

How Best to Hand Out Money: Issues in the Design and Structure of Intergovernmental Aid Formulas

Thomas A. Downes¹ and Thomas F. Pogue²

In 1998–99, U.S. Federal aid to state and local governments totaled 270.6 billion USD, comprising 18.9% of general revenue for states and localities. In that year, intergovernmental aid was the single most important source of local revenue, with 31.7 billion USD flowing directly from the Federal government to localities and 296.3 billion USD being transferred from state to local governments (Governments Division, U.S. Census Bureau, 2001). These numbers understate the importance of Federal aid as a revenue source for local governments. For example, Federal aid for school lunch and special education is channeled through the states, as is a portion of aid under the Title I program. The U.S. Census Bureau reports such aid as intergovernmental aid from state to local governments.

The quantitative importance of intergovernmental aid makes clear the need for documenting the goals of aid programs, understanding how, in an ideal world, those goals translate into aid formulas, determining the degree to which, in practice, the formulas for aid programs deviate from ideal, and characterizing the economic and social effects of deviations.

In this article, we discuss some of the central issues that analysts confront as they cope with these four tasks. In the next section of the article, we discuss four objectives of aid that are commonly cited in the economics literature. Then, to provide context for our discussion, we present a commonly-used aid formula and use this formula to introduce essential concepts and terminology. We then explain how specific aid formulas can be rationalized as means of achieving one or more of the commonly-cited objectives. After offering a few examples of how the goals of prominent formula aid programs can be linked to one or more of these objectives, we close by discussing implementation problems facing policy makers attempting to construct aid formulae to accomplish certain objectives.

Key words: Intergovernmental aid; fiscal capacity; lump-sum grants; matching grants.

1. Objectives of Intergovernmental Aid

Intergovernmental aid programs have been implemented in the United States to promote a number of objectives. Describing these objectives is a necessary first step in specifying and evaluating formulas for distributing aid. In this section, we briefly describe four of the more common objectives.

¹ Department of Economics, Tufts University, and Visiting Scholar Federal Reserve Bank of Boston. Email: thomas.downes@tufts.edu

² University of Iowa, Department of Economics. Email: tpogue@blue.weeg.uiowa.edu

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1.1. *Offset differences in expenditure needs and fiscal capacity*

Individual state and local governments differ in their expenditure needs and fiscal (revenue-raising) capacities. Expenditure needs vary because of variation in the number of individuals who need to be served and in the per beneficiary costs of providing given levels of public services; localities with relatively high costs need to spend relatively large amounts to provide given services levels. Fiscal capacities vary because of variation in tax bases and constituents' income and wealth. If all public services provided by states (or localities) are financed solely with revenue from their own tax sources, either tax burdens or public service levels or both must vary from locality to locality. And the larger the difference is between a locality's expenditure needs and its fiscal capacity, the less able it is to maintain given (adequate) public service levels.

These disparities in local governments' ability to provide adequate public services with reasonably uniform tax burdens are the most important force behind the existence and growth of intergovernmental aid programs. The primary objective of many programs is to offset, at least in part, the *fiscal disparities* implicit in differences in expenditure needs and fiscal capacities, with school foundation aid programs being the most widespread case in point.

Fiscal disparities are of concern from several perspectives. One is that they may lead to inadequate and/or unequal levels of an important public good, such as education. So some people see aid as a means of reducing inter-jurisdictional inequality in spending and public service levels. Others advocate aid that reduces fiscal disparities because they see it as a means of increasing spending for a particular purpose. And, even when the primary intent is to reduce inequality in public service levels, total spending may increase because equalization is achieved by "leveling up." Such has often been the intent and effect of school foundation aid.

Absent aid, fiscal disparities also imply that government activities, such as the provision and financing of education, are not *locationally neutral*. The taxes that individuals bear to have a given level of public services depend on where they reside and engage in economic activities, and service levels vary as well. Policy makers hoping to weaken the link between one's choice of where to engage in economic activities, the taxes paid to pay for public services, and the quality of public services received can design an aid program with the intent of making it possible for each jurisdiction to levy the same tax rates and generate sufficient revenue to provide a target level of public services. Aid programs of this type, labeled Fiscal Capacity Equalization programs by Mieszkowski and Musgrave (1999), have as their goal mitigation of the effects of fiscal disparities while still permitting some variation in taxes paid and services received. Alternatively, by constraining the ability of localities to choose service levels, policy makers at the state or federal level can break the links between the location of economic activity, taxes paid, and services received.

When government activities are not locationally neutral, economic agents may respond to variation in the tax and expenditure packages available by locating in one place rather than another. Some responsiveness of the choice of where to engage in an economic activity to variation in taxes and publicly-provided services can be productive. Actual or potential mobility of households or businesses can serve to discipline governments,

forcing localities to eliminate waste and to be responsive to the needs and desires of those who could locate in their boundaries. What may not be desirable is variation in taxes and publicly-provided services that is attributable to factors beyond the control of policy makers in local governments. As Oakland (1994) notes, location choices that are not motivated by fundamental differences in the cost of engaging in economic activity can result in a less efficient allocation of goods and services.³ Economic efficiency may therefore be the objective that some wish to promote with aid that reduces fiscal disparities.

A related concern is that fiscal disparities confer competitive advantages and disadvantages on localities. Localities with relatively high expenditure needs or relatively low fiscal capacity are at a disadvantage in competing for business and population. Some may therefore see aid to reduce fiscal disparities as a means of equalizing competitiveness across localities.

Government activities that are not locationally neutral may also be seen as unfair. Some individuals are worse off than others simply because they reside in localities with relatively high expenditure needs or relatively low fiscal capacities and because moving is too costly. The relative well-being of residents of these localities is lower because they receive lower levels of public services or bear higher tax burdens than they would if they resided in another locality. This outcome fails the *fair compensation* equity standard advanced by Yinger (1986, p. 332), which states that ‘no citizen should be worse off simply because he or she lives in a city with high costs and or low resources.’

Finally, fiscal disparities may lead to *horizontal inequity* in taxation and the provision of public services. Horizontal inequity arises when individuals who are equal in their economic and other circumstances bear unequal tax burdens or enjoy unequal levels of public services. So making the distribution of taxes or public services more equitable may be the goal of some who advocate aid to reduce fiscal disparities. For example, some proponents of school aid see it as a means of reducing inter-district differences in educational outcomes and the property tax rate required to finance schools.

1.2. Encourage spending on particular services

Numerous aid programs have as the explicit or implicit intent increased spending on a particular publicly-provided service. The motivations of policy makers who espouse such aid programs are almost as varied as the aid programs themselves. Sometimes they are responding to inefficiencies in the provision of public services; economists have long argued that aid programs that alter the pattern of public spending are an appropriate policy response when such inefficiencies exist (Mieszkowski and Musgrave 1999). But it is just as likely that these aid programs are attributable to paternalism or to a belief that spending on the service in question should exceed some minimum level.⁴

³ Movement of individuals and resources in response to fiscal disparities does not necessarily create inefficiencies. If mobility is costless and if other conditions discussed by Tiebout (1956) hold, this movement will result in individual well-being being independent of residential location, and in the capitalization of fiscal disparities into property values. If there is full capitalization, providing aid to offset fiscal disparities makes little sense, since such aid will simply generate capital gains and losses for those who purchased property after the disparities were capitalized. However, in the highly probable case that mobility is not costless, aid to offset fiscal disparities can mitigate inefficiencies and inequities (Downes and Pogue 1992).

