

The Equity Implications of Financing the Nation's Surface Transportation System



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Financing the nation's surface transportation infrastructure has never been a more difficult or contentious political issue than it is today. At the federal level, traditional sources of funds—most notably gas taxes—will be insufficient to respond to needs for new infrastructure and for the operation and maintenance of highways and public transit systems. At the local level, in what Goldman and Wachs have called a “quiet revolution” (1), governments have struggled to develop new and different ways of financing transportation.

New Financing Approaches

Many of the newer financing options under consideration at the federal, state, or local levels involve new taxing and debt instruments, direct charges for transportation services formerly provided free to users, and an active role for private entrepreneurs in the construction and operation of transportation facilities.

To complicate matters, other major policy objectives—such as making the surface transportation system more efficient and effective—are interwoven

with the objective of maintaining sufficient and reliable revenue sources. Many analysts believe that travelers should be charged for creating such burdens as excessive demands for new capacity or for the environmental, health, and congestion costs imposed on other system users and on society.

Users can be charged, for example, by pricing the use of new facilities, by imposing higher fees for traveling on a congested highway, or by taxing cars that are less fuel-efficient. But rarely do all system objectives fully complement one another; more commonly, they conflict. This happens with another major policy objective—creating a fair and equitable transportation system.

On the revenue side, new financing approaches—including the involvement of the private sector—raise questions about whether certain groups will bear a disproportionate share of the burden of paying for transportation services, or if low-income households will be priced out of the transportation system by road tolling and highway user fees.

On the expenditure—or service delivery—side,



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questions arise over the equity implications of decisions about transportation infrastructure and operations. These range from concerns that highway expansion has disadvantaged public transit to challenges that new rail systems, which largely serve middle- and higher-income travelers, disadvantage bus services, which serve mostly lower-income travelers.

Expert Perspectives

Recognizing the complex and interconnected equity issues involved in transportation financing, particularly with newer financing strategies such as public-private partnerships, the Transportation Research Board (TRB) invited four transportation financing experts with diverse perspectives to make presentations to the TRB Executive Committee at the January 2008 Annual Meeting in Washington, D.C.: Jeffrey Buxbaum, Principal of Cambridge Systematics; Martin Wachs, Director of Transportation, Space, and Technology at the Rand Corporation; Peter Rickershauser, Vice President, Network Development, BNSF Railway Company; and Robert Poole, Jr., Director of Transportation Studies, Reason Foundation.

Wachs noted that among transportation professionals, equity often yields to efficiency and effectiveness, even though equity concerns are at the center of public and political debates. At the same time, transportation professionals often see equity challenges as one-dimensional—as the negative impacts of pricing or taxing strategies on poor people. Similarly, it is often assumed that any inequity in highway financing schemes can be handled by funding mass transit services.

Equity, however, is a multidimensional concept, difficult to define, evaluate, or create. This is evident by considering first how economists have tended to

view equity concerns and the newer ways these concerns are being viewed today; and second, by sketching out different definitions of equity and the perspectives they offer on the implications of older and newer strategies for financing surface transportation.

Evaluating Equity

Economists usually are concerned with distributional impacts—the ultimate incidence, or burden on household income, that a financing mechanism creates. Economists traditionally have focused therefore on the effect that paying taxes or fees has on a household's income. If a tax takes a greater share of the income of the poor than of the rich, it is regressive; if a tax takes a greater share of the income of the rich, it is progressive. These descriptive labels, however, often have a normative connotation—many taxing policies aim for progressive outcomes and avoid or ameliorate regressive outcomes.

Balanced-Budget Incidence

Increasingly, economists and policy analysts are seeking what is called balanced-budget incidence—balancing the impact of revenue collection with the impact of the expenditures made with those funds. The intent is to calculate net costs or benefits to households—although taxes and fees are direct reductions in household income, the assumption is that most government benefits act as indirect additions to the household income of the recipients.

For example, Pucher's early work on transit financing concluded that traditional ways of paying for public transit were regressive (2, 3). He found, however, that ultimately the financing and delivery system in its entirety was mildly progressive, because the poor used public transit much more than the rich did. He concluded that incidence was sensitive to local service patterns and to the mix of the funding sources that finance public transit. He suggested ways to develop progressive transit policies, largely by expanding transit services for poorer people.

