Chapter 18

FISCAL FEDERALISM AND STATE AND LOCAL GOVERNMENT FINANCE

LEARNING OBJECTIVES After reading this chapter, you should be able to:

- Define the concept of fiscal federalism, and discuss issues relating to the supply of public goods in a multilevel system of government.
- Use the Tiebout model of supply for local public goods in a system of decentralized governments to analyze the relationship between local government finance and location decisions.
- Explain the consequences of interjurisdictional externalities.
- Describe how the elasticity of local tax bases acts as a constraint on state and local government tax policy.
- Discuss variation in fiscal capacity among state and local governments, intergovernmental grants, the impact of grants on resource allocation, and current fiscal problems of state and local governments in the United States.

Most of you rely on state and local governments to provide road maintenance, criminal justice, police and fire protection, and primary and secondary education. State and local governments also are active in the provision of health care to the needy and the subsidization of higher education. The federal government assists state and local governments in performing their functions. Federal grants to state and local governments finance nearly a quarter of the outlays of those governments in the aggregate. These grants account for more than 16 percent of the federal government's total budget. However, many of these grants go to individuals in the form of mandated programs, such as Medicaid and Temporary Assistance to Needy Families (TANF), that provide support to the poor. In fact, nearly two-thirds of federal grants to state and local governments finance income support in cash or in-kind to eligible citizens.

Since the 1980s, our intergovernmental system has come under increased fiscal discipline. On the state and local government level in the 1990s, taxpayer resistance to higher tax rates and political demands for reduced taxes have also put a cap on the growth of government spending. Open-ended programs, such as income support to the poor, are now capped through a system of block grants to the states that limits annual federal spending. State governments now have considerable leeway in policies to deal with poor families to help them become self-sufficient in a new environment that limits eligibility for income support to a maximum of five years for each aid recipient.

On the state and local government levels, there is a push to privatize many government services or achieve greater self-finance of such government enterprises as roads, recreational facilities, and university education through user charges. As a result, many of you are now paying higher tuitions to attend state universities and higher tolls to use bridges and roads around major cities. Increasingly, governments contract with private firms to provide such services as trash pickup, security, toll collection, and even administrative tasks. If we exclude payroll taxes, state and local governments, in the aggregate, now collect about the same amount of revenue as the federal government to finance their activities. The balance of power and responsibility between state and local governments and the federal government will certainly be more equal in the 21st century than it has been at any other time in the nation's history.

As of 2009, most state governments were experiencing sharp declines in revenues as a result of a major recession that increased unemployment rates and reduced both incomes and consumption. Shortfalls of revenue relative to spending forced many state governments to cut spending and search for new sources of revenue. As state and local governments bear more of the responsibility for public services, they are being forced to look for ways to balance their budgets as is required in most cases by state laws. In fiscal year 2009, 42 states used across-the-board spending cuts to ease revenue shortfalls. Fiscal year 2010 was proving to be very difficult for state governments with over three quarters of the states forced to cut their budgets because of revenue shortfalls. Many states were laying off or furloughing workers and some states were cutting basic programs such as education and public safety. Assuming a slow recovery from the recession that began in 2007, most state budgets are

likely to be impacted as a result of revenue shortfalls in fiscal years 2011 and 2012 and many have already taken measures to raise taxes to avoid draconian cuts is state government services.

Most states have refrained so far from cutting such basic services as education, Medicaid, and public safety. However, as citizen resistance to tax increases remains strong, some states are even beginning to cut funding for these basic services. In 2003, the federal government established a special fund to assist state governments. This fund allocated $20 billion to the states as part of the Jobs and Growth Tax Relief Reconciliation Act of 2003. Of the total, $10 billion was divided among the states to assist in providing essential government services; the remaining $10 billion was used to help states finance Medicaid expenditures. However, as of 2009, Medicaid expenditures were still straining most state budgets. In 2009 the American Reconstruction and Reinvestment Act had provisions that provided funds to state and local governments to ease the effects of the recession on their budgets. A total of $8.8 billion in block grants was allocated to state governments to offset the effects of recession-induced budget cuts on state services. Another $4 billion was allocated to assist state law enforcement agencies. In addition, provisions of the Act to fund infrastructure and education also directly or indirectly assisted state governments in dealing with the fiscal crisis brought on by the recession.

In this final chapter, we examine some of the issues involved in state and local government finance in a federal system. We discuss theoretical issues relating to the division of responsibility for supplying public goods among various levels of government. We also examine such practical issues as the problems of local government in raising revenues and the implications of reduced federal aid to state and local governments.

FISCAL FEDERALISM

The United States has a **federal system of government** characterized by numerous levels of government, each with its own powers to provide services and raise revenue. The levels of government can be divided into three broad categories: federal, or central; state; and local. The various local governments range from large counties and cities with populations in the millions to small towns and special districts with fewer than 1,000 citizens.

A multilevel governing system raises some interesting and important questions. What is the most efficient allocation of responsibilities among alternative levels of government? In general, the more decentralized the government, the greater is the opportunity for expressing the desire for various kinds of government services and for obtaining the means to finance those services. However, diversity can be accompanied by fragmented or noncoordinated collective decision making among jurisdictions. In addition, government provision of services on a small scale often results in higher average costs because all economies of scale cannot be realized.

Fiscal federalism is the division of taxing and expenditure functions among levels of government. Economic theory offers some insights into the consequences of alternative arrangements for supplying public goods and services

and for financing them among the various levels of government. In general, collective choices by citizens will probably result in the central government's undertaking of those functions most likely to have benefits that are collectively consumed on the national level. Accordingly, in most nations, the supply and finance of armed forces is observed as a central government function. All citizens, regardless of their location, collectively benefit from national defense and other public services that have the characteristics of pure public goods. They can reasonably be expected to agree to a national public choice arrangement for determining the level of such services and a system of finance in which all citizens pay a share for such services, independent of the region or locality in which they reside.

Many government-supplied services require central coordination and can be costly or impossible to provide in a decentralized way by local governments. It is almost inconceivable to expect a local or state government to undertake its own economic stabilization program. Such programs would be doomed to failure by virtue of the simple fact that the economic base for state and local governments is heavily dependent on those in other regions of the nation. Any attempt by state and local governments to alleviate inflation and unemployment within their own borders, either by adjusting aggregate demand through fiscal policy or monetary demand through restrictions on credit, will do little to solve these problems because much of the spending by local citizens will be for goods and services produced in other states. Increased demand that results from a tax reduction in one state is likely to provide increased income in all states, because citizens spend only a fraction of their income on locally produced goods.

No one state can control its own inflation and unemployment rates because these are tied to events in national markets that cannot in any way be controlled by the economic policies of the state or the locality. Monetary and fiscal policies can be more effectively implemented by a national government.

Similarly, attempts by local or state governments to engage in social programs that significantly redistribute income among their citizens are likely to result in resource flows that limit the effectiveness of such programs. Although state and local governments do redistribute income among citizens with some degree of success, these programs are likely to entail efficiency losses higher than those that would be encountered if the central government undertook the same level of redistribution. This is because it is easier to avoid state and local taxes than federal taxes and because the availability of transfers at one location as opposed to others is likely to induce in-migration of eligible recipients. As a result, the costs to finance a given amount of redistribution per recipient probably will be higher than anticipated, as the tax base declines due to out-migration of local resources and as the number of eligible recipients rises due to in-migration.

A national income redistribution program would be less wasteful because it would not encourage migration of eligible recipients in response to differential transfer payments among jurisdictions. The taxes necessary to finance collectively agreed-upon transfers would be impossible to avoid by changing location

of personal residence within the nation. Opportunities for a centralized governing authority to redistribute income are less limited than those for local governments, principally because the mobility of resources between nations is much less than mobility among areas within a nation.[1]

The Supply of Local Public Goods in a Federal System

Local public goods are public goods with benefits that are nonrival only for that portion of the national population who live within a certain geographical area. Such goods and services are likely to be most effectively produced by local governing units. Local governments are likely to be formed almost exclusively for producing such goods and services and financing them by taxes that are paid entirely by local residents. Among the services that are likely to result in locally consumed collective benefits are police and fire protection, public sanitation and refuse collection, traffic control and roads, water and sewer services, and educational services. Similarly, services that are typically financed by state governments result in collectively consumed benefits on a somewhat larger scale, such as state road networks, bridges, a share of educational programs, highway patrols, and certain social services.

