

***Reviving Leviathan:
Fiscal Federalism and the Growth of Government***

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Abstract: This paper revisits the influential “Leviathan” hypothesis, which posits that tax competition limits the growth of government spending in decentralized countries. It uses panel data to examine long-term changes in fiscal decentralization over time within countries, attempting to distinguish between decentralization that is funded by intergovernmental transfers and local taxation. First, it sets out a logic whereby decentralization should restrict government spending if subnational governments have wide-ranging authority to set tax bases and rates on mobile assets. In countries where this is clearly the case, decentralization retards the growth of government. Second, consistent with theoretical arguments drawn from welfare economics and positive political economy, it shows that governments grow faster as they fund a greater portion of public expenditures through intergovernmental transfers.

I. Introduction

For good or ill, fiscal decentralization is commonly thought to restrict the growth of government spending. Just as tax competition in an era of globalization is believed to place constraints on the revenue-raising capacity of governments, inter-jurisdictional competition within decentralized countries is believed to hamper government's ability to tax. For those who believe that government is a revenue-hungry beast, this is a welcome muzzle. For others, fiscal decentralization creates a worrisome "race to the bottom" that favors capital over labor and prevents governments from providing important collective goods. Pushing the ideological questions aside, this paper seeks to determine whether there is a link between decentralization and smaller government. At a very aggregate level, the proposition seems doubtful: throughout the latter part of the 20th century, in an era of globalization and fiscal decentralization, public sectors have grown faster than private sectors around the world. On average, government expenditures accounted for around 39 percent of GDP in 1978, while by 1995 the average had increased to over 45 percent for a sample of 29 countries (See Figure 1).¹ The growth has been particularly pronounced in the 1990s.

[FIGURE 1 HERE]

Political scientists and economists have long sought to explain cross-national variation in levels and changes in government expenditure, often with mixed success. Although the academic literature focuses almost exclusively on the central government level, the growth of state and local public sectors has been more pronounced in relative terms. This paper directs attention to the balance of taxing and spending authority between central and subnational governments. In doing so, it returns to one of the oldest and perhaps least successful explanations of fiscal scale

¹ The data set used to create Figure 1 is introduced below. The 29 countries are those for which a full time series from 1978 to 1995 was available (with the exception of a small number of missing observations that were interpolated to create the chart).

with a new perspective and new data. With their famous “Leviathan” hypothesis, Geoffrey Brennan and James Buchanan posit that “total government intrusion into the economy should be smaller, *ceteris paribus*, the greater the extent to which taxes and expenditures are decentralized” (1980, p.15). Depicting government as a revenue-maximizing Leviathan, Brennan and Buchanan argue that as long as some individuals and firms are mobile, fiscal decentralization forces governments to engage in tax competition, thus destroying Leviathan’s monopoly on taxation and bringing government spending closer to the preferences of citizens. This argument dovetails with other less cynical suppositions that decentralization helps resolve an inherent agency problem between citizens and government.

This hypothesis was the subject of several empirical analyses in the 1980s. Though decentralization has been linked to lower government spending in some American and Canadian case studies (Marlow 1988, Joulfaian and Marlow 1990, Grossman 1989), cross-national studies have been unable to demonstrate the hypothesized relationship. Indeed Wallace Oates has declared Leviathan to be a “mythical beast” (1985). More recently, Ernesto Stein (1999) demonstrates that fiscal decentralization is actually associated with *larger* government in Latin America.

However, this paper argues that existing cross-national studies are insufficient to dispel the myth of Leviathan for two reasons. First of all, they employ cross-section averages or single-year snapshots. Thus they shed little light on the dynamic nature of decentralization and the growth of government—both of which are processes that unfold over time. Governance in many countries around the world is undergoing a major transformation since the 1980s. Cross-national empirical analysis demonstrates that a pronounced trend towards fiscal decentralization is strongly linked with transitions to democracy—especially in large, formerly centralized countries (Panizza 1999, Garrett and Rodden 2002). For the same group of 29 countries, average state and local expenditure as a share of the total government sector has jumped from around 20 percent in

1978 to 32 percent in 1995 (Figure 2). Thus it may be inappropriate to conduct empirical analysis as if all countries have reached a long-term equilibrium.

[FIGURE 2 HERE]

Second, until very recently, insufficient attention has been given to the precise institutional incentives created by different forms of decentralization. Above all, if decentralization is to have a constraining effect on the growth of government, it must occur on both the expenditure and revenue sides. In the vast majority of countries, however, increased state and local expenditures are funded primarily by grants, shared revenues, or other revenue sources that are controlled and regulated by the center. Expenditure decentralization without corresponding local tax powers will not engender the tax competition that drives the Leviathan model, nor will it strengthen the agency relationship between local citizens and their representatives.

On the contrary, decentralization funded by “common pool” resources like grants and revenue-sharing might have the opposite effect. From a traditional welfare economics perspective, increased grants might reflect demands for greater government spending. From a public choice perspective, by breaking the link between taxes and benefits, mere expenditure decentralization might turn the public sector’s resources into a common pool that competing local governments will attempt to over-fish. Depending on whether funded by local or common pool resources, decentralization might either retard or intensify the growth of government. Thus meaningful cross-national analysis requires data on transfers, revenue-sharing, and local taxation which have heretofore not been examined.

This paper reexamines the link between decentralization and the growth of government by addressing each of these problems. First, rather than concentrating exclusively on cross-country variation, this paper uses panel data from 60 countries spanning the years from 1978 to 1997 and uses an error-correction set-up to distinguish between transitory and long-term effects. Second, while expenditure decentralization is rather easy to measure across countries, subnational revenue autonomy is often swept under the rug in empirical research because it is conceptually

complex and difficult to capture with cross-national data. As a corrective, this paper uses a new data set that aims to pinpoint different aspects of subnational revenue autonomy.

The analysis demonstrates quite clearly that the effect of decentralization on government size is conditioned by the nature of fiscal federalism. Other things equal, decentralization (a relative shift in revenue from the center to the subnational governments), when funded by common pool resources, is associated with much faster growth in overall government spending. In contrast, decentralization that is funded by autonomous local taxation retards the growth of government.

The rest of this paper proceeds as follows. Section two reviews and expands on existing theories linking decentralization and the size of government. Section three introduces the data set and empirical approach, and estimates a basic model exploring the conditional effects of decentralization on government size for a large sample of countries. Section four takes a closer look at the effects of intergovernmental transfers. While the global data set is useful for distinguishing between grants and various forms of “own-source” subnational revenue, it is poorly suited to examine state and local tax autonomy. Section five takes up this task with a smaller OECD data set. The final section concludes and points out avenues for further research.

II. Decentralization and Government Spending

Perspectives on the Size of Government

A good deal of variation across countries in the size of government can be explained by examining the demands of citizens for public spending, which are to a large extent shaped by demographic and geopolitical factors. Government spending is a response to the shifting preferences of the median voter. For instance, countries with a large portion of the society above or below the working age tend to have larger governments. According to “Wagner’s Law,” demands for government expenditure increase with per capita income. Alternatively, the

distribution of wealth within a country might shape the strength of demands for redistribution (e.g. Meltzer and Richard 1981, Bolton and Roland 1997). Another literature examines the role of international trade and demands for government spending. Cameron (1978) argues that small, open economies have been more likely to develop strong labor movements and left-wing parties, and in turn these political conditions have been conducive to the growth of the public economy. Rodrik (1998) argues that increasing trade and interdependence heighten insecurity, which in turn strengthen demands for public sector risk-sharing.

Demands by citizens for public spending are satisfied through an agency relationship that is often fraught with difficulties. By no means does governmental policy necessarily represent the ideal point of the median voter. First of all, officials might abuse the natural information asymmetry between rulers and ruled and line their own pockets, leading to a larger public sector than citizens would prefer. This has been the concern of the vast public choice literature on “rent-seeking.” Second, a more recent literature assumes that politicians might be primarily interested in reelection rather than rents, and their electoral incentives might lead them to tax and spend more (or less) than the median voter would prefer. Inman and Rubinfeld (1997) explore the role of log-rolling in “universalistic” legislatures. Persson and Tabellini (1998) argue that majoritarian—as opposed to proportional—elections increase competition between parties by focusing it in some key marginal districts, which leads to more redistribution and larger government. They also argue that presidential—as opposed to parliamentary—regimes increase competition between politicians, which leads to fewer rents, less redistribution, and smaller government.

Such institutional arguments hold constant demands for expenditure—as determined by demographics, trade, etc.—and examine the role of institutional incentives that structure the agency relationship between citizens and politicians. Perhaps the most common thread in these institutional arguments is the idea that institutions can strengthen or undermine the ability of

citizens to monitor and discipline government's "natural" tendency towards excess.² Institutions can give citizens the information and the authority to identify and discipline shirking among their agents. If one assumes that the natural tendency of government is to over-spend, this line of argument suggests that improved oversight should lead to smaller government.

But institutions might affect the size of government in a second way that does not require rent-seeking assumptions about politicians. Institutions might systematically provide politicians with incentives to favor one group over another—rural over urban dwellers, residents of marginal or "swing" districts, the middle class, or perhaps capital over labor. If institutions favor voters with strong preferences for public goods or redistribution, or allow some voters to externalize a large share of the fiscal burden onto others, one might expect these institutions to be associated with larger government.

Decentralization and Monitoring Leviathan

Much of the decentralization literature focuses on the first type of institutional argument. To the extent that fiscal decentralization brings government "closer to the people" and makes possible a better match between local preferences and local policies, it may enhance the information available to voters about government activities and put them in a better position to sanction poor performance or rent-seeking. However, such an argument requires hefty assumptions about the quality of the local democratic process. Under plausible conditions, decentralization is just as likely to lead to capture by local interest groups and increased corruption (Barhan and Mookherjee 2000; Rodden and Rose-Ackerman 1997; Treisman 2000). Moreover, given the limited resources that citizens have to invest in monitoring the fiscal activities of government, it is plausible that they are better equipped to monitor only one level of

² The distinction made here between demand-based and institutional explanations for government growth draws from but moves beyond an earlier literature in American politics (e.g. Berry and Lowery 1987) that draws on Buchanan's (1977) distinction between "responsive" and "excessive" explanations for government growth.

government, and *any* decentralization of spending or taxing authority is likely to undercut monitoring (Franzese 2001). Taking a different perspective, Oates (1985) questions the link between better monitoring and smaller government, pointing out that if decentralization does significantly enhance oversight of government, the demand side may be affected-- voters might actually demand more spending, knowing that less of it will be dissipated in rents (See also Ferejohn 1999). In short, it is very difficult to derive clear predictions about decentralization and the growth of government by theorizing about the quality of monitoring.

Conceptualizing Decentralization

There are many ways to decentralize authority in a political system; local governments might gain authority to determine school curricula or local voters might gain authority to elect mayors. However, this paper focuses exclusively on fiscal decentralization. Rather than assuming a link between fiscal decentralization and monitoring, it is useful to think of fiscal decentralization as a phenomenon arising from some exogenous shift in the costs and benefits of taxation and expenditures for the central and local governments. Whether stemming from a transition to democracy, demands of voters or multilateral lending agencies, or simply a new electoral strategy, a central government might willingly decentralize resources if the marginal *political* costs of centralized (as opposed to local) taxation go up, or if the marginal benefits of centralized expenditures go down. Figure Three displays several decentralization scenarios.

