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THE DESIGN OF EQUALIZATION GRANTS: THEORY AND APPLICATIONS

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**PART ONE
THEORY AND CONCEPTS**

OVERVIEW OF THE MODULE

This module, *The Design of Equalization Grants: Theory and Applications*, was developed for the World Bank Institute by Jorge Martinez-Vazquez and Jameson Boex at the Andrew Young School of Policy Studies, Georgia State University.

Part One of the module presents the conceptual and theoretical underpinnings that guide the design of equalization transfers as part of a system of intergovernmental fiscal transfers.

Part Two considers how to simulate alternative transfer schemes using a fiscal decentralization simulation model.

Part Three present case studies of equalization transfers for a number of countries around the world.

PART ONE: THEORY AND CONCEPTS

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SECTION 1 INTRODUCTION

Intergovernmental transfers form the cornerstone of subnational government financing in most developing and transition countries. The general term “transfers” is often used to refer to a number of different kinds of public financing instruments, including grants, subsidies, and even the sharing of tax revenues between central and subnational governments. Intergovernmental transfers can be used to pursue a variety of public policy objectives.

This manuscript considers the design of equalization transfer mechanisms. The objective of this module is to make two points. The first point is that there are many different dimensions that should be considered in the design and implementation of equalization transfers, and that the “right” equalization approach for a country depends on the specific objectives that are being pursued. The second point is that all components of intergovernmental relations, including subnational expenditures, revenues, and transfers, should be viewed as a system. Ultimately, the success or failure of a system of intergovernmental transfers lies not in the architectural beauty of the transfer mechanism, but depends on whether the system achieves its specified objectives within the context of a country’s fiscal decentralization policies.

1.1 What are equalization grants ?

There are a number of ways to classify intergovernmental transfers. Important characteristics of intergovernmental transfers upon which they could be classified and categorized include:

1. What is the purpose of the grant? What can it be used for? Is it a unconditional general purpose grant or is it a specific with conditions imposed on its use?
2. How is the total amount of the grant determined? Is it determined in advance as a share of national resources? Is it an ad hoc decision made annually as part of the national budget process? Is the amount subnational governments receive driven by the amount of costs to be reimbursed? Is it determined ex post?
3. How is the divisible pool distributed among eligible units? Is a formula used? Are revenues from a tax distributed in proportion to where the tax is collected? Are the funds used for the total or partial reimbursement of costs? Is the grant pool divided on an ad hoc basis or as a result of political negotiations?

Based on these three dimensions of transfers, a variety of approaches exist in which transfers can be allocated from the central government to the local governments.¹ For the purpose at hand, in correspondence with the above dimensions, we consider an equalization transfer to be: (1) an unconditional, general purpose transfer, (2) where the total amount of the grant is typically, although not necessarily, determined by some funding rule, and (3) where the divisible pool of resources is distributed among eligible units based on a formula that considers the expenditure needs and/or the ability of subnational governments to raise resources. The key feature of equalization grants is (4) its intended purpose: that of equalizing fiscal conditions among subnational governments. This requires providing additional resources to the poorer jurisdictions. Depending on the approach taken (see below) equalization mechanisms may also take resources away from the better-off jurisdictions.

One might wonder what the difference is between equalization funds and general purpose, unconditional transfers? For the purpose at hand, the two types of funds are virtually one and the same. Without exception, either implicitly or explicitly, general purpose, unconditional transfers apportion funds to subnational governments in response to some variation in the fiscal needs (or capacity), thereby fitting the definition of an equalization fund. While in some cases no clear distinction can be made between regular general purpose transfers and equalization transfers, the key distinguishing factor between the two types is the degree to which the intended purpose of the transfer is to provide a stable source of revenues for all subnational governments (which would make it a “regular” general purpose, unconditional transfer), or whether its explicit purpose is to provide resource predominantly to underdeveloped or fiscally needy regions or local governments (which would make it an equalization transfers, in the narrow sense of the term).

1.2 The rationale for equalization grants

Why give equalization grants? As we discuss in Section 2, targeted, conditional grants can be used to achieve specific policy objectives. For example, conditional grants can be used to stimulate spending on specific items that the central government cares about as a matter of national policy, such as education. However, equalization grants are unconditional grants and are given for general purposes. So, what is to be achieved by giving them?

¹Probably the most widely used taxonomy of transfer schemes is the one developed by Roy Bahl and Johannes Linn in *Urban Public Finance in Developing Countries* (New York: Oxford University Press, 1992).

First, in the absence of equalization transfers, some local governments often would have insufficient resources to fulfill their responsibilities at a minimum desirable level (by national standards). In particular, equalization grants are important as they typically provide a sizeable share of overall subnational government resources.

Second, equalization grants reduce horizontal fiscal imbalances in a country or regional disparities and inequities by compensating subnational governments with greater fiscal need and smaller fiscal capacity. Equalization grants can also be used to diffuse regionalism, separatism and other political centrifugal forces.

Third, equalization transfers are an important fiscal policy tool because they can be used by governments to pursue selective complementary objectives. In particular, equalization transfers can be used to stimulate fiscal effort. But as a rule, as discussed below, it is desirable to reserve equalization grants to the simple objective of equalization.

1.3 Overview of the Module

This module on equalization grants is divided into three parts. Part one provides a background on the theory and concepts involved in the design and implementation of equalization mechanisms. The second part of this module reviews how to develop an equalization grant in practice. For this purpose, the module is accompanied by an *Intergovernmental Fiscal Transfer Simulation Model*. Part three of this module contains a number of country case studies which demonstrate how to go about analyzing the equalization transfers in different countries. In several cases we provide simulations for the potential reform of the countries' equalization mechanism. The module is accompanied by a Powerpoint presentation that presents an overview of the topics.

The remainder of Part one provides a road map to the design, implementation, and analysis of equalization transfers. Section 2 considers the building blocks of a system of intergovernmental fiscal relations, defines the two key concepts of vertical fiscal balance and horizontal fiscal balance, and discusses how to determine the size of the equalization transfer pool. Section 3 considers the actual design of equalization mechanisms and formulas, including universally observed principles in the allocation of equalization grants, alternative specifications of the formula, and measurement issues related to measures of fiscal need, fiscal capacity and fiscal effort. Finally, Section 4 considers issues relating to the management and administration of an equalization scheme.

SECTION 2

THE BUILDING BLOCKS OF FISCAL DECENTRALIZATION

2.1 Components of Intergovernmental Fiscal Relations

Even though, the core subject of this module is equalization grants, it is important to realize that equalization grants, and all types of grants and transfers are just one element or leg in a fiscally decentralized system. The other three components are expenditure assignments, revenue assignments, and borrowing. It is further important to realize that fiscally decentralized systems are highly interdependent. A system of equalization grants will not perform well (i.e., reach its desired objectives) if the other components of the system are ill designed and do not perform their complementary roles. For this reason we begin this section with a brief review of the “other” components of a fiscally decentralized system.

Fiscal decentralization has to do with the degree of fiscal autonomy and responsibility given to subnational governments. It is a subject on the policy agenda of many developing, transition, and industrialized countries. In recent times there has been worldwide an increasing demand for more decentralization of government, resulting from a combination of people wanting to get more involved in the process of government and the apparent inability of more centralized systems of governance in the past decades to “get the job done.”

Commonly accepted objectives for fiscal decentralization include those of an efficient allocation of resources via a responsive and accountable government; an equitable provision of services to citizens in different jurisdictions; and preservation of macroeconomic stability and promotion of economic growth. These objectives provide guidance to the sound assignment of expenditure responsibilities among different levels of government.

Assignment of Expenditure Responsibilities

The efficient provision of government services requires that the public sector satisfy the needs and preferences of taxpayers as well as possible. This is best achieved by the subsidiarity principle: responsibility for the provision of government services should take place at the lowest level of government that can efficiently provide this service. In other words, government services should be provided at the level of government at which the a correspondence can be achieved with the "benefit area" associated with those services. The benefit area for sanitation services is clearly the local community; for national defense

the benefit area is the entire national territory.

Leaving the supply of public services with wider benefit areas to smaller units of government is likely to result in the inefficient under-provision of services. For example, if the responsibility of national defense would be left to the regional level, each state would seek to spend as little as possible on defense, since each region would hope to rely on the national defense contributions of all other states. As all regions would minimize national defense expenditures, clearly a sub-optimal level of spending would result for national defense. Likewise, the objectives of redistribution and stability are also best pursued by the central government. Efficiency in the provision of public services is further enhanced if there is a direct link between the benefits of government services and the costs of providing these services, via fees, service charges, or local taxes.