The main advantage of local and regional supply and finance of government-provided services is that it allows the system of governments to accommodate a wide array of tastes and demands for their services in accordance with local variations in demand patterns and cost conditions. Each local governing unit with its own political institutions can articulate the demands for government-supplied services within its own collective choice process. This adds great flexibility to the political process and allows citizens the option of locating their residences with at least some consideration of the types of government-provided services offered at alternative locations. In fact, citizens with similar tastes in certain public services tend to congregate together and form local governments.

Thus, communities whose citizens have strong preferences for recreation can choose to tax themselves to pay for parks and other public recreational facilities. Other communities, whose citizens are relatively more interested in the arts, can choose collectively to have few public parks and instead use significant amounts of their resources for public concerts, art exhibits, and libraries. In a sense, the political process is most efficient when individuals of relatively similar preferences congregate in local communities, where they can best satisfy their preferences for public services. Under these conditions, both transactions costs and external costs of political action are likely to be low.

[1]A strong case for centralized supply of stabilization and redistributive programs is made by Oates. See Wallace E. Oates, *Fiscal Federalism* (New York: Harcourt Brace Jovanovich, 1972), Chapter 1. However, some basis does exist for a limited role by noncentral governments in supplying these two services. For an analysis of the desirability of local government participation in stabilization and redistribution programs, see Albert Breton and Anthony Scott, *The Economic Constitution of Federal States* (Toronto: University of Toronto Press, 1978).

CENTRALIZED VERSUS DECENTRALIZED GOVERNMENT

National Versus Local Political Equilibria

Under centralized government, collective choices on government-provided services are made nationally. Central provision of these services tends to result in uniformity of the quality and quantity of public goods across all regions of a nation. The resulting collective choices represent national political equilibria. Under centralized provision of government-supplied services, all citizens vote on the quantity and kinds of services to be supplied at all locations. If such choices are made under majority rule, the resulting equilibrium is likely to reflect the preferences of the median national voter (see Chapter 5).

A national consensus on the amount of public goods with truly national collective benefits is necessary because those goods, when provided, are consumed by all residents, independent of the location of their residence. With local public goods (those with geographically constrained collective benefits), a national consensus on the amount to provide makes less sense, because when these goods are produced, they are consumed by only a subset of the population. For such goods, decentralized decision making provides the advantage of taking into account variations in preferences for those goods among residents of specific communities. Allowing local public choice of the amount of these goods provides more flexibility and improves efficiency because government output then can respond to variations in tastes.

Under decentralized collective choices made by majority rule, the political equilibrium reflects the median most-preferred outcome of local voters. The quantity and kinds of government-provided services preferred by these voters can vary considerably across regions and might be very different from the median most-preferred outcome of all national voters on similar issues.

The means of financing government-provided services can vary with local desires when government is decentralized. Communities with strong interests in encouraging certain types of development, such as housing or new industry, can adapt their tax structures to provide incentives to achieve those goals. Similarly, insofar as notions of fairness in taxation vary across jurisdictions, a decentralized system of government can adjust its tax structure to attain those objectives.

However, as will be made clear presently, the tax and expenditure decisions in one governing jurisdiction are not independent of those in other jurisdictions. Within a system of decentralized government, citizens can be viewed as "shopping" for places to reside. Their locational decisions are influenced, in part, by the menu of services and the associated taxes at alternative local government jurisdictions. By the same token, local governments can find their goals upset by reactions to their local political decisions. For example, a local jurisdiction that tries to tax the rich heavily while excusing the poor from taxes might find that its population mix changes over time as the rich leave, or choose not to reside there, while the poor flock in.

An Example

At the extreme, imagine a group of individuals who have similar tastes and who live together in a local community, each one of whom places a zero benefit on tennis courts. In such a community, under decentralized, local collective decision making, an election to consider government provision of such a good would receive no votes. In fact, it would be unlikely that any resident would even propose that such an issue be put up for vote, because a locally provided tennis court would benefit no one in town. If, however, the number of tennis courts per town were decided in a national election, with given tax shares under majority rule, the outcome would be the national median most-preferred number of tennis courts per town.

If the preferred number of tennis courts per town in other communities is greater than zero, the resultant equilibrium is likely to be some positive number of tennis courts. This means that residents in the town where no one wants tennis courts, even at zero price, would be forced to submit to construction of tennis courts in their town and to pay taxes to finance those tennis courts. Such an outcome is not efficient, and welfare can be improved by allowing each town to decide locally whether collectively to provide and finance such services. This assumes that tennis courts are local public goods and that no one living in other communities would be harmed or benefited in any way by the choice of a particular community to forgo tennis courts.

For certain government-provided services that have the characteristics of pure national public goods, uniformity across all regions is inevitable; and centralized provision of uniform amounts of such services in all locations is efficient relative to local government attempts to supply diverse services. The opportunities for local diversity in national defense, economic stabilization, and income redistribution programs are nil, or at best limited, as discussed previously.

Advantages of a Federal System of Government

The central problem of fiscal federalism is to understand the process by which various government functions are paired with various levels of government. This, in turn, requires an investigation of the linkage between the geographical portion of the population that makes collective choices on various public goods, the legal boundaries of political jurisdictions, and the range of external benefits for various government-supplied services. Likewise, given the size of government and the variation in tastes among citizens and regions, the variation in costs of producing government services also must be studied. In a normative sense, the problem of fiscal federalism is to find the efficient pairing of responsibility for deciding how much of and what kinds of government-provided goods and services to produce with geographically defined subsets of the population.[2]

[2]See David E. Wildasin, "The Institutions of Federalism: Toward an Analytical Framework," *National Tax Journal*, 57, 2 (June 2004): 247–272.

CHECKPOINT

1. What resource allocation issues are relevant to fiscal federalism?
2. What are local public goods?
3. What are the advantages of a federal system of government?

CITIZEN MOBILITY AND DECENTRALIZED GOVERNMENT

A **political jurisdiction** is a defined geographical area within which individuals make collective choices on government functions and government-provided services. Each political jurisdiction has a governing authority and its own political institutions. In a federal system of government, political jurisdictions are both centralized and decentralized. This provides both a national, or central, government as well as lower levels of government. Each citizen is within the jurisdiction of the central government. Lower levels of government represent subsets of the population, defined in terms of geographic boundaries. Only citizens of local political jurisdictions can participate in public choices that affect the provision of government-supplied services in that jurisdiction. Also, taxes to finance locally provided government services are paid mainly by residents of the political jurisdiction.

The Tiebout Model

Some useful insights into government expenditures within such a decentralized system of local jurisdictions are obtained from a classic model developed by Charles M. Tiebout.[3] Tiebout points out that the level and mix of local expenditures and taxes are likely to exhibit wide variations among local political jurisdictions. Therefore, many citizens will choose to live in communities where the government budget best satisfies their own preferences for public services, provided they are not restricted in their mobility among communities. Thus, government expenditure and revenue patterns tend to be set on the local level, and the mobile citizen maximizes personal well-being by choosing to live in some particular political jurisdiction.

The Tiebout model assumes that all citizens are fully mobile among communities and possess full knowledge of the government budgets in alternative political jurisdictions. Many communities offer similar employment opportunities to citizens. An optimal community size is defined as that which corresponds to minimum unit costs of government services. Communities larger than the optimal size try to discourage new residents, while communities smaller than the optimal size attempt to attract new residents.

Under this set of restrictive assumptions, a quasi-market equilibrium is attained when all residents are located in the community that best satisfies their political

[3]Charles M. Tiebout, "A Pure Theory of Local Expenditures," *Journal of Political Economy* 64 (October 1956): 416–424.

preferences, subject to the constraint that all communities are providing government services at minimum unit costs. The constraint implies that some citizens might have to be content with a second-choice community. If all communities can supply government services at constant costs, implying no economies or diseconomies of scale, then equilibrium will be completely analogous to a market equilibrium. This is because, in the extreme case, an iconoclast can establish a one-person community that provides all the government services he requires, and an infinite number of communities is available to satisfy every citizen's preferences. In this situation, competition among communities would result in an efficient solution similar to that produced by a perfectly competitive market economy.

