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FISCAL DECENTRALIZATION AND FISCAL EQUALIZATION WITHIN REGIONS: THE CASE OF RUSSIA

Roy Bahl and Sally Wallace*

ABSTRACT. The impact of fiscal decentralization on equalization between regions has received significant attention but there has been much less research of the impact of decentralization on equalization *within regions.* Theory suggests that the tradeoff between local fiscal autonomy and equalization ought to be most pronounced at the sub-region level where rural–urban disparities in the level of development are substantial. This paper is an empirical analysis of the impact of fiscal decentralization on equalization within one Russian region, Leningrad (State). We show that the regional government uses a mixture of fiscal instruments to strike a balance between giving more budgetary autonomy to local governments and eliminating the disparities among them. We also develop a method for studying this tradeoff between decentralization and equalization when only limited data are available. Finally, we argue and demonstrate that without a detailed understanding of the institutional arrangement for intergovernmental fiscal relations, one cannot evaluate the equalization or decentralization implications.

INTRODUCTION

Recent years have seen an outpouring of good, empirical research on the impacts of fiscal decentralization in developing economies. A particular focus has been on the relationship between the delegation of budgetary powers to elected sub-national governments and regional equalization (Prud'homme, 1995; Tanzi, 1995; and Martinez-Vazquez and McNab, 2001).

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In theory, there ought to be a tradeoff between fiscal decentralization and equalization and the tradeoff should be especially pronounced at the sub-region level, where urban-rural disparities are substantial. On the revenue side, independent taxing powers for local governments should increase disparities in resources available to finance budgets. On the expenditure side, increased local assignment and autonomy should result in a larger gap between the more advanced local governments with a better capacity to deliver services, and the others. Equalization-based transfers might be adopted to temper such disparities, but in principle, fiscal decentralization should be counterequalizing.

Most of the research on this subject deals with inter-regional variations, i.e., across regions, provinces or states. Decentralization and equalization *within regions* is a question that has received substantially less research attention. Particularly within large countries and federations, this is an extremely important dimension of the decentralization question. The following notes are anecdotal but are suggestive of why central governments are now giving more attention to fiscal disparities within regions, and to the regional government strategies for dealing with these disparities.

- Eight of China's provinces would rank among the 20 most populous countries in the world. Intra-region distribution cannot be ignored in designing China's decentralization or equalization policy.
- Russia has 89 regions, but it has over 30,000 local governments, to serve a population of 145 million. The goal of getting government "closer to the people" underlines the importance of evaluating the fiscal relations between the regions and these numerous local government units.
- The land area in Kazakhstan's largest region, Karangandinskia, is equivalent to the land area of Uzbekistan, and is larger than Germany or Japan.
- The income disparities within regions can be greater than that between regions. For example, the gap between the richest and poorest province in China is 10:1 (excluding Guizhou), but between the richest and poorest county in Jiangsu province is 12:1.

This kind of evidence notwithstanding, there has been relatively little research on decentralization and equalization at the sub-region level. For examples of intra-regional studies of fiscal equalization in transition

countries, see Bahl (1999b) and Heady, Wong, and Woo (1995) for China and Bahl and Wallace (1994) for Russia. The Asian Development Bank (1999) provided a similar analysis for Kazakhstan. There are a number of reasons for this. The necessary data for such analysis are hard to come by, and are not even collected in some countries. Another reason is that some central governments may not want to be involved in the intra-region fiscal debate. This would appear to be the case in China and Russia, where provincial governments may establish their own intergovernmental fiscal policies. Finally, central governments and even international agencies often ignore the third tier as "unimportant." But available evidence suggests that local governments do account for a significant portion of spending in some transition countries. For example, the percentage of total government expenditures at the sub-region tier was 22 percent in Russia in 1996 (Martinez-Vazquez and Boex, 1999), 24 percent in Hungary in 1998 and 31 percent in Estonia in 1998 (Horva'th, 2000). These expenditure shares are usually an overstatement of the fiscal role of sub-national governments in transition economies, because their discretion in making budgetary decisions is often limited. For an interesting discussion of expenditure autonomy in transition countries, see Norris and Wade (2002). Ebel and Yilmaz (2001) analyze options for measuring sub-national government fiscal autonomy. For all developing economies, the sub-national government share of total government expenditures averages about 15 percent, and for industrialized economies about 33 percent (Bahl & Wallace, 2003).

This paper is an analysis of the impact of fiscal decentralization on equalization within one Russian region, Leningrad. There are three contributions here. First, we show that the regional government uses a mixture of fiscal instruments—some equalizing and some not equalizing—to strike a balance between giving more budgetary autonomy to local governments, and eliminating the disparities among them. Second, we develop a method for studying this tradeoff between decentralization and equalization when only limited data are available. Finally, we argue and demonstrate that without a detailed understanding of the institutional arrangement for intergovernmental fiscal relations, one cannot evaluate the equalization or decentralization implications.

This paper is focused on the special case of transition countries. In the next section, we review the fiscal instruments that are central to the Russian system of federal-region, and region-local fiscal relations. The analytic sections of the paper deal with the equalization effects of each

component of the intergovernmental system, with the overall effects of this system on fiscal disparities, and with the tradeoffs between equalization and local government budgetary autonomy. In the concluding section, we address the issue of how the different fiscal instruments used have both reinforcing and offsetting impacts.

THE RUSSIAN SYSTEM OF SUB-NATIONAL GOVERNMENT FINANCE

Fiscal decentralization and fiscal equalization are central policy agenda items in many, perhaps most, transition countries. "Getting government closer to people" was the first principle in the aftermath of the breakup of the Soviet bloc. However, the approach to fiscal decentralization in transition countries, which relies on a combination of shared taxes, conditional transfers, and guidelines to achieve minimum expenditure targets, may not be compatible with their goals for a more equitable distribution of resources among local governments. This may be true for both central government equalization among regions and regional government equalization among local governments. Fiscal decentralization within regions tends to rely on the same fiscal instruments as does the central government, and may reinforce any counter-equalizing bias.

