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**LOCAL GOVERNMENT MOTOR VEHICLE
TAXATION IN INDONESIA**

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FOREWORD

A wide variety of motor vehicle-related revenue instruments are used throughout the world. Two important means of taxation imposed in Indonesia are motor vehicle registration fees and transfer taxes, each of which is levied and collected by provincial governments. In the case of the former, current regulations in Indonesia allow a province to share the revenues with its constituent second level of local government--the urban kotamadyas and rural kabupatens.

This paper addresses two sets of policy issues associated with these levies--the objectives of the rate structures imposed and the method by which provincial revenues are shared with the lower levels of local government. The authors show how, although these revenue sources have been productive and growing, policymakers have apparently focused their attention on the equity or income distributional implications of the registration fees while sacrificing efficiency gains that might be attained from this tax. They also demonstrate for the Province of South Sulawesi how the current method of distributing registration fee revenues do not necessarily reflect well the needs for road maintenance.

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LOCAL GOVERNMENT MOTOR VEHICLE TAXATION IN INDONESIA

Khairul Mahadi, Larry Schroeder,
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The vehicles (or persons) that use publicly provided roads and highways constitute an extremely convenient object of taxation by governments throughout the world.¹ Duties on imported vehicles, excise taxes on the fuel, lubricants, tires or other vehicle inputs, taxes imposed whenever the ownership of a vehicle, new or used, is transferred, fees for licenses or permits for drivers and vehicles, parking fees and even tolls for the use of roads all constitute mechanisms whereby road users are forced to pay. While in many developing countries all or nearly all of these revenues are collected by the central government, in Indonesia two of these taxes are imposed and collected at the provincial level. One potential advantage of such an arrangement is that, under the right circumstances, locally raised, road-related revenues can be linked to the costs of maintaining the road network that is provided for by the province and its subgovernmental units.

Financing rural roads, particularly their maintenance, is a problem facing all nations and there is little doubt that this is the case in Indonesia.² In spite of the fact that considerable

¹For a variety of discussions of vehicle taxation and user charges, see A. A. Walters, *The Economics of Road-User Charges* (Baltimore, MD: The Johns Hopkins Press for the World Bank, 1968); Johannes F. Linn, "Automotive Taxation in the Cities of Developing Countries," *Nagarlok Urban Affairs Quarterly* 11(1) (1979): 1-23; and David M. Newberry, Gordon A. Hughes, William D.O. Paterson and Esra Bennathan, *Road Transport Taxation in Developing Countries: The Design of User Charges and Taxes for Tunisia*, World Bank Discussion Paper No. 26 (Washington, DC: The World Bank, 1988).

²For discussions of the difficulties of maintaining roads in developing countries, see Clell G. and Asif Faiz, *Road Deterioration in Developing Countries: Causes and Remedies* (Washington, DC: The World Bank, 1988); R. Robinson, *A View of Road Maintenance Economics, Policy and Management in Developing Countries*, TRRL Research Report 145 (Crowthorne, United Kingdom: Transport and Road Research Laboratory, 1988); or Larry Schroeder, *Managing and*

resources have been allocated for the construction or reconstruction of roads through the Inpres grant program, there are significant problems with sustaining these investments through suitable road maintenance. While not a sufficient condition for insuring that proper maintenance will actually be carried out, adequate resources certainly constitute a necessary condition.

Although it would be desirable to discover the optimal way of mobilizing resources in Indonesia in order to meet these road maintenance needs, this paper has a less lofty goal. The questions of interest here concerns the ways motor vehicles are currently taxes by subnational governments in the country and how these revenues relate or could be associated with road maintenance needs, particularly the maintenance of rural roads.

In doing so we demonstrate two different types of local revenue policy analyses. The first concerns the appropriateness of current policies for mobilizing resources, particularly for road maintenance. The second, equally interesting, policy question addressed here pertains to how revenues mobilized by one level of regional government--the province--are most reasonably shared with subregional units--rural kabupatens and urban kotamadyas.

To accomplish these dual purposes we begin in Section I with a brief discussion of the conceptual issues involved in evaluating a revenue instrument intended to finance road maintenance. Included in that section is a discussion of how such resource instruments can be evaluated when tax revenues are shared among several jurisdictions. We then turn in Section II to a description of the motor vehicle registration fee and transfer tax system currently used by provinces in Indonesia. Section III is devoted to an evaluation of that system, particularly as it relates to the financing of rural road maintenance. The fourth section focuses specifically on the issue of how motor vehicle registration fees are shared among the localities that constitute the

two tiers of regional governments in South Sulawesi Province and the implications of this sharing arrangement in relation to alternative tax sharing schemes. A summary of the findings and some policy alternatives are presented in the final section.

i. Objectives for Shared Resource Mobilization Instruments

The usual evaluation criteria for a revenue instrument include revenue adequacy and growth, neutrality, equity, administrability and political acceptability. Here we discuss each objective briefly within the context of a resource instrument designed to mobilize revenues for road maintenance. Since two tiers of subnational governments provide road services within provinces, we then consider how the sharing of motor vehicle license revenues might be evaluated.

Revenue Instrument Objectives

Although there are, in principal, any number of possible revenue instruments that could be used to mobilize resources for road maintenance, there are only a handful of criteria against which they need to be evaluated. One extremely important set of issues concerns the amount of revenues (net of administrative costs) any particular levy might be able to mobilize and the growth in those revenues over time. Although there is no requirement that revenues exactly offset the total resource needs for a service such as road maintenance, if the revenues fall short of needs, either other general revenues will have to make up the difference or inadequate resources will be devoted to the service. Similarly, a slow growing revenue source is unlikely to be able to keep pace with the increased demands for the service in the face of general economic growth and the forces of inflation.

For services such as road maintenance, economic efficiency is obtained if the resources generated from a particular user reflect the additional costs that the user imposes on the system. As suggested above, vehicle-related taxes provide a rather unique opportunity in the public sector to link payments for use to the costs that such usage entails. The costs which are relevant in the road use case are the costs of road maintenance associated with vehicle usage and any congestion costs imposed on other users.³ For most rural roads, congestion costs are minimal, hence economic efficiency concerns can focus primarily on the marginal costs of road maintenance. Note, too, that since road deterioration is caused by both road use and the natural aging of road infrastructure, only the former is necessarily required to be met by road users for efficient allocation of resources to result.

In the case of equity, either of the alternative principals of "ability-to-pay" and "benefits received" can be defended. For the former to hold, the principal suggests that wealthier individuals bear a greater share of the burden than poorer persons. Under a benefit principal of taxation, those enjoying greater benefits from the service are to bear greater burdens than others. In either instance, payers in similar circumstances (either in terms of abilities or benefits) should bear similar burdens.