Applicability of the Tiebout Model

Although the Tiebout model's basic assumptions are extremely restrictive, it does offer insights into some of the unique problems of government expenditure analysis within a decentralized context. Citizens are not completely mobile among communities, and often they possess only imperfect knowledge of local government budgets. Although there are a large number of communities within the federal system, they differ in their employment opportunities and in geographical and climatic conditions. That is, many factors other than political preferences for government expenditure are likely to affect the locational choices of citizens. The Tiebout model is relevant, though, because, at least at the margin, some households do respond to differences among government budgets in alternative communities.

In particular, the model appears to be useful in partially explaining the exodus of households from the central city to surrounding suburban communities that has occurred in the United States since the end of World War II. Clearly, mobility of households is not perfect. But, within a constrained geographic area, a citizen can change her place of residence to one in a neighboring political jurisdiction while maintaining her employment in her old political jurisdiction. The proliferation of private automobiles in the postwar era and generally improved roads made such moves relatively easy.

In part, citizens are motivated to move to smaller political jurisdictions in the suburbs of central cities because of lower tax rates and better-quality, government-provided services, such as schools, relative to those prevailing in the central cities. This is in accord with the basic tenets of the Tiebout hypothesis. Thus, the model is useful in explaining movements within a constrained geographic area constituting one relatively large labor market. It is not very useful in explaining moves across larger geographic areas, such as interstate, because of the impediments to mobility and the variety of other factors that influence locational choices.

Interjurisdictional Externalities and Locational Choices

Interjurisdictional externalities are costs or benefits of local government goods and services to residents who live in other political jurisdictions. These interjurisdictional externalities create problems for efficient operation of a federal system of governments because they result in benefits or costs that spill across the

geographic boundaries of political jurisdictions. Interjurisdictional externalities also complicate the Tiebout model, because they cause residents of local communities to make decisions based on inadequate data. The Tiebout approach implies that local taxes are analogous to prices for local government services. Citizens who desire high quality and quantity of government services gravitate to those communities with relatively higher tax rates. The model suggests that citizens shop for a set of local government services in much the same manner as they shop for automobiles. Their choices of communities as residence sites depend on tax rates, local government services financed by revenues, and relative preferences for government and private expenditures. If, however, all government services are not financed through taxes on local bases, the alternative community tax rates do not accurately reflect the costs of those services and cannot be considered the full prices for such services. Furthermore, when local jurisdictions receive state or federal aid, the prices paid by residents are subsidized by higher levels of government.

The deduction of state and local taxes from the federal income tax base is an example of a cost spillover that enables local communities to finance their government services through a reduction in federal income tax collections. Thus, where there are spillover costs and benefits of local government activities, the competition among local governments is less likely to achieve efficiency.

A Recapitulation

In summary, the ability of households to express their preferences for alternative local government budgets by "voting on their feet" provides a partial explanation of residential choices in a constrained metropolitan area that comprises a relatively large labor market. The Tiebout model suggests that citizens choose their residence among communities solely on the basis of their demand for local public goods. The Tiebout equilibrium is efficient because, given personal demands for public services, no single voter can be made better off by moving to another political jurisdiction. The model implies that citizens of similar tastes congregate together in communities based on their preferences for local public goods.

Impediments to mobility on the regional and national levels, due chiefly to restrictions in employment opportunities, make the conclusions of the Tiebout model questionable if applied to regional residential choices.

Local taxes are not likely to be an accurate measure of the prices for local government services because of the existence of spillover costs and benefits. All these factors result in an equilibrium residential choice pattern that is not efficient. At any point in time, some persons are dissatisfied with their current political jurisdiction but for one reason or another are not able to move. Other residents can move either into or out of a community in response to tax rates that do not represent the true marginal costs of local government services.

THE THEORY OF TAXATION WITHIN A DECENTRALIZED SYSTEM

Local Tax Base

The ability of tax bases to migrate partially from one taxing jurisdiction to another creates problems that constrain the revenue-raising capabilities of local governing units. The possibility of induced locational effects of local taxation is well recognized by local governing authorities.[4] Such recognition might account, in part, for local reliance on property taxation in the United States. Real property is relatively immobile compared with the other tax bases. It is impossible to relocate land from one community to another, and shifts in the supply of structures on the land generally occur only in the long run. However, this does not suggest that local property tax policy can have no effect on the value of the property tax base. Unrestrained property taxation can result in reduced economic development of a locality and consequently reduced value of its real property tax base.

However, the local government-supplied goods and services financed with local taxes also can have an effect on property values in a community. If a community uses its property taxes to finance high-quality schools, the demand for property in that jurisdiction could be increased. The increase in the demand for real property increases its price in the jurisdiction. This increase in price could more than offset the reduction in price due to positive differentials in property tax rates.

Elasticity of the Local Tax Base

The **elasticity of the tax base**, E_T, is the ratio of the percentage change in the tax base attributable to any given percentage change in the tax rate applied to that base:

$$E_T = \frac{\Delta B/B}{\Delta t/t} = \frac{t\Delta B}{B\Delta t}, \tag{18.1}$$

where B is the tax base in dollars and t is the percentage rate of taxation. Tax revenue is equal to tB. For example, if the tax base is \$10 million of labor income per year and the tax rate is 20 percent, tax revenue is (0.2)(\$10 million), which is \$2 million per year.

The elasticity of the tax base is usually negative. Two opposing influences are exerted on the revenues collected when tax rates are changed. An increase in tax rates causes a favorable effect on revenues, stemming from the increase in the rates themselves. On the other hand, an offsetting effect decreases revenues, resulting from the decrease in the size of the tax base induced by the rate increases. Which effect dominates depends on the magnitude of the elasticity of the tax base with respect to the tax rate.

[4]See Advisory Commission on Intergovernmental Relations (ACIR), *Interstate Tax Competition* (Washington, D.C.: U.S. Government Printing Office, March 1981).

The three possibilities are that the tax base may be elastic ($E_T < -1$), of unitary elasticity ($E_T = -1$), or inelastic ($E_T > -1$). If it is elastic, any given percentage increase in the tax rate is offset by a larger percentage decrease in the size of the tax base. Under such circumstances, an increase in tax rates will reduce tax revenues collected because the change in revenues collected is the combined effect of the percentage increase in tax rates and the percentage decrease in the size of the tax base. When the tax base is elastic, the percentage decrease in the size of the base exceeds the percentage increase in tax rates, causing a fall in revenues.

By similar reasoning, if the elasticity of the tax base with respect to the tax rate is unitary, any given percentage change in tax rates will be exactly offset by an equal and opposite percentage change in the tax base, causing total revenues collected to remain constant. Only in those circumstances for which the elasticity of the tax base with respect to the tax rate is greater than -1 (that is, closer to zero) can an increase in the rate of taxation increase revenues collected. The relation among elasticity of the tax base, tax rates, and revenues collected is summarized in Table 18.1.

Tax bases are very elastic when individuals can engage in the taxed activity in alternative political jurisdictions, where the tax is not present or exists at lower rates. This is of particular concern to state and local governments. If, for example, one state increases its income tax rates significantly above the rates in neighboring states, some workers and employers will relocate to neighboring states where the income tax rates are lower. At the extreme, if the tax rate differential becomes very high, the high-tax state might find tax revenues actually decreasing in response to high tax rates. Local taxing authorities are concerned with the elasticity of the local tax base with respect to the rate of taxation. So long as resources are mobile among political jurisdictions, the knowledge of elasticities is crucial to the implementation of effective local tax and expenditure policies. If the local tax base is elastic with respect to the rate of taxation, then increases in the rates of taxation result in a reduction, rather than an increase, in tax revenue collected. An increase in the rate of taxation applied to any base

TABLE 18.1 Tax Base Elasticity, Tax Rates, and Revenues (Assuming a Negative Relationship Between the Tax Base and Tax Rates)

VALUES OF E_T	CHANGES IN t (TAX RATES)	CHANGES IN REVENUES (tB)
$E_T > -1$ (Inelastic)	An increase in t A decrease in t	Revenues increase Revenues decrease
$E_T = -1$ (Unit Elastic)	Either an increase or decrease in t	No change in revenues
$E_T < -1$ (Elastic)	An increase in t A decrease in t	Revenues decrease Revenues increase

results in an increase in revenue collections from that base if and only if the tax base is inelastic with respect to the rate of taxation.

