

On the Measurement and Impact of Fiscal Decentralization

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Summary

The typical post-Bretton-Woods era development approach that puts great emphasis on central government efforts to promote development, has changed dramatically and local governments have now emerged as important players in development policy. Now, the concept of requirements for achieving the development objectives is changing and many countries around the world are now implementing fiscal decentralization reforms. Within this context a number of studies attempted to quantify the impact of decentralization by relating a certain measure of decentralization to the economic outcomes of fiscal stability, economic growth, and the size of the public sector. However, decentralization is surprisingly difficult to measure. In nearly all cases those examining the relationship between decentralization and macroeconomic performance have relied on the government finance statistics of the IMF. But despite its many merits, GFS falls short of providing a full picture of fiscal decentralization. Yet for some countries there are data that more accurately capture the fiscal responsibilities of different types of governments.

Introduction: Scope and Purpose

Political and economic liberalization in the transition economies have opened up possibilities or at least revived claims for greater decentralization—transfer of authority and resources from the central government to sub-national governments. While we do not yet understand in a systemic way where the impetus for decentralization is coming from, limited evidence suggests that decentralization holds great promise for improving the delivery of public services, but the outcomes depend on its design and the institutional arrangements governing its implementation. In our earlier work, we show that although there is a high degree of political decentralization in the transition countries, the picture of fiscal decentralization is very general (Ebel and Yilmaz, 2002).

Scope

For much of the post-Bretton Woods era, the typical development approach emphasized central government plans and programs. The idea was that if a poor country could come up with a national plan for generating and investing a sufficient amount of funds by observing the principles of macro-stability, then that country would meet the pre-conditions for development. It would be a state (central government) applied strategy whereby the “flexibility to implement policies devised by technocrats was accorded a pride of place, and accountability through checks and balances was regarded as an encumbrance” (World Bank, 1997a). Until perhaps the mid-1990s, this was the main message of not only the two Bretton Woods institutions—the International Monetary Fund and the World Bank—but also of other multilateral and many bilateral institutions.

It was not an unreasonable strategy. Bretton Woods reflected a world emerging from the ravages of war, when much of the developing world was gaining its political independence. Development seemed a surmountable and largely technical challenge: good advisors would devise good policies, and technically assisted and institutionally capable governments would implement those policies.² There could even be stages, from the first “*mission*” to an “*exit strategy*”—words that reflect so well the thinking of the time.

There was some progress, especially in infant mortality rates, life expectancy, and adult literacy. There were also many failures (Vinod *et al.*, 2000). The failures did not only result from the inability to demonstrate sustained growth rates. They also resulted from environmental deterioration, loss of civil liberties, corruption, and a very poor record of delivering “local”

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² Ibid.

public services—clean water, sanitation, education, health, housing, safety nets, and, as some argue, poverty alleviation (Pauly, 1973). These were failures in an era when the scope of central government expanded enormously.³

Now, the idea about what is important to achieve development objectives is changing, dramatically so in some countries. Writing in 1994, W. Dillinger reported (in what has become one of the most quoted World Bank reports) that of the 75 developing countries with populations greater than 5 million, all but 12 claimed to have embarked on some form of transfer of fiscal authority from central to local governments. This transfer of power has been occurring even in “inherently centralized” countries, such as the Kingdoms of Jordan and Morocco (Ebel, Fox and Melhem, 1995; Vaillancourt, 1997; World Bank, 1999), Central and Eastern European countries that were under the Soviet-type fiscal system (Dunn and Wetzel, 2000; Bird, Ebel and Wallich, 1995), the People’s Republic of China (Wong, 1997), military regimes like Pakistan (Shah, 1996; Pakistan NRB, 2001), countries like Thailand that view decentralization as an efficient strategy for improving local service delivery in reaction to financial crises (World Bank, 2000); nation-states that are trying to avoid the centrifugal forces of separatism, like Russia (Wallich, 1994; and Martinez-Vazquez and Boex, 2001) and Indonesia (Ahmad and Hofman, 2001; Bird et al., 2001), and Latin America, where participatory budgeting is taking hold (Stein, 1997; Burki, Perry and Dillinger, 1999).

The World Bank is very explicit about the importance of all this: the World Development Report on *Entering the 21st Century* notes that along with globalization (continuing integration of countries worldwide), localization—the desire for self-determination and the devolution of power—is the main force “shaping the world in which development will be defined and implemented” in the first decade of this century. The report argues that these “defining forces of globalization and localization,” which at first glance may seem countervailing, often stem from the same factors and reinforce one another (WDR, 1999/2000).

