

An Equity Assessment of Federal Highway User Charges

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ABSTRACT

The Surface Transportation Assistance Act of 1982 made significant changes in the structure and level of federal highway user charges. Examined in this paper is the degree to which payments under the new federal rates conform to the cost responsibility of the various highway user classes as determined by the 1982 Federal Highway Cost Allocation Study. Estimated annual payments for various representative vehicle types and assumed annual mileages are computed and compared against the cost responsibilities of these vehicles. The analysis indicates significant equity problems within the new federal user charge structure. In particular, the new rates do not remedy the problem of cross-subsidization of high-mileage vehicles by low-mileage vehicles. Based on this analysis, several recommendations are made for improving the federal highway user charge structure, including the implementation of a federal weight-distance tax. It is demonstrated that the adoption of such a tax could make a significant contribution toward improving the equity of the federal tax structure.

The Surface Transportation Act of 1978, Section 506 (P.L. 95-599), mandated the U.S. Department of Transportation (DOT) to conduct a new Federal Highway Cost Allocation Study (FHCAS). In addition to the cost allocation study, Section 506 requested an assessment of federal user charges and called for recommendations "on any more equitable charges." Pursuant to this charge DOT submitted the Final Report on the Federal Highway Cost Allocation Study (1) to Congress in May 1982.

In response to pressure from the White House, the second session of the 97th Congress passed the Surface Transportation Assistance Act of 1982 (STAA). The House and Senate Committees, working in close consultation with the DOT cost allocation team, finally worked out a compromise version of the tax structure recommended in Chapter VI of the study. This version, referred to as the Conference Report, raised \$12.7 billion from highway users and was hailed by Congress as a jobs bill that would give a shot in the arm to the ailing economy.

In addressing the most pressing needs of the nation's highways and mass transit systems, the President in his remarks focused on the desperate condition of the transportation infrastructure and stressed that the bill was fair and the levies should be considered as user fees rather than taxes. Even though the bill easily passed Congress, after a prolonged filibuster attempt by Senator Helms of North Carolina, all was not calm on Capitol Hill or across the country. Although most agreed to the need for additional dollars to preserve and maintain a deteriorating transportation network, many were unsettled by the particulars of the tax structure.

Despite the fact that the Conference Report's tax

structure yielded tax rates below the rates recommended by the Federal Highway Cost Allocation Study, truckers believed they would be unfairly burdened. They found their frustrations represented by the Independent Truckers of America who sponsored a nationwide truckers strike in February 1983. Although short-lived, the strike culminated in violence that spread throughout the nation and underscored the intensity of the debate. The truckers were primarily directing their dissatisfaction toward the large fee increases scheduled for heavy trucks. The current highway use tax is a flat fee of \$3 per thousand pounds of gross vehicle weight (GVW) for trucks weighing more than 26,000 lb. The 1982 STAA scheduled phase-in rates up to 850 percent above the existing rates for the largest trucks.

Apparently, these voices have not gone unheeded by certain congressmen. Six bills have been introduced in the 98th Congress to drastically restructure the Conference Report rates--primarily by eliminating or reducing the heavy vehicle use tax with partial replacement by a fuels tax surcharge. Before this flurry of bills dealing with the heavy vehicle use tax, Congress directed DOT in Section 513(g) of the 1982 STAA to conduct a study of alternatives to the heavy vehicle use tax. This pressure has moved up the study deadline substantially so that Congress could consider alternatives by the summer of 1983. A meeting soliciting public comments on the study was held at DOT on April 27, 1983, and written comments on the docket were accepted through September 30, 1983.

Thus the stage is set for a congressional overhauling of the tax structure embodied in the 1982 STAA. The extent to which the concern about the fairness (equity) of the scheduled tax structure is valid is the subject of this paper. No attempt is made to analyze the results of the Federal Highway Cost Allocation Study either in terms of its theoretical or its empirical validity, but rather the question is raised as to how well the Conference Report's tax structure captures the costs attributed to the various vehicle classes identified in the study. It is readily acknowledged that different analytical approaches can yield substantially different results from the Federal Highway Cost Allocation Study. It is also recognized that the Federal Highway Cost Allocation Study embraced equity and investment criteria but not economic efficiency criteria.

BACKGROUND

Highways have had a long history of the "user-pays" concept and the principle now seems firmly established. As they are perceived by the public and their elected representatives, user taxes are generally accepted as fair. But there is much less of a consensus as to whether or not they are fairly levied.

Historically, the federal government and most states have predicted cost allocation studies on equity rather than on efficiency, and have employed cost allocation on the basis of cost occasioning as the guiding principle of fairness. This method holds that those vehicle groups that occasion (give rise to) traceable costs should bear the tax burden.

Thus, the approach seeks to assign costs on the basis of relationships between vehicle characteristics (primarily size and weight) and additional highway costs.