Among the factors that determine the elasticity of the tax base are the degree of mobility of taxed resources, the rates of taxation applied to similar tax bases in surrounding communities, the public services supplied by surrounding communities, and the initial amount of revenues collected from that base compared with, for example, local income. In addition, services financed through the increase in tax rates affect locational choices by households and business firms, which, in turn, affect the value of the local tax base. If individual economic units feel that extra taxation exceeds the benefits that they obtain from increased public expenditure, they will consider relocation, other things being equal.

Because of mobility of resources and the presence of alternative tax jurisdictions that provide similar public services, taxes that might be neutral when imposed on the national level can have distorting effects when imposed on the local level. For example, a lump-sum tax has zero excess burden on the national level but is likely to induce locational effects when imposed on the local level if households are mobile and alternative communities exist. Individuals who wish to avoid the local lump-sum tax can simply move to another community where the tax is not used. If the adult population (the tax base under the lump-sum tax) of the locality is elastic with respect to the rate of taxation, any increase in the tax results in a decrease in revenue.

Taxes that account for only very small percentages of taxpayers' income are likely to have tax bases that are inelastic with respect to the rate of taxation. For example, an increase of 10 percent in the rate of taxation applied to a tax base that currently yields revenue equal to less than 1 percent of local income results in fewer resource transfers among communities than does an equivalent increase applied to a tax base that currently yields 15 percent of local income. In general, the greater the degree of uniformity among local tax and expenditure policies, the less elastic is the local tax base. Within local taxing jurisdictions in the federal system, no tax base is completely inelastic. Injudicious taxation of any given base eventually erodes that base, as resources are reallocated among jurisdictions to avoid the burden of local taxation.[5] Because tax rates are often changed in discrete rather than in continuous variations, threshold levels of taxation come into play beyond which any sharp increases induce economic decision-making units to relocate their economic activities. The tax base also is likely to become more elastic over time, as it often takes time for citizens to make the adjustments required to avoid taxes.

[5]Elasticities of supplies of inputs to particular areas are much higher than their national levels. Research estimates indicate that those elasticities vary from 20 to 100. See Timothy W. McGuire and Leonard A. Rapping, "The Role of Market Variables and Key Bargains in the Manufacturing Wage Determination Process," *Journal of Political Economy* 76 (September–October 1968): 1015–1036, and "The Supply of Labor and Manufacturing Wage Determination in the United States: An Empirical Estimation," *International Economic Review* 11 (June 1970): 258–268.

Tax Competition and Tax Exporting

The elasticity of tax bases often results in competition among communities for residents and business firms whose economic activities increase the value of local tax bases. Such competition often acts as a constraint on the sizes of local public budgets. Local tax jurisdictions hesitate to increase tax rates for fear of putting themselves at competitive disadvantages relative to other jurisdictions as sites for the conduct of various kinds of economic activities. The expenditure sides of local budgets also are considered factors in the location decisions of economic units. Jurisdictions that are reluctant to raise taxes might lack public services that attract citizens as residents.

The willingness of local residents to support higher taxes also can depend on the extent to which local jurisdictions succeed in exporting their taxes to residents of other political jurisdictions. Thus, a $1 increase in taxes might be valued at less than $1 by local taxpayers if they know that part of the increase in taxes will be paid by residents of other political jurisdictions.

Tax exporting is common in many resort communities, where environmental attributes make them unique and popular with tourists. Taxes on hotel accommodations are likely to be paid exclusively by tourists and other nonresidents, but they might be used to finance locally produced public services. To the extent to which cities also must provide public services to these nonresidents, it can be argued that those taxes finance police departments and sanitation services that are necessarily bigger to meet the demands for services by these nonresidents, particularly during peak-season periods.

In a sense, the deductibility of state and local income taxes from federal income taxes is a form of tax exporting. It allows state and local governments to shift a portion of their taxes to the national level in the form of reduced federal income tax collections.

CHECKPOINT

1. What are the assumptions and major conclusions of the Tiebout model of decentralized government?
2. What are interjurisdictional externalities?
3. Why are local tax bases more elastic than national tax bases?

VARIATION IN FISCAL CAPACITY

Fiscal capacity is a measure of the ability of a jurisdiction to finance government-provided services. The fiscal capacities of local governing units are likely to vary with the values of local tax bases and with the ability to "export" taxes. Taxing jurisdictions with relatively low tax bases in dollar terms find it more difficult to raise tax revenues than do wealthier high-income jurisdictions. Insofar as the demands for local public services do not increase with fiscal capacities, low-tax-base communities are likely to encounter difficulties in supplying acceptable minimum levels and qualities of public services. Given the tax revenue required, the lower the average income in a community, the higher the tax rates.

For example, consider the fiscal consequences of different per capita income levels among states. If each state supplies the same per capita amount of public services at the same cost to its citizens, and finances all these expenditures by income taxes that fall solely on residents in the state, then it follows that the proportionate per capita tax burdens as a percentage of income are greater in those states with lower incomes. Alternatively, if tax rates are the same in all states, and all public expenditures are financed by state taxes, then those states with lower per capita income supply fewer and lower-quality public services.

Measures of Fiscal Capacity

Among the commonly used measures of fiscal capacity for state and local governments are per capita income; per capita retail sales; and assessed valuation per capita, or per pupil, for school districts. All these measure the value of the tax base per person in the political jurisdiction. Because local governments rely heavily on property taxes, the measure most relevant for this level of government would be *assessed valuation per capita*. When the property tax base is used mainly to finance schooling services, *assessed valuation per pupil* might be a better measure of the capacity to finance government-supplied services. These measures are imperfect in that they do not consider the extent to which a jurisdiction exports tax burdens to residents of other jurisdictions, and vice versa.

In addition to measuring fiscal capacity, it is useful on occasion to measure the extent to which subnational governments provide services to their residents. A common measure of this is *per capita expenditure*. However, per capita expenditure is only imperfectly correlated with actual per capita services because of unit cost variations.

It is also useful to measure the extent to which the fiscal capacity of a state compares with that of other states. Usually, this is done by dividing measures of the fiscal capacity, such as per capita income, of that state or locality by the national average of that measure. Similarly, per capita expenditure could be divided by the national average for other nonfederal governments. States and localities with fiscal capacity less than the national average, and per capita expenditure less than the national average, would be candidates for fiscal equalization grants by the central government.

Revenue Effort

Revenue effort is the ratio of tax collections from all sources in a taxing jurisdiction, as a percentage of personal income in that jurisdiction, to the national average of that ratio for all jurisdictions. As a measure of the extent to which a local government is tapping its tax base, revenue effort has a number of serious shortcomings. It does not consider the fact that jurisdictions with low levels of personal income require high revenue effort to maintain the same level of per capita public expenditure financed in jurisdictions that have high levels of personal income. Differences in revenue effort also can be explained by different costs and demands among the taxing jurisdictions. In general, areas with higher population

PUBLIC POLICY PERSPECTIVE

Interstate Tax Exportation in the United States

Many state governments do succeed to varying degrees in exporting their tax burden to residents of other states. Both winners and losers emerge in the tax-exporting game. Some states are net exporters of their tax burden, while other states, in effect, are net importers of the tax burdens of other states.

Tax exportation arises in a variety of ways. State taxes can reduce the income of out-of-state input owners who employ their inputs in the state's taxing jurisdiction. Tax exporting also can occur if state taxes raise the price of goods and services purchased by out-of-state individuals. Nonresidents who buy these goods pay part of the taxes that are shifted forward to consumers.

