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The Tax Assignment Problem: Conceptual and Administrative Considerations in Achieving Subnational Fiscal Autonomy

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Countries throughout the world are increasingly recognizing the benefits of fiscal decentralization. In theory—if not always in fact—decentralization makes it possible for people to have greater influence on the decisions of government that affect their lives. In countries as varied as the republics of the former Soviet Union, the nations of Central and Eastern Europe, South Africa, Australia, and various developing countries (e.g., Argentina, Bolivia, and Colombia), many see decentralization as an important component of a strategy designed to increase the political power of people, as expressed through local governments.\footnote{See Boadway (1997b) and Oates (1997) on Argentina, James (1992), Collins (1993), and Warren (1997) on Australia, McLure (1993b) on Brazil, Wong (1993) and Bahl (forthcoming) on China, McLure (forthcoming, a) on Kazakhstan, Wallich (1994) and McLure (1995b) on Russia, McLure (1995a) on South Africa, McLure (1994a) and Martinez, McLure, and Wallace (1995) on Ukraine, Bird, Litvack, and Rao (1995) and McLure and Martinez (forthcoming) on Vietnam, and Bird, Ebel, and Wallich (1995) on countries in transition from socialism. Prud'homme (1995) provides a more extensive list of country studies.}

Decentralization may, at the least, be important for political reasons, and it may also improve the welfare of the populace.\footnote{For a more skeptical appraisal, see Prud'homme (1995). McLure (1995c) and Sewell (1996) question Prud'homme’s analysis. See also Litvack, Ahmad, and Bird (1998).}

If fiscal decentralization is to be a reality, subnational governments must control their "own" sources of revenue.\footnote{The term “subnational” is used to describe all levels of government below the national level. “Second-tier” is used for the highest level of subnational government— the states of the United States, Australia, and Brazil, the provinces of Argentina and Canada, the laender of Germany, and the oblasts of the new republics of the former Soviet Union—and “local” is used for all governments below the second tier.}

Subnational governments that lack independent sources of revenue can never truly enjoy fiscal autonomy; they may be—and probably are—under the financial thumb of the central government.\footnote{Much of the discussion of this paper is more appropriate for a federal system of government than for a unitary system. None-the-less, interest in tax assignment is not confined to federations. It is necessary that, under either system, the central government have a real}

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subnational levels of government and how these assignments are to be effected. This group of questions is commonly called "the tax assignment problem." They are closely related to "the expenditure problem," because of the importance of benefit taxation in the finance of subnational government and the need to assure that subnational governments have revenues that are adequate to finance the expenditures assigned to them.

Section I narrows the scope of inquiry, by explaining why subnational governments should not be assigned major responsibility for two functions of government, macroeconomic stabilization and redistribution of income. Section II describes the political and economic benefits of rational tax assignment. Sections III notes two of the important conceptual constraints on tax assignment, the need to avoid tax exporting and tax-induced distortions of the location of economic activity. Section IV presents conceptual arguments concerning the assignment of particular taxes to various levels of government, and Section V describes and evaluates alternative methods of achieving tax assignments. Section VI discusses administrative factors that must be considered in designing and implementing tax assignments. Section VII discusses the possibility that rational tax assignments may result in vertical imbalance or horizontal disparities in fiscal capacity. Section VIII presents concluding remarks.

I. Narrowing the Scope of Inquiry: Musgrave's Three-Function Framework

In his classic treatise, The Theory of Public Finance, Richard Musgrave (1959) suggests that, for conceptual purposes, the functions of government should be separated into three functions or "branches," macroeconomic stabilization, income redistribution, and resource allocation.

The stabilization branch is to assure the achievement of high employment and price stability, the distribution branch is to achieve an equitable distribution of income, and the allocation branch is to see that resources are used efficiently. This conceptual division of the responsibilities of government allows us to narrow the scope of inquiry into tax assignment, by indicating which of the three functions are most appropriately assigned to various levels of government. The remainder of this section focuses on the implications of such a commitment to devolution of power if tax assignment is to be meaningful.

Musgrave (1983) asks, "Who Should Tax, Where, and What?" The tax assignment problem is part of a larger set of questions that might be called "the revenue assignment problem." The latter includes the design of intergovernmental grants and the framework for borrowing by subnational governments. I ignore these two issues.

The stabilization branch would presumably be responsible for maintaining external balance (an acceptable balance of trade under a regime of fixed exchange rates or a satisfactory exchange rate in a world of flexible exchange rates). Policies for economic development or growth (reflected in the choice between present and future consumption) might be assigned to the allocation branch, on the assumption that the stabilization branch achieved its objectives.
of the three-branch framework for the assignment of revenue sources among levels of government, especially the assignment between the central government and second-tier governments.  

A. Macroeconomic Stabilization

The stabilization function—the maintenance of high employment and price stability—is ordinarily assigned to the central government. This is true for several reasons. First, subnational governments commonly cannot much affect macroeconomic conditions within their boundaries, and thus have little reason to try, because most of the effects of macroeconomic policy attempted by subnational government will "leak" out of the area. A simple Keynesian multiplier analysis can be used to illustrate the problem. Suppose that the marginal propensity to consume is 0.6. An increase in central government expenditures of $100 will have a second round impact of $60, a third round impact of $36, and a multiplier of 2.50. Suppose, by comparison, that the residents of a subnational government considering the use of stabilization policy import half of their consumption from other areas. Even if all the initial government spending of $100 is reflected in increased incomes within the subnational jurisdiction—likely an unrealistic assumption—the second-round impact is only $30 (50 percent of $60) and the third-round impact is only $9; the overall multiplier is only 1.43. Thus, the local multiplier effects beyond the first round are 150 percent of the initial expenditure by the central government, but only 43 percent of the initial subnational spending.

The second problem with subnational macroeconomic policy is the limited power to borrow and the lack of the power to print money. Even if subnational governments had the ability and incentive to attempt stabilization, they would have difficulty in engaging in the deficit financing that is often required to implement expansionary policy, unless their borrowing is supported by the central government. Where central governments do support subnational borrowing, the result is commonly irresponsible behavior that threatens the macroeconomic stability of the nation.

The taxes commonly thought to have the most powerful stabilizing effects are the corporate income tax and the progressive individual income tax—the former because profits fluctuate more than general economic conditions and the latter because of the stabilizing effects of graduated rates (including tax-free amounts). This suggests that these two taxes should be assigned to the central government.

7See also Oates (1968), (1972), and (1994) and Musgrave (1983), especially pp. 10-17. Bird (1993a) provides an extremely useful discussion of issues of fiscal decentralization.

8Sewell (1996) suggests that there may be more latitude for subnational stabilization policy than in Musgrave's view.

9Some may argue that no government can be effective in influencing macroeconomic conditions. This debate need not divert our attention. If any macroeconomic policy is to be effective, it is more likely to be that of the central government.

10Progressive taxation takes a percentage of income that rises as income rises; regressive taxation takes a percentage that falls. Proportionate taxation takes the same fraction of income at all income levels.
disadvantage created by cyclical fluctuations in revenues. Other considerations to be discussed below suggest that subnational governments should rely heavily on corporate income taxes only if other suitable alternatives are not available—and that access to revenues from these taxes should be made available to subnational governments only subject to rigid controls.

Cyclical swings in revenues and expenditure requirements create problems even for subnational governments that do not attempt to implement stabilization policies. If subnational governments cannot much affect macroeconomic conditions nor easily adjust to wide swings in revenues, it is appropriate for them to rely relatively heavily on revenue sources that are relatively insensitive to macroeconomic conditions. These include taxes on consumption, such as general sales taxes, excises, and property taxes.11

B. Redistribution of Income

The distribution function is also commonly assigned primarily to the central level of government. Again, this is true for several reasons. First, subnational attempts at redistribution may not be successful, and they are likely to distort the geographic allocation of economic resources. Progressive taxation intended to "soak the rich" may drive out capital and high-income individuals. If this occurs, taxation that appears progressive may actually be regressive. For example, the long-run incidence of property taxes levied on mobile capital by one subnational jurisdiction may be on immobile factors, land and labor, rather than on the owners of property.12

Corporation income taxes that are apportioned among subnational jurisdictions on the basis of formulas may, in the first instance, burden whatever is in the formula, instead of profits; see McLure (1981b). Thus a corporate income tax that is apportioned on the basis of payroll, property and sales is equivalent to taxes on these three apportionment factors. The portions that are equivalent to taxes on payrolls and sales are not likely to be progressive, and even the portion that is equivalent to a tax on property may not be progressive, for reasons noted in the previous paragraph.

The contrary problem occurs on the expenditure side: the payment of transfer payments by subnational governments is likely to attract the poor. This may discourage use of such policies.13

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11Property owners may have more difficulty in paying property taxes during times of economic stagnation than those who pay taxes related to income or consumption. Whereas consumption can be reduced in order to reduce the burden of taxes based on consumption, liability for property taxes is essentially independent of consumption decisions in the short run. In addition, because of inertia in the assessment process, property taxes sometimes tend to be relatively insensitive to secular trends in property values.

12See Mieszkowski (1972). Note that this analysis of the incidence of a tax levied by one jurisdiction is conducted holding the tax policy of other jurisdictions constant; see McLure (1977) and the discussion of section III.

13Sewell (1996) reviews evidence that subnational governments do, in fact, engage in income redistribution. It should be noted that in Musgrave's three-branch system, only transfers and taxes would be used to modify the distribution of income; other types of expenditure policies
The theory just presented relies heavily on mobility of factors of production and of people for its results. Mobility may, in fact, be less than commonly assumed, for a variety of reasons. Most basically, models that assume mobility of people that have their intellectual roots in the United States may be less applicable in other countries, where ties of family, culture, and tradition are stronger. If subnational jurisdictions coincide with racial groupings, redistributive policies are less likely to induce migration. Also, in countries in transition from socialism (CITs) the fact that housing is not readily available and housing markets are less well-developed limits mobility. Under these circumstances there may be more latitude for subnational policies to redistribute income than in the Musgrave model.

Even if subnational taxation achieves some redistribution within a given subnational jurisdiction, interpersonal inequalities may persist across jurisdictions. These can be addressed only by national policies. In some cases it may be better to use intergovernmental grants to address differences in average income levels in various subnational jurisdictions than to use taxes and transfers to individuals.14 This possibility is not examined in detail here, as such an examination is well beyond the scope of the present analysis; but Section IV does note explicitly this advantage of one form of revenue assignment.

The tax instruments that are most commonly used in the attempt to reduce differences in incomes are the corporate income tax and progressive individual income taxes. If, as suggested, subnational use of these taxes is not likely of achieve the intended goals of income redistribution, but distorts the geographical allocation of resources, the corporate income tax and progressive individual income taxes should be assigned to the central government. As with the assignment of the individual income tax to the central government for stabilization purposes, this does not, would not be used. While tax policy can “level down,” they cannot reduce poverty or “level up;” that must be done on the expenditure side. If problems of implementation prevent use of transfers, as is common in LDCs, it may be appropriate to use expenditure policy, related, for example, to health and education, to reduce poverty. Considerations discussed in the text suggest that, while these may best be implemented locally, they should be financed nationally.

14See Sewell (1996) and literature cited there.
however, mean that subnational governments should not use proportionate taxes on the income of individuals.

C. Resource Allocation

The allocation function in Musgrave's three-branch system involves the provision and financing of public services. To the extent possible, services provided by government should be financed by user charges and fees; this is both fair and efficient, in the sense of encouraging responsible use of the nation's economic resources. An approach that allow beneficiaries to pay for identifiable public services that might otherwise not be provided, often by self assessment by a group of beneficiaries, is called variously betterment levies, valorización, or special levies.

Although not explicitly included in Musgrave's analysis, avoidance of tax-induced misallocation of resources seems to fall naturally within the allocation branch. This would presumably be a responsibility of all levels of government.
Where strict compliance with the dictates of benefit finance is not feasible, because of the difficulty or undesirability of exclusion from the benefits of public spending, the principle is, none-the-less, instructive. For both equity and efficiency, tax payments should reflect costs and benefits of public services, to the extent possible. Among the best examples of benefit-related taxes are those levied on motor vehicles and motor fuels and used for the construction and maintenance of roads and highways.

Each level of government should be assigned taxes that are related to the benefits of its spending. Thus, the proper assignment of taxes that are related to benefits depends on the assignment of expenditure functions. The central government should be responsible for expenditures having benefits that extend across subnational boundaries or that are characterized by economies of scale not realized at the subnational level. Subnational government comes into its own in the provision of goods and services characterized by limited economies of scale and limited spillovers of benefits to other jurisdictions.

User charges, fees, and taxes related to the benefits of public spending are likely to be regressive, or at most proportionate to income; they are not likely to reduce the inequality in the pre-tax distribution of income. According to the Musgrave three-branch view of government, this is not a defect, since income redistribution, lodged in the central government where it can be implemented most effectively, is available to offset the regressivity of benefit-related taxes, including those of subnational governments.

II. Realizing the Political Benefits of Tax Assignment

The above discussion of tax assignment in the allocation branch focused on the economic benefits of tax assignment—the resource allocation benefits of relating taxes to benefits paid. There is also a political dimension to the issue that needs to be discussed briefly. It is useful to divide the discussion of the political benefits of tax assignment into the related topics of a) subnational sovereignty and b) accountability and tax competition.

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16 Public finance of activities can be justified where there is inability of exclusion and/or lack of rivalry in consumption; see Musgrave (1959). Even if exclusion is technically possible, it may be inefficient to exclude potential consumers from services characterized by non-rivalry in consumption.

17 This statement is incomplete, if income distribution is seen in terms of the distribution of welfare, instead of the only the distribution of income, and if the benefits of public spending, as well as tax burdens, are considered. Taxes related closely to marginal benefits may finance expenditures that involve substantial inframarginal benefits. These inframarginal benefits may have special value to low-income families. Obvious examples include the provision of safe drinking water. Many consumers would probably consider themselves better off if they had access to safe water, even if they had to pay for it. The problem is often access, not cost.

18 This is not to suggest that the economic and political aspects can be neatly identified and separated; they are inextricably intertwined.
A. Subnational Sovereignty

A rational assignment of taxing powers helps provide each level of government control over its fiscal destiny.\(^{19}\) In particular, it allows choice in the level of public spending at each level by government. To do this, tax assignment should exhibit the following characteristics. (Of course, a rational system also has other desirable features; these are described in subsequent sections.)

