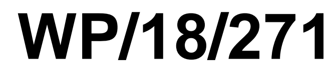

IMF Working Paper

Designing Sound Fiscal Relations Across Government Levels in Decentralized Countries

by Robin Boadway and Luc Eyraud

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Designing Sound Fiscal Relations Across Government Levels in Decentralized Countries

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Abstract

This paper discusses how decentralized countries can achieve sound fiscal relations between the central government and lower government levels. The concepts of "vertical gap" and "vertical balance" provide an analytical framework for identifying and addressing key challenges. These concepts can help policymakers ensure that the financing of subnational governments (composed of transfers received from the center, own revenues, and borrowing) is both efficient and adequate given the allocation of spending responsibilities. More generally, the paper offers some perspectives about the optimal design of decentralization systems by examining the sequencing and economic principles underlying revenue and expenditure assignments, the use of transfers, and borrowing.

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Keywords: fiscal federalism, vertical gap, vertical imbalance, fiscal balance

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I. INTRODUCTION[1]

Fiscal decentralization has important macroeconomic implications (IMF, 2009). In principle, decentralization could help contain public sector growth and improve its efficiency. It creates closer proximity between taxpayers and policymakers, thereby enhancing the information available to both parties: taxpayers are in a better position to identify decision makers and sanction their performance, making them more accountable, while local politicians can better tailor policies to the preferences of their constituents. Furthermore, the competition among jurisdictions may encourage cost-efficient delivery of public goods: if the taxpayers are not satisfied with the tax-benefit mix proposed by the local authorities, they can move to another jurisdiction or use the electoral system to pressure officials.

But, fiscal decentralization can also undermine the effectiveness of government policies and put public finances at risk (Oates, 2006). For instance, when subnational governments[2] finance expenditure from a common pool of intergovernmental transfers, they may fail to internalize the cost of expenditure and thus overspend. Decentralization sometimes duplicates functions across government levels; a lack of clarity and potential overlap in the assignments weaken accountability and can lower the quality of public services. Another risk is moral hazard: when important tax bases and spending responsibilities are devolved to subnational governments, the central government may be unable to monitor the use of revenues and prevent excess spending.

The design of the intergovernmental fiscal framework plays a key role in ensuring that decentralization is associated with positive macroeconomic outcomes. But getting the design right is complicated. Decentralization is often driven by political rather than economic considerations. Also, there is no single economic model and the framework has to be tailored to country circumstances. Another layer of complexity is that transfers cannot be looked at in isolation but should be contemplated in the context of the broader decentralization framework, which covers multiple policy areas—e.g., taxation, spending assignments, borrowing controls, and institutional arrangements.

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[2] This paper uses the term "subnational governments" to describe all levels of government below the central government, including local governments, regions, and states in federations. The term "states" is used to characterize the second tier of government in federations such as U.S. states, provinces in Canada, länder in Germany, oblasts in Russia or cantons in Switzerland. The paper does not consider the relations within the subnational governments' aggregate, such as transfers from states to local governments.

Despite this complexity, some general lessons can be drawn from international experiences. This paper argues that the two concepts of "vertical fiscal gap" and "vertical fiscal balance" provide a simple conceptual framework for identifying key challenges in the design of intergovernmental fiscal relations (Boadway, 2005):

- The term *vertical fiscal gap* describes the financing structure of the decentralized system, and, more specifically, the degree to which subnational governments rely on their own revenues to finance their spending responsibilities. This gap varies widely across countries, with the gap being the largest in countries where subnational governments have broad expenditure assignments but narrow tax bases, forcing them to rely largely on transfers from the center (and borrowing) to fulfil their mandates. Not all vertical gaps are equally beneficial from a macroeconomic perspective: in some countries, too large or too small vertical gaps have adverse consequences, such as fiscal profligacy at the subnational level or low quality of public services. Economic theory can provide guidance to achieve a "better" country-specific vertical gap, meaning a financing structure that supports the government objectives in the most efficient way.

- Identifying an "optimal" degree of the vertical gap is not sufficient; it is also important to ensure that it is adequately financed. There is *vertical fiscal balance* when transfers to subnational authorities combined with their own revenues (and borrowing) are sufficient to finance their expenditure responsibilities, that is, when a given vertical fiscal gap is covered by the appropriate level of transfers—spending mandates are neither underfunded nor overfunded.

The paper approaches these issues from both positive and normative perspectives. After defining the concepts in section II, section III looks at what causes vertical fiscal gaps *observed* in countries. The rest of the paper focuses on how to achieve a *desired* level of the vertical gap and vertical balance: section IV reviews the justifications for having a vertical gap; section V discusses which types of transfers should be used to fill this gap; and section VI explores ways to ensure vertical balance. Section VII concludes.

II. Vertical Gap and Balance In Decentralized Settings

Definitions

Vertical gap. A feature of almost all countries is that subnational governments collect less tax revenues than they need in order to cover the spending responsibilities assigned to them and any debt service. The fiscal federalism literature refers to this shortfall of subnational own-revenues[3] relative to subnational spending as a "vertical fiscal gap," a term that is meant to be descriptive rather than pejorative. The gap is covered mostly by transfers from

[3] Subnational "own-revenues" refer to the revenues over which subnational governments have some discretion. These include taxes for which subnational governments control the rate and possibly the base, as well as other types of revenues such as user charges and fees.

the center to the subnational governments. They use these transfers along with their own tax revenue to finance their expenditures. In some cases, the gap may also be covered by subnational borrowing. To the extent that subnational governments borrow, transfers from the center underestimate the difference between subnational own-revenues and spending.

Vertical balance. A decentralized system is in "vertical fiscal balance" if, for a given vertical fiscal gap, the level of transfers is adequate, given both the spending responsibilities of the central government and the subnational authorities, as well as the amount of revenue each is able to raise efficiently.[4] A country will not be in vertical balance if the subnational governments have insufficient or excessive revenues from all sources to fulfil their expenditure responsibilities. The concept of vertical fiscal balance is inherently ambiguous since it requires judgments about the appropriate level of subnational expenditure, and how much own-revenue subnational governments should be expected to raise to finance their own expenditures. As discussed in the last section of the paper, a high level of subnational borrowing is the most usual indicator of vertical imbalance, but other indicators are also important—for instance, inadequate provision of public services at the subnational level.

While closely related, the two concepts do not overlap. For instance, reliance on transfers could be excessive (signaling a suboptimal vertical gap) but the size of transfers may still be adequate to fulfil the expenditure responsibilities (sign of fiscal balance). On the contrary, the distribution of expenditure and revenue responsibilities may maximize efficiency gains (optimal vertical gap) but insufficient transfers from the center may create unfunded spending mandates at the subnational level (fiscal imbalance). Therefore, countries should aim at achieving both an "optimal" vertical gap and fiscal balance. These are essential properties of well-designed decentralization frameworks.

Some stylized facts

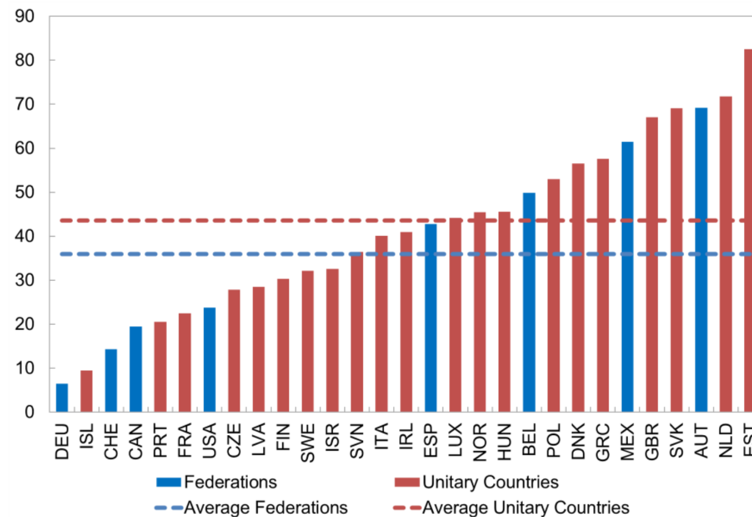
Vertical fiscal gaps vary significantly across countries (Figure 1). The average vertical gap was around 40 percent in the OECD sample in 2016; it ranged from 6 to 82 percent, showing great dispersion. Some countries like Austria have relatively large vertical gaps, with subnational governments relying heavily on transfers from the center rather than own tax revenues to finance their expenditures. In decentralized federations like Canada and Switzerland, states raise more own-revenues and depend less on central transfers, resulting in relatively low vertical gaps. On average, the vertical gap is lower in federations than in unitary countries reflecting the sizeable revenue-raising ability of state-level governments.

[4] The concept of "vertical fiscal balance" does not guarantee or require that the fiscal position of all levels of government be balanced. Vertical balance is compatible with the existence of fiscal deficits at the central and/or subnational levels.

As shown in the appendix, the vertical gap partly reflects the mismatch between the degrees of expenditure and revenue decentralizations. Simple correlation analysis shows that the vertical gap is strongly related to revenue decentralization, while the correlation with expenditure decentralization is more elusive (Figure 2). The result holds for all years available in the OECD database from 1995 to 2016.

Figure 1. Vertical Fiscal Gaps Across OECD Countries

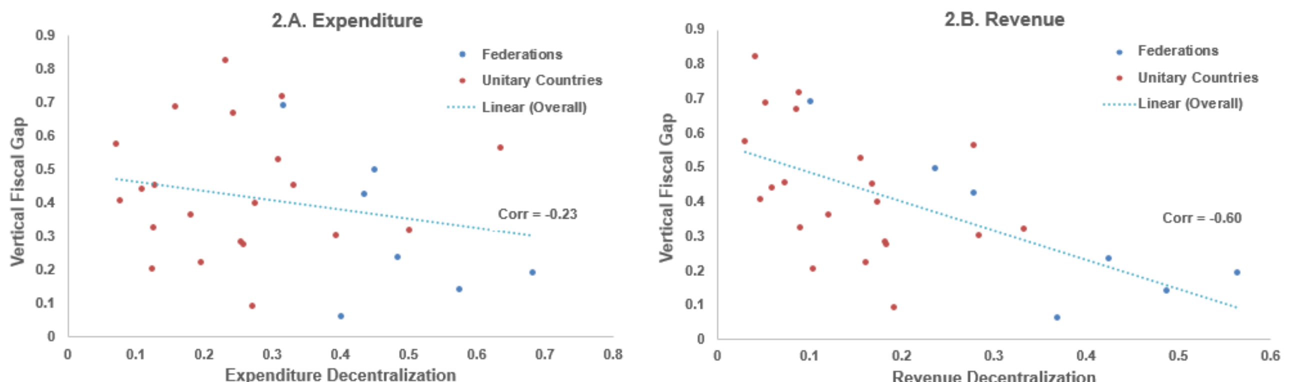
(In percent of subnational own-spending, 2016 or latest data available)



Source: OECD Fiscal Decentralisation Database. This chart computes the vertical fiscal gap (VFG) as the share of subnational (state and local) governments' own spending not financed through subnational governments' own revenue. The VFG is constructed using equation (1) of the Appendix. Australia is not available in the OECD fiscal decentralization database; its vertical gap was estimated at about 50 percent in 2011 (OECD, 2014).