The theme that emerges is that “good governance” matters, where “governance” is about how people determine collectively which government should deliver

services, and do so by establishing a set of transparent and competent public institutions they can understand and control. It is a theme that is tied to “getting right” what Bird refers to as the fundamental questions of intergovernmental finance: Who does what? Who levies which taxes (and is there a place for borrowing)? How can the resulting imbalances be resolved? What is the institutional framework to deal with the technical and political problems of decentralization? (Bird, 2000).

Purpose

Within this context a number of studies attempted to quantify the impacts of decentralization by relating some measure of decentralization to the economic outcomes of fiscal stability, economic growth, and public sector size (Davoodi and Zou, 1998; DeMello, 2000; Ehdiaie, 1994; Fukasaku and DeMello, 1998, Oates, 1985).⁴ Nearly all of these studies draw on Government Finance Statistics (GFS) issued by the International Monetary Fund as the basis for measuring “decentralization.”

As emphasized by Bird (2000), however, measurement is surprisingly difficult. And, if one cannot be confident in measuring an independent variable, then one cannot state with much confidence that decentralization is associated with one or more outcomes.

The purpose of this paper is to take a critical look at the nature and implications of measuring the fiscal dimension of decentralization. Recognizing that “a curious combination of strong preconceived beliefs and limited empirical evidence” characterizes all too much of the discussion (Litvack *et al.*, 1998; Bird, 2000), we look at two policy issues: (1) the extent to which fiscal decentralization is occurring and (2) the fragility of estimation results depending on how one measures fiscal decentralization (and, therefore, the danger in drawing sweeping conclusions that often have important policy implications).

The measuring is based on GFS data, and later supplemented with other considerations that recognize more fully local autonomy and discretion in expenditure and taxation arrangements. We find substantial differences between GFS indicators and those that capture more accurately fiscal responsibilities among different types of government. We estimate the impact of these various measures of decentralization on economic

³ Central government expenditure, 15 percent of GDP in 1960, double that by 1985 (World Bank, 1997).

⁴ The question of social outcomes (e.g., literacy rates, immunization and school enrollment) is not considered here..

stability, economic growth, and public sector size. Not surprisingly, we find that the different indicators have markedly different effects on economic performance.

The Framework for Measurement

The conceptual framework of fiscal decentralization is well established, drawing largely on the contributions by Stigler (1957), Musgrave (1959), Oates (1972), and Brennan and Buchanan (1980). The core logic is the following one: if growth and poverty issues are to be taken into account, one should be concerned about efficiency—supplying services up to the point at which, at the margin, the welfare benefit to society matches its cost. In the private sector, the market-price system is the mechanism. When the market fails in this objective, there is a case for the public commandeering of resources to supply the activity. Once the public sector intervenes, the efficiency logic is in favor of some form of fiscal decentralization. The argument is that spatial considerations make sub-national governments necessary conduits for setting up a system of budgets that best approximates the efficient solution of equating benefits and costs. This leads to the decentralization theorem: The governments closest to the citizens can adjust budgets (costs) to local preferences in a manner that best leads to the delivery of a bundle of public services that is responsive to community preferences. Sub-national governments thus become agencies that deliver services to identifiable recipients up to the point at which the value placed on the last (marginal) amount of services for which recipients are willing to pay is just equal to the benefit they receive.⁵ To implement this, sub-national (local) governments must be given the authority to exercise “own-source” taxation at the margin and be in a financial position to do so. This is the essence of fiscal decentralization.

How, in practice, does one say that a country is decentralizing? While there is no set of prescribed rules, we draw on Bahl and others to identify 11 characteristics, which range from the requirement for open local elections to the fundamental “essence” question of whether sub-national governments have (at least) tax rate-setting authority over locally assigned revenues (Bahl, 1999). A checklist for 10 transition countries

⁵ The benefit model in public finance is particularly appealing to economists, but it faces two practical problems: it is often difficult to implement appropriate pricing policies and, since it requires acceptance of a “hard budget constraint,” can be politically difficult to achieve (Bird, 1993).

(Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia, Slovak Republic) serves to explain our selection of countries that we can point to as politically “decentralized” for the purposes of making some statements about whether decentralization matters in terms of its promised benefits.⁶ We also have access to new data that go directly to the point of own-source financial autonomy (OECD, 2001; 2002).

Empirical Discussion

The literature on the relationship between decentralization and different macro indicators is growing. Most of these studies are cross-country analyses using the Government Finance Statistics (GFS) of the International Monetary Fund, and all describe the degree of fiscal decentralization as the sub-national share of total government spending/revenue or of Gross Domestic Product (GDP).⁷

Comparing the degree of fiscal decentralization across countries is a complex task that requires identification of sub-national autonomy and discretion over expenditure and revenue arrangements. Although it is widely accepted that sub-national share of total government spending/revenue is an imperfect measure of fiscal decentralization and that the need to standardize the fiscal variables in GFS inevitably eliminates details about the design of fiscal systems, many researchers use these measures to represent the degree of fiscal decentralization.