[FIGURE 3 HERE]

Figure Three displays G , the level of spending on public goods, on the horizontal axis. Ignoring deficit finance, this is equal to total revenue. The vertical axis displays the marginal political costs and benefits of taxation and expenditures. The marginal benefit of G slopes downward and the marginal costs of raising revenue slope upward. The curves on the right represent the central government, and those on the left represent the local government sector.

This representation assumes that the marginal costs of raising revenue are higher for local governments, which generally do not have access to tariffs and broad-based taxes. Likewise, it assumes that the marginal benefits of additional expenditure are higher for all levels of G at the central level. The solid curves represent the status quo ante, and the original levels of public spending—the points at which the marginal benefits of expenditure equal the marginal costs of raising revenue—are G_L for the local level and G_C for the center.

One might think of *expenditure* decentralization as stemming from a downward shift in the marginal benefit of expenditure curve for the central government and a corresponding upward shift for the local government. If the MCR curves do not move, the new local government expenditure level is G_{L1} and the new central expenditure level is G_{C1} . Decentralization has taken place; that is, $G_{L1}/(G_{L1} + G_{C1}) > G_L/(G_L + G_C)$. There is no clear effect, however, on the overall size of government (the sum of G_L and G_C). One might think of *revenue* decentralization as stemming from an upward shift in the marginal cost of revenue curve for the central government and a corresponding downward shift in the MCR curve for the local government. If the MBG curves do not move, the new spending levels are G_{L2} and G_{C2} . Again, decentralization takes place but the overall size of government might be unaffected. If decentralization is driven by shifts in both curves, the result is even more pronounced decentralization: G_{L3} and G_{C3} .

Each of these scenarios might be termed “zero sum” decentralization. A larger share of the pie shifts to the local sector, but there is no clear effect on the size of the pie. However, there are plausible scenarios that combine decentralization with larger government. It is possible that demands for local public goods increase, MBG_L shifts up, and nothing happens to the marginal costs and benefits of the central government. For example, if local governments are responsible for funding and providing education, a baby boom that increases school enrollments would have this effect, and the balance of expenditures would shift toward the local government while the overall size of government would grow. (The center stays at G_C while the local government moves to G_{L1}). Decentralization might also be associated with smaller government. For

instance, a tax revolt against the center or a growing evasion problem might move MCR_C upward without affecting local governments, causing a move from G_C to G_{C2} . This seems broadly consistent with descriptions of recent developments in China and Russia.

If one merely observes an increase in the subnational share of total expenditures, one cannot distinguish between these forms of decentralization, and thus cannot derive a clear prediction about the size of government. In order to develop clearer hypotheses, it is necessary to examine more carefully the differences between grants, revenue-sharing schemes, and local taxation.

Grants and the Growth of Government

If fiscal decentralization is funded by transfers from the center, the effect on total expenditures is much clearer. First consider the response of the local government sector to increasing grants.

[FIGURE 4 HERE]

Figure 4a decomposes the local government's revenues into grants and "own-source" taxation. Grants are a politically inexpensive form of revenue for local governments. In fact, Figure 4a assumes that the marginal cost of raising grants ($MCGr_L$) is zero up to a point where an additional dollar requires expensive political lobbying of the center, causing the cost to rise steeply. Eventually additional lobbying is useless because the pool of grants is limited. The marginal political cost of local taxation (MCT_L) is much higher but rises more gradually. The horizontal summation of these curves, MCR_L , represents the total marginal cost of local revenue. At very low levels of G , all local expenditures are funded by grants, but eventually additional revenue requires local taxation. With the marginal benefit curve MBG_L , the level of local expenditure is G_L , which is funded by grants amounting to Gr_L and taxation amounting to T_L . If the central government decides to increase the pool of grants, $MCGr_L$ shifts to the right, as does

the overall MCR_L curve. The level of expenditure shifts out to G_L^* , and the reliance on grants relative to local taxation increases.

It is possible that if voters view grants as fungible, the marginal political cost of taxation will also shift upward. In a model that focuses on the indifference of the median voters between spending their income on public and private goods, Bradford and Oates (1971) posit that the effect of a grant can be equivalent to that of a reduction in taxes to individual taxpayers. When grants go up, the median voter will demand some increase in the consumption of private goods. However, unless one makes the extreme assumption that the income elasticity of demand for public goods is zero, increased grants should have a positive effect on spending by local governments. Moreover, a massive empirical literature spanning many decentralized counties shows not only that increased grants have positive effects on local expenditures, but in contrast to the “equivalence theorem,” very little if any of the windfall is absorbed by tax reductions. Though the underlying logic is poorly understood, the “flypaper effect”—the observation that money “sticks where it hits”—is one of the most enduring empirical results in public economics (for a review, see Hines and Thaler 1995). A positive relationship between increased grants and increased local spending should not be surprising. According the theory of fiscal federalism, grants are used by the central government to encourage local governments to increase spending beyond G_L , which is socially inefficient if local governments provide goods (like higher education) with positive inter-jurisdictional externalities.

The effects of increased grants on the *central* government’s expenditures are less obvious. Figure 4b decomposes the marginal benefits of public expenditure (MBG_C) for the center into direct expenditures (MBD_C) and grants ($MBGr_C$). A variety of factors might cause the marginal benefit curve for grants to shift upward. For example, demands for corrective transfers might arise in the presence of inter-jurisdictional externalities. Demands for decentralization associated with democratization in a country with weak local revenue capacity might put pressure on the center to increase grants. From the perspective of the national median voter, the MCR_L

curve might be too low because of tax competition, and grants or revenue-sharing can help local governments afford higher G_L . Alternatively, the political attractiveness of grants might increase after an election that increases the number of local governments controlled by the central government's political party. If MGD_C is unchanged, any such shift in $MBGr_C$ would push the overall marginal benefit of expenditure curve outward as shown in Figure 4b, and G_C would shift to G_C^* . In this case, grant-funded decentralization would be associated with increased central *and* subnational spending.³

However, it is plausible that an upward shift in $MBGr_C$ would be associated with a corresponding downward shift in MBD_C , producing no change in the overall marginal benefit curve and no change in G . A central government could simply make a one-to-one replacement of direct expenditures with grants. But even from an apolitical “responsive government” or median voter perspective this seems unlikely. For instance, if an increase in grants is motivated by demands to solve an interjurisdictional externality problem or make up for the effects of tax competition, there is no compelling reason to believe that demands for other forms of central government expenditure will wane.

In practice, intergovernmental grants are not distributed by a benevolent central planner, but rather by strategic politicians (Inman 1988, Saiegh & Tommasi 1999, Gibson et al. 1999, Dixit and Londregan). Grants are often designed not to internalize externalities, but rather to buy votes by targeting benefits to important electoral districts. Local governments often are represented in the legislature—directly, as provinces in a federal upper chamber, or indirectly, as when local government jurisdictional boundaries approximate electoral districts. According to the logic of Weingast, et al. (1988), grants provide local voters, local politicians, and regional representatives within the central legislature with fiscal or political benefits without forcing them to internalize their full cost, leading to upward pressure on grants that serve purely local (rather

³ Of course it is important not to double-count grants in the expenditures of the central and local governments when calculating the total.

than national) interests. Under a variety of political conditions, the central government may find it difficult to withstand these demands.⁴ If this political logic drives grant-funded expenditure decentralization, there is no reason to expect direct central spending to fall, and again, one should expect an unambiguous positive effect on the size of the public sector.

This leads directly to an additional argument—under some conditions, intergovernmental transfers can contribute to the softening of local budget constraints and the creation of an intergovernmental moral hazard problem. If faced with an unexpected fiscal shock, local governments might refuse to adjust, keeping expenditures constant by continuing on a dangerous path of borrowing, and ultimately demanding that the central government assume its debts or provide special “bailout” transfers. Such attempts to over-fish the common revenue pool through strategic over-borrowing are much more likely when subnational governments are highly dependent on transfers, above all because creditors and voters are more likely to perceive an implicit bailout guarantee in such systems (Rodden 2002, Stein 1999, Eichengreen and von Hagen 1996). That is, a large and increasing flow of finance from the common revenue pool for local public expenditures can undermine the central government’s commitment not to intervene in the event of a self-induced local fiscal crisis. Heavy dependence on intergovernmental transfers increases the likelihood that central government officials will be held politically responsible for local service reductions or defaults, which reduces the incentives of local officials for fiscal discipline.⁵ If transfers reduce the center’s commitment to ignore subnational fiscal woes, this would have long-run positive effects on public spending at both central and subnational levels.

⁴ Above all, legislators may face electoral incentives to represent the interests of subnational governments, developing a norm of “universalism,” whereby each jurisdiction votes for the projects of the others (Inman & Rubinfeld 1997). On Argentina, see Sanguinetti (1994). Moreover, weak or fragmented coalition governments may find it difficult to withstand demands for increased grants (Rattso 2000). A less political model is presented by Persson and Tabellini (1994), in which subnational governments bribe the central government to provide them with a larger share of common resources.

All of the arguments made thus far avoid the simplistic connection between decentralization and monitoring that has thus far characterized the literature. However, there is also a rather compelling accountability argument: decentralization might actually distort information and weaken oversight if funded by intergovernmental grants rather than local tax effort. If local governments are funded primarily by transfers, decentralization muddles rather than clarifies the link between taxes and benefits. The involvement of two or three levels of government in funding, legislating, and implementing the same policies might make it difficult for voters to identify and punish waste and rent-seeking. Moreover, the center-local agency relationship is laden with adverse selection problems, since local governments may have incentives to exaggerate costs and distort information when reporting to the center in order to receive larger transfers.

Local Taxation and smaller government

Figure Three above showed that the effects of tax decentralization on the size of government are ambiguous. Decentralization—when funded by increased local taxation—might simply reflect a downward shift in the marginal cost of taxation at the local level and an upward shift at the central level. However, this view ignores the potential effect of tax competition. Brennan and Buchanan (1980) made the argument that under decentralization, government's quest for rents and revenue is undermined by the need for jurisdictions to compete with one another for mobile sources of revenue. A much earlier version of this argument was made by Friedrich von Hayek (1939), who laid out a vision of "interstate federalism" in which "the methods of raising revenue would be somewhat restricted for the individual states. Not only would the greater mobility between the states make it necessary to avoid all sorts of taxation

⁵ In other words, high and consistently growing transfer-dependence might cause local governments to perceive that the *future* MCR_L curve shifts out even further. If they have access to deficit finance, they

which would drive capital or labor elsewhere, but there would also be considerable difficulties with many kinds of indirect taxation.” (p. 260).⁶

Not surprisingly, the debate has taken an ideological tone, and many of the critiques of the Leviathan hypothesis take issue with the cynical assumptions of Virginia-school public choice scholarship about government rent-seeking. However, assumptions of government malevolence are not necessary to establish a theoretical link between decentralization and small government. Rather than improving agency, tax decentralization might affect the size of government by favoring the interests of owners of mobile assets.

Consider a closed, centralized country with n identical districts, where each district consists of individuals divided into cleavages based on the relative mobility of their assets (i.e. labor versus capital, land owners versus renters, farmers versus light manufacturing). Let us make the assumption that these moving costs are exogenous and that—especially plausible for capital and labor—the owners of relatively immobile assets outnumber the owners of mobile assets (by the same margin within each district and in the country as a whole). The level of spending on public goods is determined by the national median voter—an owner of relatively immobile assets—and distributed to the districts according to population. In this scenario, the national median voter will choose to externalize as much of the fiscal burden as possible onto owners of more mobile assets.