Finally, the deductibility of state and local income and property taxes from taxable income under the federal personal income tax also can result in tax exportation. This is because deductibility reduces the federal income tax liability of state residents. The resulting loss in federal revenue implies that federal tax rates must be higher than they otherwise would be or that federal expenditures are lower than otherwise would be the case. In addition, if state taxes reduce the income of input owners in the state, federal tax revenue will also fall. This implies that high-tax states with high-income residents who itemize deductions indirectly shift the burden of their taxes to residents of other states through a consequent reduction in federal tax collections.

Research on state corporate income taxes and business property taxes indicates that states with a large proportion of capital input owned predominantly by out-of-state individuals will tend to be net exporters of these taxes. The state of New York is a major exporter of both these taxes. Florida is a state whose residents are net importers of business and corporate taxes levied in other states.[1]

In 1980, estimates by Morgan and Mutti indicated that Alaska succeeded in exporting more than 60 percent of its total business and personal taxes. In addition to Florida, states whose residents pay major portions of taxes raised in other states included Alabama, Delaware, and Washington. Business taxes appear to be more easily exported to residents of other states than are personal taxes.

Another study on tax exporting concentrated on local taxes designed to fall on out-of-state visitors. These include hotel occupancy taxes and taxes on entertainment activities. Analysis of the incidence of a hotel room occupancy tax in Hawaii indicated that a substantial portion of the tax is exported to residents of other states (and nations).[2] The researchers estimate that the price elasticity of demand for hotel rooms is about −1, while the price elasticity of supply is about 2. This implies that about two-thirds of the hotel room tax is reflected in higher prices for a room. The remainder of the tax is borne by owners of the hotels. They also estimate about 45 percent of the hotel rooms in Hawaii are owned by nonresidents. This implies that almost half of the remaining one-third of the tax is also borne by out-of-state individuals. A tax on hotel rooms, particularly if many of the hotels are owned by out-of-state investors, therefore is a good means of exporting taxes.

Taxes on nonlodging expenditures by tourists are less likely to be exported, because a large portion of these expenditures is by residents. According to the researchers, general sales taxes, taxes on amusements, and taxes on food and alcoholic beverages, although likely to be shifted to consumers, are less likely to be exported than hotel room taxes.

[1]William E. Morgan and John H. Mutti, "The Exportation of State and Local Taxes in Multilateral Framework: The Case of Business Type Taxes," *National Tax Journal* 38 (June 1985): 191–208.

[2]Edwin Fujii, Mohammed Khaled, and James Mak, "The Exportability of Hotel Occupancy and Other Tourist Taxes," *National Tax Journal* 38 (June 1985): 169–177.

densities and greater percentages of their populations living in cities require greater levels of local government expenditure. Differences in revenue effort also reflect differences in collective choices among communities for the allocation of resources between public and private uses.

A value for revenue effort that is greater than 100 percent for a given type of taxing jurisdiction implies that the jurisdiction is raising a greater amount of revenue than the national average per dollar of personal income. This, in turn, can imply a number of things. First, citizens in this taxing jurisdiction might have strong demands for local government-supplied services compared with other communities. Second, it might be that the community has a lower level of per capita income relative to other communities and requires greater revenue effort to maintain the national average of per capita government expenditure. Finally, it could be that this community, because of either geographic or demographic characteristics, requires more per capita expenditure than the national average to meet the basic demands for government-provided services by its populace.

The chief shortcoming of the revenue effort measure is the fact that it ignores the expenditure side of the budget. The extent to which citizens in a community wish to tax themselves depends on the collective choices made concerning the allocation of resources between government and private uses. Revenue effort statistics must be used in conjunction with data on per capita expenditure and per capita tax base values to provide useful information on the need for fiscal equalization of the capacity to finance goods and services.

INTERGOVERNMENTAL FISCAL RELATIONS

Variation in fiscal capacity among states and local governments provides a basis in intergovernmental aid to ensure minimum levels of certain public services in all regions of a nation. Intergovernmental aid is also a way to help achieve a more efficient allocation of resources in the government sector by internalizing interjurisdictional externalities. In fiscal year 2007, federal aid was a major source of revenue to state and local government, accounting for 23 percent of revenue. Local governments also rely heavily on grants from state governments to finance their expenditures. Grants are intergovernmental transfers of purchasing power that can be used to help achieve a wide variety of social objectives.

Grants differ mainly in terms of the restrictions that are placed on the use of funds by recipient governments. Some grants are transfers with literally no strings attached. Other grants merely require that the recipient government spend the funds in a broad general area, such as education or transportation. The most restrictive types of grants are those that the recipient government must spend on a particular service or project. A review of the various types of grants currently in use is an appropriate way to start the analysis of intergovernmental fiscal relations.

State and local governments have become dependent on fiscal assistance from a higher level of government for significant amounts of funds. Some of this assistance is for entitlement programs that the lower level of government is required to provide within certain guidelines by the higher level. Many government officials regard the dependence on grants as risky because grant programs can be reduced, eliminated, or fail to keep up with rising costs. In recent years, the more than two-thirds of grants from the federal government to the states have financed payments to individuals through such programs as Medicaid.

Funds for these programs finance programs mandated by the federal government and are not used to finance capital projects.

Local governments are very dependent on state governments for fiscal assistance and, on average, grants from state to local governments finance 35 percent of local expenditures. State aid is very important for school districts and education finance. In some school districts, state aid accounts for more than half of revenues. During the 1990s, many state governments reduced their aid to local governments. For example, in North Carolina, state fiscal assistance to local governments accounted for 47 percent of local revenues in 1977 but declined to 28 percent by 1997. Government officials often view fiscal assistance from a higher level of government as a fickle source of funding.

Types of Grants

A **categorical grant-in-aid** is a transfer of funds from a higher level of government to a lower level, with specified conditions attached to the expenditure of the funds. Many categorical grants from the federal to state and local governments are for payments to individuals for income support or health care. The Medicaid program is a categorical grant to states to provide health services to low-income persons and is the largest federal grant-in-aid program. Federal highway grants are categorical grants to states to help fund roads and bridges. Some federal grants contain the requirement that recipient jurisdictions match each dollar of federal aid with a certain amount of locally raised revenue. These are known as **matching grants**. General **unconditional grants** differ from categorical grants in that revenues are shared among governments, with no strings attached to the use of the funds.

Federal aid to encourage expenditure on particular projects is used as an inducement to state and local governments to pursue activities in general accord with national goals. Perhaps the most famous example of an early categorical grant-in-aid program is the 19th-century Morrill Act, which established the so-called land-grant colleges in the states. Essentially, this program granted both land and funds to states that agreed to establish colleges of various kinds. In effect, this served to internalize some of the interjurisdictional benefits associated with higher education by subsidizing state expenditure for public colleges.

Federal Grants

Federal categorical grants that provide transfers to individuals have increased enormously since 1970. The bulk of these grants has been to state and local governments to fund federally mandated entitlements to individuals under such programs as Medicaid and cash transfer programs that provide public assistance to the poor. Nearly two-thirds of total federal grants to state and local governments as of 2007 was for programs that are essentially grants to individuals rather than grants to governments.