What Are We Trying to Analyze?

Recognizing that GFS has served well as a product of the central government forces of the post-Bretton Woods development model, three major problems emerge when using the data in an empirical study on fiscal decentralization:

- First, although GFS provides a breakdown of expenditures by function and economic type, it does not identify the degree of local expenditure autonomy. Thus, local expenditures that are mandated by the central government or are spent

⁶ This checklist is in the form of a multi-page matrix and is available at <http://www.worldbank.org>.

⁷ See Fukasaku and DeMello (1998) and DeMello (2000) on the impact of fiscal decentralization on macroeconomic stability; Oates (1985) and Ehdai (1994) on the relationship between the government size and fiscal decentralization; and Davoodi and Zou (1998) on the impact of fiscal decentralization on economic growth.

on behalf of the central government appear as sub-national expenditure.⁸

- Second, GFS does not distinguish the sources of tax and non-tax revenues, intergovernmental transfers, and other grants. Hence, there is no information on whether revenues are collected through shared taxes, piggybacked taxes, or locally determined “own-source” revenues.
- Third, GFS does not disclose what proportion of intergovernmental transfers is conditional as opposed to general-purpose, and whether transfers are distributed according to an objective criteria or a discretionary measure. We will argue that this distinction between conditional/objective formula grants versus more centrally tied “discretionary”/specific purpose grants can be a useful variable as a country makes the transition from deconcentration to devolution.

These aggregation problems limit the use of sub-national statistics in the GFS data set. Thus, although GFS has consistent definitions across countries and over time, the sub-national expenditure and revenue figures have little relevance in the decentralization context because the data fail to address properly the intergovernmental fiscal structure of countries and ignore the degree of central government control over local tax rates and tax bases. Thus, with GFS, the sub-national revenue and expenditure share in total government revenue/spending ends up being an overestimate of fiscal decentralization.

This overestimation of the fiscal decentralization indicator can be illustrated by analyzing the revenue structure of sub-national governments. Until recently, such a comparison was impossible due to lack of data that would be both disaggregated and would fit what we identified above as the essence of public sector decentralization—the ability of local governments to set the tax rate at the margin. Such data are available now for a set of EU accession countries from the Organization for Economic Cooperation and Development (OECD)’s survey *Fiscal Design Across Levels of Government* (OECD, 2001; 2002).⁹

OECD identifies three sources of sub-national revenues—tax revenues, non-tax revenues, and inter-

governmental grants—for the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Bulgaria, Romania, the Slovak Republic, and Slovenia (Table 1). Tax revenues and intergovernmental grants are further divided into two groups. If sub-national governments have total or significant control over a tax as defined by an “own” control over tax rate or a revenue tax base and rate, this is listed as “own tax revenue.” If sub-national governments have limited or no control over the rate and base of a tax and the central government determines how to split revenues, it is listed as “revenues from tax sharing.”¹⁰ Non-tax revenues include income from business operations and property, administrative fees and duties, and fines (Table 2).

Intergovernmental grants are further classified as either general purpose or specific. For expenditure purposes, general purpose grants can be used like own revenues, but they may be allocated based on either objective criteria or the central government’s discretion. Specific grants are earmarked for certain purposes, and the allocation may or may not be conditional across sub-national governments. Therefore, general purpose and specific grants are identified as separate subgroups.¹¹

Table 1 provides a comparison of fiscal statistics reported both in the Government Finance Statistics of the International Monetary Fund and Fiscal Design across Levels of Government of the OECD. The first three columns of Table 1 report the aggregate figures of sub-national expenditures and revenues for the ten

⁹ There are three reports: Flip de Kam, *Taxing Powers of State and Local Governments*, prepared for the Working Party on Tax Policy Analysis and Tax Statistics, OECD Committee on Fiscal Affairs (Paris, 1999), OECD Tax Policy Studies No.1; Leif Jensen et al., *Fiscal Design across Levels of Government, Year 2000 Surveys*, prepared for the Working Group on Fiscal Design across Levels of Government, Central and Eastern European Countries (Paris, 2001), OECD Tax Policy Studies No.7; Leif Jensen et al., *Fiscal Design across Levels of Government, Year 2000 Surveys*, prepared for the Working Group on Fiscal Design across Levels of Government, Central and Eastern European Countries (Paris, 2002), OECD Tax Policy Studies No.8.

¹⁰ In order to identify sub-national governments’ control over revenue sources, taxes are subdivided into categories based on the degree of tax autonomy (Table 3 lists these categories in a descending order starting with the highest degree of local autonomy). Own-tax revenues are the sum of the first three categories listed in Table 3 (taxes for which sub-national governments have the power to determine both tax rate and base or either one of them); tax sharing revenues are the sum of the last four categories.