⁴ Such minimum spending requirements would be warranted if, for example, the service in question was a merit good (Musgrave 1959).

The objective of some aid programs that encourage spending is to change the spending behavior of recipient governments by altering the incentives these governments face. For example, the matching element of the State Children's Health Insurance Program (SCHIP) is intended to encourage states to establish insurance programs that cover children in families who are not eligible for Medicaid and for whom private insurance is prohibitively costly. Incentives to encourage spending are only necessary if national interests and the interests of the recipient government diverge. Frequently, a mismatch between local and national interests exists because some of the benefits of the public service in question accrue to persons who reside and vote outside the recipient jurisdiction. In other words, the benefits of the public service *spill over* the boundaries of the providing jurisdiction. When such spillovers exist, provision of the public service will be inefficient in the absence of some intervention by the state or the national government. A properly designed aid formula can create incentives for local governments to increase spending on the aided function and, thus, implicitly account for the external benefits associated with that spending.

The objective of aid may not be to increase spending but instead to encourage recipient jurisdictions to make different uses of the resources available to them. Making aid contingent on measurable improvement in the quality of services provided, as is implicitly done in the No Child Left Behind Act of 2001, is intended to encourage recipient governments to eliminate inefficiencies and direct resources toward those services that are most needed by the target populations.

1.3. *Treat equals equally*

Another broad objective of aid is horizontal equity. In this case, aid is seen as a mechanism for insuring that individuals who are alike in their ability to pay taxes or in their need for the services do, in fact, have the same tax burdens and receive the same benefits from government services. For example, equal educational opportunities or outcomes are an important objective of state aid for schools. As explained above, horizontal equity may be the underlying objective of some who advocate aid to reduce fiscal disparities (Mieszkowski and Musgrave 1999).

1.4. *Redistribute economic well-being*

Many aid programs arise out of a desire to redistribute resources and, ultimately, economic well-being, from those with more ability-to-pay the taxes needed to finance publicly-provided services to those with less ability-to-pay. Ultimately, the goal is to make access to the benefits of economic prosperity more equal.

The Community Development Block Grants, Entitlement Grants program is an example of an aid program that has as its goal the redistribution of economic well-being. The grants provided under this program are intended "to develop viable urban communities, by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for persons of low and moderate income." Clearly, the hope is that aid will provide low- and moderate-income individuals with improved access to the fruits of economic prosperity.

Aid programs that are designed to shift resources towards those who are less well-off

economically are attempting to produce a distribution of economic well-being that is more *vertically equitable*. The degree to which the correlation between economic well-being and ability-to-pay is reduced determines the extent to which an aid program results in a distribution of economic well-being that is more vertically equitable.

1.5. Conflict among objectives

The U.S. General Accounting Office (GAO) in its 1996 study of the federal grant system observed that public finance experts have cited two objectives of a grant system:

- (1) encouraging states to use federal dollars to supplement rather than replace their own spending on nationally important activities and (2) targeting grant funding to states with relatively greater programmatic needs and fewer fiscal resources (U.S. General Accounting Office 1996, p. 1)

The first GAO objective corresponds to the second objective discussed above – providing recipient governments with an incentive to increase spending on the aided function. The second GAO objective subsumes the remaining three objectives discussed above.

The GAO report from which this quote is drawn also makes clear that, in practice, many elements of existing aid formulas are best understood as efforts partly to achieve multiple objectives with a single policy instrument (U.S. General Accounting Office 1996). Policy makers must recognize, however, that aid may promote one objective while hindering achievement of another. For example, distributing aid to redistribute economic well-being will result in shifting resources from predominately rich to predominately poor recipient governments, but it will usually not be locationally neutral; it will create incentives that make private-sector resource allocation less efficient. Or, when aid is structured so as to promote locational neutrality, individuals who have equal ability to pay taxes will not be treated equally unless the fiscal capacity measure used in the aid formula is highly correlated with ability to pay (Downes and Pogue 1992).

2. Aid Formulas Implied by Specific Objectives

In this section we examine how the objectives given above can be translated into formulas for distributing aid. After providing a very brief overview of the broad classes of aid formulae, we turn to the objective of offsetting differences in expenditure needs and fiscal capacities and the formula implied by that objective. We use that formula to introduce several design issues that are common to all aid formulae and then discuss the formulae implied by other objectives.

2.1. Classes of grants-in-aid

All grants-in-aid fall into one of two broad classes. A grant is a block or *lump-sum* grant if aid to the recipient government does not depend on the actions of that government. A grant is a *matching* grant if increased spending on the aided function by the recipient government increases the amount of the grant. The critical difference between these two types of grants is that matching grants provide an incentive for the recipient

government to spend on the aided function, lump-sum grants do not.⁵ Within these broad classifications, there are several subclasses of grants.⁶ For example, if under a matching grant program, aid to a recipient government cannot exceed a specified maximum, the grants are *closed-ended*. Also, both matching and lump-sum grants can be either *general* or *categorical*. No restrictions are placed on how general grants are spent; categorical grants must be spent on certain specified services provided by the recipient government.⁷

In practice, the decision to use a lump-sum or matching grant and the choice of other elements of the structure of an aid program should depend on the rationales for aid. That said, many of the basic issues that must be addressed by policy makers constructing aid formulae are common to both classes of grants. To keep our discussion as simple as possible, we will review these common issues in the context of lump-sum grants.

2.2. Aid to offset differences in expenditure needs and fiscal capacity

The most widely espoused objective of aid is to offset differences in expenditure needs and fiscal capacity so that all localities are able to provide a target level of services with the same tax effort. To achieve this outcome, the aid to each locality should be determined by the following formula:

$$A_j = FC_j - t^*V_j \quad (1)$$

where A_j is per capita aid to locality j , ($j = 1, \dots, L$), F is the average level of spending per capita needed to achieve the desired or target level of a particular public service, C_j is a cost index that adjusts for inter-locality differences in the cost of providing given public services, t^* is the formula tax rate, which is multiplied by each recipient government's per capita fiscal capacity to determine its contribution to financing the target level of spending, and V_j is the per capita fiscal capacity of the recipient jurisdiction. In this case, the objective of the aid program maps directly into the aid formula.

In the education finance literature, the norm is to argue that F should be set so that each child in a state has access to an "adequate" education. The decision as to what level of education is adequate or, more generally, as to what the target level of spending should be is a policy decision (Guthrie 2001).

If fiscal capacity is measured by the recipient government's tax base, then the aid payment to each district allows it to finance the target level of spending by levying a tax rate of t^* . The local contribution to financing target spending is obtained by applying the *same* tax rate, t^* , to each recipient government's tax base. Aid is likewise financed by state-level or

⁵ In the parlance of economics, lump-sum grants have only an income effect, while matching grants have both an income and a substitution effect. Though they do not change incentives, lump-sum grants do encourage more spending because they increase the resources available to recipient governments. But matching grants have more "bang-for-the-buck" because they reduce the amount by which local tax revenues must be increased in order to increase by one dollar spending on the aided function.

