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**THE EARMARKING
OF GOVERNMENT REVENUE**
*A Review of Some World Bank
Experience*

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Economic theory provides some justification for earmarking. Some economists argue that by assigning revenue from specific sources to specific purposes, a government can facilitate agreement about increasing both revenue and expenditure in cases in which there would be no consensus about raising either separately. Earmarking may also protect high-priority programs from shifting majorities, inefficiency, and corruption.

Most economists, however, have been skeptical about earmarking. In practice, it is difficult to achieve pricing and taxation arrangements that will allocate resources appropriately for the service in question and yet require few administrative decisions. Often, efficient pricing and taxing lead to unbalanced budgets for the earmarked fund and hence to interdependence with the general budget. The independence of earmarked funds is further compromised because they so often depend on the government for additional, non-earmarked sources of funding, or for reiterated endorsement of decisions about prices or taxes for the earmarked sources. Governments also frequently withhold the allotted funds, fail to make necessary changes in prices or taxes, or simply suspend the earmarking arrangements.

This article looks at the arguments for and against earmarking and goes on to illustrate the discussion with case studies from World Bank experience. The lessons from the real world appear to bear out the skepticism of the majority about earmarking: in general, it has not worked very well. The article, therefore, concludes by cautioning against the practice except under certain defined and restrictive conditions.

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Earmarking is the practice of assigning revenue—generally through statute or constitutional clause—from specific taxes or groups of taxes to specific government activities or areas of activity. Sometimes there is latitude for earmarked funds to be supplemented by revenue from other sources or to be diverted to other uses. The distinguishing feature of earmarking, at least in its pure form, is the desire to protect a certain category of expenditure from the vagaries of the political process by linking it to a particular source of revenue. Once this link is established, the system supposedly runs on automatic pilot, and the level of revenue over time drives the level of expenditure.

Principles of Earmarking

At first glance, earmarking appears to apply the benefit principle of taxation (see Bird 1978); that is, the beneficiaries of the government activities pay the taxes or charges. But benefit taxation can exist independent of earmarking, and vice versa: benefit taxes may be added to the central pool, or revenue may be earmarked for activities that do nothing for the contributing taxpayers.

Four broad types of earmarking, categorized by the specificity of tax source and expenditure, are shown in table 1. The most prevalent forms (type A) are gasoline taxes and motor vehicle fees for expenditure on highways and contributions of employers and employees to social security and unemployment insurance funds. Revenue sharing between various levels of government (type D) is also common. A subcategory of type A forms “strong earmarking,” in which the beneficiaries clearly pay for the goods or services provided. These goods or services have the characteristics of private goods—few or no external benefits or costs that affect persons other than the users, no claim by recipients for special treatment on grounds of income distribution, and no significant inefficiency resulting from implementing a charge. Transactions involving these goods give off signals to the market about the amount desired and the willingness to pay. Strong earmarking could, in fact, be extended to public goods as well, provided a way could be found to assess what people would be willing to pay for alternative amounts of the good, which would allow a decision to be reached about how much to provide and how to divide the tax bill for that quantity among citizens according to their preferences. It is also worth noting that public enterprises—to the extent that they are allowed to retain control over profits—represent a form of strong earmarking; the purity of each case would depend on its independence from the budget for subsidies or other special financing arrangements.

The remaining cases of type A earmarking and all cases of types B, C, and D are examples of weaker earmarking: the connection between those assessed and the beneficiaries is tenuous or nonexistent, and objectives related to redistribution or other aspects of social welfare commingle with allocative objectives. The designation of a liquor tax for financing education, for example, gives no

Table 1. Varieties of Earmarking

<i>Type</i>	<i>Revenue</i>	<i>Expenditure</i>	<i>Examples</i>
A	Specific tax or fee	Specific end use	Gasoline taxes and motor vehicle fees for highway investments. Social security, unemployment funds. Support of public enterprises.
B	Specific tax or fee	Broad end use	Lottery proceeds and sin taxes (on tobacco and alcohol) to finance social sector programs. Taxes and royalties from petroleum to finance development.
C	General tax	Specific end use	Fixed percentage of total revenue devoted to specific programs (such as education). Revenue sharing for a specific purpose.
D	General tax	General end use	Revenue sharing.

useful information about the appropriate level of education and represents a straight transfer between two groups of citizens. The same is true of earmarking a fixed (and arbitrary) percentage of general revenue for education. The latitude for supplementing earmarked funds from general revenue, or diverting them to other uses, can weaken all forms of earmarking. In such instances, it is not clear what purpose earmarking serves, because decisions about whether to use funds for the earmarked purpose rather than some other objective appear to dictate the allocation of resources at the margin.

The remainder of this discussion concentrates on efforts to provide fairly specific goods or services with revenue from a clearly designated tax or fee (types A and B in table 1). It excludes special cases of earmarking, such as social security, public enterprises, and revenue sharing between levels of government. The article starts out with a general discussion of the issues: a sketch of the cases against and for earmarking as they have appeared in the literature; an investigation of the feasibility—and the pros and cons—of developing rules for setting prices and taxes and for regulating how proceeds will be spent on earmarked goods; and an examination of whether earmarking is justified when there is little or no connection between the beneficiaries of public expenditure and the payers of taxes or prices. This discussion is then illustrated with some lessons from World Bank experience with several prominent cases of

earmarking: highway funds, betterment taxes to finance local expenditure, and the extensive earmarking programs in Turkey and Colombia. The final section draws some preliminary conclusions and suggests some criteria that earmarked funds should meet.

The Case against Earmarking

Among economists and public administrators, earmarking has but few supporters. The litany of principal objections is summed up by Deran (1965):

- It leads to a misallocation of resources, with too much being given to earmarked activities and not enough to others.
- It hampers effective budgetary control (depending to some degree on whether provisions are embedded in statutes or in the constitution).
- It infringes on the powers and discretion of the legislative and executive branches of government.
- It introduces inflexibility into budgets: changes come only after a lag, and earmarking systems continue after their usefulness has been served.