The 1982 Federal Highway Cost Allocation Study was conducted using this concept of equity. The study recognized efficiency-based allocation approaches as a valid alternative and devoted an appendix to exploring the nature and magnitude of user charges based on marginal cost pricing.

Under the equity approach a fair tax structure requires that (a) all vehicle groups pay their fair share of fully allocated costs and (b) vehicles within the same group pay approximately the same amount. The first condition is necessary to satisfy vertical equity, whereas the second satisfies horizontal equity. A cross-subsidy between road user groups exists when some vehicle classes are overpaying and others are underpaying relative to their respective responsibilities. A cross-subsidy within a group exists when vehicles of the same group, with equal circumstances, are paying unequal amounts.

To avoid both vertical and horizontal equity problems, it is essential that the tax structure be flexible enough to capture the variable costs attributable to vehicles. These are costs resulting from a vehicle's size, weight, and travel characteristics.

The flexibility of the tax structure, in turn, depends on the nature of the tax type. Some tax types are adequate to avoid vertical inequity but not horizontal inequity. As will be shown, the Conference Report's tax structure, while failing both vertical and horizontal equity tests, results in alarming horizontal inequities. It is this aspect of the current federal tax structure that requires extensive overhauling, and the repair can only be made by introducing a more flexible tax-type that can adequately account for miles traveled among the heavy-vehicle group. Before analyzing the federal tax structure, some considerations that are prerequisite to the development of a rational equity-based tax structure should be examined. Here some lessons can be learned from the Oregon philosophy of highway finance and its resulting tax structure.

UNDERLYING PHILOSOPHY OF THE OREGON HIGHWAY USER TAX STRUCTURE

The state of Oregon has not relied exclusively on motor vehicle ownership and fuel for its revenue base, nor has it relied on general funds. Oregon has, since the mid-1930s, been dedicated philosophically to a cost-based approach to road finance known as cost responsibility. This approach has given Oregon a source of revenue more directly related to road wear than are the traditional registration and fuel taxes.

Throughout the past 75 years, Oregon has been guided in its road user taxation by three persistent principles:

1. Road users should pay the cost of the highway system.
2. Road users should be charged according to their cost responsibility; that is, payments by road user should be in proportion to the costs for which they are responsible.
3. Road user tax revenue should be used primarily for the operation, construction, and maintenance of highways.

In 1935 Oregon conducted its first cost responsibility study. In this study, the general "user should pay" principle was extended to include the

imperative that each class of road users should be taxed in proportion to its specific responsibility for the provision and maintenance of roads.

Based on this concept of highway finance, the study called for a three-tiered structure of road user fees. The first tier or structure is the registration fee, which, in Oregon, is considered to compensate for the fixed or non-use-related costs of providing a highway system. Because these costs account for a relatively minor portion of total highway costs, the registration fee in Oregon traditionally has been low in comparison to the corresponding fees in many other states.

The second tier is the fuel tax, which provides adequately for meeting the use-related cost responsibility of automobiles and other light vehicles. This is an important part of a true user tax, as the incidence of the tax falls on road users in proportion to their use of the roads.

The key to the Oregon system is the third tier in its tax structure, the weight-mile tax, a graduated mileage tax applied to all commercial vehicles weighing more than 6,000 lb. The rationale for a weight-distance tax is quite simple. It is by now well established that building roads to accommodate truck traffic costs more than building roads for automobile and other light vehicle traffic. Roads must be wider and stronger and bridges must be wider, higher, and stronger to accommodate trucks. In addition, wear and tear on the roads increases dramatically with increases in vehicle size and weight. Heavier axle loads increase the burden on the roads in an exponential manner. For example, a conference report (2) published on the proceedings of an American Association of State Highway Officials (AASHO) design committee concluded that the conventional five-axle semi operating at 80,000 lb does approximately six times more damage than the same vehicle operating at 50,000 lb.

The weight-mile tax, in effect, takes the place of a fuel tax on heavy vehicles, as fuel consumption, although it increases with vehicle size and weight, does not increase proportionately with cost responsibility. The results of the 1980 Oregon Motor Vehicle Cost Responsibility Study (3) indicate that the per-mile responsibility of an 80,000-lb truck is about 16 times greater than the per-mile responsibility of an automobile. The 80,000-lb truck, however, uses only three to four times the fuel used by the average passenger car for a comparable amount of travel. Similarly, the 1980 study revealed that the overall per-mile responsibility of a typical 80,000-lb truck is double that of a typical 50,000-lb truck, but the 80,000-lb truck uses only about 14 percent more fuel. Thus, fuel consumption alone does not adequately reflect the cost responsibility of vehicles of different sizes and weights.