Comparative Incidence

Policy analysts increasingly are abandoning isolated analyses of the distributional impact of a tax or fee. In response to controversial policy questions such as road pricing, they are considering the comparative or relative incidence of different ways of financing the same thing. For example, user fees may be regressive—whether evaluated traditionally or in a balanced way—yet they may be less regressive than other ways to finance transportation services, such as sales taxes (4).

A related question, not much studied, is the

According to one researcher, traditional transit financing is "mildly progressive," because the poor use public transit more than the rich do.



extent to which providing a transportation improvement—regardless of its financing—is more equitable than not providing the improvement because of a lack of money. Poole made a similar comment in his presentation.

Expanded highway facilities or less-congested travel options, for example, may have a disproportionately positive effect on poor people or on those with special needs. Some evidence indicates that women in all income groups are more frequent users of the California high-occupancy toll lanes because of severe time constraints in juggling domestic and employment responsibilities. The poor who are not drivers may be helped by expanded highway toll facilities that give priority to public transit or to car-pools; for example, Hispanics are more likely to car-pool to work than others and may find that such facilities substantially improve their commutes. Not surprisingly, questions of balanced budget and comparative incidence have become more topical in the transportation financing debates of the past decade, particularly in addressing different kinds of user fees.

Other Major Equity Issues

More than 25 separate definitions of equity have been identified in the vast literature on infrastructure finance and service delivery (5–7). All of these concepts or definitions share one overarching characteristic—if adopted, they would advance some interests at the expense of others and give the advantage to some rights or values over others. In the policy debates about transportation financing, these conflicts in focus and objectives are profound.

Traditional Equity Concerns

The most traditional equity standards are benefits received and ability to pay. Both are centuries-old concepts. Benefits received—sometimes called market-based equity—is the core of the traditional approach to highway financing. The excise tax on gas, tires, and batteries was designed to be an easy proxy for a toll or user fee; the more travelers use the highway system, the more gas and tires and batteries they buy and the more taxes they pay.

The ability-to-pay principle assumes that those who can pay more should pay more. Although not the basis of the gas tax, this standard is the basis of many other taxes, most notably income and property taxes. These two equity principles can conflict; under the current system of federal and state transportation financing, poor people are likely to pay more of their income than the rich do for the privilege of using the nation's highways.

Whether gas taxes are equitable or not, several trends have undermined their viability as proxies for



user fees—for example, owners of cars that are more fuel-efficient or that use alternative fuels pay less because fewer taxed products are consumed. Thus many analysts believe that gas taxes will not be sufficient for current and future needs.

Moreover, the benefits-received approach to financing transportation facilities raises some serious analytical problems—for example, what benefits should a traveler pay for? For which costs should a traveler be charged? What if the value of the benefits received is not equal to the costs? Should a highway user pay a fair share of the construction costs, the operating costs, the costs imposed on other motorists in congested traffic, the health costs imposed on other people through environmental pollution, or the costs of cleaning up the environmental pollution?

Fuel-efficient cars may cause as much destruction to the highway and to parts of the environment as gas guzzlers do; regardless of the size or weight of the car or if the car is environmentally friendly, all drivers impose more costs on the system during congested or peak periods. A fee set high enough to cover costs—however the costs are defined—may price too many people out of the system; alternatively, the costs may be too low to change behavior in the desired ways. One financing scheme or set of charges clearly may not meet all policy objectives.

The United States is likely to move beyond gas

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taxes in the coming decade at the federal and state levels and already has made the transition at the local level. To what extent, then, should a benefits-received standard continue to be applied in lieu of an ability-to-pay standard as new financing schemes are developed? Is it equitable to charge lower-income people the same price for the benefits they receive from the highway system, or for the costs they create for the system?

If people are charged more—or at all—for traveling by car at a congested time, is the assumption that all people have equal freedom to live and work in transit-rich areas or to avoid automobile travel or peak-period travel? How many poor workers can choose their hours of employment or even their home or job locations?

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If they cannot make these choices, they may be unable to use either alternatives to the car or non-tolled highways. They may have to pay more for their use of the roadways, either relatively or absolutely, than wealthier travelers who have the flexibility to choose their homes or travel modes or hours of travel—or to pay the charge.