¹¹ All of these characteristics have implications for the degree of decentralization in a given country..

⁸ This is especially relevant in the context of developing countries, where an important portion of sub-national expenditures is either mandated or spent on behalf of central government.

Table 1. Comparison of GFS Data with Fiscal Design Survey of OECD (1999) [%]

County	GFS ¹	Expenditure Share ²	Revenue Share ²	Composition of Sub-national Revenues					
				Tax Revenue		Non-tax Revenue ⁵	Grant		Total
				Own-Taxes ³	Tax-Sharing ⁴		General Purpose ⁶	Specific ⁷	
Czech Rep.	21.0	18.3	20.8	3.9	43.8	36.3	0	16.0	100.0
Hungary	23.0	23.7	26.7	16.3	16.8	17.0	1.7	48.2	100.0
Poland	31.0	27.6	28.8	10.6	14.4	24.6	30.5	19.9	100.0
Estonia	21.0	19.7	22.1	6.3	62.1	9.1	13.4	9.1	100.0
Latvia	24.0	23.1	25.0	0	66.2	14.1	5.8	13.9	100.0
Lithuania	20.0	19.6	22.8	0	91.0	4.8	2.3	1.9	100.0
Bulgaria	23.1	18.8	18.6	0	47.2	13.4	32.4	7.1	100.0
Romania	12.0	9.6	11.7	6.1	64.1	14.9	0	14.9	100.0
Slovenia	12.7	11.6	11.9	10.6	49.3	17.5	15.9	6.6	100.0
Slovak Rep.	7.5	7.1	5.0	22.8	39.6	19.3	0	18.4	100.0

¹ Sub-national expenditures in total government expenditure.

² as reported in OECD, 2001 & 2002.

³ Sub-national government sets tax rate and/or tax base.

⁴ Central government sets tax rate and base and determines revenue split.

⁵ Revenues such as fees and user charges that are assessed by sub-national governments.

⁶ General purpose grants are those that can be treated like own-source revenue. General purpose grants can be distributed according to objective criteria (such as tax capacity, expenditure needs) as well as at the discretion of the central government.

⁷ Specific grants are tied sources of revenue. Specific grants are given to cover a certain amount of costs of a service mandated by the central government or a function that is performed on its behalf.

transition countries for 1999. The GFS column presents the sub-national governments' share in total government expenditure as used in most empirical studies. Comparison of the GFS data with the aggregates reported in the OECD study shows very little discrepancy between them. The detailed sub-national revenues reported in the OECD study, however, tell a very different story.

The composition of revenues reveals that sub-national governments in these ten countries have very little control over their revenues. Therefore, aggregate revenue figures overrepresent the degree of fiscal decentralization. For example, in Lithuania, 91 percent of sub-national governments' revenues come from shared taxes for which the central government sets the rates and bases and controls revenue split. Sub-national governments in Lithuania have control over only 4.8 percent of their revenues. Thus, almost all local revenues are under the control of the central government, and the aggregate revenue (expenditure) figure grossly overrepresents the degree of fiscal decentralization. But the

aggregate data tell a very different, and misleading story (columns 2, 3 and 4).

Table 2 provides further details of sub-national revenues in all ten-transition countries for all years that fiscal surveys were carried out. In general, their sub-national governments have very little revenue autonomy, especially in Baltic countries. Table 3 presents the percentage of sub-national own revenues in total sub-national revenues. The first column presents own revenues over which sub-national governments have policy control. This control is essential for effective decentralization. Sub-national governments in the Slovak Republic have the highest percentage share in own-source revenues, which is only 60 percent of total revenues.

The next two columns report intergovernmental grants. One might argue that general purpose grants and specific grants cannot be own sources of revenue, and we recognize the merits of this view. Nevertheless, for the reasons stated above and for a limited purpose here,

Table 2. Composition of Sub-national Revenues [%]