Government Structure

The Russian Federation is governed by a Federal government, 89 regional governments and about 30,000 local governments.[1] The regions are regulated by the center but have considerable discretion in terms of how they arrange relations with their underlying municipal governments. Leningrad region, the subject of this case study, is governed by an elected Legislative Council and Governor. The Leningrad region has a population of 1.7 million and a per capita income that is 18 percent below the Russian national average. Leningrad region does not include the City of Leningrad. The latter is a separate (adjacent) regional government.

The *Oblast Law on Local Self Governance* (1996) provided for the creation of self-governing bodies within the region and set the stage for fiscal decentralization. In the second half of 1996, 29 municipal governments were created, and local governing councils were elected.[2] The municipal governments technically have budgetary autonomy, i.e.,

they may approve their own budgets. However, they must report to the region on matters having to do with compliance with region and federal government regulations (Bahl, et al, 1999).

Expenditure Structure and Autonomy

The formal fiscal autonomy of both regional and municipal governments in Russia is circumscribed to a considerable degree. Each level is dependent on the next higher-level government for determination of their total expenditure budget. Sub-national governments have some discretion in determining their *mix* of expenditure but little ability to determine the *total amount* available for them to spend. Even the composition of spending is partly dictated. Regional and local governments are subject to stringent (funded and unfunded) mandates from higher-level governments. These mandates are an important constraint on fiscal autonomy in that they prescribe specific subsidies for various population groups, or prescribe exact payments to workers or enterprises (Morosov, 1998; Lavrov, 1998).

In addition, higher level governments define spending norms for lower-level governments. These are usually *physical* rather than monetary spending requirements, e.g., the number of students to one teacher, the number of hospital beds to one doctor and so on. The "norms" are not strictly enforced mandates for each category of sub-national government spending, but the idea is that they should help determine the amount of revenue that flows to the lower level governments. These expenditure norms, and the resources to finance them, are prescribed in Federal laws and regional regulations. In many cases, they become unfunded mandates. The Kirovsk City Government in Leningrad Region, for example, has estimated that the execution of all mandates for 1997 would have required Rb 141,596 million in expenditures. Actual revenues (including all grants) in 1997 were equal to Rb 119,261 million, a shortfall of about 16 percent (Bahl, et al., 1999).

In short, the federal government plays a major role in determining the size and the composition of regional government budgets, and the regions play a major role in determining the size and the composition of local budgets. The Russian fiscal system is very much a "top-down" affair, with expenditure discretion reduced at each lower level. This structure provides higher-level governments with a number of instruments to use in equalizing fiscal and economic disparities, if they

decide to follow an equalization policy. It also gives higher level governments the wherewithal to pass significant fiscal autonomy to their subordinate units.

The functional distribution of expenditures by municipal governments in the Leningrad region reflects this top-down process. Housing and utility expenditures, which make up almost one-third of total expenditures, include maintenance of municipally owned housing, operation of the central heating system, and the provision of water supply. Education adds around twenty percent and health care another 13 percent to total expenditures. Spending on these three categories together accounts for well more than half of total expenditures, and indicates the important role of local governments in providing essential services. When viewed by the *object* of expenditure, the single largest component is subsidies to enterprises, which accounted for over one-third of total spending in 1997. Wage costs are about one-fourth of local government expenditure in 1997, a share substantially lower than in most western countries.[3]

Tax Sharing

Regional governments in Russia finance their budgets primarily from shared taxes. Three-fourths of revenue comes from four major shared taxes: personal income, enterprise profits, value added, and property. With minor exceptions, regional and local governments have no power to adjust the tax rate or the tax base. Only the federal government may adjust the legal structure of taxes.

Revenue collections from federation taxes are shared with sub-national governments on a *derivation* basis, i.e., the region retains revenues according to the point of collection. The tax sharing rates are uniform across regions, i.e., every region retains the same percentage of collections for its own budget purposes. The sharing rates, which have been more or less stable since the mid to late 1990s, range from a low of 25 percent for the VAT to 100 percent for the property tax. (See Bahl, et al., 1999).

Federal Grants to the Regions

The present system of federal grants to regional governments has three major components: a block grant known as the "Federal Fund for Support of Regions (FFSR grants)," earmarked project grants, and ad hoc

transfers known as "mutual settlements." The FFSR is the largest component (about 65 percent of all federal grants in 1997) and was equivalent to approximately 15 percent of central government tax collections in 1997. These grants are distributed by a formula that includes expenditure needs and fiscal capacity. Martinez-Vazquez and Boex (1999) concluded that the FFSR grants were equalizing over the period 1994-1997, based on their calculation of a negative correlation between per capita FFSR transfers and per capita GRP, and positive correlations with the cost of living and with the concentration of old-age and young-age populations.

The amount of earmarked project grants flowing to each region is determined by the State Duma (legislative body of the Russian Federation) after a negotiation between regions and the federal government. The distribution is very much an ad hoc process. In 1998, these grants accounted for about 15 percent of total grants to regional governments.

The "mutual settlements" grants, in theory, are used to balance the budgets of lower levels of government when deficits are created by changes in tax legislation or adoption of federal laws prescribing new expenditure mandates (e.g., if a law is enforced or enacted in the middle of a financial year). In practice, they are largely gap filling, or deficit grants. Some are budgeted and some are not. There is no objective method of distribution of mutual settlements among the regions, or of determining the total value of mutual settlements to be distributed in any year. Mutual settlements accounted for about 20 percent of all federal grants in 1998.[4]

Region-Local Fiscal Relations

The design of intergovernmental fiscal relations within the region is the responsibility of the regional government. On the revenue side, the federal government determines the tax structure but otherwise sets relatively few direct guidelines for regions to follow in distributing resources among municipal governments. The regional government is not required to seek approval of its intergovernmental sharing arrangements from the federal level, though regions do report to the Ministry of Finance (MOF) on the actual distributions of revenues between the regional government and its local levels. There are some restrictions on revenue sharing arrangements, and certain federal tax

revenues are specifically designated for local governments, but these are a relatively minor part of the overall revenue-sharing arrangement.