**Own revenues.** First, subnational governments must have enough “own” revenues to finance the services they provide. If a subnational government legislates and collects its own taxes, protected by meaningful constitutional safeguards of its right to do so, it clearly has a source of own revenues. Even if such a government must rely on grants from a higher-level government, it may reasonably be considered to have own revenues, provided the grants are determined in an objective way and are guaranteed by the constitution or legislation of long-standing. By comparison, own revenues may not exist in any real sense, if grants are made at the sole discretion of the higher government, perhaps on an ad hoc, arbitrary, and unpredictable basis, and even well into the fiscal year and subject to renegotiation.\(^{20}\) Between these extremes lies a variety of arrangements that

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\(^{19}\)A rational assignment of taxing powers is necessary, but it is not sufficient. As noted below, an otherwise rational system of tax assignment may produce patterns of vertical imbalance and horizontal disparities that are unacceptable. Moreover, subnational governments may lack fiscal sovereignty, even if they are assigned taxes that, at first glance, seem adequate. In principle, subnational governments may have substantial discretion over how they spend revenues raised through taxes they legislate and implement, tax surcharges, and shared taxes. (Of course, at any particular time, expenditures may be largely "uncontrollable," because of prior commitments.) But the central government may mandate spending by subnational governments, or it may provide grant funds that can be spent only for very narrowly specified purposes. In either case, there may be little subnational autonomy. Between these two extremes is a spectrum of discretion in the use of funds. The more discretion, the more fiscal autonomy a subnational government has. I ignore mandated spending in what follows.

\(^{20}\)It is difficult for a subnational government to exercise fiscal autonomy if it cannot predict its revenues with an acceptable degree of certainty. Revenues may be unpredictable for any number of reasons. First, they may depend on economic conditions, as well as the state of taxpayer compliance and tax administration, whether from taxes legislated and implemented by subnational governments or from taxes imposed by the national government. Second, funds from grants are unpredictable if they are provided on an ad hoc basis. By comparison, grants based on population and specified in advance are predictable, at least in principle. While it is more or less inevitable that subnational governments experience the first type of predictability (that resulting from variability in economic conditions and the success of enforcement), they should not be forced to experience the second (ad hoc adjustments in grants). The second type of variability can be reduced through the process of tax assignment. See also the discussion of macroeconomic stabilization below.
provide more or less complete subnational ownership of revenues. Shared taxes and tax surcharges collected by higher level governments might properly be seen as own revenues; but where there is substantial risk that the higher level government collecting the revenues will not remit them to the subnational government, effective ownership is reduced. Box 1 explains why the system of revenue assignment the new nations that were formerly republics of the Soviet Union and other CITs inherited from socialism did not provide own revenues and cannot underlie a rational system of tax assignment.

**Marginal revenues.** Even if subnational governments have own revenues, they may not be able to affect the amount of revenue they receive. This is true, for example, if the central government shares revenues from certain taxes with subnational governments. In such a case, the own revenues of subnational governments are not marginal revenues.21 By comparison, if subnational governments legislate and implement their own taxes—or even if they are allowed to impose surcharges on the taxes levied by the central government at rates they choose, they can affect the amount of revenues they receive. This distinction is crucial, because *subnational governments must be assigned sources of marginal own revenues—own revenues whose level they can control—if they are to be truly autonomous.* Only by choosing to pay higher or lower taxes can residents of subnational jurisdictions choose the level of public services they want. An important prerequisite for the exercise of subnational fiscal autonomy is thus the ability to choose tax rates.

**Subsidiarity in taxation.** It is commonly accepted that expenditure responsibility should be assigned to the lowest level of government that simultaneously reflects the geographic scope of benefits of public services and achieves economies of scale; this is commonly called the principle of subsidiarity. A similar principle can be evoked in the area of tax assignment: a given tax should be assigned to the lowest level of government that can implement it (or for which it can be implemented) and for which it is not inappropriate.22 Compliance with this principle is important to minimize the tendency to vertical imbalance, which exists because subnational governments have difficulty implementing many taxes, but higher levels of government can implement almost any tax that a lower level of government can implement. Of course, some taxes are not appropriate for use by subnational governments, for reasons stated in Sections III, IV, and VI.23

\[21\] This terminology is not totally satisfactory; revenues provided by the central government may be incremental, but not the result of actions taken by the subnational government.

\[22\] Similarly, Musgrave (1983, p. 11) notes that the assignment rules he suggests “place narrower constraints on the lower levels of government, so that the latter might be accorded prior claim on the use of taxes suitable to them.” The notion of subsidiarity in taxation was introduced to the EU with the Maastricht Treaty amendments to the Treaty of Rome (Article 3B). Subsidiarity requires that Member States should be able to determine their own fiscal policies unless those policies have negative spill-over effects on the entire Union. The Commission of the European Communities (1991, p. 7) explained that subsidiary requires that “Member States should remain free to determine their tax arrangements, except where these would lead to major distortions.” See also McLure and Weiner (forthcoming).

\[23\] An excise on the production of a local brewery, an import duty levied by a port city, and a
B. Accountability and Tax Competition

The fact that subnational governments enjoy sovereignty does not mean that they are accountable. Even in a democracy, the political forces that support accountability commonly encounter self-interested politicians and entrenched bureaucracies that may blunt these forces.\textsuperscript{24} In less democratic societies, people may have even less power, because their leaders are less accountable to them. Rational tax assignment may help to increase accountability. In this regard, tax competition between subnational jurisdictions deserves special mention. Although sometimes thought to be an unmitigated evil, tax competition can have positive effects. Just as competition in the marketplace protects consumers from the rapaciousness of business, so tax competition protects citizens from the rapaciousness of politicians and bureaucrats. It helps assure that taxpayers are getting what they pay for.\textsuperscript{25}

Tax competition takes several forms. In its most effective form, high-income individuals and investors controlling the capital needed for economic development threaten to leave—or take their money from—jurisdictions where taxes exceed the value of the benefits of government spending—or never to come or invest there.\textsuperscript{26} This helps assure that the composition of government spending, as well as the level, is appropriate. The pressure exerted by potential investors is likely to be extremely local property tax on natural resources are examples of taxes that may be inappropriate for a subnational government that is able to implement them. The reasons these assignments are inappropriate are explained below.

\textsuperscript{24}The literature of “public choice” deals with such issues. It is well beyond the scope of this paper. See, however, Brennan and Buchanan (1980).

\textsuperscript{25}Brennan and Buchanan (1983) provide a strong argument for tax competition. See also McLure (1986). This is only part of the story, although an important part. Because those who enjoy public goods cannot be excluded from enjoying the benefits, they have little incentive the reveal their preferences for such goods. There is thus a tendency to under-provision of public goods that may be aggravated by tax competition. See Gordon (1983) for a theoretical analysis of the inefficiencies that can result from decentralization, including tax competition. Benefit taxation helps to combat this source of market failure. See also Wildasin (1986). Tax competition makes it difficult for subnational governments to tax mobile factors—capital and highly educated or skilled labor—and thus to engage in progressive taxation.

\textsuperscript{26}Even where factors of production are not mobile, tax competition may have a beneficial effect, by making over-taxed industries uncompetitive. In this case the result may be disinvestment and unemployment, instead of migration of capital and labor. This, too, may have political costs. Of course, it is difficult to imagine a contemporary setting in which capital is not mobile. Thus the model implicit in the text is generally more relevant.
important in developed countries (LDCs) and countries in transition from socialism (CITs), both of which seek foreign investment.  

C. More on the Role of Benefit Taxation

Many services provided by governments, including subnational governments, produce what may be described as "generalized benefits," benefits that cannot be closely related to taxes on the beneficiaries. While generalized benefits may not be conducive to the use of charges and fees, or even taxes closely related to benefits, such as taxes on motor transport, they can be related in a general way to taxes paid. Thus, for example, the general benefits of government spending may be thought to be loosely related to income or to private consumption. Unless there is some reason to believe that benefits rise more or less rapidly than income or consumption, it may be reasonable simply to rely on flat-rate taxes on income or consumption for the finance of such services.

At the subnational level, an additional inquiry is necessary when people do not work where they live (or if they do not invest their savings where they live): whether production or consumption (income earned or income spent) is the better measure of generalized benefits. If benefits of public spending are more closely related to production or the earning of income than to consumption or the spending of income, origin-based taxes on value added and payroll taxes levied where employment

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This pressure is strongest for investors from countries taxing only foreign-source income. It is diminished to the extent the home countries of investors provide foreign tax credits for source-country taxes, unless taxpayers have excess (unused) foreign tax credits. See Slemrod (1995) for a masterful exposition of this complicated topic.

The world-wide trend of privatizing activities formerly provided by government and financed by taxes not closely related to benefits suggests that the latitude for benefit-related charges is probably greater than traditionally thought. In making such a statement one must be careful to distinguish between services that are now provided privately but financed publicly from general revenues, those that are now provided and financed privately, and those that are still provided publicly but financed on a basis related to benefits.

Whether income or consumption is the better measure of benefits is, of course, an important question, but not central to the present discussion. In many countries consumption does not differ much from income, especially labor income, except at the very top of the income distribution.

This issue arises most commonly and most conspicuously in the case of workers commuting across the boundaries between jurisdictions. It also arises when workers spend long periods in employment away from home, as in much of Sub-Saharan Africa. It is quite possible in such a case that three jurisdictions might reasonably make claims to revenues from taxes on the earnings of such workers: the jurisdiction of residence of the employee, the jurisdiction of employment, and the jurisdiction where the employee's family lives. The last arguably has the greatest claim to tax revenues, because of the expense of education and health care for the family.
occurs would be superior to destination-based value added taxes, retail sales taxes, and residence-based income taxes as measures of benefits received. In principle, this is an empirical issue, though a difficult one, given the inherent difficulty of relating benefits of public spending to private actions. Yet a priori reasoning suggests that consumption (the spending of income) is probably more closely related to the benefits of public spending than is production (the earning of income). For example, education for one's children is provided where one lives, not where one works; the same is predominantly true of health care. The implications of this reasoning concerning generalized benefits of public services for the problem of tax assignment are clear: in principle, residence-based income taxes are probably superior to employment-based payroll taxes, and destination (consumption)-based sales taxes are better than origin (production)-based ones. If, as seems likely, production is more mobile than the residence of households, the use of origin-based taxes that do not reflect the generalized benefits of public spending are more likely to distort the location of economic activity than are residence-based taxes. Moreover, as noted below, they are likely to contribute to horizontal fiscal disparities.

III. Conceptual Constraints on Tax Assignment: General Principles

Under a destination-based VAT, tax is applied to the goods imported into the taxing jurisdiction and exports from the jurisdiction occur tax-free. Under an origin-principle VAT, exports are subject to tax, and tax is applied only to the value that is added after importation. The retail-sales tax is inherently a destination-based tax, except to the extent that it is applied to sales to businesses producing for export. For further elaboration, see McLure (1987).
Tax assignment inevitably encounters obstacles. These obstacles may usefully be grouped in the following four categories. First, some assignments are undesirable on conceptual grounds. Perhaps the best examples of conceptually inappropriate assignments (aside from subnational responsibility for macroeconomic stabilization and income redistribution) are the use by subnational governments of taxes that are exported to residents of other jurisdictions or that interfere with international commerce. Most of the remainder of the present section discusses the need to avoid tax exporting and distortions of locational decisions, and Section IV discusses conceptual constraints pertaining to particular taxes. Second, some assignments elicit particularly strong political reactions. Section IV also discusses briefly one of the most important examples, the assignment of taxes on natural resources. Third, some assignments of taxes to subnational governments cannot easily be administered; "stand-alone" subnational value added taxes are one example. Section V discusses three methods of implementing tax assignment, and Section VI discusses administrative issues germane to each of several taxes. Finally, tax assignments that make sense on conceptual, political, and administrative grounds may lead to vertical imbalance of revenues between central and subnational governments or to horizontal disparities among subnational governments at a given level. Section VII discusses this issue, but only briefly, as they are perhaps more appropriately addressed in the design of intergovernmental grants. Finally, the present section discusses a false constraint, the view that any one tax should be assigned to only one level of government.

A. Tax Exporting

Some taxes imposed by subnational governments are "exported," that is, they are borne by residents of other jurisdictions. Two simple examples illustrate the point. Suppose that a nation has only a single cigarette factory or only one oil refinery. A tax imposed by the subnational jurisdiction where the cigarette factory or refinery is located would be exported to consumers throughout the nation. (Assume for argument's sake that importation of untaxed cigarettes is illegal and that smuggling is effectively controlled.)

Some taxes compensate for costs imposed on subnational governments levying the taxes (or on their citizens). In such cases tax exporting is not inappropriate; indeed, under such circumstances, tax exporting is consistent with fairness and economic neutrality, as defined by the benefit principle.

32 I do not consider a fifth obstacle to rational tax assignment that is sometimes important, assignments that are prescribed or prohibited by constitutions. Box 3 describes the provisions for tax assignment found in the recently adopted constitution of South Africa. Some constitutional provisions are more binding than others. For example, because of overly restrictive judicial interpretation of the provision of the constitution of Australia that provides that imposition of excises is reserved for the central government, the states cannot levy sales taxes. By comparison, the courts have interpreted the limitation on taxing powers of the provinces in the constitution of Canada ("direct taxes in the province") quite liberally, so that all provinces except Alberta levy sales taxes. The interpretation is that the sales tax is a direct tax imposed on the buyer, but collected by the seller.
It would seem strange, indeed, if non-residents did not pay motor fuel taxes intended to defray the costs of building and maintaining highways they use while traveling as tourists.

Otherwise, taxes that are likely to be exported in large part should not be assigned to subnational governments. Exporting is unfair and it encourages over-expansion of the subnational public sector at the expense of non-residents. Box 2 explains how tax exporting occurs in the United States.

Including a general prohibition of tax exporting in a nation’s constitution (or in its tax code, as was proposed in the draft tax code the Russian government submitted to the Duma in early 1998) is probably not the way to address this problem. This approach invites litigation and contests between experts on incidence theory—hardly the way to settle constitutional questions. Rather, this type of expertise should be employed in determining whether particular types of taxes would best be assigned to the central government or to various levels of subnational government, as in the constitution of South Africa. See Box 3.