⁶ Many federal aid programs determine maximum grant-in-aid amounts by multiplying the total amount budgeted for aid by fixed shares for each state. Grants of this type are referred to as cost-sharing grants. Such grants do not represent a distinct class of grants; as the examples below show, cost-sharing grants could be either lump-sum or matching depending on the other elements of the grant program.

⁷ State equalization aid grants to local school districts are examples of general grants since there are no constraints on how these moneys can be spent. Title I, Part A grants to Local Education Agencies are examples of categorical grants since the intent is that these grants improve the educational opportunities of poor children who are likely to be at academic risk.

federal-level taxes that apply uniformly throughout the state or nation. Therefore, regardless of where within the granting jurisdiction an individual resides and engages in economic activities, he or she bears the same taxes to provide the target level of spending.⁸ Access to the target level of public services and an individual's tax burden if the target level of services is provided do not depend on location decisions; no locality is at a competitive disadvantage in the provision of the target level of public services. Furthermore, the aid formula given above results in equal outcomes if all jurisdictions choose to spend the target level.⁹

In practice, even if intergovernmental aid is granted according to (1), the result will not be equal outcomes unless recipient governments are prohibited from spending either more or less than the target level. Such rigid limits on spending generally have not been imposed and, as we note below, may actually be counterproductive. In sum, providing aid according to (1) levels out the playing field for localities but does not prevent residents of any single locality from choosing a tax rate above or below t^* so as to provide more or less of the public service in question.¹⁰

Recapture: In practice, the target tax rate, t^* , is often such that recipient governments with relatively high fiscal capacities would not need to make the expected effort to finance the target level of spending; that is, $t^*V_j > FC_j$ for some j . In this case the formula calls for negative aid, $A_j < 0$; funds would flow to rather than from the grantor government.

If negative aid payments are not ruled out, *all* recipient governments make the expected effort by collecting at least t^*V_j – even those that need not do so to finance target spending. Recipient governments for which the revenue generated exceeds target spending are required to remit the excess to the state. Recipient governments with relatively large fiscal capacities (those for which $t^*V_j > FC_j$) thereby transfer funds to, rather than receive funds from, the granting government. This procedure, termed *recapture*, has not been politically popular. For example, the requirement of the Highway Planning and Construction program that each state receive a minimum amount linked to its contributions to the Highway Trust Fund is a response to the perception that there should be a link between taxes paid and services received. This tension between treating tax payments as payments for services and using these payments to redistribute economic well-being is also the reason why only a few states (Kansas, Vermont, New Hampshire, Texas, and California) have school aid systems in which there is substantive recapture.

To avoid recapture, aid formulas commonly rule out the possibility of negative aid with the restriction $A_j = 0$ if $t^*V_j > FC_j$. With this restriction, aid reduces but does not fully eliminate variation in the tax rate required to finance target spending. This rate is not uniform across recipient governments; it is greater for recipient governments that qualify

⁸ Even if tax burdens are not locationally dependent, individuals who are equal in terms of any particular measure of income may bear unequal tax burdens. Although this outcome may be regarded as unfair, it is *not* the result of fiscal disparity. It could occur even if there were no fiscal disparities – if per-capita cost and property value were the same in all recipient governments. It is an inherent result of the fact that individuals who have the same income have different amounts of local tax bases.

⁹ Unless local discretion regarding spending is eliminated, recipient governments may not spend at the target level for reasons identified below. Also, most aid programs provide aid only for current spending. In principle, opportunities are not equalized unless capital expenditure needs are also taken into account.

¹⁰ In several states in which state aid to school districts is calculated using a variant of (1), t^* is the minimum permissible tax rate. Thus, in these states, the local effort in all school districts is expected to be at least t^*V_j . We will discuss below the implications of such minimum effort requirements.

for aid than for those that do not. The number of recipient governments qualifying for aid and the total amount of aid provided obviously depend on the values assigned to F and t^* , increasing as F increases and decreasing as t^* decreases.¹¹

An alternative to recapture is to reduce variation in the local tax base. In the case of property taxes, much of the variation is due to the uneven distribution of commercial and industrial property across school districts and other local governments. Eliminating the *local* tax on commercial and industrial property and imposing instead a uniform *state* tax on that property could therefore reduce variation in the local property tax base. The proceeds of the state tax could then be distributed to local governments on a per-capita basis. Enlarging local taxing jurisdictions could also reduce variation in tax bases and fiscal capacities, thereby reducing the need for recapture.

Multiple jurisdictions: Modifying the basic formula to account for the fact that there may be multiple determinants of the fiscal capacity of recipient governments can be done simply. For ease of exposition, suppose that there are K determinants of each recipient government's fiscal capacity, with V_{jk} giving the value of the k^{th} per-capita fiscal capacity determinant for the j^{th} recipient jurisdiction and t_k^* giving the formula tax rate for the k^{th} determinant. Then, assuming there is no recapture, A_j is given by the formula:

$$\begin{aligned}
 A_j &= F - \sum_k t_k^* V_{jk} && \text{if } \sum_k t_k^* V_{jk} < F \\
 A_j &= 0 && \text{if } \sum_k t_k^* V_{jk} \geq F
 \end{aligned}
 \tag{2}$$

If the determinants of fiscal capacity are the tax bases available to the recipient jurisdictions, the quantity $\sum_k t_k^* V_{jk}$ is analogous to the measure of fiscal capacity calculated using the representative tax system.¹² Clearly, if all jurisdictions chose the same mix of taxes, they would generate locally different amounts of revenue. However, aid would bring total revenue up to the target level of spending. So, if fiscal capacity were measured in this way, all recipient governments could choose the same mix of taxes to finance the target level of spending.¹³

When the above formula is used to determine aid for all services for which such grants are made, the effort recipient governments need to make to finance provision of the target set of services is the same. This result follows from the fact that the aid formulae are all additive in cost-adjusted spending and expected effort. Further, using the same formula for all grants-in-aid could allow a granting government to provide equal access to public services while finessing the recapture problem mentioned above. Specifically, if for all recipient governments cost-adjusted spending for all services exceeds aggregate expected effort for those services, then all recipient governments could be required to make the expected effort to finance provision of the services for which aid is granted, with any

¹¹ If F is chosen so that, for all recipient jurisdictions, $t^* V_j < F$ and if n_j is the relevant population in recipient government j , then under this formula the total amount of aid provided is $A = F \sum n_j - t^* \sum n_j V_j$. The quantity A is increasing in F and decreasing in t^* .

¹² See Tannenwald (1999) and Taylor, Keenan, and Carbonneau (2001) for excellent discussions of some of the issues that arise in establishing formula tax rates and in using the representative tax system to determine fiscal capacity.

¹³ In practice, the mix of taxes could vary across recipient governments, even if spending levels do not vary. This creates another source of cross-jurisdiction variation.

“negative” aid amounts subtracted from the cumulative value of any positive grants these high fiscal-capacity jurisdictions would receive.