Revenue Assignment

If fiscal decentralization is to deliver the benefits of increased efficiency in public expenditures, subnational governments must have a minimum degree of control over their own sources of revenue. Subnational governments that lack independent sources of revenue can never truly enjoy fiscal autonomy; they may be--and probably are--under the financial thumb of the central government. Furthermore, without revenue autonomy there will be little accountability of local officials to local residents. Thus, the question is which revenue sources can and should be assigned to subnational levels of government and how these assignments are to be effected.

The question of how to assign revenues is closely related to the assignment of expenditure problem, because of the importance of benefit taxation in the finance of subnational government and the need to assure that subnational governments have revenues that are adequate to finance the expenditures assigned to them.

The traditional theory of fiscal federalism prescribes a series of conditions local taxes must meet: "good" local taxes are said to be those (1) that are easy to administer locally, (2) that are imposed solely (or mainly) on local residents, and (3) that do not raise problems of competition between subnational governments or between subnational and national governments. They are not too many revenue sources that meet those criteria. Those that do include property taxes and betterment levies, the personal income tax (usually as a flat-rate tax "piggy-backing" on the national personal income tax), some excise taxes, taxes on vehicles, and a variety of user fees.

Intergovernmental Transfers

Transfers form a critical component of virtually every system of intergovernmental fiscal

relations. Since own source revenues typically falls short in providing local governments with adequate resources to fulfill their expenditure responsibilities, a system of transfers is needed to provide subnational governments with additional resources.

The provision of additional resources in the form of transfers to subnational governments allows the central government to pursue a variety of objectives. From this perspective transfers can be designed for equalization purposes, to stimulate spending the subnational level for programs of national merits or importance (such as education or health), to stimulate activities with considerable economic externalities (the environment and transportation) or simply to pay for the local implementation of central government programs. Transfers can be designed to vary in three important aspects: (1) what local government are allowed to spend the money on (i.e., whether the grant is conditional, and if so, how much discretion the conditions leave); (2) the size of the transfer pool, and how the size of the pool is determined; and (3) how the available resources are distributed among the eligible governments. The characteristics of a grant will obviously vary greatly with the purposes pursued with the transfer. While it is beyond the purpose of this module to provide a comprehensive overview of intergovernmental transfers, a number of alternative types of transfers that could be considered for the design of a system of intergovernmental transfers include:

- Revenue sharing. Local governments could be allowed to keep a percentage of certain national revenues collected within their territories, such as the personal income tax. These revenues can be distributed on “derivation basis” (i.e., they stay in the jurisdiction where they are collected) or else they can be distributed on a per capita basis or other criteria or even formulas. Because revenue sharing does not give local governments discretion over either the tax rate or base, revenue sharing is considered a type of intergovernmental transfer.
- General purpose (unconditional) block grant. A general purpose or unconditional block grant is a grant allocated on an annual basis that has no strings attached. A formula is often used to allocate unconditional block grants among local governments. Due to the unconditional nature of this grant type, it provides local governments with a substantial amount of policy discretion. Grants issued for equalization purposes are most often general purpose unconditional grants.
- Conditional grants. The name of this grant already suggests that conditions are imposed (by the central government) on the use of this grant. Conditions can vary greatly from case to case. A sectoral block grant (also called categorical grants) is a conditional block grant that comes with the condition that the funds must be spent on a specific sector (for example, education); however, local governments maintain full control over how to spend the funds within each sector. Alternatively,

specific purpose grants can have very narrowly defined conditions (for example, a specific grant to be used for school books). Conditional grants by design limit the discretion of local governments, and as a rule should be used sparingly. However, conditional grants may be justified in order to promote national policy priorities or to prevent suboptimal funding of particular local government activities.

- Matching grants. Matching grants are conditional grants which require a specific contribution by the local government in a particular expenditure area. For example, the central government may provide a matching grant of one dollar for every dollar that a local government spends on schoolbooks from its own revenue sources (or general allocation transfers). Matching grants can be designed in a variety of ways and for a variety of purposes. Matching grants can be defined for very specific purposes or for broader (sectoral) purposes; the rate with which the central government matches local government contributions can be increased or decreased depending on the central government's desire to stimulate spending in a particular policy area; and matching grants can be open-ended or capped at a maximum for each local government.
- Cost reimbursement. The central government could implement a grant scheme in which it (fully or partially) reimburses local governments for certain approved cost. Again, this mechanism restricts the discretion of local governments and should be used with great caution. However, reimbursement schemes are recommended when a central government relies on local governments to implement central government policies (i.e., to fund tasks that fall outside the realm of functions to be devolved to local governments as part of the decentralization program). For example, the central government may wish to fully reimburse local governments for the cost of certain medicines made available through local governments as part of national eradication programs. Full reimbursement would prevent central government policies from becoming unfunded central mandates.
- Ad hoc or ex-post grants. In some cases, the distribution of grant programs is left to the discretion of an agency within the executive branch, such as the Office of the President or the Ministry of Finance or in some cases to the discretion of Parliament. Ad hoc disbursements give the public officials, an opportunity to “buy” favors and provides politicians an opportunity to wield their influence to the benefit of their constituents. This practice hardly ever results in an allocation of resources in accordance with the principles of sound fiscal management. Another relatively common practice, with similar inefficient results, is for the Ministry of Finance to forgive subnational governments budget loans that were incurred during the year, essentially turning budget loans into ex-post transfers.

Subnational borrowing

A fourth dimension of intergovernmental fiscal relations is subnational borrowing. Like revenue autonomy, central governments are often timid yielding control over borrowing to state and local governments, afraid of losing control over fiscal policy as a macro-economic management tool. However, this might impede the ability of subnational governments to borrow funds for capital development purposes. While subnational borrowing has risks, the efficiency gains and greater (intergenerational) equity associated with well regulated and controlled subnational borrowing outweigh those risks.

There are several basic approaches for bringing discipline and responsibility to subnational government borrowing. The first approach relies on financial markets to self-enforce prudent borrowing behavior by subnational governments. Excessive or irresponsible borrowing gets punished by higher borrowing costs and ultimately by the refusal of lenders to provide funds to irresponsible governments. This approach only works effectively if there are well developed capital markets and institutions, including disclosure of information, ratings agencies and bankruptcy laws. The relative simplicity and self-enforcing properties of the market approach make it a more attractive and ultimately a superior approach. However, typically institutions are not developed enough to make the capital market a viable alternative in most developing and transitional economies.

A second approach to subnational borrowing relies on federal or central government legislation to impose limits on borrowing for subnational governments and on central or federal government agencies enforcing these limits. Countries with less well developed capital markets and institutions often rely on this second approach. In addition, a successful strategy to impose restraints on subnational borrowing requires instituting bankruptcy and financial emergency controls and addressing the fiscal imbalances that underlying the fiscal problems of subnational governments.

2.2 Vertical Fiscal Balance

The design of expenditure responsibilities and revenue sources very rarely leads to a perfect match between the two sides of subnational government budgets.

Vertical fiscal balance exists when there is a broad correspondence between the expenditure responsibilities assigned to each level of government and the fiscal resources available to them to carry out those responsibilities. Vertical balance requires that revenue sources (revenue-raising capacity) assigned to the central and subnational government match their respective expenditure responsibilities. This requirement applies to the revenue

source assignment for each subnational government as well as for all subnational government in aggregate. It is always hard to attain vertical balance. The most effective solution is to provide some degree of *tax autonomy* or discretion to each level of government. A typical representation of the two sides of the budget is given in Table 1.

Table 1: Vertical Fiscal Balance	
Revenue Capacity = Expenditure Needs	
Regional Revenue Sources [1] Own taxes and other revenue sources [2] Shared tax revenues [3] Intergovernmental transfers (a) Equalization grants (b) Other recurrent transfers (c) Capital transfers	Expenditure Responsibilities [4] Own expenditures (responsibilities) [5] Delegated expenditure responsibilities

The most common source of vertical imbalance is the lack of own revenue sources at the subnational level. There are several reasons why central government often are hesitant to assign substantial own revenue sources to subnational governments:

- C the center's fear to lose control over fiscal policy as a fiscal management tool;
- C the perceived need for the centralized administration of the most significant taxes;
- C the assignment of the most elastic sources of revenues to the central government (even though local governments are often assigned responsibility for public services with a more elastic demand with respect to income);
- C fear of mismanagement or tax competition among local governments, or;
- C simply a reflection of the dominant political power of the central government.