[FIGURE 5 HERE]

Figure Five displays two upward-sloping marginal cost of taxation curves—one for mobile assets and one for immobile assets. Since the median voter derives most of her income from immobile assets, the marginal *political* cost of taxing immobile assets is higher for all levels of G . The bold MCT curve is the horizontal summation of MCT_I and MCT_M , representing the

might borrow against expected future grant increases, and creditors have little incentive to cut them off.

⁶ This argument has recently been extended to explain commitments to the preservation of markets. See, e.g. Weingast (1995).

total marginal cost of taxation. At very low levels of G , the entire tax burden is borne by owners of mobile assets, and as G rises, some of the burden is picked up by immobile asset owners. Where MBG and MCT meet, total expenditures are represented on the horizontal axis by G , and the lion's share of the tax burden is borne by mobile asset owners ($T_M > T_I$).

Contrast this with a decentralized setting in which the same districts are independent jurisdictions who set their own tax rates and choose their own levels of spending. G is now a summation of the level chosen by each individual jurisdiction. The marginal cost of taxing immobile assets has not changed, but mobile asset owners are now free to shop around for jurisdictions that offer lower T_M . A local politician that sets T_M too high in a decentralized system runs the risk of inducing capital flight. Because of tax competition, the MCT_M curve has shifted upwards, as has the total MCT curve (represented by dashed lines). The new level of government spending, G^* , is lower than G , and the burden of taxation has shifted in the direction of immobile asset owners ($T_I^* > T_I$ and $T_M^* < T_M$).

Of course the scenario in which the center completely gives up taxing authority is unrealistic, but the same logic functions even if there is only a partial decentralization of taxation. Returning to Figure Three, if the marginal political cost of central government taxation rises, central spending will go down. As long as tax decentralization entails a shift in the authority to tax mobile assets, it is unlikely that the marginal cost of revenue for the local government sector will shift down sufficiently (if at all) to make up for the lost revenue, and the overall effect on the size of government will be negative.

This is essentially the logic of Hayek (1939) and Brennan and Buchanan (1980). If one observes fiscal decentralization within (or across) countries and can be certain that it involves a long-term shift (or cross-country difference) in the authority to tax mobile capital, there are strong reasons to expect that such decentralization will be associated with smaller government. However, it can be quite difficult to identify such shifts using cross-national data. One might observe decentralization that is funded by increased local taxation without any change in the

central government's tax structure. Returning to Figure 3, the local sector's marginal costs of taxation might fall due to some exogenous change like technological improvements in tax collection. For example, the marginal costs of collecting taxes at the municipal level in Brazil have fallen dramatically because of a massive technical effort, funded by the IDB, to improve local tax administration. Such a shift would appear as tax-funded decentralization, but would be associated with larger local government spending and static central government spending. Thus in order to test the tax competition argument, one must be sure to capture some change (or cross country difference) in the central/local balance of authority to set the rate and the base for the taxation of mobile assets.

Even without the constraining effects of competition between governments over mobile assets, there is a "monitoring" perspective that leads to a similar hypothesis. The "benchmark competition" argument suggests that decentralized taxation allows voters in adjacent jurisdictions to directly compare tax prices paid and public goods provided, assessing whether decentralized governments are wasting or stealing resources. If one assumes that there is always a component of public expenditures that is stolen or wasted, competition with other, more efficient jurisdictions might put limits on the size of that component. According to Besley and Case (1995), benchmark competition in a transparent multi-jurisdiction environment makes tax hikes politically dangerous, effectively raising the MCR_L curve for the local sector as a whole.

III. The Conditional Effects of Fiscal Decentralization on the Growth of Government

Depending on the precise nature of incentive structures, the decentralization of expenditures might lead either to a smaller or larger public sector. Whether one assumes that governments are responsive to the median voter or examines agency problem, a clear hypothesis emerges that if decentralization is funded by intergovernmental transfers, it will be associated with a larger public sector. The "Leviathan" hypothesis linking decentralization with smaller

government should hold if decentralization is driven by a shift in the taxation of mobile assets from the center to the subnational governments. A less demanding “benchmark competition” hypothesis does not rely on the mobility of assets, suggesting a relationship between all forms of decentralized taxation and smaller government.

Previous Studies

In the first paper to use cross-national evidence to assess the Leviathan hypothesis, the measures of decentralization were quite simple—subnational revenue and expenditure shares of the total public sector (Oates 1985). While Oates found no significant relationship, more recent work by Ernesto Stein and his associates finds a significant positive relationship between decentralization (measured in a similar way) and the size of government (IADB 1997, Stein 1999). The Stein (1999) study introduces intergovernmental grants and the common resource problem, finding that, consistent with the “common pool” hypothesis, this relationship is compounded by dependence on intergovernmental transfers. Moreover, the Stein study demonstrates the advantage of using a small data set with cross-section averages; it allows one to focus on specific aspects of the intergovernmental system-- like the procedures through which grants are formulated and distributed-- that might help shed further light on the common resource problem.

However, this empirical approach does not allow for the possibility that the relationship between decentralization and government spending might be reversed in those countries where decentralized spending is funded primarily by local taxes. But as suggested in the discussion above, the Leviathan and common resource hypotheses are not mutually exclusive. Thus in the analysis that follows, I attempt to improve on previous attempts to distinguish between decentralization that is funded by grants and “own-source” local revenue.

Perhaps the most serious disadvantage of previous empirical approaches has been the exclusive reliance on cross-section rather than diachronic variation.⁷ A more convincing test of the relevant hypotheses would examine both cross-national and within-country changes in the nature of fiscal decentralization that might speed, retard, or perhaps even reverse the growth of the public sector. Thus in the analysis that follows, I use a data set composed of yearly observations from the period from 1978-1997 for 60 countries—all of the countries and years for which appropriate data are available. These include countries from every continent and level of development.

Dependent Variables

The dependent variable for the regressions presented below is a measure of total public sector expenditure as a percent of GDP. This is calculated for each country-year by taking the sum of expenditures of the central, state, and local governments from the IMF *Government Finance Statistics* (hereafter GFS)⁸ and dividing by GDP (from the IMF's *International Finance Statistics*).⁹ The regressions in Section Four also examine central and subnational expenditure shares of GDP separately.

Main Independent Variables

For the purposes of this paper, total government revenue can be broken down into three types:

- *Central Revenue*: Revenue that is raised and spent by the central government

⁷ For a critique of cross-country regressions on government size without a time series component, see Berry and Lowery (1987).

⁸ In order to avoid double-counting intergovernmental transfers (in the expenditures of the center and the higher-level subnational governments), grants are subtracted out.

⁹ Surprisingly, all of the existing papers on globalization and the size of the public sector only measure central government spending (e.g. Rodrik 1998, Garrett 2000, Quinn 1997). The measures used in these studies are virtually identical to the central government component of the variable used here (correlation .97), but these studies severely underestimate the size of the public sector in the United States, Canada, Switzerland, and several other highly decentralized countries.

- *Grants*: Revenue that is raised by the central government and transferred to lower-level governments
- *Own-Source Subnational*: Revenue that is raised and retained by lower-level governments themselves

Fiscal decentralization is defined as a decline in central revenue relative to grants and own-source subnational revenue. While critically important, the distinction between grants and own source revenue is often difficult to make in practice. Fortunately, the *GFS* distinguishes between “grants” and various forms of own-source subnational revenue (local taxes, user fees, interest income, etc.). However, the residual category of “own-source” revenue is not necessarily a proxy for tax autonomy, since it fails to distinguish between tax revenues that are legislated and collected locally, and those that accrue to the subnational governments automatically through revenue-sharing schemes. As a result, “own-source” revenue measured with the *GFS* may not be ideal for a cross-country analysis of public spending, since it does not fully capture the directness of the tax-benefit link or the likelihood of tax competition, both of which may be undermined by revenue-sharing programs.

Nevertheless, the distinction is important and these data may be quite valuable for the analysis of changes over time within countries. The *GFS* classification “grants” refers to explicit intergovernmental transfers that appear in the yearly budget, but exclude recurring automatic distributions of shared taxes. Thus the grants reported by the *GFS* reflect the subnational revenue flows that are most subject to central government discretion. As the discussion above pointed out, this type of transfer is most likely to create a common resource dilemma. Hence grants, taken as a percent of total public sector revenue, are a useful source of variation over time within countries to test the “common pool” hypothesis. The prediction is that if decentralization—a decrease in central government revenue as a share of total public sector revenue—is funded by

increased grants, it will be associated with a larger public sector. Descriptive statistics are displayed in Table 1.

[TABLE 1 HERE]

The best way to link these data with the discussion above is to estimate the following type of interactive model:

$$\text{Government Size}_{it} = \beta_1 \text{Subnational Revenue}/\text{Total Revenue}_{it} + \beta_2 \text{Grants}/\text{Total Revenue}_{it} \quad (2)$$

where $\text{Government Size}_{it}$ is total government spending as a share of GDP in country i at year t .

The second term should be understood as a multiplicative interaction term:

$$\beta_2 \frac{\text{Subnat. Revenue}}{\text{Total Revenue}} \times \frac{\text{Grants}}{\text{Subnat. Revenue}} = \beta_2 \frac{\text{Grants}}{\text{Total Revenue}} \quad (3)$$

Thus β_1 measures the effect of revenue decentralization in the (hypothetical) case in which grants are zero, and the interactive specification allows for the calculation of conditional coefficients that estimate the effect of revenue decentralization at various levels of subnational transfer-dependence. The hypothesis is that decentralization will have the largest positive “common pool” effect when funded primarily by transfers, and will have the smallest effect—perhaps even a negative effect if capturing the Leviathan or benchmark competition hypotheses—when funded primarily by increased “own-source” revenues.

Estimation Technique

In order to properly assess the effects of different types of decentralization on the size of government, it may be important to distinguish between short-term and long-term dynamics. It is possible that the dependent variable—the size of government—exhibits short-term changes in response to changes in the independent variables as well as long-term levels consistent with those predicted by the independent variables. The arguments relating decentralization to the size of government are best understood as pertaining to long-term equilibria. A variety of factors might

cause a transitory one-year increase in subnational revenue as a share of the total without altering any of the incentives discussed above. Rather, since our interest is in the long-term “moving equilibrium,” an error correction model (ECM) is very attractive. By estimating changes in the dependent variable and including both changes and lags of the independent variables, it is possible to distinguish between short-term or transitory effects of decentralization, and the effects of a long-term moving equilibrium level of decentralization. The error correction version of the basic model can be expressed as follows:

$$\Delta \text{Government Size}_{it} = \beta_1 \text{Government Size}_{it-1} + \beta_2 \Delta \text{Subnational Revenue/Total Revenue}_{it} + \beta_3 \Delta \text{Subnational Revenue/Total Revenue}_{it-1} + \beta_4 \Delta \text{Grants/Total Revenue}_{it} + \beta_5 \Delta \text{Grants/Total Revenue}_{it-1} + \text{Controls} + \text{Country Dummies} + \epsilon \quad (4)$$

and the coefficients of interest are β_2 and β_5 , which estimate long-term effects. It is important to include fixed country effects for several reasons. First of all, even with a large and carefully selected matrix of control variables, it is likely that without the country dummies, the analysis would suffer from substantial bias owing to omitted variables that help determine long-term cross-country differences in levels of public expenditure. Moreover, I have argued that the GFS distinction between grants and “own source” revenue is more useful within countries over time than across countries, so it is prudent to focus on long-term within-country changes with a fixed effects model.