The regional government decides -- implicitly or explicitly -- the magnitude of fiscal disparities that will be allowed within the region, the extent to which the maintenance of infrastructure in more developed local areas will be supported, and whether it will introduce revenue-sharing features that will stimulate or dampen incentives for increased revenue mobilization. The region may decide whether a local government will be given a predictable and adequate stream of revenue that will enable efficient budgetary planning, and even whether local governments will have the ability to repay loans. However, the regional government is constrained in these decisions by the total amount of resources allocated to it by the center.

In practice, the regional governments influence the level and mix of spending by municipal governments in two very significant ways.

- The region controls the total flow of resources to the lower-level governments by setting tax sharing rates and by determining the level and distribution of grants to the local governments. The region essentially fixes the *level* of spending by each local government.
- The region imposes expenditure mandates on local governments and decides on the degree to which it will enforce these rules and fund these mandates. This can be a major determinant of equalization.

EQUALIZATION WITHIN THE LENINGRAD REGION

The Leningrad regional government may use several instruments of fiscal policy to reduce fiscal disparities among regions. It may guarantee minimum levels of budget expenditures, it may vary tax sharing rates to favor some jurisdictions over others, and it may allocate grants among local governments in an equalizing way. We will define equalization as occurring if the regional government distributes resources so as to either reduce disparities in fiscal capacity, or to compensate for greater expenditure needs.[5]

Minimum Expenditures

Leningrad region uses a formula to establish "minimum budget needs" for each municipality.[6] The idea is to guarantee a "floor" level of expenditures for each local government that is tailored to the situation of

that local government. The calculated minimum expenditure budgets however, are "guidance" values rather than enforced mandates.

The formula-based system has some equalizing elements: average per capita expenditures in the region are used as a norm for certain, specified functions, and a client-driven component (students, patients) is used for health and education expenditures. But the formula also has some elements that favor those municipalities that already have a more developed infrastructure, e.g., the number of existing classrooms, miles of road, the number of hospital beds, etc. There is an incentive feature in the formula, i.e., greater allocations for housing and utilities are given to municipalities that can show higher rates of cost recovery through user charges. One could reasonably conclude from a review of this program design that the regional government is conflicted about the goals it wants to emphasize with the minimum budget approach.

The formula is so complicated that it is not intuitively clear whether its aggregate effect is to favor lower or higher income places. Not only is there the problem noted above of offsetting equalizing and counterequalizing components; there also is the problem of certain elements of the formula not being fully funded, or implemented according to the formula. Bahl and Wallace have attempted to develop the normative intent of the formula by examining the various components (as reported in Bahl et.al., 1999) but could not reach a firm conclusion because of the uncertainty surrounding the weights to be attached to each element.

Another way to get at the equalization biases of the minimum expenditure budget formula in the Leningrad region is to take a straightforward empirical approach. Two questions need to be answered. First, does the formula for estimating expenditure needs favor higher income or lower income municipalities? Second, does the region provide the municipal governments with sufficient funding to cover their estimated minimum budgets?

To examine the ex-post equalization features of the minimum budgets, we have calculated the simple correlation coefficients shown in Table 1. The data in column 4 in this table show the correlation between per capita estimated minimum budget expenditures for municipal governments in the Leningrad region, and selected variables that represent the economic and population structure of the municipalities. No causality is implied here, but the pattern of association we find in

these results is roughly one of counter-equalization. In municipalities where the per capita level of industrial production or the profitability of enterprises[7] is higher, the level of estimated per capita minimum expenditures is also higher. Places with a capacity to raise more revenue are deemed (by the formula) to have greater basic expenditure needs.[8] We can find no relationship between per capita minimum expenditure needs and either the infant mortality rate or the housing crowding measure, though there does appear to be a bias in favor of local governments with a smaller population, those that are more densely populated and those with a greater share of their housing stock in urban areas. From this evidence, we cannot conclude that the estimated minimum budget needs are equalizing. If the regional government were to use only these estimated minimum budget amounts to allocate intergovernmental transfers, the result would be a widening of the already significant disparities in fiscal capacity.

Why do the minimum budgets not favor the poorer jurisdictions? One answer may be that the minimum budget formula places heavy weight on the cost of maintaining the existing infrastructure. In this connection, note the positive correlation between the minimum budget level and the size of the municipal housing stock reported in Table 1. There also is the possibility of the provision of more subsidies to enterprises in municipalities where the level of industrial production is greater.

In fact, most local governments in Leningrad do spend more than this minimum budget amount. Only four municipalities failed to spend as much as their estimated minimum budget levels and the median ratio of minimum expenditure level to actual expenditure level is 87 percent across the 29 municipalities in the Leningrad region. So, while we may conclude that the marginal contribution of the minimum expenditure component of intergovernmental fiscal policy is not equalizing, we also note that there is more to the story. The pattern of disparity in actual per capita expenditures (column 3 of Table 1) does not show the same bias in favor of jurisdictions with a stronger economic base. Because virtually all local governments spend above the minimum budget levels, we must look to the contribution of other fiscal decentralization instruments to get a full picture of the relationship between fiscal decentralization and fiscal equalization.

TABLE 1

Simple Correlation Coefficients between Average Wage, Per Capita Expenditures, Per Capital Assigned Revenues, and Per Capita Total Minimum Budget Expenditures with Selected Indicators of Economic Development and Expenditure Needs: For 21 Local Governments within Leningrad Region in 1997

	Average Wage	Per Capita		
		Assigned Revenues	Total Expenditures	Minimum Budget, 1998
Indexes of Expenditure Needs				
Population	0.18	-0.03	-0.35	- 0.45*
Land Area (sq km)	-0.14	-0.20	-0.05	-0.29
Population Density	0.05	0.25	0.11	0.56*
Percent of Population over working age	-0.35	-0.12	0.07	0.12
Percent of Population under working age	0.13	0.02	0.32	0.24
Infant mortality rate	-0.25	-0.23	0.17	0.17
Number of families on a housing waiting list per 1000 of population	-0.05	-0.12	-0.07	-0.23
Indexes of Economic Base				
Average Wage	1.00	0.88*	0.18	0.30
Value of Industrial Production (Rb per capita)	0.89*	0.93*	0.31	0.54*
Per Capita Assigned Revenues	0.88*	1.00	0.37	0.53*
Number of Registered Enterprises units	0.21	-0.02	-0.27	-0.32
Number of Registered Enterprises per 1000 population	-0.10	-0.16	0.32	0.23
Average Profits in Industry (profits divided by number of registered enterprises)	0.84*	0.77*	0.29	0.51*
Indexes of Social Infrastructure Level				
Urban Area Housing Stock (sq m) per capita	0.24	0.37	0.46*	0.79*
Total Housing Stock (sq m) per capita	-0.33	-0.25	-0.10	0.03
Percent of Housing Stock in Urban Areas	0.29	0.38	0.33	0.46*

TABLE 1 (Continued)

	Average Wage	Per Capita		
		Assigned Revenues	Total Expenditures	Minimum Budget, 1998
Number of Public Libraries, per capita	-0.43*	-0.41*	-0.01	-0.17
Number of Public Museums, per capita	-0.31	-0.11	0.28	0.30

Notes: *Significant at the 95% confidence level or better
Source: Computed from data provided by Leningrad regional government officials.

