, has many causes, and varies greatly among locations and by time of day, so I must be careful not to overstate this part of the case; but surely at least some congestion at some locations is due in part to slowed federal and state spending on transportation capacity improvements. Between 1980 and 1999, vehicle-miles of travel on U.S. roadways grew by 76 percent, while lane miles increased by only 3 percent. Average daily vehicular volumes on urban interstates rose by 43

percent between 1985 and 1999, from 10.331 million to 14.757 million. In a study of 68 urban areas published in 2001, the Texas Transportation Institute reported that the percentage of daily travel taking place during congested periods increased from 32 percent in 1982 to 45 percent in 1999. According to the Federal Highway Administration, road delays — defined as travel times in excess of those at free flow conditions — increased by 8.5% between 1993 and 1997. Growing congestion not only slows us down; it also pollutes the air and consumes precious fuel.

The Federal Highway Administration expects vehicle miles of travel to increase by another 42 percent between 2003 and 2020, with the growth rate for heavy trucks increasing faster than that for lighter vehicles. Congestion will surely worsen at some locations, and funding is also needed to address safety needs and the deterioration of older pavements and bridges.

7. Relative Declines In Fuel Tax Revenues Increase Reliance On Non-Transportation Related Taxes To Support Transportation Projects.

Reluctance to increase federal and state gasoline taxes does not mean that consumers are going to pay less for transportation. Declining revenue from gasoline taxes, coupled with continually rising costs, means that money to support transportation infrastructure has to come from other sources. Like everyone else, I would prefer not to pay more in taxes. But, declining fuel tax revenue leads to increases in alternative forms of taxation, which I believe are inferior to fuel taxes.

There has been a surge in local government ballot measures asking citizens to vote for a wide range of taxes to support lists of transportation projects. Before 1980, few states permitted or encouraged towns or counties to levy their own transportation fees, except for the property taxes traditionally used for neighborhood streets and county roads. In the seventies, major metropolitan areas adopted permanent sales taxes to support the development of new transit systems, and in the eighties several states authorized local jurisdictions to hold elections to raise revenues for transportation purposes. The pace accelerated during the nineties as 21 states either adopted new laws authorizing local option transportation taxes or saw dramatic expansion in their use.

During calendar year 2002, American voters considered 41 separate ballot measures to raise money for transportation, of which nine were state-wide elections and of which only a handful involved user fees like fuel taxes. Local sales taxes were by far the most common approaches taken in these measures, but some local governments have enacted vehicle registration fees (arguably a user fee, but more accurately a form of property taxation), taxes on sales of real estate, local income or payroll taxes earmarked for transportation, and taxes on new real estate developments. In California, residents of 18 counties — containing 80% of the state's population — have voted to raise their sales taxes to pay for county and city transportation improvements. Collectively, these measures are producing roughly \$2 billion per year for capital investment in new highway and transit facilities and to pay for the maintenance and operation of existing ones. These sales taxes are the fastest growing source of money for transportation in

California. Virtually all of these tax measures ask voters to support a specified list of particular projects by taxing themselves for a limited length of time – typically twenty or thirty years. Measures that fail to obtain the needed majority vote are put before the voters again until they garner the needed votes.

Local sales tax measures produce needed revenue that is welcomed because of declining gasoline tax receipts, but they are inferior in many ways to fuel taxes. Sales taxes are quite volatile – they rise when the economy is strong and fall when it is poor. Transportation projects have long time lines, through planning, environmental review, design, and construction. The revenue stream from sales taxes is difficult to forecast accurately, giving agencies financial problems when they incur heavy construction costs just as the economy goes into recession.

In order to build coalitions that will support the measures at the polls, they tend to look like “Christmas Trees,” including many different projects that appeal to different constituencies. The listing of projects that have voter appeal often differs from projects put forward by federally-mandated regional transportation planning processes. Transportation ballot measures frequently include projects that will get votes because they are glitzy or glamorous though they may not be cost effective. Often, ballot measures create new local authorities to implement these tax measures, adding to the organizational complexity of transportation decision making.

Some local projects listed on ballot measures, like freeway interchanges and bridges, provide most of their benefits to long-distance travelers passing through the jurisdiction in which they are located. The cost burden for such improvements should not be imposed on local taxpayers without regard to the degree that they benefit from those investments.

8. The Relative Decline In Fuel Tax Revenues Is Increasing Borrowing For Transportation Projects And Programs.

In the absence of growing fuel tax revenues, the fastest-growing source of money for transportation projects and programs has been borrowing. Between 1995 and 1999, while collections of user fees (taxes and tolls) rose by only 18%, borrowing for transportation projects rose by 92%. Proponents of a variety of forms of borrowing prefer to call this approach “creative financing.” A few states have created “infrastructure banks,” and others have developed financial instruments that enable them to borrow against anticipated future federal appropriations and future revenues from a variety of taxes earmarked for transportation. But in the end, borrowed money is not really revenue at all, since it must later be repaid using revenues from taxes or user fees. In addition to repaying the borrowed funds, the state must bear the cost of interest, which, if funds are held for twenty or thirty years, often exceeds the value of the principal.