It is necessary to digress momentarily to clarify several key issues in the theory of tax exporting. First, in deciding whether a particular tax is likely to be exported, it is generally appropriate to consider the incidence of a tax imposed by a particular jurisdiction, rather than the incidence of a similar tax imposed uniformly throughout the nation. Consider the case of a local property tax, ignoring for simplicity reductions in national capital formation induced by the tax. The standard theory gives two answers for the incidence of such a tax. If the tax is imposed uniformly throughout a nation, it is borne by owners of capital and land. But if the tax is imposed by only a single jurisdiction (or to the extent one jurisdiction deviates from the national pattern—or even raises its property tax), land and labor that is located in the taxing jurisdiction and is not mobile between jurisdictions is likely to bear most of the burden of the tax, at least in the long run. These two results—

33Gordon (1983, p. 38) notes, “... where non-residents pay an important share of a particular tax, ... the tax rate may be set too high. ... The most obvious, and extreme, remedy is to forbid local governments from using such tax bases at all.”

34McLure (1983b) argues that the U.S. Supreme Court was correct in deciding that tax exporting should not be used as a test of whether a state tax on the production of coal violates the Interstate Commerce Clause of the U.S. constitution.

35McLure (1995a) provides suggestions for the assignment of taxes in the South African constitution.

36An intermediate result might occur if a subset of all subnational governments acted in concert to raise their taxes. In such a case, for analytical purposes these governments should be treated as one.

37This discussion is based on Mieszkowski (1972) and McLure (1977).
-burdens on capital and land and burdens on labor and land—are quite different and are likely to have quite different implications for tax exporting. The property tax would be exported to the extent its incidence is on land and capital that are owned by non-residents. But it would not be exported to the extent it is borne by labor residing in the taxing jurisdiction.

One often encounters a second fallacy; that a tax is exported to consumers in other jurisdictions if it is levied on a product that is exported from the taxing jurisdiction. Standard incidence theory, combined with the reasoning of the previous paragraph, indicates that this in not true; a tax can be exported to consumers only if the taxing jurisdiction dominates the relevant market for the product. (Moreover, whether or not the taxing jurisdiction dominates the market, shifting will not occur if supply is inelastic or demand is totally elastic.) Otherwise, competition from producers located elsewhere and not subject to the tax under consideration prevents shifting the tax to consumers. (This explains the analytical need for the assumption that domestic cigarettes are not subject to competition from imported cigarettes in the illustration of tax exporting that begins this discussion.)

An example will help to clarify this. During the years of high energy prices consumers in the United States complained that oil-producing states were exporting taxes on the production of crude oil via higher prices. In fact, this assertion reflects faulty thinking. The actions of OPEC (the Organization of Petroleum Exporting Countries) raised the price of oil, including that produced in the United States, and increased the profits of American oil producers. But production taxes would cut into the profits of oil producers; they were not responsible for the high prices and they would not be reflected in further increases in prices. Thus, if exporting of a production tax occurred, it was to non-resident owners of oil, not to consumers in other states.

B. Locational Distortions

The need to avoid distortions in the geographic location of economic activity (e.g., of trade and investment) places another important constraint on tax assignment. Taxes that might be acceptable if imposed by a national government may have unacceptable consequences if levied by a subnational government. Thus many nations prohibit subnational government use of taxes that would interfere with either international trade and the functioning of the domestic market. The constitution of South Africa does this explicitly and the U.S. Supreme Court has interpreted the Commerce Clause of the U.S. constitution as implying the same thing.

38 The burden on land in the two scenarios is quite different. In the first, the returns to ownership of land and capital fall by the amount of the tax. In the second, land bears part of the tax on capital, so its value falls by more than the amount of tax imposed on land.

39 McLure (1981a) provides a rigorous demonstration of this point.

40 Indeed, the U.S. Supreme Court has refused to allow the states to require out-of-state vendors to collect use tax on mail-order sales made into a state, because of the burden on interstate commerce created by the great diversity of state sales and use tax regimes. (Use taxes are imposed on the use of products brought into a state without payment of sales tax.) This creates discrimination in favor of “remote sellers” and against local merchants. Developments in
It might be noted that tax competition and avoidance of distortions of locational decisions are two sides of the same coin. Tax competition is effective only where there is a risk of distortion of the location of economic activity. Benefit taxation by subnational governments does not distort the allocation of resources; indeed, it contributes to an economic allocation of resources.

C. A False Constraint: Unique assignment

Discussion of assigning taxes to different levels of government should not be interpreted to imply that revenues from each type of tax should be assigned to only one level of government. There is generally no reason to assign revenues from a given tax to only one level of government, as long as assignment to more than one level is achieved in a way that does not cause unacceptable inequities, economic distortions, or complexities of compliance and administration. Indeed, these problems may often be avoided by assigning a given tax to more than one level of government. Musgrave (1983, p. 14) notes, “Multiple use, if properly coordinated, does in fact simplify instillation and reduces cost.” As Section V argues in detail, avoiding the problems just mentioned generally has very strong implications for the choice of instruments chosen to implement a given tax assignment.

IV. Conceptual Arguments: Specific Taxes

electronic commerce (using the Internet to sell tangible products, as well as intangible products and services) threaten to aggravate the effects of this discrimination on both revenues and local businesses. Efforts are currently underway to resolve this problem. Any solution is likely to involve a combination of greater uniformity of state tax bases and agreement by remote sellers to collect tax. For a thorough treatment of U.S. constitutional law as it applies to state taxation, see Hellerstein and Hellerstein (1993). For a more detailed discussion of issues raised by electronic commerce, see McLure (1997a) and (1998a, b).

Indeed, this understates the problem. It has recently been argued that if the federal government of the United States were to eliminate its income tax, the states would be forced to do the same, because they would lack access to the information (especially on interest and dividends) needed to administer state income taxes. Of course, there would be no saving in administration and compliance costs, if the 46 states imposing income taxes were to develop the administrative capacity needed to replace that now provided by the U.S. Internal Revenue Service, a federal agency. See Mazerov, Buck, and the Multistate Tax Commission (1996) and Strauss (1997). If both the federal government and state governments were to rely predominantly on sales taxes, which would require a combined rate in the neighborhood of 30 percent—some 50 to 100 percent higher than the VAT rates in the European Union, there would be enormous incentives for evasion—and less capacity to prevent it than under a VAT. Thus the entire structure of fiscal federalism could be threatened.
The previous section suggests that there are strong conceptual arguments for the assignment of various revenue sources to central or subnational governments (or both). These are sketched here.  

As the next sections indicate, not all conceptually attractive assignments can be realized in practice, for administrative reasons.

*Individual income taxes* are suitable for use by several levels of government. Whereas the central government may appropriately use a progressive income tax for stabilization and redistribution, subnational governments more properly employ a flat-rate tax simply to pay for the generalized benefits of public services. There is no place in the subnational fiscal arsenal for a tax intended to "soak the rich." Inclusion of a tax threshold in the income tax of subnational governments is also likely to be conceptually inconsistent with the benefit principle, since low-income households, as well as those with high incomes, consume public services. In theory, transfer payments could be used to offset the burden of taxes on low-income households. In fact, for administrative reasons this is not a viable solution in many LDCs and CITs; thus even subnational income taxes should probably contain a tax threshold.

At a conceptual level, subnational taxes on the income of individuals are probably better assigned to the jurisdiction of residence than to the jurisdiction of employment (or the jurisdiction where savings are invested, often an ambiguous concept). Even so, there is a place for the use of payroll taxes to pay for costs of public services related to the place of employment, instead of residence. And, as explained further below, it may be difficult to implement residence-based subnational income taxes.

*General sales taxes* (e.g., value added taxes and retail sales taxes) are, in theory, also suitable for the finance of generalized benefits provided by both central and subnational governments. In general, use of this type of tax at the subnational level should probably be assigned primarily to the jurisdiction where consumption occurs, rather than to the producing jurisdiction, for reasons stated in Section II. Thus retail sales taxes and destination-based VATs are likely to be conceptually superior to origin-based VATs. 

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42 See also Musgrave (1983) and other papers in McLure (1983a).

43 For similar reasons, destination-based taxation is likely to be preferable to other forms of origin-based taxation, such as multiple-stage gross-receipts taxes and single-stage sales taxes levied before the retail level. Since these other forms of taxation have well-known defects, aside from problems likely to be encountered in their assignment to subnational governments, they are not considered further.
The value added tax is almost universally imposed on international trade according to the destination principle. This is achieved through "border tax adjustments," imposition of the tax on imports and zero-rating of exports. An important topic of Section VI is whether and how the VAT can be imposed according to the destination principle on trade crossing jurisdictional boundaries within a nation.

In its conceptually pure form the retail sales tax (RST) is also levied primarily on the basis of destination. Retail sales to local households are subject to tax, whether the item being sold is produced locally or in another jurisdiction. Ideally, retail sales to households located in other jurisdictions would not be taxed by the jurisdiction of origin. Similarly, sales from one jurisdiction to another occurring before the retail level—the vast majority of sales between jurisdictions—would not be subject to tax. In fact, as explained in Section VI, it may be difficult to achieve these results.

Excises are sometimes well suited to the implementation of the benefit principle, since the consumption of certain goods and services that are commonly subject to excises are closely related to benefits of public services (e.g., taxes on motor vehicles and motor fuels used to finance construction and maintenance of roads and highways) or to public costs imposed by private actions (e.g., taxes on tobacco products and alcoholic beverages used to defray the costs of health care related to smoking and the consumption of alcoholic beverages). Excises on luxury consumption (e.g., expensive automobiles) can also be used to increase the progressivity of the tax system, but this approach has severe practical limitations.

Excises can properly be used by more than one level of government; central governments can use them to tax luxuries or to finance public services that transcend subnational boundaries, while subnational governments can use them to finance public services having geographically limited benefits. For example, the central government can use taxes on motor transport to finance the national highway network, while subnational governments can use similar taxes to finance the provision of local roads and city streets. Similarly, revenues from excises on alcoholic beverages and tobacco products should be assigned to the level(s) of government responsible for providing consumption-related health care to consumers of the products.

It should be emphasized that the assignment of revenues from excises in the system of tax sharing inherited from the former Soviet Union (and found in Vietnam, as well as in Central and Eastern Europe) makes no sense and could not underlie a rational system of tax assignment. In that system revenues from excises were shared with the jurisdiction where excisable products were produced or imported. If carried over to a system of tax assignment, this rule would fail the test of benefit taxation, which requires that jurisdictions providing public services receive revenues from benefit-related taxes, it would violate the prohibition against tax exporting, and it might contribute to horizontal fiscal disparities.

Environmental levies—taxes intended to compensate for degradation of the environment—have recently appeared prominently in the public policy arena. This is not the place for a full

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44It should also be noted that the assignment had little practical significance, since sharing rates and grants were manipulated to produce the ex ante division of revenues that would allow subnational governments to meet their budgets. For descriptions of this "gap-filling" model, see Wallich (1994) and McLure (forthcoming, a).
discussion of the assignment of environmental levies among levels of government. It is, however, possible to shed some light on the issues by examining the assignment of taxes intended to cover the social costs created by the exploitation of natural resources, many of which involve damage to the environment. The above discussion of excises intended to compensate for the social costs of private consumption is also closely related to the question of the assignment of revenues from environmental levies.

Subnational governments should be assigned enough of the revenues from taxes on natural resources to compensate for localized social costs created by exploitation of the resources. These costs would include not only costs of providing special services to the resource industry, such as roads needed to transport heavy machinery and the resources being harvested (e.g., ore and timber) and special hospital facilities required to treat injuries incurred by those working in the resource industry. They should, in principle, also compensate, for example, for degradation of the local environment and increased health costs of local residents related to the extraction of resources. The central government should be assigned revenues intended to compensate for social costs of resource extraction that transcend subnational boundaries.

_Taxation of natural resources_ poses important questions about the nature of federalism—and, in some countries, its very future. Where important natural resources are geographically concentrated, the choice between national and subnational taxation of natural resources involves issues of both vertical fiscal imbalance between the central and subnational governments and horizontal fiscal disparities among subnational governments. (Where resources are more or less

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45 The taxes required to cover the social costs of resource extraction are likely to differ substantially from those intended to capture resource rents. The discussion of taxes on natural resources that begins with the next paragraph relates only to the latter (rent-related) taxes. A discussion of the structure of either type of tax would go well beyond the scope of this paper. Suffice it to say a few basic things. Taxes related to the quantity of output (but not the value of output) may generally be a reasonable way to charge resource companies for the costs they impose on society. Taxes related to the volume or value of production are not likely to be closely related to rents and (unless they reflect social costs) are likely to distort production decisions; only taxes designed explicitly to fall on economic rents are likely to do so, and thus to have little effect on production decisions. National governments are more likely to be able to implement such taxes than are subnational governments. For further discussion, see McLure (1994b).

46 Musgrave (1983, p. 13) notes that this issue raises the question of “whether subnational jurisdictions will in fact be willing to join the federation (or willing to remain there) unless their patrimony in natural resources is protected.” This discussion of the taxation of resource rents assumes that subnational governments are assigned revenues intended to compensate for localized costs of resource extraction, including environmental degradation. Such compensatory taxes should be taken into account when measuring resource rents.

47 See McLure (1993a) and (1994b) and McLure, Wallich and Litvack (1995).
uniformly distributed, tax assignment raises questions of vertical balance, but not horizontal disparities.) Russia provides a striking example; the autonomous okrug of Khanti Mansisk contains only 1 percent of the nation's population, but historically produced two-thirds of its oil.48

There are economic arguments for national taxation of important natural resources. First, unequal access to revenues from taxes on natural resources can lead to economic inefficiencies. Resource-rich areas can provide more public services than resource-poor areas, levy lower non-resource taxes, or both. This can cause uneconomic attraction of labor and capital to resource-rich areas.49 Also, resource-rich jurisdictions may spend public funds in ways that are socially less productive than projects that must be foregone in resource-poor regions. Finally, revenues from resource taxes are highly unstable; their suitability for the financing of subnational governments is thus suspect. There is great risk that public spending will be increased when revenues from resource taxes are high and that retrenchment will be difficult.50

Equity—at least in one manifestation—also calls for central government taxation of natural resources. It is reasonable to ask why those who live in resource-rich areas should have access to public services on more favorable terms than those in other areas. Assignment of revenues to the central government can have the effect of spreading resource wealth across the country, either through grants to subnational governments or through the substitution of central government taxes on natural resources for non-resource taxes collected throughout the country.

Local governments use of property taxes on natural resources is especially problematical. In addition to questions of the equity and efficiency of assigning taxes on natural resources to subnational governments, which assignment to local governments accentuates, one must worry about the inefficiency of exploitation of resources induced by property taxes on natural resources, which encourage premature exhaustion and abandonment.

