Designing Intergovernmental Transfers in Russia: A Simulation Study *

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1. INTRODUCTION

Many countries have a mandate to decentralize some aspects of their public finance system (Dillinger, 1994). Some countries (e.g., Uganda[1]) are proceeding at a rapid pace with their decentralization efforts as dictated by their constitutions; other countries have adopted decentralization in certain sectors such as infrastructure, education and health (e.g., Colombia[2], Venezuela[3], and Philippines[4]); while others (e.g., Kenya[5]) are contemplating a reform of their local governments with the support of the Bank; and still other countries are listening to the Bank on "reorienting" and rethinking the role of the state (e.g., Bangladesh[6], the Caribbean[7] and Paraguay [8]). An important dimension of these efforts has been the role of intergovernmental grants. Intergovernmental grants along with tax and expenditure assignments to various levels of government represent the three fundamental instruments of fiscal decentralization.

Intergovernmental grants are important sources of revenues for many subnational governments. Historically, developing countries have on average relied less on intergovernmental grants than developed countries. For example, over the 1970-1992 period, intergovernmental grants in developing countries have accounted for 32.4% of subnational government expenditures and 33.4% of subnational government revenues. The corresponding figures for developed countries are 40.9 % and 40.8 % respectively. However, these aggregate statistics hide a diversity which is much more pronounced in developing countries than developed countries. For instance, in developing countries intergovernmental grants as a fraction of subnational government revenues range from a high of 94.2% in Trinidad and Tobago to a low of 5.8% in Paraguay, while the

[1] World Bank (1996a).

[2] World Bank (1995d).

[3] World Bank (1993b).

[4] World Bank (1994a).

[5] World Bank (1992).

[6] World Bank (1996c).

[7] World Bank (1996d).

[8] World Bank (1996e).

corresponding figures for developed countries range from a high of 77.3% in Italy to a low of 8.4% in Iceland. [9]

Table 1-- Importance of Intergovernmental Grants : One Subnational Government

Country and Country Grouping	Grants as a percentage of recipient government expenditure	Grants as a percentage of recipient government revenue
Developed Countries	**40.9**	**40.8**
Developing Countries	**32.4**	**33.4**
Dependence on grants		
Most	78.4 (Indonesia)	94.2 (Trinidad &Tobago)
Least	5.3 (Paraguay)	5.8 (Paraguay)

Source: Calculated by the authors from the IMF's Government Finance Statistics. The data are averages over the 1970-1992 period; number of countries is 52. The local and state governments are consolidated into one subnational government.

In Russia, intergovernmental transfers have been increasingly used by the federal government. In 1992, 1.75 percent of GDP was transferred to the regions, and the number increased to 3.50 percent in 1994. Given the importance of intergovernmental grants, a well-designed system of intergovernmental grants seems to be an essential element of the health of any public finance system. However, despite the extensive literature on intergovernmental grants, there is very little empirical analysis of the design of intergovernmental grants in Russia.[10] The purpose of this paper is to provide a general treatment of the federal-regional transfers across regions in Russia, with focus on the regional distribution of total federal grants and on block grants to key social sectors, namely education and health. Simulations will be conducted with results incorporated into grant formulas.

The paper proceeds as follows. Section 2 reviews the fundamentals on the economic rationale of intergovernmental transfers, followed by the discussion of current practice and present system of intergovernmental grants in Russian, and the evaluation of the system, as in section 3, 4 and 5. Section 6 provides several experiments on regional allocations of intergovernmental transfers, including block grants, general or non-conditional grants. Section 7 concludes the paper.

[9] Subnational governments refer to local and state governments. The following statistics are calculated from the IMF's Government Finance Statistics and are derived by consolidating accounts of local and state governments.

[10] The conceptual issues and descriptions of intergovernmental transfer system in Russia are discussed in several publications as in: Bird, Ebel, and Wallich (1995), OECD (1995), Wallich (1992, 1994) and World Bank (1996). Zou (1994, 1996) provided a dynamic, general equilibrium model of local government grants.

2. THE ECONOMIC RATIONALE FOR INTERGOVERNMENTAL TRANSFERS

The review of economic rationale services as a framework of making normative judgments on design of intergovernmental transfers. Broadly speaking, the economic justifications include the arguments of efficiency, equity, local autonomy, revenue adequacy, administrative feasibility, in some cases, stabilization objectives. These arguments have been found closely related to benefit and cost spillovers, or externalities, common market issues, differential net fiscal benefit, fiscal gap, redistribution effect, minimum service provision requirement, and so forth (Bahl 1986, Bahl and Linn 1992, Shah 1994).

