Unequal Subsidies in Highway Investment: What Are the Consequences?

*Richard Voith**

The automobile's rise to dominance has changed the face of virtually every metropolitan area in the United States. With automobiles came highways that dramatically extended the boundaries of attractive places to live and work. For people with cars, it was no longer necessary to live in the city in order to work there, and increasingly, businesses found it advantageous to locate in less congested suburban areas as well. Thus, people and jobs have become more dispersed throughout metropolitan areas, often following developments in the highway transportation system.

The way for ubiquitous automobile travel and for attendant changes in regional development was paved not just by expenditures on cars and trucks, but also by billions of dollars of public investment in the highway transportation system. This public investment has been financed, in part, by taxes levied on motorists using the highway. These taxes, or "user fees," are the prices motorists pay to use the highway system.

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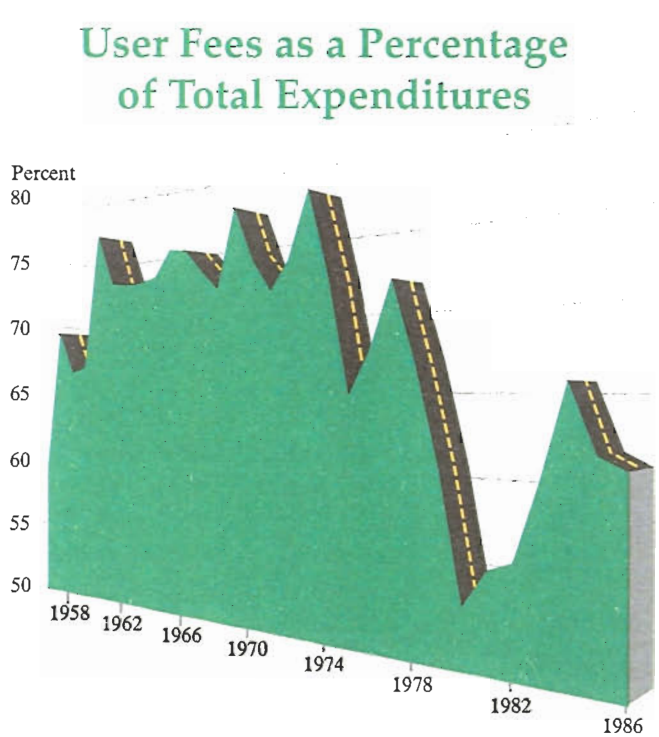
User fees, however, fail to cover the highway system's total construction, maintenance, and operating costs. Nearly $454 billion in general tax revenues has supplemented highway user fees in the 1956-86 period, representing about 32 percent of the total investment.[1] The share of total highway expenditures covered by user fees has fluctuated considerably over the period and in 1986 stood at 61 percent (see graph below). Though user fees cover about 68 percent of the highway system's costs on average, the degree of subsidy for a particular highway may be considerably more (or less) than the average. And the price a motorist pays to use a highway often diverges from the actual cost he imposes, contributing to highway congestion and inefficient patterns of regional development.

Highway subsidies not only foster increased travel and congestion, but they change the relative attractiveness of localities within a metropolitan area. An area traversed by a new highway tends to become more attractive because its transportation is improved without the residents, who get to use the highway, having to bear the full costs of the construction. Some localities will benefit economically from highway subsidies, but others, especially the older, more densely populated city centers, may suffer.

WHAT SHOULD THE MOTORIST PAY?

Encouraged by low user fees, more motorists are traveling longer distances than ever before. According to U.S. Census figures, the percentage of work-commuting trips by car increased from 69.5 percent in 1960 to 85.9 percent in 1980, and the average length of a commuting trip increased 18 percent between 1975 and 1980. The bulk of the increase in travel has occurred in suburb-to-suburb and suburb-to-city commuting, up 58 percent and 25 percent, respectively.[2] The increase in suburban travel is straining the capacity of the highways that initially fos-



[1]Figures are in 1986 constant dollars. In 1986, highway subsidies were $24.5 billion, or 39 percent of the total public expenditure. Calculated from *Highway Statistics* (annual series, 1956-87), U.S. Department of Transportation, Federal Highway Administration, Table HF-10.