This same deficiency applies to vehicle registration fees and other road user charges, such as the federal heavy vehicle use tax, that are not related to the amount of highway use. Although a registration tax based on vehicle gross weight may be graduated in its application, it does not reflect the variation in travel by the same vehicle from year to year or the variation in mileage among different vehicles of the same type and gross weight. Thus, two vehicles that are identical except that one travels 100,000 miles a year and the other travels 20,000 miles a year pay the same registration fee, even though the total responsibility of the first vehicle is five times that of the second vehicle.

Hence, neither a fuel tax nor a vehicle registration fee adequately reflects the cost responsibility of vehicles of different sizes and weights. A weight-mile tax, a tax based on vehicle weight and distance traveled, is the only type of tax that can

equitably charge heavy vehicles for the costs for which they are responsible. A road user tax structure consisting of a balanced mix of registration, fuel, and weight-distance taxes is required to capture the cost responsibility of vehicles of different sizes and weights and to equitably charge both high- and low-mileage vehicles.

THE FEDERAL HIGHWAY USER TAX STRUCTURE

On January 6, 1983, the President signed into law HR 6211, the 1982 Surface Transportation Assistance Act. As noted earlier, this legislation, among other things, substantially raised road user fees paid by vehicles operating on the highways. The legislation repealed previous user taxes on tread rubber, inner tubes, lubricating oil, and truck parts. What remains of the old structure is the gasoline and diesel taxes, the tax on new tires, the tax on new trucks and tractors, and the heavy vehicle use tax. Table 1 gives details of the Conference Report rates enacted by the 1982 STAA.

The gasoline and diesel tax was raised 5 cents per gallon effective April 1, 1983, for an increase of 125 percent. The revised tax schedule on new tires became effective January 1, 1984. The new schedule eliminates the tax on small tires (under 40 lb) used by cars but graduates the tax by weight for heavier tires used by trucks.

The revised truck and trailer sales tax went into effect on April 1, 1983. Under the new law, light trucks under 33,000 lb and trailers under 26,000 lb are exempt. The heavier vehicles now pay a sales tax of 12 percent of the retail price instead of 10 percent of the wholesale price.

The heavy vehicle use tax was dramatically revised. The old rate was a flat fee of \$3 per 1,000 lb GVW for trucks larger than 26,000 lb. The revised tax is a graduated schedule starting at \$50 for a 33,000-lb truck and peaks at \$1,900 for trucks 80,000 lb and larger. The new rates will go into effect on July 1, 1984, and the rates for trucks

larger than 55,000 lb will be incrementally phased upward during the next 4 years. For example, the rate for an 80,000-lb truck, effective July 1, 1984, will be \$1,600; this changes to \$1,700 on July 1, 1986, and reaches its maximum level of \$1,900 on July 1, 1988.

As indicated in Table 1, all buses are granted a full exemption from federal fuel taxes. This exemption represents a substantial subsidy to a particular class of heavy vehicles using the nation's highways, roads, and streets.

Vehicles using gasohol pay a 4 cents per gallon fuel tax. This results in such vehicles paying only 44 percent of the per gallon fuels tax paid by vehicles using gasoline and diesel fuel. Also, as indicated in Table 1, heavy vehicles traveling less than 5,000 miles annually were exempted from paying the heavy vehicle use tax.

EQUITY OF THE FEDERAL HIGHWAY USER FEE STRUCTURE

As mentioned earlier, the federal highway user fee structure fails to meet both vertical and horizontal equity tests. The nature and extent of the inequities in the 1982 STAA user charge structure is examined in this section.

Exemptions

Without question, most exemptions are contrary to the basic purpose of equitable cost allocation, which is that each vehicle should pay for the highway costs it causes. The exemptions mentioned earlier lead to obvious cross-subsidy situations. The exemption of buses from the fuel tax means that other passenger vehicles must pick up their share of road wear and tear. The result is a vertical inequity.

The gasohol exemption will primarily benefit passenger cars and pickups. By 1985 this is likely to amount to more than \$100 million. Other passenger

TABLE 1 Federal User Fee Rates Enacted by the Surface Transportation Assistance Act of 1982

| User Fee Type | Rate (\$) |
|---|--|
| Gasoline | 0.09/gallon |
| Diesel | 0.09/gallon |
| Gasohol | 0.04/gallon |
| Bus fuel | Full exemption for all buses |
| Tires | By weight 0 to first 40 lb 0.15/lb next 30 lb 0.30/lb next 20 lb 0.50/lb balance |
| Truck sales | 12 percent at retail for trucks more than 33,000 lb GVW, trailers more than 26,000 lb |
| Heavy vehicle use tax (lb GVW) | |
| 26,000-33,000 | 0 |
| 33,000-55,000 | 50 + 25/1,000 lb more than 33,000 lb |
| 55,000-70,000 | 600 + 52/1,000 lb more than 55,000 lb |
| 70,000-80,000 | 1,380 + 52/1,000 lb more than 70,000 lb |
| 80,000 lb and above | 1,900 |
| | Top rate (\$) |
| | 1,600 on July 1, 1984 |
| | 1,700 on July 1, 1986 |
| | 1,900 on July 1, 1988 |
| Trucks traveling less than 5,000 miles/year | Exempt |

Source: Data compiled from information provided by Anthony Kane, U.S. Department of Transportation, Federal Highway Administration, 1983.

vehicles in the federal study were assigned this user tax liability, thus creating a horizontal inequity in the tax structure.