There is considerable debate about the appropriate estimation technique for such a model. The results presented below are from models that use the panel-corrected standard errors recommended by Beck and Katz (1995) and assume panel-specific autocorrelation. However, the presence of the lagged level of the dependent variable can bias the fixed-effects OLS estimator even if the error term is not correlated over time. In panels where the time series dimension is long, this bias may not be very severe. The data set used in this section does cover a reasonable number of years (1978-1997), but in order to include as many countries as possible (including

some in Sub-Saharan Africa and Central and Eastern Europe, for whom data were available only for shorter periods) the panels are unbalanced and include a smaller number of years for some countries. Thus I have explored a variety of alternative estimation techniques—described below—but each yields very similar results to the Beck-Katz technique.

Control Variables

The models presented below include a matrix of control variables suggested by the existing literature on the growth and size of government. For most of these as well, it is useful to examine separately the effects of first differences and lagged levels. First, I include several variables that might affect the demand for public expenditures. In order to take account of government attempts to smooth tax rates over time or conduct counter-cyclical policy in the short-term, or the possibility of the long-run “Wagner’s law” effect, I include both changes and lagged levels of real GDP per capita (PPP international dollars).¹⁰ Demands for welfare spending might be driven by demographics, so I include changes and lagged levels of population and the “dependency ratio”—the portion of the society above or below the working age.¹¹ Country size (square kilometers) is included as well. To control for the Rodrik (1998) and Garrett (2000) arguments about trade and capital account openness, I use changes and lagged levels of trade/GDP ratios to capture the international integration of national goods and services markets. In addition, capital account openness is a dummy variable from the IMF’s annual *Exchange Arrangements and Exchange Restrictions* describing whether countries impose significant restrictions on capital account transactions (coded as “0”) or not (“1” = open).

Next, I include variables that control for the effects of institutions. Demands for redistribution may be harder to ignore in more democratic countries, but on the other hand, it is plausible that citizens have better control over rent-seeking politicians in democracies. To deal

¹⁰ Taken from *Penn World Tables*.

¹¹ Taken from *World Development Indicators*.

with these possibilities, I include changes and lagged levels of Gurr's 20-point scale of democracy (taken from the *Polity 98* Data Set). In addition, there is a large literature linking divided government (in presidential systems) and fragmented governing coalitions (in parliamentary systems) to "wars of attrition" (Ale sina and Drazen 1998) and budget deficits (e.g. Roubini and Sachs 1989, Alt and Lowry 1994). The implications of such political fragmentation for fiscal scale are less clear, but it seems plausible that "wars of attrition" in systems with large debt levels create a status quo bias in expenditures. A measure of executive and legislative fragmentation that bridges the parliamentary-presidential divide by incorporating both institutional and partisan veto players is included in the World Bank's *Database of Political Institutions*.¹² If the effect of political fragmentation on expenditures is through slowed adjustment, this variable should be interacted with the lagged debt level. Since debt data are unavailable for many countries, the central government's lagged deficit/GDP ratio is used instead. To control for the possibility of electoral spending cycles, I include a dummy variable for federal executive election years, also taken from the *DPI*. Finally, given the arguments of Persson and Tabellini about presidential versus parliamentary regimes, I include a variable from the *DPI* that takes the value zero for presidential systems, one for systems with assembly-elected presidents, and two for parliamentary systems.¹³

Results

¹² The variable, called "Checks2a" is the sum of 1 for the president and 1 for each legislative chamber in presidential systems. Legislative chambers are not counted if elections are non-competitive, or if list PR is used and the president controls more than 50 percent of the body. For parliamentary systems, it is the sum of 1 for the Prime minister and 1 for each coalition party. The number is reduced by 1 if closed lists are used and the PM is in the coalition. For non-competitive elections, the number of coalition parties is reduced to zero. Finally, the index is augmented by 1 for every veto player whose left-right orientation is closer to the opposition's than to the average of the rest of the government.

¹³ All of the models presented below were also estimated with a full matrix of year dummies, but these were never jointly significant, nor did they affect the substance of significance of the results. Due to the arguments of Easterly and Levine (1997), models were also estimated that controlled for ethnic fractionalization (as measured in the *Atlas Narodov Mira* (1964) and presented in Taylor and Hudson (1972). This variable was unavailable for several countries and the data are of questionable quality. In any case, the inclusion of this variable for a smaller sample did not affect any of the results.

[TABLE 2 AND FIGURE 6 HERE]

The results of the basic model are presented in Table 2, Model 1. First of all, the coefficients for most of the control variables behave as expected. The negative short-term coefficient for GDP per capita would seem to indicate counter-cyclical expenditure policy or smoothing. Since GDP is the denominator in the dependent variable, this suggests that expenditure growth lags behind the growth of the private sector during short-term booms and exceeds the growth of the private sector during short-term downturns. Larger countries demonstrate faster-growing government spending. As expected, the dependency ratio is an important factor both in the short-term and long-term. Although the long-term “trade” variable does not quite achieve statistical significance, capital accounts openness is associated with faster government growth. Initial transitions to democracy are associated with declining expenditures.

Moving on to the main results, the measure of long-term fiscal decentralization and the “grants” interaction term are jointly significant at the one percent level.¹⁴ The best way to understand the substantive effects is with reference to the plot of conditional coefficients in Figure 6. The horizontal axis represents the range of variation in grants as a share of state-local revenue, and the vertical axis measures the conditional effect of long-term fiscal decentralization (state-local revenue/total revenue) on changes in overall public spending. The bold line plots out the conditional coefficients over the full range of transfer-dependence, and the lighter lines represent 95 percent confidence intervals. The upward sloping line shows very clearly that the effect of fiscal decentralization on the size of government is conditional on the distinction between grants and own-source revenue. At low levels of transfer-dependence, the coefficient is actually negative. Other things equal, decentralization funded primarily by increased “own-source” revenue appears to retard the growth of government. When a long-term increase in relative decentralization is funded *exclusively* by own-source revenues (zero on the horizontal

¹⁴ Inclusion of the other component of the interaction (grants/subnational revenue) does not affect the results or the performance of the model.

axis), the coefficient is $-.18$.¹⁵ Note, however, that the confidence bands are rather wide throughout the negative range. The conditional coefficient crosses the zero axis when transfer-dependence is around $.44$ and the confidence interval gets much tighter as the line continues to slope upwards. At the far right, when long-term decentralization is driven *purely* by intergovernmental transfers, the coefficient is $.23$ and highly significant. Relative to central and own-source subnational revenue, a shift towards greater reliance on intergovernmental transfers leads to a faster-growing public sector.

The results presented in Table 2 and Figure 6 withstand a number of robustness checks and alternative estimation techniques. These results are based on 600 observations from 59 countries—an average of around 10 years per country. Because of concerns about missing data, the model was estimated using a smaller data set restricted to countries for which complete, overlapping year coverage was available. Other experiments were conducted with dropping countries and even entire regions, and similar or even more pronounced results were found no matter what criteria were used for the inclusion of cases.¹⁶ Finally, because of the potential bias associated with including the lagged level of the dependent variable in a fixed effects model, the same model was estimated using the GMM estimator derived by Arellano and Bond (1991). This approach relies on the use of instrumental variable estimation, where the instruments are the lagged explanatory variables (in differences) and the lagged dependent variable.¹⁷ This technique yields virtually identical results to those presented in Table 2.

IV. A Closer Look at Grants

¹⁵ Substantively, a ten percentage point long-term increase in decentralization (i.e. going from $.3$ to $.4$ of total revenue accruing to subnational governments) is associated with an increase of $.018$ in government spending/GDP (i.e. going from $.50$ to $.518$).

¹⁶ Separate effects were also estimated for federal and unitary countries, and the coefficients are quite similar and statistically significant for both. The results displayed in Table 2 are not driven disproportionately by either type of country.

¹⁷ This approach was first suggested by Anderson and Hsiao (1981) and developed further by Arellano and Bond (1991). For an overview, see Baltagi (1995), chapter 8.

Fiscal decentralization, when funded by intergovernmental transfers from the central government, is associated with increasing overall public expenditures. Thus far it is unclear, however, whether this shift affects expenditures at the subnational level, the central level, or both. This section examines central and subnational expenditures separately. Rather than examining grants and “own-source” local revenues as portions of total revenues as before, here they are entered as shares of GDP in order to facilitate direct comparisons of their stimulative effects on expenditures at each level:

$$\text{Government Size}_{it} = \beta_1 \text{Government Size}_{it-1} + \beta_2 \text{Grants/GDP}_{it} + \beta_4 \text{Own-Source Subnational Revenue/GDP}_{it} + \beta_6 \text{GDP/capita}_{it} + \text{Panel Dummies} + \epsilon \quad (5)$$

where government size is either *subnational expenditure/GDP* (model 4) or *(central government expenditures - grants)/GDP* (model 5) in country *i* at year *t*. Borrowing from the empirical literature on the flypaper effect, the primary goal is to estimate the effect of changes in grants on changes in expenditures in order to obtain the marginal effect of a one-unit increase in grants on expenditures. The basic question of this section is whether increased grants substitute or complement other forms of subnational revenue or central government expenditure.

First of all, when a subnational government receives an increase in grants, what portion of the increase goes to increased expenditures versus decreased local taxation? This is the key empirical question of the flypaper literature. For the regression in which *subnational expenditure/GDP* is the dependent variable (Model 4), it is not necessary in three-tiered systems to combine the state and municipal sectors as above. Rather, since subnational rather than total expenditures are being estimated, the state and municipal sectors in such systems can be entered as separate panels, providing an even greater number of observations. Since most of the flypaper literature developed prior to recent advances in dealing with panel data and endogeneity, it is likely that the first generation of studies based on simple OLS models overestimated the stimulative effect of grants on subnational expenditures. A better approach is to use the GMM estimator derived by Arellano and Bond (1991). This approach uses first differences and

instrumental variable estimation, where the instruments are the lagged explanatory variables and lagged dependent variable (in differences).

[TABLE 3 HERE]

Model 2 in Table 3 is a simple estimation of the flypaper effect using this technique.¹⁸ The coefficient for $\Delta Grants/GDP$ is close to unity. A one-unit increase in grants is associated with a .93 unit increase in expenditures by subnational governments. In the literature on the flypaper effect, this is at the upper end of the spectrum of findings for block grants.¹⁹ In contrast, the coefficients for “own-source” revenue and GDP per capita are not statistically different from zero. Aggregate data for entire state or municipal sectors are quite blunt, and the grant programs around the world vary widely from specific-purpose matching grants to open-ended block grants—but these results do suggest that a strong flypaper effect is quite universal. Subnational governments appear to spend virtually all of the grants they receive from higher-level governments.

The next question is whether, when central governments increase their expenditures on grants to subnational governments, there is a corresponding *decrease* in direct (non-grant) central government expenditures. Model Three uses the same independent variables as Model Two, but examines the central government’s expenditures (net of grants) instead.²⁰ If increased grants merely substitute for forms of expenditure that were formerly provided directly by the center, the coefficient would be negative. The results presented in Table 3 show that the effect is actually positive (though only significant at the ten percent level)—increasing transfers are associated with increases in other forms of expenditure as well.