[2]These data are compiled in *Commuting in America*, by Alan Pisarski, Eno Foundation For Transportation, Westport, CT (1987). The analysis is based on data from the U.S. Bureau of the Census.

tered the suburban development. Is this level of auto travel, and the associated geographic dispersion, a good use of our resources?

According to economic theory, individuals' transportation and location decisions would be efficient if the price paid for transportation closely matched the costs imposed by the user.[3] Though motorists do not pay a fee directly every time they use a highway, they do pay fees that are indirectly related to their use of the highway system.[4] The federal Highway Trust Fund was established in 1956 to finance construction of highways, using revenues from a tax on gasoline and, to a lesser extent, from other automobile-related taxes.[5] The tax on gasoline, a user fee, is essentially the price motorists pay to use the highway system. General governmental tax revenues augment highway expenditures, since the revenues from gasoline taxes have been insufficient to cover the capital, maintenance, and administration costs of highway use.[6]

The Costs of Highway Use. Motorists impose two primary types of costs: infrastructure costs and congestion costs. Infrastructure costs include the costs of constructing, maintaining, and operating the highways. Congestion costs include time lost waiting in traffic, increased pollution, and reduced fuel efficiency. These are the costs one motorist imposes on another by competing for the same highway infrastructure. Adding another car on an already crowded road may result in slow travel not only for that car but for all others on the road.[7] Infrastructure and congestion costs are related, as congestion costs can be reduced in the short run by more infrastructure investment. Alternatively, user fees can be raised to reflect congestion costs, reducing the demand for car travel and hence the need for additional highways.

The costs of highway use—infrastructure and congestion—often diverge from the prices motorists pay through user fees, for three reasons. The most obvious reason is that total user fees are insufficient to cover the infrastructure cost of the highway system. The second reason is that while the federal government collects user fees from all motorists, many of the expenditures from the Highway Trust Fund are concentrated on projects that only a fraction of all motorists use.[8] Often, the user fees gener-

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[3]For discussion of the economic theory of highway pricing, see Theodore E. Keeler and Kenneth A. Small, "Optimal Peak-Load Pricing, Investment, and Service Levels on Urban Expressways," *Journal of Political Economy* (1977) pp. 1-25.

[4]Toll roads are an exception. Current federal regulations prohibit tolls on virtually all roads built with federal aid. There are, however, nine pilot projects that are federal-aid toll roads. See Michael Deitch, *New Directions of the Nation's Public Works*, Congressional Budget Office (September 1988).

[5]The federal government actually started taxing gasoline in 1932, but the funds were not earmarked specifically for highway expenditures. Federal expenditures on highways tracked gas-tax revenues fairly closely during the 1932-55 period. States taxed gasoline for highway expenditures much earlier than the federal government; as early as 1916, nearly 30 percent of states' highway expenditures came from gas-tax revenues. See Michael Deitch, *New Directions of the Nation's Public Works*, Congressional Budget Office (September 1988).

[6]State and local governments contribute most of the non-user-fee revenue for highway expenditures.

[7]Estimates of the costs of congestion are as high as $5.6 billion per year (in 1981). See Steven A. Morrison, "A Survey of Road Pricing," *Transportation Research* 20A (1986) pp. 87-97.

[8]In theory, the federal portion of the gasoline tax should be used to promote interstate mobility for all U.S. citizens, while state and local user fees should cover intrastate and intrametropolitan highway investment. In practice, however, the federal government's highway investments have large effects on local commuting and development patterns, since the Highway Trust Fund provides up to 90 percent of the funds for state and local highway capital projects. Thus, some federal expenditures have primarily local effects even though they are paid for by the motorist at large. A similar problem occurs at the state level, though less severely since states spend their user fees at home.

ated from these particular projects cover only a small part of their infrastructure cost. The third reason prices and costs diverge is that not all motorists impose the same costs. Motorists traveling at peak times impose greater costs than those traveling at off-peak times. Taken together, rush-hour highway users cause higher infrastructure costs because additional lanes are needed to accommodate them. If peak highway capacity is inadequate, rush-hour motorists are likely to impose high congestion costs on one another. Yet, the price that rush-hour motorists pay in user fees is almost the same that off-peak motorists pay. Each of the three reasons for the divergence of prices and costs is easily illustrated.