This is an important and interesting finding. Many countries around the world are stuck on the issue of defining a "required minimum level of expenditures" as a baseline for defining the "right" vertical and horizontal share for local governments in the intergovernmental transfer system. This is an issue in industrialized and developing countries. For example, many U.S. states identify minimum levels of school spending; the Indonesian government is working to identify minimum spending levels to use in allocating resources under its new decentralization, and the Japanese make use of expenditure standards for local governments. For discussion of the options, see Ahmad and Craig (1997). Policy analysts and international advisors often are called on to evaluate the establishment of minimum expenditure levels as a route to equalizing public service levels. The Russian system is one of the few examples of the use of such a normative approach, and the results for this one region suggest that it does not necessarily lead to an equalization outcome.

Local Revenue

A second component of the fiscal decentralization system at the regional level is "assigned local taxes," (i.e., housing tax, personal property tax, licenses, and registration fees and other fees and charges). The distinguishing feature of assigned local taxes is that 100 percent of the revenue collected remains with the local government where the taxes are collected. However, even though these are designated as "local taxes," the federal government sets the rate and base. In some cases, the regional government may choose whether or not to levy the tax, and in a few cases may choose a tax rate within prescribed ranges. Perhaps more

importantly, they may decide how aggressive to be about tax administration (See Norris, Martinez-Vazquez & Norregaard, 2000).

There is a strong correlation between the per capita revenues from these sources and the size of the local economic base (column 2 of Table 1). Per capita assigned revenue is strongly correlated with the average wage (0.88), the per capita value of industrial output (0.93), and the profitability of the enterprise sector (0.77). This finding is consistent with the hypothesis that low wage municipalities with weaker enterprises cannot collect significant amounts of revenue, even if they have the incentive of a 100 percent retention rate. There simply is no adequate tax base (either payrolls or profits). As might be expected, then, fully assigning revenues for specified taxes, on a derivation basis, accentuates the inter-municipal disparities in taxable capacity. This is a second element of the intergovernmental fiscal system that is counter-equalizing.

Tax Sharing

In the case of the more productive (broad-based) taxes, the region and the lower-level governments divide the revenues according to negotiated sharing rates. Under the Russian version of fiscal decentralization, the regional governments have been given the power to set the sharing rates with their local governments.[9] This gives the region a powerful policy tool for reducing fiscal disparities.

In Leningrad region, the excise taxes are fully retained by the local governments on a derivation basis. In the case of the other three major taxes--the enterprise income, value added (VAT), and personal income (PIT)--revenues are divided according to a more negotiated process. The sharing rates can be adjusted annually. For example, Sosnovy Bor City received 33 percent of the PIT in 1999 but 78 percent in 1998. Kirishy City received no VAT revenue from 1997-99 while 17 other local governments received 100 percent. These variations suggest that the Leningrad regional government uses the sharing rates as an instrument for redistribution of resources among its underlying units of local government. The use of variable sharing rates across local governments is not unusual in Russia. Alexeev and Kourliandskaia (1997) report different sharing rates for rich and poor local governments in 1997 in Nizhny Novgorod, Novgorod, Novosibirsk, and Perm regions. In 1992, however, Bahl and Wallace (1994) found uniform sharing rates in Moscow region, Tyumen region and Khanty-Mansiisk Okrug. Igudin

(1998) also reports uniform sharing rates in Sverdlovsk and Penza. The question is whether the result is fiscal equalization. We treat this as an empirical question.

Our results do not suggest that there is equalization of fiscal capacity in the distribution of shared tax revenues. The revenue from tax sharing varies significantly among the municipal governments. The range in per capita shared tax revenue is about 30 to 1. To estimate the equalization built into the sharing rates, we compare this distribution to that of per capita assigned taxes, which are fully retained on a derivation basis by the local governments. The distribution of per capita assigned tax revenue should be strongly related to the distribution of taxable capacity. To compare the marginal impacts of assigned and shared taxes on equalization, we regressed per capita shared tax revenues (OR) and per capita assigned revenues (AR) against the average wage in each municipality, with the following results:

$$OR_p = -29.50 + 1.30\,W \qquad (\bar{R}^2 = 0.58) \qquad (1)$$
$$(0.16) \quad (5.31)$$

$$AR_p = -380.58 + 1.38\,W \qquad (\bar{R}^2 = 0.56) \qquad (2)$$
$$(1.90) \quad (4.95)$$

Where

OR_p = per capita shared revenues
AR_p = per capita assigned revenues
W = average wage, and
t-values shown in parenthesis, N = 21.

A Rb 1 higher average wage is associated roughly with a Rb 1.3 higher level of revenue, both before *and* after tax sharing. By this analysis, we can conclude that variable sharing rates do not significantly reduce disparities in fiscal capacity within the region.

Grants

The fiscal instrument that is most commonly thought of as a policy tool for equalization is intergovernmental grants. The Leningrad regional government makes three types of grants to its local governments: subventions, subsidies, and mutual settlements.

Subventions are earmarked grants. These grants are of three types: Housing subsidies for low income families, price subsidies for medicines

distributed to veterans and the handicapped, and partial compensation to municipally-owned communication companies to cover losses because of the subsidized rates given to pensioners and others. The policies concerning the size of subventions and the eligibility of recipients (e.g., child benefits) are prescribed by the regional government and in a few cases the national governments.