2.3. Aid to encourage spending

If the objective of an aid program is to correct for underprovision of public services attributable to spillovers of the benefits of public services or other sources of inefficiency or is to increase expenditures or service levels for some other reason, matching grants are the appropriate policy tool. Using the notation given above, the formula for the matching grant would be

$$A_j = m_j C_j t_j V_j \quad (3)$$

where m_j gives the matching rate, t_j is the actual tax rate levied by the recipient jurisdiction, and, therefore, $C_j t_j V_j$ gives cost-adjusted, locally-generated spending on the aided function. In other words, a recipient jurisdiction’s aid under a matching grant program is that jurisdiction’s matching rate times the recipient government’s cost-adjusted per capita expenditures on the aided function.¹⁴ For any jurisdiction, the matching rate will vary across aid programs.

If the objective of the program is to correct for spillovers, the matching rate should depend on the degree of allocative inefficiency. For example, the matching rate should increase as the magnitude of benefits accruing to non-residents increases. In theory, the matching rate should also depend on the nature of the public choice process, though building in such dependence is probably not feasible in practice.¹⁵

If an additional objective of the grant program is to mitigate locational nonneutralities, the matching rate could also be modified to account for the relative fiscal capacities of the recipient jurisdictions. For example, in several states aid to school districts in whole or in part is determined according to the formula

$$A_j = t_j (V^R - V_j) \quad (4)$$

where V^R is reference fiscal capacity. Under this formula, which is known as power-equalization, the implicit matching rate of $m_j = (V^R - V_j)/V_j$ is higher for school districts with lower fiscal capacities.

Matching grants result in locational neutrality only if there is recapture or if the matching rate is such that the recipient government with the highest fiscal capacity has a matching rate of 0. Further, recipient governments are unlikely to choose to spend the same cost-adjusted amount per capita.¹⁶ As a practical matter, these conditions are unlikely to hold, with the result that the local tax rate required to finance any given level

¹⁴ If no cost adjustments are made, then C_j would equal 1 for all recipient jurisdictions.

¹⁵ For example, suppose the public choice process is such that, in effect, the voter whose preferred allocation is the median of all preferred allocations chooses the level of provision of the publicly-provided service. In this setting, which is known in the literature as the *median voter model*, the optimal matching rate depends upon the median voter’s marginal rate of substitution between the publicly-provided good and private goods, the median voter’s share of the local tax base, and the marginal cost of producing the publicly-provided good. The appendix of Downes and Pogue (1994a) gives this and other examples of the link between the optimal matching rate and the public choice process.

¹⁶ This point is developed more fully below; Feldstein (1975) advances this criticism of power equalization.

of spending is likely to vary across recipient governments and individuals are unlikely to enjoy equal access to the public services for which aid is provided.

Matching as well as other aid programs often include requirements to maintain effort, such as those in the Title I program, that limit the extent to which revenues raised by the recipient government can decline after aid has been received. Such requirements are intended to reduce the substitution of aid for local resources.

2.4. *Aid to redistribute economic well-being*

The central issue facing those who would use intergovernmental aid to redistribute economic well-being is whether formulae can be devised that will increase the net fiscal residuals (value of benefits received minus taxes borne) of the relatively poor. An individual's net fiscal residual increases if that individual's benefits increase or if that individual's tax burden falls. This simple observation has led to the seemingly logical suggestion that, if redistribution is the objective, aid formulae should be designed to channel resources to communities in which average income (ability to pay) is relatively low. To show the potential flaw in this logic, we explain the implications of the logic for the design of Formula (1).

The most explicit and widely-accepted effort to operationalize the objective of redistributing economic well-being is that of Ladd and Yinger (1989), who argue that aid should be distributed to equalize across communities the average tax effort required to finance a standard package of public services, where average tax effort is defined as the ratio of residents' aggregate tax burdens to their aggregate export-adjusted personal income. The formula for distributing aid in this manner is Formula (1), with fiscal capacity measured by per-capita personal income, adjusted for the extent of exporting and importing of taxes (Downes and Pogue 1992). Distributing aid by this formula increases *average* net fiscal residuals for individuals in relatively poor communities – those with an above-average gap between expenditure need and fiscal capacity. The poor, as well as the rich, in these communities are better off. But distributing aid by this formula also *reduces* average net fiscal residuals for individuals in relatively rich communities. Poor individuals in such communities could thus be made worse off by the aid program. Since some poor individuals may lose, even though others gain, distributing aid by this formula is at best an imperfect tool for making the distribution of economic well-being more equitable. Further, distributing so as to equalize average tax effort could increase horizontal inequities if individuals with similar abilities to pay taxes reside in communities with very different rates of tax importing or exporting (Downes and Pogue 1992).

Federal taxes are often regarded as more equitable and efficiently collected than state and local taxes. If this is in fact the case, any federal grant improves the equity of the combined federal, state, and local tax system to the extent that it reduces reliance on state and local taxes. Improving tax equity by substituting federal for state and local taxes was certainly a key rationale for the federal revenue sharing program. Similarly, if state taxes are more equitable than local taxes, state aid, by reducing reliance on local taxes, improves overall equity of state-local taxation. For example, a common argument in support of state aid for schools is that state sales and income taxes are more equitable than local property taxes.

Although some undoubtedly see a more equitable distribution of income (economic well-being) as an important objective *and result* of aid, neither matching nor lump-sum grants are particularly effective mechanisms for making the distribution of economic well-being more equitable. The problem is that, because of its focus on people rather than communities, the objective of redistributing economic well-being differs fundamentally from the objectives of closing the gap between need and effort and of encouraging spending. Horizontal and vertical inequities result from differences in individuals' economic status, but intergovernmental aid only redistributes among communities. The reality is that some poor individuals may reside in communities with high export-adjusted per capita income and some rich individuals may reside in poor communities with low export-adjusted per capita income. So, even if aid effectively redistributes income from relatively rich to relatively poor communities, it may have an ambiguous effect on vertical equity because it makes some poor individuals worse and some rich individuals better off.

In sum, intergovernmental aid is not the best mechanism to insure that all individuals have available the same economic opportunities or to insure that all taxpayers are treated equitably. Vertical inequities are best reduced via direct redistribution among individuals. For example, the distribution of the burden of the local property tax could be made more vertically equitable through the use of means-tested credits or rebates (*circuit breakers*). Similarly, means-tested voucher programs offer a mechanism for producing a more vertically equitable distribution of benefits of publicly-provided services like education and housing. Thus, intergovernmental aid programs are at most second-best policies for reducing vertical inequities in the distribution of net fiscal residuals.

That said, it is true that almost any intergovernmental aid program can make the distributions of tax burdens and, therefore, of net fiscal residuals more equitable if taxes of the grantor government are more equitable than taxes of the recipient government – e. g., if state aid for schools is financed using state-level income and sales taxes and these taxes are more equitable than local property taxes. But the opposite is also a possibility.

3. Examples

In this section we briefly discuss four existing formula aid programs. The reality is that the political process has profoundly affected the final structure of these programs, so there is typically no clear link between the legislated aid formulae and the objectives described above. Nevertheless, the descriptions of the programs typically provide some indication of the objectives of the program initiators. Comparing the actual structure of aid formulae to the stylized formulae given above can help observers better understand the extent to which deviations from the ideal, which are a necessary by-product of the legislative process, impinge on the accomplishment of the programs' stated objectives.