Additional Equity Definitions

In addition to the historical or traditional definitions of equity, other definitions have captured the public imagination or are beginning to emerge in discussions about financing, such as modal equity, inter-jurisdictional equity, and intergenerational equity.

Modal Equity

Modal equity is an important but controversial concept, usually raised in the context of the unfair financial advantage said to be given to highways over transit now and in the past.

Yet in some ways, federal funding gives a substantial advantage to public transit, with a per capita subsidy that is higher in both absolute and relative terms. That is, highway users pay a substantially larger percentage of the costs of highway service than transit users pay of transit system costs—nevertheless, many highway users are also poor, and many transit users are not.

Moreover, most economists would argue that transit systems have no rights—only people have rights. The other definitions of equity would measure people's rights to more or improved transit service; therefore fashioning a new equity definition may not be necessary—although the concept receives substantial traction in policy debates.

Intramodal Equity

Intramodal equity is concerned with the distribution of funds between various transit services, as well as among different highway users—whether in terms of benefits received or income distribution. Urban highway users are commonly thought to subsidize rural users, and off-peak users to subsidize peak travelers. In general, this is true for public transit users also—central city transit riders subsidize suburban riders, especially in communities with flat fares, and off-peak transit users generally subsidize peak-period users.

The intramodal equity issues in public transit related to expenditures for rail versus those for buses, however, may be more significant. The average subsidy to a rail passenger is substantially higher than the average subsidy to a bus passenger, sometimes by many orders of magnitude—mostly because of the higher capital costs (8). For example, a 1992 study



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found that the average subsidy per bus trip in Los Angeles was \$1.17, but the average subsidy for a rail commuter was more than \$21 per trip (9).

All data show that bus riders are much more likely to be poor, minority, and female, while rail riders are much more likely to be wealthy, white, and male (10–13). Subsidizing transit service may have other goals, such as encouraging choice riders to use public transit; this example, however, suggests that the equity impacts of transit funding strategies are not clear-cut or obvious.

That some transit expenditures and services provide few or no services for the poor or disadvantaged is important in any discussion of transportation financing equity. The questions go beyond the comparative equity of decisions about transit infrastructure and service. Because analysts often argue that regressivity in highway financing strategies can be offset by transit expenditures, understanding the conditions in which that holds true is fundamental.

Providing additional transit services addresses regressivity in highway financing only if and when the transit services are geared to, and used by, those who are affected unfairly by highway financing techniques, whether road tolls, higher general sales taxes, or another financing tool. A commuter who must pay tolls but has no viable option for commuting via transit is not helped if the increased transit services do not reach his or her community or employment location or operate during the hours he or she works. Many people in the United States live in low-density suburban areas—highway financing strategies that use public transit to offset inequities may not extend a viable transit option to the majority of travelers.

Interjurisdictional Equity

These equity discussions hint at another important

dimension of service equity—where travelers live—something that is arguably as important as how much money they make (14). As Buxbaum noted, geographic equity is important in assessing financing schemes in general and public–private partnerships in particular.

Transportation raises questions about the spatial distribution of costs and benefits, including inter-jurisdictional equity. Because the tax bases of jurisdictions differ, people living close to one another in otherwise similar communities may have different levels of highway and transit service. The differences, moreover, may not be in proportion to differences in the taxes they pay.

For example, a jurisdiction with substantial commercial or industrial properties may have lower household property taxes than a neighboring city but still generate more resources to spend on highways, cycling facilities, pedestrian amenities, public transit services, and paratransit systems. Conversely, people living in communities with limited tax bases may have higher absolute tax burdens, even if they are poorer, while receiving fewer transportation services and lower-quality facilities.

Intergenerational Equity

Intergenerational equity is the idea that one generation should not be burdened or advantaged unfairly by the actions of another generation; this concept is central to discussions of infrastructure debt. Borrowing to build a long-lived facility—such as a highway or light rail system—is often defended on the grounds that if current users paid the full price of building the facilities, they would be leaving a free gift to future generations.

Paying off debt over the useful life of a facility spreads the cost over generations of users. A problem

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can arise, however, if the debt is not soundly capitalized, or if the expected sources of revenue to pay off the original debt do not materialize. Then current or future taxpayers may be hit with substantial debt, far in excess of any benefits they are receiving.