These arguments notwithstanding, residents of resource-rich areas commonly claim that the resources are their heritage—that they have a right to the revenues from taxes on resources. This claim—and the question implicit in it: who are "we," and who are "they," for purposes of dividing revenues from taxes on natural resources—brings into sharp focus the nature of federalism.51 On this

48This fraction will fall, because of the exhaustion of resources in Khanti Mansisk and the development of resources in other parts of Russia. The experience of Canada and the United States during the energy crisis of the 1970s and 1980s provides further illustration of the tension created by the assignment of taxes on natural resources to subnational governments. McLure (1994b) provides references to this experience.

49See McLure (1984c) for these arguments. Mieszkowski (1983) Mieszkowski and Toder (1983) find, however, little evidence of significant waste of resources.

50It should be noted, however, that national governments of resource-rich nations also have not performed well in this regard; see Gelb (1988).

51In some cases desires for ethnic separation intrude into questions of tax assignment. See McLure, Wallich, and Litvack (1995).
crucial philosophical and political question—which loomed large in Canada and the United States during the days of high energy prices and has arisen more recently in Russia—economists have little to say.

Corporation income taxes (or company income taxes) are not well suited for use by subnational governments. Their use by such governments for macroeconomic stabilization is inappropriate, it is unlikely to have the distributional effects commonly ascribed to it when used by subnational governments, and it fails to satisfy the criteria of benefit taxation. Ideally corporate income taxes would be integrated with individual income taxes levied by the jurisdiction where the taxpayer resides. The remainder of this discussion ignores this solution.

52 The term “income” is used to mean income net of ordinary and necessary costs of earning income; it does not include costs of labor, as it apparently does in the Russian language.

53 Actually, it is difficult to defend any taxation of corporate (company) income on conceptual grounds. The corporation income tax does not accord with any reasonable interpretation of the benefit principle of taxation. There is no reason to believe that corporations benefit from public services, but unincorporated business do not, or that the benefits corporations receive vary with their profits. Nor is a classical corporate income tax (one that provides no relief for double taxation of dividends) consistent with interpersonal equity. It is true that such a tax adds to progressivity, since corporate shares are owned predominantly by high-income individuals (except in advanced countries and in other countries that have privatized pension saving, such as Chile, where pension funds may hold large amounts of shares on behalf of the non-wealthy). But the tax imposes an inappropriate burden on low-income shareholders, unless it is integrated with the individual income tax, as in much of Europe (but not the United States).

The best rationale for the existence of the corporation income tax is the need to protect the base of the individual income tax. If corporate income were not subject to tax, individuals could use the corporate form to avoid tax. Use of the corporate income tax to protect the individual income tax deserves attention in discussions of revenue assignment. If both national and subnational governments were to utilize the individual income tax, but the corporate tax were assigned to the central government, the corporate tax should be levied at a rate that, on average, considering taxes levied by both the central and subnational governments, largely eliminates the incentive to convert individual income to corporate income.

54 On integration of subnational income taxes, see McLure (1981c). Supposing that, as in note 52, both national and subnational governments taxed individual income, but only the national government taxed corporate income. The method chosen to alleviate double taxation of dividends could affect the division of revenues between the company and individual taxes, and thus between central and subnational governments and among subnational governments. Compared to a classical system, a deduction for dividends paid would reduce taxable income of companies. On the other hand, the more commonly employed shareholder credit (imputation) system might be interpreted as reducing individual tax paid by shareholders—or the part of the company tax allowed as a credit could be interpreted as withholding against individual tax liability, and thus as part of the tax on shareholders and not as part of the company tax burden.
Due to the difficulties of determining the geographic source of corporate profits, it is common to use a formula to divide the nation-wide profits of a corporation among subnational jurisdictions. (See Section VI.) This, in effect, converts the tax into a tax on whatever appears in the apportionment formula (commonly some combination of payroll, property, and sales), levied at effective tax rates that depend on the nation-wide profitability of the firm, relative to the various components of the formula, as well as the statutory tax rate. (See McLure, 1980, 1981b). Such a system makes little sense; it is unfair and it distorts the allocation of resources among jurisdictions. It would be more transparent and more rational simply to impose taxes directly on (some or all of) the components of the formula, at rates that are uniform across firms. In fact, in some countries subnational corporation income taxes apportioned on the basis of formulas co-exist with taxes on factors in the apportionment formula (e.g., payrolls, property, and sales).

Here, too, the system of assignment of revenues inherited from the Soviet system cannot underlie rational tax assignment. In that system revenues from taxes on the income of enterprises were first assigned to the government to which the enterprise was subordinated (Union, oblast, or local) and in some countries subsequently (i.e., following economic reform) were assigned to the jurisdiction where the enterprise was registered; where a single enterprise had affiliates in other jurisdictions, such affiliates were treated as separate entities, if they maintained separate books of account. The problems are obvious. First, such a system is grossly unfair; since it is not likely to be justified by the theory of benefit taxation, it is likely to lead to unjustified tax exporting on a monumental scale. Second, there are incentives and opportunities to shift income to jurisdictions where it is taxed lightly. One can easily imagine that some subnational jurisdictions would establish themselves as internal tax havens in order to facilitate such activities. Finally, this system could give rise to enormous horizontal fiscal disparities.

Subnational governments in some countries, especially CITs, employ corporate income taxes, both for political reasons and because there are generally not enough other satisfactory sources of revenue to finance the appropriate services of such governments. The next two sections discuss how that tax assignment can best be implemented.

Property taxes are sometimes well suited for use by local governments. They can be used to charge for the generalized benefits of public services provided by local governments. This is especially true when both property and population are homogeneous and ownership of property is widespread, as in the case of peasant agriculture. Under such conditions property taxation can be justified as a benefit-related levy needed to pay for such activities as irrigation and drainage. As an economy and its people become more diverse and urbanized, this argument is less persuasive.

Deductions generally should not be allowed for benefit-related taxes paid to lower-level governments in calculating income tax liabilities of higher-level governments, except in the case of taxes that constitute costs of doing business.\textsuperscript{55} Deductibility for lower-level taxes amounts to a subsidy from the higher-level government. By comparison, it is appropriate for lower-level governments to allow deductions for income taxes paid to higher-level governments in calculating liability for their income taxes. Just as consumption taxes of lower-level governments must be paid

\textsuperscript{55}Musgrave (1983, p. 14) expresses a similar view.
from income that is left after paying the income tax of higher-level governments, so should income taxes of subnational governments be paid from after-tax income.

V. Alternative Methods of Revenue Assignment

A variety of methods of assigning revenues to subnational governments can be distinguished. These methods differ in the degree of fiscal autonomy they provide subnational governments, their ease of compliance and administration, the fairness and neutrality they are likely to produce, and the degree of interjurisdictional redistribution they can accommodate. In discussing these alternatives, it is convenient to distinguish four features: (a) which level of government chooses the taxes from which subnational governments receive revenues, (b) which defines the tax base(s), (c) which sets the tax rate(s), and (d) which administers the tax(es). From the viewpoint of subnational fiscal sovereignty, the capacity to set rates is clearly the most important of these; it is what allows subnational governments to choose the level of public services. Subnational governments clearly cannot be allowed total discretion in the choice of the taxes they will levy; for example, they should not be allowed to levy import duties on international trade or trade between subnational jurisdictions or to impose taxes likely to be exported in large part. Excessive subnational latitude in the choice of tax bases and in tax administration can create unacceptable complexity and administrative burdens, as well as inequities and distortions in the allocation of resources.

Independent subnational legislation and administration provides subnational governments the most fiscal autonomy. Under this approach subnational governments choose the taxes they levy, define the tax base(s), set the tax rate(s), and administer the tax(es). This is the approach followed in the United States; subject only to very general constitutional limitations (e.g., due process and non-interference with interstate and international commerce) and almost no statutory limitations, the states can do virtually anything they want in these four areas.

Carried to the extreme, this approach is vulnerable to inconsistency, duplication of effort, and excessive complexity of compliance and administration. These problems can occur if different jurisdictions choose radically different taxes (e.g., if some levy retail sales taxes, but others levy value added taxes), define their tax bases in different ways (as in the case of the state corporate income taxes and retail sales taxes in the United States, described below), or administer the same taxes in different ways. Inequities and economic distortions can also occur if the tax systems of various subnational governments do not mesh, resulting in gaps or overlaps in taxation. Within limits, these problems—which differ in importance from tax to tax—can and should be tolerated in the interest of gaining the benefits of decentralized government. But serious complexities,

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56 Subnational constitutions or laws may limit any of these, as in the United States. If such limitations are sufficiently restrictive, it may make little sense to speak of subnational discretion in the affected areas. But self-imposed restrictions in constitutions of subnational governments are different from restrictions imposed from above by law or as part of a national constitution.

57 Duncan and McLure (1997) describes the American system of tax assignment. Local governments, being legally dependent on the states, generally do not have the same degree of fiscal sovereignty.
inequities, and distortions can and should be avoided. This objective can be achieved, without greatly compromising the fiscal autonomy of subnational governments, through intergovernmental compacts among subnational governments or the imposition of uniform ground-rules by a higher level of government, for example, rules for the definition and division of the corporate income tax base. Alternatively, subnational surcharges on national taxes can be employed.

Subnational surcharges provide most of the important fiscal autonomy of independent subnational legislation and administration, without the inequities, distortions, complexities, and problems of compliance and administration just described. Under this approach a higher level of government defines the tax base and collects both its own tax and surcharges set by subnational governments. This approach ideally avoids the problems that occur when different subnational jurisdictions define the tax base in conflicting ways, use different apportionment formulas, and administer the tax in different ways. Because of their power to set surcharge rates, subnational governments retain the most important attribute of fiscal sovereignty in the tax field; the ability to define the tax base and administer taxes are much less important.

There is no reason, in principle, that the tax rate of the central government cannot be zero for a particular tax; in such a case the central government would simply administer the tax of

\[58\] In 1957 the National Conference of Commissioners on Uniform State Laws prepared a model statute, the Uniform Division of Income for Tax Purposes Act (UDITPA), and urged its adoption by states imposing corporate income taxes. Since then more than 25 states—of the 45 that impose corporate income taxes—have adopted UDITPA, some with important modifications. Because UDITPA does not cover all aspects of corporate income taxation, there would be substantially differences in state laws, even if all states were to adopt it.

The situation is even worse in the sales tax area, where each of the 46 states (including the District of Columbia) defines the tax base as it wishes. Because of the complexity of state sales and use taxes, the U.S. Supreme Court has ruled that the states cannot require a mail-order vendor to collect use taxes unless the vendor has a physical presence in a state. In order to simplify their systems, in hopes of gaining an agreement under which mail-order vendors and their equivalents in electronic commerce would voluntarily collect use tax, the states are considering adopting uniform definitions of products, so that a given state's sales and use tax base could be defined simply by choosing whether or not to tax given identically defined products. See McLure (1998b).

\[59\] It is sometimes suggested (commonly where the national government is considering levying a type of tax already imposed by subnational governments) that subnational governments could administer national surcharges on their taxes. Although similar system is employed successfully in some countries (the administration of the national VAT by the German laender and the VAT of the Canadian government by the province of Quebec being the best-known examples), it does not seem to deserve serious consideration in most. Aside from the need to harmonize tax bases and administration in all jurisdictions, subnational governments can have an incentive to be lax in administering taxes that raise money, at least in part, for the national government at the expense of local taxpayers.
subnational governments, thereby assuring uniformity and avoiding duplication of effort. There is, however, a problem of providing incentives for the central government to collect a tax that it does not keep—and, indeed, of trusting it not to keep the revenues it ostensibly collects for subnational governments. These problems exist in any system of surcharges.

Surcharges should, of course, be limited to that portion of the tax base reasonably deemed to arise in, or be attributed to, the taxing jurisdiction. This objective is relatively easy to implement for some taxes (e.g., payroll taxes). In some (e.g., company income taxes) it may be necessary to use formulas to divide the tax base among subnational jurisdictions.

Subnational surcharges appear to be the most appropriate means of providing subnational governments with own marginal revenues in many countries, especially LDCs and CITs, where administrative resources are scarce. While some Canadian provinces (the largest and wealthiest) implement their own individual and corporate income taxes, others rely on surcharges on the national taxes. In both cases tax bases and apportionment formulas are quite similar, if not identical.

Tax sharing is generally much less attractive than subnational surcharges. Under this approach subnational governments receive fixed fractions of revenues from particular national taxes originating within their boundaries; commonly the sharing rates are uniform across jurisdictions (though not across taxes), but this is not necessarily the case. As with surcharges, formulas may be needed to determine the deemed origin of tax revenues. In many LDCs and CITs the data needed to share revenues (e.g., data on consumption, by subnational jurisdiction, needed to divide revenues from the VAT) may not exist or may not be reliable.

This approach also avoids the problems that arise from extreme subnational independence in tax policy. But it does so in a way that severely restricts fiscal autonomy of subnational governments. Individual subnational governments have autonomy over how to spend a given amount of revenue, but not the power to alter the amount of revenue they receive from shared taxes; thus they cannot control the level of public spending. (While all subnational governments, acting as a group, can attempt to affect their share of revenues from these taxes, no subnational government, acting unilaterally, can hope to do so. The harmonized sales tax employed in several of the maritime provinces of Canada, which combines federal and provincial VATs, illustrates the problem. All of the provinces that participate in the scheme must implicitly adopt the same VAT rate. In Germany the central and subnational governments engage in an annual struggle over the split of revenues from certain taxes.)

Revenue sharing assigns revenues of higher levels of government to lower levels of government on the basis of formulas. Though the origin of revenues can be reflected in such formulas, it is more common for formulas to be based, inter alia, on population, tax capacity (inversely), or measures of need, such as per capita income. Since revenue sharing is not based on the origin of revenues, this approach offers an alternative that does not exist (or exists only in attenuated form) under the three methods of revenue assignment just discussed: redistribution of fiscal resources between jurisdictions. By comparison, under the previous three approaches, revenues flow to the jurisdiction where economic activities occur; thus there is no redistribution of income between subnational jurisdictions. (A minor qualification should be made in the case of tax sharing; sharing rates could be set at higher levels for poor jurisdictions than for more affluent ones. It is more convenient to classify that approach as revenue sharing, rather than tax sharing.)
Since subnational governments need to exercise little or no independent fiscal effort in order to receive funds from revenue sharing, this is generally not a source of marginal own funds. The only fiscal autonomy lies in how to spend the money. (These statements should be qualified by noting that revenue sharing formulas sometime contain a measure of "own tax effort." Of course, if subnational governments are to be able to exert tax effort, meaningful marginal sources of revenues—and the latitude to use them as they wish—must be assigned to them.)