A Hypothetical Example. Suppose there are only two cities in the country, Taxtown and Spendville. Taxtown is an older, compact city with little open space. Spendville is far less concentrated, with an abundance of inexpensive open land. Both cities have severe problems with rush-hour congestion; the costs of this congestion in lost time and economic activity are $40 million for each city. Because of the availability of inexpensive land in Spendville, it is possible to build a highway there for $30 million that, in the short run, will eliminate the congestion. In Taxtown, the lack of land and dense population drive the construction cost of a new highway up to $50 million. Motorists in Taxtown and Spendville contribute $20 million, $10 million from each city, to the national Highway Trust Fund through user fees; consequently, neither city can pay for congestion-reducing investments from user fees at their current level.

From a *social point of view*, the highway in Spendville should be built, since its benefits will exceed its costs. That is, the benefits of reduced congestion ($40 million) exceed the cost of highway construction ($30 million). The highway in Taxtown should not be built, since the construction cost ($50 million) exceeds the benefit ($40 million). Under the *current system of financing*, user fees from Spendville and Taxtown ($20 million, by way of the national Highway Trust Fund) would be allocated to build the highway in Spendville. (The transfer of funds from Taxtown to Spendville is called a cross-subsidy.) Moreover, an additional $10 million in general tax revenue would be required to build the Spendville highway. (This additional $10 million in general tax revenue is a non-user-fee subsidy.)[9]

The subsidies for Spendville's highway provided by the general taxpayer and the motorists in Taxtown affect more than just Spendville's transportation system. Because two-thirds of the cost of Spendville's highway investment is subsidized, it is likely to be a more attractive place to live and work, as its transportation has been improved without its residents having to bear the full cost. Additionally, the highway subsidies would encourage more geographic dispersion in Spendville and, in the long run, more travel that would partly offset the benefits of increased highway capacity.

The residents of Taxtown, on the other hand, still pay user fees but derive no benefit from the highway investment. From a social perspective, it would be both more equitable and more efficient to increase user fees in Spendville by $20 million and eliminate the general revenue subsidy and the cross-subsidy.[10]

The Importance of Fine-Tuning User Fees. Now let's examine some possible consequences

[9]The actual distribution of federal highway funds is quite complex. Some highway trust funds are allocated by formula, while others, including the interstate highway system, are allocated on a project-by-project basis.

[10]Note that there may be instances when it is more efficient for cities to jointly fund a project—if the project has benefits for both cities. Additionally, sometimes projects should be funded from general revenues. If the overall benefits of a project outweigh what users are willing to pay because of positive externalities, there is a good rationale for subsidies.

of increasing user fees in Spendville. Just increasing user fees to cover the costs of the new highway would likely reduce the demand for highway travel and, hence, reduce congestion. With the reduced travel, a less ambitious, less expensive new highway might suffice to eliminate the remaining congestion. Now suppose that user fees are increased only for rush-hour motorists, since these motorists impose the highest costs. This would reduce travel demand when its costs are highest, partly by shifting travel to periods when the road is underused. The reduction in peak travel would lessen the need for new highway construction while keeping user fees low for those motorists imposing only small costs.