Revenue sharing and transfers are typically designed to redress this vertical imbalance. However, both political accountability and economic efficiency require that subnational governments have at least some own sources of revenues, meaning taxes and fees over which they have total or almost total control. At a minimum, local governments should have discretion over the rate of a local own revenue source. An item of specific concern

in many decentralizing countries is that although subnational governments are often increasingly assigned “own source revenues” to fund their budgets, the term is often improperly used to refer to any revenue source that flows to subnational governments, irrespective of whether subnational government have any control over these revenue sources. In many cases, the base and rate of these “own source” taxes are still determined by the central or federal government.

Measures of Vertical Fiscal Balance

Conventionally, vertical fiscal imbalances have been measured in two different ways. The first approach is to look at the surplus or deficit position of each consolidated level of government, before borrowing but after all revenue sharing and transfers have been implemented. One might conclude that the level of government that runs relatively the largest deficit, does not have its expenditure needs met appropriately.

Box 1

Vertical Imbalances in Practice: The Issue of Adequacy

One common problem when a decentralization policy is implemented is determining the level of resources that is “adequate” for the delivery of subnational government services. Determining this level of adequate funding is often a cause for substantial disagreement between the central and subnational levels of government. It is important to consider this question in the context of developing economies.

A defining characteristic of developing economies is that economic resources are limited; this naturally constrains the resources that might be made available to the public sector. A nation’s fiscal decentralization policy will not instantaneously cause economic resources to become abundant, and public sector resources at all levels of government will continue to be constrained well within socially and politically desirable levels. However, a decentralization program does give local governments increased control over certain revenue sources and also gives governments the right to decide how local resources are allocated.

In this light, the term adequate should logically be interpreted within the context of the overall constraint on public sector resources. As a prudent step in the implementation of a decentralization policy, a more complete definition of what constitutes “adequate resources” should be established before any major expenditure responsibilities are devolved. Reaching this understanding in advance would be beneficial to all stakeholders.

Consensus on the meaning of the term adequate resources would protect local governments from a tendency of central governments to use the decentralization process in order to resolve their own fiscal problems by “dumping” expenditure responsibilities onto subnational governments. At the same time, the central government would be wise to inoculate itself from future claims by local governments that the transferred resources were inadequate.

Failure to establish a definition of adequacy would give local governments political cover to engage in fiscally irresponsible behavior (i.e., over-commit resources with the hope of receiving additional transfers) as soon as the decentralization process starts in earnest. In practice, a helpful measure of adequacy is the historical level of expenditures at the national level for a particular service (expressed in per capita terms or as a percent of the public sector), in the year before it was decentralized.

Although this measure has the benefit of being easily understood, there are a number of problems with this approach. This measure tends to be biased toward central or federal government mismatch because in many countries, either by law or by practice, subnational governments operate more conservatively than the national government. In most countries, the central government is allowed to borrow quite freely to cover current operations. In contrast, local governments in many countries are only allowed to borrow for capital investment purposes, if at all. This measure of vertical imbalance is further only meaningful under the assumption that deficits are not the result of mismanagement or waste, or in other words that governments at all levels attempt to provide the services under their responsibility in an efficient manner. Only under these conditions would the presence of a budget deficit suggest the presence of a mismatch between expenditure responsibilities and fiscal resources.

A second way to measure vertical fiscal imbalance is to examine what share of subnational government expenditures is financed with sources of revenues under the control of regional and local governments. Hunter (1977) defines a coefficient for vertical imbalance as:

$$1 - \frac{\text{(total subnational resources not under subnational control)}}{\text{total subnational expenditures}}$$

This coefficient quantifies the share of the subnational government expenditures that are financed from sources of revenues that are controlled by the subnational government. By

construction, the coefficients of vertical imbalance take values between zero and one, with values closer to zero indicating a larger vertical fiscal imbalance. There is typically disagreement on how exactly to define those types of transfers and revenue sources that are controlled by the central government, especially when comparing fiscal decentralization policies between countries. An important advantage of Hunter's approach is that it only requires consolidated subnational fiscal data.

2.3 Horizontal Fiscal Balance

Another important objective, and at times more important for maintaining cohesiveness of a nation than attaining vertical fiscal balance, is to assure the achievement of an acceptable level of horizontal fiscal balance. Horizontal imbalances exist when there are significant economic and fiscal disparities across regions. Significant regional variations in fiscal resources often leads to regional tensions and can even lead to open conflict or demands for secession.

It is important to keep in mind that horizontal imbalances are a natural occurrence. If left undisturbed, regional variations in economic conditions and fiscal disparities will encourage people and capital to relocate from less productive regions towards more productive regions. As such, excessive equalization may thwart the efficient allocation of resources throughout the national territory and overall economic growth in the country.

Although increased decentralization of revenue sources always results in increased horizontal imbalances, it is important in the design other elements of a system of intergovernmental fiscal relations to keep the imbalance in check. Horizontal imbalances can be controlled by assigning own source revenues in a way that minimizes resource variations between local governments. For instance, assignment of natural resource revenues to state or local governments could lead to extreme variations in resource availability at the subnational level. More typically, horizontal imbalances are addressed by equalization transfers.

Measures of Economic Disparities

Without exception, at least some fiscal disparities do exist between different regions within a country and between different localities within a region. However, political forces often demand that the system of intergovernmental fiscal relation reduce these inequities. This poses the dual task for economists to, first, measure horizontal fiscal imbalances, and second, to design policies to reduces these imbalances.

The root cause of regional fiscal disparities is the fact that each region or locality has a unique economic base since economic activity is not spread out across space in an even manner. Thus, one possible measure of horizontal imbalances is per capita gross regional product (GRP); other possible measures of regional disparities include per capita personal income or regional value-added. The variable is expressed in per capita terms to control for the fact that some regions are larger than others. Descriptive statistics that are typically reported for measures of regional disparities include the mean, minimum, maximum, and the coefficient of variation. The coefficient of variation (CV) is practical measure of dispersion, and is defined as the standard deviation divided by the mean. An advantage of the coefficient of variation compared to the standard deviation is that the size of the coefficient does not depend on the measurement units chosen. As a result, one can compare the CVs of two variables that are measured in different units.

It is important to note that per capita GRP is a limited measure of fiscal disparities. For example, two regions with the same level of GRP may have different levels of fiscal need. In addition, different regions may also have differing abilities to collect taxes as a result of differences in economic structures: a rural, agricultural region, for example, may be less able to collect taxes than an urban region with a large manufacturing sector when trying equally hard to collect taxes from the same level of GRP.

Measures of Fiscal Capacity and Fiscal Need

While variations in per capita GRP provide a measure of regional economic disparities, horizontal fiscal imbalances are better measured by variations in fiscal capacity across regions. The fiscal capacity of a region represents the potential revenues that can be obtained from the tax bases assigned to the region if an average level of effort is applied to those tax bases. One might be inclined to use variations in per capita regional revenue collections as a measure of fiscal capacity. However, the level of own source revenue collections does not depend solely on the ability of a state or local government to collect revenues, but is also effected by the level of effort exerted by the subnational government in collecting revenues. Section 3.3 discusses the difficulties in selecting a good measure of fiscal capacity and suggests a number of possible measures.

In addition to differences in the economic base of regions and differences in the ability to generate revenues, regions are also different with regard to fiscal needs. Differences in fiscal need can arise due to variations across regions in geography, climate, demographic composition and economic conditions. For example, regions with more young or old people typically spend more on education and health care, respectively, than other regions. Likewise, regions with high concentrations of poverty often need to spend more on social programs, while regions with higher price levels will typically also have higher expenditure

needs in order to assure the same level of public services as other regions. Again, ways to measure and quantify fiscal need are discussed in Section 3.3.

Measuring the Fiscal Gap

The most obvious way to reduce fiscal disparities is to provide transfers to regions that have a significant “fiscal gap.” The fiscal gap could be defined as the difference between *fiscal needs* (needs associated with the expenditure responsibilities, indicated by [4] and [5] in Table 1) and *fiscal capacity* (own-source revenue potential [1], shared resource revenue potential [2]), after taking into account targeted transfers (indicated by [3b] and [3c] in Table 1) which are used to pursue other objectives. The remainder of the fiscal gap could be filled by equalization transfers [3a]. :

$$\text{Fiscal Gap} = \text{Fiscal Needs} - \text{Fiscal Capacity} - \text{Targeted Transfers}$$

The main challenge in providing equalization transfers, though, is to measure fiscal need and fiscal capacity. As pointed out above, actual revenues form a poor measure of fiscal capacity, because revenue collections also depend on region’s fiscal effort. Similarly, local expenditures are not necessarily a good reflection of fiscal needs: subnational expenditure levels more a function of a region’s fiscal capacity and a region’s political ability to receive special favors and transfers than a measure of fiscal need. In addition, the use of actual revenues and expenditures in an equalization formula would provide a perverse incentive for subnational governments to increase spending while reducing own source revenue collections, with the knowledge that the central government will finance the difference. As a result, actual revenues cannot be used in general to measure fiscal capacity and actual expenditures cannot be used to measure fiscal needs for the purpose of equalization. More in general, the measure of tax capacity and expenditure needs can not incorporate variables that can be directly affected by the behavior of subnational, governments or the central authorities.