Figure 2. Revenue and Expenditure Decentralizations and Vertical Fiscal Gap

(In percent, 2016 or latest data available)



Source: OECD Fiscal Decentralisation Database. Revenue (expenditure) decentralization is the ratio of subnational own revenue (own spending) divided by general government revenue (spending). The vertical gap is defined as in Figure 1.

Applying the concepts of gap and balance to individual subnational governments

Both the vertical gap and vertical balance concepts are defined at the aggregate subnational level. But subnational aggregates mask important heterogeneity across jurisdictions. When considering each individual entity, this heterogeneity can be accounted for by the concepts of "horizontal gap" and "horizontal balance."

Horizontal gap. Even when there is no vertical gap at the aggregate subnational level, differences between expenditure and own-revenues may appear in particular subnational governments, because they have different abilities to raise revenue (tax bases are not equally distributed across jurisdictions) and because of differences in their respective needs and costs of providing public services. The fact that the size of the vertical fiscal gap varies across subnational jurisdictions is referred to as "horizontal fiscal gap." The equalization transfer system is the main instrument to fill horizontal gaps.

Conceptually, the *total* fiscal gap between the own-revenue and expenditure of an individual subnational government can be decomposed as the sum of the *vertical* gap (which is the "average" gap common to all subnational entities) plus an additional jurisdiction-specific component, which is the (positive or negative) *horizontal* gap. When the horizontal gap is positive, the subnational authority needs to receive, in addition to the common transfers covering the vertical gap, specific equalization transfers to be able to fulfil its expenditure responsibilities. When the horizontal gap is negative, equalization transfers should, in principle, be negative (e.g., in the form of a tax) to create a level playing field for all subnational governments.

In practice, it is difficult to design separately transfers covering the average/vertical gap ("general-purpose financing transfers") from transfers targeting jurisdiction-specific/horizontal gaps ("general-purpose equalization transfers"). Many equalization systems compensate subnational governments with lower revenue capacity/higher expenditure needs but do not penalize those with higher revenue capacity/lower needs; therefore, equalization transfers often cover both vertical and horizontal gaps simultaneously, as discussed below. On the other side, transfers meant to finance the vertical gap often have an equalization component.

Horizontal balance. "Horizontal fiscal balance" is achieved when the fiscal gap in each jurisdiction is adequately financed by sufficient transfers. Even when transfers are broadly adequate for the aggregate of all subnational governments (meaning that there is vertical balance), some subnational governments may receive too much transfers while others receive too little; this indicates a horizontal, not a vertical, imbalance. Horizontal balance cannot, for instance, be achieved in countries where equalization systems do not extract negative equalization payments from jurisdictions with negative horizontal gaps (like in Canada); by construction these jurisdictions receive excess transfers relative to their needs.

III. WHAT DETERMINES THE VERTICAL FISCAL GAP?

The usual measure of the vertical fiscal gap is the aggregate amount of transfers from the central government to the subnational governments, which can be expressed as a share of aggregate subnational spending. This is meant to proxy the excess of aggregate subnational expenditures over aggregate subnational own-revenues (or equivalently, the excess of revenues collected by the central government over its expenditures). Much of the literature abstracts from subnational government borrowing, although a more accurate measure of the vertical gap should include it (see Appendix). This section discusses the main determinants of the vertical gap observed in countries.

Determinants of the vertical fiscal gap

Fiscal decentralization is mostly driven by political rather than economic factors. Decentralization pressures frequently arise from a desire for more participatory government and greater voice of local players in determining fiscal policy. Historical and cultural legacies can also shape the allocation of responsibilities across government levels (vertically) and between individual subnational authorities (horizontally).

Political factors and history are reflected in the constitution, which, in many countries, describes the broad principles on which decentralization operates, including the assignment of expenditure responsibilities. For instance, Articles 148 and 149 of the Spanish constitution establish the list of competences that are within the purview of the central government and the regions. The constitution may also allow or proscribe the use of certain taxes by the states; for instance, states have access to all broad tax bases, including sales taxes, in Canada and the USA, but in Australia, the constitution stipulates that the central government has exclusive powers to impose customs and excise duties and the courts have interpreted the latter to include sales taxes.

Typically, however, the specifications in the constitution are too general to provide an accurate basis for identifying an "intended" vertical fiscal gap. In many countries, the vertical fiscal gap has changed considerably over time as the level of subnational expenditures and the decentralization of revenue responsibilities have evolved. Thus, within the limits defined and imposed by the constitution, the observed vertical fiscal gap is also a consequence of tax and expenditure decisions taken by both central and subnational governments (including transfers paid to other levels of government), with the discretion of each level varying across countries. In some countries such as Canada, Switzerland and the United States, not only central but also subnational levels of government have wide discretion to raise their own-revenues (although they may be constrained by fiscal rules or other limitations imposed on their revenue-raising powers). The ability to adjust expenditure is often more limited, particularly at the subnational level.

Importantly, the level of the vertical gap is not fully and unilaterally established by the central government, whose discretion over transfers may be limited in various ways. The freedom of the center depends, for instance, on whether transfers are formula-based or discretionary. In some cases, transfers are set by revenue-sharing formulas, which can be constitutionally imposed as in Germany, recommended by an independent fiscal commission as in Australia, or agreed to by the two levels of government. And even when the center determines the amount of central-state and central-local transfers, policies conducted by subnational governments may influence the amount granted. For example, states may attract higher transfers by exhibiting fiscal distress to exploit a soft-budget constraint.

Two approaches to decentralization

The vertical fiscal gap is also influenced by the order in which decisions are taken by central and subnational governments. Once the level of central and subnational expenditures has been specified, the question becomes how to finance them.[5] Two contrasting approaches are emphasized in the literature (Boadway and Tremblay, 2006):

- **Transfers decided proactively**. In one approach, the center chooses its taxes and transfers to the subnational governments. These are then expected to respond by adjusting their tax rates to raise sufficient revenues to finance their spending.

- **Transfers used to fill the gap**. The alternative approach is that the center and the subnational governments choose their tax rates independently, and this results in a certain level of gap. This gap is then filled by the central government, by specifying a level of transfers, possibly in collaboration with the subnational governments. In this approach, transfers are a residual and perform a gap-filling role.

Of course, either view is extreme, since actual outcomes can combine elements of the two. Thus, in cases where the central government sets its transfers first, it may revise them once it has observed how subnational entities respond, including how much they resort to borrowing. Alternatively, if the level of transfers chosen to fill a fiscal gap is inadequate, the subnational governments may still respond by adjusting their tax rates or borrowing.

[5] Our stylized framework assumes that spending is set first, and financing adjusts. This standard assumption in the fiscal federalism literature is motivated by the fact that spending is often less flexible than revenue. Also, Figure 2 shows that the correlation of the vertical gap with decentralization ratios is stronger on the revenue side. However, nothing prevents subnational governments from adjusting spending to revenue in practice.

The two approaches in practice

These two models are useful to understand the diversity of country experiences, and, in particular, the difference between vertical gaps in centralized and decentralized countries.[6]

In *centralized countries*, like many unitary countries and some federal ones (e.g., Australia, Austria or Belgium), subnational governments have limited discretion over revenue-raising and the vertical fiscal gap is consequently relatively large. Centralized countries often take the first approach described in the previous section: the fiscal gap is determined more directly by central government decisions on transfers and central revenues, possibly with the advice of advisory commissions or fiscal councils.[7]

In *decentralized countries* like Canada, the United States or Switzerland, where the vertical fiscal gap is relatively small, the vertical gap is determined endogenously by the expenditure and taxation decisions of the two highly independent levels of government. Both central and subnational governments have considerable discretion to raise their own revenues and legislate their own expenditure programs. Transfers can be viewed as covering the discrepancy between the two, as a general rule.

However, further analysis shows that decentralized countries tend, in practice, to combine the two approaches, because subnational and central decision-making may be far from uncoordinated, and both levels of governments may obtain revenues from the same tax base (e.g., income or sales). Given that there is one central government and a number of subnational governments, the central government might be viewed as the "first-mover" in its interaction with them. It decides and legislates the level of central-state/local transfers, and it chooses how much tax revenue to raise, including from common tax bases. That is, transfers may often, to some extent, be chosen proactively (rather than simply used to fill a vertical fiscal gap determined by state behavior). Perhaps a realistic way to characterize the decentralized setting interaction is to say that the subnational governments individually choose their spending and taxing levels, given the transfers they have been allocated and given the tax rates the central government has chosen to apply to common tax bases. The higher the central tax rate on a common base—that is, the more "tax room" the central

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[6] This paper characterizes the degree of decentralization by the extent of revenue-raising powers given to subnational governments. According to this definition, subnational governments have more revenue-raising powers in decentralized countries than in centralized ones. In general, decentralized countries rely less on transfers from the center and their vertical fiscal gap tends to be smaller.

[7] If transfers are insufficient, subnational governments could, in principle, increase their own taxes to get more resources. In practice, given that subnational governments have only limited revenue-raising power in centralized countries, using subnational taxes to fully cover the transfer shortfall is not always possible and could be a cause of vertical fiscal imbalance—an issue discussed in section VI.

government occupies—the more difficult it is for the subnational governments to impose subnational taxes on the same base. In these circumstances, it is reasonable to assume that the central government's decisions dominate the determination of the fiscal gap, as in the centralized case.[8]

Subnational borrowing

The vertical fiscal gap is primarily covered through transfers from the center (Figure 3). But borrowing is an important source of subnational financing in some countries, particularly federations, for several reasons. The first one is that, in the most decentralized countries, automatic stabilizers operate not only through the central budget but also at the subnational level. Federations delegate to states significant revenue and spending responsibilities that are sensitive to the economic cycle. For instance, states run the unemployment insurance system in the United States and the welfare system in Canada and Spain. In this context, states can face large revenue shortfalls in economic downturns, forcing them to borrow to absorb the shock and avoid sharp spending cuts. This issue can potentially be mitigated if subnational governments have established rainy day funds they can draw from or if they receive countercyclical transfers from the center in bad times. But rainy day funds are not prevalent, and, where they exist, can be insufficiently funded (OECD, 2016a). Also, transfers rarely play a stabilizing role, particularly in federations (Foremny and von Hagen, 2012; Blöchliger and Égert, 2013).