Other heavy vehicles were assigned the user tax liability that resulted from the heavy vehicle use tax exemption of vehicles traveling less than 5,000 miles. This exemption worsens the horizontal equity of the federal structure. To be sure, a heavy vehicle traveling less than 5,000 miles has the same per-mile cost responsibility for road use as does one traveling 100,000 miles (assuming similar load factors).

Cost Responsibility Between Vehicle Classes

A litmus test of vertical equity is to compare the cost responsibility of a vehicle class to its revenue payments. Table 2 provides such a comparison for eight major vehicle classes.

Automobiles and motorcycles are the only groups whose payments closely match their responsibility, with a 3 percent overpayment. Buses, as exempt vehicles, contribute nothing toward their cost responsibility. Interestingly, the bus underpayment of \$160.4 million is sufficient to offset the automobile and motorcycle overpayment of \$149.5 million. However, as pickups and vans are overpaying by \$282.5 million, or 13 percent, the passenger-carrying vehicles as a whole overpay by \$271.6 million. This sizable overpayment in effect represents a cross-subsidy to freight-hauling vehicles and most especially the heaviest truck classes.

Single-unit trucks (excluding pickups) are overpaying their share of costs by 18 percent and combination trucks weighing less than 70,000 lb are overpaying by an even more significant 30 percent. Together, these lightest of the freight-hauling vehicles are overpaying a whopping \$426.6 million. This overpayment results in a significant cross-subsidy to the heavier combination vehicles, 70,000 lb and more.

The 70,000 to 75,000-lb combination vehicles are underpaying their cost responsibility by 11 percent, or \$118.4 million, and the heaviest group, the more than 75,000-lb class, is substantially underpaying by 31 percent, or \$579.8 million. Together, the heaviest freight-hauling vehicles are being subsidized by almost \$700 million per year. This deficit is compensated by the overpayments made by passenger vehicles (except buses) and lighter trucks.

The data presented in Table 2 indicate that by 1985 the rates contained in the 1982 STAA will lead to a significant imbalance in vertical equity among

user groups. The failure of the legislated pricing structure to adequately reflect the cost responsibilities of vehicle groups will inevitably lead to overuse of highway facilities by the heaviest vehicle classes.

The problem of significant imbalance between cost responsibility and payments within the freight-hauling group is a direct result of an inadequate user fee structure. The tax types chosen for trucks are not flexible enough to account for variations in weight and distance traveled. This is especially true for the excise taxes and the heavy vehicle use tax. Repeal of these taxes and the introduction of a tax type more responsive to weight and distance traveled is the key to improving the vertical equity of the federal structure.

Cost Responsibility Within Vehicle Classes

In addition to establishing equity between classes of vehicles (vertical equity), it is equally important to address the question of equity among the vehicles within each class (horizontal equity). Because of the composition of the federal tax structure under the 1982 STAA, substantial horizontal inequities exist within the heavy vehicle classes that do not appear within the light vehicle classes. This is demonstrated by the data given in Tables 3 through 7, which compare tax payments and cost responsibilities at various annual mileages for five selected vehicle classes.

The data in Table 3 indicate that regardless of miles traveled the ratio of tax paid to cost responsibility for automobiles and motorcycles remains virtually constant. Under the 1982 STAA, automobiles and motorcycles pay all of their tax liability through the fuel tax. This tax is highly related to vehicle travel and retains, on the average, a close relationship to cost responsibility.

The data in Table 4 indicate that single-unit trucks have somewhat of a horizontal equity problem. A single-unit truck that travels 100,000 miles per year pays about seven times as much as one traveling 10,000 miles per year, whereas the cost responsibility of the vehicle traveling 100,000 miles per year is ten times greater.

Tables 5 through 7, on the other hand, display data for combination vehicles that pay the new vehicle excise tax and the heavy vehicle use tax in addition to the fuel and tire taxes. As neither the new vehicle tax nor the use tax is related to mileage, the tax-payment and cost-responsibility ratio varies greatly with the amount of travel by a vehi-