In summary, it appears that subnational surcharges generally dominate both independent subnational taxation (legislation and administration) and tax sharing as means of providing subnational governments with fiscal autonomy in the tax area; this is especially true in LDCs and CITs, where the resources needed for compliance and administration are quite scarce. Surcharges provide almost as much fiscal autonomy as independent taxation, but are much simpler. They provide more autonomy than tax sharing, and are scarcely more complicated. None of these provides for redistribution among subnational jurisdictions; for that, some form of revenue sharing (or grants) is needed. Box 3 describes the system of tax assignment provided in the post-apartheid constitution of South Africa, which follows the principles outlined in this paper quit closely.

Transition from tax sharing, which is now found in many countries, to a system of surcharges, in which subnational governments choose tax rates, could be achieved as follows. First, tax sharing rates could be made uniform, if uniformity does not now exist. (It might also be necessary to rationalize the basis of tax sharing, if the present basis makes no sense, as when excises are shared with the jurisdiction of origin, instead of the jurisdiction of destination, as in much of the FSU.) Then tax sharing could be converted to a uniform-rate subnational surcharge on the national tax. Finally, subnational governments could be given authority to decide surcharge rates.

VI. Administrative Considerations

A key problem for the achievement of fiscal decentralization is the fact that many of the most important sources of tax revenue do not readily lend themselves to implementation by—or for—subnational governments. Where this is true, conceptual arguments must give way to practical reality.

A. Individual income tax

Under certain circumstances, the individual income tax is amenable to implementation by (or for) subnational governments. Implementation of income taxes can take two basic forms: withholding of final taxes at source and payment of taxes based on the filing of tax declarations; withholding taxes may be used in the latter case, but they are provisional payments, to be offset against liabilities calculated on the tax declaration, instead of final taxes. As a source of revenues for subnational governments, either form can, in principle, be implemented as a tax of subnational governments acting independently or as a surcharge on the tax of the central government.

As noted earlier, the revenue assignment problem becomes complicated when people do not work where they live. The first technique (final withholding taxes levied at source) is rather easily

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60I discuss these issues in the context of Mexico in McLure (1990), South Africa in McLure (1995a), and the former Soviet Union in McLure (1994a), (1995b), and (forthcoming, a).
implemented. It can, in principle, be justified as needed to collect taxes intended to finance benefits of public services related to the earning of income. We have argued, however, that most public services provided to households are consumed where people live, not where they work. Thus, the distribution of revenues from such taxes among jurisdictions is not likely to match the costs of providing services, except in rare instances.

Final withholding generally does not lend itself to implementation of residence-based taxation, especially if tax rates are not uniform across jurisdictions. It would require channeling revenues collected at origin to the jurisdictions where taxpayers live. First, subnational governments where income originates have little incentive to implement such taxes on behalf of jurisdictions of residence. Second, it is necessary to know the jurisdiction of residence of taxpayers. In principle, this can be ascertained by asking employees, recipients of interest, etc., where they live. In fact, if there are substantial differences in tax rates between jurisdictions, there is an incentive to report residence in the jurisdiction with the lowest tax rate. One can imagine that some jurisdictions might deliberately impose tax rates below those in other jurisdictions, in order to induce taxpayers to state that they live in the low-tax jurisdiction. It is difficult to see how this abuse could be prevented, short of the use of tax declarations filed with the jurisdiction of true residence. (Even this would be problematical in many LDCs, given the level of administrative competence; see below.) Of course, this problem could be avoided if all jurisdictions were required to levy similar tax rates (or at least a minimum rate). But this would defeat one of the objectives of fiscal decentralization, the ability of subnational governments to determine their own tax rates.

The second technique, the filing of tax declarations, can, in principle, be used to levy residence-based taxes on income. Such taxes can be implemented by subnational governments acting independently or by the central government, as surcharges, or as tax sharing. Independent state taxation (facilitated, however, by information from the income tax of the federal government) is the rule in the United States. By comparison, provincial surcharges administered by the central government are more common in Canada. As noted above, there is much to be said for a system of centrally administered surcharges.

Unfortunately, developing countries have difficulty implementing income taxes based on declarations, except in the case of high-income individuals; most should rely heavily on the use of final withholding taxes on those with low incomes. This means that it may be nearly impossible to channel revenues from income taxes paid by commuters (and others who do not work where they or their families live) to jurisdictions of residence, unless income tax rates are uniform.

B. General Sales Taxes

The value added tax is by far the most important form of general sales tax in use today. It is used primarily by national governments. An important question is whether the VAT is suitable for use by subnational governments, either with or without a VAT at the national level. Some countries use, or are considering subnational use of the retail sales tax. A second question is thus

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61It should be noted that this subsection has been rewritten substantially— and its conclusions changed dramatically— since this paper was first presented in Vienna in March 1998. At that time I still believed a subnational VAT to be administratively infeasible, a position I no longer hold.
whether the RST is suitable for such governments; the answer may be different depending on whether or not there is a national VAT or a national RST. For convenience we can describe these five options (to be discussed in a slightly different order) as a dual central/subnational VAT, a standalone subnational VAT, a standalone subnational RST, a dual central/subnational RST, and a “hybrid” central VAT/subnational RST.

Dual central/subnational RST and standalone subnational RST. Section IV argued that, in concept, the RST is ideally suited to the implementation of destination-based indirect taxes of subnational governments—argued above generally to be preferable to origin-based taxes for implementation of benefit taxation by subnational governments. There are, however, several important practical qualifications to this conceptual argument. These involve various types of trade between subnational jurisdictions: cross-border shopping and purchases by tourists; mail-order sales and electronic commerce in tangible products; and electronic commerce in digital content. Moreover, as a practical matter, extant RSTs commonly do not exempt all sales to business. In addition to creating well known distortions and inequities, the resulting “cascading” or “pyramiding” of tax interjects an important element of origin-based taxation into the RST. Moreover, it increases the complexity of dealing with trade between jurisdictions. It would be difficult to prevent pyramiding even under the best of circumstances. This is one of the reasons the VAT is vastly more popular than the RST.

RSTs of subnational governments could be implemented by the governments themselves as standalone taxes or as surcharges on the tax of the central government, if the central government employed the RST (similar to the way local governments in the United States “piggyback” on the state RSTs). It will be convenient to discuss both together.

62 The term “standalone subnational” is used to indicate that the tax in question is imposed only at the subnational level, so there is no central government sales tax administration with which the subnational tax administration can coordinate. It is not assumed that subnational governments do not act in a coordinated way in administering standalone taxes. If they do not, administration and compliance will be even more complicated and costly than suggested here.

Logically one might consider another case: national use of an RST, combined with subnational use of a VAT. This does not seem to be live policy option in most countries because the VAT is superior to the RST as a national tax. It would encounter the same administrative and compliance problems as the dual central VAT/subnational RST discussed below, as well as the problems of a stand-alone subnational VAT in dealing with trade between subnational jurisdictions.

63 I discuss these problems in greater detail in McLure (1998e).

64 It may be useful to note that the problem resulting from failure to exempt sales to business is not, as sometimes said, that there is a “tax on a tax.” After all, the “tax on a tax” that results from subjecting a sale to business to a 5 percent tax twice is only 0.25 percent of the price of the sale. The real problem is that the sale itself is taxed twice. In the case of the 5 percent sales tax, the aggregate rate of taxation is 10.25 percent.
It is probably best to tax most cross-border shopping and direct sales to tourists as if made to residents of the taxing jurisdiction. The alternative would involve the maintenance of internal fiscal borders, which would interfere greatly with the internal market. (The proposed approach would be problematical primarily if there were a low-tax jurisdiction located near major metropolitan areas in other jurisdictions. Special measures might be needed to prevent abuse in such cases.) The primary exception would be for large high-value items such as automobiles, boats, and airplanes that must be registered in the jurisdiction where they are used. Collection of the tax of the jurisdiction of destination is relatively easy in these cases. In developed countries there may be an important flow of retail sales directly to customers located in other jurisdictions (mail-order sales and electronic commerce in both tangible products and digital content). This need pose no problem in the case of central government administration of a subnational surcharge for second-tier governments. It would be a relatively simple matter for large mail-order houses to record the jurisdiction of residence of their customers; the central government would impose the appropriate subnational surcharge based on this information and channel revenues to the jurisdiction to which goods are sent. Small firms might be exempt from this requirement, but required to pay tax to the jurisdiction where they are located. Nor must mail-order sales be an insuperable problem in the case of independent administration by subnational governments, provided the tax base is defined in the same way in all jurisdictions. Large mail-order firms could be required to pay the appropriate tax to the jurisdictions of residence of their customers.

Successful administration of either standalone sales taxes or dual central/subnational sales taxes requires substantial identity of tax bases and administrative procedures; otherwise compliance costs can be come prohibitive for firms engaged in commerce that crosses subnational boundaries. This caveat will not be repeated below.

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65 The advent of electronic commerce complicates this picture somewhat. Yet it seems safe to say that the primary problems inherent in electronic commerce involve trade between nations and not that within nations. For more on this topic, see McLure (forthcoming, b).

66 The problem is substantially worse in the case of local sales taxes, including tax sharing and surcharges. Business interests in the United States assert that they would be unable to comply with a requirement to collect tax for each of the 6,600 local jurisdictions that levy a sales tax and have thus insisted on one tax rate per state. See McLure (1998e).

67 As explained in note 40, the U.S. Supreme Court has ruled that states cannot require out-of-state vendors to collect use taxes if they have no physical presence in the state. Given the capacity for compliance made possible by computers, it may be possible in the United States to gain an adequate level of uniformity simply by defining the potential base in a consistent manner, as long as there is only one tax base and one tax rate per state. (States assert that the limit of one rate per state is overly restrictive, as it precludes the possibility of differences in local sales tax rates.) In developing countries, it would probably be necessary to define the base identically, leaving subnational governments only the choice of tax rates (with only one rate per second-tier government).
Central VAT/subnational RST. Russia, whose central government has a VAT, has recently enacted a law providing the possibility of oblast-level RSTs. The combination of a central VAT and state RST has also recently been proposed for Brazil. Systems in which the central government imposes a VAT and subnational governments impose RSTs would create compliance problems for taxpayers and require duplication of effort by tax administrations. Moreover, they involve the same problems of dealing with trade across subnational borders that plague standalone subnational RSTs. They should generally be avoided.  

An ideal RST achieves the objective of exempting sales to business directly; it applies only to sales to households and exempts all sales to businesses. The administrative problem is how to achieve this objective, without opening the door to evasion by households claiming to make business purchases. Exempting all purchases by business places the vendor in the unenviable position of determining whether each sale is taxable or legally exempt and creates an incentive for the vendor to “look the other way” when a household purchase masquerades as a business purchase. Equally significant, auditors must trace exempt sales to the purchaser to determine whether they are for legitimate business expenses.

The VAT achieves taxation of consumption in a different manner. VAT is collected on virtually all sales by registered traders, without regard to whether the sale is to a household or unregistered trader or to another registered trader. Taxation of business purchases is eliminated by allowing registered traders to deduct (take “input credit” for) taxes paid on purchases from tax due on sales. Thus the only tax that is not eliminated by input credits is that paid by households and unregistered traders. Moreover, the burden of documenting whether the purchase was a legitimate business purchase that is eligible for input credit falls directly on the purchaser and is of no concern to the vendor.

Thus the RST and the VAT operate in quite different ways. Either system involves considerable administrative and compliance costs, especially for small businesses. Imposing both systems on business, via a subnational RST and a national VAT, would be quite onerous. Because the two systems would operate quite differently, implementing both would also be quite costly for tax administration. If both levels of government are to impose a sales tax, they should both use a VAT (or an RST). This is assumed in what follows.

Standalone subnational VAT. Because the value added tax (VAT) is the great fiscal innovation of the second half of the twentieth century, and is the most important single source of revenue in many countries, there may be a tendency to think that subnational governments can tap it for revenues to finance public services providing generalized benefits based either on consumption (a destination-based VAT) or on production (an origin-based VAT), even if there is no national VAT. This is wrong. For technical reasons, administrative problems are especially severe in the case of the standalone subnational VAT. These problems can be appreciated by reviewing the

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68 In Brazil there is another obvious problem. The states have had access to the VAT for more than 30 years and would not gladly relinquish its use.

69 As explained below, the fact that Brazil has a state VAT does not negate the truth of this assertion; see McLure (1993b) for a discussion of the Brazilian experience with the state VAT and McLure (1995a) and (1994a) for a discussion of Russia's and Ukraine's unfortunate attempts
experience of Brazil and the European Union. These problems do no exist, or are much attenuated, in the dual VAT described at the end of this section.

The basic issue is what to do about trade between jurisdictions—whether to apply the origin or the destination principle to such trade, and how. (It is commonly assumed, and is assumed here, that the destination principle would be applied to international trade. When the origin principle for domestic trade is combined with the destination principle for international trade, the result is commonly called the "restricted origin principle."\(^{70}\)) The destination principle has, until recently, been thought to require the existence of fiscal frontiers, so that tax can be collected on imports and rebated on exports. (The possibility of basing liabilities on books of account, instead of border controls, is considered below.) Since fiscal frontiers interfere with domestic trade, use of the origin principle for internal trade might seem to be attractive.

**Origin-based taxation.** The origin principle can, however, be implemented without fiscal frontiers only if tax rates are uniform. With different rates in different jurisdictions, several problems may arise. First, unlike a destination-based VAT, which is a tax on consumption, an origin-based tax, as a tax on production, is likely to distort the location of economic activity, unless levied at a uniform rate. Beyond that, there is an incentive to overstate or understate the value of goods moving between jurisdictions, in order to minimize aggregate tax liability.\(^{71}\) Alternatively, a jurisdiction may be asked to allow credits for the VAT of another jurisdiction that exceeds its own rate—or allowed to give credits for a VAT lower than its own; when this happens, the tax collected to implement what are, in effect, subnational surcharges on their national VATs. This section draws heavily on those sources. Although the central government of Brazil levies a VAT, the base of the central VAT is much smaller and administration of the two taxes is not coordinated; the state VATs are thus best seen as standalone VATs. Being the first nation to adopt a systematic VAT, Brazil enacted the VAT as a state tax before it was widely realized that a state-level VAT is problematic.