Administrative feasibility is a particularly important criteria to be met in developing countries where it is often extremely difficult (costly) to collect many types of taxes and fees on a fair basis. In the case of revenues associated with road use, collection and enforcement costs generally limit use of direct tolls on roads with relatively light traffic. It is for this reason that road use-related revenues in most countries are limited to the other taxes and fees noted in the

³Walters, *The Economics of Road-User Charges*, pp. 22-24.

opening paragraph of this paper. Generally, each of these sources is reasonably easy to collect and difficult to evade.

One exception to this general statement arises in the case of taxing diesel fuel used by trucks, buses and some automobiles. This special case also demonstrates the problems associated with possible non-neutralities of road-use taxation and the potential for conflicts between efficiency and equity in taxation.⁴ Diesel fuel powers many engines that do not use roads. Thus, while it is administratively simpler to tax all consumption of diesel fuel, to do so and to utilize the revenues for roads the resulting allocation of resources will not be efficient. As important, kerosene, which is a primary household fuel for cooking and heating, can be substituted for diesel fuel (or, more correctly, can be mixed with diesel fuel to power diesel engines). Taxing diesel fuel without taxing kerosene therefore can induce road users to substitute kerosene for diesel fuel so as to avoid the tax which, in turn, decreases revenues and diminishes the support of road maintenance. Alternatively, taxing kerosene identically to diesel fuel can result in higher tax liabilities of kerosene users which may be viewed as inequitable to low income households.

Finally, political feasibility must be considered in any evaluation of alternative revenue instruments. While the feasibility of various instruments differ across countries, the sorts of benefit-related taxes and fees just mentioned that are associated with the ownership and use of vehicles are likely to be politically acceptable for financing road maintenance since there is a general quid-pro-quo relationship between resources mobilized and service benefits enjoyed. In the Indonesia case, however, there is currently one exception to that general statement. It relates to the political unwillingness to impose motor fuel taxes. At present there are no excise taxes

⁴The issue is discussed further in Newbery, et al., *Road Transport Taxation in Developing Countries*, pp. 87-88.

paid on gasoline and diesel fuel in spite of the fact that it is generally recognized that fuel usage is probably the single best proxy for road usage. Furthermore, since larger vehicles can cause greater road damage and, simultaneously use relatively greater amounts of fuel, fuel-based taxes are most effective at insuring a close correspondence between taxes paid and road damage costs imposed. Altering that policy would seem to be warranted (while keeping in mind the administrative problems associated with the tradeoffs between taxing and not taxing diesel fuel).

Objectives for Shared Revenues

As is detailed in the following section, motor vehicle registration fees in Indonesia are collected at the provincial level. But the law also makes it possible for provinces to share some proportion of those revenues with the local government subunits that lie within the province, i.e., the rural kabupatens and urban kotamadyas. Policy makers then face two questions concerning the design of such sharing arrangements: (a) What proportion of total revenues is to made available to the other subunits and (b) How are these revenues to be distributed among the subunits? When viewed in this manner, the sharing mechanism can be seen as being identical to the major questions associated with intergovernmental grant design. Any grant system must determine simultaneously both the size of the grant pool and the method of distribution.

Since the sharing mechanism is a form of intergovernmental grant, the same criteria used to evaluate a grant program can be used to evaluate the tax sharing arrangement. Many of the same criteria as mentioned above can be applied to the grant program.⁵ The principal difference is that in the case of grants the evaluation is generally based upon the effects of the grants on

⁵For general discussions of intergovernmental transfer programs in developing countries, see Richard Bird, *Intergovernmental Fiscal Relations in Developing Countries*, Staff Paper No. 304 (Washington, DC: The World Bank, 1978); or Roy Bahl and Johannes Linn, *Urban Public Finance and Administration in Developing Countries* (Washington, DC: The World Bank, 1991).

the granting and recipient jurisdictions rather than on individuals taxpayers and the jurisdictions collecting the revenues.

Revenue adequacy and growth remain important aspects of the evaluation of a grant program. The size of the grant to a particular jurisdiction will depend, in part, on the overall size of the grant pool; it will also depend on how that jurisdiction is treated by the method of distribution of the grant across recipient governments. Revenue growth also depends on each of these factors. A grant pool that is tied to a growing revenue source will provide buoyant revenues to the recipient jurisdictions. The factors used to distribute the grant across localities may also significantly affect the shares that each jurisdiction derives. For example, if current population is used as the allocator, more rapidly growing localities will experience faster grant revenue growth than will slow growing or declining areas.

A grant program may also influence recipient government behavior (if the system permits local autonomy in revenue and spending decisions). Thus a grant may discourage (encourage) resource mobilization efforts by recipient governments or may discourage (encourage) those governments to support particular services. Only an examination of the specific features of a grant can suggest the sorts of incentives they provide; furthermore, empirical analysis is then required to determine if, in fact, the incentives actually have an effect on jurisdictional behavior.

An effect that may be of particular interest to the granting government involves the degree of accountability a grant imposes on recipient jurisdictions. Often granting governments are especially concerned that recipient governments spend the grant funds in a prudent manner lest the resources be wasted. On the other hand, recipient governments are likely to prefer that they be given considerable autonomy and freedom to choose how grant monies are spent. The specific features of a grant program will suggest which of these possibly competing objectives dominate.

The method of distributing a grant will be the primary determinant of its equity effects. For example grants may be designed to equalize resources across jurisdictions. Localities with relatively greater needs and/or less abilities to mobilize revenues of their own may be given preferential treatment vis-a-vis localities with fewer needs and greater locally available resources. On the other hand, it is also possible to share grant revenues spatially in a manner that corresponds closely to where the revenues were originally raised. Given these alternative criteria, a tax sharing system with distribution of funds on the basis of where the revenues were collected will likely be viewed as detrimental by those preferring interjurisdictional resource equalization and favorably by those who prefer a close correspondence between tax burdens and grant-financed service provision.

The ease and costs of administration also must be considered when evaluating grant schemes. For example, grants that require recipient governments to request money for a particular project with the requests examined and evaluated by the granting government are considerably more costly to administer than are block allocations made to recipient governments on the basis of a formula. At the same time, the additional administrative costs may be deemed desirable by granting governments since they can have greater control over how the money is spent.

Obviously, political factors will again be crucial determinants of the final form of any grant program. What may be deemed quite reasonable on grounds of revenue adequacy and growth, neutrality, equity and administrative costs may simply be impossible to institute within a particular political setting.

In summary, evaluating a shared revenue instrument requires consideration of a variety of factors, some of which may conflict. To demonstrate these factors, we now turn to a consideration of the motor vehicle registration fee in Indonesia.

II. Motor Vehicle Taxation in Indonesia

Since roads constitute one of the major service responsibilities assigned to subnational governments in Indonesia, it is reasonable that vehicle-based taxes constitute one of the more important revenue sources of these jurisdictions. Before turning to a description of these local taxes, however, it is useful to describe briefly the structure and financing of local governments in the country.