	Tax		Non-tax	Grants		Total
	Own taxes	Tax sharing		General purpose	Specific	
1996						
Hungary	11.0	14.0	16.0	1.0	58.	100
1997						
Lithuania	0	66.0	5.0	11.0	18.0	100
Latvia	0	54.0	21.0	4.0	21.0	100
Estonia	6.0	58.0	13.0	15.0	8.0	100
Poland	15.0	23.0	28.0	21.0	13.0	100
Hungary	12.0	16.0	18.0	1.0	53.0	100
Czech Rep.	4.0	50.0	26.0	0	19.0	100
1998						
Lithuania	0	74.0	4.0	12.0	10.0	100
Latvia	0	54.0	21.0	5.0	20.0	100
Estonia	6.0	61.0	9.0	13.0	10.0	100
Poland	13.0	23.0	28.0	23.0	13.0	100
Hungary	13.0	17.0	18.0	1.0	50.0	100
Czech Rep.	5.0	51.0	27.0	0	18.0	100
Bulgaria	0	53.0	10.0	34.0	3.0	100
Romania	7.0	45.0	13.0	0	35.0	100
Slovenia	0	58.0	21.0	17.0	5.0	100
Slovak Rep.	21.0	38.0	21.0	0	19.0	100
1999						
Lithuania	0	91.0	5.0	2.0	2.0	100
Latvia	0	56.0	20.0	4.0	20.0	100
Estonia	6.0	62.0	9.0	13.0	9.0	100
Poland	10.0	14.0	24.0	30.0	21.0	100
Hungary	16.0	17.0	17.0	1.0	49.0	100
Czech Rep.	4.0	44.0	36.0	0	16.0	100
Bulgaria	0	47.0	13.0	32.0	7.0	100
Romania	6.0	64.0	15.0	0	15.0	100
Slovenia	11.0	49.0	18.0	16.0	7.0	100
Slovak Rep.	23.0	40.0	19.0	0	18.0	100
2000						
Bulgaria	0	46.0	14.0	33.0	7.0	100
Romania	5.0	65.0	14.0	0	17.0	100
Slovenia	10.0	48.0	18.0	15.0	9.0	100
Slovak Rep.	21.0	39.0	19.0	0	21.0	100

Table 3. Share of Sub-national Own Revenues in Total Revenues (1999) [%]

	Own taxes + Non-tax revenues	General purpose grants (with objective criteria)	Specific grants (not conditional)	Total
Czech Rep.	40.2	0	6.5	46.7
Hungary	33.3	0.3	0.8	34.4
Poland	35.2	30.5	0	65.7
Estonia	15.4	13.4	0	28.8
Latvia	14.1	5.8	0	19.9
Lithuania	4.8	2.3	0	7.1
Bulgaria	13.4	25.4	0	38.8
Romania	21.0	0	0	21.0
Slovenia	28.1	15.9	0	44.0
Slovak Rep.	42.1	0	18.4	60.5

Source: OECD, 2001; 2002.

we risk the overestimation bias and treat general purpose grants with objective criteria and non-conditional specific grants as own source revenues. Therefore, they are included in the decentralization variable. The argument is that sub-national governments have at least expenditure autonomy over these grants. On the other hand, sub-national governments have no control over discretionary and conditional grants that cover all or parts of services mandated by the central government; thus these revenue items are not treated as own source revenues. But, even with this liberal interpretation of the disaggregated sub-national revenue data, the case remains strong against using aggregate revenue/expenditure figures to measure decentralization.

Tables 1 through 3 make a strong point that cross-country studies which do not capture the variation in intergovernmental fiscal design misrepresent the degree of fiscal decentralization in transition countries. On the other hand, in other countries where sub-national governments have discretion over revenues and expenditures, aggregated figures might be appropriate in representing the degree of fiscal decentralization (see Table 4, next page).¹² Table 4 shows the significant variation in degree of tax autonomy for sub-national governments in developed and developing countries.

¹² In both Davoodi and Zou (1998) and DeMello (2000), there is a clear dichotomy in the estimation results for developing and developed countries. In both of them, the impact of fiscal decentralization on macro indicators is positive in developed countries and negative in developing countries. Overrepresentation of the degree of fiscal decentralization in the aggregate figure for developing countries might be the reason for the negative relationship.

Sub-national governments in developing countries get a significant portion of their tax revenues from tax sharing, whereas sub-national governments in developed countries either have control over tax rate and base or must approve any changes in the revenue-split of shared taxes.

The Question of Macro Indicators

At first, the revenue structure of a country may seem just a detail that has no bearing on the empirical analysis. The revenue structure of sub-national governments, however, has important implications for the outcome of the fiscal decentralization process (Bird, 2001, p.9.). The coordination failures arising from an improperly designed revenue system may induce sub-national governments to spend inefficiently and endanger macroeconomic stability by aggravating fiscal imbalance. A key to the success of decentralization is to design a system of multilevel public finances to provide local services effectively and efficiently while maintaining macroeconomic stability (DeMello, 2000). Accountability at the margin is an important characteristic of a revenue system that fosters prudence in debt and expenditure management. It is impossible for a sub-national government not to have control over revenue margins and still be fully accountable.

These points have been overlooked in most of the empirical studies. Studies using variables that misrepresent the degree of decentralization find an implausible impact of fiscal decentralization on macroeconomic stability, economic growth, and public sector size. For example, in recent cross-country studies using GFS data, DeMello (2000), Davoodi and Zou (1998), and

Oates (1985) analyze the impact of fiscal decentralization on budget balance, economic growth, and public sector size, respectively.