¹⁸ The overall fit and results of models 4 and 5 are unaffected by the inclusion of the control variables included in Models 1-3.

¹⁹ In fact, if the fixed-effects OLS model used in most flypaper studies is estimated instead of the GMM model, the flypaper coefficient is slightly above 1.

²⁰ Similar to models 1-3, the subnational variables are once again state-local aggregations in three-tiered systems.

To sum up, increased grants stimulate virtually identical increases in local government spending. This is quite consistent with the empirical literature on the flypaper effect. At the central level, increased transfers are not offset by decreases in direct expenditures. The net effect is that as countries increase their use of intergovernmental transfers, the size of the public sector increases.

V. A Closer Look at Tax Autonomy

Figure Six above displays impressive evidence in favor of the hypothesis linking grants to the growth of government. However, one must stop short of interpreting the negative conditional coefficients on the left-hand side as evidence in favor of the Leviathan hypothesis. Not only is the statistical significance questionable, but increasing own-source subnational revenue, as identified by the GFS, does not necessarily imply that autonomous tax authority is shifting to subnational governments. While the GFS measure is a good start (and the only available cross-national time series data) it drastically overestimates local revenue autonomy in cases where “own-source” subnational revenue is merely the output of a revenue-sharing scheme or where the tax rate and/or base are set by the central government. Fortunately, a recent report published by the OECD has undertaken the first systematic cross-national examination of subnational tax autonomy. Although it only covers a small number of countries and does not examine changes over time, it contains valuable new information from which it is possible to calculate the share of total tax revenue for which subnational governments not only collect revenue, but also set the base and rate themselves. The OECD study reveals that some local government sectors, like the Danish municipalities and counties—although they raise a good deal of revenue—do not determine the bases and rates. Thus the value of this variable for Denmark is zero. At the other end of the spectrum, 30% of tax revenue in Canada is legislated and collected by the provinces and local governments. (See the descriptive statistics in Table 1). Tax

competition, and hence the Leviathan and benchmark hypotheses, are much more plausible in countries like Canada than in countries like Denmark.

[FIGURE 7 HERE]

Since the OECD researchers collected their data in the early 1990s, it is useful to plot the tax autonomy index against the average size of government from 1985 to 1995. One of the key lessons of the OECD study is immediately clear in Figure 7: true tax decentralization is much more rare than commonly thought. The three developed, highly decentralized federations—Canada, Switzerland, and the United States—are in a class by themselves and their public sectors are among the smallest in the sample. By contrast, although welfare expenditures and even revenue collection are quite decentralized in the Scandinavian countries, either the tax rates, the determination of the base, or both are tightly regulated by the center. Of course the Scandinavian countries have among the largest public sectors in the sample. To the familiar list of factors explaining large public sectors in Scandinavia—small states in global markets and ethnic homogeneity—one might add the structure of fiscal decentralization.

Though the degrees of freedom are low, it is useful to examine this relationship further with a simple regression on cross-section averages. The new variable can be used in an interactive specification to examine the effects of own-source revenue decentralization on the size of government at various levels of tax autonomy.

[TABLE 4 AND FIGURE 8 HERE]

Table Four presents the result of a regression using cross-section averages that includes all of the same control variables used in the panel data analysis above. With the exception of *Trade/GDP*, the control variables do not perform particularly well. In spite of the small number of observations, however, the variables of interest are highly significant. The r^2 is .86, while for the same model without the fiscal federalism variables it is .70. Once again, the best way to examine the effects is with a plot of conditional coefficients. In Figure 8, the horizontal axis represents the share of subnational “own-source” revenue (as defined by the GFS) that is raised through

autonomous local taxation, while the vertical axis represents conditional coefficients for the estimated effect of revenue decentralization on the long-term average size of government. At the far left, “own-source” decentralization is driven exclusively by revenue sources that the subnational governments do not directly control. This type of decentralization has large, significant positive effect on the average size of government. Moving to the right, as subnational governments have more tax autonomy, own-source decentralization has a smaller positive effect on the size of government, and once around 70 percent of own-source subnational revenue comes from autonomous tax collection, the effect of decentralization is not significantly different from zero.

Though the variable taken from the OECD study does not exhibit time series variation, it is reasonable to assume that tax autonomy is relatively stable over time and estimate an ECM model similar to model One on the smaller OECD data set, but using the interaction variables from Model 4. Rather than relying purely on cross-section variation, this approach allows one to test whether the effects of fiscal decentralization on government growth over time are conditional on the share of subnational own-source taxation that comes from taxes that are directly controlled by state and local governments. Since this model relies on cross-section variation in tax autonomy, fixed effects are not included. To control for possible regional effects, a matrix of region dummies is included instead.

[TABLE 5 AND FIGURE 9 HERE]

The results are presented in Table 5 (model 5) and the conditional effects are displayed in Figure 9. Once again, the model performs rather well. The r^2 is .60 (.40 without the fiscal federalism variables). Though the sample is now restricted to a smaller group of wealthier countries and allows much greater influence from cross-section variation by suppressing fixed country effects, most of the control variables tell similar stories as Model One, though *area* is no longer significant. In addition to previous findings, Model Three also suggests that high population is associated with faster-growing government, the long-term effects of increasing trade

are positive, and consistent with the prediction of Persson and Tabellini, parliamentary systems demonstrate slightly higher government growth than presidential systems. Furthermore, the results for the interaction of central government fragmentation and central government deficits are consistent with the “delayed adjustment” story.²¹

All of the decentralization variables are individually and jointly highly significant. The key results can be interpreted as follows: when decentralization takes place in countries where the central government tightly controls subnational taxation, it has a large, significant positive effect on the growth of government. This positive relationship between decentralization and the growth of government is weaker in countries where subnational governments have more control over local taxation, and disappears altogether in countries where around 35 percent of subnational own-source revenue comes from autonomous local taxes. After around 50 percent the conditional coefficient is negative and statistically significant. The interpretation is that in countries with high levels of subnational tax autonomy (primarily the United States, Switzerland, and Canada), decentralization actually has a negative effect on the growth of government.

Though the goal of the analysis in this section was to shed light on the Leviathan hypothesis, the results extend the “common pool” logic beyond grants to all forms of state and local revenue that are *not* completely under autonomous local control. Perhaps the most surprising thing about these results is the persistence of positive conditional coefficients for the effect of decentralization on the size of government, except in three or four countries with the very highest levels of subnational tax autonomy. The results are also broadly consistent with the Leviathan hypothesis—the countries in which the largest shares of total revenue are raised through autonomous local taxation have significantly smaller public sectors. Furthermore, though the results rely on a rather small number of cases, it appears that the long-run effects of

²¹ When the lagged surplus is large and negative (adjustment may be necessary), the number of veto players is positively associated with increases in the size of government. Smaller numbers of veto players are associated with expenditure cuts. This is not an ideal test of the delayed adjustment hypothesis, however, since it uses deficits rather than debt and ignores the revenue side of adjustment.

moves towards further decentralization in these countries are either neutral or actually retard the growth of government.

VI. Conclusion

Those who are alarmed that the global trend towards fiscal decentralization entails dangerous tax competition have little to fear, and those who envision smaller, more efficient government have little to celebrate. Even in the most developed countries, subnational expenditures are most often funded by revenue-sharing schemes, taxes that are controlled by the central government, or outright intergovernmental transfers. In general, the trend towards fiscal decentralization is not moving countries closer to Hayek's "economic conditions of interstate federalism" or Weingast's "market-preserving federalism." These envision powerful, self-financing local governments and a credibly limited central government. If anything, decentralizing countries are moving closer to the overlapping, increasingly "intertwined" multi-tiered state described by Fritz Scharpf (1976) in which the finances of the central and local governments are increasingly difficult to disentangle.

However, the rarity of subnational tax autonomy does not mean the theoretical link between tax decentralization and smaller government should be rejected. A modified version of the Brennan/Buchanan argument drops rent-seeking assumptions about public officials and posits that as countries devolve tax authority to subnational governments, owners of relatively immobile assets will lose their ability to tax more mobile asset owners. Previous cross-national studies may have been "looking for Leviathan" in the wrong places using the wrong techniques. Using an OECD sample, this paper shows that decentralization—when funded primarily by autonomous local taxation—is associated with a smaller public sector. This finding is also consistent with arguments that decentralized taxation constrains the size of government by encouraging benchmark competition. This cross-national finding helps explain why support has been found for

the Leviathan hypothesis in time-series case studies of the U.S. and Canada but not in larger cross-national studies. When funded by revenue-sharing, grants, or centrally-regulated subnational taxation, fiscal decentralization is associated with larger government in the OECD sample examined in this paper.

Using a much larger global sample, this paper has also shown that when funded by direct intergovernmental transfers, decentralization is associated with a larger public sector. The growth of intergovernmental transfers appears to be an important untold part of the story of the growth of government around the world. Other things equal, the fastest-growing public sectors over the past 20 years have been those in which grants—as a portion of total revenue—have grown the fastest. When central governments increase transfers to subnational governments they do not reduce their own direct expenditures, and consistent with the flypaper effect, subnational governments spend virtually every dollar of increased transfers.

The nexus between growing intergovernmental grants and a growing public sector might be explained as an efficient response to exogenous demands for decentralization. First of all, a move towards decentralized service provision might lead to the under-provision of positive externalities or over-provision of negative externalities by subnational governments, which calls for corrective transfers from the (presumably benevolent) central government. Moreover, decentralization through increased local taxation may simply be impossible or undesirable in extremely poor or highly unequal countries, and building local administrative capacity is likely to be costly. Furthermore, demands for decentralization—especially when part of the process of democratization—might be accompanied by demands for increased redistribution and risk-sharing that can only be funded by the central government. Thus under a variety of conditions, increased transfers and a larger public sector might be unavoidable—even desirable—concomitants of fiscal decentralization.

An alternative story about grants and the growth of government builds from the common resource problem associated with governmental budgeting. When decentralization is funded

by grants, the tax-benefit link is broken, which increases fiscal illusion and undermines accountability, giving politicians incentives to “overfish” the common pool of public revenue. Even worse, if subnational politicians see grants as implicit bailout pledges, they may face weak incentives for fiscal discipline, leading to higher local-level spending and potentially, higher central government spending in the form of bailouts.

The empirical design of this paper does not allow one to distinguish between these alternatives. Thus the findings in this paper pertaining to intergovernmental grants spur similar challenges for further research as the flypaper finding. The stimulative effect of grants on public spending is quite strong and robust, but a range of plausible explanations runs the gamut from welfare economics to positive political economy. Although preliminary comparative work has been done on endogenous expenditure decentralization (Panizza 1999, Garrett and Rodden 2002), an important goal for future research is to unravel the determinants of cross-country differences and diachronic variations in intergovernmental transfers, revenue-sharing schemes, and the vertical distribution of tax authority. Moreover, it will be important to identify more precisely the motivations behind and incentives created by the various types of grants and forms of subnational taxation in use around the world.

Whether tax decentralization leads to government that is “too small” remains an open question. Moreover, whether the nexus between grants and the growth of government is, to use Buchanan’s words, “responsive” or “excessive” remains unresolved. These are important questions that demand more refined work using a combination of case studies and cross-national analysis.