Table 18.2 shows that federal grants-in-aid to state and local governments grew rapidly in the 1970s and then slowed down considerably in the 1980s. Federal grants grew more quickly in the early 1990s, both as a share of federal revenue

TABLE 18.2 Federal Grants-in-Aid Summary: Selected Fiscal Years 1970 to 2007

	CURRENT DOLLARS						
			GRANTS TO INDIVIDUALS		GRANTS AS PERCENT OF INDIVIDUALS		
YEAR	TOTAL GRANTS (MILLIONS OF DOLLARS)	ANNUAL PERCENT CHANGE AVERAGE[a]	TOTAL (MILLIONS OF DOLLARS)	PERCENT OF TOTAL GRANTS	STATE-LOCAL GOVERNMENT OUTLAYS[b]	FEDERAL OUTLAYS	GROSS DOMESTIC PRODUCT
1970	24,065	19.3	8,727	36.3	19.0	12.3	2.4
1975	49,791	14.8	16,762	33.7	23.5	15.0	3.3
1980	91,451	9.7	32,652	35.7	26.3	15.5	3.5
1985	105,852	8.5	49,352	46.6	21.3	11.2	2.7
1988	115,342	6.4	62,434	54.1	18.6	10.8	2.4
1989	121,928	5.7	67,353	55.2	18.6	10.7	2.4
1990	135,325	11.0	77,132	57.0	18.7	10.8	2.5
1991	154,519	14.2	92,497	59.9	19.5	11.7	2.7
1992	178,065	15.2	112,185	63.0	20.8	12.9	3.0
1993	193,612	8.7	124,289	64.2	21.2	13.7	3.1
1994	210,596	8.8	135,232	64.2	21.8	14.4	3.2
1995	224,992	6.8	145,793	64.8	22.2	14.8	3.2
2000	284,700	6.4	182,600	64.1	24.2	15.9	2.9
2002	351,550	11.0	227,373	65.0	26.3	17.5	3.4
2005	426,243	4.9	273,464	64.2	25.2	17.2	3.5
2007	443,800	3.7	284,400	64.1	22.6	16.3	3.2

[a]Annual percent change from prior year shown.

[b]Outlays as defined in the national income and product accounts.

Source: Office of Management and Budget, based on Budget of the United States Government, FY2009.

and as a share of gross domestic product (GDP), than they did in the 1980s mainly because of the growth in grants to individuals through entitlement programs. In 2007, 64.1 percent of all federal grants to state and local governments was accounted for by Medicaid and public welfare payments to individuals. Table 18.3 shows trends in federal grants by category from 1960 to 2007.

The major functions for which federal transfers are made directly to local governments include education, housing and community redevelopment, waste treatment facilities, and airport construction. Again, these are areas of expenditure likely to have spillover effects. If categorical grants are to be efficient tools for internalizing externalities, they must be allocated according to a system that accurately evaluates spillovers and their ranges. To internalize externalities, a grant must reduce the net cost to local citizens of the activity that generates the externality to citizens of other local governments. In addition, if opportunities exist for communities to engage in bargaining to internalize externalities, then categorical grants are unnecessary and their use could result in inefficiencies.

TABLE 18.3 Trends in Federal Grants to State and Local Governments, 1960–2007 (Outlays; Dollar Amounts in Billions)

	1960	1965	1970	1975	1980	1985	1990	1995	2000	2002	2005	2007
Distribution of Grants by Function:												
Natural Resources and Environment	0.1	0.2	0.4	2.4	5.4	4.1	3.7	4.1	4.6	5.1	5.9	6.1
Agriculture	0.2	0.5	0.6	0.4	0.6	2.4	1.3	0.8	0.7	0.9	0.9	0.8
Transportation	3.0	4.1	4.6	5.9	13.0	17.0	19.2	25.8	32.3	41.0	43.4	47.9
Community and Regional Development	0.1	0.6	1.8	2.8	6.5	5.2	5.0	7.2	8.7	10.5	20.2	20.7
Education, Training, Employment, and Social Services	0.5	1.1	6.4	12.1	21.9	17.8	23.4	34.1	36.7	44.8	57.2	58.1
Health	0.2	0.6	3.8	8.8	15.8	24.5	43.9	93.6	124.8	158.7	197.8	206.3
Income Security	2.6	3.5	5.8	9.4	18.5	27.2	35.2	55.1	68.7	81.5	90.9	91.0
Justice	—	—	[a]	0.7	0.5	0.1	0.6	1.2	5.3	5.7	4.8	4.6
General Government	0.2	0.2	0.5	7.1	8.6	6.8	2.3	2.2	2.1	2.5	4.4	3.6
Other	0.2	0.3	0.6	7.2	9.3	7.6	3.1	3.0	0.9	1.0	2.6	2.8
Total	7.0	10.9	24.1	49.8	91.4	105.9	135.3	225.0	284.7	351.6	428.0	443.8
Composition:												
Current Dollars:												
Payments for Individuals	2.5	3.7	8.7	16.8	32.6	49.3	75.7	141.2	182.6	227.4	273.9	284.4
Physical Capital	3.3	5.0	7.1	10.9	22.6	24.9	27.2	39.6	48.7	58.7	60.8	70.8
Other Grants	1.2	2.2	8.3	22.2	36.2	31.6	32.5	44.2	53.4	65.5	93.3	88.7
Total	7.0	10.9	24.1	49.8	91.4	105.9	135.3	225.0	284.7	351.6	428.0	443.8
Percentage of Total Grants:												
Payments for Individuals	35	34	36	34	36	47	56	63	64.2	64.7	64.2	64.1
Physical Capital	47	46	29	22	25	24	20	18	17.6	16.7	14.3	15.9
Other Grants	17	20	34	45	40	30	24	20	18.2	18.8	21.5	20.8
Total	100	100	100	100	100	100	100	100	100	100	100	100

[a]$50 million or less.

Source: U.S. Office of Management and Budget, Historical Tables, Budget of the United States Government, 2001 and 2009.

States also make grants to their own local governmental subdivisions. As in federal aid, the bulk of such funds appears to be designed to internalize externalities caused by inappropriate sizes of the collective decision-making units. The major local functions subsidized by state-aid programs are education, public welfare, and highways.

When spillovers exist, the tendency is for either overspending or underspending, depending on whether costs or benefits are spilling over and on the extent of spillovers among communities. When the spillovers lead to an undersupply of public services, matching categorical grants-in-aid are reasonable tools to use to subsidize government activities that generate external benefits. The existence of a categorical grant program for a particular function induces an increase in local expenditure. However, in most functions that generate external benefits, all the benefits are not appropriable by the communities that are responsible for supply decisions. Educational expenditure, for example, tends to spill out because some of the recipients of education relocate to other areas after they finish their schooling. On the other hand, many recipients of educational services do remain in the community in which they are educated. Thus, efficiency considerations imply that some matching of funds is desirable.

Ideally, the federal share of costs for a program is equal to the percentage of net benefits spilling out from a particular local area. The local share is based on an estimate of the benefits retained by the community. Although this is desirable in principle, accurate computations of spillouts virtually are impossible because of problems in quantifying and evaluating collectively consumed goods. However, some reasoned estimates of appropriate matching formulas are useful and are likely to improve resource allocations.

Unrestricted Grants and Fungibility

For the purpose of studying intergovernmental relations, it is useful to discuss unrestricted and restricted intergovernmental grants separately. Unrestricted grants include what often are referred to as **general revenue sharing**. The United States had a general revenue sharing program that was terminated in 1986. Restricted grants are those available only for a specific purpose, and they must be spent on that purpose. Restricted grants have auditing requirements that limit the way the funds, once granted, can be spent. **Block grants**, a principal type of unrestricted grant, have only minimal restrictions on the uses to which the funds can be put and rarely require matching funds raised locally. TANF is the major block grant to states used to provide income support to the poor.

The distinction between restricted and unrestricted grants is somewhat artificial because of the **fungibility** of money, which means that money can be used for more than one purpose. A grant, with or without restrictions on the use of funds, frees local tax monies that otherwise would be spent on government-provided services. The receipt of the grant could allow tax reductions that benefit citizens of recipient communities. If taxes are reduced as a result of the grant, citizens can increase their consumption of private goods and services beyond the amounts that would be possible if they had to finance all government-supplied

goods and services through locally raised tax revenue. In other words, the funds might end up being used for any purpose, even though they were intended for a specific use. However, matching grants tend to stimulate government spending to a greater degree than nonmatching grants. A grant increases net resources flowing to a local or state government only to the extent to which the grant increases the net funds available for both government and private spending in that community over and above the federal, or central, government taxes paid by the local citizens in that community to finance the grant program expenditures in all localities.

CHECKPOINT

1. What is fiscal capacity?
2. How well does revenue effort measure fiscal capacity?
3. How do matching grants differ from unconditional grants?