DeMello (2000) looks at the impact of fiscal decentralization on budget balance, measured as the ratio of the fiscal deficit to GDP, and argues that decentralization promotes fiscal imbalance. He uses several independent variables that explain budget balance, including sub-national tax autonomy (ratio of tax revenue to total sub-national revenue), sub-national fiscal dependency (ratio of intergovernmental transfers to total sub-national revenue), and sub-national spending share (ratio of sub-national government spending to total government spending). Similarly, Davoodi and Zou (1998) look at the relationship between economic growth and fiscal decentralization, measured as the sub-national share of total government spending, and argue that fiscal decentralization is associated with slower economic growth. On the relationship between fiscal decentralization and total public sector size, Oates (1985) reports no supporting evidence for the “Leviathan” hypothesis.¹³

In order to explore how the fiscal decentralization variable selection affects the estimation results—and how important the selection is—we replicated the DeMello, Davoodi and Zou, and Oates models using OECD data and ran the analyses for the ten transition countries listed above.¹⁴ As presented below, the estimation results with a fiscal decentralization variable that represents sub-national revenue structure of sub-national governments are very different from those reported for the other three models.¹⁵

¹³ If greater decentralization increases the number of alternative fiscal jurisdictions, any attempt to increase tax rates in one jurisdiction would result in migration of its residents to another (Tiebout, 1956). In Tiebout’s analysis, taxpayers migrate in order to avoid higher taxes and interjurisdictional competition, thereby limiting excessive taxing power of the governments. Along the lines of Tiebout, Brennan and Buchanan (1980) developed the “Leviathan” hypothesis, which argues that fiscal decentralization serves as a constraint on the behavior of the revenue-maximizing government. The “Leviathan” hypothesis predicts that the overall size of the public sector should vary inversely with fiscal decentralization; fiscal decentralization increases competition among local governments, which ultimately limits the size of the public sector.

¹⁴ We are aware of the shortcomings of their approach discussed in different studies such as Martinez-Vazquez and McNab, 1997.

¹⁵ A summary of descriptive statistics and data sources is given in Annex 1.

Economic Stability

In the DeMello (2001) study, budget balance measured as the ratio of the fiscal deficit to GDP is the dependent variable, and sub-national tax autonomy is an independent variable. In his estimations, the coefficient of the sub-national tax autonomy variable is positive and statistically significant. Thus, he concludes that sub-national tax autonomy “worsens fiscal positions.” As we have argued, however, a close look at DeMello’s independent variables shows that they do not represent what he intends to test. GFS data do not allow him to identify the degree of local tax autonomy; i.e. whether the governments have control over the tax rate or tax base. As discussed previously, the new data set prepared by the OECD allows us to identify the types of tax revenues over which sub-national governments have control, either with regard to the rates or the bases (or both). We define tax autonomy as the ratio of own taxes (taxes whose rates and/or bases are set by sub-national governments) to total sub-national revenues (the first column in Table 2).

We present our estimation results in Table 5. The coefficient of the tax autonomy variable is negative and statistically significant at one percent. Therefore, by following DeMello’s lead, we argue that sub-national tax autonomy improves the fiscal position of sub-national governments. Another variable that DeMello uses to explain the sub-national budget balance is fiscal dependency. He uses the ratio of total transfers to total sub-national revenues as the fiscal dependency variable. In his study, the impact of fiscal dependency on sub-national fiscal positions is statistically insignificant. In our replication, the fiscal dependency variable is positive and significant. Therefore, again following DeMello’s lead, we argue that intergovernmental transfers “worsen fiscal positions” of the sub-national governments.

Finally, we analyze the impact of sub-national non-tax autonomy and sub-national tax sharing on budget balance. Since non-tax revenues and tax sharing are at opposite ends of the revenue autonomy scale, they are expected to have opposite signs. The estimation results in the last two columns of Table 5 show that they do have opposite signs, but of unexpected directions. The positive sign of the sub-national non-tax autonomy variable suggests that the increase in non-tax revenues of sub-national governments has a negative impact on their fiscal positions. On the other hand, the negative sign of tax-sharing variable implies that the increase in shared taxes would help sub-national governments balance their budget. However, the coefficient of the

Table 4. Sub-national Government Taxes as Percentage of Total Tax Revenue "Tax Autonomy"