Structure of Local Governments and Their Finance

Indonesia is subdivided into 27 provinces (Dati I) regional governments. The provinces are further divided into 246 second level (Dati II) regencies. Of these, 55 are highly urbanized areas and are called kotamadyas or cities; the remaining 191 are predominately rural in nature (with some towns and villages) and are termed kabupatens or districts. For administrative purposes, kabupatens are further subdivided into kecamatanans or subdistricts (3,539 in the country) and the kecamatanans include approximately 67,500 desa or villages. The urbanized kotamadyas are also subdivided, primarily for administrative purposes, into kelurahan.

The provinces, kabupatens and kotamadyas have primary responsibilities for providing local service delivery. At the same time, it is important to recognize that local governments in Indonesia do not have much autonomy in either their administrative or fiscal affairs. That is, most local personnel decisions must be approved by the center as are most budgetary decisions and the bulk of all financial resources spent by local governments are derived from intergovernmental transfers. These transfers dominate both routine (current) and development (capital) expenditures. The 1983/84 data exhibited in Devas shows the following percentages of routine and development revenues derived from central government grants (excluding loans and

the property tax which, although a central government levy, is shared with Dati I and II level jurisdictions).⁶

Central Government Grants as:	Provinces	Kabupatens and Kotamadyas
Percent of Routine Revenues	74.9	70.9
Percent of Development Revenues	78.2	85.6
Percent of Total Revenues	75.5	80.6

Even then, the data understate the fiscal reliance of kabupatens and kotamadyas on higher level jurisdictions since these Dati II governments derive some small grant amounts from the provinces. In spite of the low level of reliance of subnational governments in Indonesia on own-source revenues, the list of local taxes, fees and charges that they are permitted to impose is an extremely long one. For example, at present there are a total of 35 local taxes and 28 fees and charges that can be imposed by the kabupatens and kotamadyas, although the bulk of the levies are not imposed in most of the jurisdictions.⁷ Although the titles of several of these Dati II local revenues suggest they are meant to be imposed on road users and would be prime candidates for earmarking for road maintenance, such is not the case. For example, the most productive local tax in many rural kabupatens is the "street lighting" tax; however, it is actually a surcharge levied on electricity charges and is not related to road usage nor are the revenues earmarked for lighting streets.

⁶Nick Devas (ed.), "Local Taxation: Possibilities for Reform," *Financing Local Government in Indonesia*, Monographs of International Studies, Southeast Asia Series No. 84 (Athens, OH: Ohio University press, 1989), pp. 24 and 32.

⁷Decentralization: Finance and Management Project, *Special Study on Local Resource Mobilization for Road Maintenance*.

Only seven different tax sources and thirteen different fees are currently assigned to provinces. But interestingly, the bulk of the tax revenues that are collected are levied on motor vehicles. We now review these sources.

Provincial Motor Vehicle Taxes

Two different forms of vehicle-based taxes are imposed by provinces in Indonesia. One is an annual tax on motorized vehicles (pajak kendaraan bermotor) which is essentially an annual license that must be paid by the owner of a motorized vehicle. The second levy is a vehicle transfer tax (bea balik nama kendarann bermotor) that is imposed whenever a vehicle, new or used, is purchased. In each case, as is true for all subnational taxes in Indonesia, the statutes governing these local taxes are promulgated by the central government.

The motor vehicle registration tax is one component of Law No. 11 Drt./1957. All vehicles with two or more wheels that transport people or goods and that are energized by fuel are subject of the tax. (Non-motorized vehicles can be taxed by Dati II governments.) The tax is levied annually on registered owners of the vehicles. To indicate that the tax has been paid, the vehicle owner receives license plates that are attached to the front and rear of the vehicle.

The rates of the registration fee are set by the Ministry of Home Affairs and are standard throughout the nation. Apparently, there was some provincial discretion in rate setting in the past; however, when it was observed that owners were registering vehicles in provinces with lower rates regardless of their place of residence, uniform rates were imposed. The rate schedule is dependent upon (1) the type of vehicle--automobiles, jeeps, buses of various types, trucks and pickups, three-wheeled vehicles and two-wheeled vehicles; (2) if the vehicle is an automobile, the rate also depends upon with it is exclusively for personal use or for commercial use; (3) the model year--currently classified into nine groupings, 1987 or newer; 1984-86; 1981-83; 1978-80; 1975-77; 1972-74; 1969-71; 1966-68 and 1965 or older; and (4) cylinder displacement with the

specific categories depending upon the type of vehicle. The entire rate schedule is contained on seven pages so is too lengthy to be replicated here; however, the Appendix shows a portion of this schedule for automobiles, jeeps, buses and trucks. The rates in effect during FY1990-91 had been effective since 1987. We defer to the next section a discussion of this rate structure.

The second motor vehicle-related tax is the transfer tax regulated by Law No. 27/1959. The purchaser of the vehicle is liable to pay the tax. Again the tax rates are set nationally. The current rates are 10 percent of the value of new vehicles and 5 percent of that of used vehicles. Since it is often quite difficult to obtain accurate sales price information of any asset (those liable for the tax have strong incentives to underreport transactions prices), the taxing authorities in Indonesia do not rely on self-reporting. Instead, a list of current values of different makes and models of vehicles by model year is prepared annually and is used throughout the nation when levying the transfer tax. Apparently, the standard values are generally somewhat below actual transaction prices; however, the method helps to create equity in tax by insuring that sales prices are not significantly underreported.

With that backdrop concerning the overall structure of these taxes, we now turn to an assessment of these vehicle-based provincial taxes.

III. Revenue, Economic and Administrative Effects

In this evaluation we consider first the revenue levels and growth of the two vehicle-based taxes. This is followed by a consideration of their neutrality and equity implications. Some comments on the costs of administering the levies conclude this section.

Revenues

As suggested above, intergovernmental transfers dominate the fiscal structure of subnational governments in Indonesia. Nevertheless, for provinces, these two vehicle-based

revenues are by far the most important components of own source revenues. This is seen in Table 1 which shows total revenues from each of these two sources for the six fiscal years 1983/84 - 1988/89 and also the percentage of own source revenues that each of the taxes provided.

The data illustrate the prime importance of these two revenues as own source revenues for provinces. Of course, the percentages are large primarily because there are few other sources available for provinces to tap. Nevertheless, the revenue performance of these two sources go far to determine the ability of provinces to finance their own efforts.

The data also illustrate that over the six year period, revenues were growing quite rapidly and at a pace faster than that for other own source revenues of the provinces. The average annual compounded growth rate of revenues between 1983/84 and 1988/89 was 15 percent. This was nearly double the general inflation rate of 7.45 percent during the same period suggesting that the purchasing power of these revenues grew substantially over the period. The annual growth was also nearly 5 percent greater than the growth in nominal GDP (10.24 percent). These results indicate that the taxes constitute a highly income elastic revenue source.