3.1. Medicaid

The Medical Assistance Program, or Medicaid, is by far the largest formula allocation program at the federal level.¹⁷ Established in 1965, Medicaid is intended to assist states

¹⁷ In fiscal year 1999, the total obligations for the Medicaid program comprised 45% of the total obligations of the federal government under formula aid programs.

in financing health care for “cash assistance recipients, children, pregnant women, and the aged who meet income and resource requirements, and other categorically-eligible groups” (General Services Administration 2001). Under the Medicaid program, federal aid to each state is a matching grant, with minimum and maximum matching rates established in the aid formula. If these minimum and maximum matching rates did not exist, each state’s matching rates would be given by $m_j^* = (1 - 0.45(V_j/V_{nat})^2)$, where V_j is per-capita income in the j^{th} state and V_{nat} is per-capita income in the nation as a whole. This matching rate is such that the federal government will pay 55 percent of the state Medicaid expenditures for a state with per-capita income equal to the national per-capita income. Including in the matching rate formula the square of (V_j/V_{nat}) has the effect of using the ratio of the state and national per-capita incomes to account for variation in fiscal capacity and to adjust, in an ad hoc manner, for cost variation.

In practice, the matching rate for states in which per-capita income is high, relative to per-capita income in the nation, is not allowed to be less than 0.5. Similarly, for no state will the matching rate exceed 0.83, no matter how low per-capita income in that state is. These minimum and maximum matching rates mean that each state’s aid is determined by $A_j = m_j E_j$ with:

$$\begin{aligned} m_j &= 0.5 && \text{if } m_j^* < 0.5 \\ m_j &= m_j^* && \text{if } 0.5 \leq m_j^* \leq 0.83 \\ m_j &= 0.83 && \text{if } m_j^* > 0.83 \end{aligned} \tag{5}$$

where A_j gives per-capita aid for the j^{th} state and E_j gives per-capita state expenditures on Medicaid for the j^{th} state. The matching rate m_j for the j^{th} state is referred to as that state’s Federal Medical Assistance Percentage (FMAP).

The creators of Medicaid intended it to be a partnership between the states and the federal government (Dubin 1992). While there is little additional information on the goals of the policy makers who crafted Medicaid, their intent to construct a program in which the federal government and state governments were relatively equal partners is most consistent either with the locational neutrality or the redistribution of economic well-being objectives. Some elements of the aid formula and of the operation of the Medicaid program are consistent with these objectives; others are not. Since the Medicaid program is an example of a matching grant with a matching rate that varies inversely with per-capita income, aid does mitigate fiscal disparities and redistributes income from relatively rich to relatively poor communities. However, the program’s success in accomplishing either of these objectives is limited by the minimum and maximum matching rates. The ad hoc adjustment for cost variation also limits the program’s success in countering fiscal disparities and redistributing income. Further, as was noted above, matching grants are most consistent with the objective of encouraging spending. Finally, Medicaid has never been the type of partnership envisioned. For example, while the federal government establishes broad eligibility criteria for Medicaid, state governments, which are allowed to establish the specific eligibility criteria for their states, have considerable latitude when setting spending levels (Baicker 2001).

3.2. State Children's Health Insurance Program

The State Children's Health Insurance Program, or SCHIP, is another aid program that is intended to reduce the number of children who are uninsured. The intent of SCHIP is to encourage states to establish insurance programs that cover children in families who are not eligible for Medicaid and for whom private insurance is prohibitively costly. SCHIP is therefore best seen as a response to the perception that, in the absence of aid, poor children might have inefficiently low levels of health care.

Beginning in fiscal year 2001, the maximum aid per-capita that state j can receive under the SCHIP program is:

$$A_j^{max} = P \times A \times [(0.5N(LU)_j + 0.5N(L)_j) \times C_j] / n_j \left\{ \sum_j [0.5N(LU)_j + 0.5N(L)_j] \times [C_j] \right\} \quad (6)$$

where P is the proportion of the total appropriation reserved for the 50 states, A is the total federal appropriation for SCHIP, $N(LU)_j$ is the number of low-income uninsured children in the j^{th} state, $N(L)_j$ is to the number of low-income children in the j^{th} state, C_j is the State Cost factor for the j^{th} state, and n_j is the population of the j^{th} state. The State Cost factor, which reflects the annual wage level in the health services industry (SIC code 8000) in the state, relative to the nation, is calculated from the formula:

$$C_j = 0.15 + 0.85W_j/W_{nat} \quad (7)$$

where W_j is the mean annual wage (per employee) in the health services industry in the j^{th} state and W_{nat} is the mean annual wage in the health services industry nationally (Czajka and Jabine 2001). Abstracting away from the effects of minimum allocations, hold-harmless provisions, and reallocation of unused aid, each state's actual aid per capita under the SCHIP program is:

$$\begin{aligned} A_j &= (.3 + .7m_j)E_j & \text{if } A_j \leq A_j^{max} \\ A_j &= A_j^{max} & \text{if } A_j > A_j^{max} \end{aligned} \quad (8)$$

where m_j is the j^{th} state's FMAP and E_j is per-capita state expenditures on SCHIP for the j^{th} state.

Unlike Medicaid, states are not required to provide coverage to children who meet the general eligibility requirements for SCHIP established in federal legislation. As with Medicaid, however, qualifying state expenditures are matched by the federal government. And, as is true with Medicaid, the latitude states have in establishing eligibility requirements provides them with a fair amount of control over total expenditures under SCHIP (Czajka and Jabine 2001).

3.3. Community Mental Health Services Block Grant

The intent of the Community Mental Health Services Block Grant program is best described by the agency that administers the program, the Substance Abuse and Mental Health Services Administration (SAMHSA):

The formula grant program is designed with the goal of supporting and enhancing State capacity to provide community-based mental health care to

adults with serious mental illnesses and children with serious emotional disorders through outreach, mental and other health care services, individualized supports, rehabilitation, employment, housing, and education. (Substance Abuse and Mental Health Services Administration 2001a)

Similarly, SAMHSA's characterization of the goals of the block grant program for substance abuse is:

The Substance Abuse Prevention and Treatment (SAPT) Block Grant program goal is to support substance abuse prevention and treatment programs at the State and local levels. While the SAPT Block Grant provides Federal support to addiction prevention and treatment services nationally, it empowers States to design solutions to specific addiction problems that are experienced locally. (Substance Abuse and Mental Health Services Administration 2001b)

The aid formula for both the Community Mental Health Services Block Grant and the Substance Abuse Prevention and Treatment (SAPT) Block Grant programs is:

$$A_j = \left[0.985 \times 0.95 \times A \times \left(N_j C_j V_j / \sum_j N_j C_j V_j \right) \right] / n_j \quad (9)$$

where A_j is per-capita aid for the j^{th} state, A is the total federal appropriation for the specific block grant program, N_j is a proxy for the population at-risk for the j^{th} state, C_j is the cost of services index for the j^{th} state, V_j is the fiscal capacity of the j^{th} state, and n_j is the population of the j^{th} state. The cost index C_j is a weighted average of three sub-indexes covering labor costs, rent, and supplies (National Research Council 2001). Unlike the Medicaid and SCHIP programs, there is no matching element in the formula for block grants to states for substance abuse and mental health services.