2.4 Determining the Size of the Equalization Transfer Pool

The first fundamental step when considering the introduction of an equalization transfer is to *explicitly identify how much equalization will be pursued*, in light of the potential tradeoffs between equalization on one hand and economic growth and overall incentives for revenue mobilization on the other hand. Although not much is known with certainty about the potential tradeoffs between the level of equalization and overall economic growth, the presumption is that by withdrawing resources from better off regions for distribution to poorer regions the overall rate of growth will slow down. Depending on the

economic and fiscal disparities across regions in the country, a high degree of equalization could draw resources away from faster growing regions. In addition, systems that bring a high degree of equalization can have a significant deterrent effect on the stimulation of tax effort and the development of tax bases. Thus, an important question is whether these high degrees of equalization are still desired, and if so, how the negative incentives for revenue mobilization can be minimized.

The second fundamental step is to ***decide on the use subnational governments can make of the equalization funds received***. Although it is often the case that equalization funds are used as instruments to pursue economic objectives other than equalization, in general it is more desirable to use different instruments to pursue these objectives. For example, redressing vertical imbalances can be accomplished through the reform of revenue assignments. Alternatively, the support of particular types of expenditures at the subnational level could be accomplished through the use of conditional grants (for instance, categorical or matching grants). For the most part, equalization transfers should be unconditional, lump-sum transfers, thus providing subnational government with total discretion to use those funds.

Vertical (Paternal) or Fraternal Equalization

The third fundamental step is the ***determination of overall funding for equalization transfers***. Two basic aspects of this determination may be identified. First, it should be determined whether equalization will take place using a traditional, vertical mechanism (funded by central government revenues) or whether equalization will occur through a “fraternal” approach (funded among the subnational governments themselves). Second, once the basic principle has been identified, what are the rules to be used within that basic principle.

The use of an explicit fraternal principle for funding the equalization pool is a function of historical tradition, whether or not there exist significant economic and fiscal disparities across regions, whether there exist ethnic frictions in the country, and so on. The main idea under the fraternal system is to create a pool of funds from direct contributions by richer subnational governments which is distributed to the poorer subnational governments. This system is also known as a “Robin Hood” system of finance. It is used in Scandinavian and some Central European countries, and also in the Baltic countries. In the second approach, which can be labeled vertical funding, the central government contributes the funds to be distributed to poorer subnational governments as equalization grants.

There is also the possibility of mixed (fraternal and vertical) funding. For example, the system currently used in Latvia is actually a mixed system because both the central

government and richer subnational government contribute jointly to the equalization fund pool. Central government may also engineer hybrid funding systems by implementing negative transfers (or mandatory withdrawals) from richer regions but without actually putting these funds directly in the equalization pool for poorer regions. Many countries in the Former Soviet Union (e.g., Kazakhstan, Ukraine and Russia) have been using withdrawals or negative transfers on and off during the transition years as an indirect way to fund (and also implement) equalization schemes.

It must be kept in mind that any change in the system of funding of the equalization pool is likely to require also significant changes in revenue assignments and/or expenditure assignments, if all levels of government (central and subnational) are to be held harmless.

Funding Rule

After the basic principle or approach to funding the equalization pool has been decided, several rules can be chosen for their implementation. The actual determination of funds can be organized on an *ad hoc* basis, such as a particular level of funding specified in the annual budget, or it can be done in a more objective and stable basis as, for example, a percentage of central government revenues, or certain taxes, with this percentage fixed for a number of years.

There are advantages and disadvantages to these two different rules. The ability to change the overall level of funding annually in an *ad hoc* basis provides central governments with more flexibility to pursue macroeconomic stabilization policies. On the other hand, the use of an *ad hoc* rule causes uncertainty for subnational government budgets. The desirability of making revenue flows for subnational governments more predictable suggests that the introduction of a temporarily fixed rule for funding the equalization pool may be a superior alternative. A common version of this rule is to fund the equalization pool with a percentage of central government revenues and to fix this percentage for a number of years, for example, three to five years. The percentage may be applied to only some central government taxes rather than all revenues. But, even though the adoption of this type of rule contributes significantly to the revenue certainty of subnational budgets, it does stop short of providing subnational governments with predictable revenues, since the actual revenue performance of central government taxes is itself uncertain.

Several other rules may be adopted to increase the revenue predictability for subnational governments from equalization transfer flows. One of these rules is to fix the size of the equalization pool as a share of central government *budgeted* revenues, as opposed to actual or realized revenues. A second rule is to use a moving multi-year average of central government revenues for determining the pool of equalization funds. Again there are pros

and cons in the choices of these rules. The former exposes central governments to greater risks, while the latter may under-fund the equalization pool in high growth and inflationary environments. Of course, there is also the possibility of indexing the moving average amount for inflation.

SECTION 3

EQUALIZATION MECHANISMS AND FORMULAS

The fourth fundamental step is the *division of the equalization funds among subnational governments*. Again several types of rules can be followed for the apportionment of the available funds among subnational governments. First, the apportionment of funds can be done on an *ad hoc* basis. This can mean many different things. For example the central government may use bargaining and negotiation with subnational governments, or may use “internal computations” partially based on political considerations to establish a “fiscal gap,” or it may use any other type of non-transparent and discretionary methodology. Second, the central government may use an “equal per capita” rule for the distribution of funds for those subnational governments that qualify. Third, the central government can use more complex and explicitly stated formulas.

The manner in which the equalization funds is divided among eligible subnational governments is ultimately a political choice, but the design of the mechanism should be guided by sound economic principles.

3.1 Universal Principles in the Allocation of Equalization Grants

Central governments have many choices on how to structure the equalization formula and even what exact objectives to pursue, as discussed below. However, independently of its final structure, all equalization formulas should obey *several universal principles*:

- First, the equalization formula should provide a source of adequate resources to local governments in a way that balances national priorities and local autonomy.
- Second, the formula should support a fair allocation of resources by providing more resources to districts with lower tax capacity and greater fiscal needs.
- Third, equalization transfers should be provided in a predictable manner in a dynamic sense. The formula should be stable over a period of years to promote revenue predictability and overall budget certainty.
- Fourth, equalization formulas should be, to the extent possible, simple and transparent. An important way to keep equalization formulas simple is to limit its objectives exclusively to the purpose of equalization of fiscal capacity and/or fiscal need. (Thus, it is generally better to use other policy tools to achieve other

specific objectives, such as stimulating fiscal effort or rewarding sectoral performance). The formula should also be understandable to all stakeholders, in particular regional officials and legislators, and not be subject to political manipulation or negotiation in any of its aspects.

- Fifth, the formulas should not create negative incentives for revenue mobilization by subnational governments, neither should they induce inefficient expenditure choices. Negative incentives to revenue mobilization are created for example if the amount of to be received in equalization transfers is reduced every time the subnational governments makes a greater effort to increase its own revenues. Negative inducements to expenditure choices are present, for example, if the amount to be received from the equalization transfers is increased by hiring more employees or hoarding excess physical capacity in the form of half empty hospitals or idle school rooms. In order to avoid these negative incentives it is critically important that the formulas do not try to equalize actual revenues and expenditures but instead fiscal capacity and expenditure needs. These two concepts are defined below.
- Sixth, the transfers of funds should be unconditional lump-sum grants for general-purpose financing of subnational governments. This is so because the objective of equalization is best served by providing subnational governments with the equivalent of their own-revenues, which in principle they can use without any limitations or constraints.
- Seventh, during the introduction of the new transfer mechanism, the transfer system should avoid sudden large changes in funding for local governments. Changes in the existing formula should strive to hold local government “harmless.”

3.2 Allocation Mechanisms

The general intent of an equalization mechanism is to compensate for fiscal disparities across regions. Fiscal disparities arise from two main sources. Regions may differ in their *fiscal capacity*, that is in their economic base and therefore in their ability to raise a particular level of revenue with standard rates and administration effort. Regions may also differ in their *expenditure needs*. Even when regions have the same fiscal capacity or ability to raise revenues, they may differ in the costs they face to provide a standardized basket of public services due to differences in needs arising from different demographic profiles (percent of the population of school age or retired), geographical and climatological conditions, incidence of poverty and unemployment, and so on. The differences in expenditure needs among regions may also arise independently from differences in costs or price levels related to the provision of a standard basket of public

services.