One important principal reason for this revenue growth has been the rapid increase in the number of vehicles registered in the country. Between 1984 and 1987 the annual average growth rate in all vehicles has been 5.4 percent (passenger cars: 6.0 percent; buses: 12.2 percent; trucks: 4.8 percent and motorcycles: 5.1 percent). These are all considerably larger than the growth rate in population of approximately 2.0 percent. The data graphically illustrate the increasing demand for transport that accompanies economic growth and, therefore, provide an expanding revenue base. Of course, accompanying this demand for motorized vehicles is a demand for the physical infrastructure necessary to permit them to be used.

TABLE 1
REVENUE LEVELS AND IMPORTANCE OF VEHICLE-BASED TAXES
ALL PROVINCES, 1983/84 - 1988/89
 (revenues in million rupiahs)

Fiscal Year	Vehicle Registration		Transfer Tax		Total as Percent Own Revenue
	Total Revenue	Percent Own Revenue	Total Revenue	Percent Own Revenue	
1983/84	105,827	15.9	149,340	22.5	38.4
1984/85	140,670	18.7	163,951	21.8	40.6
1985/86	167,917	21.0	170,381	21.3	42.2
1986/87	209,804	21.4	213,639	21.8	43.2
1987/88	231,051	29.3	257,361	32.6	62.0
1988/89	258,707	na	331,461	na	na
Average Annual Compounded Growth Rates (1983/84 - 1988/89):					
Vehicle Registration: 16.1 percent					
Vehicle Transfer Tax: 14.2 percent					
Total Revenues: 15.0 percent					
SOURCE: <i>Statistik Keuangan Pemerintah Daerah-Daerah Tingkat I (Provinsi)</i> [State and Local Government Financial Statistics - First Stage Region (province)]. 1987/88 and 1988/89.					

It is also the case that, whereas these vehicle-based taxes are capable of generating revenues that grow over time, the fact that the two taxes are essentially the only own source revenues available to provinces means that they must be capable of financing not only road-related expenditures. Other public services provided by the provinces must be supported as well by these revenues. Hence, the revenue growth experienced is not necessarily sufficient to meet the expanding demands for roads and bridges.

Efficiency and Equity Implications

Since the registration fee is paid only once per year, it is not an effective revenue instrument to reflect the marginal costs that vehicular traffic imposes on streets and highways. As noted above, these costs include both the construction and maintenance costs of roads and also any external costs that vehicles cause. Such costs are a function of the level of vehicle usage. But since the registration fee is fixed regardless of whether a vehicle uses the facilities for 100 or 100,000 km (which, in turn, can create congestion and pollution), the registration fee is not a good instrument to reflect such costs.

Even in the absence of a close relationship between road use and registration fees, it is useful to examine the degree to which the fee structure reflects differentials in road use costs. The engineering literature on the fact that more heavily loaded vehicles do considerably more damage to roads than do lighter weight vehicles with the same number of axles.⁸ Two generalizations from the literature are that pavement cracking damage of a vehicle is proportional to the square of its load and that the deformation of the pavement which causes roughness is proportional to the fourth power of the axle load. If load weight is held constant, there are

⁸William D.O. Paterson, *Road Deterioration and Maintenance Effects: Models for Planning and Maintenance* (Baltimore: Johns Hopkins Press for the World Bank, 1987); and Newberry, et al., *Road Transport Taxation in Developing Countries*.

considerable advantages to multiple axles on trucks in terms of the amount of road damage they cause.

These general differentials in road damage can quite easily be reflected in registration fees (although such fees cannot reflect relative usage). For example in the United States, each individual state has autonomy in setting registration fees for trucks, buses and autos. The general policy is to impose considerably higher fees on large trucks than on automobiles. Table 2 illustrates some typical fees imposed in five large states in the U.S. The data indicate that generally considerably higher fees are paid by larger vehicles. The large range of entries across states also illustrate a major feature of the fiscal autonomy enjoyed by states in the United States. It is also interesting to note that nearly all states in the U.S. provide for lower fees to be imposed on trucks utilized exclusively for farm use. This may be due to the assumption that these vehicles travel on public roads less than do other commercial vehicles. Or, it may be the case that the farm lobby is more effective in getting legislatures to provide the agricultural sector with additional fiscal advantages.

This digression on the structure of registration fees in the United States is offered as a counterpoint to the structure of vehicle registration fees used in Indonesia. In Indonesia there are apparently other objectives that are sought from the registration fee. This is deduced from an examination of the vehicle registration rate structure (see the appendix).

The rates for any vintage category are positively related to engine size. This can be rationalized either on the principal that larger engine sizes are related to vehicle weight and, therefore, to road damage associated with vehicle use or on an equity principal that higher income persons are more likely to own larger vehicles and are, therefore, more able to pay. Based on the estimated relationship between engine size and fees, one might conclude that the latter principal dominates. From Table 3 we see that for the newest automobiles the marginal

TABLE 2
ILLUSTRATION OF MOTOR VEHICLE REGISTRATION FEES IN SELECTED
STATES OF THE UNITED STATES
(in dollars)

State	Fees for Typical Vehicles within a Vehicle Class, 1988			
	Auto	Truck: 14,000 Pounds Gross	Truck, 3-Axle 40,000 Gross	Truck, 5-Axle 80,000 Gross
California	22	189	510	1,154
Florida	26	92	318	997
Illinois	48	268	960	2,200
New York	24	70	440	860
Ohio	22	43	362	681

SOURCE: U.S. Department of Transportation, Federal Highway Administration, *Highway Taxes and Fees: How They Are Collected and Distributed* (Washington, DC: U.S. Government Printing Office, 1988), pp. 60-67.

TABLE 3			
MARGINAL EFFECT OF ENGINE SIZE ON 1990 REGISTRATION FEE BY VEHICLE TYPE, SELECTED VINTAGES*			
Type of Vehicle	For a Vehicle Built in:		
	1990	1980	1970
Automobile	100.2	78.2	32.2
Jeep	52.1	41.5	20.6
Light Truck	22.1	22.6	10.8
Buses	24.5	19.3	9.8

*Coefficients computed from linear equation of registration fee regressed on motor size. All coefficients are highly significant statistically and the coefficients of determination (R^2) in each equation exceeds 0.96.

SOURCE: Computed by authors.

effect of cubic centimeters on license fees is Rp. 100.2.⁹ This means that for cars built after 1987, each additional cc engine size requires the owner to pay, on average, Rp. 100.2 more to register the vehicle. For cars built in 1980 the marginal effect is Rp. 78.2; and for cars built in 1970 the marginal effect is only Rp. 32.2. Since wealthier individuals are more likely to own new cars, these regression results show that the impact of engine size on level of fee is largest for them. The same general ordinal relationship between the marginal impact of engine size on registration fees holds for each type of vehicle (other than for light trucks built since 1980). Furthermore, the smaller marginal effects of engine size for vehicles other than automobiles also suggests an equity orientation of those determining these rates.