Earmarking, in short, is seen as infringing on discretion; by reducing the scope of the executive and legislative branches' command over the allocation of resources, it builds some rigidity into the system and reduces flexibility. Earmarked expenditures, exempt from fluctuating general revenue, may attract a disproportionate share of funds at times when resources are short (provided, of course, that sources of earmarked funds are more stable than those of general revenue). Earmarking has also been criticized because it removes expenditure from close public scrutiny. Earmarked expenditure may not have to satisfy the same rigorous evaluation as other budgetary expenditure, so that funds may be diverted to low-priority projects or squandered on needless overhead.

The foregoing arguments have some merit. At the very least, they suggest that expenditure of earmarked money should be formally evaluated and strictly accounted and audited and that there should be periodic review of whether the earmarking is still warranted.

The Case for Earmarking

The case against earmarking is not persuasive under all circumstances. The defects cited by its critics are the virtues cited by its proponents, who argue that rigidity and limitations on the possibility of reallocating resources can sometimes be desirable. Moreover, the flexibility of financing programs from general funds can be overstated. Monies are not readily moved from one category of expenditure to another: spending on debt service, social insurance, and, often, administration and security take precedence; expenditure programs, once started, take on a life of their own. Some countries have established safeguards against corruption or the misuse of funds so strict that it is difficult to begin

programs or to obtain timely funding for them once approved. In such cases, earmarking is an escape from overly rigid procedures in the general budget (see, for example, Bird 1982).

That earmarking is common in the real world—and that some programs are apparently successful—warrants further investigation into the merits of the practice. Adherents of earmarking—few as they are—cite a number of advantages (see Deran 1965):

- Earmarking applies the benefit principle of taxation (at least in some cases).
- Earmarking gives more assurance of minimum levels of financing for public services that governments consider worthy, thus avoiding periodic haggling within the bureaucracy or between the bureaucracy and the legislature over appropriate levels of funding.
- Greater stability and continuity of funding may lead to lower costs because of speedy completion of projects.
- By linking taxation with spending, earmarking may overcome resistance to taxes and help to generate new sources of revenue.

To the extent that there is overlap between payers and beneficiaries, earmarking takes on some of the virtues of benefit taxation: the simultaneous linking of the expenditure and revenue sides of the budget; the provision of adequate financing for public goods and services; and the elimination of excess demand or shortages that occur when goods or services are provided below (marginal) cost or free. In other words, benefit taxation, like the price mechanism, provides appropriate signals for the efficient allocation of resources and financing for government services.

In the long search for a fair system of taxation, the potential for linking spending decisions to decisions on taxes and prices has been a recurrent theme—from Adam Smith through Wicksell and Lindahl down to Samuelson, Musgrave, and Buchanan (Wicksell 1958, Lindahl 1958, Samuelson 1954 and 1955, Musgrave 1959, Buchanan 1968). In a fair tax system, these economists contend, people would pay according to what they received, and taxes would be set according to the marginal benefits received by taxpayers. Expenditure—both in total and for individual public goods and services—would be expanded so long as, at the margin, benefits received by all individuals exceeded marginal costs (since the marginal benefits and costs reflect the gains and losses to society from expanding the provision of any good). Thus total spending (and its composition), and total taxation and its distribution across taxpayers, would be determined simultaneously.

As elegant as such a system would appear in theory, its design in practice has proved problematic. It leaves open two questions: first, how to handle taxes or expenditures that have distributional objectives (that is, how to finance the redistribution), and second, how to induce the public to reveal its preferences in relation to pure public goods—especially if people know that such

revelations might increase tax bills. Although the budgetary process—through the sensitivity of elected officials to voters' desires—to some extent performs the function of revealing preferences, it is not at all clear how accurately it translates the public's wishes into concrete expenditure and tax programs. Nonetheless, this strand of public finance theory points up, first, the importance of regarding expenditure on the one hand and tax and financing on the other as an entity, and, second, the fact that this link is crucial to decisions on resource allocation. Indeed, the "public-choice economists"—James Buchanan, Charles Goetz, and others—would argue that in some cases the link is essential to reaching any collective decision to expand government activity.

Criticism of earmarking rests mainly on a notion of government as a single will, or government decisionmaking as a perfect reflection of the wishes of the population, under which decisions about spending and taxation are made such as to improve welfare (even if implicitly). Analogously to utility maximization by households, if choices about the allocation of public resources are made such that the last dollar spent yields the same additional benefits to society regardless of what use it is put to (that is, such that the net marginal social benefits across all uses are equated), any constraints on choice would lead to a lower level of welfare. But if one drops the notion of a single will and recognizes that political processes are imperfect and that societies consist of many groups with differing preferences, benefit taxation and earmarking may take on a more favorable coloring as a means of accommodating differences at a point in time and over time. (In fact, if voters have identical preferences or if the same group of voters had the median preferences with respect to both how funds are spent and the level of taxes—that is, the size of the budget—then the end results of financing from general funds and earmarking are the same.) If collective decisions are nothing more than the expression of individual choices through constitutionally agreed rules, financing from general funds may have drawbacks. Spending and taxes are considered separately, with the level of (planned) spending determined annually at budget time on the basis of projected revenue from a tax system that has been implemented piecemeal over a number of years. In this process, the only links between expenditures and taxation are the marginal adjustments in either that must be made to accommodate macroeconomic stabilization.

These characteristics of financing from general funds, coupled with unstable majority coalitions, mistrust among competing groups, or general tax weariness, may make it difficult to raise additional resources. Voters and legislators will be unwilling either to vote for more taxes without assurances about how the money will be spent or to vote for higher spending without details about how the tax burden will be distributed. Both Buchanan (1963) and Goetz (1968) have shown that earmarking enforces a tie-in, which ensures that taxes will be used for certain purposes and that the relationship will be stable through time. Thus earmarking can sometimes break through the impasse and allow money to be raised that otherwise might not have been forthcoming.