On average, subventions account for less than 10 percent of total grants from the regional government. A priori reasoning would lead us to expect that subventions are distributed on a basis of the number of needy clients. In fact, this is generally the case. The simple correlations reported in Table 2 show that per capita subventions are significantly higher in municipalities where the share of pensioners in the population is greater and where the infant mortality rate is greater. There is no statistically significant association with the average wage, or the level of industrial production or profitability. A reasonable conclusion might be that the distribution of subventions across municipalities is roughly consistent with equalization based on expenditure needs, but is unrelated to the fiscal capacity variations across local governments.

Subsidies are paid to local governments to cover the general shortfall between the capacity of a municipality to pay for public services and the level of expenditures needed to provide standard services. These account for 44 percent of total grants. Unlike subventions, the subsidies are general-purpose grants.

The distribution of subsidies is made in an ad hoc way; that is, there is no objective formula that guides the allocation among municipalities. The estimated minimum budget levels are reported to be used only for guidance. The variation among local governments is quite substantial, but subsidies do appear to be equalizing with respect to fiscal capacity. There is a significant, negative correlation between per capita subsidies received and both the average wage and the per capita level of industrial production in a local government area (see Table 2).

The other, most important form of intergovernmental grant is the so-called *mutual settlements*. Most mutual settlements are for the purpose of financing municipal housing and utilities, and maintenance of social facilities. However, "mutual settlements" are sometimes used as an instrument for transferring additional (non-budgeted) financial assistance, including assistance in writing off outstanding budget loans.

TABLE 2
Correlation Coefficients between Per Capita Grants and Selected Variables: By Type of Grant for 21 Local Governments within Leningrad in 1997

Measure of Development	Per Capita Subsidies	Per Capita Subventions	Per Capita Mutual Settlements	Per Capita Total Grants
Indexes of Expenditure Need				
Population	-0.24	0.04	0.21	0.03
Urbanization	-0.62*	-0.06	-0.17	-0.43*
Infant Mortality Rate	0.11	0.43*	-0.03	0.10
Pensioners, per capita	0.00	0.49*	0.09	0.14
Land Area	0.25	0.41	0.14	0.29
Indexes of Economic Base				
Average Wage	-0.49*	-0.16	-0.05	-0.30
Profitability of an Average Enterprise	-0.40	-0.15	-0.14	-0.33
Per Capita Value of Industrial Production	-0.47*	-0.21	-0.11	-0.32
Indexes of Infrastructure Size				
Finished Construction of Housing per capita	-0.27	-0.19	-0.09	-0.20
Per Capita Housing Stock	0.06	0.47*	0.10	0.15
Number of Public Libraries per capita	0.41	0.25	-0.06	0.14
Indexes of Education Service				
Number of Kindergartens, per 10,000 Population	-0.11	0.06	-0.09	-0.11
Students per capita	-0.08	-0.20	-0.35	-0.31
Students per Teacher	-0.41	0.04	0.05	-0.12
Teachers per capita	0.25	-0.15	-0.24	-0.10
Students per School	-0.45*	-0.29	-0.02	-0.22

Notes: *Significant at the 95% confidence level or better.

Source: Computed from data provided by Leningrad regional overnment officials.

Mutual settlement grants appear to be partly earmarked and partly general purpose, but the distribution among municipalities is on an *ad hoc* basis. There is no set formula. The simple correlations shown in Table 2 suggest a random distribution, i.e., we can find no clear patterns of relationship.

Sometimes, patterns of relationship are too complex to be picked up by a simple correlation analysis. Moreover, the central question is not how each grant component is related to variations in expenditure needs and fiscal capacity, but whether the total grant system is equalizing. In fact, a multiple regression analysis, with per capita total grants as the dependent variable does identify an equalizing pattern in the distribution of total grants (Table 3). After we account for differences in urbanization, population, student population, and the level of industrial output, we find a negative and significant relationship between the average wage and per capita total grants. At the margin, the "package" of subventions, subsidies and mutual settlements shows some degree of equalization with respect to fiscal capacity.

TABLE 3
Ordinary Least Squares Regression of Per Capita Total Grants against Selected Independent Variables for 21 Municipalities in Leningrad in 1997[a]

	Equation 1	Equation 2	Equation 3	Equation 4
Constant	19.67* (6.99)	14.88* (7.03)	15.05* (5.73)	19.93* (6.99)
Average Wage	-1.24* (3.66)	-1.01* (2.78)	-1.04* (2.31)	-1.49* (5.01)
Percent of Population in Urban Areas	-0.28 (1.77)	-0.21 (1.19)	-0.21 (1.17)	...
Population	-0.11 (1.02)	0.12* (1.78)	-0.21 (1.72)	...
Students per capita	2.23 (2.30)	...	...	2.13* (2.39)
Per Capita Value of Industrial Output	...	...	0.01 (0.11)	...
Adjusted R^2	0.59	0.49	0.46	0.56

Notes: [a] All variables expressed in logarithms. t-statistics shown in parenthesis.

* Significant at the 95% confidence level or better.

Tax Effort

The use of these decentralized fiscal instruments to distribute resources among local governments might also include a tax effort impact. That is, the flow of grants and the variable tax sharing rates might induce local governments to increase their rate of revenue mobilization. Even though sub-national governments do not have rate or base setting powers, they can stimulate or dampen tax collections by the influence they bring to bear on the local tax administration service, and on the enterprises to which they are so closely tied. They may also increase tax effort by choosing to enact a retail sales tax, by pressing all other local taxes to the authorized maximums, or they may reduce tax effort by lowering the enterprise income tax rate. Another route is for local government to subsidize the creation or expansion of locally-owned enterprises, thereby increasing the local tax base. In fact, the issue of *local* tax effort may be as relevant as *regional* tax effort because the local governments are closer to both the local enterprises (in terms of their regulatory relationships) and to the tax service (in terms of their day-to-day working relationships).