In international practice there are countries that use formulas to equalize both fiscal capacity and expenditures needs (including most developed and transitional countries), countries that use mechanism that equalize only fiscal capacity, and countries which equalize only expenditure needs differences across subnational governments. Typically, to achieve an adequate level of equalization, it will be necessary to equalize both fiscal capacity and expenditure needs. Descriptions on international practices in fiscal decentralization are contained in a number of publications, including *Urban Public Finance in Developing Countries* by Roy Bahl and Johannes Linn (New York: Oxford University Press, 1992); *Fiscal Decentralization in Developing Countries* edited by Richard Bird and François Vaillancourt (Cambridge, UK: Cambridge University Press, 1998); *Fiscal Federalism in Theory and Practice* edited by Teresa Ter-Minassian (Washington: IMF, 1997), *Financing Decentralized Expenditures: An International Comparison of Grants* edited by Ehtisham Ahmed (Cheltenham, UK: Edward Elgar, 1997) and *Intergovernmental Fiscal Transfers in Nine Countries: Lessons for Developing Countries* by Jun Ma (World Bank, 1997).

A further policy decision is whether the *stimulation of tax effort* by subnational governments should be part of the equalization mechanism. This can be accomplished by introducing incentives in the equalization formulas to promote tax collections by subnational governments. This is a controversial issue. The generally accepted principle is that the transfer systems should neither encourage nor discourage tax effort by subnational governments.

That tax effort should not be discouraged is immediately obvious, since otherwise equalization transfers would be self-defeating. Nevertheless, surprisingly many transfer systems in the international practice, including many countries of the former Soviet Union, violate this neutrality principle reducing transfers in response to revenue mobilization by subnational governments. Theoretically, the general encouragement of tax effort is not justified either, because there is nothing superior about a system of intergovernmental finance that taxes and spends more. The encouragement of higher tax effort by subnational governments may be justified on a temporary basis if there is no tradition of revenue autonomy at the local level or there is a generalized problem with the lack of tax effort. However, to emphasize, the encouragement of tax effort should never be seen as a permanent feature of the equalization system.

Equalizing the Fiscal Gap Between Needs and Resources

Once the size of the equalization pool is determined (preferably as a percent of central

government revenues, fixed for a number of years), there are a number of ways in which the allocation mechanism can be specified. One straightforward approach equalizes resource based on the fiscal gap between expenditure needs and capacity. This mechanism has three steps:

- Step 1. Measure Fiscal Capacity and Fiscal (Expenditure) Needs
- Step 2. Define the fiscal gap for each local government:
- If Fiscal Capacity > Fiscal Needs, then Fiscal Gap = 0.
 - If Fiscal Capacity < Fiscal Needs, then
Fiscal Gap = Fiscal Needs - Fiscal Capacity
- Step 3. Define the transfer to each local government:
Transfer to Subnational Government i =
(Fiscal Gap $_i$ / \sum Fiscal Gap $_i$) * Fund

Due to the inadequacy of the revenue sources assigned to local government in many countries, (virtually) every local government would be expected to have a positive fiscal gap.

In this approach, equalization transfers are allocated in proportion to the fiscal gap. The degree to which the gap is filled depends on the level of funding available: each local government's fiscal gap will be filled by a percentage equal to the ratio of the total funds available and the aggregate local fiscal gap. This mechanism follows one of the most basic structures of an equalization formula because it uses only a single determinant (or allocation factor) to allocate transfers, namely the fiscal gap. Of course, this approach places an important burden on the accurate computation of fiscal capacity and fiscal need, which is discussed in Section 3.3.

Equalization Using Two Windows

As in the example above, an equalization mechanism can combine the equalization of tax capacity and expenditure needs in one single step. Alternatively, an equalization mechanism can take the form of a two-step mechanism, with separate "windows" for tax capacity equalization and expenditure need equalization. The added benefit of a second window is that it allows to equalize differences in fiscal capacity at a different level than differences in fiscal need. Of course, one could also use the first window for fiscal gap equalization and use the second window for a different purpose, for example, to stimulate fiscal effort or to provide additional transfers for only the poorest regions.

For instance, in a two-window approach, one could equalize fiscal capacity in a procedure

very similar to the previous example:

Step 1. Measure Fiscal Capacity

Step 2. Define the fiscal capacity gap for each local government:

If Fiscal Capacity > Average Fiscal Capacity, then Capacity Gap = 0.

If Fiscal Capacity < Average Fiscal Capacity, then

Capacity Gap = Average Fiscal Capacity - Fiscal Capacity

Step 3. Define the transfer to each local government:

Transfer to Subnational Government $_i$ =

$(\text{Capacity Gap}_i / \sum \text{Capacity Gap}_i) * \text{Fund}$

The information requirements of these two approaches are essentially the same. However, if the equalization of fiscal capacity and expenditure needs is done in a two-step or window formula, then the overall amount of funding needs to be divided between these two windows. There are no fixed and fast rules for the division of funds between the windows. The division typically reflects policy objectives toward the need for equalization of capacity and expenditure needs and the perceptions as well as measurements of the relative seriousness or importance of differences in fiscal capacity and expenditure needs across subnational government budgets.

Regardless of whether a single or two-window approach is actually adopted, the effectiveness of an equalization formula is largely determined by the quality of the information and data used in its development. The biggest challenge is always to find adequate measures of fiscal capacity and expenditures needs.

Equalization using Multiple Factors

One of the draw-backs of fiscal-gap filling is that it requires to quantify fiscal capacity and fiscal needs of each local government. A more basic approach is to allocate the funds to subnational governments simply in proportion to some allocation factors that together form a proxy of a local government's fiscal capacity or fiscal need; this approach thus relies on a number of weighted factors.

The distribution approach using weighted factors is quite simple. First, a number of "factors" (such as population, land area, and so on) are selected. (The selection of variables is discussed in the next section). Second, it is determined how important each factor will be in the final allocation of transfers by assigning relative weights to each factor ($a_1 + a_2 + \dots + a_n = 1$; n is the number of factors used). Third, for each factor, a local government will receive its share of funds in proportion to that factor.

An example may be illustrative. First, it might happen that population and land area are selected as factors to be used in the allocation formula. Second, the government assigns a weight to population of 80 percent, while 20 percent of the total fund is assigned in correspondence with land area. Third, if a local government area contains 5 percent of the national population, the assembly would receive 5 percent of the funding available for the factor "population." Naturally, this local government would also receive an allocation in proportion to its relative share of land area.

When expressed in a formula (as is sometimes done for the purpose of legislation), the formula would look like:

$$\text{Transfer for Local Government} = [a_1 (x_1 / X_1) + a_2 (x_2 / X_2) + \dots + a_n (x_n / X_n)] * F$$

Note that this can be re-written to the mathematically equivalent and perhaps more intuitive expression:

$$\begin{aligned} \text{Transfer for Local Government} &= (x_1 / X_1) * a_1 F \\ &+ (x_2 / X_2) * a_2 F \\ &+ \dots \\ &+ (x_n / X_n) * a_n F \end{aligned}$$

where:

- F is the pool of funds to be allocated among all local governments;
- $a_1 + a_2 + \dots + a_n = 1$; and
- x / X represents the share of each factor that is present in the local government area.

Variables that could potentially be included as allocation factors in such an equalization formula include:

- Population;
- School-aged population (population aged 5-14) or school enrollment;
- The number of poor persons, and/or the number of ultra-poor persons;
- Infant mortality count;
- Land area, acreage of arable land.

The fifth step involved in the design of an equalization mechanism is to decide whether particularly poor or depressed regions need to be addressed in a special way within the regular equalization mechanism or whether *a different system of emergency*

equalization grants for these regions is justified. It is not an uncommon event for some regions in a country to be subject to extreme economic hardship conditions because of drastic economic reversals or natural disasters. The expenditure need and fiscal capacity gaps created by these conditions may well be beyond the capability and design of the ordinary equalization transfer system. A separate system of emergency equalization grants (either as a separate transfer altogether, or as a separate window of the equalization fund) may well be justified in the presence of extraordinary circumstances. When disparities in fiscal capacity and expenditure needs remain moderate a well designed regular equalization fund is all that is needed.

Box 2
Equalization for the Neediest Local Governments

One way to increase the level of equalization is to focus equalization transfers on the neediest local governments.