\(^{70}\) Most of the republics comprising the Commonwealth of Independent States (CIS, the former Soviet Union, with the exception of the Baltic nations) are applying the origin principle to trade within the CIS. If the CIS is seen as an economic union, this is tantamount to applying the restricted origin principle. See Summers and Sunley (1995).

\(^{71}\) Suppose that value of 100 is added in a jurisdiction where the VAT rate is 10 percent; then the product moves to a second jurisdiction, where the VAT rate is 20 percent, for the addition of another 100 in value before it is sold to consumers. In principle, the total tax under the origin principle should be 30, of which 10 goes to the first jurisdiction and 20 to the second. Because of the incentive to overstate production in the low-tax jurisdiction, suppose that the value of the product is claimed to be 150 at the time of its export from the first jurisdiction. That jurisdiction would collect 15 (10 percent of 150) and the second jurisdiction only 10 (20 percent of 200 minus 150).
is less or more than application of the tax rate to value actually added in the jurisdiction would
suggest.\textsuperscript{72}

With uniform rates, there is less need for fiscal frontiers, since credits can be allowed for all
VAT paid domestically, regardless to which jurisdiction. Even this solution is not without problems.
While taxpayers may not care about the division of value added reported to various subnational
governments, the governments do care and may "whipsaw" taxpayers in an effort to increase their
own revenues. Brazil encountered another problem with subnational application of a restricted
origin-principle VAT.\textsuperscript{73} Trade in Brazil follows a triangular pattern: imports enter through the
relatively prosperous South and exports exit through the poor Northeast. Thus the South collects
the state VAT on imports, and states in the Northeast rebate taxes on exports. To overcome the
obvious inequities, Brazil has developed an extremely complicated system of differential rates,
depending on the destination of trade within the country, and compensating payments between
states. Poddar (1990) concludes (p. 108), "...the Brazilian system appears to be one of the most
complicated VAT systems in the world. Most of the complications relate to the origin principle of
the tax." By specifying that subnational governments (oblasts, the equivalent of American states,
and local governments) should share in the revenues from the national VAT, Russia and Ukraine
effectively imported this problem.\textsuperscript{74}

\textbf{Destination-based VAT.} During the early 1960s the European Common Market (ECM, the
forerunner of the European Union), when faced with these problems, decided that all members
should introduce the restricted origin principle, using uniform rates. However, implementation of
this decision was delayed for three decades by the reluctance of member nations to give up control
of the right to set VAT rates—a prime attribute of fiscal autonomy. Thus substantial effort has gone
into efforts to devise simple methods of implementing destination-based taxation that rely on books
of account, rather than border controls.

\textsuperscript{72}The first example of the previous footnote (the one with accurate border declaration of
prices) assumed that goods passing between jurisdictions would be valued at the border, so that
VAT could truly be levied on value added in each jurisdiction. Suppose instead that credit is
given for whatever tax has been collected previously, by whatever jurisdiction. In the example
the second jurisdiction would collect VAT equal to 30 percent on production occurring on its
territory (20 percent VAT on the total value of the goods up to the point of consumption, less
credit for the 10 percent tax paid to the first jurisdiction), not 20 percent of the value added
within its borders. Reversing the assumed flow of goods, we see that the jurisdiction with the
low-rate VAT would collect no tax, because it be called on to give credit for the 20 percent VAT
on production occurring in the high-VAT jurisdiction, even though it levies only a 10 percent
VAT on sales to consumers of 200. This example is taken from McLure (1993b).

\textsuperscript{73}See Longo (1982).

\textsuperscript{74}The situation may be even worse than the discussion of the text suggests. If exports and
imports are deemed to occur depends on where title to goods changes hands, the possibilities for
abuse are obvious. See McLure (1995b) and (1994a).
One idea was to rely on a “clearinghouse” arrangement. Sales to purchasers in other member nations would be taxed at the VAT rate of the member of origin. Registered traders would receive input credits for whatever tax they had paid on their purchases. In the case of trade between members, the origin member would compensate the destination member for the credits the latter had allowed for taxes the former had collected. Since this scheme would require complicated identification of credits by member of origin, it is administratively cumbersome and probably infeasible.

The European Union has recently embarked on a “transitional” effort to rely on the books of accounts of firms instead of border controls to implement the destination principle. In this scheme, exports to registered traders in other members of the EU (like exports to other countries) would be zero-rated. Tax on imports from other members (unlike that on imports from other nations) would be “deferred.” Since subsequent sales would carry no input credit, tax would be due on the full value of sales. This produces destination-based taxation: the rate actually paid by consumers would be the rate where they consume (leaving aside mail-order sales and cross-border shopping) and the revenue would accrue to the jurisdiction where consumption occurs (leaving aside cross-border shopping).

This approach is potentially vulnerable to abuse by consumers who make direct purchases from other jurisdictions on a zero-rated basis, claiming that they are for business use. To prevent this abuse Keen and Smith (1997) have proposed introduction of a uniform tax on all sales to registered traders, whether or not the buyer is located in the taxing jurisdiction. As Bird and Gendron (1998, p. 432) have noted, “the Keen-Smith scheme in effect rectifies one asymmetry, between trade within a member state and trade between member states, by creating a new one, between sales to registered taxpayers and sales to final consumers.” The dual VAT system described below appears to be a better way to resolve the concerns motivating the Keen-Smith proposal.

The Commission of the EU (1996) has proposed a solution that would require uniform tax rates, as well as a uniform tax base, in all member countries. Credits would be allowed for taxes on trade between members. Rather than attempting a clearinghouse arrangement in which revenues collected by origin members are channeled to destination members, revenues would be divided among nations on the basis of aggregate consumption statistics. In other words, the existing VATs of the various members of the EU would, in essence, be replaced by a shared union-wide VAT. As emphasized above, this would leave individual members of the EU with no autonomy over VAT rates.

Conclusion. It seems inadvisable for subnational governments in LDCs and CITs to attempt to impose standalone VATs, except in the context of the system described at the end of the discussion of dual central/subnational VATs that follows. Origin-based VATs are undesirable for both economic and administrative reasons. Subnational governments in these countries are unlikely to be able to be able to prevent the abuse that would occur if they undertook to implement on a standalone basis the “transitional” approach based on books of account currently being implemented in the EU.

Dual central/subnational VAT. It appears that a properly structured dual VAT of the type being used in Canada and the province of Quebec, in which the central and subnational governments both rely on the VAT, is feasible for implementation in most countries, especially if protected from
abuse on cross-border trade as suggested below. Such a system could work as follows. As in the transitional system of the EU, subnational governments would zero-rate exports to other jurisdictions and defer payment of tax on intranational imports from other jurisdictions. Since traders in the importing jurisdiction would have no input credit, they would owe VAT to that jurisdiction on the full value of their sales (except for exports). Bird and Gendron (1998, p. 432) note that in Canada, unlike the situation in the EU, the tax of the federal government "serves as a cross-check to ensure that QST (the Quebec sales tax) has not been evaded" on intraprovincial trade. In the EU there is, of course, no over-arching Euro-tax upon which to rely for this cross-checking.

Even where there is a national VAT that could, in principle, provide the same cross-check as the VAT of the federal government in Canada, one cannot be overly sanguine; such cross-checking simply may not occur. The risk that consumers will attempt to make zero-rated purchases from other jurisdictions can be avoided in the following way. In addition to its "regular" VAT, the central government would collect a "compensating VAT" on trade between subnational jurisdictions. The rate of the compensating VAT might be the weighted average of the subnational VAT rates. Registered traders making imports from other jurisdictions would be allowed input credits for the compensating VAT, as well as the regular VAT of the central government. The result would be destination-based taxation, as in the absence of the compensating VAT. Box 6 describes this system.

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75 For a much more comprehensive discussion, see Bird and Gendron (1998). Quebec administers both its own VAT and that of the federal government. Moreover, the provincial and federal tax bases are not identical. These are not essential features of this approach. In most countries the dual VAT would presumably be administered by the tax authorities of the central government. Clearly national and subnational tax bases should be identical.

76 This proposal is developed more fully in McLure (1998d) which draws heavily on Gonzales Cano (1996), Fenochietto (no date), and (Varsano, 1995).
In the case of purchases from other jurisdictions made directly by consumers and unregistered traders, the compensating VAT would be a final tax, replacing the tax of the subnational government that would otherwise be due on such sales. Thus it would do no (or little) good to disguise household purchases as business purchases. Since these revenues are not intended to accrue to the central government, they could be distributed among subnational governments in proportion to their other VAT revenues. The above description assumes that the compensating VAT is collected by the central government; this is probably the most realistic assumption for most LDCs and CITs. (In Brazil, however, where there is already a state VAT, this would represent a substantial loss of state fiscal autonomy.) There is, however, no reason that the compensating VAT could not be collected by a consortium of subnational governments where there is no national VAT. Thus this system could be used to implement a standalone subnational VAT, for example, in the EU.

77 There could be some incentive to do so, if the rate of the compensating VAT exceeded that of the jurisdiction of residence of the household. Similarly, there may be incentives for and against direct purchases from other jurisdictions, to the extent that subnational VAT rates differed from the rate of the compensating VAT. This could be avoided by requiring uniform subnational VAT rates. Gonzales Cano (1996), Fenochietto (no date) and Varsano (1995) all assume uniform rates. Uniform rates would frustrate the objective of providing a source of marginal revenues for subnational governments.
This approach has marked advantages over other schemes for dealing with internal trade between jurisdictions. First, it implements destination-based taxation, rather than origin-based taxation. Second, unlike the proposal of the European Commission, it would allow subnational choice of tax rates. Third, it would not require a complicated clearinghouse of tax credits. Fourth, it would not be vulnerable to abuse via sales to consumers masquerading as business purchases. Finally, unlike the Keen-Smith proposal, there would not be an asymmetry between sales to registered taxpayers and sales to others; the asymmetry between sales to local purchasers and sales to purchasers in other jurisdictions seems to be much more manageable for both taxpayers and tax administrators than the Keen-Smith asymmetry.

C. Excises Many excises are most efficiently and certainly collected at the point of manufacture or importation. But it makes no sense for the jurisdictions were these activities occur to keep all subnational revenues from excises. It is generally more sensible for governments where consumption occurs to receive the revenues. But, depending on how distribution is organized, it may be difficult to channel revenues to the jurisdiction where consumption occurs and for subnational governments to exercise sovereignty over tax rates.

Smuggling lies at the heart of the problem in the case of high-value, low volume goods such as alcoholic beverages and tobacco products; it is relatively easy to pay the tax of a low-tax jurisdiction and then transport the product to a high-tax jurisdiction for distribution and consumption. (In the case of motor fuels, motorists living near low-tax jurisdiction do their own smuggling on a limited basis, by filling their tanks where taxes are low.) Various techniques (e.g., highly visible tax stamps) can be used in the effort to prevent smuggling. Ultimately these are likely to fail, as long as there are substantial differences in the tax rates applied by different jurisdictions.

Fees for automobile registration resemble excises. In principle, they are good candidates for assignment to subnational governments, since it can be required that cars be registered where they are garaged and driven—likely to be a good measure of the provision of at least some public services. Again, if registration fees differ greatly, abuse may occur, although, in principle, it should be relatively easy to prevent.

D. Corporate income tax

The corporate income tax is not conceptually attractive as a subnational revenue source, as noted in Section IV. Moreover, implementation of the tax by subnational governments without safeguards to assure at least minimal uniformity can cause severe problems. But it can provide substantial "own" marginal revenue for subnational governments.

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78See McLure (forthcoming, a) for further discussion.

79Because of the prevalence of car theft and smuggling, registration fees are superior to taxes on the purchase or importation of automobiles. When cars are stolen the former owner loses the tax as well as the car, and smuggled automobiles generally are not subject to import taxes. Registration fees can be collected on both smuggled and stolen cars.
The primary problems of compliance and administration arise from the need to determine the geographic source of corporate income. Because of the economic interaction between activities occurring in various jurisdictions, it is generally impossible to isolate precisely the source of income of a corporation doing business in two or more jurisdictions. Rather, it is common to use a formula to divide the income of a corporation among the jurisdictions where it operates. ⁸⁰

There are at least two inevitable sources of problems. First, it is common for substantial amounts of goods and services to pass between members of a group of affiliated firms (e.g., between a parent and its subsidiaries or between subsidiaries). Where this happens, corporations commonly use "transfer prices" to value these goods and services. But in many cases—and perhaps most—there is no "arms length price"—the price that would prevail in transactions between unrelated parties—against which to judge whether transfer prices are reasonable. Thus it is difficult to know whether "separate accounting" (accounting intended to measure the income of the various members of a corporate group) accurately determines the income of various entities. Transfer prices can be manipulated to minimize taxes (or for other reasons). Manipulation of transfer prices is not the only reason separate accounting often cannot be used to divide the income of affiliated firms. Pervasive economic interdependence is inherent in the nature of the modern corporation; that is, the activities of one part of a firm may influence the income of other parts in ways that defy quantification. Where this occurs, it is often appropriate to use a formula to apportion the total income of the firm among jurisdictions. The need for formula apportionment does not arise only within a given legal entity; it may also be difficult to know where a group of affiliated firms earns its income. ⁸¹ Economic interdependence and transfer pricing problems may be every bit as great between affiliated corporations as within a single legal entity. In response to these and other problems, some of the states of the United States employ combined reporting, under which the income and apportionment factors of related corporations are "combined" to determine the income subject to tax by a given state. ⁸² By comparison, the Canadian provinces do not combine the activities of related corporations, because the central government does not allow consolidation. As a result, Canadian corporations can manipulate sales between related firms to place taxable income in the provinces with the lowest tax rates.

In the United States the Supreme Court has given the states wide latitude in interpreting the Constitution's very general limitations on their taxing powers. As a result, there is substantial inconsistency in legislation and practice in state taxation of corporate income. See Box 4, which

⁸⁰In the United States formulas are tailored to the circumstances of particular industries, including banking and finance.

⁸¹See, for example, McLure (1984b) and (1986a).

⁸²There is substantial disagreement about the proper scope of combination. Some states (and some taxpayers) prefer worldwide combination, while others prefer to limit combination to the "water's edge." Bowing to pressures from multinational corporations, the U.S. government, and the governments of other developed countries, the states no longer require worldwide combination.
notes, "In the formula for an apportioned income tax, as commonly applied in the United States, virtually everything is up for grabs." The results of this unsatisfactory state of affairs include excessive costs of compliance and administration, litigation, and uncertainty, as well as inequities and distortions of economic behavior. By comparison, in Canada the provinces either employ surcharges on the tax base of the national government or employ a tax base that is quite similar to the national base; in either case, they use the same apportionment formula.