There is an important link between the policies of providing incentives for increased revenue mobilization, and equalization. Variable retention rates for shared taxes could give a powerful incentive to some local governments to increase collections, and could give a powerful disincentive to others to reduce tax effort. Likewise, higher levels of intergovernmental grants might discourage increased revenue mobilization. To the extent that the more prosperous municipalities react to these signals and make higher tax efforts, the instruments of fiscal decentralization used in Russia will have indirectly accentuated fiscal disparities. If lower income communities make a greater tax response, there will be a reinforcing effect between decentralization and equalization.

To investigate the variations in tax effort among the local governments in the Leningrad region, we developed a measurement approach that borrows from the literature that addresses the subject of tax effort measurement in developing countries.[10] The approach we follow is to estimate taxable capacity based on the economic characteristics of the municipality, and then to compare this hypothetical amount with what is actually raised. The ratio of actual revenue raised to estimated taxable capacity gives an index of tax effort.

To estimate tax collection potential, we carried out a regression analysis between per capita total revenues collected (Rp) and the per capita value of industrial output. Note that the dependent variable is the per capita amount collected in a local government area, and not the per capita amount that is retained by that local government. Since the main sources of revenue are the taxes on enterprises, industrial output seems a reasonable measure to proxy for taxable capacity. Higher values on this variable should signal a higher level of revenue potential for all major taxes in the system. In theory, part of this difference among municipalities in taxable capacity could be due to differences in tax rates. In this case, however, local governments have a very limited ability to adjust the tax rates.

The relationship between actual collections and industrial output was estimated as:

$$R_p = 643.4 + 0.1Q^* \qquad R^2 = 0.85 \quad \text{number of observations} = 21^{11}$$
$$(3.6) \quad (10.6)$$

Where:

R_p = actual per capita collections (thousands of rubles)

Q = per capita industrial output (thousands of rubles)

More than 80 percent of the variation in per capita tax collection levels among local governments may be explained by variations in industrial output. A Rb 1000 higher level of industrial output per capita, we predict, is associated with a Rb100 higher level of per capita taxable capacity.

The predicted values from this equation are interpreted here as showing the level of taxes that should have been collected by each municipality, based on its taxable capacity and the average behavior of all municipalities of the region. For example, in Kirishy City, revenues actually collected were Rb 6,188 thousand per capita (column 1 of Table 4). But given our equation that reflects the average use of tax bases in the region, and given Kirishy's industrial output of Rb 50,332 thousand, it should have collected Rb 6,476 thousand (column 3). By our terminology, Rb 6,476 thousand is the *taxable capacity* of the municipality. The ratio of what was actually raised to what should have been raised is 0.96, i.e., Kirishy City exerts a tax effort that is 4 percent below the average in the region. The tax effort indexes for all municipalities are shown in the last column of Table 4.

TABLE 4
Tax Effort Estimates: By 21 Municipalities in Leningrad in 1997

City	Per Capita Tax Revenues (thousand Rb)	Per Capita Volume of Industrial Production	Per Capita Tax Capacity (thousand Rb)	Tax Effort Coefficient
Boksitogorsk City	1,059	7,266	1,485	0.71
Gatchina City	1,225	3,545	1,054	1.16
Gatchinsky Rayon (includes Kommunar City)	803	3,717	1,074	0.75
Ivangorod City	611	1,074	768	0.80
Kingisepp City	1,246	7,049	1,460	0.85
Kirishy City	6,188	50,332	6,476	0.96
Kirovsk City	1,043	1,853	858	1.22
Lodeynoye Pole City	711	1,843	857	0.83
Luga City	864	4,086	1,117	0.77
Pikalyovo City	2,097	28,740	3,974	0.53
Podporozhye City	881	3,220	1,017	0.87
Priozyorsk City (including Kuznechnoye City)	1,008	2,941	984	1.02
Shlisselburg City	825	1,500	817	1.01
Slantsy City	1,224	4,825	1,203	1.02
Sosnovy Bor City	7,304	44,145	5,759	1.27
Tikhvin City	1,111	6,147	1,356	0.82
Tosno City	1,918	3,209	1,015	1.89
Volkhov City	2,176	3,410	1,039	2.10
Volkhovsky Rayon (including Novaya Ladoga)	813	3,011	992	0.82
Volosovsky Rayon	661	2,064	883	0.75
Vsevolzhsk City (including Koltushskaya Volost and Sertolovo City)	709	1,073	875	0.81
Vyborg City (including Svetogorsk City)	1,734	6,303	1,374	1.26
Median	1,059	3,545	1,054	0.9
Coefficient of Variation	1.03	1.54	0.96	0.37

Source: Calculated based on data provided by Finance Department and Regional Statistical Committee, Leningrad Regional Government.

Does this distribution of tax effort indexes give us any further clues about the relationship between fiscal decentralization policy and fiscal equalization? One reasonable hypothesis is that, *cet. par.*, a higher retention rate on shared taxes will encourage tax effort. That is, the more of its collections that a municipality can keep, the harder it will try to raise more revenue. To test this hypothesis, we divide the municipalities into those who retain less than 100 percent of what they collect, and those that retain all collections. We find that the average level of tax effort in the municipalities that share their taxes (1.140) is not significantly lower than tax effort in the recipient municipalities (0.973).

A second hypothesis about the behavioral response of local governments is that tax effort and per capita grants received will be inversely related. That is, a local government that can rely heavily on grants will have less need to push for a higher tax effort. In fact, we find a strong *positive* correlation between per capita grants and tax effort ($r = 0.788$). Grants and taxes do not appear to be substitutes, that is, higher levels of grants do not discourage increased tax effort.

What to make of this seemingly perverse behavior? One possibility is that local officials, steeped in a centralized tradition for so long, simply do not react as they normally would in a market setting. They are still too new to the market system to react to changing relative prices, and too bound to a rule-based approach to fiscal decisions. A second view is that the true reaction is as expected, but it is hidden by the data. For example, municipalities that receive significant amounts of grants can afford to overstate in-kind tax collections and so their (true) lower level of tax collections is hidden. The overstatement of in-kind revenues gives the statistical impression of a high tax effort, but the reality may be quite different.[12] Finally, there is the possibility that income effects completely dominate the price-based incentive effects that concern us here. For example, a higher income municipality may have such a strong demand for services that it pushes hard for increased taxation even though it receives a significant amount of intergovernmental grants. Still, these explanations do not help us account for a high tax effort in cases when relatively little of the revenue can be retained. Whatever the explanation, the conclusion is interesting. At least in the Leningrad region, variable tax sharing rates, and an equalizing distribution of grants do not provide a disincentive for increased local government revenue mobilization.