In the past, many state and local government long-term debts were repaid with general revenue, such as property and sales taxes—that is, they were general obligation bonds. Today, however, more than two-thirds of state and local government long-term debt is in the form of revenue bonds, which are to be repaid with anticipated future revenue, such as tolls or fares.

The growing use of public-private partnerships and innovative highway financing techniques based on predictions of the ridership or use of proposed facilities may become a crucial equity issue. The security behind revenue bonds is anticipated revenue; if that revenue does not materialize, bond holders technically have no recourse. Instead, the cities and states that issued the bonds often step in to rescue the revenue bonds, creating additional burdens for future generations of taxpayers. Future generations therefore may be forced to assume a larger share of the costs of financing a facility than is fair, given their use of the facility.

What happens to the facility if future revenues prove insufficient to cover operating costs, as well as debt service? A 2006 TRB study of toll roads financed with bonds found that almost all had overestimated use, often by huge margins (15). Even years after the issue of the bonds, the annual trip projections—frequently modified downward in response to actual travel demand—were still off the mark (16). There-

fore the potential impact on intergenerational equity should be questioned for any financing mechanism based on revenue projections.

What is crucial is not the type of debt instrument but how the debt is repaid. Bonds repaid with general revenue—often with property and general sales taxes—have different equity implications from those repaid only with dedicated sales taxes, and yet different implications from those repaid only with user fees or congestion charges. In short, the equity of various ways of covering debt service—many of which are similar—should be discussed first; and then the focus can turn to any attributes of the various debt instruments that create differences in who pays, how much, when, and how often, or in the levels of service provided.

Public-Private Partnerships

Another key focus of the financing debates is the involvement of the entrepreneurial sector in public-private partnerships. All of the presenters at the TRB Executive Committee session spent time on these issues. Although complicated and sometimes seemingly new, most of these partnerships depend on specific financing techniques that can be analyzed in the same way as any other financing techniques. That is, instead of assuming major equity differences between private and public toll roads or high-occupancy toll lanes or concession schemes, the underlying financing tools should be evaluated.

Road tolls imposed by a private entity, for example, look to the user exactly like road tolls imposed by the public sector. The operator of the toll facilities—the public sector, the private sector, or a pub-

lic-private partnership—makes a difference in equity only if ownership and operational differences affect the magnitude of the tolls imposed, the users on whom they would be levied, or the level of service provided.

Rickershauser reiterated a longstanding argument that the private sector should play a greater role because of the ability to make operational decisions more quickly and more responsively to customer needs and to find innovative and cost-effective ways of delivering services. But critics argue that private ownership or operation creates equity concerns, because the private sector may be able to increase fares more easily than the public sector, or it may do so in ways that are less than transparent, or it may diminish levels of service, or maintenance, or safety to meet profit expectations. These are contentious issues that go far beyond questions of equity.

Research Needs

Understanding and evaluating the equity of alternative means of financing the nation's surface transportation system are challenges at all levels of government. To address these issues, research is needed to

- ◆ Identify, synthesize, and evaluate what is known about the incidence—that is, the impact on household income—and other equity impacts of current and alternative financing strategies by level of government and by mode;
- ◆ Identify, synthesize, and evaluate what is known about the incidence and other equity impacts of infrastructure and service delivery patterns by level of government and by mode;
- ◆ Suggest alternative financing or policy initiatives to achieve the same objectives with fewer equity implications or to redress the unintended equity impacts of otherwise promising financing or policy approaches; and
- ◆ Identify additional research needed to address unexplored or unanswered questions about key equity issues in the funding, planning, construction, maintenance, and operation of the nation's surface transportation system.

The TRB Executive Committee decided that more time and effort were needed to understand the complexity of equity issues in financing the nation's surface transportation system. The Executive Committee proposed the creation of a National Research Council-appointed Committee on Equity Implications of Alternative Transportation Finance Mechanisms. Chaired by Joseph L. Schofer of Northwestern University, the committee began its work in late 2008.

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Peter Rickershauser, Vice President, Network Development, BNSF Railway Company, pointed out that the private sector can make operational decisions quickly and responsively to customer needs and can find innovative and cost-effective ways of delivering services.