But what of the congestion in Taxtown? Suppose congestion in Taxtown could be eliminated by improved public transportation costing $35 million. This investment in public transportation improvement should be made, since the benefits of reduced automobile congestion ($40 million) outweigh the costs of improved public transportation ($35 million). However, highway user fees probably would not be used for public transportation investment, even though it is socially desirable.[11] Financing for public transportation would have to come from a combination of public-transit user fees and general revenue subsidies, even though automobile users directly benefit because overall congestion would be reduced.[12] It would be more efficient to increase highway user fees and invest them in public transportation than either build the highway for $50 million or do nothing and endure the congestion cost. In this case, limiting the use of motorists' user fees to highway investments is against the interest of the motorist.

By fine-tuning user fees to more accurately reflect the costs imposed, and by investing user fees where they make the greatest contribution to mobility, it is possible to reduce congestion and the quantity of new infrastructure needed. In our example, Spendville might be able to have both low average user fees and low congestion without subsidies from general taxpayers and cross-subsidies from motorists in Taxtown. Taxtown's residents would be better off raising user fees and investing in public transportation. In either case, if pricing is ignored, new highways designed to reduce congestion are bound to become congested themselves, since the low price will attract users until congestion costs offset the benefits.

DISTORTIONS DUE TO UNEQUAL SUBSIDIES

While the example of Taxtown and Spendville is purely hypothetical, it mirrors what actually occurs in the pricing of and investment in our highway system. The extent to which travel and location decisions are distorted from the most efficient ones depends, in part, on how far prices diverge from the true costs of highway use. The degree to which the highway user is subsidized on average will affect the attractiveness of the automobile relative to other transportation alternatives, as well as the level of total travel and, in the long run, the extent of geographic dispersion. Unequal subsidies for individual highway projects will distort the relative attractiveness of locations for individuals and businesses, regardless of the average level of subsidy. Thus when examining the extent of highway subsidies, it is useful to go beyond their average level and examine those for individual highway projects.

Individual Highway Subsidies. Subsidies for individual highways may differ widely

[11]Highway user fees are generally earmarked solely for highway investments, though there are some exceptions. For example, 1 cent of the 1982 5-cent hike in federal gasoline taxes is dedicated to public transportation. See the Highway Revenue Act of 1982.

[12]The only justification for subsidizing public transportation in this case is that it benefits riders and motorists alike. If no benefits accrued to nonriders, it would not be efficient to subsidize public transportation.

from the average subsidy. It is not necessarily true that users of any particular highway will pay the 1986 average of 61 percent of highway infrastructure costs. Some areas will generate more user fees than are spent, while others will spend more than are generated. Just as in Taxtown and Spendville, those making use of highway investment may not be financing the total investment through user fees.

For any project, several factors affect the share of the infrastructure costs covered by highway user fees. On the cost side, expenses increase with the number of lanes needed, the quality of the roadway, the cost of acquiring land, and the complexity of the project. For example, expressways through densely populated urban areas often are complex and have high land-acquisition costs. In the case of new highways, costs are often higher as special amenities, such as sound barriers, are built into the design of the highway to minimize its negative impacts on the communities it passes through.[13] On the revenue side, user fees increase proportionately with travel so that the most heavily traveled roads generate the most revenue. Urban highways thus tend to generate more user fees than rural expressways.

The subsidy level for any particular project depends on the interaction of factors affecting costs and revenues. A rural highway may be relatively inexpensive to construct but traffic may be low, resulting in low user fees, and hence the highway may be heavily subsidized. The pattern of traffic demand affects the level of subsidy for a project in another way. Peak travel levels determine the number of lanes needed for a highway and hence the cost, but the total user fees depend only on total traffic. So if traffic is very heavy at rush hours but light at other times during the day, the highway built for heavy peak traffic will require higher subsidies than if demand were smooth throughout the day.

Some Real-World Examples. To get a handle on the extent to which user fees and highway infrastructure costs diverge, we examined 13 major highway construction projects—six in Pennsylvania, six in Maryland, and one in New Jersey. (See Tables 1 and 2 for a description of each project, listed in order from the most highly subsidized on a per-car basis to the least subsidized.) The projects, ranging in cost from $97 million to $581 million, include completely new highways and reconstructions of existing highways. The cost per mile of construction varies widely, from a low of $6.8 million per mile to a high of $133.3 million per mile. For all but one project, current and future travel levels are shown in Table 1.[14] The current daily usage varies from 9,200 cars per day to 127,600 cars per day. The projected daily usage ranges from 26,000 to 133,800 cars per day.