EQUALIZATION AND DECENTRALIZATION: AGGREGATE EFFECTS

The central question in this paper is whether fiscal decentralization within the province, using all of these instruments, is compatible with fiscal equalization. In this section, we examine the aggregate effects on expenditure equalization of tax sharing rates, grant distribution, local taxation, and expenditure assignment.

a. The aggregate effect of the decentralization program of the regional government is not easily sorted out. As we have demonstrated above, there are a myriad of fiscal instruments that have different impacts on rich and poor, more and less needy jurisdictions. We have developed the following experiment to test the null hypothesis that the aggregate effect of the region's fiscal decentralization policies is neutral with respect to equalization. We use "assigned revenues" as a measure of general economic well-being and fiscal capacity. Assigned revenues have centrally set, and regionally uniform rates and bases, and 100 percent of collections are retained by the local government. We argue that this measures the variation among municipalities in the amount that would be available for spending if there were no further interventions or transfers from higher level governments. The distribution of assigned revenues favors the higher income communities. We estimate the elasticity for per capita assigned revenues with respect to the average wage. The implicit assumption here is that the same income (wage) elasticity would apply if all collections were fully retained.

b. We use the actual expenditures of local governments, after all tax sharing and grants are taken into account, as the comparative or counterfactual. We estimate the expenditure-wage elasticity for per capita expenditures.

c. Suppose the cross-section per capita expenditure – wage elasticity (b) is less than the cross-section per capita taxable capacity-wage elasticity (a). This result would indicate that the sum of all policies followed by the regional government was equalizing, i.e., that the fiscal capacity advantage of higher wage municipalities was to some extent offset. This would lead us to conclude that the aggregate effect of the overall system is equalizing, and would provide a rough estimate of the degree of equalization.

Our estimates show that the revenue elasticity is greater than the expenditure elasticity, whether measured against the average wage or (alternately) against per capita gross industrial product (see Table 5). Apparently the equalizing distribution of grants among local governments offsets the counter-equalizing shared tax distribution, with the result that the fiscal system embodies a transfer of resources from jurisdictions with a higher fiscal capacity to jurisdictions with a lower fiscal capacity. In 1999, the top end per capita local revenue was 4.3 times the bottom. In fact, the regional government did narrow this fiscal gap significantly. The ratio of maximum to minimum actual per capita expenditures was only 1.3 in 1999.

- We might also test the hypothesis that there is equalization with respect to expenditure needs. Our test is whether the correlation between per capita actual expenditures and indicators of expenditure needs is stronger than the correlation between per capita assigned revenues and indicators of expenditure needs. We assume that expenditure needs are determined by the following: The concentration of low income population increases the need for social support. To measure the size of the "at-risk" population, we use the infant mortality rate, and housing shortage;
- The high share of children in total population increases the demand for education services;
- The high share of children and senior citizens in the total population increases the demand for health care services;
- The high percentage of rural population increases the demand for expenditures for maintaining dispersed infrastructure facilities.

If municipalities where these shares are higher are not able to tax more but are able to spend more, then we may conclude that the equalization process takes some account of differences in the need for public services across municipalities.

We have been able to collect 13 indicators of expenditure needs and infrastructure levels. With only 21 observations, we cannot do any testing of the joint and separate impacts of these variables on either per capita expenditures or assigned revenues. We can, however, examine the pattern of simple correlations as reported in Table 1. We do not find any evidence of a systematic pattern to the omitted observations, i.e., either

TABLE 5
Regression Estimates of the Income Elasticity of Fiscal Capacity and Actual Expenditures[a]

	Dependent Variable			
	Per Capita			
	Assigned Revenue	Expenditures	Assigned Revenue	Expenditures
Constant	-5.52	5.91	5.46	8.16
Average Wage	1.72 (5.97)	0.40 (1.53)	...	...
Per Capita Industrial Product	...	...	0.34 (5.95)	0.16 (3.39)
Population	-0.23 (2.51)	-0.30 (3.58)	0.01 (0.13)	-0.27 (3.39)
$\bar{R}^2$	0.62	0.35	0.66	0.56
N	21	21	18	18

Notes: [a]All variables in logarithms.
t-values reported in parentheses below the elasticity coefficient.

small places or large places, rich or poor, etc. The pattern observed shows little relationship between these indicators of expenditure needs and either actual per capita expenditures or per capita assigned revenues. The percent of children is not significantly related to actual per capita expenditures. The infant mortality rate is not significantly related to the actual level of expenditures, nor is the degree of crowding in housing. At least from this evidence, we cannot conclude that spending is higher where needs are higher.

A third way to measure the success of the Leningrad system of equalization is to use the size of the existing infrastructure as the baseline. The question we ask is whether capital investments in social overhead favor higher income local governments. If social infrastructure (e.g., housing, schools, museums) is distributed in favor of higher income and more developed local areas, this would imply a counter-equalizing distribution strategy. The simple correlations presented in Table 1, however, do not bear out this thesis. The infrastructure stock is not significantly stronger in municipalities with a higher average wage or in those with a higher per capita level of fiscal capacity. There is little

difference between the correlation coefficient for per capita expenditures and the infrastructure stock variables, and per capita assigned revenues and the infrastructure stock variables.

CONCLUSIONS AND IMPLICATIONS

This research explores the relationship between fiscal decentralization and fiscal equalization at the region level. Our interest is in whether the institutional arrangements for the intergovernmental fiscal system in a transition country setting—particularly tax sharing—lead to a counter-equalizing result in terms of the distribution of resources among municipalities within a region. The result of the case study undertaken here, of the Leningrad, Russia, regional government, can be summarized in stylized conclusions.

1. The regional government uses several different fiscal instruments to allocate resources among its local governments. In the case of Leningrad, these include tax sharing on a derivation basis, conditional grants, unconditional grants, the setting of targets for minimum levels of local government expenditures, and the provision of incentives to stimulate local tax effort.