A second point to note from the excerpts from the schedule of fees in the Appendix is that the fees are inversely related to the age of the vehicle, i.e., fees on older vehicles are less than those for newer vehicles within the same engine size class. Again, one might argue that rate-makers expect older vehicles to be driven less and therefore to do less damage to roads. However, it is more plausible to attribute this decline in rates to a concern for ability to pay since it might be anticipated that higher income persons own newer vehicles.

Since the value of a vehicle declines with its age, the rate structure can be thought of as approximating an ad valorem or personal property tax, i.e., lower taxes on lower valued vehicles. To pursue this idea, consider the estimated value of a 1988 Nissan Stanza which, according to the values specified in Government of Indonesia, Ministry of Home Affairs, has a value of

⁹Registration fees measured in rupiahs were regressed on engine size measured in cubic centimeters using a linear functional form. The regression was estimated for the various vintages of vehicles separately. The entire rate schedule was used to estimate these relationships, not only the data shown in the appendix.

approximately Rp. 24.2 million.¹⁰ The 1990 vehicle registration schedule called for its owner to pay Rp. 235,800 per year to operate it on public streets and roads. This amounts to an effective rate of approximately 1.05 percent. For purposes of comparison, the effective rate on land and other property liable for the PBB (the national property tax) is only 0.1 percent of market value. Thus, the registration fee on vehicles is nearly ten times greater than the effective tax on land (assuming that the value of each type of property is assessed reasonably accurately).

Perhaps the strongest indicator that the tax rates are designed to be related to ability to pay is by comparing the rates across classes of vehicles. Considering only the newest model years, the following sample of the rates suggests that the taxing authorities are interested in levying the highest rates on those owning automobiles used for private purposes only.

Engine Size	Private Autos	Jeeps	Buses	Trucks
1,000 cc	169,200	89,700	54,600	44,400
3,000 cc	385,200	201,900	123,300	98,400
5,000 cc	568,500	296,700	162,600	143,700
8,000 cc	717,900	374,700	222,600	206,700

There is a general monotonic decline in rates across all of these categories of vehicles with private automobile owners paying the most and truck owners paying the least. Indeed, the owner of the largest category of new truck (engine displacement greater than 20,000 cc) would pay Rp. 452,400 which is less than the amount an owner of a new 3,601 cc automobile would pay!

¹⁰Government of Indonesia, "Nilai Jual Kendaraan Bermotor Untuk Menghitung bea Balik Nama Kendaraan Bermotor, Tahun Pajak 1990" (Sales Value of Motor Vehicles for Calculating the Motor Vehicles Transfer Tax), Decree No. 024-977 (Jakarta: Ministry of Home Affairs, December 14, 1989).

One final feature of the rate schedule that has some implication for its equity and incentive effects is the use of tax brackets for both engine size and vintage. Whenever such brackets or "slabs" are used, the marginal tax revenue effect within a bracket is zero while it is non-zero between brackets. This means that there can be vertical inequities of tax burdens within a bracket, e.g., the owner of a 1990 auto pays the same as one who owns one built in 1987 whereas the owner of a 1986 vehicle pays a smaller amount than the 1987 owner. If the rate differentials between brackets are sufficiently large, it also can create incentives to fall just below the upper bound of a bracket. Perhaps the strongest incentive, given the rate structure, is to have one class of vehicle classified as another. That is, the rate structure encourages persons to say that their automobiles are used for commercial purposes rather than for purely personal purposes. Or, if a jeep can be misclassified as a minibus, the owner will gain a tax advantage. The principal benefit of this system is on its administration. It is much easier for the tax collector to find a particular cell in the table than to base license fee computations on an algebraic formula.¹¹

In summary, it appears that the principal objective of the current rate structure of vehicle registration charges is ability-to-pay equity. There is probably an assumption being made that if larger, freight-carrying vehicles were charged more, these charges would be passed on to commodity users, many of whom are poor. While the concern for ability-to-pay based equity is not unimportant in any tax policy choice, the logic fails to consider the possible effects on costs of using a road. In the absence of sufficient funds for road maintenance, roads deteriorate. A principal consequence of such deterioration is increased costs of using the roads by users.

¹¹In the rate structures used in many states within the U.S., formulas are used, particularly for trucks. But rather than basing the amounts on engine displacement, the rate is applied to the legal weight than the truck is allowed to carry.

Poor roads add to vehicle maintenance costs and also slow the movement of goods and persons. These increased costs of using the road may, in turn, also be passed on to the consumers of the goods transported over the roads as would be any additional direct taxes or fees imposed on road users. Thus, it is far from clear whether the equity implications on poor consumers are any more beneficial of having low vehicle taxes and fees imposed (with insufficient funds for road maintenance) than would be higher taxes and fees with a simultaneous utilization of the funds for improved road conditions.

Of course, an assumption inherent in this argument which may not hold is that any increases in funds derived from road users would be reinvested in the road sector. It is plausible that increased road use fees would be spent for other pro-wealthy public expenditures with the overall incidence of the policies even more regressive. Nevertheless, policy positions that ignore entirely how apparently progressive tax revenues are spent (or how the absence of certain spending such as on maintenance of roads) may also have income redistributive effects are shortsighted and should be examined more fully.

The equity and neutrality implications of the transfer tax are more straightforward. Any transfer tax has the effect of discouraging economic transactions and, therefore, must be viewed as creating inefficiencies in the market. The five percent rate imposed on used vehicles could, therefore, discourage a potential buyer from purchasing a vehicle that he would be put to a more productive use than it is presently yielding. As Ricardo noted many years ago, transfer taxes "prevent the national capital (here vehicles) from being distributed in the way most beneficial to the community."¹²

¹²Quoted from Carl S. Shoup, *Ricardo on Taxation* (New York: Columbia University Press, 1960), pp. 57.

The differential between the rates on new and used vehicles also has the effect of discouraging the purchase of new models even though they may be somewhat more productive. It is quite possible that these differential rates are chosen by the central government to discourage using relatively scarce hard currency for the importation of vehicles. This suggests that objectives other than the classic ones of economic efficiency and equity are being pursued. Such objectives are unlikely to be prominent in the minds of local policy makers were they given the autonomy to set rates. On the other hand, there may be the perception that price elasticities of demand for new vehicles are less than those for used vehicles. If this were the case, the rate differentials could be defended on the grounds of revenue maximization. Nevertheless, if there are only small differences in the performance of slightly used and new vehicles, the rate differentials create horizontal inequities in the tax burden.

As was noted in the previous section, the buyer is required to pay the vehicle transfer tax. This does not mean, however, that he necessarily bears the burden of the tax. The ultimate tax burden may be borne by both buyers and sellers depending on the elasticities of demand and supply. If demand is highly elastic (responds greatly to price changes), vehicles sellers will bear a greater portion of the burden than if demand is inelastic. Note, too, that if sellers do bear a portion of the burden, all current vehicle owners can be thought of as bearing some of the burden of the tax since their assets are worth less because of the tax. This is an example of tax capitalization. Since vehicle owners are primarily wealthier individuals, the general expectation is that this tax will fall more heavily on the rich than on the poor even without the sort of differential rates that are used for the vehicle license tax.