In the gap-filling mechanism (regardless whether you are filling a fiscal gap, a capacity gap, or a needs gap), one can focus additional resources on the neediest regions by modifying the threshold. For instance, in the computation of the fiscal capacity gap above, step 2 can be modified as:

- If Fiscal Capacity $> \alpha$ * Average Fiscal Capacity, then Capacity Gap = 0.
- If Fiscal Capacity $< \alpha$ * Average Fiscal Capacity, then
Capacity Gap = α * Average Fiscal Capacity - Fiscal Capacity

where α is a threshold parameter between zero and one. For instance, if $\alpha = 0.8$, then only local governments that have a fiscal capacity less than 80 percent of average fiscal capacity will receive a transfer. Since the same amount of funding is applied to a more select group of (poorer) local governments, each local government can have a larger share of its gap filled.

In a similar vein, when using the weighted factor mechanism, instead of allocating funds in proportion to a factor, one can achieve a greater degree of equalization by defining special factors for the neediest regions. For instance, instead of allocating funds in proportion to the number of poor persons in a local government (which would result in transfers to all regions, including some to local governments with a low poverty rate), one can define a factor that measures a “poverty gap.” This poverty gap variable could be used as one of

the allocation factors in the formula and would allocate resources towards local governments that have an above-average incidence of poverty:

- If Poverty Rate_i < Average Poverty Rate, then Poverty Gap_i = 0.
- If Poverty Rate_i > Average Poverty Rate, then
Poverty Gap_i = (Poverty Rate_i - Average Poverty Rate) * Population_i .

The sixth step in the equalization process is whether to introduce reforms “cold turkey” or *whether to phase-in the new transfer system* (or the reform or an existing one) over a period of several years to smooth out the transition to the new regime. A more gradual approach would typically make the changes in regional funding more politically acceptable. The potentially significant changes in transfers and the losers that reform will generate are often an impediment for the serious discussion of alternatives that imply significant departures from the *status quo*. Drastic changes in the level of funding can hurt local governments’ ability to repay loans or to embark in long-term expenditure programs.

Two approaches could be used to phase in a new formula or a new equalization mechanism. First, one can gradually introduce the new mechanism while maintaining part of the status quo (see Box 3). Alternatively, one can phase in reforms by holding regions partially harmless, that is, by simply compensating regions for their loss in revenues due to the regime shift. Often these approaches fix the base transfer or entitlement for the local governments in nominal terms. The transition to the new system is achieved through real growth and inflation, both of which kept to the shrinkage of the historical transfer. This is typically harder to implement because additional funds for the purpose of holding harmless are often not available. Unless there is significant growth in revenues or additional resources could be identified, a holding harmless provision would significantly reduce the available pool of funds for equalization. However, in many cases a phased-in program or the use of a hold-harmless provision are preferable alternatives to having no reform whatsoever.

Box 3

Phasing in a New Transfer Mechanism

A new transfer mechanism could be phased in to assure that no unnecessary shocks occur in the level of funding. This technique is resource neutral and assures that sharp decreases

and sharp increases in local resource availability are spread out over a two-year period. (Naturally, if these changes are still deemed excessive, this methodology could be modified to ensure smoothing over a three-year period or even longer).

Transfer for a local government = $0.5 F o/O + 0.5 F t/T$,

where F represent the aggregate level of available funding; o/O represents the relative share of resources that the local government would have received using the original allocation mechanism; and t/T represents the relative share of resources that the locality would receive if the activity would be funded fully in accordance with the new formula.

3.3 Fiscal Capacity, Fiscal Needs, and Fiscal Effort

Measuring fiscal capacity

Fiscal capacity of a subnational government may be defined as the potential revenues that can be obtained from the tax bases assigned to the subnational government if an average level of effort (by national standards) is applied to those tax bases. Thus, ideally, tax capacity should be measured by the size of the tax bases available to subnational governments or the revenue that these tax bases would yield under standard tax rates. A measure of fiscal capacity is necessary to compute transfers based on a “fiscal gap” in a one-window transfer mechanism. Alternatively, fiscal capacity (or a “capacity gap”) may be computed as one of the factors in a weighted factor allocation scheme.

Before we proceed, let us explain the problems associated with using the actual amount of revenue collections in a region as a measure of fiscal capacity. There are several elements that create a gap between the amount of revenue raised by a region and the *potential ability* of a region to raise revenue. First, two regions with the same fiscal capacity may collect different amounts of revenue as a result of applying different tax rates or defining taxable income in different ways, by for example, granting different levels of exemptions. Second, two regions with the same fiscal capacity may collect different amounts of revenue due to variances in the enforcement effort with which revenues are collected. Third, two regions with the same fiscal capacity may collect different amounts of revenue as a result of different levels of taxpayer compliance (for the same enforcement effort). Thus, while tax rates, enforcement effort and taxpayer compliance all affect the actual level of revenue collections, they do not affect the *potential ability* of regions to collect revenues. Additionally, using actual revenue collection as a measure of fiscal capacity in an equalization formula would provide a negative incentive for subnational

revenue generation, as it would reduce equalization transfers for subnational governments that collect more revenues.

A variety of methods are used around the world to measure a state or region's fiscal capacity:

- First, an often used measure of fiscal capacity (despite the problems already mentioned) is the state's level of *revenue collections* or *past* years's revenue collections. Note that using past collections only partially addresses the problem of negative incentives. Sooner or later subnational governments "learn" that higher collections translate into lower transfers.
- Second, the source of revenue for subnational governments (either directly or indirectly) is the income of its taxpaying residents. As a result, an obvious measure (and one of the most widely used measures) of fiscal capacity has become the per capita level of *personal income*. The main advantage of using per capita personal income as a measure of fiscal capacity is that its wide availability and its simplicity.
- Third, *Gross Regional Product (GRP)*, the regional-level equivalent of Gross Domestic Product, can also be used as measure of fiscal capacity. GRP is defined as the total value of goods and services produced by the region's economic resources (land, labor and capital) over a given period of time. Since the total value of goods and services produced in a region is equal to the income received by the owners of the employed economic resources, GRP reflects the total amount of income potentially subject to taxation by the state government. GRP is a more comprehensive measure of the fiscal capacity than per capita income because GRP includes income generated within a regional irrespective of the location of residence of the worker or producer.
- Fourth, *Total Taxable Resources (TTR)* is a modified version of Gross Regional Product. Total Taxable Resources recognizes that while GRP is a good measure of the total amount of economic activity that takes place in a region, GRP does not include the effect of certain federal/central taxes and transfers on the fiscal capacity of subnational regions. As such, several adjustment are made to GRP to arrive at TTR.
- Fifth, in order to move away from the one-dimensionality suffered by the measures of fiscal capacity reviewed so far, the (now-defunct) U.S. Advisory Commission on Intergovernmental Relations developed the *Representative Revenue System (RRS)*. As a measure of fiscal capacity for a region, the fundamental concept underlying the RRS is to calculate the amount of revenue that a region would collect if it were to exert average fiscal effort. This is done by collecting data on

revenue collections and (proxies for) tax bases for each of the taxes under consideration for every subnational regions. Based upon information on all tax bases for every region as well as the national average fiscal effort for each of the taxes (which is explained below), one can compute the amount of revenues that each region would collect under average fiscal effort. This amount is then considered to quantify the fiscal capacity of each region. The main benefit of RRS is that computations are made at a disaggregated level and based on detailed knowledge of (proxies for) the statutory tax bases.

Box 4
Representative Revenue System (RRS)

In order to move away from the one-dimensionality suffered by the measure of fiscal capacity reviewed so far, the U.S. Advisory Commission on Intergovernmental Relations developed the Representative revenue System (RRS). As a measure of fiscal capacity for a region, the fundamental concept underlying the RRS is to calculate the amount of revenue that a region would collect if it were to exert average fiscal effort.

The Representative revenue System consists of five elements: (1) determination of revenue coverage, (2) classification of revenues into sources, (3) definition of standard tax bases, (4) determination of average tax rates, and (5) the estimation of fiscal capacity. The discussion of the mechanism that follows is organized around these five elements.

Revenue Coverage. In order to produce the best measure of fiscal capacity possible, the RRS should take into account all the taxes and quasi-taxes levied by regional and local governments. The revenue sources of the governments considered for the purpose of RRS should include quasi-taxes such as vehicle taxes, license or registration fees, permits, user charges and fines. Since profits from regional government-owned businesses also enhance the fiscal capacity of regions, they should also be included in the revenues covered by the estimation of fiscal capacity.

Classification of Revenues. The next step in the RRS is to group all revenue items into “revenue components.” A revenue component is a group of revenues sources which essentially rely on the same tax base. For instance, a variety of regional excises taxes on distilled alcoholic beverages can be grouped into one revenue component. In this manner all revenue items are combined into one or more revenue components. For example, in

the United States the RRS incorporates 27 state revenue components, ranging from more detailed components such as “Selected Sales Taxes on Distilled Spirits” to a component for “General Sales and Gross Receipts Taxes.”