Another argument for earmarking has been that it facilitates cost recovery for goods or services for which charging a price is feasible. Cost recovery, the argument goes, makes more sense if the monies raised are retained for particular public goods or services in the same sector of the economy. Beneficiaries will be more willing to pay if they know their money will be used for activities that directly benefit them. Officials who provide the good or service will be encouraged to enforce the collection of fees if they know that their clients will benefit or that more and better services will be provided. In this way, earmarking may improve both collection and perhaps even the way the money is used, since concerned users and officials are better monitors of performance than are more distant authorities. (For example, a recent study of the Philippines—Jimenez, Paqueo, and de Vera 1988—showed that schools that rely more heavily on local sources of finance have lower costs, holding enrollments and quality-related variables constant.)

The arguments just outlined point to earmarking as a means of improving the performance of public sector institutions. They suggest too that under certain circumstances, the practice may be a better instrument of resource allocation than financing from general funds, or it may be a way around cumbersome and inflexible general budgetary procedures. The arguments have some merit but are not compelling because they do not give a clear indication of the circumstances under which earmarking is justified or the criteria it would have to meet to be considered satisfactory.

Efficiency and Automaticity in Pricing

Neither the theoretical nor the practical literature gives much guidance about what performance criteria earmarking should meet. The theoretical arguments are confined to deriving circumstances under which earmarking might prove desirable, and they say little about how earmarking might be implemented or what might determine whether earmarking arrangements were suitable or not. The practical literature evaluates the experience of earmarking in various countries and economic sectors, using broad criteria in assessing the growth and mix of earmarked expenditures. On the basis of such qualitative criteria, earmarking usually receives a mixed to negative rating.

Earmarking arrangements must meet two broad criteria. First, the price and tax arrangements must lead to appropriate allocation of resources for the sector—that is, the financing must promote an economically efficient result. Second, these arrangements must lead to reasonably automatic financing for the earmarked expenditures—that is, financing that is independent of developments in the general budget. Earmarked funds that have to depend on frequent decisions about prices and taxes in the executive or legislative branch (or on additional funds from the general budget) are no longer insulated, and such earmarking begins to resemble financing from general funds.

The traditional theory of earmarking calls for balanced budgets—charges paid by beneficiaries (taxpayers) will be just sufficient to cover the (current and capital) cost of providing the good or service. For example, in Samuelson's (1954 and 1955) general equilibrium model of the efficient provision of private and social goods, all goods are provided under constant returns to scale (that is, equal proportional increases in all inputs lead to an equal proportional rise in output), the quantity of each social good consumed is the same for all taxpayers (by definition), and its output is expanded so long as the sum of the marginal benefits over all taxpayers exceeds the (constant) marginal cost of its provision.¹ The equilibrium solution requires that quantities of all public and private goods be determined, that taxes be levied on each taxpayer for each social good according to the marginal benefit received, and that the sum of taxes paid for each social good be equal to the total cost of supplying that good. Although there is no earmarking in the sense of segregated funds, earmarking in fact takes place because every public expenditure comes with its own source of finance, and no public good would be provided without such financing. With constant returns, the budget for each public good would be balanced.

Analogous is the case of the public sector providing pure private goods under conditions of constant returns to scale—leaving aside for the moment questions of economies of scale, indivisibilities (or those investments which add large, nonincremental amounts to output), externalities, and public sector financial constraints. Given the level of demand for the good, the optimum output involves the equality of price with short-run and long-run marginal costs (and hence with short-run and long-run average costs). A price in excess of short-run marginal cost provides an incentive to increase production using variable factors of production; a price in excess of long-run marginal cost would lead to increased investment to expand capacity and lower (short-run) costs of production. The optimally adjusted capacity, for a given demand, requires the equalities just listed and results in total revenue equaling total cost. Earmarking (and cost recovery) would in this case involve a balanced budget—but only if capacity had been adjusted to the optimum level² and assuming constant returns to scale and no indivisibilities, externalities, or financial constraints. (The results would, however, still hold in the face of fluctuating demand. In the case of so-called peak load pricing, users at nonpeak times pay a price equal to short-run marginal cost, whereas users at peak times pay a price sufficient to cover the variable and fixed costs of peak use. Optimality thus involves a balanced budget; see Williamson 1966.)

Without the restrictive assumptions, economic optima and earmarking would entail unbalanced budgets. In other words, any earmarking rule that required a balanced budget would be incompatible with optimality. The reasons for this are well known and need only be outlined here:

- *Returns to scale.* With increasing returns to scale, the long-run optimum output still requires the price to equal the short-run and long-run marginal costs, both of which fall short of short-run and long-run average costs.

That is, optimum adjustment to any given level of demand will entail continuous losses for an indefinite period. With decreasing returns to scale, marginal costs exceed average costs, and adjustment to demand will entail excess profits.

- *Indivisibilities.* With constant returns to scale but with lumpy investments that add nonmarginal increments to output, the output at which price is equal to both short-run and long-run marginal costs—for any given level of demand—may be impossible to attain, and the appropriate price will either exceed or fall short of long-run marginal costs and entail continuous excess profits or losses.
- *Externalities.* Optimization in the presence of externalities requires equality between marginal social benefits and marginal social costs. If the good or service in question is produced under constant returns to scale, external economies (that is, with benefits also affecting nonusers) involve a higher output than would be generated by considerations of private demand and supply, along with a subsidy to consumers to induce them to consume the larger quantity. External diseconomies (that is, with costs imposed on persons other than users) in turn would involve a tax on output, which results in a lower equilibrium output than would be generated by considerations of private demand and supply.
- *Public sector financial constraints (pure taxation).* To raise revenue to finance general operations in the public sector, the government may impose excise and sales taxes (and may set prices of public enterprise products at above marginal cost)—that is, financial constraints may dictate indirect taxation, which drives a wedge between the price consumers pay and marginal (private and social) costs. Any money raised by this indirect taxation belongs to the general budget.