A second factor explaining the existence of subnational deficits is that healthcare, which shows rapid growth due to population ageing, is a subnational responsibility in highly decentralized countries (OECD, 2016b). This is often cited as a factor behind the deterioration of the fiscal positions of some provinces in Canada (Barua, Palacios and Emes, 2017).

A third factor is that subnational governments frequently resort to borrowing to finance public investment. In fact, many subject their budget to a "golden rule," where subnational deficits are allowed for capital expenditure, but current expenditure should be funded from tax and nontax revenues (see next section).

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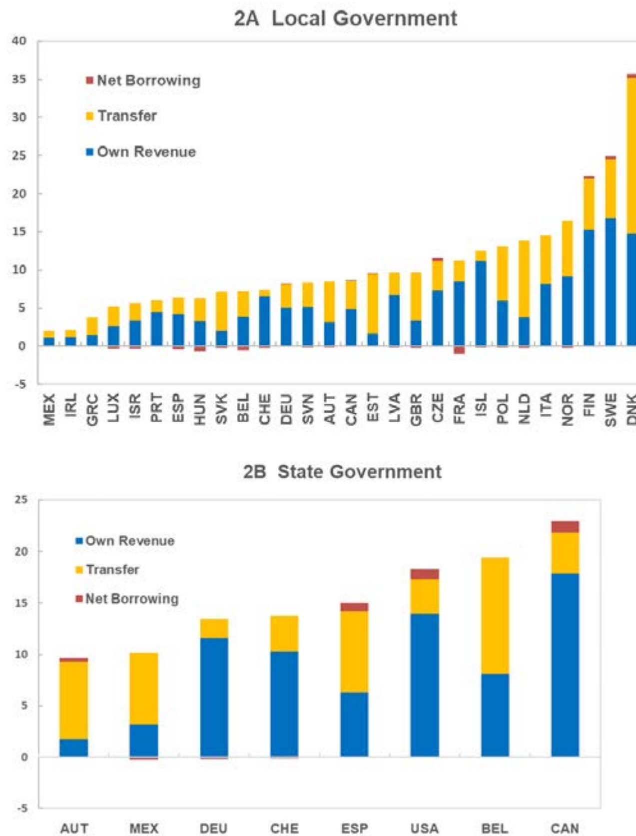
[8] Nonetheless, compared to the centralized case, the determination of the vertical gap in decentralized countries is more akin to a sequential and repeated game where each government level adjusts its expenditure and revenue decisions in response to the other level's strategy.

Figure 3. Financing Structure of Subnational Expenditure

(In percent of GDP, 2016 or latest data available)



Source: OECD Fiscal Decentralisation Database. The chart describes the structure of resources of subnational governments, including their own revenues, the transfers received from other government levels, and net borrowing.

IV. How Large Should the Vertical Fiscal Gap Be?

As discussed above, the size of the vertical fiscal gap is ultimately a policy decision or combination of policy decisions, taking into account constitutional and institutional considerations. These decisions are often of a political nature rather than based on economic considerations; they are also shaped by history. It is thus difficult for countries to target or modify the level of the vertical gap in the short run, even when the existing decentralization framework entails clear efficiency costs. For instance, the decentralization trend of health policy in Europe in the past fifty years has raised several problems, including regional disparities in access to services, unfunded mandates in a context of rising care needs and costs, difficulties to achieve national standards, and loss of economies of scale; but so far, only Northern European countries have taken explicit steps towards recentralization (Saltman, 2008).

Thus, the purpose of defining an "optimal" gap is not to set a short-term policy target for governments. It is rather to establish a benchmark against which the current framework can

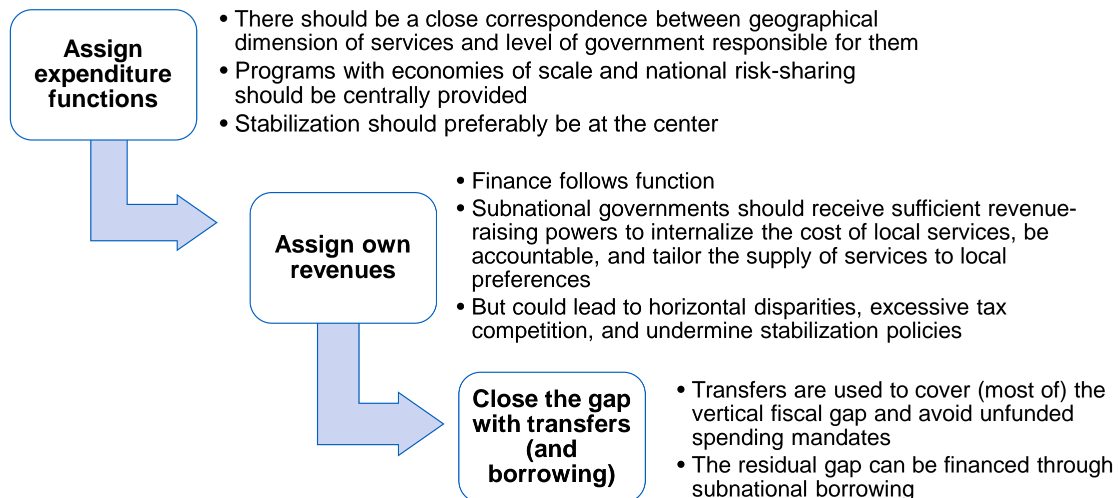
be assessed and potential costs can be identified. Reviewing the rationale for a vertical gap can also help clarify the main objectives pursued with decentralization.

This section reviews the *normative* case for choosing a particular level of vertical fiscal gap drawing on an extensive literature.[9] We can distinguish two broad justifications for a vertical fiscal gap. These justifications are parallel to the conceptual distinction we drew above between the gap-filling role of transfers and their proactive role as policy instruments in their own right.

A. The Vertical Fiscal Gap as a Residual

From an accounting point of view, central transfers and subnational borrowing fill the gap between the expenditure responsibilities of subnational governments and their ability to raise revenues. Therefore, a way of assessing the appropriateness of the vertical gap is to determine "optimal" levels for expenditure and revenue decentralizations. The difference between the two indirectly determines the desired vertical gap (see appendix 1 on the relationship between the variables). This exercise can be conducted in a sequential way by first determining the degree of expenditure decentralization, then deciding how it should be financed and, finally, inferring the vertical gap (Figure 4).

Figure 4: A Standard Model of Fiscal Decentralization



The model of decentralization presented in Figure 4 describes the sequential split of total expenditure and total revenue between the center and lower government levels. An implicit and preliminary step, which is beyond the scope of this paper, is the determination of these *general government* aggregates. We assume that, for the country as a whole, general government expenditure and revenue are compatible with fiscal sustainability, meaning that they do not put public debt on an explosive path. Thus, under this assumption,

[9] See for example Bird and Smart (2002), Boadway and Shah (2009), and Schroeder and Smoke (2003).

intergovernmental transfers can be financed without jeopardizing the soundness of public finances; in particular, they do not require the central government to run excessive deficits.

Scope for expenditure decentralization

The case for decentralizing the provision of spending is generally regarded as strong in the economics literature. Expenditure decentralization brings many benefits, including greater cost effectiveness (because of the competitive pressure to attract mobile residents and businesses), better ability to design subnational programs according to local needs and preferences, fewer layers of bureaucracy, and more opportunity for experimentation and innovation in public policy and service delivery (Oates, 2006).

Of course, not all types of expenditure should be decentralized. The following principles can guide the allocation of expenditure responsibilities across government levels (Boadway and Shah, 2009):

- The first is the *principle of subsidiarity* according to which public services should be provided by the lowest level of government compatible with the size of the "benefit area," meaning the area to which the service applies (McLure and Martinez Vasquez, 2000). This means, for instance, that defense and key national transportation systems should be at the center, while local services such as social housing, regional infrastructure, or waste management should be devolved to local governments. This correspondence between geographical dimension of services and level of government responsible for them brings several advantages: first, policymakers are more familiar with the preferences and needs of individuals in their benefit area; second, delivery may be more efficient because local officials are more politically accountable and need to compete to attract mobile factors; and third, adequacy between benefit areas and government responsible avoids spillovers of benefit.

- A second principle is that public programs that have significant *economies of scale* should be centrally provided, especially where uniform provision is acceptable. For example, whereas public services provided to individuals and firms (such as education, garbage collection or utilities) are best decentralized, nation-wide transportation can be efficiently provided centrally.

- A third principle is that programs that involve *risk-sharing* can be more efficiently provided centrally. This includes social insurance transfers such as unemployment insurance and public pensions whose risks are most efficiently addressed by the central government, since risks are pooled across the entire nation rather than within each jurisdiction. A similar argument applies for interregional insurance against idiosyncratic economic shocks affecting the fiscal position of individual subnational governments. Although the latter could to some extent self-insure against local shocks by using capital markets, the central government is often in a better position to insure subnational jurisdictions and provide financial support in bad times, financed either through

centralized borrowing or by raising more taxes in jurisdictions that enjoy more favorable cyclical conditions.

- A final principle is that the macroeconomic *stabilization function*—meant to address common macroeconomic shocks—is most efficiently performed centrally (Fedelino and Ter-Minassian, 2010). Stabilization policies at the decentralized level are likely to be less efficient, because (i) their effect tends to spill over into other jurisdictions, creating risks of free riding and "import" leakage (subnational entities are akin to small open economies); (ii) coordination problems may arise across government levels (e.g., fiscal consolidation at the center could be offset by fiscal relaxation at the subnational level); (iii) subnational stabilization may face operational constraints if local borrowing markets are illiquid and shallow.

Taken together, these principles suggest that an efficient allocation of public expenditures would entail that central government responsibility includes national public goods, social insurance and other transfers to individuals and firms. Subnational governments would provide public services to individuals and firms, as well as local public goods. Of course, there are other non-expenditure responsibilities that are delivered by governments, such as control of the currency, criminal and civil law, regulation, and so on and these will have to be allocated among governments; these are not of concern for our purposes.

Crucially, the public services delivered most efficiently by subnational governments can have consequences of national interest, and these can be of two forms. First, they can affect the equity of government spending, which may be of interest to the central government. For example, subnational education programs affect opportunities for children, and the central government may be concerned that such opportunities abide by some national standards. Similarly, subnational government health and welfare programs affect the well-being of residents within each jurisdiction, and the central government acting on behalf of the nation may prefer that these programs comply with minimum national standards. This is important because the bulk of subnational expenditures, at least in the most decentralized countries, are on public services that serve redistributive purposes. Second, subnational public spending programs can affect the efficiency of the economic union, especially the efficiency of allocation of resources across jurisdictions. They may create barriers to mobility of labor across state borders or distort the allocation of businesses. And, they may entail spillovers of benefits or costs across regions or states. Here again, the central government may have an interest in discouraging subnational governments from designing programs that distort the internal economic union (e.g., differentiated university fees on residents and non-residents; or subsidies to local firms).