For each project, yearly costs, yearly user-fee revenue, and subsidy have been calculated and are shown in Table 2.[15] (For method of cal-

[13]Some claim that the costs of these amenities often outweigh the environmental benefits. See Jose A. Gomez-Ibanez, "The Federal Role in Urban Transportation," in *American Domestic Priorities*, John M. Quigley and Daniel L. Rubinfeld, eds., University of California Press, Berkeley (1985) p. 205.

[14]The current levels refer either to the number of cars per day using the highway when it is initially opened, or, if it is a reconstruction or expansion, to the traffic level prior to the project. The projected level of travel is the number of cars per day expected by the states' departments of transportation when the transportation and land-use patterns have evolved around the highway. The years in which the projected travel levels are reached are not the same for each project.

[15]The cost figures include only the opportunity cost of capital and depreciation, and no allowance for maintenance, law enforcement, administration, or externalities such as pollution and personal injury from highway accidents. The revenue figures include only gasoline taxes, both state and federal, and assume that, without the investment, there would be zero user-fee revenue. On balance, the estimates of subsidy (costs–revenue) are likely to be underestimated.

TABLE 1

Project	State	Urban, Suburban, or Rural	Capital Cost ($ million)	Miles	Current Cars Per Day	Projected Cars Per Day
Blue	PA	Suburban	581	21.5	64,000	75,000
US48	MD	Rural	202	22.1	9,200	26,000
US220	PA	Rural	97	11.0	17,000	NA*
I279	PA	Urban	405	16.0	45,000	74,000
I78	PA	Urb/Suburban	384	30.0	35,000	64,000
I97	MD	Suburban	364	20.9	43,822	72,597
MD100	MD	Suburban	197	12.4	21,581	49,935
Vine	PA	Urban	200	1.5	70,000	120,000
RTE29	NJ	Suburban	253	13.5	86,667	131,185
I68	MD	Suburban	204	10.2	75,229	105,490
US50	MD	Suburban	103	15.2	28,923	47,148
I68	MD	Suburban	158	9.8	46,510	89,176
I76	PA	Urb/Suburban	200	17.7	127,600	133,800

Notes: Gas tax (state + federal in $/gal): Maryland=.275; Pennsylvania=.21; New Jersey=.195; U.S.=.9. Quarterly Summary of Federal, State, and Local Tax Revenue, Bureau of the Census, GT-88-Q3.

Sources: *State Report on Transportation* Vol. II, Maryland Department of Transportation, FY1988 - FY1993; New Jersey State Department of Transportation (Regional Office); Pennsylvania State Department of Transportation (Regional Offices).

*Projected value not available.

culation, see *Calculating Cost and Revenues,* p.17.) According to these calculations, none of the projects generates sufficient user fees to cover the infrastructure investment. In fact, based on the current travel-usage figures, user fees cover 54 percent of the investment at best and 2.5 percent at worst. On a per-car basis, the subsidy ranges from $0.16 to $4.50 for every car using the highway. On a vehicle-mile-traveled basis, the subsidy ranges from less than 1 cent per vehicle mile to 41 cents per vehicle mile. Based on projected travel, these figures range from 0.8 cents to 23 cents per vehicle mile.[16] All of these highway projects are very highly subsidized—some because their costs of construction are very high and others because the total travel, and hence user fees, is low.

Three Philadelphia-area Projects. Let's take a closer look at three projects, all in the Philadelphia metropolitan area. The most expensive project—I476, commonly known as the *Blue Route*—is a completely new highway cutting through suburban Philadelphia. This highway is highly subsidized, by over $41 million per year (8 cents per vehicle mile traveled, or $1.47 per car), because it has a relatively high construction cost on a per-mile basis ($27 million per mile) and because the traffic level (75,000 cars per day) is not that high. The most expensive project on a per-mile basis is the *Vine*

[16]These figures do not take into account the higher subsidies accruing in years prior to the traffic reaching the projected level.