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Figure 1: Government Expenditure as Share of GDP: Average for 29 Countries

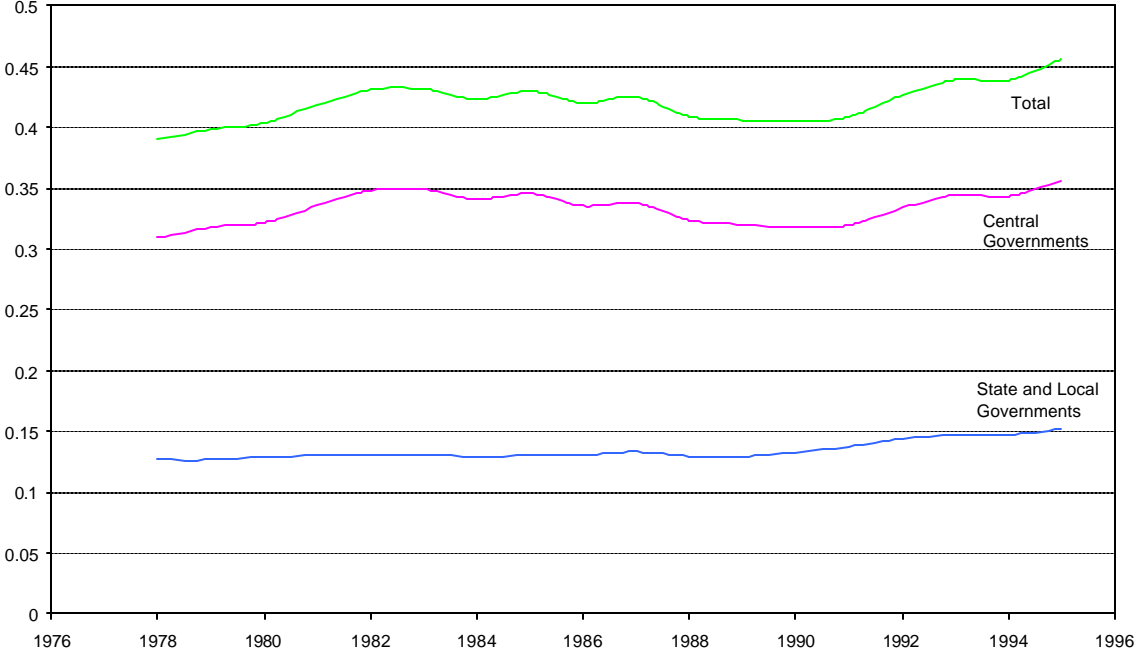


Figure 2: Fiscal Decentralization, 29 Countries

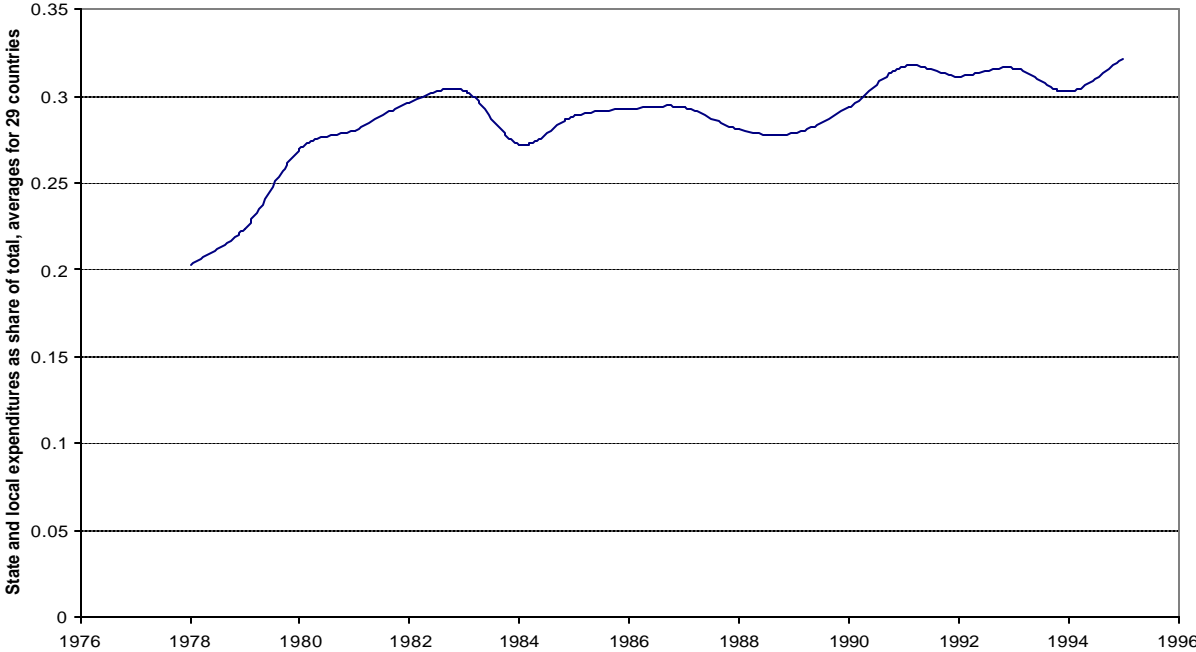


Table 1: Descriptive Statistics

	Full Sample			OECD Sample		
	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median
<u>Dependent Variables</u>						
Total Expenditure/GDP Central Govt.	0.39	0.15	0.37	0.48	0.11	0.48
Expenditure/GDP State-Local Govt.	0.32	0.13	0.31	0.37	0.10	0.38
Expend./GDP	0.10	0.09	0.08	0.17	0.09	0.18
<u>Independent Variables</u>						
State-Local Revenue/Total Revenue	0.26	0.19	0.22	0.37	0.17	0.37
Grants/State-Local Revenue	0.36	0.22	0.35	0.36	0.19	0.31
Grants/Total Govt. Revenue	0.10	0.09	0.08	0.13	0.08	0.13
Autonomous State-Local Taxation/Total Revenue				0.04	0.08	0.004
Autonomous State-Local Taxation/Own-Source State- Local Revenue				0.14	0.21	0.02
<u>Control Variables</u>						
GDP Per Capita	7328.41	5185.615	5811.50	11647.76	3508.586	12302
Population (millions)	47.40	121.00	13.10	40.30	60.60	10.10
Area (square km)	184983.5	200845.2	92827	183478.8	155949.5	93117.7
Dependency Ratio	0.65	0.17	0.59	0.53	0.08	0.52
Trade as % of GDP	0.66	0.38	0.57	0.64	0.28	0.63
Capital Account Openness	0.34	0.47	0	0.46	0.50	0
Democracy	4.99	6.52	8	8.81	3.65	10
Central Govt. Surplus/GDP	-0.04	0.05	-0.03	-0.04	0.04	-0.03
Veto Players	2.68	1.62	2	2.94	1.40	3
System (Pres/Parl)	1.26	0.92	2	1.67	0.73	2
Election Year	0.07	0.25	0	0.04	0.20	0
Observations		600			148	
Countries		59			18	