Administration

As previously indicated, administration of each of these taxes is relatively simple and low cost. For the vehicle license fee revenue collectors need only to be certain of the authenticity

of the factual age and engine displacement data concerning the vehicles and, in the case of automobiles, whether they are used for private or commercial purposes. Compliance costs are also not overly great; for the vehicle registration fee the principal cost is traveling to the collection point (of which there are several in each province) and waiting to be served. These costs are, of course, greater for those living at some distance, but vehicle owners are probably not overly burdened by these costs. Finally, detecting evasion of the fees is very simple since license plates are used and replaced annually and clearly include information on both the month and year after which the license will no longer be valid. By allocating all licenses on a monthly basis, the administrative system can also spread the work effort out over the entire year rather than have all licenses come due at a single date. (Even then there may be some peak-loading problems associated with obtaining licenses near the end of each month; however, since these costs are borne primarily by those registering the vehicles, many owners will likely try to avoid these peak demand periods so that queues will not be overly long.)

Administration of vehicle transfer tax is aided by the fact that buyers will have an incentive to report and register that they have purchased the vehicle. Determining tax liabilities is simplified by the use of the schedule of values rather than relying on self-reporting of sales prices. Finally, compliance costs are probably not extremely high and represent a small fraction of the total transactions costs involved in purchasing a new or used vehicle. All in all, therefore, the transfer tax gets high marks on administrability grounds. This is particularly desirable in the Indonesian context where Devas notes that "One of the problems with many local taxes is the high cost of tax administration."¹³

¹³Devas, "Local Taxation: Possibilities for Reform," pp. 72.

Summary

This empirical and impressionistic review of the features of the motor vehicle registration and vehicle transfer taxes levied by provinces in Indonesia suggests that (1) the revenue streams have proven to be responsive to increases in GDP; (2) have rate structures that appear more concerned with perceived equity implications of the taxes than with any attempt to reflect road use costs and therefore cannot be judged favorably on efficiency grounds and (3) are reasonably easy to administer. Since the rules governing provincial governments allows them to share motor vehicle license fees with kabupatens and kotamadyas, we now turn to a discussion of this issue, focusing our attention on the Province of South Sulawesi.

IV. Intergovernmental Sharing of Motor Vehicle Registration Fees

In Section I it was argued that analysis of tax sharing can be considered similarly to a grant system. Since we concentrate on the case of shared motor vehicle registration taxes in South Sulawesi in this section, we first provide some description of how the tax sharing arrangement works there. The second portion of the section is devoted to an analysis of the implications of this system. Suggestions as to why and how that system might be altered are left for the final section of the paper.

Shared Revenues in South Sulawesi

The Province of South Sulawesi (SulSel), one of four provinces on the Island of Celebes, had an estimated population of slightly more than 7 million in 1989. Given its land area of 72.8 thousand square km., its estimated population density of 97 persons per km² in 1990 put it almost exactly at the national average of 95 persons per km². (It is important to recognize that Indonesia is characterized by a huge range in population densities, even outside of the Special Capital

District of Jakarta. The range is from 4 persons per km² in Irian Jaya to 1,001 per km² in Yogyakarta.) Population growth estimates suggest, however, that the province has been growing at a slower rate than the rest of the country--1.31 percent between 1985 and 1990 compared with a national average of 2.08 percent.¹⁴

The Province contains only two cities that are classified as being kotamadyas -- the provincial capital city of Ujung Pandang (a population in excess of 810,000 in 1988) and a much smaller city of Pare-Pare (population approximately 82,000). In addition to the two kotamadyas, there are 21 kabupaten (consisting of 1,405 villages) in the province.

The economy of the Province is dominated by agriculture. Estimates for 1986 indicated that over 45 percent of the provincial gross domestic product was generated from agricultural sector with the trade sector a distant second, with approximately a 20 percent share.¹⁵ Given the importance of transportation to agricultural production, rural roads can play an especially important role in the overall growth of the SulSel area.

The road network in the Province, as in all provinces of Indonesia, includes state or national roads, provincial roads, kabupaten/kotamadya roads and village (desa) roads. The last of these are generally narrow roads designed to connect small villages and agricultural areas with the other, higher quality roads. Village roads are often built and maintained primarily by the local villagers. It is the remainder of the road network, especially the provincial and kabupaten/kotamadya roads, that is of particular interest to us here.

¹⁴All data from Buro Pusat Statistik, *Statistic Indonesia, 1989* (Jakarta: Biro Pusat Statistik, 1990), pp. 44-48.

¹⁵Biro Pusat Statistik, *Pendapatan Regional Provinsi-Provinsi di Indonesia* (Provincial Income in Indonesia), 1983-1986, Part II (Jakarta: Biro Pusat Statistik, 1989).

Table 4 reports on the composition of the road network of South Sulawesi with roads classified by both surface type and the level of responsible government as of 1986. The data show that the vast majority of the roads in South Sulawesi are kabupaten or rural roads and that the roads for which the Province has responsibility are predominately hard surface, all weather roads. As might also be expected, the streets and roads in the urbanized areas are generally also hard surfaced roads.

Since we are primarily interested here in the responsibility for financing road development and maintenance of sub-national roads, we concentrate on the 16,938 km. of the network that is not the responsibility of the central government. The relative lengths of this portion of the network classified by jurisdictional responsibility and surface types are as follows:

Provincial	8.3%	Asphalt	26.2%
Kabupaten	86.4	Gravel	26.3
Kotamadya	<u>5.3</u>	Earth	37.5
Total	100.0	Other	<u>10.0</u>
		Total	100.0

Relative length of the road network does not, of course, mean that relative traffic levels have the same distribution. Indeed, if traffic level on provincial roads is ten times that on kabupaten roads, then provincial and kabupaten vehicle-km. would be almost identical. Furthermore, although still classified as roads, at least some of the kabupaten right-of-ways may be little more than paths suitable for only vehicles equipped for "off-road" use. Some indication of the relative condition of these roads is provided in Table 5.

The data in the table suggest that nearly 24 percent of the local government road network in South Sulawesi in 1986 was very heavily damaged. It is quite possible that many of those roads were in such poor condition that they could not be traveled. More importantly for the issue of road maintenance is that roads which are extremely deteriorated must be reconstructed or

TABLE 4
LENGTH OF ROADS IN SOUTH SULAWESI, 1986
CLASSIFIED BY RESPONSIBLE GOVERNMENT AND SURFACE TYPE
(km)

Government Responsible	Surface Type				Total
	Asphalt	Gravel	Earth	Other	
Central	982	36	---	---	1,018
Province	1,369	30	---	---	1,399
Kabupaten	2,299	4,355	6,302	1,678	14,634
Kotamadya	771	72	52	10	905
Total	5,421	4,493	6,354	1,688	17,956

SOURCE: Biro Pusat Statistik, *Statistic Indonesia, 1989* (Jakarta: Biro Pusat Statistik, 1990), p. 415.