TABLE 2 Comparison of Vehicle Class Responsibility to User Payments Under 1982 STAA (millions of dollars)

| Vehicle Class | 1982 STAA Total Revenue | FHCAS Cost Responsibility ^a | Overpayment or Underpayment | |
|-----------------------------|-------------------------------|---|--------------------------------|---------|
| | | | Total | Percent |
| Automobiles and motorcycles | 5,586.0 | 5,436.5 | +149.5 | +3 |
| Intercity buses | 0.0 | 33.3 | -33.3 | |
| Other buses | 0.0 | 127.1 | -127.1 | |
| Pickups and vans | 2,470.7 | 2,188.2 | +282.5 | +13 |
| Other single units | 1,106.2 | 937.5 | +168.7 | +18 |
| Combinations (lb) | 3,388.5 | 3,828.8 | -440.3 | -11 |
| Less than 70,000 | (1,109.0) | (851.1) | +257.9 | +30 |
| 70,000-75,000 | (979.1) | (1,097.5) | -118.4 | -11 |
| More than 75,000 | (1,300.4) | (1,880.2) | -579.8 | -31 |
| Total | 12,551.4 | 12,551.4 | | |

Source: Data compiled from information provided by Anthony Kane, U.S. Department of Transportation, Federal Highway Administration, 1983.

^aThe cost responsibility numbers given here are 2 percent lower than the numbers given in the 1982 FHCAS. They were adjusted downward to reflect the vertical inequity problem for a given program level.

TABLE 3 Comparison of 1985 Tax Payments and Responsibility at Various Annual Mileages Under 1982 STAA—Automobiles and Motorcycles

| Annual VMT | Use Tax | Excise Taxes | Fuel Tax ^d | Total Taxes | Cost Responsibility ^b | Ratio |
|-------------|---------|--------------|-----------------------|-------------|----------------------------------|-------|
| 9,940 (avg) | 0 | 0 | 50 | 50 | 47 | 1.06 |
| 10,000 | 0 | 0 | 50 | 50 | 47 | 1.06 |
| 25,000 | 0 | 0 | 125 | 125 | 118 | 1.06 |
| 50,000 | 0 | 0 | 250 | 250 | 236 | 1.06 |
| 75,000 | 0 | 0 | 375 | 375 | 354 | 1.06 |
| 100,000 | 0 | 0 | 500 | 500 | 472 | 1.06 |

^aBased on standard sized automobile with average mile per gallon (MPG) of 18.0.

^bResponsibility of \$0.00472 per mile based on a \$12.6 billion program. Derived from data in Final Report on the Federal Highway Cost Allocation Study, Appendix C and the Congressional Conference Report (1).

TABLE 4 Comparison of 1985 Tax Payments and Responsibility at Various Annual Mileages Under 1982 STAA—Single Unit Trucks

| Annual VMT | Use Tax ^a | Excise Taxes ^b | Fuel Tax ^c | Total Taxes | Cost Responsibility ^d | Ratio |
|--------------|----------------------|---------------------------|-----------------------|-------------|----------------------------------|-------|
| 10,000 | 66 | 6 | 130 | 202 | 162 | 1.25 |
| 12,920 (avg) | 66 | 8 | 169 | 243 | 209 | 1.16 |
| 25,000 | 66 | 15 | 326 | 407 | 405 | 1.00 |
| 50,000 | 66 | 30 | 652 | 748 | 810 | 0.92 |
| 75,000 | 66 | 45 | 978 | 1,089 | 1,215 | 0.90 |
| 100,000 | 66 | 60 | 1,304 | 1,430 | 1,620 | 0.88 |

^aAssumes typical vehicle with two axles at 33,500 lb GVW.

^bIncludes tire excise tax only.

^cBased on average MPG of 6.9.

^dResponsibility of \$0.0162 per mile based on a \$12.6 billion program. Derived from data in Final Report on the Federal Highway Cost Allocation Study, Appendix C and the Congressional Conference Report (1).

TABLE 5 Comparison of 1985 Tax Payments and Responsibility at Various Annual Mileages Under 1982 STAA—Combinations Less Than 70,000 lb

| Annual VMT | Use Tax ^a | Excise Taxes ^b | Fuel Tax ^c | Total Taxes | Cost Responsibility ^d | Ratio |
|--------------|----------------------|---------------------------|-----------------------|-------------|----------------------------------|-------|
| 10,000 | 600 | 450 | 155 | 1,205 | 345 | 3.49 |
| 25,000 | 600 | 463 | 388 | 1,451 | 862 | 1.68 |
| 36,560 (avg) | 600 | 473 | 567 | 1,640 | 1,261 | 1.30 |
| 50,000 | 600 | 485 | 776 | 1,861 | 1,725 | 1.08 |
| 75,000 | 600 | 507 | 1,164 | 2,271 | 2,588 | 0.88 |
| 100,000 | 600 | 528 | 1,552 | 2,680 | 3,450 | 0.78 |

^aAssumes typical vehicle at 55,000 lb GVW.

^bIncludes tire and truck sales excise tax. Retail \$43,000 amortized over 12 years.

^cBased on average MPG of 5.8.

^dResponsibility of \$0.0345 per mile based on a \$12.6 billion program. Derived from data in Final Report on the Federal Highway Cost Allocation Study, Appendix C and the Congressional Conference Report (1).