Most of us have home mortgages, which make it clear that borrowing can provide great benefits. Debt is sometimes well worth undertaking, for example, when early construction of a project saves construction costs and the flow of revenues later in the life

of the project is likely to exceed the interest payments. It is appropriate to fund some capital projects with borrowed funds, and systematic analysis can show when the benefits of doing so exceed the costs. Some states might be planning lumpy “megaprojects” or may need to borrow in order to catch up after years of disinvestments. But, borrowing is not always justified, and it is troubling that elected officials, especially many operating under term limits, increasingly prefer borrowing simply because it defers the implied tax increases to a future date after they will have left office.

9. Fuel Taxes Have Low Collection Costs And Are Relatively Fraud Proof.

Governments have a responsibility to their citizens to be concerned about the cost of collecting revenues, and about the possibility that revenues can be lost to fraud and tax evasion. In comparison with many other revenue instruments, the fuel tax is unusually efficient in this regard. While traditional manual toll collection, for example, incurs costs that range from twenty to twenty-five percent of the revenue produced, the cost of administering the fuel tax is typically only one or two percent of the revenue. Fuel taxes can be collected from a reasonably small number of fuel wholesalers or at the refineries, with the charges being passed along to the retailers and ultimately their customers. This keeps costs low and it also reduces prospects for fraud or evasion. When the tax is paid, a dye is added to the fuel changing its color, and this enables authorities to more readily identify fuels for sale that have not been subjected to the required tax.

10. Fuel Taxes Are User Fees That Send “Price Signals” To Motorists To Use The Transportation System More Efficiently.

Fuel taxes are user fees, akin to tolls. The fuel tax is admittedly quite imperfect as a user fee, since we don’t pay different tax rates for the use of different roads or different prices for the use of congested versus uncongested roads. While there is growing interest in the use of tolls and congestion pricing to support highway expansion and operations, most experts think toll financing has greater promise over the longer term than in the immediate future. But, even with motor fuel taxes we pay for the benefits of the road system roughly in proportion to our use of that system.

In many states, this connection is recognized through the use of “trust fund.” accounts. Fuel tax proceeds are segregated from other government revenues to be spent only on projects that benefit those who pay the taxes. Some argue that public transit should not be a beneficiary of fuel tax expenditures, since many motorists paying the user fee don’t have the option of using transit for most of their trips. Others argue that to the extent that transit alleviates congestion it does benefit fuel taxpayers. Gradually, the weight of opinion, responding to political realities, has shifted to define transportation expenditures more broadly, and in many jurisdictions motor fuel tax revenues are used to support subsidies to public transportation.

To some extent at least, user fees encourage economic efficiency – we pay for road capacity using a charge that encourages us to make more efficient use of that

capacity. Very heavy vehicles, because of their low fuel efficiency, pay more per mile of travel for the use of roads. This is appropriate because they also impose greater costs on the road system for the initial design of pavement to withstand the heavier load and for higher costs for wear and tear. When fuel taxes rise, the price change encourages us to acquire more fuel efficient vehicles, to tune our cars more carefully to get better gas mileage, to carpool with one another or to switch to public transit to save money. While such changes in behavior reduce the revenue produced by the fuel tax, they marginally encourage us to improve the efficiency of the system.

In comparison, the funding of transportation facilities by general sales or income taxes or by borrowing provides no incentive to encourage behavior that contributes to the efficiency of the transportation system. Because the charge is completely unrelated to the costs we impose on the transportation system or the benefits we receive from using it, an increase in a sales or income tax does not encourage us to conserve transportation resources. If we paid for restaurant meals through general sales or income taxes rather than through specific bills for meals, there would surely be long lines at the restaurant doors. If we increasingly pay for roads through taxes dissociated with the use of roads, we are similarly inviting unbounded increases in traffic congestion which will, in turn, evoke the need to raise those taxes further in order to cover our growing travel costs.

11. Fuel Taxes Are Fairer Toward The Poor Than The Alternatives Currently Available.

People almost instinctively ask whether higher fuel taxes wouldn't harm the poor. Upon close reflection, this concern would appear to be exaggerated and, depending upon specific circumstances, higher fuel taxes might even benefit lower income communities. This is so, in part, because the fairness of a tax is a complex matter.

Regressivity is one aspect of the fairness of a tax. Regressivity is usually measured by the extent to which the proportion of a population's income is taken by the tax as income rises. When the poor have a larger fraction of their income taken by a tax than do higher income groups, the tax is said to be regressive; a progressive tax is one that takes a greater fraction of income from richer people. Fuel taxes and sales taxes are both moderately regressive.

Regressivity is by itself an inadequate test of fairness. The income tax provides a perfect example of this. Income taxes are in principle very progressive because richer people occupy higher tax brackets and pay higher income tax rates than poorer people. On the other hand, polls have shown that a majority of Americans think the income tax is unfair because the rich benefit from tax deductions that are not available to the poor. While a flat income tax would be less progressive, many people consider it to be fairer than our graduated income tax. An analogous situation exists with respect to the fuel tax.