In the instances described above, earmarking, to be economically efficient, would require inequality between revenue and outlay for variable and fixed factors of production—and hence some sort of relationship with the general budget (or perhaps with financial markets, if borrowing or lending is allowed). Quite simply, allowing levels of spending in these cases to be driven solely by the level of earmarked revenue would lead to a misallocation of resources. For example, the excess profits generated at the optimum level of output in the case of increasing costs are not a signal for increased investment since capacity is already correct; the excess profits should either revert to the general budget or, at a minimum, be held in interest-bearing financial assets until increased real investment can be justified. Similarly, the losses dictated by considerations of optimality in the case of either decreasing costs or positive externalities would have to be met from general funds. In theory, therefore, in many cases economic efficiency would predicate an unbalanced budget; and in these cases it would be undesirable to run a fund independent of the general budget.

Theoretical considerations aside, experience has shown that arrangements for automatic financing are difficult to devise. One obvious reason is that often

such funds also depend on additional, non-earmarked sources of revenue. The amount of such monies will then depend on general budgetary considerations—such as the availability of resources and the comparative desirability of various expenditures—and the advantage of earmarking for the allocation of resources at the margin is no longer evident. Second, earmarked revenues are easily eroded, especially during inflation. To the extent that any fund depends on a specific tax, an administered price, or an ad valorem tax linked to an administered price, it depends on periodic price adjustments by the government. By failing to adjust, the government can force the fund to become more dependent on financing from the general budget or give itself the leeway to raise other taxes. Third, experience has shown that governments will simply override earmarking arrangements if necessary (see the discussion of highways later in this article).

The cases of earmarking discussed so far have a large, if not total, overlap between the payers of prices and taxes and the beneficiaries of the expenditure. Several real-world cases do not meet this condition. For instance, the use of so-called sin taxes (on alcohol or tobacco) or lottery proceeds to finance the social sectors and the setting aside of a fixed proportion of income taxes for specific purposes seem to exhibit no such link. There is no connection between the amount of revenue raised and the appropriate level of expenditure or services; indeed, because the goods or services are provided to users below cost, there is a tendency toward excess demand, which must be counteracted by nonprice devices (such as queueing, congestion, and entrance examinations). In addition, since most of these earmarked funds are supplemented by funds from the general budget, the purpose they serve is unclear. Earmarked sources are supplying an arbitrary amount of resources for the sector; the amount of additional resources coming from the general fund depends on the needs of the sector as against those of other sectors. The main advantage cited by proponents of these taxes is that government can extract more resources from taxpayers by committing them to specific purposes. But given fungibility and given that earmarking has little way of ensuring the appropriate level of output in such cases, such commitments appear to serve political ends rather than be rooted in sound criteria of efficiency or distribution.

Examples of Experience with Earmarking

The World Bank's experience with earmarked funds for highways and for local government programs, and its experience in two countries where earmarking has been widespread (Turkey and Colombia), illustrate and extend the arguments just propounded.

Highway Funds

Highways provide a particularly fruitful area for the study of earmarking. First, from the point of view of decisions about pricing and cost recovery,

certain characteristics of the sector make it interesting: for instance, financing highways raises questions of returns to scale and indivisibility, external diseconomies in the form of congestion and pollution, and income-elastic demand for fuel, which opens up the possibility of luxury taxation. Second, taxes on fuel and vehicles form a significant fraction of government revenue in both developed and developing countries, in both of which groups there are numerous examples of earmarking in the form of highway funds.

The World Bank's initial enthusiasm for earmarking for highway expenditure has cooled. Early Bank work called for earmarking in some countries on grounds that more stable funding would encourage entrepreneurship and help reduce unit costs of construction by speeding completion; in addition, some crude statistical work purported to show a correlation between earmarking and the proportion of investment devoted to highways (Eklund 1967). But by the 1980s, Bank experience with road funds—described in an internal World Bank policy paper in 1985 as disappointing almost without exception—had led to the conclusion that with some qualifications, earmarking ought to be avoided. It was conceded that, when mismanagement was rampant in the public sector, earmarking might be better than the alternative if (1) there were a public agency with the demonstrated capacity to carry out the program; (2) funds would be devoted entirely to a maintenance program for which economic priorities had been carefully articulated; (3) there were clear controls (before and after the project) to prevent the diversion of funds; and (4) the earmarking arrangement would be of finite duration. But even this qualified position is not unassailable. Despite the safeguards, it is hard to be sure that all maintenance programs will take precedence over construction projects or that, given fungibility, earmarking really does lead to an improved mix of highway expenditures.

Subsequent evaluations (Johansen 1989, McCleary and Tobon 1990) of the Bank's experience in five countries—the Central African Republic, Colombia, Ghana, Mali, and Zaire—confirm the skepticism. Only in Ghana has earmarking had some success. There, the road fund appears to have ensured more timely distribution of funds and sharp increases in allocations for maintenance and rehabilitation. The deterioration of the road network during a long period of economic mismanagement threatened the government's economic recovery program, which strengthened the government's resolve to ensure adequate funding. In the other four countries, road funds have—at least for a time—helped to get around cumbersome budgetary procedures, and the more reliable funding has made it easier to use private contractors through competitive bidding. Generally, officials in agencies receiving earmarked funds support earmarking arrangements; often such arrangements cut through red tape, allow more timely receipt of funds, and permit better planning. But it does not follow that society also benefits from such arrangements unless priorities for spending can be set and adhered to. Otherwise, earmarking creates a new inefficiency to

correct an old one. The quest for larger allocations and greater stability of funding appears to have been more elusive.

The lessons of Bank experience have been that road funds are not the easy or obvious solutions to underfunding that they may appear to be. The surveys have found, among other things, that:

- It is hard to set appropriate prices for road funds; specific taxes or ad valorem taxes linked to administered fuel prices quickly erode road funds in an inflationary environment. A pricing arrangement that will generate adequate resources for highways generally requires periodic decisions by officials.
- Allocations for road funds appear to depend on the condition of the general budget. When money is tight, earmarked funds may be temporarily frozen (as happened in Ghana) or diverted to other uses (as in Mali), or the government and public enterprises may stop paying their fuel bills and hence fuel taxes (as they did in Zaire).
- Road funds are more vulnerable to general budgetary problems the more they depend on periodic changes in fuel prices or tax rates and (obviously) the smaller the share of earmarked taxes in the road funds' resources.
- The adequacy of road funds' resources as a whole is no guarantee of an appropriate mix of maintenance, rehabilitation, and new investment.