2. Depending on how these fiscal instruments are structured, they can have very great effects on fiscal autonomy and fiscal equalization. A one percent higher average wage is associated with a 1.72 percent higher level of per capita assigned revenues (i.e., revenues that are 100 percent retained by the local government), but only a 0.4 percent higher level of per capita expenditures. The considerably lesser advantage of higher income places on the expenditure side is due to the government's use of intergovernmental fiscal instruments to reduce fiscal disparities. Regional governments play an important role in fiscal decentralization and fiscal equalization.

3. The regional government enhances the fiscal autonomy of local governments, and helps achieve the self-governance goals of decentralization, in two important ways. It weights general purpose transfers (shared taxes and unconditional grants) more heavily than conditional grants, and it gives incentives for increased revenue mobilization by local governments. But, it introduces variable tax sharing rates that may channel funds away from local governments most able to develop their budgetary

independence, and ad hoc distributions of grants that are neither transparent nor stable over time.

4. The regional government establishes minimum expenditure "norms," or guidance values, for its local governments. In Leningrad region, these normative amounts were exceeded by actual per capita expenditures in all but four municipalities. Contrary to what might be expected from a minimum budget approach, the per capita norms were set higher in the more well-off municipalities. Neither were the variable tax sharing rates found to be equalizing or counter-equalizing. The system of grants, distributed on an ad hoc basis, are equalizing. Overall, the evidence seems to show that the regional government uses its intergovernmental fiscal systems to reduce disparities in fiscal capacity, but there is no evidence that it addresses disparities in expenditure needs.

5. In theory, unconditional grants might call out some reductions in revenue effort, i.e., a substitution of regional government transfers for what otherwise might be more aggressive local tax administration effort. Variable tax sharing rates might also bend local government tax effort, i.e., local governments who can keep more of what they collect might try harder with their local administration. In the case of Leningrad, we can find no empirical evidence on either count to support the existence of a tax effort effect.

What we might conclude from this analysis is that the regional government is ambiguous about what it wants to achieve with its intergovernmental fiscal system. On the decentralization front, it emphasizes unconditional transfers, but at the same time it imposes unfunded mandates. Local governments are not given the power to select tax rate or base. On the fiscal equalization front, the regional government does allocate grants in favor of less developed regions, using ad hoc grant allocations. On the other hand, there does not appear to be a relationship between revenue allocations and expenditure needs, and shared taxes are not distributed to favor poorer local governments. At the end of the process, per capita expenditure disparities among municipalities remain quite large, but the fiscal advantage of higher income places is reduced.

Perhaps this ambiguity in the objectives of various fiscal decentralization instruments is to be expected. Officials at both the regional and local government level are new to the fiscal federalism game and many still operate in a command and control frame of mind. Some of this policy ambiguity may disappear with time and with the development of a stronger local government sector. However, we hasten to point out that even in the market economies, governments often design intergovernmental fiscal systems with conflicting objectives. Failure to examine all aspects of the intergovernmental system could lead to misleading conclusions regarding the impact of the system on decentralization.

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NOTES

1. In Russia, the middle tier governments are referred to as "regions" rather than "states" or "provinces." The local governments are "municipalities and cities." We will follow the same terminology in this paper, and refer to sub-national, intermediate level governments as "regions" and to sub-regional governments as "cities or municipalities." In much of the literature on Russian federalism, the regional and local tiers of government are referred to as "oblast" and "rayon," respectively.

2. Previously, the oblast or regional government had 17 administrative districts that functioned as spending units and revenue districts of the regional government.

3. However, this is an understatement of the compensation of employees. Some major items of household expenditures, including housing, transportation and utility services, are heavily subsidized in Russia. See Morduch, Brooks and Urinson (1994) and Commander and Tolstopiatenko (1996).

4. While mutual settlements continue to exist, their use has diminished since the late 1990s (Boex & Martinez-Vazquez, 2001).

5. There is no uniformly accepted definition of fiscal equalization among regions. Some analysts see the conditions for equalization as satisfied when per capita expenditures or fiscal capacity disparities are reduced. These are the definitions used in this study. A better definition, however, poses difficult measurement problems. For more detailed discussion of the different views about defining decentralization, see Bahl and Wallace (2003) and Boex and Martinez-Vazquez (2004).

6. The formula is very complicated, and the transparency usually gained with a formula versus a negotiated system may be partly given up by the complexity of the system. In the case of Leningrad's municipalities, interviews with local officials suggest that there is not a full understanding of the minimum budget methodology. For a full discussion of the details of the formula, see Bahl, et. al. (1999).

7. This is not, strictly speaking, a measure of the profits of local enterprises. It does show, however, the revenue minus cost, before subsidy, of the "average" enterprise. We take this to be a rough approximation of the economic well-being of the local government, and note with some comfort the high positive correlation with the average wage (Table 1).

8. Because there are no data on value-added or regional product for local areas, our analysis uses other indicators of the level of economic development. The average wage is a reasonable proxy for money income of workers, and is significantly correlated with differences among municipalities in the profit of an average enterprise (0.84) and with per capita industrial output (0.89) (see Table 1). The average wage is also positively correlated with the size of the education infrastructure, i.e., municipalities with a higher average wage tend to have fewer but larger schools, and a significantly greater kindergarten capacity. While the average wage is not a perfect measure of economic well being, it would appear to be a reasonable proxy, and we feel comfortable using the average wage (along with enterprise output and profitability) as indexes of variations in local economic capacity.

9. In the case of a few taxes, the federal government has stipulated the sharing rate between regional and local governments.

10. See Bahl (1971). For a similar analysis of sub-national government tax effort in China, see Bahl (1999). For tax effort analysis in Russia, see Bahl and Wallace (1994), Boex and Martinez-Vazquez (1997).

11. Our analysis is based on only 21 observations, because industrial output figures were not reported for a number of cities and municipalities.

12. Kleiman (1999) offers an analysis of the complex and costly system of in-kind payments. In-kind payments are made in lieu of cash payments to the government or between enterprises and individuals. Such payments include building materials, utilities, and foodstuffs used by the government for producing public goods. Between enterprises, in-kind payments are used to "purchase" inputs and include raw materials to semi-finished products. This form of barter is extensive in Russia.

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