	Own tax revenue			Revenue split may be changed with consent of SNG	Tax revenue sharing		
	SNG sets tax rate and base	SNG sets tax rate only	SNG sets tax base only		Revenue split fixed in legislation (may be changed unilaterally by the central government)	Revenue split determined by the central government	Central Government sets rate and base of SNG tax
<i>Developing/Transition Countries</i>							
Bulgaria (98)	0	0	0	0	41.0	59.0	0
Czech Rep. (95)	2.0	5.0	3.0	0	90.0	0	0
Hungary (95)	0	30.0	0	0	0	0	70.0
Poland (95)	0	45.0	1.0	0	54.0	0	0
Estonia (97)	0	9.8	0	0	90.2	0	0
Latvia (97)	0	0	0	0	0	0	100.0
Lithuania (97)	0	0	0	0	0	0	100
Romania (98)	0	8.6	4.6	0	0	66.9	19.9
Slovenia (99)	16.85	0.6	0.26	0	82.29	0	0
Slovak Rep. (98)	7.4	28.2	0	0	0	64.4	0
<i>Developed Countries</i>							
Austria (95)	5.9	6.0	0	88.1	0	0	0
Belgium (95)	5.1	49.1	0	45.3	0.4	0.2	0
Denmark (95)	0	95.2	0	0	2.7	0	2.1
Finland (95)	0.01	88.6	0	0	11.4	0	0
Germany (95)	0.3	13.2	0	86.5	0	0	0
Iceland (95)	8.0	92.0	0	0	0	0	0
Japan (95)	0.1	89.8	0	0	0	0	10.1
Mexico (95)	0	0	0	74.6	18.8	0	6.6
Netherlands (95)	0	100.0	0	0	0	0	0
New Zealand (95)	98.0	0	0	0	0	0	2.0
Norway (95)	0	3.7	0	0	0.6	95.7	0
Portugal (95)	30.1	8.6	0	0	0	0	61.3
Spain (95)	26.7	35.4	0	37.9	0	0	0
Sweden (95)	0.3	99.7	0	0	0	0	0
Switzerland (95)	51.8	40.8	0	3.2	4.2	0	0
U.K. (95)	0	100.0	0	0	0	0	0

Source: OECD, 1999; 2001; 2002.

sub-national tax-sharing variable is not statistically significant at conventional levels.

Economic Growth

Previously, the debate over the merits of fiscal decentralization was on theoretical grounds of efficiency gains. In a recent study, Davoodi and Zou (1998) analyzed empirically the impact of fiscal decentralization on economic growth and reported a negative relationship across 46 developing and developed countries. There are,

however, serious methodological issues in their analysis (Martinez-Vazquez and McNab, 1997).

One problem in the study is the misspecification of the fiscal decentralization variable. They measure fiscal decentralization as sub-national share of total government expenditure reported in GFS. Sub-national share of total government expenditure does not represent the multidimensionality of the fiscal decentralization process. Without controlling for autonomy over expenditure and revenue decisions and whether officials

Table 5. Replication of the DeMello Model: Decentralization and Fiscal Positions (1997–1999)¹⁶

	Sub-national government balance			
Log sub-national tax autonomy	-0.000009* (0.0000001)			
Log sub-national fiscal dependency		0.002246* (0.000381)		
Log sub-national non-tax autonomy			0.000378* (0.00035)	
Log sub-national tax sharing				-0.001106 (0.001553)
Adj R ²	0.91	0.69	0.83	0.61
Durbin Watson	2.1	2.1	2.1	2.0
Num. Obs.	31.0	31.0	31.0	31.0

Standard errors are in parenthesis.

* Significant at the 1% level.

** Significant at the 5% level.

*** Significant at the 10% level.

are democratically elected, the expenditure share of sub-national governments as a fiscal decentralization variable means very little in representing the level of decentralization. If fiscal decentralization is defined as revenue autonomy of sub-national governments, then estimation results might change.

To demonstrate this point, we specified a regression model similar to Davoodi and Zou in order to explore how the revenue structure of sub-national governments affects estimation results—whether the negative relationship between fiscal decentralization and economic growth holds, as they suggested. The dependent variable in this model is the growth rate of real per capita output and independent variable is fiscal decentralization. However, as we discussed above, we define fiscal decentralization as the revenue autonomy of sub-national governments (see Table 3).

Table 6 reports the estimation results. First, we use the conservative definition of revenue autonomy variable, then we include non-conditional and specific grants as own-source revenues into the analysis (See Table 3). The positive coefficients of both conservative

and liberal definitions of fiscal decentralization variables are statistically significant suggesting that more revenue autonomy of sub-national governments brings higher levels of growth. In the last column, we include a control variable: population growth rate (Levine and Renelt, 1992). As presented in the table, the magnitude and direction of the fiscal decentralization variable remain the same in this model as well.

Public Sector Size

On the relationship between fiscal decentralization and public sector size, Oates (1985) tested the Brennan and Buchanan “Leviathan” model¹⁷ for a group of 35 countries and argued that the hypothesis does not hold—fiscal decentralization does not limit public sector size. Like previous studies, Oates did not take into consideration the revenue structure of sub-national governments, but instead he measured fiscal decentralization as sub-national share of total government expenditure.