Subnational governments of LDCs and CITs should not be allowed to "go it alone" in legislating and implementing their own company income taxes, as in the United States. Subnational governments in most such countries do not have the administrative resources needed to implement separate and duplicative company income taxes imposed by a central government and various subnational governments; nor should companies be forced to comply with multiple and potentially inconsistent company income taxes.

The only reasonable way to implement a subnational company tax in LDCs and CITs is as a surcharge on the tax of the central government. In that case, the central government would determine the tax base, use a single formula to divide the base between subnational jurisdictions, and collect surcharges established by subnational governments, as well as the tax of the central government. This approach is used in most of the provinces of Canada. Such a system of surcharges provides most of the fiscal autonomy of independent legislation and implementation, without the problems. 83 The alternative of central government sharing of revenues with subnational governments (which would have no control over the tax rate) is distinctly inferior, as it does not provide marginal revenues to the subnational government.

If corporate income is to be apportioned using a formula, it is necessary to choose the elements of the formula (the "apportionment factors") and to define them. It is, of course, essential that these elements and their definitions be the same in all jurisdictions.

If the purpose of using an apportionment formula is to approximate the geographic source of corporate income, origin-based factors such as payroll, property, and sales at origin are presumably the most appropriate elements to include in the formula. 84 By comparison, in the United States the formulas of all states include sales at destination, in order to give some recognition to the role of markets, by channeling some of the revenues from the corporate tax to market states. This is probably better interpreted as the result of political compromise than an economically defensible solution. In recent years the American states have been shifting from the traditional formula that accords equal weight to the three factors (payroll, property, and sales) to double-weighting sales (or weighting them even more heavily), presumably in order to prevent discouraging economic activity within their borders. In Canada the apportionment formula assigns equal weight to payroll and sales.

Although the definitions and measurement of payrolls and sales are not without problems, the treatment of property deserves special attention, as it is likely to raise the most important

83 Problems in this area extend beyond administration and compliance. China, Russia, and Ukraine have all chosen intergovernmental approaches to the company income taxes that create undesirable economic incentives. See McLure (1995b) and (1994a) and Bahl (forthcoming).

problems. First, it is appropriate from a theoretical point of view that the definition of property be based on the flow of capital services, as measured by the user cost of capital (depreciation plus the cost of invested funds), not the value of the stock of capital. This creates problems, because neither depreciation rates nor the appropriate interest rate to use in calculating the cost of funds is obvious. Second, even if one uses the value of assets in the formula, there are problems in measuring the values of assets. These can be illustrated using the experience of the American states, which measures the value of property as the original cost, with no allowance for depreciation and no adjustment for inflation. The failure to recognize depreciation overstates the importance of old capital, and the failure to adjust for inflation understates it. While these two defects will be mutually offsetting under some circumstances (if the interest rate and the rate of depreciation are equal), this result is by no means certain. Results are particularly likely to be particularly problematic following a rapid period of inflation, if asset values are not adjusted for inflation. By omitting property from its apportionment formula, Canada avoids these problems.

Before ending this discussion of corporation income taxes, it is worthwhile to re-emphasize that when a formula is used to apportion income between subnational jurisdictions, the result is not really a tax on income arising in particular jurisdictions. While the formula may generally give satisfactory results, in some cases it will produce dramatically incorrect results—for example, by attributing resource rents to market jurisdictions, rather than to the point of production. This is not necessarily a dispositive indictment of the tax; after all, the alternative way of determining the geographic source of income, separate accounting, is often unreliable, for reasons stated earlier. But it does suggest that subnational governments should rely on revenues from the corporation income tax only if more satisfactory sources of revenue do not yield sufficient amounts of revenue.

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85 Consider the example of a company that owns new property in state A that is worth $1 million and lasts 50 years and property in state B that also costs $1 million but lasts only one year. Apportionment based on asset values would apportion income equally between the states. Assume that the interest rate (either the cost of borrowed funds or the opportunity cost of equity) is 10 percent, so interest is $100,000 per year in both cases. Assuming straight-line depreciation, depreciation would be $20,000 in state A, but $1 million in state B. Thus the user cost of capital would be $120,000 in state A and $1.1 million in state B, implying a theoretically correct allocation of more that 90 percent (1.1/1.22) of profits to state B.

86 This discussion pertains only to tangible assets. Intangible assets, which are crucial for modern corporations, pose even greater problems. The same problems that create the need for formula apportionment, economic interdependence and the lack of arm’s length prices, makes it difficult to determine the value of intangible assets. It is also difficult to assign such assets to particular locations. This problem is likely to be less important for LDCs and CITs than for economically advanced countries. See McLure (1997c).

87 Recall the earlier assertion that it is a tax on whatever is in the apportionment formula. See also McLure (1980).
E. Property taxes

Property taxes on real estate are among the few taxes that local governments can implement with relatively little assistance from higher levels of government. While uniformity of administrative procedures is desirable, it is not essential, as it is in the case of the corporation income tax. Because information needed to assess property is likely to be available locally, there is relatively little need for assistance from the national government. (An important exception is the need for cadastral survey that indicates ownership of property. Moreover, where property that is essential to the functioning of a business as a single entity extends across several jurisdictions, as in the case of railroads, electric power grids, and telecommunications facilities, it may be appropriate to use a formula to apportion the value among jurisdictions, as in the case of the corporate tax base, discussed above.)

Although some jurisdictions attempt to tax intangible property and movable personal property, this is generally a mistake. A tax on intangible property commonly results in double taxation, for example, when both corporate assets and corporate stock are taxed. Moreover, it is virtually impossible to identify owners of many intangible assets (e.g., bearer bonds). Taxing only intangible assets that can be identified produces inequities. Where taxpayers voluntarily declare the existence and value of intangible property, the tax becomes a tax on honesty.

VII. Vertical Imbalance and Horizontal Disparities

A system of tax assignment designed in accord with the principles outlined above may produce vertical imbalance in the revenues available to various levels of government or horizontal fiscal disparities among governments at a given level. 88

A. Vertical Fiscal Imbalance

Vertical fiscal imbalance is likely because many of the taxes that, from a conceptual point of view, are appropriately assigned to subnational governments cannot easily be administered in a way that implements this assignment. It is especially difficult to find taxes that can be implemented in a way that provides subnational governments with marginal sources of own revenues. 89 As noted earlier, neither revenue sharing nor tax sharing provides marginal sources of own revenues for subnational governments.

88 See Bird (1993).

89 The version of this paper delivered at the Vienna Workshop in March 1998 contained the following sentence: “The most obvious example of this problem is the value added tax; while a VAT can provide revenues that can be shared with subnational governments on the basis of a formula, it cannot very well form the basis of tax surcharges or even tax sharing based on the origin of revenues (and even less can it be administered by subnational governments acting independently).” The omission of this sentence from the present draft indicates the change in the authors thinking since the Vienna Workshop—and the importance he ascribes to the dual VAT described in Section VI.
The likelihood of vertical fiscal imbalance explains the earlier emphasis on subsidiarity in taxation: the view that subnational governments should generally be assigned any tax that they can administer (or that can be administered for it) that is not inappropriate for their use. Also, it explains why many nations may need to assign the corporation income tax to subnational governments, despite the manifest disadvantages of such an assignment. Box 5 illustrates the results of alternative choices in tax assignment. Whereas the Canadian provinces and the states of the United States are fiscally quite strong, the Australian states and the provinces of South Africa are fiscally weak.

**B. Horizontal Fiscal Disparities**

Even if tax assignment follows the principles outlined here, horizontal fiscal disparities are likely, unless taxable capacity is evenly distributed across subnational jurisdictions. Unequal fiscal capacity generally occurs where income levels are quite different. Inequalities in income levels make it difficult for poor jurisdictions to collect as much tax revenue as their more affluent counterparts from income and sales taxes. But particular industrial structures and tax assignments can create or aggravate horizontal disparities. The assignment of taxes on important and geographically concentrated natural resources to subnational governments is perhaps the most obvious example of this phenomenon. The assignment of the corporate income tax to subnational governments can have a similar effect, especially if the tax base is apportioned primarily on the basis of origin-related factors such as payrolls and property. Including destination-based factors in the apportionment formula may help to offset this tendency.

Where tax assignment does not follow the principles set forth here, horizontal disparities may be even worse. One of the most egregious cases involves the assignment of excises to the jurisdiction where production or importation occurs, instead of the jurisdiction of consumption. The combination of an origin-based VAT, differentiation of production on a geographic basis, and exemptions for food can also produce horizontal disparities. Finally, as noted above, the combination of triangular trade and an origin-based VAT can cause horizontal disparities.

**C. A Caveat on the Design of Intergovernmental Grants**

At the end of the day, it is likely that, in many countries, taxes reasonably assigned to subnational governments will not be adequate to finance the provision of services assigned to those governments or that they will result in horizontal fiscal disparities. If so, it may be desirable to use grants from higher level governments to compensate for vertical fiscal imbalance or to offset horizontal fiscal disparities. While a complete discussion of the design of such grants is beyond the scope of this paper, one point deserves emphasis. Grants intended to offset vertical imbalance or horizontal disparities should provide inframarginal funding for subnational governments, so as not affect the marginal decisions of those governments regarding the choice between public and private

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90 This discussion is limited to horizontal disparities that occur even if taxes are assigned in a rational manner. Disparities are even more likely if tax assignments are not rational, as when excises are assigned to the subnational jurisdictions where importation and production occurs.
spending. It is especially important that subnational governments not be penalized for raising additional revenues, by reducing grants.

VIII. Concluding Remarks: Tax Competition Revisited

Two themes flowing through this paper indicate the difficulty of achieving fiscal autonomy of subnational governments, especially in LDCs and CITs, and highlight a problem. On the one hand, subnational governments need the ability to vary tax rates, in order to exercise fiscal autonomy and engage in healthy tax competition. On the other hand, it may be difficult to vary many of the most important tax rates, without inducing taxpayers to take steps that would artificially minimize their tax burdens, at the expense of revenues in the high-tax jurisdiction. This may be true of the individual income tax (to the extent people do not work where they live), sales taxes (because of cross-border shopping), certain excises (because of smuggling and cross-border shopping), and corporate income taxes based on separate accounting (because of manipulation of transfer prices). It is possible to vary rates of subnational surcharges on corporate income, if the tax base is apportioned on the basis of a formula. But excessive variation of rates of business taxes, origin-based sales taxes, and source-based income taxes not matched by differences in benefits provided to taxpayers is likely to distort the location of business. This suggests the need to rely as heavily as possible on fees, charges, taxes that can be linked closely to the benefits of public services, destination-based sales taxes, and residence-based income taxes.

It is useful to distinguish between healthy tax competition and what might be called predatory tax competition. In healthy tax competition there is pressure for taxes to be no higher than justified by the benefits of public spending. Pressure for responsible taxation comes from those who threaten (perhaps implicitly) to migrate from jurisdictions where taxes exceed the benefits of public activities. The only way to avoid the taxes is to leave the jurisdiction and cease consuming the services it provides. There is relatively little reason for taxes to fall below benefits in this model.

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Grants may be appropriate because of interjurisdictional spillovers of benefits of services provided by subnational governments. By their nature this type of grant should be designed to change the terms on which private income can be exchanged for public services characterized by spillovers (and, indeed, the terms of the trade-off between these and other public expenditures).

Section 227 of the Constitution of South Africa reflects this thinking; it provides (Paragraph 2): "Additional revenue raised by provinces or municipalities may not be deducted from their share of revenue raised nationally, or from other allocations made to them out of national government revenue. Equally, there is no obligation on the national government to compensate provinces or municipalities that do not raise revenue commensurate with their fiscal capacity and tax base."

Some favor including provisions in grants that reward greater subnational tax effort. I find this policy unattractive, unless there are reasons to believe that the choices of subnational governments are being artificially constrained to suboptimal levels. Even then, it seems more appropriate to remove the obstacles than to reward tax effort, per se.

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Some favor including provisions in grants that reward greater subnational tax effort. I find this policy unattractive, unless there are reasons to believe that the choices of subnational governments are being artificially constrained to suboptimal levels. Even then, it seems more appropriate to remove the obstacles than to reward tax effort, per se.
Predatory tax competition is very different. It is not necessary for taxpayers to leave the jurisdiction and forego benefits of public spending in order to benefit from smuggling, cross-border shopping, false statements of residence, or manipulation of transfer pricing; they can stay in the high-tax jurisdiction, but not pay its taxes. Pressure for tax reduction comes, in part, not from healthy tax competition, but from predatory behavior of jurisdictions that can finance their public services, with little cost to their own residents, by providing a haven for residents of other jurisdictions who would engage in smuggling, cross-border shopping, misstatement of residence, or shifting of corporate income. This type of tax competition is potentially destructive, instead of healthy. Rather than being welcomed, like healthy tax competition, it should be suppressed. Use of formula apportionment minimizes the possibility of manipulating transfer prices to shift corporate income between jurisdictions. The other forms of abuse just described are more difficult to prevent.
Box 1
The Soviet Gap-Filling Model

The system of revenue assignment many countries in transition from socialism inherited from the socialist system cannot form the basis of a rational system of tax assignment. The following is a stylized description of this system:

• Expenditures needs of second-tier governments are determined by the planners.
• Estimated revenues from taxes assigned to second-tier governments are subtracted.
• Second-tier shares of "regulating" taxes of the central government are set to finance the residual expenditures.
• Subventions are provided if necessary.

This system allows subnational governments almost no fiscal sovereignty. Subnational governments have little or no latitude in choosing expenditure levels or setting tax rates. (In fact, they commonly employ extra-budgetary funds to circumvent this system.)

The typical assignment of revenues in this system makes no sense. Revenues from excises are shared with the subnational government where products are produced and imported, rather than with the jurisdiction where consumption occurs. Revenues from the enterprise income tax are shared with the jurisdiction where the enterprise is registered, instead of where its income originates. Separate accounting is used to divide the income of enterprises operating in more than one jurisdiction via branches that maintain separate books of account. Revenues from the value added tax are shared on a derivation basis, which commonly means where the enterprise is registered. Subnational governments where imports occur share in VAT on imports, and those where exports occur must share in the cost of rebates of VAT on exports.

1The description is for relations between the central and second-tier governments. A similar relationship existed between pairs of governments at lower levels.