TABLE 5
LENGTH OF ROADS IN SOUTH SULAWESI, 1986
CLASSIFIED BY RESPONSIBLE GOVERNMENT AND CONDITION
(km)

Government Responsible	Condition of Road				
	Good	Moderate	Damaged	Poor	Total
Province	1,041	273	85	---	1,399
Kabupaten	3,386	3,529	3,719	4,000	14,634
Kotamadya	767	90	36	12	905
Total	5,194	3,892	3,840	4,012	16,938

SOURCE: Biro Pusat Statistik, *Statistic Indonesia, 1989* (Jakarta: Biro Pusat Statistik, 1990), p. 423.

rehabilitated before any routine or periodic maintenance efforts are economic. Thus when considering the resource needs for road maintenance (not for road construction or reconstruction), it is misleading to think that the entire network of nearly 17,000 km ought to be maintained. Similarly, since the benefits of road maintenance also depend on actual or potential traffic, without some indication of relative traffic counts it is nearly impossible to ascertain where road maintenance would do the most good. At the same time, one cannot ignore the vast road lengths under the responsibility of kabupatens when considering their need to have finances available to carry out the maintenance.¹⁶

Two obvious potential sources of funds that would link road use to road maintenance spending are the vehicle-based taxes which are the subject of this paper. Before discussing the actual and potential allocations of these funds across all road service-producing jurisdictions in the Province, it is useful to review the recent history of revenues from these two revenue sources in SulSel. For that purpose Table 6 has been constructed identical to Table 1 but for the Province of South Sulawesi.

The data in Table 6 show that the vehicle registration tax, in particular, grew at the substantial annual rate of 14.5 percent during the 1983/84 - 1988/89 period but that the transfer tax lagged quite badly, growing only slightly faster than the national consumer price index (which grew at a 7.45 percent annual rate during the same period). Because of the slow rate of growth experienced by the transfer tax, aggregate revenues from these sources in South Sulawesi grew more slowly (11.5 percent) than in the nation as a whole (15 percent, see Table 1). One reason for this slower growth may have been due to the more slowly growing population in South

¹⁶These issues are considered more extensively in *Decentralization: Finance and Management Project, Special Study on Local Resource Mobilization for Road Maintenance*, Rural Road Maintenance System Project, Vol. I: Final Report (Burlington, VT: Associates in Rural Development, 1991).

TABLE 6
REVENUE LEVELS AND IMPORTANCE OF VEHICLE-BASED TAXES
SOUTH SULAWESI PROVINCE, 1983/84 - 1988/89
(revenues in millions of rupiahs)

Fiscal Year	Vehicle Registration		Transfer Tax		Total as Percent Own Revenue
	Total Revenue	Percent Own Revenue	Total Revenue	Percent Own Revenue	
1983/84	3,064	19.7	3,475	22.3	42.0
1984/85	4,069	12.2	3,696	11.1	23.3
1985/86	4,518	41.7	3,793	35.0	76.7
1986/87	5,886	33.5	4,410	25.1	58.6
1987/88	6,372	37.8	5,236	31.0	68.8
1988/89	6,902	na	5,668	na	na

Average Annual Compounded Growth Rates (1983/84 - 1988/89):

Vehicle Registration: 14.5 percent

Vehicle Transfer Tax: 8.5 percent

Total Revenues: 11.5 percent

SOURCE: *Statistik Keuangan Pemerintah Daerah-Daerah Tingkat I (Provinsi)* [State and Local Government Financial Statistics - First Stage Region (province)]. 1987/88 and 1988/89.

Sulawesi, estimated to have been less than 1 percent per year between 1984 and 1988. Nevertheless, the implied GDP elasticity of the aggregate revenues in South Sulawesi was greater than unity at 1.12.

Sharing of Vehicle Registration Tax Revenues

As was mentioned in Section II, provinces have the authority to share some proportion of the revenues of the motor vehicle registration fee with the kabupatens and kotamadyas that lie within it. Currently in South Sulawesi 15 percent of these revenues are distributed to the 21 kabupatens and 2 kotamadyas. In 1989 this grant "pool" amounted to Rp. 7,615 million.

The method of distribution used in South Sulawesi is based on the residence of the vehicle owner. Table 7 shows the resulting distribution by kabupaten and kotamadya of these revenues.

As suggested in Section I, a tax sharing arrangement such as the one used in South Sulawesi can be evaluated on several grounds. First, there is the question of the size of the distributable pool. It was shown above that provincial roads constitute only 8.3 percent of the total road length in the Province (exclusive of central government roads and village roads); hence, it might be argued that the local government subunits should derive more than only 15 percent of vehicle registration receipts since they are responsible for over 90 percent of the road network. Such a position would, however, ignore differentials in traffic levels. As suggested before, provincial roads likely have considerably greater amounts of traffic than are carried on kabupaten roads. (Kotamadya streets and roads, particularly in a highly urbanized area such as Ujung Pandang with its population in excess of 800,000, also probably carry higher traffic volumes than do even the provincial roads.)

The argument also ignores the fact that motor vehicle license revenues constitute one of the two major own source revenues of South Sulawesi Province. Although these revenues

constituted only about 31 percent of all revenues (routine and development) of the province in 1988/89, the non-shared portion is expected to help support spending activities the province undertakes in sectors other than roads. To share more than 15 percent of the revenues could jeopardize the operation and maintenance of other spending activities. One alternative, considered more fully in the following section would be to restructure and raise the rates to permit greater amounts of money to be transferred to the kabupatens and kotamadyas.

The fact that a high proportion of vehicle owners maintain their residences within the cities of the Province means that the kotamadyas receive a disproportionate amount of the shared funds. Thus, as shown in Table 7, in 1989/90 Ujung Pandang received 61.4 percent of the total pool of shared funds and Pare-Pare received 3.7 percent. This occurred in spite of the fact that only 12.2 and 1.4 percent of the population of South Sulawesi lives in Ujung Pandang and Pare-Pare, respectively. It may be the case that residents of these urban areas have higher incomes than do rural residents and, therefore, are more likely to own motorized vehicles and, perhaps use primarily the streets and roads of the cities. In addition, however, owners of fleets of vehicles may be much more likely to reside in the major cities of the province with their revenues credited to the cities in spite of the fact that the vehicles probably use roads throughout the province. In this instance, the distribution currently used does not accurately reflect benefits received.¹⁷

The current method also results in a distribution of revenues between the rural and urban areas quite dissimilar to the relative lengths of roads in these areas. Thus, in 1986 only about 6 percent of the total sub-province road network was in the cities of South Sulawesi; however,

¹⁷It is interesting to note that the Congress of the United States in 1991 has spent an inordinate amount of time debating how Federal Highway Funds are to be distributed across the 50 states. Thus, the issue of finding a politically acceptable "fair" distribution of shared revenues is certainly not limited to revenue poor countries like Indonesia.