The purported insulation of road funds from general budgetary problems is thus largely illusory, since there are many ways governments can tap into earmarked monies when budget conditions get tight. (The experience in the United States bears this out; see Short 1989.) Only when a government is committed to relatively high spending on roads (as in Ghana) will the funds be safe—and financing from general funds could have brought about much the same outcome.

Earmarking by Local Governments

The prospects for earmarking seem brighter in the context of decentralized local government. Beneficiaries are easier to identify, and the preferences of voters and users are easier to articulate. Because the benefits are localized, there is less opportunity to pass the cost of programs to nonbeneficiaries. Thus, at the local level, earmarking occurs in the guise of special assessments (specific expenditures linked to changes in tax rates or betterment and valorization taxes); special-purpose governments (such as special districts for water and sewerage or for schools financed from fees or property taxes); and various services provided for a charge (for example, local transport, garbage removal).

One point is worth stressing. The link between expenditure and revenue in these arrangements is extremely close. In fact, often the level of government activity or service is proposed first and the financing arrangement decided afterward. This substantially reduces the danger of a mismatch between appro-

appropriate levels of revenue and activity and the corresponding danger of over- or underinvestment, which may occur when spending is linked to a source of revenue whose level is set more or less arbitrarily; highway expenditures and fuel taxes are an example of such a linked pair. These advantages may, however, be reaped at the expense of the prime virtues of earmarking: automaticity and insulation from general budgetary considerations. The more often officials must make decisions about appropriate levels of expenditure and revenue, the more they and the voters will be forced to choose among competing uses for the funds, and the less certain financing becomes.

Colombia's municipal valorization tax (similar to what are called special assessments or betterment taxes in other countries) represents a rather pure form of earmarking at the local government level (see Rhoads and Bird 1967, World Bank 1977, and Bird 1984). This purity results from:

1. the substantial overlap of taxpayers with beneficiaries
2. the use of benefit-cost considerations (analysis would be too strong a word) and the conscious and conscientious attempt to assess taxes according to how people benefit from the project
3. the strong link between valorization revenue and expenditure (in principle, no supplement from or diversion to the general budget).

In addition, valorization appears to reverse the usual sequence of earmarking, in which available revenue drives levels of expenditure: instead, the identification of desirable projects, often within the scope of prepared investment programs, stimulates efforts to raise financing from prospective beneficiaries.

Once a project suitable for valorization taxation is selected, a zone of influence—the area over which benefits are expected to be felt—is demarcated. Benefits are estimated as the total resulting rise of site values and allocated across the properties within the zone according to formulas that take into account characteristics such as size, shape, topography, frontage, distance from the project, and various economic factors. Over time, the scope of valorization has been extended to include the construction of streets and parking facilities, local paving, urban development, and the establishment of green spaces. In principle, there is nothing to stop authorities from attempting to recapture some or all of the (net) benefits from the project, but in practice full recovery is sought only for the costs of land, construction, and some interest and administrative expenses. Problems that the poor or people with few liquid assets might have in paying the tax are taken into account: the poorest can be exempted altogether, and others are allowed to stretch payment over several years if it would otherwise absorb a significant fraction of their annual income.

The tax has some obviously desirable features—the connection between beneficiaries and taxpayers; the effort to select projects in which the gains clearly exceed the costs; and the flexibility with which it has been adapted to differing circumstances. As a tax on the unimproved value of land, it has no adverse effect on incentives; indeed, the combination of the tax and improvement serves

to raise income and increase the potential profitability of investments, which stimulate incentives. The tax has raised sizable sums and financed significant improvements in Colombia's cities.

But valorization does have some drawbacks, primarily having to do with collection. First, quite aside from the fact that authorities attempt to recover only the cost of the project, collections fall far short of 100 percent. The reasons appear to be cost overruns, generous exemptions (for example, the Catholic church, charitable institutions, and public enterprises), and generous accommodations for the poor and those with liquidity problems. Difficulties have been greatest for projects designed to improve conditions in low-income areas. Second, the concept of the zone of influence has its limitations: in cases in which many of the beneficiaries fall outside the zone, it has been difficult to collect because people within the zone have been reluctant to pick up the added burden. Collection is also problematic when several projects simultaneously affect a number of overlapping zones. Third, partly because of these collection problems and partly because of administrative deficiencies in planning and implementing projects, growth of valorization has proved unstable, characterized by periods of stagnation followed by sizable increases.

Despite its imperfections, valorization deserves a favorable rating. Its popularity and its ability to raise revenue justify its continuation and extension. Its weaknesses could be reduced by cutting back exemptions, charging interest (this was in fact introduced in 1981), and imposing penalties on arrears. Furthermore, if many people cannot pay and a key objective is to subsidize them, experience has shown that such objectives are served better by explicit financing from the general budget than within the context of the valorization or betterment taxes.

Earmarking in Turkey and Colombia

Turkey and Colombia are prolific earmarkers. In both countries, earmarking has gotten out of hand, bringing significant misallocation of resources. The earmarking policies of the two countries differ, however, in several respects. In Colombia earmarking generates a much larger share of government revenue and is of longer standing than in Turkey, where earmarking is a recent response to budgetary stringency. Turkey's earmarking is mainly off budget, whereas Colombia's is almost entirely on budget.

TURKEY. Some of Turkey's extrabudgetary funds are quite old but most are of recent origin, mainly a response to the budgetary problems of the 1980s. As a consequence, extrabudgetary funds have grown, according to World Bank data, from the equivalent of 8 percent of central government revenue (1.4 percent of gross national product, GNP) in 1983 to more than 20 percent of government revenue (more than 4 percent of GNP) in 1987—this in a country where central

government revenue as a share of GNP, including extrabudgetary funds, has been falling, from 21 percent in 1980 to 18 percent in 1987.