Source: This description draws heavily on the author’s work in Kazakhstan, Russia, Ukraine, and Vietnam. See McLure (forthcoming), (1995b), and (1994a), McLure and Martinez (1996), and Martinez, McLure, and Wallace (1995), as well as Wallich (1994).
Because of the functioning of the system, these assignments are essentially irrelevant, at least \textit{ex ante}. Greater estimated revenues from subnational taxes reduces subnational shares of regulating taxes or subventions. Subnational shares in regulating taxes are more accurately seen as subventions than as subnational taxes. Sharing rates and subventions may be altered during the course of the year, if revenues differ from budget estimates.
Box 2
Tax Exporting in the United States:
Mistakes to Be Avoided

The constitution of the United States provides the states with virtually unlimited authority to impose any tax they wish, subject only to quite limited and general restrictions, the most important of which involve non-interference with interstate and foreign commerce and compliance with due process. (This broad authority has been circumscribed in only minor ways by federal legislation.) Although taxpayers have recourse to the courts if they believe their constitutional or legal rights have been violated, federal courts have been extremely reluctant to limit the states' taxing authority, absent clear and flagrant violations. One of the many undesirable results of such a system of independent and uncoordinated legislation is the high degree of tax exporting that can occur.

Tax exporting—the shifting of tax burdens to non-residents of the taxing jurisdiction—is generally undesirable. It is unfair, it undermines the accountability of government, and it may induce overexpansion of the public sector. In some cases tax exporting is not problematical, however, as when tourists pay higher taxes imposed to cover the costs they create (for example, for extra police protection).

Tax exporting can take many forms, reflecting the interplay of market forces in determining the incidence of taxation (who bears the burden of taxation). Under certain conditions (especially state domination of the relevant market for the taxed product), taxes can be exported to non-resident consumers. More commonly they may be exported to non-resident owners of the factors of production (land, labor, and capital).

In the United States tax exporting takes many forms. States that are especially popular with tourists (for example, Florida, Hawaii, and Nevada) do, indeed, impose taxes intended to be paid largely by tourists; these include taxes on hotel occupancy and taxes on gambling.

In the United States much ownership of land and natural resources is in private hands. Taxes on land and natural resources, including property taxes, are exported, to the extent that they borne by non-resident owners.

Delaware imposes extremely high corporate franchise taxes (equal to some 20 percent of state revenues), in order to extract revenues from corporations that take advantage of the state's relatively lax incorporation statutes. (In the United States a corporation incorporated in one state can operate in other states.) More generally, state corporate income taxes may be borne by non-resident owners of corporate shares.

Quantitatively the most important form of tax exporting in the United States results from the ability to deduct income and property taxes (as well as other taxes that constitute a cost of business) levied by state and local governments in calculating federal taxable income. (Since the deduction reduces federal taxable income, the federal government, in essence, pays a fraction of state and local taxes equal to the marginal tax rate of the taxpayer.) The important lesson for LDCs and CITs from this experience is that taxes and surcharges levied by subnational governments should not be deductible in calculating liability for the income tax of the central government, unless they constitute a business expense.

In a federal system in which the states retain the authority to impose taxes of their choosing, it is very difficult to prevent tax exporting. In the United States the only remedy is to be found in the courts. (Of course, taxpayers may also attempt to have tax laws changed legislatively.) In the early 1980s the U.S. Supreme Court rejected the view that tax exporting was sufficient grounds to find a tax on coal—argued to be borne by non-resident consumers—to be in violation of the constitutional provision prohibiting interference with interstate commerce. The Court noted, among other things, that it could not be expected to undertake the complex economic analysis needed to determine the incidence of taxation.

The rules of tax assignment can be designed to minimize the likelihood of tax exporting. For example, excise taxes can be assigned to the jurisdiction where consumption occurs, instead of where production or importation occurs. Similarly, most revenues from individual income taxes should go to the jurisdiction where people work or live, and not to the place where their employer is registered or has its primary place of business.

Source: McLure (forthcoming, a).
The Post-apartheid Constitution of South Africa provides a textbook example of following the conventional wisdom of tax assignment. Chapter 13 of the 1996 Constitution, dealing with “Finance,” contains, _inter alia_, these passages:

**Provincial taxes**

228. (1) A provincial legislature may impose -
(a) taxes, levies and duties other than income tax, value-added tax, general sales tax, rates on property or customs duties; and
(b) flat-rate surcharges on the tax bases of any tax, levy or duty that is imposed by national legislation, other than the tax bases of corporate income tax, value-added tax, rates on property or customs duties.

2) The power of a provincial legislature to impose taxes, levies, duties and surcharges -
(a) may not be exercised in a way that materially and unreasonably prejudices national economic policies, economic activities across provincial boundaries, or the national mobility of goods, services, capital or labour; and
(b) must be regulated in terms of an Act of Parliament, which may be enacted only after any recommendations of the Financial and Fiscal Commission have been considered.

**Municipal fiscal powers and functions**

229 (1) Subject to subsections (2), (3) and (4), a municipality may impose -
(a) rates on property and surcharges on fees for services provided by or on behalf of the municipality; and
(b) if authorised by national legislation, other taxes, levies and duties appropriate to local government or to the category of local government into which that municipality falls, but no municipality may impose income tax, value-added tax, general sales tax or customs duty.

In short, neither provincial governments nor municipal governments is allowed to levy income taxes, VAT, general sales taxes, or customs duties. Provincial governments can levy flat-rate surcharges on the base of the individual income tax, excises, and (if there were one) general sales tax of the national government, but not on the corporate income tax, VAT, property taxes, or customs duties. Municipal governments can levy property taxes and surcharges on fees for municipal services—essentially excises on water and electricity. The corporate income tax, VAT, and

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1The assignment of the VAT entirely to the central government reflects the view current at the time that a subnational VAT was not feasible.

2Section 229 contains provisions that parallel those of Paragraph 2 of Section 228.

3Traditionally, municipal governments have collected substantial revenues from the provision of water and electricity. This provision allows continued municipal use of this source.
customs duties are thus reserved exclusively for the national government, and the property tax can be imposed only by local governments. Both the national government and provinces can levy individual income taxes, excises, and (in theory) general sales tax. In no case can a provincial or local tax interfere with national economic policies or with trade or factor movements across provincial or municipal boundaries. All subnational taxation is to be regulated by national legislation, to be enacted only after consultation with the Financial and Fiscal Commission provided in the Constitution.
Box 4

Formula Apportionment in the United States

In the formula for an apportioned income tax, as commonly applied in the United States, virtually everything is up for grabs. Thus:

\[ T_i = t_i \times I \left[ \frac{(W_i/W) + (P_i/P) + (S_i/S)}{3} \right], \]

where:
- \( T_i \) is tax liability in state \( i \),
- \( t_i \) is the tax rate in state \( i \),
- \( I \) is the company's total taxable income,
- \( W_i, P_i, \) and \( S_i \) are payroll, property, and sales in state \( i \), and
- \( W, P, \) and \( S \) are total payroll, property, and sales.

The tax rate and the ratio of in-state to out of state payroll are the only parts of the right-hand side of this formula that have not been subject to considerable controversy. (Federal rules determining the location of employment for the purpose of unemployment compensation are commonly used to define the latter; this is not required.) Within extremely broad limits, each state can adopt its own definition of taxable income; there is no requirement of conformity with the federal definition or the laws of other states. Similarly, in applying the formula, states need not treat sales in the same way. Most measure sales at destination, but others measure them at origin. Some (an increasing number) depart from the typical formula, by double-weighting sales. Some states that generally measure sales at destination apply a "throw-back rule, whereby they also include sales originating within their boundaries that are made to a state that does not tax company income.

Basing apportionment on payrolls and property (and on sales of capital goods and intermediate products) attributes most corporate income to states where production occurs, rather than to the states where consumption occurs. Use of sales in the apportionment formula has the apparent advantage of giving some weight to the consuming jurisdiction. But no effort is made to distinguish between sales made to final consumers and sales to business. Thus the tax on the portion of profits apportioned by the sales factor resembles a turnover tax. This is undesirable. Double-weighting sales increases this tendency.

Nor is there agreement about the entity to which the formula is to be applied. Some states adopt a strict legal entity approach. This open the door for abuse through manipulation of transfer prices. Others combine related companies deemed to be engaged in a "unitary business;" but there is no accepted definition of what is a unitary business. Some states have applied unitary combination on a world-wide basis, whereas others have restricted the use of combination to "the water's edge," apportioning only profits deemed to be earned in the United States. The treatment of intercorporate dividends is particularly troublesome. Dividends flowing between firms filing combined reports are eliminated from the calculation. Some other dividends are taxed, but others are exempt; this varies by state.

Box 5
Models of Revenue Assignment

It is possible to identify two prototypical models of revenue assignment, along with their strengths and weaknesses.

Fiscally “strong” subnational government

The provinces of Canada and the U.S. states are fiscally quite strong. This is achieved in the United States, and to a considerable degree in Canada, through independent legislation and administration of subnational taxes. In both countries intermediate governments levy retail sales taxes—a fact that has impeded imposition of VAT at the central level (now done in Canada, but not in the United States), because of the difficulties of meshing the two taxes. Most American states also levy income taxes on individuals and corporations. The largest and most economically powerful Canadian provinces levy their own income taxes, but the others rely on surcharges on the national taxes. All Canadian provinces use similar definitions of the income tax base and the same apportionment formula to divide the corporate tax base. In the United States these choices are left to the states, subject to only very general constitutional limitations. This creates complexity that less developed countries and countries in transition from socialism can ill afford.

Fiscally “weak” subnational governments

The Australian states are fiscally weak, because they have little revenues from “own” sources. Since overly restrictive interpretations of the constitution prevent their imposing either income taxes or a general sales tax, they must rely heavily on grants from the central government. Subnational governments account for half of public spending in Australia, but raise only 25 percent of revenues. It appears that the same pattern may develop in South Africa, where the provinces are allowed to levy surcharges on only the individual income tax and excises of the national government. See also Box 3.

Source: McLure (forthcoming, a).
Box 6
Protecting Dual VATs from Evasion on Cross-Border Trade

Table 1 illustrates the working of the compensating VAT (CVAT) described in Section VI. It assumes a three-stage production-distribution process, with value added of 100 in each stage and total value of sales to households of 300; the first column summarizes these transactions. Gross liability for VAT at each stage is calculated by application of the relevant tax rates (federal, state, and CVAT) to sales. Net liability is calculated by deducting credits for VAT paid on purchased inputs; these equal taxes paid on sales at the previous stage.

It is assumed that state A imposes a VAT of 4 percent and state B imposes a VAT of 8 percent. The federal government imposes two taxes: the "ordinary" federal VAT of 20 percent and a CVAT of 6 percent on interstate sales. (The example is concerned only with sales to registered traders; by assumption, there are no other interstate sales.) The rate of the CVAT is assumed for convenience to lie midway between the two state rates. Alternatively, it could equal the highest state rate, the lowest state rate, or any rate between, without affecting the basic conclusions presented here. The choice or this rate is discussed further below.

The second set of columns shows the calculation of tax liabilities if all three stages occur in state B; it serves as a useful benchmark. The state collects VAT of 24 (8 percent of total sales to households of 300) and the federal government collects VAT of 60 (20 percent of 300).

The third set of columns illustrates the operation of the CVAT, assuming that the first two stages occur in state A and only the third occurs in state B. Thus, Stage 1 occurs in state A, Stage 2 involves an interstate sale by producers in state A to registered traders in state B, and Stage 3 involves sales to households in state B. State A collects VAT of 4 on the production of 100 in Stage 1. Since it zero-rates the interstate sale that occurs at the second stage, it refunds to the producer at Stage 2 the VAT of 4 collected at the first stage. State B does not tax these interstate imports; rather, it defers payment of tax on the imports and collects VAT of 24 on the entire sale of 300 to households (allowing no credit for tax on prior stages), replicating the result in the second set of columns, as is appropriate under a destination-based VAT. This is exactly the result that occurs under the system of zero-rating and deferred payment currently employed in the European Union.

The federal government collects its ordinary VAT at each stage and allows credits for it at each subsequent stage, so that, in total, the federal VAT on sales to households is 60, as in the second set of columns. In addition, the federal government collects the 6 percent CVAT of 12 on the interstate sale of 200 occurring at the second stage, but allows a credit for it at stage 3, thereby eliminating any net liability--and any revenue for the federal government--when the two stages are consolidated. In short, the final result for all three governments (A, B, and federal) is the same as if a) all production occurred in state B or b) zero-rating/deferred payment had been used without the CVAT. That is, the CVAT implements a destination-based state VAT, but in a way that protects revenues from the risk of zero-rating interstate sales to households and unregistered traders.

Table 1
Illustration of Compensating VAT on Interstate Sales to Business:
Tax rates: “Ordinary” Federal VAT Rate = 20%;
State VAT Rates: 4% in A and 8% in B
Compensating VAT Rate = 6%;
Assumptions: Column 2, All Production in State B
Column 3: Stages 1 and 2 in State A; Stage 3 in State B

<table>
<thead>
<tr>
<th>Stage</th>
<th>Transactions (Purchases, Sales, and Value Added)</th>
<th>Calculation of Tax (VAT on sales; credit for input VAT: net VAT liability)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>One-state Example</td>
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<tr>
<td></td>
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<td>State Federal Tax: Tax</td>
</tr>
<tr>
<td>Stage 1:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Purchases/Credits</td>
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<tr>
<td>b. Sales/Tax</td>
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<td>8</td>
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<tr>
<td>c. Value added/Net tax (c= b-a)</td>
<td>100</td>
<td>8</td>
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<tr>
<td>Stage 2:</td>
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<td></td>
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<tr>
<td>d. Purchases/Credits (d=b)</td>
<td>100</td>
<td>8</td>
</tr>
<tr>
<td>e. Sales/Tax</td>
<td>200</td>
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<tr>
<td>f. Value added/Net tax (f=e-d)</td>
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<tr>
<td>Stage 3:</td>
<td></td>
<td></td>
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<tr>
<td>g. Purchases/Credits (g=e)</td>
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</tr>
<tr>
<td>h. Sales/Tax</td>
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<tr>
<td>i. Value added/Net tax (i=h-g)</td>
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</tr>
<tr>
<td>j. Total tax (j=c+f+i)</td>
<td></td>
<td>24</td>
</tr>
</tbody>
</table>

n.a. : not applicable
Gross tax liability at each stage is calculated by application of the relevant tax rates to sales. Tax credits equal taxes paid on sales at the previous stage, where applicable. Algebraic notation indicates the calculation of value added and net tax liabilities at each stage.
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