The design of intergovernmental transfers plays an important role in ensuring that national interests are taken into account when public service delivery is decentralized, as discussed in greater detail in the next section. Conditional transfers provided by the center are a potentially efficient means by which incentives can be given to subnational governments to design their programs to conform to national standards. Provided the conditions are not too

intrusive and the subnational governments retain sufficient discretion such that the benefits of decentralization are realized, efficient delivery of public services can be compatible with achieving national equity and efficiency in the national economic union. And, other more intrusive ways of the central government influencing subnational programs, such as mandates, can be avoided. Another way to achieve national standards is through unconditional equalization transfers, which enable subnational governments to provide comparable levels of key public services to their citizens.

Scope for revenue decentralization

The case for decentralizing revenue-raising seems much weaker than for expenditures (Ter-Minassian, 1997). For subnational governments to finance their expenditures entirely from their own tax revenues would require levels of subnational revenue-raising that are above what many would regard as reasonable.

There are certainly advantages for subnational governments to cover their expenditure responsibilities with own-revenues rather than relying on transfers. It gives them more accountability and a higher stake in good program outcomes, more subnational discretion over the size and mix of budgets, and greater ability to respond to economic shocks. In addition, to the extent that subnational governments are responsible for raising their own-revenues, the intergovernmental fiscal system is more resistant to soft-budget constraints since subnational governments are better able to address fiscal difficulties they may bring upon themselves.

It should be noted that many of the advantages of revenue decentralization can still be captured when important tax bases remain centralized and there is a large vertical fiscal gap. This is because the main requirement to reap these benefits is that subnational governments have discretion over *marginal* or *incremental* revenue-raising.[10] Transfers could finance a fixed amount of "inframarginal" subnational spending, such as a standard package of services, provided that subnational governments keep tax autonomy "at the margin" and can levy additional revenues to tailor services to local needs (Martinez-Vasquez, 2007). In federations, for instance, this can be accomplished in a harmonized way if the central government and the states agree to some common tax bases with some discretion left to the states to choose their own tax rates, as in Canada and the United States.

Against these benefits of decentralized revenue-raising, there are significant disadvantages. Subnational authorities have differing abilities to raise tax revenues since their tax bases per capita will vary. The more subnational governments rely on their own-revenues to finance

[10] The accountability of subnational governments is improved when they have complete discretion over incremental revenue-raising, since this determines the size of their budget. By contrast, under revenue-sharing arrangements, subnational governments do not have this type of discretion, meaning that they are not responsible for the last dollar of revenue raised.

spending, the greater will be horizontal disparities in the country, and the greater will be the risks on the fiscal position of each jurisdiction (since decentralized revenues are subject to idiosyncratic shocks). This will put greater pressure on the central government's equalization system, including possibly greater political resistance.

Decentralized revenue-raising can also lead to tax distortions and inefficiency. To the extent that capital, labor, and products are mobile across regions and cities, tax competition will emerge. Although tax competition can be beneficial, for instance by reining in excessive subnational spending, it can lead to inefficiently low tax rates as subnational governments compete for persons and businesses. Subnational governments might also be induced to engage in beggar-thy-neighbor tax policies whereby they use their tax powers to attract specific types of investments from others. By the same token, tax competition can lead to a race to the bottom, with subnational governments competitively reducing their redistribution policies in order to attract high-income residents at the expense of low-income ones. The harmonization of central and subnational tax bases is also more difficult the more revenue-raising is decentralized.[11] This is particularly relevant in federations where state governments use broad-based taxes that coincide with or overlap with federal taxes.

A final argument against decentralizing the main taxes concerns the conduct of macroeconomic demand management policies, which are usually considered the responsibility of the central government. In order to conduct these responsibly, the central government needs to have sufficient influence over short- and medium-term deficit choices—which involves pursuing deficit policies in a countercyclical way by some combination of changes in expenditures and changes in taxes. The more decentralized are revenues, the more difficult it is to deploy such policies. In contrast, subnational government fiscal policies are likely to be mildly procyclical. This is because they find it more difficult than the central government to borrow in bad times, especially when subnational bond markets are undeveloped. As well, subnational budgets are relatively inflexible, both on the revenue and expenditure sides. As a result, subnational governments are more likely to rely on central government fiscal policy to achieve economic stabilization, which will be less effective the more decentralized is revenue-raising.

[11] For harmonization to occur, the central and subnational governments must agree to a common tax base (or possibly several tax bases), although they can apply different tax rates on this base. Since there are many subnational governments and one central government, the base will typically be determined by the center. It would be difficult for subnational governments to coordinate on a common base without the participation of the center. Subnational governments will be less willing to agree to a base set by the central government if they are the dominant revenue-raisers.

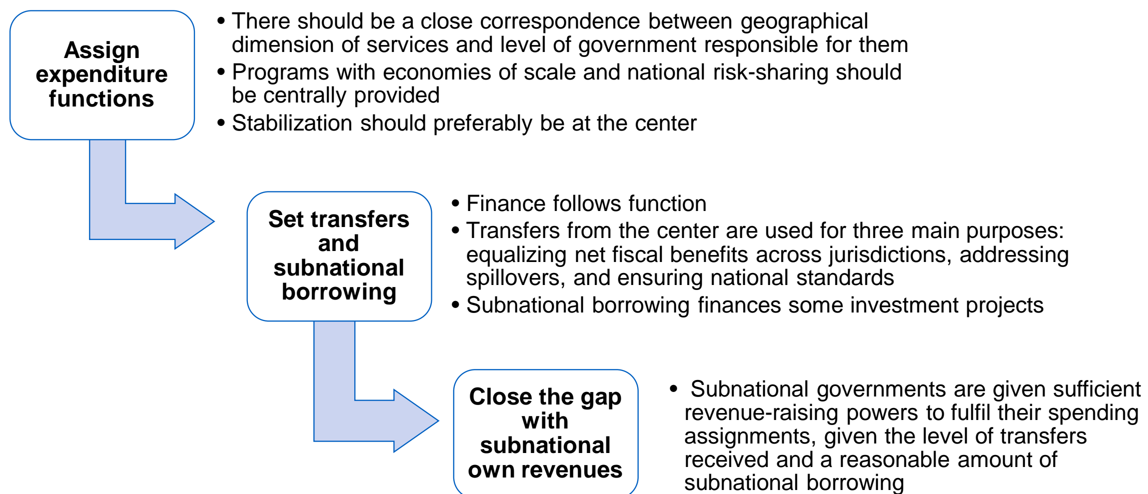
Resulting vertical gap

The balance of these arguments for and against revenue decentralization leads to a compromise, whereby subnational governments should finance some, but not all, of their spending from their own tax revenues. This suggests some "optimal" level of vertical gap, which will differ from country to country.

B. The Vertical Fiscal Gap as the Desired Level of Transfers and Subnational Borrowing

An alternative approach to decentralization, based on a different sequencing, treats transfers and borrowing as policy targets rather than residuals. While the assignment of expenditure responsibilities still comes first, the financing is reversed with transfers and borrowing preceding subnational own revenue raising (Figure 5). The following paragraphs discuss further how to determine the desired level of transfers and borrowing.

Figure 5. An alternative Model of Decentralization



Rationale for transfers

Apart from their gap-filling role, transfers from the center are important in their own right. This explains why the central government may choose transfers proactively, with subnational taxes responding to finance public sector expenditures. We can distinguish three purposes transfers fulfil.

Equalization. The first is an equalization role.[12] If left to their own fiscal devices, different

[12] It may seem surprising to treat the equalization objective as a determinant of the vertical (rather than horizontal) gap. In principle, if the equalization system is fully balanced in a federation, meaning that the contributions of states with below-average fiscal requirements cover exactly the transfers received by states

subnational governments would have different abilities to provide public services of a given level at comparable tax rates. For instance, regions with relatively high levels of per capita income or consumption would be able to raise more revenues per capita at given tax rates. As well, those with a proportionately large share of elderly in the population would have higher healthcare costs per capita and would need to raise more taxes to fulfil their basic expenditure mandates; regions with a younger population could do the same with lower tax rates. Therefore, residents of different subnational jurisdictions with different revenue capacities and expenditure needs would obtain different "net fiscal benefits", defined as the benefits residents receive from the consumption of public services minus the taxes they pay to provide them.

In these circumstances, outcomes of decentralized subnational decisions would lead to both inefficiencies and inequities. Individuals and businesses would have a fiscal incentive to migrate to regions/municipalities with higher net fiscal benefits, and this could lead to an inefficient allocation of resources among them.[13] At the same time, to the extent that they did not move, otherwise similar persons would be treated differently depending on their region or municipality of residence. That is, the fiscal system would exhibit horizontal inequity, referred to in the fiscal federalism literature as "fiscal inequity."

A system of equalization can contribute to equity and efficiency by reducing differences in the ability of different subnational governments to provide comparable public services at comparable tax rates. In other words, equalization transfers are meant to eliminate differences in net fiscal benefits across subnational governments, leveling the playing field. This does not preclude subnational governments from using their fiscal capacities differently: some may provide higher services financed with higher taxes, while others may prefer a mix of low taxes-low expenditures. Equalization should equalize the ability of subnational governments to provide comparable levels of public services without compelling them to do so.

Important caveats about equalization should be noted. First, the purpose of equalization is to equalize the ability of subnational governments to provide public services, and not to

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with above-average requirements (this is possible in both "horizontal"—across states—or "vertical"—between the center and the states—equalization systems), the aggregate equalization transfers from the center to the states should be zero and should not impact the vertical gap. But, in practice, as discussed in the next section, equalization systems are rarely fully balanced and net contributors often pay less than what net beneficiaries receive. Therefore, aggregate equalization transfers from the center to the states are positive, contributing to the vertical fiscal gap.