THE THEORY OF GRANTS

Grants and other forms of intergovernmental fiscal assistance are essentially gifts, or subsidies, from one level of government to another level. Usually, the recipient government is on a level lower than that of the donor government. These subsidies can be expected to affect the political equilibrium, with consequent changes in the observed expenditure and tax policies collectively agreed upon by citizens who live in the recipient political jurisdiction. The process by which such grants change behavior patterns in recipient jurisdictions must be understood in order to predict whether the grant will accomplish the result for which it is intended.

Matching grants, under various categorical grant programs, are more likely to stimulate citizens of recipient governments to agree collectively to expanded production of public goods than are equal-dollar-amount general-purpose grants. The latter grants neither require matching funds raised from local taxes nor restrict the purpose for which the grant funds must be spent. The basic reason for the more stimulative effect attributed to matching grants is the fact that such grants reduce the marginal and average cost of the public good to citizens of the recipient government. This sets up both income and substitution effects that influence citizens' collective choices. A nonmatching grant, such as that used for revenue sharing or general fiscal assistance, results only in income effects and is less effective in increasing the willingness of citizens to support increased local public spending.

Suppose the distribution of taxes among citizens per unit of a public good, such as a road, is given. For example, say each citizen pays $1 per mile of new road surfaces supplied per year. A matching grant for public goods will be available only if citizens allocate local tax revenue to the project. For example, if the grant requires a 50 percent matching of revenue, matching funds will be made available if local

authorities allocate from their own revenue 50 cents per citizen per mile of new roads. In effect, *in terms of local taxes*, the matching grant reduces the marginal cost of each mile of road from $1 to 50 cents per citizen. This 50 percent reduction in the tax per mile of road per citizen results in a substitution effect, leading individual citizens to support more government spending on roads.

The income effect of the grant depends on the income elasticity of the demand for public goods. Depending on the individual tastes of citizens, the income elasticity can be positive or negative. The impact of the income effect of any grant on the political equilibrium therefore is difficult to predict. The income effect is likely to have the effect of increasing consumption of both private goods and public goods, as its effect on the political equilibrium might be to induce citizens to support local tax reductions.

General-purpose or categorical grants without matching requirements result *only* in income effects. No substitution effect is caused because such grants do not reduce the tax per unit of government-provided goods to individual citizens. Therefore, it is conceivable that under certain circumstances general-purpose grants can decrease the amount of government-supplied goods and services produced by the recipient community if enough citizens in the community view these goods and services as inferior (negative income elasticity of demand). This is less likely to be the result with matching grants because substitution effects always will occur to counter any income effects acting to decrease the consumption of the public good.

MATCHING VERSUS GENERAL-PURPOSE GRANTS: AN APPLICATION OF THE THEORY OF COLLECTIVE CHOICE UNDER MAJORITY RULE

Consider the case of two equal grants that finance a single public good. Assume that the grants are equal in amount but that one grant has a matching requirement while the other is simply a direct transfer to the recipient government. Assuming that collective choices are made by simple majority rule in the recipient jurisdiction, Bradford and Oates have shown that the matching grant will result in a political equilibrium at a higher level of production for the public good.[6]

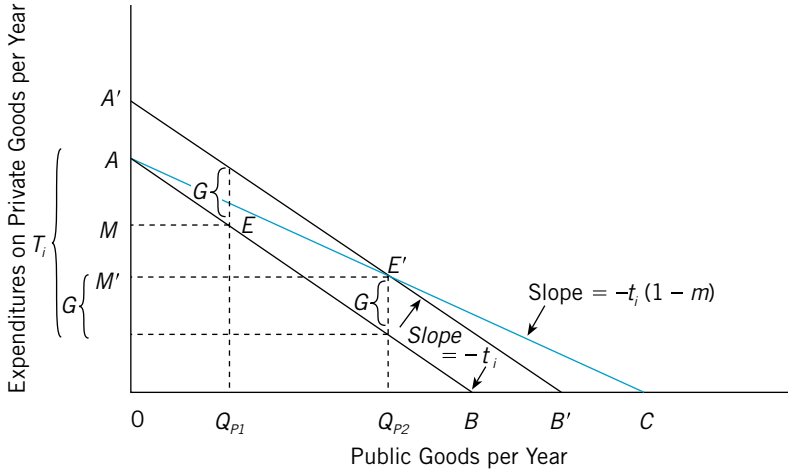
The Initial Political Equilibrium

Suppose that collective choices in the recipient government are made under simple majority rule and that taxes per unit of the public good are given for each voter. If, as illustrated in Figure 18.1, the marginal tax per unit of the public good of each voter is t_i, then the initial budget line for each voter would have slope $-t_i$. This slope gives the expenditure on private goods per year that must

[6]David F. Bradford and Wallace E. Oates, "Towards a Predictive Theory of Intergovernmental Grants," *American Economic Review* 61 (May 1971): 440–449. The analysis presented here follows Bradford and Oates.

FIGURE 18.1

Political Equilibrium: A Matching Grant versus a Nonmatching Grant of Equal Value



A matching grant lowers the tax per unit of local public goods. Matching grants are more effective in increasing local government expenditures than nonmatching lump-sum grants, with an equivalent reduction in taxes to the median voter of G per year.

be given up by each citizen to finance each extra unit of the public good, such as miles of new roads, per year. In actuality, the marginal tax per unit of the public good, t_i, varies from voter to voter.

In Figure 18.1, the indifference curves of the voter whose budget line is illustrated are omitted to avoid cluttering the diagram. Assume, however, that the indifference curves have the standard shapes and that, given the voter's tax per unit of the public good and his preferences, the voter has his most-preferred mix of expenditure on private goods per year and units of public goods per year, represented by point E.

At that point, he consumes Q_{P1} units of the public good, gives up AM of his income in taxes, and retains $0M$ of his income for expenditure on private goods. Assume that the voter whose equilibrium is illustrated in Figure 18.1 is the median voter. It follows that his individual optimum will correspond to the political equilibrium, provided that all voters have single-peaked preferences (see Chapter 5).

Other voters whose most-preferred mixes of expenditure on private goods and public goods do not correspond to the median will end up consuming either more or less than their most-preferred amount of the public good after the political equilibrium is reached.

Impact of a Matching Grant on the Political Equilibrium

Suppose now that a matching grant is made available to citizens in the local jurisdiction. The effect of the grant is to reduce the tax rate per unit of the public

good for each voter. If the donor government's proportionate share of increased costs associated with more public goods is m, then each voter's tax share would fall by m times his original tax share. The tax share of each voter now is $t_i(1 - m)$. For example, if $m = 0.5$, the tax per unit of the public good would fall by 50 percent for each citizen. This would rotate the voter budget line from AB to AC as the introduction of the matching grants reduces tax rates per unit of the public good for all voters by the same fraction, m. Suppose again that the voter whose budget lines are illustrated in Figure 18.1 is the median voter. This voter's most-preferred outcome would move from E to, say, E'. This implies an increase in the output of the public good to Q_{P2} and an increase in taxes to the voter from AM to AM'. The full cost of producing the public good, however, is $AM' + G$, where G is the voter's imputed dollar share of government grant to the community. Because the voter illustrated is the median voter, his most-preferred outcome is the political equilibrium. As long as the demand curve for the public good is downward sloping for each voter, all voters would prefer more annual amounts of the public good per year under the matching arrangement. It is therefore certain that the new median peak, or most-preferred outcome, would correspond to increased production of the public good and correspond to a point such as E'.

Bradford and Oates point out that the impact of the grant is equivalent to a tax reduction equal to the fraction of the tax per unit of the public good to individual voters.[7] This result indicates that the effect of the grant could be duplicated, in terms of the political equilibrium it generates, by a tax credit to all voters equal to the fraction, m, of each voter's share of the total budget spent on the public good. For example, if the median voter is told that he will receive a cash payment in terms of a tax rebate each year equal to a fraction, m, of the amount actually paid in taxes, his most-preferred amount of the public good would be Q_{P2}. He would pay $T_i = (AM' + G)$ in taxes but would receive G as a rebate equal to mT_i. His net taxes would be AM'.