Figure 3: Decentralization scenarios

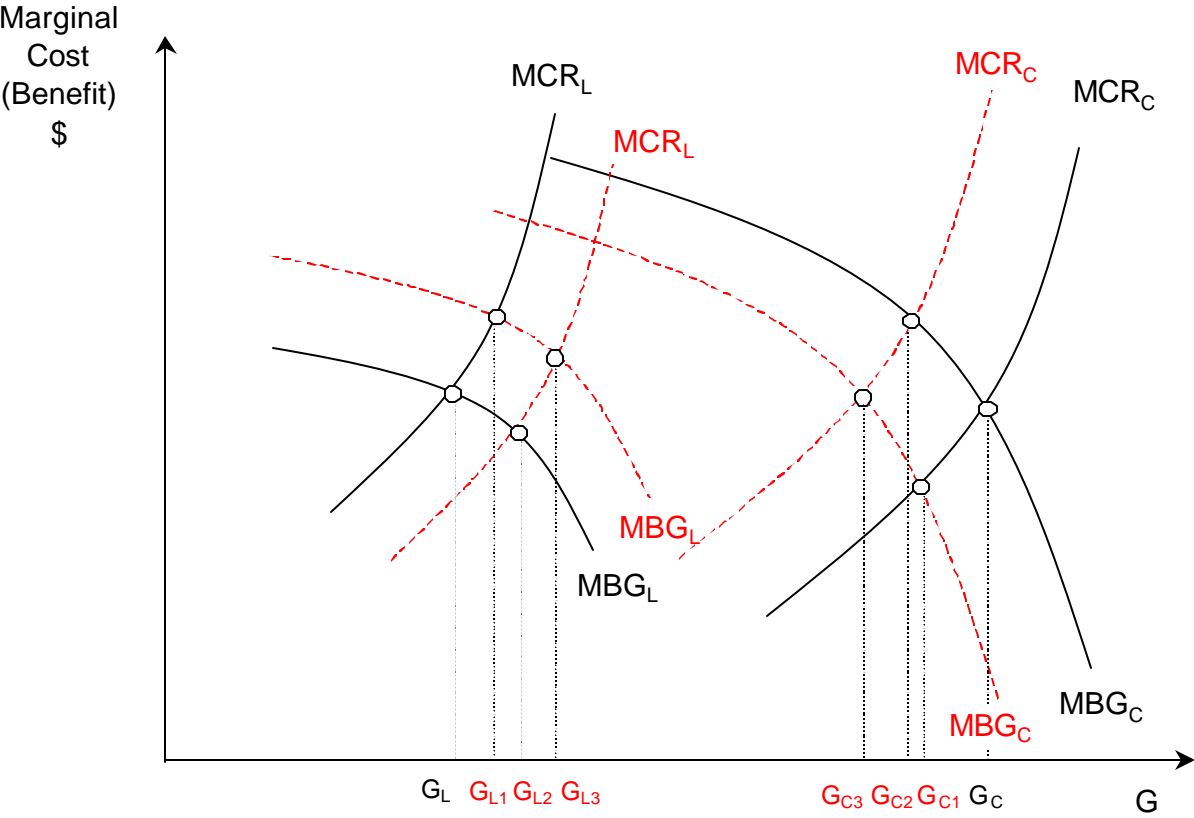


Figure 4: Decentralization through increased grants

Figure 4a: Local Government Sector

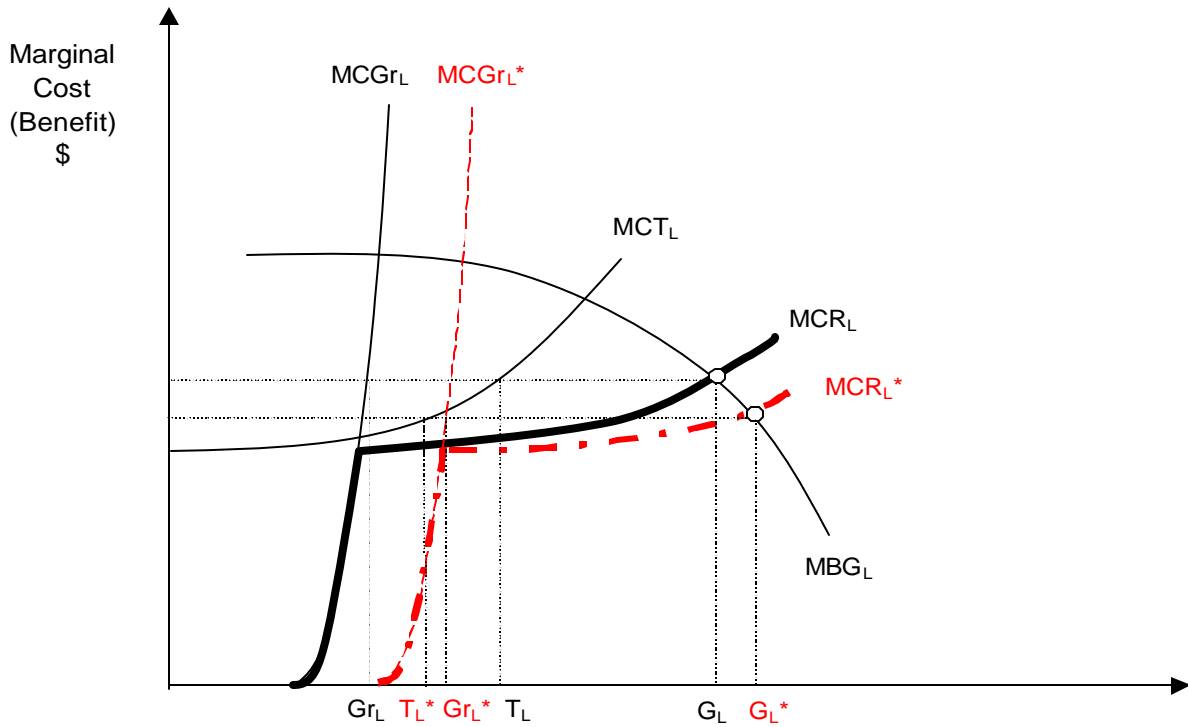


Figure 4b: Central Government

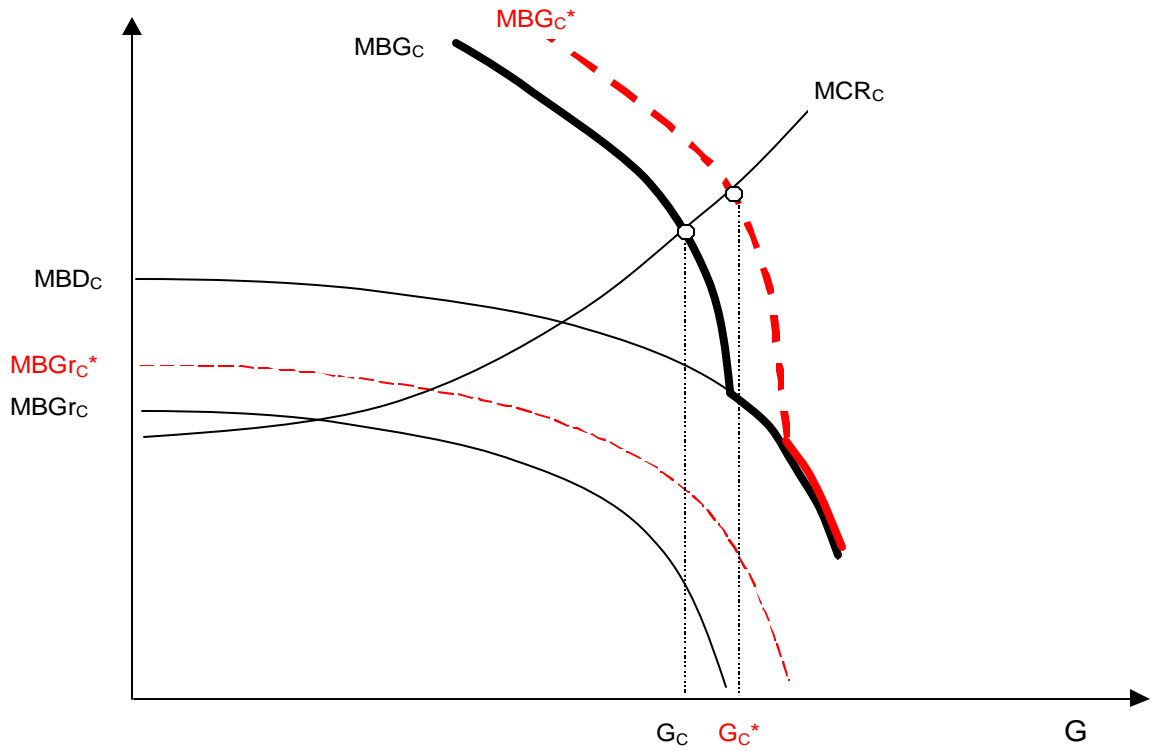


Figure 5: Decentralization and tax competition

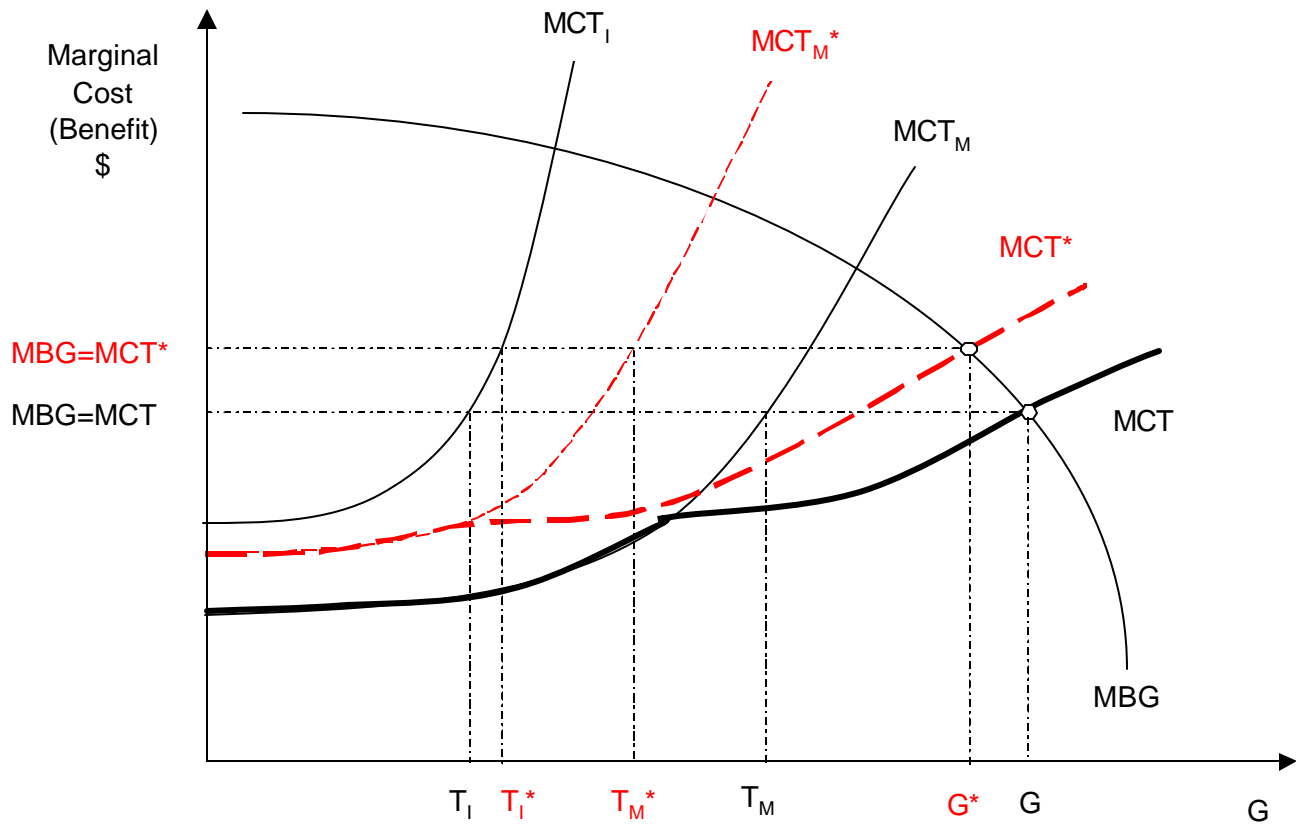


Table 2: Estimates of Changes in the Size of Government, Full Sample

<u>Dependent Variable</u>	Model 1	
Δ Total Expenditure/GDP		
<u>Independent Variables</u>		
Δ State-Local Revenue/Total Revenue	-0.138	(0.083) *
State-Local Revenue/Total Revenue _{t-1}	-0.181	(0.110) *
Δ I.G. Grants/Total Revenue	0.157	(0.122)
I.G. Grants/Total Revenue _{t-1}	0.412	(0.135) ***
<u>Control Variables</u>		
Δ GDP per Capita (log)	-0.060	(0.033) **
GDP per Capita (Log) _{t-1}	-0.006	(0.017)
Δ Population (Log)	-1.362	(0.745)
Population (Log) _{t-1}	-0.026	(0.024)
Area (Log square km)	0.237	(0.111) **
Δ Dependency Ratio	0.980	(0.385) ***
Dependency Ratio _{t-1}	0.117	(0.064) *
Δ Trade/GDP	-0.012	(0.033)
Trade/GDP _{t-1}	0.038	(0.026)
Capital Account Openness	0.013	(0.005) ***
Δ Democracy	-0.003	(0.001) ***
Democracy _{t-1}	0.0001	(0.001)
Central Govt. Surplus _{t-1}	0.099	(0.183)
Veto Players	-0.004	(0.002) *
Veto Players X Central Govt. Surplus _{t-1}	0.003	(0.044)
Executive Election Year	-0.008	(0.006)
System (Pres/Parl)	0.003	(0.006)
Total Expenditure/GDP _{t-1}	-0.373	(0.093) ***
Observations	600	
Number of countries	59	
R ²	0.36	

Panel-Corrected Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Fixed effects model, coefficients for country dummies not shown

The model assumes panel-specific AR1 Autocorrelation

Figure 6: Conditional Effects of Fiscal Decentralization on Change in the Size of Government (Model 1)