TABLE 6 Comparison of 1985 Tax Payments and Responsibility at Various Annual Mileages Under 1982 STAA—Combinations 70,000 to 75,000 lb

| Annual VMT | Use Tax ^a | Excise Taxes ^b | Fuel Tax ^c | Total Taxes | Cost Responsibility ^d | Ratio |
|--------------|----------------------|---------------------------|-----------------------|-------------|----------------------------------|-------|
| 10,000 | 1,280 | 688 | 158 | 2,126 | 547 | 3.89 |
| 25,000 | 1,280 | 720 | 395 | 2,395 | 1,368 | 1.75 |
| 50,000 | 1,280 | 771 | 789 | 2,840 | 2,737 | 1.04 |
| 62,810 (avg) | 1,280 | 798 | 992 | 3,070 | 3,438 | 0.89 |
| 75,000 | 1,280 | 823 | 1,184 | 3,287 | 4,106 | 0.80 |
| 100,000 | 1,280 | 875 | 1,579 | 3,734 | 5,474 | 0.68 |

^aAssumes typical vehicle at 72,000 lb GVW.

^bIncludes tire and truck sales excise taxes. Retail \$66,569 amortized over 12 years.

^cBased on average MPG of 5.7.

^dResponsibility of \$0.05474 per mile based on a \$12.6 billion program. Derived from data in Final Report on the Federal Highway Cost Allocation Study, Appendix C and the Congressional Conference Report (1).

TABLE 7 Comparison of 1985 Tax Payments and Responsibility at Various Annual Mileages Under 1982 STAA—Combinations More Than 75,000 lb

| Annual VMT | Use Tax ^a | Excise Taxes ^b | Fuel Tax ^c | Total Taxes | Cost Responsibility ^d | Ratio |
|-----------------|----------------------|---------------------------|-----------------------|-------------|----------------------------------|-------|
| 10,000 | 1,520 | 725 | 158 | 2,403 | 734 | 3.27 |
| 25,000 | 1,520 | 757 | 395 | 2,672 | 1,834 | 1.46 |
| 50,000 | 1,520 | 809 | 789 | 3,118 | 3,668 | 0.85 |
| 67,960 (avg) | 1,520 | 847 | 1,073 | 3,440 | 4,985 | 0.69 |
| 75,000 | 1,520 | 861 | 1,184 | 3,565 | 5,501 | 0.65 |
| 100,000 | 1,520 | 914 | 1,579 | 4,013 | 7,335 | 0.55 |

^aAssumes typical vehicle at 78,000 lb GVW.

^bIncludes tire and truck sales excise taxes. Retail \$69,320 amortized over 12 years.

^cBased on average MPG of 5.7.

^dResponsibility of \$0.07335 per mile based on a \$12.6 billion program. Derived from data in Final Report on the Federal Highway Cost Allocation Study, Appendix C and the Congressional Conference Report (1).

cle. For combination vehicles less than 70,000 lb (Table 5); for example, a vehicle traveling 10,000 miles per year pays 3.49 times its cost responsibility whereas one traveling 100,000 miles per year pays only 0.78 of its cost responsibility. Similar situations exist for combinations of 70,000 to 75,000 lb (Table 6) and combinations more than 75,000 lb (Table 7). The data in these tables clearly indicate the inequity created by flat rate annual taxes. The vehicle that spends the most time on the road and uses the largest share of road services pays the lowest tax rate per mile, thus encouraging overuse of the nation's highways. An illustration of this may be derived from Table 5. A vehicle traveling 10,000 miles per year pays a per-mile rate of 12.1 cents (\$1,205 ÷ 10,000 miles), while the same vehicle traveling 100,000 miles would pay only 2.7 cents per mile (\$2,680 ÷ 100,000 miles).

The largest horizontal equity problem that results from the federal user fee structure occurs within the heaviest trucks class, combination vehicles weighing more than 75,000 lb. It is not unusual for vehicles in this class to travel more than 100,000 miles per year. Thus, these higher mileage vehicles are meeting less than 55 percent of their cost responsibility under the federal fee structure. This is the major problem with the current federal highway user fee structure.

As with the solution to the vertical equity problem, much of the horizontal imbalance would be rectified by repealing the new vehicle excise and heavy vehicle use taxes and replacing them with a tax that considers both weight and distance traveled by a heavy vehicle. This type of tax, in conjunction with a fuel tax, would bring tax payments more closely in line with cost responsibility, improving both horizontal and vertical equity.

An Equity Alternative

The 1982 STAA has built into it both horizontal and vertical inequities, as indicated in Tables 2 through 7. A solution to both equity problems can be found by simplifying the federal tax package enacted in the 1982 STAA. This package was a simplification of the earlier law, reducing the previous eight separate taxes to a total of four. A further reduction is proposed here by eliminating the excise taxes on new tires (more than 40 lb), the truck sales tax, and the heavy vehicle use tax, and replacing these with a graduated weight-distance tax.