This is a very interesting and useful result. It suggests that nothing is uniquely special about matching grants to governments. Insofar as these grants upset the political equilibrium in recipient governments, they do so by altering the tax shares to citizens. Provided that the grant itself does not change the basic political institutions of the recipient government, its effects are equivalent to a reduction in taxes to individual taxpayers, and the impact of the grant can be duplicated by simply giving local taxpayers tax credits against their local tax bills.

This model of grants assumes that the bureaucrats and politicians respond to the desires of the median voter. Some models suggest that the mechanism involved in government grants is such that the normal political process can be bypassed by bureaucrats who spend the funds. These models presume that the bureaucrats who receive the grant funds will spend the money according to their own goals without voters ever being given the opportunity to express their desires. The bypassing of the normal political process by local bureaucrats is called the **flypaper effect**. The funds seem to stick to the hands of the local

[7]See Bradford and Oates, "Towards a Predictive Theory."

politicians and get spent before voters can be polled. In fact, some evidence shows that the tendency to spend grant money on government programs is higher than the tendency to spend private income on such programs.

Impact of a Nonmatching General-Purpose Grant on the Political Equilibrium

Now, consider the effect of a nonmatching lump-sum or general-purpose grant, with no strings attached, made available to a local government. Essentially, this is a gift to citizens in that political jurisdiction and can be thought of again as a reduction in local taxes to individual citizens. To compare the effect of the general-purpose grant with the matching grant, suppose that the individual's imputed share of the general-purpose grant is G, equal to the matching grant at the political equilibrium of Q_{P2} units of the public good, as illustrated in Figure 18.1 and discussed previously. Such a grant can be illustrated as a parallel shift upward of the budget line by G to $A'B'$. For each voter, the aggregate grant to the government is equivalent to a subsidy, G, equal to the imputed share of what the voter would receive under the matching grant. The grant, because it has no strings attached, could allow voters to continue consuming Q_{P1} units of the public good and pocket the grant as a net increase in income to each taxpayer equivalent to AA'. However, this extreme result would occur only in the unlikely case that the income elasticity of the demand for public goods was zero for all voters. More likely, the grant will have the effect of increasing the production of public goods and allowing some reduction in tax rates to local citizens so as to enable them to consume more private goods and public goods.

The new political equilibrium will be that corresponding to the most-preferred outcome of the median voter. As long as the income elasticity of demand for public goods is positive for at least some voters, an increased output of public goods is implied. This same political equilibrium could be generated by a federal income tax reduction for all citizens in the recipient government proportionate to local citizens' local tax share in the total cost of the public good. In other words, the political outcome that results from a gift to the local government could have been achieved by a set of gifts to individual voters in that community. General-purpose grants can be thought of as implicit subsidies that increase the income of residents of local jurisdictions and induce them to spend such increases in income on both public and private goods.

The impact of the general-purpose grant on the output of the public good will be less than is the case under the equivalent matching grant. The basic reason for this, as discussed, is that the matching grant will result in both income and substitution effects that influence the behavior of others, while the general-purpose grant always will result in a political equilibrium to the left of point E' in Figure 18.1. The median voter is likely to be in equilibrium under the lump-sum grant at a point to the left of E', implying that he consumes relatively less of the public good and retains more of the grant for other purposes through reduced local tax payments.[8]

[8]See Bradford and Oates, "Towards a Predictive Theory," for a more complete proof.

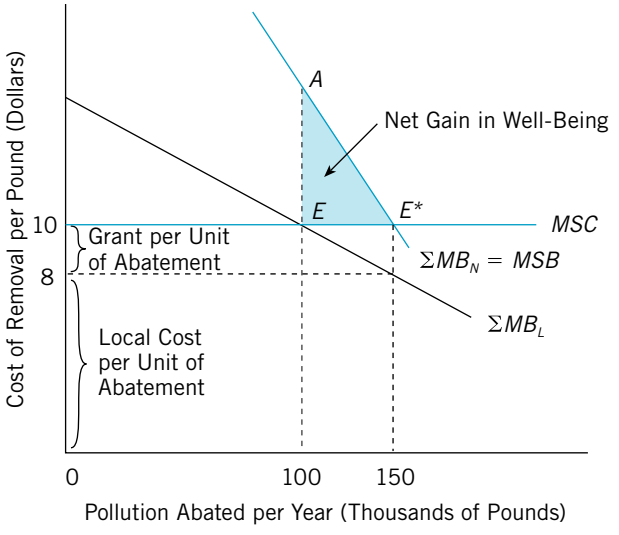
Matching Grants and Efficiency

Categorical grants with matching requirements can be used to internalize interjurisdictional externalities and thereby promote efficiency. To see this, suppose that pollution control by local governments provides benefits not only to the citizens of the local jurisdiction but to *all* citizens. Suppose that the local political equilibrium results in the level of pollution control that corresponds to the point at which the sum of the marginal benefits of local residents equals the marginal social cost of abatement. If a positive interjurisdictional externality exists, less than the efficient amount of annual pollution abatement will be supplied by this local government, even though $\Sigma MB = MSC$ for local residents.

In Figure 18.2, a local government must spend $10 to remove each pound of a certain pollutant from waste water. The current political equilibrium at point E corresponds to the point at which the sum of benefits to local citizens of the jurisdiction, ΣMB_L, equals the marginal social cost of pollution abatement, MSC, where MSC is assumed to be constant. At that point, 100,000 pounds of the pollutant are removed each year at a cost to local taxpayers of $1 million per year. However, at point E, the marginal social benefit of pollution abatement exceeds its marginal social cost. This is because local pollution abatement results in positive interjurisdictional externalities to residents of other areas.

The efficient level of pollution abatement for this jurisdiction corresponds to point E^*, at which the sum of the *national* marginal benefits equals the marginal social cost of abatement. The sum of the national marginal benefits, ΣMB_N, is

FIGURE 18.2 Matching Grant



A matching grant can internalize interjurisdictional externalities. The grant allows a net gain in well-being.

the marginal social benefit of pollution control, *MSB*. The efficient level of local abatement corresponds to 150,000 pounds per year.

A matching grant for pollution control can get the local residents to choose the efficient level of abatement. Local residents will demand 150,000 pounds of abatement per year if the price per pound is reduced from $10 to $8. This can be accomplished through a 20 percent matching grant. The federal government would agree to pay 20 percent, or $2 per pound, of pollution abatement. The local government would pay the remaining 80 percent of the costs. At a net price of $8 per pound, local citizens agree to provide 150,000 pounds of local pollution abatement. The total cost of this annual abatement is $1.5 million. Local taxpayers, however, pay only $1.2 million. The remaining $300,000 per year is paid and financed by the federal government.

The net increase in well-being to all citizens made possible by the matching grant is represented by the triangular area *EAE**. If the matching grant is provided to *all* localities, the increment in well-being would be equal to the gain in net benefits made possible by the improvement in efficiency in the pollution abatement decisions of *all* local jurisdictions.

CHECKPOINT

1. How does a matching grant affect the price per unit of the local public goods it helps finance?
2. What is the "flypaper effect" of intergovernmental grants?
3. How can a matching grant improve resource allocation when used to finance local public goods for which interjurisdictional externalities prevail?

EDUCATION FINANCE

In the United States, public elementary and secondary education is primarily the responsibility of state and local governments. The federal government finances only about six percent of the total cost of primary and secondary education, and the bulk of federal spending on education is on programs designed to improve equality of educational opportunity. The federal government also finances research and development programs to stimulate educational reform.

Spending for public schools amounts to nearly 40 percent of the budgets of state and local governments. It is the largest single category of expenditure for these governments. In many states, the primary responsibility for financing education falls on local governments: cities, counties, and school districts set up for the sole purpose of financing elementary and secondary education for local residents. The provision of basic schooling has significant effects on the well-being of citizens and their children. Deprivation of quality schooling or inequality of educational opportunity can have devastating impacts on the lives of students and all of us through its effect on future taxpayers' productivity. For this reason, many citizens demand that government play a strong role in the supply of schooling to ensure that each child in the nation receives a satisfactory amount of schooling of a certain standard of quality.