Congress has specified that in this formula fiscal capacity is to be measured by total taxable resources (TTR), which is an approximate measure of each state's export-adjusted income (Tannenwald 1999).¹⁸ Based on the statements of intent, what links the goals of these two block grant programs is their focus on equalizing the ability of states to provide services to the populations in need (National Research Council 2001). Because the aid formula uses TTR instead of the actual tax bases available to measure fiscal capacity, the formula is more consistent with the objective of redistributing income from relatively rich to relatively poor communities, though the cost adjustments, ad hoc as they are, will help to mitigate fiscal disparities.

3.4. State aid for schools

In most states, the bulk of intergovernmental aid from state to local governments flows to local school districts. This aid is mainly *equalization* aid – formula-based aid that is intended to reduce the fiscal disparities that arise because fiscal capacity and the cost of providing educational services vary across school districts.¹⁹

¹⁸ Compson and Navratil (1997) present the current methodology used to calculate TTR.

¹⁹ Fiscal disparities have given rise to school finance reform in many states. See Murray, Evans, and Schwab (1998) for information on states in which fiscal disparities have motivated court challenges of the school finance system and for discussion of the fiscal implications of some of the resultant finance reforms. For a compelling discussion of reform efforts, see Kozol (1991).

Although equalization programs vary in detail from state to state, most are variations on two approaches: *foundation* and *power-equalizing* programs.²⁰ Foundation aid programs provide grants to local governments using variants of the cost-adjusted, lump-sum aid formula in (1). As was noted above, under power-equalizing programs local expenditures are matched by state governments with an implicit matching rate of $m_j = (V^R - V_j)/V_j$ (Downes and Pogue 1994a).

The on-going discussion of existing and proposed programs for financing schools makes clear that school aid is motivated by several interrelated objectives – increasing and/or equalizing educational opportunities, assuring an adequate level of schooling, and reducing variation in tax rates required to finance schools. The aid formulae used by most states are best suited to accomplish the second of these objectives – assuring adequacy.

4. Problems of Implementation

A number of issues arise in the implementation of any aid program. In this section, we discuss the more important of these implementation problems.

4.1. Estimating differences in costs and needs

Variation in the cost of providing public services means that providing equal service levels requires *unequal* spending. In recognition of this fact, most aid formulae include ad hoc adjustments for cost differentials, but the adjustments have been rudimentary at best. For example, to compensate for differences in prevailing salaries and, thus, in the cost of education across the country, the formula for Title 1, Part A grants to Local Education Agencies includes state per-pupil expenditure as one factor in the determination of grants (Brown 2001). Another example from school aid formulae is the assignment of different weights to different types of students, with larger weights being assigned to students who are thought to be more costly to educate. This *weighted student count* is used to calculate a cost adjustment index:²¹

$$C_j = \left(\frac{\text{weighted student count in } j / \text{actual enrollment in } j}{\text{total weighted student count} / \text{total actual enrollment}} \right) \quad (10)$$

With C_j defined in this way, $(\sum_j n_j C_j) / N = 1$, where n_j is enrollment in district j and $N = \sum_j n_j$. Districts that have a relatively large share of high-cost (high-weight) students have a relatively high weighted student count and a relatively high C_j . States also often make adjustments for other factors thought to affect costs, e.g., district size (enrollment), enrollment growth (decline), sparsity or isolation of student population, and teacher experience and training.

These weights are based on averages of the *observed* spending on particular types of

²⁰ Gold, Smith, and Lawton (1995) classify 40 programs as foundation, six as power equalizing (four as percent-age equalization and two as guaranteed tax base or yield), two as flat grants, and two as full state funding.

²¹ Gold, Smith, and Lawton (1995) report that all but 14 states use a weighted student count. In addition to weighting students differently, states vary somewhat in how they measure the number of students in a district. Common measures are average daily attendance (ADA), average daily membership (ADM) and enrollment on a particular day. A state that uses ADA would assign weights to the number of students in average daily attendance to obtain a weighted average daily attendance.

students.²² This method fails to account for the likelihood that districts respond to relatively high costs by providing relatively low service levels. Similarly, districts with relatively low costs tend to provide relatively high service levels. As a result, expenditures vary less than underlying costs; and, in using average expenditures, the weighted-student-count approach understates the true variation in costs.

This and other flaws in the weighted-student-count approach have been recognized (Downes and Pogue 1994b). These flaws, and the pressing need to develop aid formulae that will enable all districts in a state to provide an adequate education (Guthrie 2001), have led analysts to explore numerous methodologies for estimating the costs of meeting state-specified standards. Monk and Fowler (2001) and Guthrie (2001) offer critical summaries of the most prominent methodologies. In theory, any of these methodologies could be used to construct estimates of C_j . In practice, even the proponents of a particular methodology would be loath to argue that that methodology, in its current state, can be used to provide definitive estimates of cost variation.²³

The prevailing state of affairs, then, is that weights and other existing cost adjustments typically are *not* closely linked to evidence on the costs that derive from providing particular service levels. Therefore, while there is rather general agreement that aid formulae should take account of differences in costs, they do not, in large measure, because doing so has proven to be difficult. For any public service, the barriers to obtaining reliable cost indices are numerous, with the largest barrier being settling on an acceptable definition and measure of output.

The examples of cost adjustments in the Title 1, Part A formula and in the school aid formulae highlight a second problem facing those seeking to construct cost adjustments. In the production of public services, cost variation results both from variation in input prices and from variation in environmental factors that influence a locality's ability to produce public services (Bradford, Malt, and Oates 1969). Some existing methods for estimating cost adjustments, like that described in Chambers (1998), only account for variations in input costs, probably because accounting for the impact of environmental factors is more difficult and controversial. However, while Chambers tries to control for the effect on input costs of variation in environmental factors, the large differences observed by Duncombe and Lukemeyer (2002) between the cost adjustments produced by Chambers and the adjustments that are implied by a methodology that controls explicitly for variation in costs attributable to variation in inputs, environmental factors, and outcomes are likely to be attributable in part or in whole to the methodologies' differential success in controlling for environmental factors and outcomes. The differences that Duncombe and Lukemeyer observe in the cost adjustments implied by alternative methodologies also make clear that a critical task for researchers will be to compare the results of the alternative methodologies with the goal of developing "consensus" estimates of cost indices.

Any methodology used to estimate cost indices must distinguish costs that can be

²² The Representative Expenditure System (RES) represents the extension of this weighting methodology to other public services. Rafuse (1991) and Tannenwald (1999) give descriptions of RES and examples of the use of RES to develop measures of relative fiscal need.