[13] Migration will be efficient to the extent that individuals or businesses have an incentive to locate in regions where their productivity (net of migration costs) is highest. If part of the motivation of migration is to take advantage of higher net fiscal benefits, the payoff from migration differs from productivity differences and is liable to result in inefficient migration. This phenomenon was first pointed out by Buchanan (1952) and its implication for equalization is summarized in more detail by Boadway and Shah (2007, 2009).

equalize interpersonal income differences. Interpersonal redistribution rather than intergovernmental redistribution is suitable for the latter. An implication is that, even in a "perfect" equalization system, there will remain differences in net fiscal benefits across individuals, which may motivate migration. For instance, poor people may be willing to move to states or regions that offer more redistributive policies. Equalization cannot fully correct for these differences in net benefits at the individual level. Second, achieving fiscal equity through equalization transfers involves a form of social citizenship that will be accepted politically only if there is sufficient solidarity among different regions in the country. The extent to which this is the case will differ from country to country. Third, revenue-based equalization might discourage subnational governments from attracting new tax bases and expanding existing ones. This is because revenue equalization schemes generally compensate subnational governments with below-average tax bases. Fourth, some observers might also be concerned that equalization may discourage persons from moving from declining regions to economically vibrant regions with prospects for innovation and agglomeration benefits. Thus, the equalization system could sometimes be detrimental to economic development. To mitigate this problem, equalization transfers could be complemented by regional development programs, such as subsidies to firms operating in low-income regions. Finally, equalization is intended only to deal with differences in the provision of public services, and not to finance major infrastructure investments, which is better achieved through the use of specific transfers (see discussion in section V.D).

Spillovers. The second purpose of central-subnational transfers is to address spillovers that might exist as a result of a given subnational spending programs providing benefits to residents of other jurisdictions. The existence of spillovers means that each subnational government may underspend in areas that benefit residents of other localities. Subnational spending on roads, higher education, communications, and environmental projects are examples of programs with inter-regional spillovers. The size of these spillovers is notoriously difficult to estimate, but to the extent that the central government judges that spillovers exist, it can use specific conditional grants to finance and incentivize an adequate level of subnational spending. These grants could match subnational spending at a specified matching rate. The matching rates could be negotiated on a state-by-state or region-by-region basis, since the need for them is likely to vary across states or regions. Specific conditional grants are likely to be a relatively small component of aggregate central transfers though.

National standards. A third role of transfers from the center is to encourage subnational governments to design their expenditure programs to satisfy national standards. The issue arises because subnational governments deliver social programs that are of national interest, such as education, health and welfare. While these programs are most efficiently delivered by the subnational governments, they fulfil equity objectives that are of interest to the central government, including equality of income and opportunity. Block transfers with broad conditions attached can be used to induce subnational governments to abide by

minimum national standards in program design. Receipt of block transfers in a given area would be contingent on subnational programs complying with these standards. They could be equity-related, e.g., requiring programs to be universally available and accessible, or efficiency-based, e.g., requiring benefits to be portable across states or regions. By leaving the conditions fairly general, the central government can limit its interference with subnational responsibilities. The transfers are of a block form in the sense that they apply to a broad area of responsibility (see below). To encourage adherence to minimum standards, the central government could reduce the size of the transfer if a subnational government was found to violate these standards.

Despite their benefits, transfers also come with some perils. The greater is subnational governments' reliance on transfers from the central government, the more likely they are to perceive a soft-budget constraint, and the less able (or willing) they will be to respond to fiscal contingencies by raising tax revenues instead of resorting to borrowing.[14] In addition, the larger are central transfers, the more likely it is that the central government will respond to an economic shock it faces by reducing transfers to the subnational governments. The problem is that it is difficult for the central government to commit to maintaining existing transfer policies in the event of a negative shock. The best that can be done is to minimize the problem by basing transfers on formulas rather than on central government discretion, and to have in place institutions like fiscal councils or commissions that oversee central-subnational finances. [15]

Rationale for subnational borrowing

Transfers are the main instrument for financing the vertical fiscal gap. But subnational governments can instead borrow. A key question is whether there are legitimate motives for them to borrow.[16]

Borrowing for investment? It is common practice for subnational governments to borrow to finance public investment, and very often, they adhere to a golden rule principle that allows borrowing only for this purpose (OECD, 2016a).

[14] For instance, Eyraud and Lusinyan (2013) find a negative empirical relationship between the vertical fiscal gap and fiscal performance at the general government level in OECD countries.

[15] In OECD countries, about one fifth of the intergovernmental transfers are of a discretionary nature—not formula-based (OECD, 2016b). Formulas partly protect subnational governments, although they can be modified.

[16] This section assumes that the stabilization function is conducted by the center and that automatic stabilizers are concentrated in the central budget. Therefore, we do not discuss, among the motives for subnational borrowing, the need to let automatic stabilizers operate at the subnational level. This may be a legitimate argument in some countries, particularly highly decentralized ones.

Not all types of investment should be carried out at the subnational level. As discussed above, subnational governments should focus on projects with regional or local benefits, whereas the central government should execute investments that have national benefits. Another requirement for conducting investment at the subnational level is that local and regional governments have the capacity to implement projects efficiently and translate investment into quality infrastructure. This, in turn, necessitates strong institutions to manage adequately all stages of the investment cycle, starting from project identification, and going through appraisal, selection, financing, implementation, monitoring and auditing (IMF, 2015). A third requirement is that subnational governments have space in their budgets or can raise additional revenues from user fees to accommodate future operation and maintenance costs related to the new capital.

Provided that the above conditions are in place, a choice must be made among financing these subnational projects through subnational taxes, subnational borrowing or from central transfers:[17]

- Financing investment projects out of subnational taxes seems impractical and inconsistent with inter-generational equity. The size and lumpiness of investment spending relative to subnational revenue-raising capabilities means that current expenditures would have to be severely curtailed if capital spending were financed from local taxes only. At the same time, paying for local investments with current revenue means current taxpayers would bear all the costs while future generations would enjoy many of the benefits for free.

- Subnational borrowing is more advantageous, since the cost of investment projects is shared between current and future taxpayers. Another benefit—compared to central transfer financing—is that the cost is borne solely by the (future) beneficiaries.[18] Also, borrowing exposes subnational governments to market discipline and contributes to financial deepening. The downside is that many projects do not have well-defined localized benefits and subnational governments may not internalize their externalities adequately.

- The third option—transfers from the center—have some advantages. The central government is often in a better position to evaluate projects efficiently and internalize externalities across levels of governments and across individual subnational entities. But centralized financing of investment comes with its own challenges. First, the center may not be able to tailor financing properly to the needs and characteristics of subnational entities, especially in very large countries with a fragmented government structure.

[17] Another option would be to finance the projects through public-private partnerships, where part of the costs is covered by the private sector. This section focuses on the public part of the financing.

[18] If central transfers are financed through central borrowing, this ensures that the cost of investment projects is shared with future generations. However, it is also shared across all subnational governments, since central borrowing is eventually repaid from central taxes that are levied on the whole territory.

> Second, investment financing, which is primarily done on an ad hoc basis, is less amenable to formula-based transfers. Third, capital transfers can create a common pool problem: individual subnational authorities may tend to inflate their needs, because the funding cost of transfers (in terms of central taxation or central borrowing) is spread over all jurisdictions.

Overall, there is no one-size-fits-all model for financing subnational investment. The split between central and subcentral financing will depend on the size of the projects, their benefit area, the quality of public financial management institutions, and the degree of financial development. Bahl (2008), for instance, argues that in developing countries, infrastructure investment should be centrally directed and financed, because large national infrastructure projects are higher priority and subnational authorities lack capacity to select the projects. The nonexistence of local bond markets is another impediment in some countries.

Borrowing for current expenditure? Subnational borrowing other than for worthwhile investments does not seem warranted, especially when the subnational capacity to raise revenue is limited. It is not a long-run solution to the gap between subnational current expenditure requirements and revenues. The need for subnational governments to rely on borrowing to finance current expenditures can indicate either an imbalance in the fiscal system or a strategy adopted by them to attract greater transfers. That is why many subnational governments follow—or are required to follow—the explicit or implicit rule that their current budget (revenue minus current expenditure) should be balanced or in surplus.

Independent assessment. The above principles are relatively clear. But, in practice, it is often difficult to discern whether subnational governments' borrowing comes from legitimate investment needs, from a system-design imbalance, or from a gaming strategy. An objective assessment by some external body such as a fiscal council may be needed.

C. Combining the Two Approaches

The two approaches—the vertical fiscal gap as a residual or as the desired level of transfers—could possibly yield conflicting recommendations on the "optimal" size of the vertical gap. For instance, in highly decentralized countries, the fact that subnational governments have more revenue-raising powers could justify less reliance on transfers and a smaller vertical gap. At the same time, the need to ensure national standards when key social functions lie at the subnational level may require a higher vertical gap.

Such tradeoffs are difficult to resolve; they reflect the fact that decentralized systems try to purse multiple objectives with few policy instruments. Coming up with an overall assessment of the desired vertical gap is necessarily a matter of judgement and pragmatism. Several strategies could be contemplated in practice:

- A first possibility is to prioritize the various objectives of the fiscal decentralization system and calibrate the desirable level of vertical gap based on the most important objective(s). This means that, if very few tax bases can be decentralized for efficiency reasons, a vertical gap may be unavoidable, even if the rationale for intergovernmental transfers per se is relatively weak. On the contrary, if ensuring national standards is the priority, the center may want to maintain a certain vertical gap, even if there is scope for further revenue devolution.

- Another aspect to consider if whether the country has just embarked on decentralization or has already a mature decentralized system. In the first case, the first approach (Figure 4) may be more warranted, because the devolution of revenue and expenditure responsibilities is one of the key policy decisions at this stage. In the second case, there may be less scope for revisiting the assignments across government levels, and the focus should be on the desirability of transfers in their own right.

- The two approaches could also be used sequentially and complement each other. Following the normative model presented in Figure 4, the starting point could be to establish desirable levels of expenditure and revenue devolutions. Then, the resulting vertical gap could be assessed against the criteria of the second approach (equalization, spillovers, and national standards). If there is a large discrepancy, revenue decentralization would have to be adjusted.

V. How Should The Vertical Fiscal Gap Be Covered?

The preceding section establishes the case for transfers and discusses some of the roles they are intended to fulfil. In this section, we discuss in more detail the form that transfers (including revenue-sharing arrangements) could take to cover the vertical but also the horizontal fiscal gaps.[19] The variety of roles suggests that there should be a mix of transfers, each with different designs but with some coherence when taken together (Box 1).

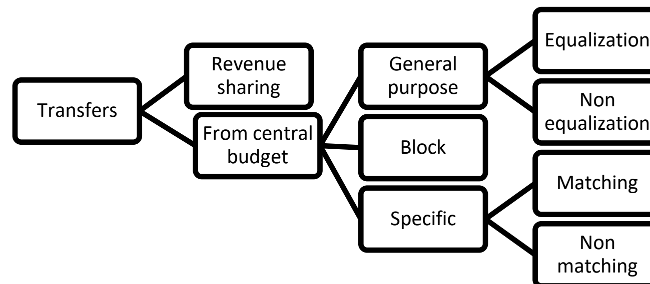
[19] From the perspective of the design of transfers, it is difficult to separate vertical and horizontal gaps, since, in practice, many transfers address both type of gaps simultaneously.