We replicate Oates’ model to observe how the revenue structure of sub-national governments affects the analysis. Table 7 reports the estimation results. As seen in the first column, sub-national tax autonomy has a negative significant impact on public sector size, suggesting that the public sector’s expenditure share of GDP decreases with the increase in sub-national tax autonomy. In the second column, we include two control variables identified in Levine and Renelt (1992).

¹⁶ To alleviate the specification error problems, we used state dummies to capture state-specific characteristics, e.g., location, climate, and initial endowments. Therefore, our econometric estimates are based on a fixed effect model. In addition, given the variations in the dependent variables across the observed units, with some states demonstrating much more variance than others, the potential heteroskedasticity problem is avoided by utilizing the Generalized Least Square (GLS) estimation procedure.

¹⁷ About “Leviathan” hypothesis see footnote 13.

Table 6: Replication of the Davoodi and Zou Model: Decentralization and Economic Growth

	Per capita GDP growth		
Sub-national own tax + non-tax revenues	0,237*		
	(0,026)		
Sub-national own tax + non-tax revenues		0,114**	0,126*
+ General purpose grants (with objective criteria)		(0,044)	(0,038)
+ Specific grants (not conditional)			
Population growth			3,995**
			(1,732)
Adj R ²	0,80	0,68	0,71
Durbin Watson	2,0	1,8	2,0
Num. Obs.	31,0	31,0	31,0

Standard errors are in parenthesis.

* Significant at the 1% level.

** Significant at the 5% level.

*** Significant at the 10% level.

Table 7. Replication of the Oates Model: Decentralization and Public Sector Size (1997–1999)

	Total government expenditure % of GDP	
Sub-national own tax + non-tax revenues	-0,011**	-0,012**
+ General purpose grants (with objective criteria)	(0,004)	(0,005)
+ Specific grants (not conditional)		
Population growth		1,767*
		(0,202)
Per capita GDP growth		-0,075*
		(0,019)
Adj R ²	0,99	0,99
Durbin Watson	2,6	2,5
Num. Obs.	31,0	31,0

Standard errors are in parenthesis.

* Significant at the 1% level.

** Significant at the 5% level.

*** Significant at the 10% level.

The population growth variable has a positive sign and is significant at one percent level. The positive sign of the population growth variable suggests that the increase in population increases the level of government services. Per capita GDP growth controls the influence of Wagner's law — which argues that rising incomes are positively related to government growth. However, the negative sign of the per capita GDP growth variable suggests that public sector size is an income-inferior good in these countries.

Concluding Comments

This exercise shows the importance of choosing the fiscal decentralization variable in an empirical study. Once the degree of fiscal decentralization has been represented

as the revenue autonomy, the estimation results change significantly. Two key conclusions can be drawn from this approach to the issues that are fundamental in analyzing the impact of fiscal decentralization across countries:

- While it can be demonstrated that there was a great deal of political decentralization in the 1990s, the next step toward fiscal decentralization has been a bit sketchy. This can be largely explained by the fact that it takes time for systems to change from a long-lasting centralization to decentralization. Nonetheless, the preconditions for political decentralization are being satisfied in many countries, and it seems likely that the actual restructuring of the government will be achieved in this decade, for good or ill.

Annex 1. Summary Statistics of Data in the Baseline Regressions

Variable	Number of cross sections	Number of observations	Mean	Maximum	Minimum	Standard deviation	Data source
Sub-national tax autonomy	10	31	0.072	0.228	0.000	0.071	OECD
Sub-national non-tax autonomy	10	31	0.175	0.363	0.040	0.075	OECD
Sub-national fiscal dependency (1)	10	31	0.278	0.537	0.041	0.123	OECD
Sub-national fiscal dependency (2)	10	31	0.156	0.522	0.000	0.137	OECD
Sub-national tax sharing	10	31	0.475	0.910	0.144	0.183	OECD
Sub-national government balance	10	31	-0.001	0.010	-0.005	0.003	World Bank Economic and Social Database
Per capita GDP growth	10	31	0.030	0.124	-0.065	0.043	World Bank Economic and Social Database
Population growth	10	31	-0.004	0.001	-0.016	0.005	World Bank Economic and Social Database
Total government expenditure % of GDP	10	31	0.394	0.463	0.034	0.082	World Bank Economic and Social Database

- It is important to choose the correct fiscal decentralization variable in an empirical study. Empirical estimations are sensitive to variable selection, and a wrong choice may have far-reaching consequences for policymaking. The fiscal decentralization variable estimated in a different way leads to a significant change in the results, which shows how fragile the estimation results are. Therefore, the analysis of the impact of fiscal decentralization on macro indicators requires qualitative as well as quantitative techniques that take into account the countries' institutional structures.

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