The proposed tax structure would contain a 9 cent per gallon tax on all fuel and a graduated weight-

mile tax. The proposed equity-based tax structure is given in Table 8.

As under the 1982 STAA, all vehicles would pay a 9 cent per gallon fuel tax. Only automobiles, pickups, and vans would be exempt from the weight-mile tax. However, if single-unit trucks were exempt from the weight-mile tax it would only create a 9 percent underpayment by this group. The total dollar amount is less than \$100 million or about 2 percent of total truck cost responsibility.

The weight-mile tax rates listed are averages for broad weight groups. In the actual construction of tax tables, much greater delineation between weight groups is necessary. For example, whereas the average cost responsibility weight-mile tax rate for the more than 75,000 lb group is 5.7 cents per mile, the rate for the heaviest, most damage-causing configuration in the group may be 10 cents or more per mile. The lightest vehicle in this same group may have a weight-mile cost responsibility as low as 4 cents per mile.

The last column in Table 8 reflects each vehicle group's average total payment per mile for the combined fuel and weight-mile tax payments. If the total rates per mile are appropriately established, then payments by each vehicle class will approximate its cost responsibility.

Table 9 gives the total payments by each vehicle class under the proposed equity-based tax structure and Table 10 compares these payments with the cost responsibility of each class as determined by the Federal Highway Cost Allocation Study. The equity-based tax structure raises approximately the same amount of money as the FHCAS structure.

As can be seen from comparing Table 10 to Table 2, the equity-based tax structure greatly improves the vertical equity between the major vehicle classes. Although under the equity-based structure automobiles, pickups, and vans are still overpaying, the weight-mile tax, because of its flexibility, adjusts all other classes to their cost responsibility. Thus, the equity-based tax structure virtually eliminates cross-subsidization between broad vehicle classes.

CONCLUSIONS

Highway cost-responsibility studies are unquestionably important. The federal government as well as many states are investing heavily in resources to conduct such studies. It makes little sense, however, to conduct cost-responsibility studies unless there is the commensurate desire to implement a tax

TABLE 8 An Equity-Based Tax Structure by Vehicle Class

| | Fuels Tax ^a Cents per Gallon | Weight-Mile Tax Cents per Mile | Total Average Payments per Vehicle Mile Cents per Mile |
|-------------------------|--|--------------------------------------|---|
| Automobile | 9 | Exempt ^b | 0.5 |
| Bus | 9 | 1.1 | 2.6 |
| Pickups and vans | 9 | Exempt ^b | 0.6 |
| Single unit trucks | 9 | 0.3 | 1.6 |
| Combination trucks (lb) | | | |
| Less than 70,000 | 9 | 1.8 | 3.4 |
| 70,000-75,000 | 9 | 3.9 | 5.5 |
| More than 75,000 | 9 | 5.7 | 7.3 |
| Average | 9 | 2.2 | 0.7 |

^aIncludes gasoline, diesel, and gasohol and other liquid or non-liquid fuels convertible to cents per gallon.

^bExempt except for vehicles powered by electricity and other energy sources not convertible to cents per gallon.

TABLE 9 Total Payments by Vehicle Class Under an Equity-Based Tax Structure (millions of dollars)

| Tax | Automobile | Bus | Pickups and Vans | Single Unit Trucks | Combination Trucks (000 lb) | | | Total |
|-------------|----------------|-------|---------------------|-----------------------|-----------------------------|---------|---------|----------|
| | | | | | <70 | 70-75 | >75 | |
| Fuel | 5,586.0 | 88.1 | 2,470.7 | 853.6 | 350.9 | 282.9 | 363.4 | 9,995.6 |
| Weight-mile | - ^a | 72.3 | - ^a | 83.9 | 500.2 | 814.6 | 1,516.8 | 2,987.8 |
| Total | 5,586.0 | 160.4 | 2,470.7 | 937.5 | 851.1 | 1,097.5 | 1,880.2 | 12,983.4 |

^aNot applicable.

TABLE 10 Payments Under Equity-Based Tax Structure Compared to FHCAS Cost Responsibility—By Vehicle Class (millions of dollars)

| Vehicle Class | FHCAS Cost Responsibility | Equity Tax Structure Alternate | More Than/Less Than FHCAS | |
|-------------------------|------------------------------|--------------------------------------|------------------------------|---------|
| | | | Amount | Percent |
| Automobile | 5,436.6 | 5,586.0 | 149.5 | 2.7 |
| Bus | 160.4 | 160.4 | 0 | 0 |
| Pickups and vans | 2,188.2 | 2,470.7 | 282.5 | 12.9 |
| Other single units | 937.5 | 937.5 | 0 | 0 |
| Combination trucks (lb) | 3,828.8 | 3,828.8 | 0 | 0 |
| Less than 70,000 | (851.1) | (851.1) | 0 | 0 |
| 70,000-75,000 | (1,097.5) | (1,097.5) | 0 | 0 |
| More than 75,000 | (1,880.2) | (1,880.2) | 0 | 0 |
| Total | 12,551.4 | 12,983.4 | 432.0 | 3.4 |

structure flexible enough to capture the costs identified (either singularly or collectively).