Box 1. Taxonomy of Intergovernmental Transfers

This box presents a taxonomy of different transfer types, which can be summarized using the following distinctions, some of which have been referred to above (Figure 6).

Transfers financed from the central budget versus revenue-sharing scheme. A first distinction among mechanisms to transfer funds to subnational governments concerns how the transfers are financed. Transfers can be financed either from the central government's general revenues or earmarked from particular tax sources to be turned over to subnational governments. In the first case, the aggregate size of transfers can be chosen at the discretion of the central government, while in the second case—called "revenue-sharing"—aggregate transfers are determined by the size of the tax base being shared and the rate of sharing. In either case, the allocation of the aggregate funds among individual states must be decided.

Figure 6: Typology of Transfers



General-purpose versus block versus specific. General-purpose transfers can be spent on any programs of the subnational government's choice. Block transfers are intended to be spent on a given broad area of spending like health or education, while specific transfers are targeted at more specific areas or spending such as highways. Given the fungibility of subnational budgets it is hard to enforce where block or specific transfers are actually spent unless conditions are attached to them.

Unconditional versus conditional. Unconditional transfers can be used for any purpose, whereas conditional transfers must satisfy specified conditions regarding their use.[1] The conditions could involve program design, some measure of program inputs or outputs, or tax effort. In general, general-purpose transfers are unconditional, while block and specific transfers are conditional (with conditions being more detailed for specific than for block transfers).

Formula-based versus discretionary. Formula-based transfers are allocated to subnational governments according to some pre-determined formula, whereas discretionary transfers can be chosen in an unfettered way by the central government. The formula can specify the size of the aggregate pool of transfers as well as the allocation among individual subnational governments. The formula may be chosen to minimize the incentive effect it has on subnational governments' choices and reduce their ability to manipulate the amount of transfers received.

Non-matching versus matching. Transfers may be independent of subnational spending levels, or they may match subnational spending at some matching rate. Matching transfers can be open-ended (that is, unlimited in size), or they can be closed-ended in which case they face a size limit. Instead of matching subnational spending, transfers may match other indicators, such as measures of output (e.g., number of social assistance recipients) or performance (e.g., number of students completing school). Matching conditions are more common for specific transfers.

[1] In the literature, the term "conditions" refers to specific strings attached to the *use* of the transfers received (e.g. requirement of minimum teacher to student ratio per class in the case of education grants); if these conditions are not met, access to the funds may be lost. According to this terminology, the objective criteria used to allocate transfers (e.g, population size, geographical factors) are not considered as "conditions"; such criteria also exist for unconditional transfers.

A. Revenue-Sharing

Revenue-sharing schemes allocate a share of revenues from particular taxes to the subnational governments. The share can be specified by the constitution as in Germany or by the central government, perhaps based on a recommendation by an independent commission. The shared tax revenues will be from a broad-based tax, such as the income tax or value-added tax. The subnational share of revenues can vary widely, being roughly half of personal and corporate income taxes and VAT revenues in Germany, and reaching as high as 100 percent in the case of the Australian GST.[20] In revenue-sharing schemes, subnational governments do not have the ability to modify the amounts received (they can neither alter the base nor the rate on the shared tax).

Although revenue-sharing differs from transfers financed from central government's general revenues, the two systems share some similarities. Like unconditional transfers, subnational governments can use the funds from revenue-sharing for any purpose as they see fit. Also, these funds can be allocated among individual subnational entities according to prescribed formulas. Three common methods of allocation are as follows:

- The subnational share of revenue-shared funds can be allocated to individual subnational jurisdictions according to where the taxes being shared are collected. This is the *principle of derivation* and applies to the allocation of state GST revenues in India. Application of this principle means that subnational governments with higher revenue-raising capacity end up with higher per capita shared revenues, resulting in a horizontal disparity of revenue-raising. The larger the subnational share in the revenue-sharing formula, the greater will be the disparity. To address this issue, state funds obtained from shared revenue sources are, in some federations, equalized after having been distributed to states using a broad equalization formula.[21]

- Alternatively, the subnational share of revenue-shared funds can be aggregated and allocated among subnational jurisdictions in *equal per capita amounts*. Relative to the principle of derivation, an equal per capita allocation of revenue-shared funds is implicitly redistributed from subnational governments with higher per capita tax bases to

[20] It might seem odd to describe the Australian case as revenue-sharing given that the states obtain all the revenues. The states' share of GST revenues is 100 percent and the central government's share is zero. In all other respects, it is like a revenue-sharing system since the states have little control over the revenues they receive.

[21] This is the case for Canada, where shared revenue sources include the VAT as well as personal and corporate income taxes. The Canadian case differs from a pure revenue-sharing scheme in another way in that each state government has some discretion to choose its own VAT rates (or harmonized sales tax, HST, as it is called) and income tax rates. Both central and state taxes are collected by a single tax-collecting authority as in pure revenue-sharing schemes, and the tax bases are harmonized.

those with lower per capita tax bases. This system, which is similar to Germany's, goes some distance towards per capita equalization of subnational shared revenues.

- Third, the subnational share of revenues could be aggregated and then allocated among subnational governments according to a *more purposeful formula*, such as an equalization formula. The formula could be based on both revenue-raising capacity and expenditure needs as in the Australian case, or could be a more ad hoc formula based on macro-indicators as discussed below.

A main difference between revenue-sharing and transfers financed from the central government's general revenues is that the size of the revenue pool in a revenue-sharing arrangement is determined by the total amount of revenues collected from the shared tax source, while, for transfers financed from the central budget, their aggregate size may be formula-based or set at the discretion of the central government. Another difference is that revenue-sharing funds are subject to the fluctuations associated with the business cycle, which may create fiscal risks that subnational governments are not well equipped to manage. With transfers that are formula-based, the central government tends to bear the risk. Revenue-sharing schemes may also induce some behavioral response from the central government: since it gets only a share of revenues from shared sources, it may choose to rely more on revenues from tax sources that are not shared.

B. General Purpose Transfers

Covering the vertical gap: revenue-sharing or general-purpose transfers?

General-purpose transfers are transfers that can be used by the recipient for any purpose. From the perspective of subnational governments, these transfers are similar to their own tax revenues. They are generally unconditional. Alongside revenue-sharing, general-purpose transfers are the main instrument to cover the vertical fiscal gap. Their main purpose is to provide financing rather than correcting externalities or promoting certain types of expenditure (which is the purpose of block or specific transfers).

The choice between revenue-sharing versus general-purpose transfers is country-specific and involves on a number of considerations. Revenue-sharing arrangements are often easier to administer and create some predictability for subnational governments (which know for sure that they will receive the funds), but they make subnational budgets more procyclical, reduce the flexibility of the central government budget, lead to regional inequalities, and can create a bias for the central government (which is tempted of maximizing collections on taxes that are not shared). By contrast, general-purpose transfers are generally less cyclical but also less predictable—an issue mitigated when these transfers are formula-based.

Equalization transfers

When expenditure responsibilities and revenue-raising are undertaken by the subnational governments, horizontal gaps are created relative to a fully centralized situation. Many countries respond to this challenge by making equalization transfers to correct differences across individual subnational governments. Most federations have equalization systems, an exception being the United States.

In principle, equalization could be a self-financing horizontal scheme whereby transfers made to jurisdictions with below-average fiscal requirements are financed by taxes (negative transfers) on jurisdictions with above-average ones. In practice, very few equalization schemes are self-financing. Instead, they are based on transfers from the center, which are funded from the general budget, and are allocated among subnational governments in an equalizing manner. Thus, equalization transfers serve to address both the vertical and horizontal fiscal gaps.

There is a large literature on equalization summarized in Boadway and Shah (2007), and here we highlight only some of the key design features:

Unconditional transfers. Equalization transfers are intended to give funds to the subnational governments so they can provide comparable levels of public services at comparable tax rates. They are not intended to influence the choice of subnational expenditure or tax policies. Therefore, transfers should be unconditional, and this is the common practice in most countries. Equalization transfers could thus be used for any purpose, including to permit subnational taxes to be reduced.

Equalization formulas. There are three broad approaches to determining the allocation of equalization transfers among subnational governments.

- One is *revenue equalization*, which bases equalization on the ability of subnational governments to raise revenues from their respective tax bases. The best-practices approach to revenue equalization uses the representative tax system (RTS) method whereby a subnational jurisdiction's per capita equalization entitlement is based on the amount of revenue it would raise by applying national average tax rates to its own tax base and comparing that with what would be raised per capita nationwide from the national average per capita tax base. Australia, Canada and Switzerland all equalize state revenues using the RTS approach.

- The second is *expenditure equalization*, which uses an approach similar to the RTS to determine how much money per capita is needed to provide comparable levels of public services across subnational governments. Expenditure equalization can be based on differences in needs arising from the demographic composition of the population or differences in costs arising from differences in wage costs, land costs, etc. Either needs

or costs, or both, can be included in expenditure equalization, and these could be combined with revenue equalization as in Australia.

- The third is *macro-based equalization*, where equalization is based on macro indicators like regional income or GDP, population structure, urbanization, and other factors that contribute indirectly to the cost and ability to provide public services. Macro-based equalization is often resorted to in countries where data limitations preclude more explicit revenue or expenditure equalization systems. It might also be used where subnational revenue and expenditure policies are sufficiently diverse that measuring equalization against a common national standard is difficult. Switzerland combines the RTS approach for revenue equalization with a macro-based approach for expenditure equalization, while India relies solely on a macro-based approach that takes into account both revenue capacity and expenditure needs factors.

Full versus partial equalization. Equalization can be partial in several senses. It might apply either to revenues or expenditures, and not both. In the case of revenue equalization, subnational governments may be compensated for only a portion of their deficiencies relative to the average. Or some tax bases or expenditures may be omitted from the equalization formula. Another definition of partial equalization describes a situation where equalization transfers apply only to subnational governments whose fiscal capacities are below average; above-average jurisdictions are not equalized down. This so-called "gross equalization" system applies in Canada mainly to avoid extracting negative equalization payments from above-average states.

Determination of the size of the equalization pool. The size of the pool (to be distributed across subnational authorities in the form of equalization transfers) may be determined by the transfer formula or in an exogenous way. For instance, under a gross equalization system, the size of the equalization pool corresponds to the amount of funds required to bring the below-average subnational governments up to average; therefore, the total amount of equalization derives from the formula. In other systems such as in Australia and India, the size of the pool is determined exogenously first and then the pool is allocated by the equalization formula with each subnational government receiving some transfers according to its relative revenue capacity and/or expenditure needs.