TABLE 2

Project	Yearly Gas-Tax Revenue ($ million)		Total Yearly Cost ($ million)	Yearly Subsidy ($ million)		Subsidy Per Car ($ million)	
	Current	Projected		Current	Projected	Current	Projected
Blue	5.27	6.18	46.35	41.07	40.17	1.76	1.47
US48	1.02	2.88	16.12	15.10	13.24	4.50	1.39
US220	0.72	NA*	7.74	7.02	NA*	1.13	NA[a]*
I279	2.76	4.54	32.31	29.55	27.77	1.80	1.03
I78	4.02	7.36	30.63	26.61	23.27	2.08	1.00
I97	4.60	7.61	29.04	24.44	21.42	1.53	0.81
MD100	1.34	3.11	15.74	14.40	12.63	1.83	0.69
Vine	0.40	0.69	15.95	15.55	15.26	0.61	0.35
RTE29	4.16	6.30	20.18	16.02	13.88	0.51	0.29
I68	3.85	5.40	16.31	12.46	10.91	0.45	0.28
US50	2.21	3.60	8.20	5.99	4.60	0.57	0.27
I68	2.29	4.39	12.59	10.30	8.20	0.61	0.25
I76	8.66	9.08	15.95	7.30	6.88	0.16	0.14

Notes: Yearly Revenue = Tax * (Miles/MPG) * (Cars/Day) * 365
Total Yearly Cost = (Int. Rate * Capital Cost)/(1-exp(- Int. Rate * Capital Life))
Yearly Subsidy = Yearly Cost - Yearly Revenue
Subsidy/Car = Yearly Subsidy/(Cars/Day * 365)

Assumed miles per gallon: 20
Assumed capital life: 30 years
Assumed interest rate: 7 percent

[a]Ranked by current subsidy per car.
*Projected values not available.

Street Expressway, running through the heart of Philadelphia. This project is almost five times as expensive on a per-mile basis than the Blue Route, but its projected subsidy per vehicle mile is a little more than three times as great because of the heavy traffic volume (120,000 cars per day).[17]

The I76 *(Schuylkill Expressway)* reconstruction project in the Philadelphia metropolitan area is, by far, the least subsidized project. It has relatively low construction costs per mile—primarily because no additional land needed to be acquired for reconstruction. Additionally, the highway has very high traffic volumes of 133,800 cars per day. The projected subsidy on a per-mile basis for this project is less than 1 cent per mile, or 14 cents for each car using the expressway.

Each of these projects is likely to have a

[17]This project is very expensive because part of the highway runs underground for aesthetic and environmental reasons.

different impact on the pattern of regional development in metropolitan Philadelphia. Since the I76 reconstruction serves the same area at close to the same capacity as the original highway, it probably will have little impact on new development. Rather, it should facilitate the continued economic health of the areas it has historically served. The effect of the Vine Street

Calculating Cost and Revenues

To calculate subsidies for a highway project, we compare the yearly costs of the highway with the yearly revenue from user fees. In computing the yearly cost of a highway project, we need to estimate the opportunity cost of the capital invested in the project, the rate at which the highway depreciates, the maintenance and operating costs, and the costs of adverse side effects from the highway, such as increased pollution. To calculate user fees, we need to know how many cars will use the road, how much gas they will use, and what the gasoline tax rate is.