Defining Standard Tax Bases. The next step in computing fiscal capacity is to define a standard tax base for each of the revenue components. Requirements for the selection of standard tax bases include (1) that they are closely related to the statutory tax base as possible, (2) that they are well-defined, and (3) that consistent data are available for them for all regions. Examples of proxies of tax bases in the U.S. RRS system are the consumption of distilled spirits (in gallons), which functions as a proxy for the tax base of the component “Selected Sales Taxes on Distilled Spirits.” The amount of retail sales and receipts of selected service industries services as a proxy for the tax base for the component “General Sales and Gross Receipts Taxes.”

While in the United States there are large variations in statutory tax bases for state and local taxes, in many countries the base of regional or local taxes are defined by national legislation. When the statutory tax base is defined the same across all the regions, when the measurement of the statutory tax base is free from subnational manipulation, and when data on the statutory tax base are available, the statutory base can be used as the standard tax base.

Determining Average Tax Rates. Once standard tax bases are defined for all the revenue components under consideration, we need to determine the representative (or average) effective tax rate that applies to each of the tax components. For this purpose, we do not rely on statutory tax rates. Instead, determination of the average effect tax rate involves computing a weighted average of the actual tax rates levied by all the regions.

First, for each tax component we add up the revenue generated across all regions. Then this amount is divided by the standard tax base for this item aggregated across all regions. The resulting ratio is defined as the average or representative revenue rate for this tax component. An example using U.S. data may again be illustrative. In 1988, all state and local governments in the United States collected a total of \$ 108 billion in general sales taxes, based on roughly \$ 1,800 billion in retail sales and receipts for selected services, which is the standard tax base for this component. This results in a representative or average effective tax rate of $(108/1800=)$ 6 percent.

Estimating Fiscal Capacity. The final step in the Representative Revenue System is to determine the fiscal capacity for each region. This involves applying the average tax rate (as computed in the previous step for the entire country) for each tax component to the

respective standard tax base of the region. The total amount that follows from these computations represents the total amount of revenues that each region would have collected under average fiscal effort. This is the amount considered to represent the fiscal capacity of the region.

The most basic version of a RRS groups all subnational own source revenues into one revenue component and uses a composite measure for the regional tax bases, such as personal income, Gross Regional Product, etcetera. Then, a region's fiscal capacity is defined as

$$\text{Fiscal capacity of region } i = \text{AETR} * \text{BASE}_i ,$$

where BASE_i is the tax base measure for region i , and the average effective tax rate (AETR) is defined as the aggregate of own source revenues for all local governments, expressed as a share of the aggregate tax base for all local governments. While this measure of fiscal capacity may appear rather simplistic, two important benefits are that the data requirements are limited (most countries have sufficient data available to compute this basic representative tax system) and that the RRS filters out the effect of differences in fiscal effort across local governments.

Instead of considering all revenues jointly, a more complex version of the representative revenue system would separately consider each major source of revenue. For instance, we could define a representative revenue system with three revenue categories:

$$\begin{aligned} & \text{Fiscal capacity of region } i = \\ & \text{AETR}_{\text{PROP}} * \text{PROP}_i + \text{AETR}_{\text{RETAIL}} * \text{RETAIL}_i + \text{AETR}_{\text{OTHER}} * \text{INCOME}_i \end{aligned}$$

In this example, three revenue categories are defined: property taxes (PROP), retail sales taxes (RETAIL), and other revenues (OTHER); the amounts of real property, the retail sales volume, and personal income could be used as the respective effective tax bases.

Overall, the RRS is a thorough and complete method to accurately measure the fiscal capacity of a region. It is based on disaggregated data and takes into account variations in effective tax rates among various taxes components and non-tax revenue sources. As a result, fiscal capacity as measured by the RRS can be considered a more accurate representation of a region's true fiscal capacity. However, by the disaggregated nature of the computations, the measure is extremely data intensive.

Measuring expenditure needs

The expenditure needs of a subnational government may be defined as the funding necessary to cover all expenditure responsibilities assigned to the region at a standard level of service provision. In practice there are many options to measure differences in expenditure needs across subnational governments.

First, expenditure needs can be measured from the bottom up, costing the current expenditure obligations of local governments or costing a standardized basket of subnational government services. However, this approach is quite demanding on all sorts of information and it requires very explicit procedures for how to cost all aspects of the expenditure responsibilities of subnational governments. An additional disadvantage of this approach is that there is no guarantee that the expenditure needs so derived are affordable within available budget resources. The lack of funds by necessity will require a downward adjustment of the computed budgets. This often can become a source of frustration for subnational government officials, if not cause voters' protests.

Second, a simpler and more commonly used approach is to estimate some type of index of relative expenditure need. Implicitly, this is what is done when a weighted-factor mechanism is used for the purpose of allocating equalization grants. These indexes attempt to capture, from the simplest to more complex ways, the factors that determine cost differences in delivering a standard package of local government services. These factors include demographic variables reflecting for example, the special needs of the young and the elderly, other factors such as the level of poverty and unemployment, and differences in the price level or cost of living. The list of criteria entering the index and the weight used need to be carefully assessed and also thoroughly discussed with all stakeholders to ensure that the main causes for substantial differences in the costs of public service delivery across jurisdictions are captured in the index.

A third way to establish the expenditure needs of local governments is to rely on historical expenditure patterns. Obviously, expenditure levels would have to be adjusted over time for inflation and possible changes in expenditure responsibilities.

Of these three approaches, the most common and practical way to measure subnational expenditure needs is to construct a fiscal need index using the weighted-factor mechanism presented in Section 3.2. Naturally, one would have to determine which allocation factors best reflect local government expenditure needs and assign greater weight to those needs measure that have a greater impact on local government expenditures. Inter-regional difference in the cost of providing local public services between regions could be included into the formula by using a cost-of-living (COL) index as one of the allocation factors.

Alternatively, the COL index could be used as a multiplier to adjust the relatively allocation for each subnational government.

Sensitivity analysis could be performed on the weights that are selected for the allocation factors by analyzing the impact different weight schemes. In addition, regression analysis could be used to determine the incidence of the proposed mechanism and determine if the proposed formula achieves the stated objectives of the government's decentralization policy.

Box 5

Expenditure Needs and Regression Analysis

Public finance theory suggests that citizens have a demand for government goods and services, much like they demand regular private consumption goods. For instance, just like consumers have a willingness to purchase a bottle of Coca-Cola, households are willing to pay something for local government services. The main differences between private goods and local government services are that (a) local government services are typically provided by a local government instead of a private firm and (b) local government services are often paid through taxes instead of through a direct payment.

In a decentralized system of governance, where local leaders are elected by popular vote, it is expected that local politicians will attempt to levy local taxes and provide local public services in such a way to satisfy a majority of the electorate. Thus, in a decentralized system where local governments have a fair degree of revenue autonomy and budgetary discretion, economists can learn something about the demand for non-central government services by studying the variation in local expenditures and relate these through regression analysis to variations in socio-economic characteristics of subnational governments. Such a regression could reveal how expenditures on local government services (such as primary education) vary with a community's ability to afford such services (fiscal capacity), differences in the cost of providing the service, and other local characteristics that cause variations in the demand for local public services (fiscal need measures). This knowledge could then be used to guide the design of the transfer system.

Unfortunately, such analysis of historical expenditure patterns would not yield an improved understanding of the demand for local public services in many developing and transitional countries. Historically, local governments in many of these countries had little or no budgetary discretion and local governments typically had very limited own revenue

sources. In the absence of some degree of local budgetary autonomy, variations in local public spending across districts would therefore not reflect variations in the demand or need for local government expenditures. Instead, it would reveal more about a local government's ability to collect own source revenues and garner resources from the central government through transfers than about the variations in fiscal need among local governments.

Data concerns

Given the high stakes involved in an equalization system, there is a potential risk for subnational authorities to put pressure on subnational statistical offices and government officials at the regional and local levels to misreport data in order to increase their share in the overall pool of equalization transfers. To guard against this type of problem is very important to keep data sources and estimation procedures public and transparent.

Ultimately, the selection of factors and the weights assigned to them are a political choice. However, we recommend that the distribution formulas used to distribute equalization grants should be based on a relatively limited number of factors. Inclusion of too many variables reduces the transparency of the allocation scheme. It is also more costly and difficult to update a larger number of variables on a regular basis, and the use of many variables introduces more opportunities for political manipulation. Therefore a balance needs to be struck between the need for simplicity and transparency, and the need to find factors that equitably reflect the true fiscal need of local governments.