Incentive effects. Equalization formulas should be designed to minimize the incentives for subnational governments to change their behavior to influence the amount of transfers received. The RTS system is based on the size of each subnational government's tax bases as well as its population. To the extent that subnational governments can influence their tax bases by economic development and other policies, the equalization system will discourage that. If this is perceived to be a problem, partial equalization (with incomplete compensation for jurisdictions with below-average tax bases) can mitigate this disincentive. Subnational governments may also have some influence over their revenue-raising capacity by improving their tax effort, that is, the efficiency with which they obtain revenues from a

given base. Higher tax effort reflects more effective tax administrations resulting in part from greater resources devoted to them. It may be tempting to reward tax effort through the equalization system, but measurement problems make this difficult to do accurately, as Bird and Smart (2002) argue.

Relation to other transfers. The extent of equalization in the intergovernmental transfer system depends on all transfers taken together, since transfers other than equalization also have effects on the "net fiscal benefits" of subnational governments. First, if revenue-sharing funds going to subnational governments based on the principle of derivation are not equalized, horizontal revenue gaps will remain even though the equalization system applies to all other (non-revenue-sharing) tax revenues. Full revenue equalization would require that subnational funds obtained from revenue-sharing be equalized as well. Second, some non-equalization transfers also have implications for equalization. Block transfers that are based on equal per capita transfers and that are financed from central government revenues, as in the Canadian case, will be fully revenue equalizing.[22] They can enhance the formal equalization system when it is only partial. Specific transfers that match (at some rate) the amount of spending done by subnational governments in particular areas could also be equalizing to the extent that subnational expenditure differences reflect differences in expenditure needs. Transfers for infrastructure expenditures, which are conceptually distinct from equalization transfers, can achieve a broadly similar purpose, since they take into account different needs for infrastructure across subnational governments.

Response to transitory and structural shocks. Equalization partly serves as an insurance device for subnational governments against idiosyncratic economic shocks. That is, a subnational government experiencing an adverse shock will receive higher equalization transfers to offset reductions in its tax bases and increases in its spending requirements (e.g., more social assistance). To be effective in that role, equalization should be formula-based and stable over the longer term. Otherwise, subnational governments would have to await a discretionary decision by the central government and this may result in uncertainty for them, especially if the central government is also coping with a shock.

A subnational authority may also face structural changes that affect its equalization entitlements. For example, its population may change. If these changes are significant enough, it may take some time for the subnational authority to adjust its revenue and spending policies: a rapid decrease in population will reduce expenditures on public services in the longer run, but maybe not in the short term. If the equalization system responds immediately to changes in population, states or regions whose populations have recently fallen will suffer in the sense that their spending has not yet declined but their transfers

[22] Since such block transfers are financed from central general revenues, the same tax rates apply in all subnational governments. Therefore, full revenue equalization is achieved by definition, because all subnational governments get the same per capita tax revenues at comparable tax rates.

have. In these circumstances, an argument can be made for phasing in changes in equalization entitlements over a few years.

C. Block Transfers

Subnational expenditure programs such as education, health, transportation and welfare are of national importance in fostering opportunity, inclusiveness, social justice and economic mobility. Block transfers in support of these broad areas of subnational spending responsibilities could complement equalization transfers as means to close the fiscal gap (both vertical and horizontal).

Conditions could be attached to block transfers to encourage subnational governments to design their programs with national standards in mind. Although conditions of block transfers are typically relatively broad, they can take on varying amounts of specificity. More specific conditions entail less subnational discretion and accountability, and run the risk of reducing program effectiveness and efficiency. Broadly worded conditions on the other hand are more difficult to enforce and rely on the judgment of the central government to decide whether the conditions have been fulfilled.

Dispute settlement regarding the fulfilment of the conditions can be an issue. Even if the central government decides on subnational compliance and the penalty for non-compliance, subnational governments could be given the opportunity to appeal the decision and have it reviewed by an appropriate tribunal. This might discourage the central government from preemptive actions, and encourage it to seek agreement with the subnational governments to resolve the issue.

In the case of unconditional block transfers, subnational governments are free to spend the funds with discretion, and to design their programs to suit local needs and preferences. As mentioned above, block transfers can supplement the equalization system in addressing differences in subnational fiscal capacities. Even equal per capita block transfers financed from central general revenues will be effective at equalizing subnational revenue capacities. However, the allocation of block transfers could take into account need factors to the extent that the equalization system does so inadequately. For example, block transfers in support of subnational education spending could be based on the number of school-age children in the population, and could do so separately from the equalization system.

D. Specific Transfers

Specific transfers differ from block transfers in two main dimensions. They target specific programs rather than broad sectors; and their conditions are generally more restrictive and detailed: not only are specific transfers contingent on the transfers being spent in the supported area (like block transfers), but they are also often conditional on actions taken by subnational governments—for instance, central transfers paid could match the own spending

of individual subnational governments at some chosen rate.[23] It is useful to distinguish between specific transfers used to finance recurrent programs (e.g., labor training or school lunch programs) from specific transfers funding one-off spending (e.g., infrastructure). We discuss these two types of transfers separately below.

Recurrent programs. Consider first specific transfers used to fund recurrent expenditure programs. Because specific transfers can have conditions related to program design, they are useful to modify the incentives of subnational governments, and can encourage them to expand existing programs or establish new programs that have interregional spillover benefits or benefits of a national interest (e.g., transportation, environmental protection and social insurance). By contrast, block transfers, which do not have such detailed conditions, are more suitable for subnational expenditure programs that are already well established and do not need to be changed significantly. Any conditions block transfers have can be of a general sort, such as the requirement for education or health care to be available to all, including migrants from other subnational jurisdictions.

Given their stricter conditions, specific transfers leave subnational governments less discretion in program spending than do block transfers. Once the programs being supported are established, conditions can be loosened and matching transfers eliminated, and the programs can be supported by either block conditional transfers or using general transfers with no conditions attached.

One-off spending. Specific transfers may also be used to support one-off, as opposed to ongoing, subnational expenditure programs such as infrastructure or other public investment projects. These projects may also involve municipalities. Most federations are governed hierarchically in the sense that the central government transacts with the states while the states transact with the municipalities in their jurisdictions. In these circumstances, projects involving municipalities that the central government supports will involve states as intermediaries rather than the central government dealing directly with municipalities. Otherwise, lines of accountability can become blurred.

Three important issues arise with designing transfers in support of subnational infrastructure spending:

- The first is that although infrastructure needs vary across jurisdictions, central transfers in support of infrastructure cannot easily be delivered through the equalization system. The latter is suitable for recurrent transfers based on representative expenditure needs of jurisdictions. Infrastructure spending occurs only periodically, and is preferably financed on a project-by-project basis using discretionary transfers based on the specific needs of a jurisdiction for an infrastructure project. For example, it would be very difficult to

[23] Other action-based conditions could relate to program design, such as requiring that teacher-student ratios or classroom sizes exceed certain thresholds.

design an equalization system based on the need for infrastructure spending without influencing the incentives of recipient jurisdictions; each jurisdiction's needs are unique and cannot be estimated using criteria that are objective, simple, and homogeneous across subnational governments.

- Compared to equalization transfers, specific transfers are a more appropriate instrument to finance infrastructure for at least two reasons. First, the central government may want to incentivize such spending. Subnational government infrastructure projects can involve strategic considerations with national consequences. Public investments may be an instrument of regional development whereby the central government aims to achieve agglomeration economies and initiate growth in selected areas. Second, specific transfers are easier to use in a discretionary manner to address a backlog of infrastructure needs that has developed in particular jurisdictions.

- Infrastructure spending involves both some initial capital expenditure and subsequent ongoing operation and maintenance spending to ensure that the future benefits of the project are fully realized. Recurrent spending on operating and maintenance costs can readily be financed from the general revenue sources of subnational governments, including both own-revenues and general-purpose transfers provided by the center (rather than from specific transfers); the needs for such recurrent expenditures can be evaluated as part of the overall assessment of subnational spending needs. As long as the residents of a jurisdiction benefit from the services of the infrastructure, their subnational governments should have an incentive to spend on operating and maintenance costs to provide the services. Of course, there is always the possibility that a subnational government will let its infrastructure deteriorate either because of bad governance or because of an attempt to elicit transfers from the center. Such behavior is no different from any other soft-budget constraint problem.

VI. How To Achieve a Suitable Vertical Fiscal Balance?

Vertical fiscal balance is achieved when transfers to subnational governments combined with their borrowing and own revenues are *sufficient* to finance their expenditure responsibilities, that is, when the vertical fiscal gap has been covered by the *appropriate* level of transfers. Vertical fiscal balance is compatible with different levels for the vertical fiscal gap. For instance, low transfer levels are satisfactory if subnational governments have adequate revenue-raising capacity to finance a suitable level of expenditures without resorting to excessive tax effort.

Since there is no clear-cut definition of what constitutes adequate levels of subnational and central public expenditures, and what would be an acceptable tax effort by the two levels of government, vertical balance cannot be assessed directly. It is necessarily a matter of judgment, which could be based on the analysis of various indicators of imbalance. That makes the task of determining the appropriate measures for addressing vertical balance difficult.

In practice, some countries use intergovernmental advisory councils to recommend on the structure and amount of transfers. Such councils have a number of advantages. They enable both the central and subnational governments to be involved in the design of transfers. They can make the process of determining transfers transparent and subject to non-political criteria. And, they can take a longer-term view of the fiscal transfer system rather that basing it on current budgetary considerations. At the same time, these councils can only be advisory since the decision about the aggregate level of transfers and their allocation among subnational jurisdictions must be made by the legislature. They are also typically confined to advising on intergovernmental transfers and not on broader issue such as the decentralization of revenue-raising or expenditure responsibilities. Typical examples of such councils include the Commonwealth Grants Commission in Australia and the Finance Commission in India. The former is mainly concerned with recommending on the allocation of a given amount of equalization transfers among Australian states. The work they do is highly technical and involves equalizing both revenue capacity and expenditure needs using representative tax system and expenditures approaches. The mandate of the Indian Finance Commission is somewhat broader since it can recommend the total size of transfers as well as the allocation among states. Both the Australian and the Indian councils have established a strong enough reputation that their advice is usually taken by the central government. Those countries that do not have intergovernmental advisory councils rely on internal government expertise to evaluate the options.

Country practices

There is no best-practices model for achieving vertical fiscal balance. Decentralized and centralized countries approach vertical balance in different ways, although the differences are not always clear-cut.