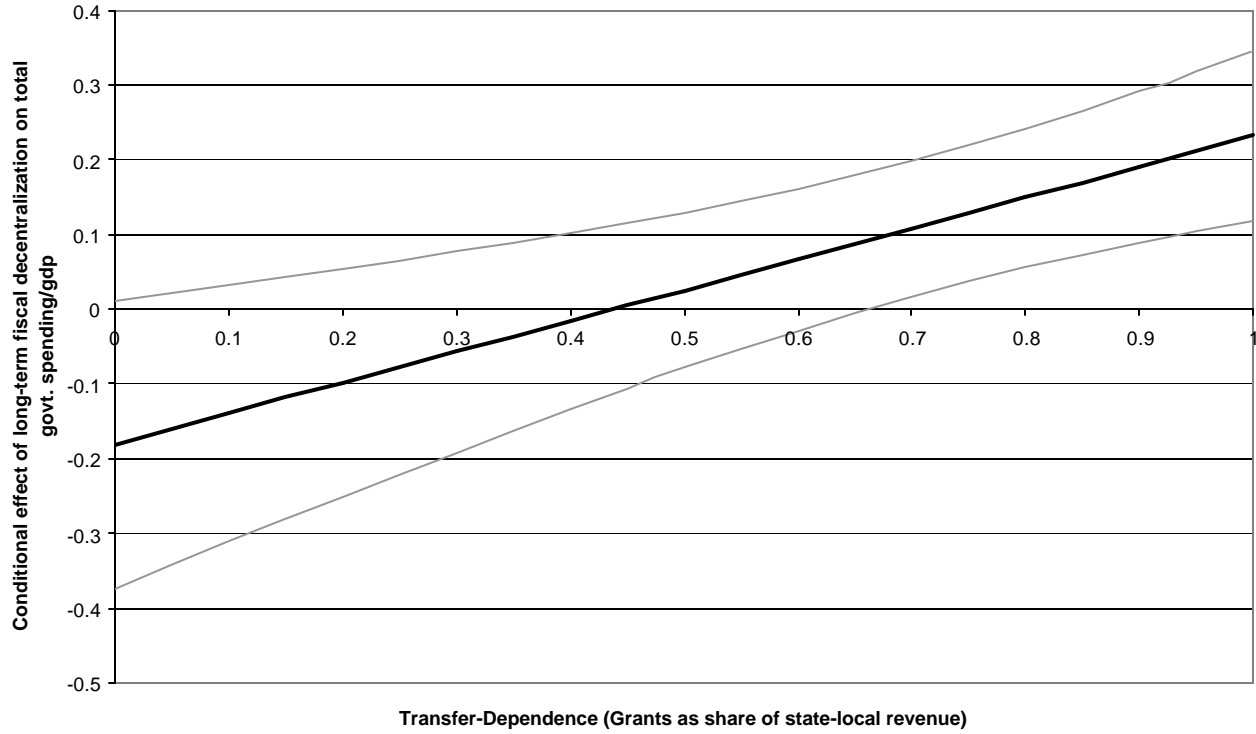


Table 3: Estimates of Changes in the Size of Subnational and Central Government, Disaggregated Analysis

	Model 2		Model 3	
<u>Dependent Variable:</u>	? Subnational Expenditure/GDP		? Non-Grant Central Govt. Expenditure/GDP	
<u>Independent Variables</u>				
? Grants/GDP	0.93	(0.12) ***	0.77	(0.43) *
? Own-Source Subnational Revenue/GDP	0.28	(0.20)	0.41	(0.34)
? GDP per Capita (log)	0.002	(0.002)	-0.001	(0.07)
? Subnational Expenditure/GDP				
? Dependent Variable _{t-1}	0.26	(0.06) ***	0.45	(0.12) ***
Observations	653		553	
Number of Panels	70		64	

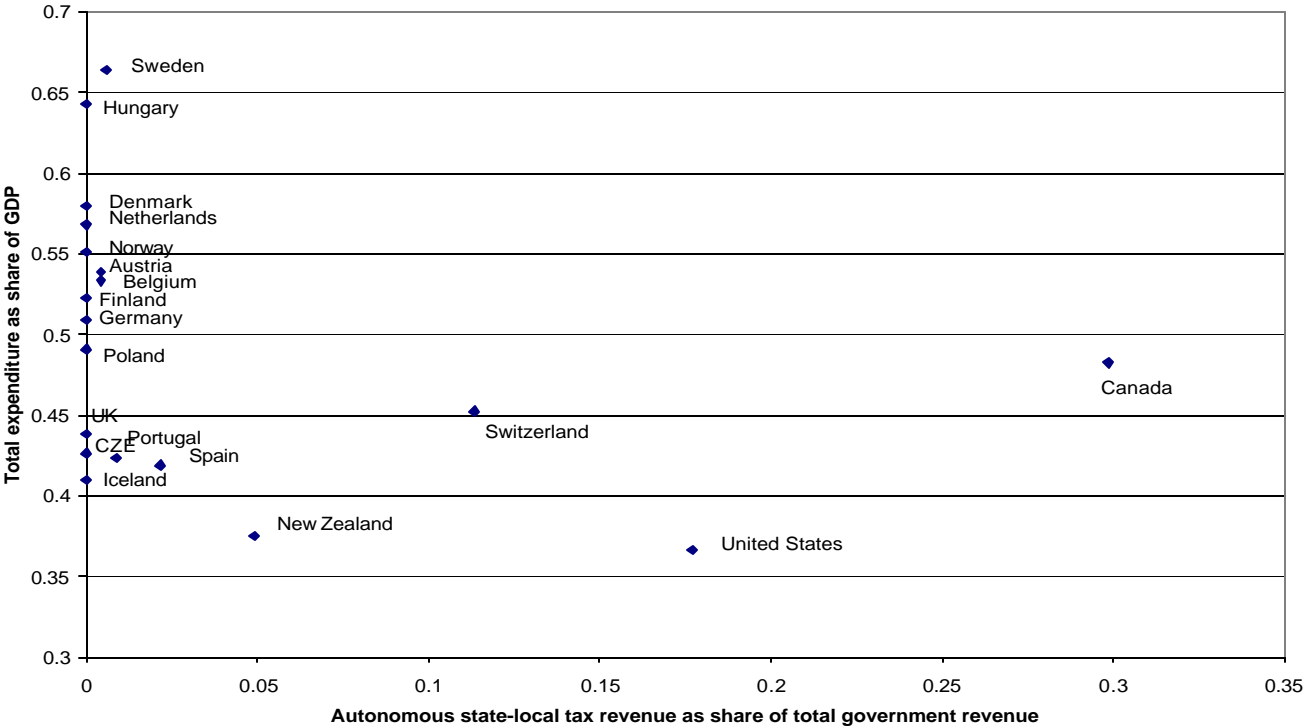
GMM estimates, Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Estimates for fixed unit effects not reported.

Calculated using Stata 7.0, "xtabond" procedure, one step results

Figure 7: Subnational Tax Autonomy and the Size of Government



**Table 4: Estimates of Long-Term
Average Size of Government (1985-
1995), OECD Sample**

Model 4		
<u>Dependent Variable:</u>		
Total Government Spending/GDP		
<u>Independent Variables</u>		
Own-Source State-Local Revenue/Total Revenue	0.857	(0.246) ***
Autonomous Subnational Tax Revenue/Total Revenue	-0.912	(0.352) **
<u>Control Variables</u>		
GDP per Capita (Log)	-0.083	(0.086)
Population (Log)	0.026	(0.017)
Area (Log square km)	0.021	(0.026)
Dependency Ratio	0.566	(0.763)
Trade/GDP	0.416	(0.117) ***
Democracy	-0.007	(0.005)
Central Govt. Surplus	0.756	(0.772)
Veto Players	-0.011	(0.018)
System (Pres/Parl)	0.013	(0.045)
Constant	-0.016	(0.692)
Number of countries	18	
R ²	0.86	

OLS "between effects" model, standard errors in parens.

* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 8: Conditional Effects of Fiscal Decentralization on the Size of Government, 1985-1995 Average, OECD Sample (Model 4)

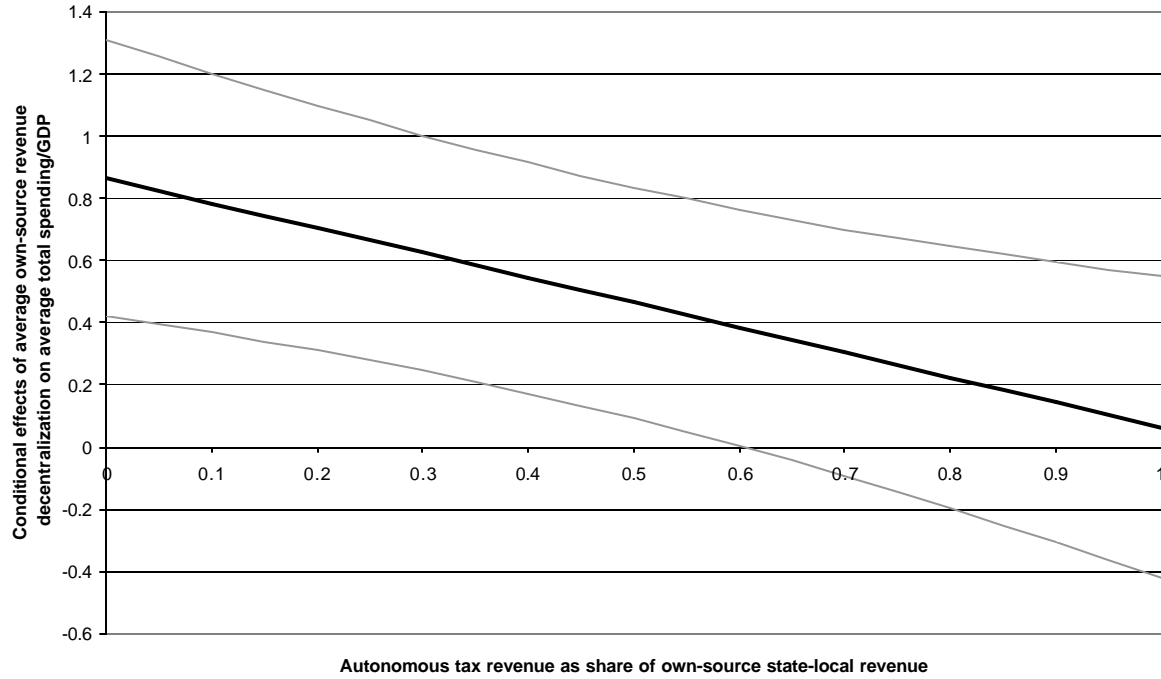


Table 5: Estimates of Changes in Total Government Expenditure as Share of GDP, OECD Sample

	Model 5	
<u>Dependent Variable</u>		
?? Total Expenditure/GDP		
<u>Independent Variables</u>		
?? Own-Source State-Local Revenue/Total Revenue	0.114	(0.048) ***
Own-Source State-Local Revenue/Total Revenue _{t-1}	0.149	(0.029) ***
Autonomous State-Local Taxation/Total Revenue	-0.353	(0.054) ***
<u>Control Variables</u>		
?? GDP per Capita (log)	-0.503	(0.066) ***
GDP per Capita (Log) _{t-1}	-0.015	(0.022)
?? Population (Log)	0.026	(0.586)
Population (Log) _{t-1}	0.007	(0.003) **
Area (Log square km)	0.008	(0.006)
?? Dependency Ratio	-0.740	(0.524)
Dependency Ratio _{t-1}	0.010	(0.088)
?? Trade/GDP	0.033	(0.037)
Trade/GDP _{t-1}	0.043	(0.022) **
Capital Account Openness	0.012	(0.004) ***
Democracy _{t-1}	-0.002	(0.001) *
Central Govt. Surplus _{t-1}	0.384	(0.122) ***
Veto Players	-0.002	(0.002)
Veto Players X Central Govt. Surplus _{t-1}	-0.057	(0.028) **
Executive Election Year	-0.012	(0.007)
System (Pres/Parl)	0.021	(0.012) *
Total Expenditure/GDP _{t-1}	-0.154	(0.028)
Eastern Europe Dummy	-0.036	(0.024)
Asia Dummy	0.004	(0.036)
Western Europe Dummy	-0.024	(0.015) *
North America Dummy	0.026	(0.025)
Constant	-0.016	(0.224)
Observations	148	
Number of countries	18	
R ²	0.60	

Panel-Corrected Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

The model assumes panel-specific AR1 Autocorrelation

Figure 9: Conditional Effects of Fiscal Decentralization on Changes in the the Size of Government, 1985-1995, OECD Sample (Model 5)