TABLE 7
DISTRIBUTION OF 1989/90 MOTOR VEHICLE REGISTRATION
FEEs ACROSS LOCAL JURISDICTIONS IN
SOUTH SULAWESI PROVINCE

Kabupaten/Kotamadya	Total Revenue (1,000 Rp)	Percent of Total
Ujung Pzandang (City)	4,672,643	61.36
Maros	158,214	2.08
Pangkep	138,050	1.81
Gowa	162,209	2.13
Takalar	68,519	0.90
Pare-Pare (City)	280,530	3.68
Barru	63,662	0.84
Sidrap	250,968	3.30
Pinrang	253,025	3.32
Luwu	303,114	3.98
Tator	86,331	1.13
Enrekang	40,187	0.53
Bone	355,868	4.67
Sinjai	45,657	0.60
Wajo	158,702	2.08
Soppeng	147,502	1.94
Bantaeng	48,832	0.64
Jeneponto	89,258	1.17
Bulukumba	127,532	1.67
Selayar	24,649	0.32
Majene	32,782	0.43
Polmas	98,297	1.29
Mamuju	8,830	0.12
Total	7,615,372	100.00

SOURCE: Daftar Realisasi Penerimaan PKB Dan Jak Dati II Tahun Anggaran, 1986/87 - 1989/90.

the cities derived 65 percent of the funds. If the shared monies were meant to help the kabupatens and kotamadyas maintain their road networks, this distribution can be thought to provide an unfairly large proportion of the total to the urban areas.

If one ignores the two urban areas, the resulting distribution of vehicle tax revenues among the rural kabupatens is reasonably closely related to both the length of the rural road network and to population. The simple correlation between road length by kabupaten and the amount of shared revenues was only +0.21 suggesting that the shared revenues do not correspond well to the length of kabupaten roads that require maintenance. (The correlation between kabupaten population and shared revenues was slightly greater at +0.35.)

V. Summary and Policy Conclusions

This paper has addressed a couple of general issues applicable to any analysis of local revenue policy and has applied them to the specific case of provincial motor vehicle taxation in Indonesia. The general issues are evaluation of a local revenue source and analysis of the sharing of those revenues with subunits of government lying within the taxing jurisdiction. The analysis was applied to the motor vehicle registration tax and the vehicle transfer tax as currently imposed in Indonesia with more specific analysis of the sharing of these revenues in the South Sulawesi Province.

As with most previous analyses of motor vehicle based taxes in other developing countries, the two taxes get good marks when evaluated for revenue responsiveness to economic growth and, given the set of revenues the provinces are permitted to impose, the two taxes constitute the bulk of all own source revenues of provinces. Neither of the taxes are good at reflecting the marginal costs of road use. In part this is because the taxes are levied without regard for how much the vehicle is used. Furthermore, the transfer tax can inefficiently impede

market transactions. And the specific structure of the motor vehicle registration fee exacerbates the inefficiency of the levy by imposing higher rates on automobiles than on trucks.

This tax rate structure is probably designed primarily with ability to pay equity considerations in mind since the rates are negatively related to the age of the vehicle and positively related to engine displacement. Both taxes are, however, relatively easy to administer with low compliance costs.

The analysis of these vehicle-based taxes leads to some suggestions for a restructuring in the tax system. First, even though we have not specifically analyzed the issue here, introduction of a tax on motor fuel would seem quite reasonable in Indonesia. Although the tax does not necessarily reflect the external vehicle congestion costs, it would reflect marginal road use costs much better than do either of the two revenue sources analyzed in this paper. Apparently, there is great concern that such taxes, if imposed, would raise prices of commodities transported over the roads. This is, however, an overly myopic view of the full costs of transportation since if, in the absence of such a tax, roads are allowed to deteriorate, private transport costs will rise in any event.

In a similar vein, it is quite plausible to argue on the grounds of economic efficiency that higher registration fees should be levied on vehicles other than automobiles, especially large trucks. It is highly questionable whether subsidizing the trucking industry through extremely low registration fees is good tax policy.

The analysis also addressed the interesting issue of how vehicle registration fees collected by provinces are distributed among the Dati II governments within a province. Data from South Sulawesi were used to carry out this analysis. In that province 15 percent of total revenues are shared with the kabupatens and kotamadyas on the basis of the residency of the vehicle owners. The analysis showed that the policy has a very strong pro-urban bias when compared with the

distributions of population and road length within the province. In the absence of vehicle counts on different types of roads, it is not possible to stipulate a formula that would necessarily be "better" at reflecting relative road usage. Nevertheless, policy makers in Indonesia might consider a multiple factor formula to distribute these revenues. For example, a three-factor formula that would include residency of the registered vehicle's owner, population and road length would, *ceteris paribus*, provide additional revenues to rural kabupatens that under the current formula derive extremely low revenues from the motor vehicle registration tax. Even this formula could be further complicated to include differential weights for road lengths of different quality. For example, under the assumption that highly deteriorated roads are not being used, road length could be measured only in terms of roads in better than poor condition.

Regardless of the outcome of any debate concerning the "appropriate" distribution formula, the paper has illustrated how a specific set of local revenue instruments, some of which are shared with subtaxing units, can be analyzed in relation to multiple finance objectives.

APPENDIX

SELECTED MOTOR VEHICLE REGISTRATION FEES, 1990
 (annual fee based on engine size and model year)

Vehicle Type	Model Year						
	1987- Present	1984- 1986	1981- 1983	1978- 1980	1975- 1977	1972- 1974	1969- 1971
Autos							
1801-2100cc	269,100	264,300	209,400	205,500	154,800	97,800	88,200
2101-2400cc	302,100	296,700	235,200	230,700	173,700	109,800	99,000
2401-2700cc	343,800	337,500	267,300	262,200	197,400	124,800	112,500
Jeeps							
1801-2100cc	141,300	138,900	115,200	113,100	88,500	63,600	57,300
2101-2400cc	158,400	155,700	129,600	127,200	98,400	71,100	64,200
2401-2700cc	180,300	177,000	154,200	151,200	111,900	80,700	72,900
Buses							
1801-2100cc	85,800	84,300	70,200	68,700	56,400	43,200	39,000
2101-2400cc	96,600	94,800	78,600	77,100	63,000	48,300	43,500
2401-2700cc	109,500	107,400	89,400	87,900	71,400	54,600	49,200
Motorcycles							
251-500cc	18,300	18,000	16,500	16,200	13,200	10,500	9,600
501-600cc	19,800	19,500	17,700	17,400	14,400	11,700	10,800
601-900cc	24,000	23,400	21,600	21,000	16,800	13,800	12,600

SOURCE: Provincial Decree of South Sulawesi, No. 11, 1987.

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