In centralized countries where subnational governments have less discretion over revenue-raising, the vertical balance is determined more directly by central government decisions. Since the central government may not be fully informed about the level of transfers consistent with vertical balance, and the subnational governments have limited ability to respond to imbalances, fiscal adjustment is a trial-and-error process. Ideally, some flexibility would be built into the system so that adjustments could be made to the level of transfers (including revenue-sharing), albeit taking care not to induce soft-budget constraint problems.

In decentralized countries, vertical balance can be achieved through changes in expenditure and taxes of the two highly independent levels of government. For instance, subnational

governments have more discretion than in the centralized countries to raise their taxes[24] or cut their expenditure programs in the face of financial pressures. In this way, subnational governments can address any vertical imbalance arising from shocks they face, including unexpected reductions in transfers received from the center.

Decentralization of revenue-raising ability has a further advantage. It mitigates the soft-budget constraint problem, and it does so to a greater degree the more decentralization there is. The central government will judge that the subnational governments have more ability to respond to financial stress by exploiting their own revenue-raising powers, so the center will be less likely to increase transfers when subnational governments face self-imposed budget deficits. Subnational governments, for their part, will be less likely to incur deficits on purpose if they understand that the central government is less likely to bail them out.

However, achieving fiscal balance is not necessarily easier in a decentralized setting. The fact that subnational governments have more revenue-raising ability might also induce the central government to respond to its own fiscal difficulties by reducing transfers, thus passing on part of its budget deficits to them.

In both centralized and decentralized countries, fiscal rules and fiscal councils can be used to mitigate soft-budget constraints and abusive central government behavior. Fiscal rules imposed at the general government level can limit the undesirable use of intergovernmental transfers to deal with vertical imbalances that come about because of intentional subnational or central government fiscal choices.[25] Fiscal councils can contribute to accountability of both levels of government by publicizing the medium- and long-term consequences of current budgetary choices. However, ill-designed fiscal rules can be counterproductive and create the wrong incentives—in particular, rules limited to one level of government or rules that are too loose. For instance, a budget balance rule imposed at the central level may encourage the center to cut transfers to comply with the rule.

Indicators of vertical imbalance

Whether the proportion of transfers (including sharable revenues) going to the subnational governments is sufficient to achieve vertical balance can only be judged indirectly and imperfectly by observing subnational behavior. This assessment could be based on a scoreboard of indicators to detect possible imbalances. The list of the indicators, which needs to be tailored to country circumstances, could include the following:

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[24] In decentralized countries, states or regions have often access to one or more broad tax bases, such as income or consumption. By contrast, in centralized countries, states or regions typically have only access to narrow tax bases, such as excise taxes.

[25] When the rule applies to the general government, the central government does not gain by passing on its fiscal problems to lower government levels.

- **Inadequate public services**. If the level and quality of public services in the subnational governments funded by transfers and their own tax revenues are judged to be adequate relative to their assigned mandates, there is no need to change the amount of transfers (or the sharing rate in the case of revenue-sharing arrangements). On the other hand, if subnational services are judged to be inadequate, that might indicate a vertical imbalance. In practice, the assessment could be based on indicators of quality and access to public services (e.g., number of physicians in the population, teacher-student ratios). See Garcia-Escribano and Yue Liu (2017).

- **Wasteful spending**. If it is judged that subnational spending is excessively wasteful, that might be an indication that transfers are, on the contrary, too high. To detect such problem, simple indicators of expenditure efficiency could be computed for each subnational government by comparing the amounts spent to outcome variables (for instance, education spending versus school enrollment ratios; or health spending versus life expectancy and infant mortality). See Garcia-Escribano and Yue Liu (2017).

- **Persistent deficits of the current fiscal balance of subnational governments**.[26] If subnational governments finance their current expenditure through borrowing (thus, incurring current deficits), this may indicate that their resources—own revenues and transfers—are insufficient to cover their current expenditure responsibilities. The argument is less valid for public investment, since there is a case for financing subnational investment through subnational borrowing, as discussed in section IV.

- **Off-budget operations**. If subnational governments use off-budget vehicles, such as special purpose entities, to carry fiscal or quasi-fiscal operations, without properly recording them in fiscal accounts, this could be because their budgeted resources are too low. For a list of criteria to assess whether fiscal operations should be recorded under the government, see the IMF *Government Finance Statistics Manual 2014*.

- **Arrears**. Vertical imbalance may be reflected in an accumulation of subnational government arrears. These arrears can affect all types of subnational government liabilities: payments due to commercial contractors that provide goods, services, or fixed assets; tax refunds owed to taxpayers; payments of principal or interest on government debt; and compensation paid to individuals or transfers to households in the form of wages, salaries, social benefits, and pension (Flynn and Pessoa, 2014).

- **One-off revenue measures**. When subnational governments resort to one-off operations to raise resources (e.g. sale of assets or exceptional levies), spending responsibilities are not supported by a sustainable flow of financing.

[26] The current balance is defined as the difference between government revenue and current expenditure. Current expenditure excludes capital spending.

- **Bailouts**. Exceptional transfers from the center to prevent subnational insolvency may reveal a mismatch between spending needs and resources allocated to subnational governments.

All these indicators can be monitored for each individual subnational entity (e.g., municipality or region). Nonetheless, what matters, from a vertical fiscal imbalance perspective, is whether transfers are adequate to finance subnational spending responsibilities *at the aggregate subnational level*. A vertical fiscal imbalance materializes when all (or most) subnational governments show one of the problems identified above. If problems are limited to some subnational governments, while others tend to overperform—for instance, if some regions are judged to be providing inadequate levels of public services *relative to others*—this may be more an indication of horizontal imbalance, and should be addressed by adjusting the equalization system.

VII. Conclusion

One of the most fundamental questions in the conception and implementation of fiscal decentralization frameworks is whether the center provides "sufficient" transfers to subnational governments. To approach this question, this paper argues that two issues should be clearly separated. The first one is whether the vertical structure of the framework—the *vertical gap*—is efficient. As discussed in the paper, the assessment of the vertical gap could be based on several considerations: do transfers have the adequate size and design to achieve their stated objectives (e.g., addressing spillovers)? Are transfers consistent with the optimal degrees of expenditure and revenue decentralizations?

A very different question is whether the decentralization system displays *vertical balance*, meaning that the vertical gap is adequately filled. If transfers are too high or too low relative to what they should be, the quality and cost-effectiveness of services provided by the central and subnational governments can be impacted. Vertical balance can be achieved at any level of the vertical gap.

These two issues are, to some extent, independent of each other. For instance, reliance on transfers could be excessive (signaling a suboptimal vertical gap) but the size of transfers may still be adequate to fulfil the expenditure responsibilities (sign of fiscal balance). On the contrary, the distribution of expenditure and revenue responsibilities may maximize efficiency gains (optimal vertical gap) but inadequate transfers may create unfunded mandates (fiscal imbalance). Therefore, countries should aim at achieving both an optimal vertical gap and fiscal balance. These are essential properties of well-designed decentralization frameworks.

Although the two concepts offer a useful framework for policymakers, they are not easy to operationalize. The optimal vertical gap, defined either as the ideal level of

transfers/borrowing or as the optimal difference between expenditure and revenue responsibilities, is not a precise concept. This is because the arguments about the optimal degree of decentralization are themselves not precise and consensual. The concept of vertical balance can also be elusive. Since there is no clear-cut definition of what constitutes adequate levels of subnational and central public expenditures, and what would be acceptable tax effort by the two levels of government, vertical balance cannot be assessed directly. It is necessarily a matter of judgment, which could be informed by the analysis of various indirect indicators of imbalance, such as excessive subnational borrowing, poor quality of public services provided by subnational governments, and the existence of arrears.

APPENDIX: ACCOUNTING RELATIONSHIP BETWEEN VERTICAL FISCAL GAP AND DECENTRALIZATION RATIOS

Definition

The vertical fiscal gap (VFG) is defined as the share of subnational (SNG) own spending not financed through subnational own revenue:

$$VFG = 1 - \frac{SNG\ own\ revenue}{SNG\ own\ spending}\ [1]$$

with $\text{SNG own revenue} = \text{SNG spending} - \text{transfers received by SNG} - \text{SNG net borrowing}$; and $\text{SNG own spending} = \text{SNG spending} - \text{transfers paid by SNG}$.

The VFG indicator computed in equation [1] presents a shortcoming common to many empirical studies: it measures only imperfectly the control that subnational governments exert on their financial resources in order to carry out their spending responsibilities. "Own revenues" do not measure accurately the discretion of subnational governments over their resources; similarly, a large part of subnational "own spending" is regulated or earmarked by the center.

Link to decentralization

The VFG is related to the degree of revenue and expenditure decentralizations (as well as the general government (GG) deficit) through the following relationship:

$$VFG = 1 - \frac{revenue\ decentralization}{spending\ decentralization} * (1 - GG\ deficit)\ [2]$$

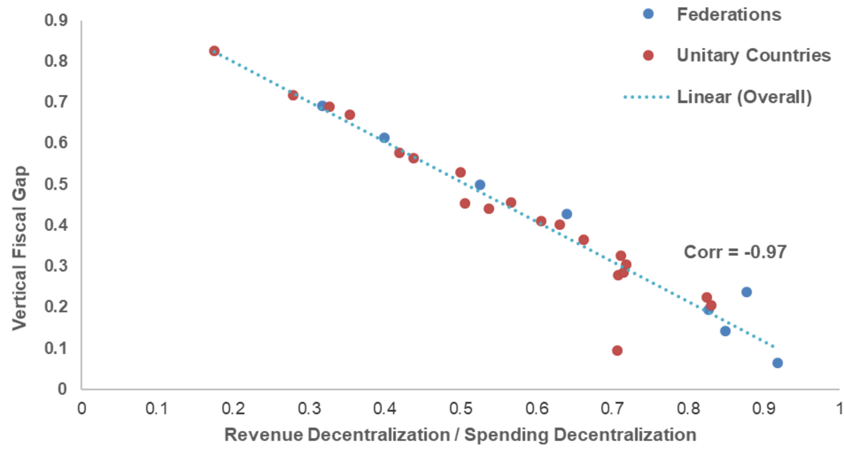
where:

$$\text{Revenue decentralization} = \frac{\text{SNG own revenue}}{\text{GG revenue}}$$

$$\text{Spending decentralization} = \frac{\text{SNG own spending}}{\text{GG spending}}$$

$$\text{GG deficit (as a share of spending)} = \frac{\text{GG spending} - \text{GG revenue}}{\text{GG spending}}$$

Figure 7. Vertical Fiscal Gap and Decentralization Mismatch
(In percent; 2016 or latest year available)



Source: OECD Fiscal Decentralisation Database. The vertical fiscal gap is defined as in Figure 1. The ratio of decentralization is measured as revenue decentralization divided by expenditure decentralization.

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