Rich people and truckers drive more than poor people, and thus pay a larger share of fuel tax collections. Nevertheless, the fuel tax is fairly regressive because the poor do pay a higher proportion of their income in fuel tax than the rich. On the other hand, there

are at least three ways in which the fuel tax appears to be fairer than alternative ways of funding transportation. First, only those poor people who drive actually pay the fuel tax, so only the poor who benefit from the road system pay the tax, while those whose poverty precludes them from driving are not charged. Second, the users of public transit as a group have much lower incomes than highway users; to the extent that fuel taxes are “diverted” to transit expenditures, lower income people are the primary beneficiaries. Third in most jurisdictions in which the fuel tax is kept low, the most rapidly rising alternative source of transportation finance is sales taxes, which, according to most measures, are roughly as regressive as gasoline taxes. But, sales taxes are paid by people whether or not they use highways, and are less fair because they charge the non-driving poor as much for highways as they charge the poor who do drive. Fourth, it is reasonable to expect that jurisdictions that increase fuel taxes earmarked for transportation are less likely to raise general sales taxes specifically to use their proceeds for transportation improvements. Since most jurisdictions have some practical upper bound on their sales taxing capacity, greater reliance on fuel taxes for transportation allows governments to devote their general sales taxing capacity to the support of non-transportation programs that could benefit everyone including the non-driving poor — such as education, police services, and health care. In many circumstances, therefore, reliance on earmarked transportation fuel taxes would benefit the poor by providing them with both lower general sales taxes and a higher level of non-transportation services that rely for funding upon general sales taxes.

12. Fuel Taxes Make It Easier To Transition To Better User Fees In Coming Years.

Over the long term it is probably not wise to rely on fuel taxes to finance roads or transit systems. The current development of hybrid engines which dramatically improve fuel economy is only a hint of changes likely to occur over the coming two to three decades. The world’s supply of petroleum is finite, and we are already developing a variety of bio-fuels and other synthetic fuels. Fuel cells are seen by many as the likely source of motive power for the future, and they may not in the longer term use petroleum-based fuels. At the very least, over a longer period of time we can foresee a changing and uncertain relationship between travel and the consumption of petroleum based fuels. We could, of course, tax hydrogen or biofuels as we do gasoline. Doing so, however, would likely conflict with other policy goals like reducing pollution and achieving energy independence, so in the long term we will undoubtedly charge on the basis of road use rather than fuel use. Dramatic improvements in fuel economy, whatever their source, make fuel taxes less promising in the future as the fundamental instrument of transportation finance. But, every reasonable projection of technological change would indicate that the use of gasoline and diesel fuel will dominate the market for surface transportation fuel for at least two decades, and probably three.

Traffic will continue to grow and funds will be needed for transportation infrastructure construction, operation, and maintenance. User fees will still be a valid basis thirty years from now for financing that infrastructure, even as fuel taxes decline in usefulness. Electronic toll collection is growing very dramatically and is probably the

way we will charge users of transportation facilities in the future. People will someday soon pay electronically for each use of the system, with charges reflecting the cost of using particular facilities at particular times of day by vehicles having particular characteristics. While the technology by which this will be achieved is advancing, there is a need to address enormous institutional changes that will be needed to transition from the current system. During that transition, fuel taxes will remain viable for a large though decreasing proportion of the vehicle fleet.

Conclusion: All Things Considered, Higher Fuel Tax Increases Are Better Than The Alternatives.

Increases in motor fuel taxes serve useful social purposes. It is not appropriate to ask, in the abstract, whether we like higher fuel taxes nor whether politicians will be hurt by their support for higher fuel taxes. The question to ask is whether the taxes and their political consequences are superior to the alternatives usually considered in public policy debates, and the answer is affirmative.

In the 1920s automobile clubs, trucking interests, bicycling associations, oil companies, outdoor enthusiasts, car manufacturers and many others joined together in supporting motor fuel taxes as the most appropriate way to finance the pressing need for new roads. Defined as a user fee, this revenue instrument was widely seen as superior to the alternative then prevalent of state borrowing against general fund revenues. Those fundamentals remain true today, but we have somehow lost sight of the underlying consensus. It is still fundamentally true that benefits from higher fuel taxes can be seen clearly by diverse interests. While environmentalists and proponents of smart growth may not want many new roads constructed, they can probably be convinced to support higher taxes on motor fuels; the trucking industry would probably also support higher fuel taxes if they could see a link to congestion relief. The most important point is that the alternatives – such as regional sales taxes administered by local authorities — will provide less desirable outcomes for interests as diverse as these.

We cannot choose to ignore our transportation infrastructure needs, and reluctance to increase fuel taxes is costing us more in many other ways. Until electronic tolling is widespread, the alternatives most often put forward to avoid increasing fuel taxes are less effective, less efficient, and less equitable.

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