The purposes and sources of funding for the principal extrabudgetary funds are varied (see table 2), ranging from quite specific—support for investment in the defense industry, housing subsidy, fertilizer subsidy—to more general—export and investment subsidies, promotion of exports through marketing and advertising—to even more general—an extrabudgetary fund to raise money for other extrabudgetary funds. For example, the biggest fund, the Public Participation Fund, which builds and sells participation in large infrastructural projects, receives money from the petroleum consumption tax and can borrow domestically. The second biggest, the Mass Housing Fund, provides credit for small housing units and land acquisition and receives the bulk of its financing from earmarked taxes—from variable import levies, the supplementary value added tax, petroleum product taxes, and the \$100 exit tax on Turkish citizens. Revenue for the extrabudgetary funds is obtained from tax (68 percent) and from nontax (32 percent) sources. Some funds have authority to borrow, but the amounts involved have so far been quite small. Principal tax sources have been import duties (18 percent of total revenue), export taxes (13 percent), petroleum taxes (20 percent), and financial transactions (10 percent), followed by excises on tobacco, alcohol, and beverages. Nontax revenue has included the proceeds of lotteries and gambling houses, various fees and penalties, operating income from infrastructural facilities, and interest income on financial assets.

In general, extrabudgetary funds are established by decree following approval by the Council of Ministers. The decree specifies the purposes, eligible expenditures, and the sources of revenue and rates of tax, surcharge, or subsidy involved. In some instances the decree is so specific that the Council of Ministers determines the charter, policies, operating framework, and budget of the extrabudgetary fund, which has no separate management board and is merely an account held at the central bank. In other instances, the fund has a separate board and management body. No central authority supervises the extrabudgetary funds.

Turkish earmarking has some serious drawbacks. First, it contributes little to government efforts to raise more resources. The rise of the extrabudgetary funds has been sapping central government revenue and expenditure by preempting an increasing share of public revenue. For example, import levies on particular products reduce imports and the amount of import duties flowing to the central budget from them. Other special indirect taxes can reduce budgetary revenue by reducing demand or profit.

Second, because there is no central organization, the policies of some extrabudgetary funds run counter to those of others or to those of the government. For example, reliance on export taxes and import duties is contrary to the government's goal of a more open, export-oriented trade regime. Special import levies obstruct the move to reduce quantitative restrictions and tariffs,

Table 2. Turkey's Principal Extrabudgetary Funds, 1985-86

<i>Fund</i>	<i>Date established</i>	<i>Revenue, 1985</i>	<i>Projected revenue, 1986</i>	<i>Principal sources of revenue</i>	<i>Principal uses</i>
Defense Industry Support Fund	1985	n.a.	194.6	Indirect tax on fuel, tobacco; direct tax on corporate and personal income; nontax revenue	Support to investment in the domestic defense industry
Development and Support Fund (DSF)	1984	62.2	113.1	Tax on luxury imports and transfers from other funds	Price support of animal feedstock and social programs
EEC Fund ^a	1982	13.0 ^b	0	Tax on imports of iron, steel, and some chemicals from the EC ^a	Transfer to other funds (mainly DSF)
Export Encouragement Fund	1984	22.9	31.0 ^c	Tax on imports and exports and nontax revenue	Support to private investment and transfer to other funds (mainly RUSF and DSF)
Export Improvement Fund	1980	0.6	0.8 ^c	Contributions from private industry	Promotion of exports through marketing and advertising
Financing Fund	1980	22.4	30.0 ^c	Deferred tax on corporate income	Support to private investment
Investment Goods Manufacturing Encouragement Fund ^d	1985	n.a.	—	Foreign credits and transfers from other funds	Credit to firms that manufacture investment goods and to their importer-clients
Mass Housing Fund (MHF)	1984	212.4	315.7	Tax on luxury imports; share of supplementary value added tax and transfers from other funds	Subsidized housing credit
Mutual Assistance and Support Fund (Poor People's Fund)	1986	n.a.	—	Transfers from budget and other funds; surcharge on corporate and personal income tax; nontax revenue	Income transfer to poor

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and they introduce the potential for arbitrary, uneven protection across various parts of the economy. At the same time as the government is encouraging private initiatives and giving incentives to invest, one extrabudgetary fund is drawing on taxes on bank loans to the private sector to subsidize exports and investments. Until recently, one fund was taxing agricultural exports while another was subsidizing them at the same rate.

Third, the administration of extrabudgetary funds in Turkey strays far from the benefit principle. In virtually no case are the beneficiaries of government expenditure financing the spending themselves (the use of part of the taxes on

Table 2 (continued)

<i>Fund</i>	<i>Date established</i>	<i>Revenue, 1985</i>	<i>Projected revenue, 1986</i>	<i>Principal sources of revenue</i>	<i>Principal uses</i>
Petroleum Consumption	1984	52.0	108.8	Tax on fuel consumption	Financing investments of local government and highway and sport directories
Petroleum Exploration Fund	1973	75.3 ^b	90.0	Tax on domestic petroleum	Transfer to other funds (mainly SPSE)
Public Participation Fund	1984	228.7	421.7	User charges on public infrastructure; issuance of revenue-sharing certificates; share of petroleum consumption tax	Public investment in infrastructure
Petroleum Price Stabilization Fund	1979	65.4 ^b	88.3 ^c	Tax on imported petroleum	Transfer to other funds (mainly MHF)
Resource Utilization Support Fund (RUSF)	1984	112.3	172.2	Tax on bank loans	Export and investment subsidy
Selective Credit Fund	1970	35.0 ^e	5.0	Central government consolidated budget	Export and investment subsidy (now through transfer to RUSF)
Support and Price Stabilization Fund (SPSF)	1980	267.7	280.0	Tax on imports and agricultural exports	Fertilizer subsidy
Tax Administration Development Fund	1985	n.a.	50.0	Central government consolidated budget	Improvement in tax administration
Total		1,134.9	1,901.2	n.a.	n.a.
Total (net of interfund transfers)		965.0	1,700.0	n.a.	n.a.