Consider highway costs first. What is the opportunity cost of capital? It is the amount of money one could make by not spending the money on the highway project, but rather by investing it in some risk-free asset like a Treasury bill. For example, the opportunity cost of capital for the $581 million spent on the Blue Route, assuming a 7 percent interest rate, is .07 times $581 million, or $41 million a year. The highway does not last forever, so we must take into account how much the highway depreciates each year. For our calculations, we assume that the highway lasts 30 years and that the asset delivers the same service flow throughout the life of the highway. Given these assumptions, coupled with a 7 percent rate of interest, the yearly expense for the Blue Route is $46.35 million.* The yearly expense increases with the level of interest rate assumed; the assumed interest rate of 7 percent is less than current long-term rates, which are about 8 percent, so our cost estimate is conservative. Also, since we ignore all other costs, such as maintenance and pollution costs, our cost estimates are lower than the true costs.

To calculate the user fees generated by motorists, we use estimates of the number of cars using the highway, then assume that the average car gets 20 miles to the gallon and that it travels the entire length of the highway. The yearly revenue equals the gasoline tax multiplied by number of gallons consumed by each car on the highway times the number of cars using the highway each year. Using the Blue Route as an example, total gasoline taxes in Pennsylvania are 21 cents per gallon, the highway length is 21.5 miles, and the expected number of cars per day at the outset is 64,000, or 23.4 million cars per year. This gives total revenues of $5.27 million per year. An implicit assumption in this calculation is that all travel on the highway is new travel—that is, it is travel that would not have occurred without the highway. Because this assumption is unlikely to be true, the estimate is likely to overstate the new user fees resulting from the project.

Subsidies are the difference between yearly costs and yearly revenues. In the case of the Blue Route, these amount to $41.1 million initially. Because costs are probably underestimated and revenues are probably overestimated, the subsidy figure may be too low.

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*The formula for calculating the annual opportunity plus depreciation costs is: $(r \times k) / (1 - \exp(-r \times L))$, where r is the interest rate, k is the total capital cost, and L is the useful life of the highway. Note that $r \times k$ is the opportunity cost, and the depreciation cost is the difference between the yearly cost and the yearly opportunity cost. For a discussion of this calculation, see Theodore Keeler and John S. Ying, "Measuring the Benefits of a Large Public Investment," *Journal of Public Economics* (1988) pp. 69-85.

Expressway, despite its high subsidy level, is uncertain; it is unclear whether it will serve primarily as a bypass for suburb-to-suburb travel or whether it will improve access and extend the boundaries of the central business district. Finally, the Blue Route is likely to have large effects on regional development, since it provides access to a large area that formerly had no interstate highway access. Whether its large subsidy will be offset by reduced congestion and by new economic development (as opposed to shifts in the location of development) is an open question.

DO WE INVEST IN HIGHWAYS EFFICIENTLY?

Just because a highway does not generate sufficient revenue under the current mechanism of pricing does not mean that the highway should not be built. The decision to build—and the type of road to be built—depends on the social costs and benefits of the highway. The benefits include the time saved from reduced congestion and the new economic activity spawned by the highway. For example, the Blue Route, though highly subsidized, may be a good investment if the time savings plus net benefits to nonusers, such as new economic development, are greater than the subsidy. But in this case, those deriving the benefit from increased local economic development should help pay the cost of the investment.

If a highway's costs are not borne by those deriving the benefits, motorists have too large an incentive for travel, and local jurisdictions have an incentive to undertake projects that provide some benefits but not enough to justify the costs. Also, it is easier for localities to undertake a project that simply shifts development from one area to another. In the case of the Blue Route, for example, there will likely be significant economic development in the area it serves. But how much of this development would have occurred anyway, only in a different location, had the large subsidy not existed?

Our analysis indicates that all of the large highway projects considered are highly subsidized and that the subsidy levels of the 13 projects vary considerably. While many of these projects may be worthwhile from a social point of view, the obvious beneficiaries are not paying the full cost. We can assume that for each project there are some benefits enjoyed by nonusers to justify a subsidy, but there is little indication that the different subsidy levels are in any way related to the benefits to nonusers. It is also likely that the large subsidy levels are not matched by benefits to nonusers and therefore encourage too much auto travel and too much dispersion of economic activity. The best way to ensure efficient transportation and location decisions is to make those imposing the costs or deriving the benefits—whether motorists or local communities seeking development—pay for the investment.