²³ See Downes and Pogue (1994b), Duncombe, Ruggiero, and Yinger (1996), Fowler and Monk (2001), and Guthrie (2001) for further discussion of the methods and problems of estimating cost differentials.

controlled by a recipient government from those that cannot. In general, aid should compensate only for costs that are beyond control of the recipient governments. Otherwise, recipient governments receiving aid do not have an incentive to reduce costs when it is possible to do so. A concrete example of perverse incentives that are frequently built into aid formulae are adjustments that provide more aid per capita to jurisdictions serving small populations. In these cases, aid compensates in part for the higher costs associated with small scale and reduces the incentive to consolidate or pursue other strategies that could take advantage of scale economies (Duncombe and Yinger 2001).

4.2. Issues in the measurement of fiscal capacity

As indicated above, the appropriate measure of fiscal capacity to use in an aid formula depends upon the objective of the aid program. For example, if the objective is to offset fiscal disparities, a recipient government's fiscal capacity is appropriately measured by the revenue it would obtain from applying the formula tax rates to each of the tax bases it could use in financing its spending.²⁴ What is not appropriate is to include income in the measure of fiscal capacity *when income cannot be taxed by the recipient government*; doing so will prevent elimination of locational nonneutralities and lead to horizontal inequities.

If the objective is to redistribute economic well-being, the measure of a recipient government's fiscal capacity should account for the ability of that locality's residents to pay taxes and purchase services. Since all taxes ultimately reduce disposable incomes, a recipient government's fiscal capacity, given this objective, depends in part on the income of its residents. How this logic should be operationalized is, however, not clear. Suggested measures of fiscal capacity include per-capita income earned within the locality adjusted for exporting of taxes (Barro 1986) and total taxable resources (Compson and Navratil 1997). Ladd (1994) notes that measuring the fiscal capacity of a locality by its average export-adjusted personal income can, in principle, equalize *average* tax burdens required to finance a target level of spending. But adjusting for the importing and exporting of taxes is difficult. Furthermore, even if *average* tax burdens are equalized across localities, the taxes that *individuals* bear to finance the target level of spending will vary from locality to locality.²⁵

The discussion above of adjustments for variation in the cost of producing public services highlighted the tension between making such adjustments and making counterproductive modifications to incentives. Similar trade-offs confront policy makers who contemplate adjustments to fiscal capacity measures. For example, fiscal capacity measures could be adjusted for cost-of-living variation. Such adjustments, which would have the flavor of purchasing power parity adjustments in the international context, would account for the fact that the same dollar buys fewer private goods in those localities with higher cost-of-living. However, adjusting for cost-of-living variation can mute desired responses of individuals to variation in economic costs. Further, if cost-of-living variation is fully reflected (capitalized) in incomes, then adjusting for cost-of-living variation would overcompensate those who reside in high cost-of living localities.

²⁴ The reasoning underlying this principle is examined in more detail in Pogue (1989).

²⁵ Downes and Pogue (1992a) discuss conditions under which horizontal equity can be increased by using a measure of fiscal capacity different from the tax base actually used. In practice, these conditions rarely hold.

Another question that frequently arises is whether “municipal overburden” should be considered in defining fiscal capacity. Municipal overburden refers to the spending that local governments, usually central cities, must make to deal with problems such as poverty and decaying infrastructure. Failing to account for the need for some localities to make such expenditures could place those localities at a competitive disadvantage.

The aid formula presented above can be easily modified to take account of municipal overburden *if its magnitude is known*. Specifically, the amount of overburden, M_j , is subtracted from the revenue that recipient government j is expected to obtain from local taxes to finance the target level of spending. Fiscal capacity is thus reduced by the amount of overburden.

4.3. Local discretion in spending

State equalization aid can in principle equalize tax effort and public service levels across recipient governments, making a person’s taxes and public services independent of where within a state he or she lives. But this is the case *only if* each recipient government spends at its cost-adjusted target level. However, many, if not most, recipient governments will choose to spend differently if given the latitude to do so. The reason is that local decisions about public spending do not depend solely on fiscal capacity and the costs of public services. They depend as well on other factors that vary between recipient governments: the mean level and distribution of private incomes (resources), the willingness to trade off public services for other goods (preferences), local decision making procedures (local political processes),²⁶ and the extent of cross-jurisdiction externalities. And if free to choose different levels of spending, most recipient governments will spend either above or below the target level, even if the equalization aid program is implemented ideally.

Given the complexity of local government decision making, and our lack of knowledge of that process, it is not practical to manipulate and achieve desired service levels simply by altering the budget constraint of local governments. Yet this is often the objective of grant programs. The grantor government wants particular levels of the service for which aid is being provided. Recipient governments can of course be induced to provide a given level of services if the grantor government provides significant aid only on the condition that the target service level be provided. For example, in many states that use foundation aid programs to determine aid to school districts, aid is granted only to those jurisdictions that levy local tax rates at or above the target tax rate, t^* . Such minimum effort requirements are one example of policies that essentially dictate service levels; the aid is just the means of enforcing the grantor government decision. Practically speaking, then, policy makers must either accept differences in spending and services or impose limits on local discretion. In the extreme, local choice of the composition as well as the level of spending could be ruled out.²⁷

Some insight into the possible consequences of limiting local discretion can be gleaned from the experience of state-controlled school systems in general and the California

²⁶ The extent of population heterogeneity in a community also affects the level of provision but generally does so through the local choice process. For further discussion of this point, see Sonstelie (1982).

²⁷ Dictating the composition of spending has the advantage of allowing policy makers at the level of the granting government to be confident that spending will be targeted towards desired outcomes and that recipient governments will not respond to adverse incentives implicit in the compensation for costs.

system in particular. The result of state control in California has been a significant reduction in cross-district differences in per pupil spending (Downes 1992). By this measure, severely limiting local discretion appears to have eliminated inequalities in educational opportunities. But loss of local discretion also appears to have reduced popular support for public financing and provision of education (Fischel 1989, 1992; Downes and Schoeman 1998).

If limiting local discretion does slow growth of spending, it becomes much more difficult to make the case that the equalization in spending resulting from the combination of aid and limits on local discretion has helped individuals residing in communities with low fiscal capacity. The relative position of these individuals may have improved, but their absolute position may be lower than it would have been in the absence of limits on local discretion. The California experience thus suggests a trade-off between quality and equality.

Another potential cost of limiting discretion is the chilling effect that it may have on local experimentation. By making spending for innovative programs more difficult, limits on discretion may adversely affect progress in all recipient governments.

Finally, very strict limits on local discretion may have adverse effects if cost adjustments are inaccurate or, more generally, if the recipient government has better information about local conditions than does the state. Some local discretion may be desirable to allow districts to respond flexibly to their particular circumstances. And it should be emphasized that such responses could entail spending below as well as above the target level.²⁸

The variation in spending resulting from local discretion can be reduced by modifying the grant formula as follows:

$$A_j = FC_j - t^*V_j + (t_j - t^*)(V^R - V_j) \quad (11)$$

In other words, the formula combines lump-sum and power-equalization (matching) elements. Power equalization makes it possible for recipient governments with low fiscal capacity to finance spending above the target level with the same tax rate as recipient governments with high fiscal capacities. Including power equalization removes the limit both on the amount of aid that a recipient government can receive and on total aid – the granting jurisdiction's budgetary liability.