— Not available.

n.a. Not applicable.

a. Taxes on imports from the European Communities were abolished in July 1986.

b. Data are provisional.

c. These are estimates based on an increase of 35 percent over 1985.

d. As of July 1986 this fund had not yet started functioning.

e. Figure refers to 1984 and is not included in the total.

Source: Estimates based on World Bank data.

petroleum to finance highways is a minor exception). Earmarking instead represents the arbitrary assignment of revenue from certain taxes for financing supposedly desirable government programs. Under these circumstances, revenue gives no guidance as to what level of the service is desirable. Finally, and relatedly, it is not at all clear what criteria for project evaluation the extrabudgetary funds must meet and how rigorous these are compared with those for regular budgetary expenditures. In sum, given the size of the extrabudgetary funds and the lack of coordination and control, there is a potential for a significant misallocation of resources.

COLOMBIA. Most of Colombia's earmarking, unlike Turkey's, comes from old, established funds created at least two decades ago (see table 3; this section draws on McCleary and Tobon 1990). Earmarking has increased since then mainly as a consequence of revenue sharing and rather buoyant sources of revenue for some of the major funds. Colombia's earmarking is a product of its

Table 3. Colombia's Principal Earmarked Funds
(millions of Colombian pesos)

Fund	Date established	Revenue		Principal sources of revenue	Principal uses
		1986	1987		
<i>National funds</i>					
Highway Funds (national and other)	1967	46,493	59,600	Fuel taxes	Transportation investment: 75% for national highways, 10% for neighborhood roads, 10% for national railways, and 5% for urban transport
PROEXPO	1967	27,038	43,200	Levy on imports	Subsidized credit for exports
National Coffee Fund	1940	17,886	14,005	Taxes on value of coffee exports and retention on volume	Economic and social investments in coffee-growing regions; various equity and financial investments; coffee price stabilization
National Apprenticeship Service	1957	18,256	23,195	Payroll taxes	Technical training
Family Welfare Institute	1968	17,831	23,534	Payroll taxes	Programs for protection of children and family
<i>Departmental funds</i>					
Sectional Health Services	—	78,461	—	Taxes on beer, wine, liquor	Health programs
Sectional Sports Commissions				Taxes on cigarettes	Support of sports activities
<i>Municipal funds</i>					
Municipal Improvements	1921	6,967	—	Tax on increases in unimproved value of land (valorization tax)	Investment in roads, water, sewers, parks, and so on
<i>Intergovernmental transfers</i>					
Departments and Territories	1971	75,838	109,862	Share of total national revenue minus revenue earmarked for other purposes	Education and health programs
Municipalities	1968	55,590	80,432	Share of value added tax revenue	Specified municipal investments

— Not available.

Source: McCleary and Tobon 1990.

political history—a long struggle over the degree of centralization and significant periods of political tension and violence. Earmarking has become a mechanism for committing government to continue specific activities regardless of an unsettled political climate and for getting around elaborate budgetary controls designed to prevent misuse of funds. Earmarking in the form of the automatic sharing of specified sources of central government revenue is an attempt to reduce the extent of centralization and to support increased activity on the part of departments (provinces) and, more recently, municipalities.

Earmarking has grown rapidly during the past two decades. The proportion of national government revenue earmarked rose from 11 percent in 1970 to 28 percent in 1986. The proportion of revenue earmarked at all levels of government rose from 21 percent to 32 percent over the same period. Whereas departmental was as important as national earmarking in 1970, a surge occurred in earmarking of central government revenue, which now accounts for 75 percent of earmarking at all levels of government. The largest sources of earmarking at present are revenue sharing for education and health and for specified municipal investments (35 percent of all earmarked revenue); departmental sin taxes (on alcohol, tobacco, and gambling) for health and sports (21 percent); the fuel tax for spending on highways and other transportation projects (12 percent); payroll taxes to finance training and programs to promote family welfare (10 percent); the import levy to finance subsidized credit for exports (9 percent); various levies on coffee exports to cover economic and social investments in coffee-growing regions and other investments (5 percent); and the municipal valorization tax (2 percent). These seven sources account for about 94 percent of earmarking in Colombia.

Colombia's earmarking differs from Turkey's in several respects other than its origins and significance in public resources: first, Colombia's earmarked funds are largely within existing budgets so that their revenues and expenditures do not so often obscure government activities or the government's effect on the economy; second, the system relies less heavily on import duties and other taxes on international transactions as a source of financing; and third, a greater (though still fairly small) proportion of earmarking would meet the test of being benefit related (for example, the fuel tax, municipal valorization tax, and, more loosely, the coffee tax).

That earmarking has become excessive has long been recognized in Colombia, but there has been little success in reducing its scope. The 1981 Mission on Intergovernmental Finance (headed by Richard Bird and Eduardo Wiesner) took a generally skeptical but pragmatic view of earmarking, attributing its origin primarily to Colombia's complex political and budgetary situation (see Bird 1984). The mission recommended evaluating earmarking case by case, eliminating earmarking that did not fulfill the benefit principle or was not a primary source of finance. The Commission on Public Expenditure (1986) took a much harsher view, accepting the Bird-Wiesner view that earmarking ought to be limited to cases that meet the criteria of the benefit principle but

finding that principle absent in virtually all cases. This commission therefore concluded that the inefficiency of Colombia's budgetary processes was not sufficient justification for earmarking if there was no assurance that the appropriate amount of resources would be devoted to earmarked activities—if one inefficient practice replaced another, there was no reason to expect an improvement in national welfare. The commission recommended that earmarking ought to be abolished. (The commission's definition did not include revenue sharing, payroll taxes for social security, and profits from public enterprises, all of which could be considered earmarking under a broader definition.) So far the government has done little to implement these recommendations; in fact, a few small earmarked funds have been added.