It is important to make sure that variables used as factors in the distribution formula have a number of desirable characteristics. Variables used as factors should:

- Accurately reflect the specific characteristics (they should be statistically sound).
- Be regularly updated in the future (every year or every two years).
- Come from an independent source respected by all stakeholders
- Be drawn from a source that cannot be manipulated by the central government or one or more local governments.
- Reflect needs or demands for public goods (for example, the number of clients) rather than outputs such as infrastructure. Problems occur when using physical output measures as allocation factors, as discussed below.

Variables That Should Not Be Used as Fiscal Needs Measures

There are a number of variables that are sometimes used as factors in transfer allocation

schemes that could actually present significant problems. First, an important concern is the common use of the "equality principle" or "equal shares" as an allocation factor. A potential problem is posed by the use of physical infrastructure measures as factors. The problems associated with both measures are discussed immediately below.

Use of "equality" or "equal shares" as a factor in the distribution formula (so that each local government gets the same amount, regardless of its population) raises concerns about incentives, efficiency and basic fairness:

- First, the use of equality as a factor in the allocation formula raises a question of basic fairness. If the equality principle would be used as an allocation factor, regions with fewer residents would receive much larger transfers when expressed in per capita terms. This violates a basic concept of fairness in a democratic system of governance.
- Second, distributing funds based on equality gives politicians a significant fiscal incentive to create new, small local governments that in turn receive a significant fiscal benefit. This incentive may prove politically hard to resist, and often results in local governments that are too small to benefit from scale economies.
- Third, the reliance on the equality principle in the distribution formula would cause substantial efficiency losses by isolating small local governments from the effects of scale economies.

A second "bad" practice sometimes observed in the choice of allocation factors is the use of physical infrastructure measures, such as hospital beds or school buildings. (For instance, Uganda allocates a portion of its education transfers based on the number of school buildings in each district). The number of school buildings in a local government area is arguably a very poor measure of the educational needs of a local government. Wealthier local governments, with greater resources available for education, would likely have more school buildings and thus receive more generous compensation under such a scheme, while poorer local governments (that could not afford to erect school buildings) would receive fewer resources. Thus, historical disparities are perpetuated in time.

In addition, the use of "outputs" such as school buildings and hospital beds as allocation factors causes inefficiency by providing an incentive that could distort the preferred allocation of resources. For instance, the inclusion of school buildings as an allocation factor would give the local Finance Director a reason to press the District Education Officer to build a larger number of school buildings in order to increase allocations from the grant system. This would be especially harmful if resources could be better spent hiring additional (or better trained) teachers. Therefore, as a rule, one should avoid using measures of physical capacity or inputs (such as the number of hospital beds, the number

of schools, and so on) as allocation factors and focus instead on measures of the number of "clients" or citizens with a certain need.

Measuring Fiscal Effort

Fiscal effort can be defined as the degree to which a government or subnational region utilizes the revenue bases available to it. As such, the level of fiscal effort is effected by the level of the tax rates applied (if subnational governments have discretion over rate), by the level of exemptions granted (again if subnational governments have discretion over the structure of the tax), and by the tax enforcement effort exerted by the tax administration authorities. The level of fiscal effort is typically measured as the ratio of the actual amount of revenues collected to some measure of fiscal capacity.

There are two reasons why it is important to include a discussion of fiscal effort in concert with this treatment of fiscal capacity. First, the degree of fiscal effort determines the gap between actual collections in a region and the region's fiscal capacity. The acknowledgment that different regions may exert different levels of fiscal effort emphasizes the fact that the revenues raised in a region and the revenue-raising ability of a region are two distinctly different concepts. Second, fiscal effort itself may become a factor in the allocation of equalization grants. The idea is that regions that try harder to raise revenues but are still unable to finance a certain level of public services may be more worthy of receiving grant money. However, as we have seen it is generally held that simply rewarding regions that exert higher levels of fiscal effort could result in the use of federal resources on regional projects that lack any merit.

A common problem with the inclusion of fiscal effort in allocation formulas is that rather than using the level of fiscal effort, subnational fiscal effort is stimulated based on the increase in own source revenue collections relative to the previous year. The disadvantage of this approach is that subnational governments need to consistently exert a higher level of fiscal effort to receive these incentives. Subnational governments that initially exert a high level of fiscal effort have little room to increase their fiscal effort further, and are thus not rewarded for their high levels of fiscal effort. On the other hand, this mechanism simply rewards subnational governments that had previously low levels of fiscal effort. In summary, by rewarding increases in fiscal effort (as opposed to the level of effort), there is little incentive for subnational governments to maintain a consistently high level of effort.

SECTION 4 ADMINISTRATION AND IMPLEMENTATION

4.1 Management of the Grant Scheme

The seventh step is to decide how to structure the management and upkeep of the new system of equalization transfers. As conditions and priorities in the country change, there will be a need to update the equalization mechanism. Administering and implementing an equalization system is also a time consuming activity that will require exclusive attention and dedication. Often these activities are carried out by the Ministry of Finance or some other central government agency. Some countries (including Australia, India, and Nigeria) have used successfully the institution of a “*grants commission*,” which is a semi-autonomous institution at the central government level which is charged with collecting all the required data, overseeing the implementation of the equalization mechanism, introducing changes in the mechanism to keep within its objectives, and maintaining an open dialog with the stakeholders including the subnational governments. The advantage of a “grants commission” is its greater impartiality and objectivity in administering the equalization grant system.

4.2 Administration of the Distribution

The eighth step is to decide on the *administrative structure of equalization transfers* in those countries with more than two levels of government. In these countries, the equalization system may be structured in two basic different ways. For simplicity, let’s assume that there are only three levels of governments: central, regional or provincial, and local or municipal. The discussion applies without much difficulty to countries with more than three levels of government, such is the case in China or Ukraine. The first is a hierarchical structure, whereby the central government implements an equalization system with the regions or provinces, and leaves it up to the regional or provincial governments to arrange an equalization system with the local or municipal government within their jurisdictions. A hierarchical structure of equalization grants is common in federal countries (e.g., Canada, Australia, India) but also in decentralized unitary countries (e.g., China, Ukraine, Kazakhstan).

The second approach is a parallel structure whereby the central government does not only arrange the equalization system with regional governments but it also arranges a separate

equalization system for the municipal government directly without going through the regional governments. This system is used in Nigeria, as well as in some unitary countries such as England, Poland and more recently in Indonesia.

4.3 Simulations

The ninth step is, prior to the concrete implementation of any equalization transfer system, to carry out a careful evaluation of its impact on actual redistribution through *numerical simulations of the different scenarios* to make sure the government objectives are fulfilled, that the system will live within the established budget constraint, and that no negative incentives are introduced regarding revenue mobilization and efficient expenditure policies.

To explore such simulations further, Part Two of this module discusses the construction of an intergovernmental fiscal transfer simulation model.

4.4 Plan and Implementing Supporting Reforms

The tenth step is to *introduce other transfers* to enable the government to pursue other objectives besides equalization. This is important from the perspective of the design of an equalization fund because the introduction of other objectives in a system of equalization transfers typically interferes with its effectiveness in delivering its core objective. Indeed, different types of transfers are used in decentralized systems of public finance in the pursuit of other government objectives. Ideally, the system of categorical and conditional transfers is objective, transparent and formula-driven. The best results are achieved when a separate transfer program is established for each separate objective the central government wants to achieve.

Examples of the categorical transfers that can be introduced include: (i) explicit categorical grants, earmarked for programs of national policy significance such as those in education, health, and so on; (ii) matching grants to provide incentives to subnational governments to increase expenditures in areas with externalities, such as infrastructure and the environment; (iii) direct transfers to compensate for mandates and national programs such as those for the social safety net.

The eleventh step is to *plan and implement other supporting reforms*. Quite clearly, the reform of the system of equalization and other transfers may not be effective if carried

out without regard to the necessary reforms of other important elements of intergovernmental fiscal relations, in particular revenue and expenditure assignments. For example, there is little to be gained from introducing formula-driven system of equalization transfers if because of the lack of an explicit and stable assignment of revenues, the central government can clawback any additional revenues raised by subnational governments.

Conclusion

The design of a system of equalization grants is a complex and demanding task which requires clear objectives, transparent procedures and good data. The design of equalization transfers always need to be framed with the rest of the components of a system of fiscal decentralization. Part one of this module has outlined the most important steps to follow in going about the design and implementation of equalization transfers. This work is part applied theory and part actual practice. The next part of the module demonstrates in practical terms how to build an equalization transfer system from scratch.