4.4. Limiting the budgetary liability of the granting government

Under a cost-adjusted lump-sum grant program, the aggregate amount of aid that the granting jurisdiction is committed to disperse, its budgetary liability, is

$$A = F \sum_j n_j C_j - t^* \sum_j n_j V_j \quad (12)$$

If C_j is defined such that $(\sum_j n_j C_j)/N = 1$, the budgetary liability is

$$A = N(F - t^*V^T) \quad (13)$$

²⁸ If the benefits of education spill over community boundaries, giving these low demand districts incentives to increase spending is appropriate. While these incentives are best provided through matching grants, limits on local discretion may be a second-best policy.

where $V^T \equiv (\sum_j n_j V_j)N$ is average fiscal capacity. Policy makers at the level of the granting government determine budgetary liability as they choose the target spending level (F) and the formula tax rate (t^*). If the provision of aid alters average fiscal capacity, it also changes the budgetary liability associated with any given values of t^* and F .

A matching grant program, unlike a lump-sum grant program, has no built-in limit on the amount of aid that a recipient government can receive and no cap on total aid – the granting government’s budgetary liability.²⁹ Total aid can be limited by setting a maximum level of per-capita aid or by eliminating local discretion. Setting a maximum level of aid transforms the matching grant program into a closed-ended matching grant program.

4.5. Handling transitions – the role of hold-harmless

When the parameters of an aid system are changed, some recipient governments will receive less aid, and they will consequently have to increase local taxes and/or decrease local spending. As a result, changing aid formulae may make it more difficult for recipient communities to make long-term spending plans. Further, increases in taxes and decreases in public service levels triggered by reduced aid may lead in turn to decreases in property values and disposable incomes that are regarded as unfair.

The uncertainty that results when aid formulae are open to change and the perception of unfairness of formula-induced spending changes and capital losses often lead legislators to limit decreases in aid by including minimum-distribution and hold-harmless parameters in aid formulas. Hold-harmless provisions are also seen as mechanisms for shielding recipient governments from the effects of errors in the measurement of inputs to the aid formula. Year-to-year fluctuations in aid should be driven by changes in costs, fiscal capacity, or the number of individuals to be served, and not by sampling errors or other sources of imprecision in the inputs to the formula. Hold-harmless provisions mute the effects of sampling and measurement errors.

However, hold-harmless provisions and minimum aid amounts necessarily cause the distribution of aid to differ from that called for by the equalization formula – some recipient governments receive more aid than would be called for by strict application of the formula. Ultimately, if changes in the inputs to the aid formula are correlated positively with changes in costs, in fiscal capacity, and in the number who need to be served, hold-harmless provisions will prevent the objective of the aid program from being achieved.

Most observers recognize the trade-offs implicit in hold-harmless provisions. What many may not recognize is the degree to which hold-harmless provisions lock-in past aid distributions and create current aid distributions that differ dramatically from those that would result from literal application of aid formulae. Brown (2001) documents this reality for the case of Title I.

For the aid formula to have any real meaning, anything near complete hold-harmless should be avoided. Partial hold-harmless would still dampen the disruptive effects of changes in aid while permitting the goals behind the aid formula still to be the driving

²⁹ If there are no limits on discretion, the budgetary liability of the granting government is

$$A = \sum_j n_j m_j C_j t_j V_j$$

This quantity can be reduced by reducing m_j . For any m_j , the grantor’s expenditures will increase when local effort

force behind the distribution of aid. The handling of year-to-year changes in the Canadian equalization system provides an instructive example of partial hold-harmless. In Canada, year-to-year declines in each province's entitlement are limited. However, the base against which the year-to-year decline is computed is the entitlement the province would have received if the aid formula had been applied, not the actual amount of aid received in the previous year. Ultimately, then, the formula, as opposed to previous years' aid amounts, determines the amount of aid received.

If hold-harmless provisions are a response to concerns about sampling or measurement error, using moving-average measures of the inputs to the aid formula can mute the effects of errors while still permitting aid amounts to vary with true changes in costs, in fiscal capacity, or in the number of individuals who need to be served. Schirm and Zaslavsky (2001) document the advantages of using moving-averages in place of complete hold-harmless.

4.6. *Why grants may fail to achieve their objectives*

As the preceding text indicates, failing to adjust fully for changes in the aid formula, requiring aid to all jurisdictions to exceed some minimum, and failing to require all jurisdictions to make a minimum effort will prevent an aid program from having its intended effect. These are not, however, the only reasons why the goals of an aid program may not be achieved. Some objectives, such as creating a more equitable distribution of tax burdens, are difficult to attain under any realistic scenario. Achieving other objectives requires data that are not likely to be available. For example, matching grant programs will fail to correct for externalities if the matching rate fails to adjust properly for the fraction of benefits that spill over community boundaries. Yet measuring this fraction will typically be impossible (Fisher 1996).

Data limitations may also prevent equalization from achieving locational neutrality. Even if the formula is adhered to, if the available data are not good enough to permit accurate estimation of cost differentials, then locational neutrality cannot result.

Adjusting aid formulae to limit the budgetary liability of the granting government will also prevent an aid program from achieving its goals. For example, in the case of state school aid, limiting the state's budgetary liability by choosing too low a target level of spending (F) or too high a local effort (t^*) would be inconsistent with the goal of enabling schools to provide an adequate education with a reasonable local effort. Similarly, establishing a maximum aid amount in a matching grant program, i.e., making the grant a closed-ended matching grant, will typically result in the failure to provide those jurisdictions at the maximum with the necessary incentives to correct fully for externalities.

Finally, limiting the aid a jurisdiction can receive can create incentives that are counter to the intent of the aid program. For example, the Special Education, Grants to States program caps each state's aid at an amount equal to the number of its children receiving special education services multiplied by 40 percent of average per-pupil expenditure in U.S. public elementary and secondary schools. This cap gives states near the cap an incentive to modify their classification procedures so as to reduce the number of children receiving special education services.

5. Summary

In theory, the structure of intergovernmental aid programs should depend upon the goals of those programs. In practice, because those responsible for allocating funds have objectives that differ from the stated goals of the aid programs, the structure and operation of these programs are not necessarily consistent with these goals. Nevertheless, policy makers and analysts need to know how the goals of an aid program can be best translated into aid formulae. This knowledge makes it possible to understand the economic and social implications of deviations from the ideal. Providing this knowledge is the principal goal of this article.

Specifically, we describe how, in general, the objectives of intergovernmental aid can be translated into aid formulae. We focus on four objectives: offsetting differences in expenditure needs and fiscal capacities, encouraging spending on specified services, lessening horizontal equities that arise when persons of equal economic circumstances are not treated equally, and redistributing economic well-being. We note that intergovernmental aid can come closest to achieving the first two objectives; formula aid tends to be less effective in reducing horizontal equities and redistributing income.

We also discuss alternative methods for measuring need and effort and indicate how the objectives of the aid program should determine the choice of a measure of fiscal capacity. In addition, we offer a brief overview of a number of implementation issues, including the pros and cons of hold-harmless provisions and of provisions to limit the liability of granting governments. We close with some preliminary observations on the causes and consequences of aid programs failing to achieve their objectives.

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