Colombia's earmarking is too complex for blanket recommendations. Nevertheless, recent budgetary reform in Colombia makes reductions in the scope of earmarking more feasible politically than in the past, and some piecemeal reforms, if adopted fully, would eliminate about 45 percent of traditional earmarking (in value terms). Remaining would be revenue sharing, three major cases of earmarking, and perhaps some minor funds. The objective would be to eliminate the most obvious cases of inefficiency.

The suggested reforms would apply, first, to those funds whose revenue and expenditure do not fit the benefit principle of taxation. These funds include import duties for subsidized export credit (PROEXPO); payroll taxes for various social welfare objectives (such as the National Apprenticeship Service and the Family Welfare Institute); departmental taxes on and profits from alcohol, tobacco, and gambling used for health, welfare, and sports; and a number of minor funds. Second, the remaining major funds could be adjusted to move them closer to the benefit principle. For instance, spending from the National Coffee Fund could be limited to the coffee sector and coffee-growing areas, fuel taxes could be adjusted more often to generate the resources required for highways, and the valorization tax could be extended to additional Colombian municipalities. Third, the government could increase the effectiveness of revenue sharing, an important element in its effort to decentralize activities to the departmental and municipal levels, by changing the formulas to remove anomalies (such as the undue favoritism given to areas with small populations), increasing incentives to generate resources at the local level, and taking measures to increase the capacity of municipalities to absorb larger resources.

Conclusions and Recommendations

However much the International Monetary Fund and the World Bank have condemned it in the past, there is no general presumption against earmarking. In theory, as Buchanan, Goetz, and other public-choice economists have shown, earmarking may make agreement possible on increasing revenue and expenditure when there would be no consensus about either separately. It may

protect high-priority programs from shifting majorities, administrative inefficiency, and corruption (although experience shows that often apparently low-priority programs also get protected). There are examples of successful earmarking, clustered mainly in the areas of revenue sharing, social security, special assessments (betterment or valorization taxes), and special districts (for example, for water and sewerage and for education). Earmarking in other areas—requiring specific taxes to finance narrowly defined government programs (such as highways, housing, and training)—has been notably less successful.

The setting of taxes and prices under earmarking should meet the same tests of efficiency and equity as the setting of prices for public sector goods in general, and it should provide a reasonably automatic source of financing, independent of general budgetary considerations. Meeting these two criteria simultaneously is difficult. Efficient pricing and taxation is likely to dictate unbalanced budgets for the earmarked fund and hence an interdependence with the general budget. In practice, governments generally override earmarking arrangements if they need the resources; the protection given by earmarking tends to evaporate when budgets get tight.

Earmarking works best when it is an extension of the benefit principle of taxation. But since the objectives of efficiency and equity under benefit taxation can usually be met through financing from general funds, earmarking needs to be justified on other grounds—for instance, that it is needed to protect levels of the service, increase the collection of revenue, or improve the quality of the service. By the same reasoning, earmarking is not desirable for programs in which redistribution or social welfare is emphasized because the connections between revenue and appropriate levels of activity are tenuous. Nor does earmarking work well in the case of pure public goods, since taxpayers will not reveal their preferences through voluntary individual payments.

The World Bank's long-standing skepticism about highway funds is amply justified by experience. Highway officials like them because they simplify budgetary procedures and appear to make funding more certain, but experience shows that the financing they provide is not automatic and remains dependent on government judgments, which change as budgetary considerations dictate.

Earmarking appears to work more successfully in the context of local government, where the correspondence of beneficiaries and taxpayers is closer and where users can more easily express their preferences by voting. Periodic votes or assessments link expenditure and revenue for specific activities and provide a check on the appropriateness of decisions.

The scope of earmarking is restricted, at any level of government, by the limited number of cases to which the benefit principle applies; the costs of fractionalization of decisionmaking; and possible tradeoffs with revenue mobilization for the general budget. In countries such as Turkey and Colombia, where earmarking has become extensive, in many cases the practice is not justified and ought to be abolished.

In sum, earmarking cannot be discarded out of hand, but there are certainly grounds for skepticism about how well it is likely to work. If past experience is any guide, any proposed scheme of earmarking carries its own set of potential problems even as it shelters one type of government expenditure from competition for funding with another. Questions arise about the adequacy of resources to meet the needs of a given endeavor, the adequacy of the institution designated to carry out the earmarked activity, the lack of control over priorities for spending or administrative outlays, and the possible conflicts with the government's ability to raise resources for the general budget or with other government policies. The clear implication is that each earmarking scheme should be required to satisfy a series of tests to ensure that it does represent an improvement.

- Is there a strong link between beneficiaries and the payers of taxes and prices?
- Is earmarking necessary, in addition to benefit taxation or charges, to ensure levels of service or to improve the collection of revenue or the quality of service?
- Will the arrangements for pricing, taxing, and other financing for the earmarked expenditure elicit resources adequate for present and expected levels of demand?
- Will the price or tax arrangements have significant distortionary effects—deadweight losses, inflationary effects—on the allocation of resources?
- Is there an appropriate investment program and a clear set of rules to regulate investment decisions, the mix of spending on capital, maintenance and rehabilitation, and administrative overhead?
- Are there accounting and auditing safeguards against the misuse or diversion of funds?
- Are the expenditure program and its financing consistent with the government's policies on macroeconomics and the allocation of resources; better, is there a government agency that oversees extrabudgetary funds and ensures that their activities are consistent with policy?
- Is there an agency (or prospective agency) with the capacity to plan, evaluate, and carry out the program?
- Is there a cutoff date for deciding whether the earmarking arrangements should be continued?

Satisfying each of these questions would constitute a requirement formidable enough to limit the scope of earmarking quite stringently in practice.

Notes

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1. This, of course, abstracts from the problem of free riders. If all public goods must be consumed in equal quantities by all, and one person's participation in the benefits of any public

good does not affect the benefits received by others, there are no incentives for taxpayers to reveal their preferences, especially when large numbers are involved. They benefit whether they pay or not.

2. All short-term equilibria (with short-run marginal cost unequal to long-run marginal cost) involve either excess profits or losses.

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