Congress appears to be sensitive to this point in calling for a new study of alternatives to the heavy vehicle use tax. The target date for completion of this study has been moved up by a full year.

There has been substantial controversy concerning the new rates proposed in the 1982 STAA. Many truckers feel heavily burdened by the new rates. Some of their concerns are valid as was demonstrated by the discussion in this paper of the horizontal inequity in the STAA rates (low-mileage vehicles are seriously overpaying to the benefit of higher mileage vehicles). On the average, however, truckers do not have a justifiable complaint. If the results of the Federal Highway Cost Allocation Study are accepted, the two heaviest classes of trucks are underpaying by \$700 million.

Exemptions add significantly to both vertical and horizontal inequity. The gasohol exemption must be eliminated in order to treat other passenger vehicles fairly. Buses are making no contribution toward their road user cost responsibility.

Congress evidently deems the bus exemption to be justifiable when consideration is given to other social objectives, such as assisting low-income people who ride buses; however, it should not be forgotten that other road users must assume more

than \$160.4 million in cross-subsidy payments. Exempting heavy vehicles that travel less than 5,000 miles per year from the heavy vehicle use tax may improve the relative equity with other large vehicles under the cumbersome federal user fee structure, but it makes no sense in terms of cost responsibility.

Only by adopting a national weight-distance tax can the inequities addressed in this paper be corrected. Weight-distance taxes are practical, proven, and can be efficiently administered (Oregon has found that collection and administration costs are less than 5 percent of revenue).

Given the current congressional interest in improving the equity of the federal user fee structure the time is ripe for federal enactment of a weight-distance tax. In the words of the 1982 Final Report on the Federal Highway Cost Allocation Study (1), the adoption of such a tax "...could contribute significantly to a fairer and more efficient tax structure."

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The views expressed in this paper are those of the authors and do not necessarily reflect those of the Oregon Department of Transportation or the Public Utility Commissioner.

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Transit and the California Legislature: A Practitioner's Perspective

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ABSTRACT

Transit services in the state of California are discussed with emphasis on the role of the state legislature. Not unexpectedly, the efforts of the legislature have been significant in financing and developing an institutional framework. Initial efforts centered on providing financing mechanisms and later efforts moved toward accountability and performance measures as transit dollars became more scarce and subject to competition from other governmental programs. Recent activities also have addressed the structure and process of targeting and delivering transit dollars where potentially most effective, encouraging local and private support, and establishing incentives for better management and greater operating efficiency. An array of secondary efforts conceived to enhance public transit in the state are outlined by the transit industry followed by a discussion of efforts to present its case in political arenas in response to financial scarcity and calls for accountability. Despite the activist role of the legislature in transit services inherent limitations exist. The legislature has been a facilitator and architect and can continue to frame certain policies and procedures; still it remains the task of transit operators and managers to actually provide the services, the accountability, and the performance. Failing to do so will set the stage for erosion of political and financial support and increase the prospect of decline and deterioration in the state's transit industry.

When discussion turns to transporting people by public transit, probably the most common locations that come to mind are those in the eastern United

States. This is almost predictable given the long-established and extensive transit systems in existence in the eastern United States. Because of its long history in the region, transit is a service with which the populace grew up, uses and expects, and relies on.

Conversely, when discussion turns to the transportation of people by automobiles, the association is more likely to be with western portions of the United States. The populace in these areas grew up with the private automobile, after long being wedded to their horses (another mode of private transportation), and have extensive--some would argue excessive--freeway and road systems dedicated to serving the automobile's needs. Nevertheless, close examination reveals that considerable transit activities, services, and support are being provided in those western areas, particularly California, that appear to be dominated by the private automobile.

TRANSIT AND THE CALIFORNIA LEGISLATURE

Public transit in California, although not now and probably never to be the dominant transportation mode, has made slow but steady progress from the spartan days when it inherited the transit functions abandoned by private industry.

One of the most significant influences and factors in the progress of transit has been the financial and institutional support provided by the California Legislature. Through a long series of actions, the California Legislature has put in place mechanisms that ensure a relatively predictable base of support for all local transit systems as well as establish those provisions necessary for the effective operation of individual systems. In addition, the legislature has developed and refined an equitable process for providing capital assistance for major projects of regional and statewide interest.

Despite the legislature's many accomplishments in transit development, one should not assume that transit is without significant hurdles nor that the gains and resources realized to date are permanent