Designing intergovernmental transfers is difficult and complex. One of the many important reasons is that there are many goals that may be set out to achieve by the system of intergovernmental transfers. As pointed in by Wallich (Wallich 1992), however, "one system cannot simultaneously achieved all of these ends, and governments must decide which are the most important" or if they need more than one system of intergovernmental finance. However, since any one system may result in many policy consequences, including those unwanted, and it is not surprising to observe policy conflicts if more than one system of intergovernmental finance are implemented. Government planners must prepare for a combination of successes and pitfalls resulted from the operations of the system of intergovernmental finance, and they must decide on the portfolio of the combination of successes and pitfalls to best serve their policy interests.

Taking concern of equalization to even out the quality of public provision nation-wide. This is such that all sub-national governments can provide minimum standard services as nationally-expected and the provision should be achieved with the same level of tax or fiscal effort, in that any one jurisdiction exploits its tax base to the same extent. Fiscal equalization can be achieved by either intergovernmental transfers or delegating taxing powers to sub-national governments. Both approaches have advantages and disadvantages. Federal transfers may fill in the fiscal gaps, but may also discourage the fiscal or tax effort at the sub-national level and reduce the accountability of sub-national fiscal management. Tax assignments to sub-national governments may increase the degree of their fiscal autonomy and mobilize local resources more efficiently and enhance the provision of local services, but it also enables jurisdictions with the stronger economic base to raise more revenue with lower tax effort and thus increase inter-jurisdictional disparities.

The fundamentals of the economic reasons for transfers are discussed in detail in the literature on intergovernmental fiscal relations (Boadway et al 1993 and 1996, Oats 1972 and 1994, and Shah 1994). For the purpose of economic analysis, intergovernmental transfers are broadly classified by two dimensions of criterion: (1)non-matching and selective matching (McMilian, Shah, and Gillen 1980), and (2)conditional (selective) and non-conditional (general). The first criteria deals with the requirement for the grant recipient to spend to some extent their own funds. The second one defines that whether the

grants recipient need to spend the grant for a particular purpose which is usually proposed by the grantor.

The pros and cons usually co-exist in the selection of intergovernmental transfers. In theory, selective non-matching grants are best suited for subsidizing activities considered high priority by the grantor government, usually a higher level of government but low priority by the grantee government, usually a lower level of government. The general non-matching provides the maximum flexibility for a grantee to pursue their own objectives but limits the grantor's capability in directing a grant recipient to spend on expenditures on which the grantor place a priority. Matching grant, selective or general, can correct inefficiencies from spillovers but is weak in addressing uneven or inadequate fiscal capacities among regional and local governments.

In practice, however, the implementations of intergovernmental transfers and their impact on the behaviors of both grantors and grantees are far more complicated than they appear in the theoretical predictions. The reform of central-provincial revenue-sharing regimes adopted in China in the late 1980s attempted to promote provincial revenue mobilization. However, it not only failed to increase local tax effort, but also contributed to increasing fiscal imbalance among Chinese provinces (World Bank 1993, Zhang 1995, 1996). In the case of Russia, the actual revenue-sharing system was neither transparent nor rules-based, best evidenced by the lack of correspondence between the statutory rules and actual sharing rates in the period of 1992-93. Many localities (oblast level) running budgetary surplus receiving transfers (OECD, 1995).

Although there may not be a one best system of intergovernmental transfers even for a particular country, such as Russia, some general principles should still be taken into considerations in designing the system of intergovernmental transfers:

- Government planners should decide in the first place their principal purpose in using intergovernmental transfers. If the federal government dominates its concern with the national macroeconomic policy in the short-run, then an ad hoc approach would bring about the greatest flexibility. Formula grants may be more appropriate if sub-national governments are required to smooth their plans on fiscal operations.
- Designing a intergovernmental transfers should be considered along with the current arrangements between the national and sub-national governments on the assignment of revenues and expenditures responsibilities. Transfers and responsibility assignment are closely related because their joint effort will help to find the right balance between providing sub-national fiscal incentive but increasing inter-jurisdictional disparities and equalizing fiscal capacity but dampening tax effort. This is especially relevant for Russia, where all revenues are collected sub-nationally, and it raises the question how federal grants may better serve for vertical balance on the basis of current revenue collection system.
- If equity is a dominant goal and formula grants is placed with priority, it is important to build appropriate formula indicators to achieve equalization. However, one should also avoid taking biased indicators, most of which result from the lack of adequate data,

especially those directly related to the revenue capacity and fiscal need, the two crucial ingredients in the formula grants.

- When formula indicators are not sufficiently supported by the availability of data, it is recommended to use broad indicators, or so-called "umbrella variables", such as the size of population, the concentration of high-cost citizens, urbanization, miles of standard roads, deficiencies in schools and hospitals, and so on.
- When complicated, data-intensive exercises of intergovernmental transfer system designs are not doable, for example, for insufficiency on data, simplicity and flexibility should be the watchwords in the design of intergovernmental transfers. One should be very cautious in introducing factors into the distribution formulas because once they are implemented, it will be very difficult for the grant recipients to adjust to any changes in the proposed new systems unless they bring more revenues from the higher level of government. Given the current "transitional factor" in the Russian economy, the system of transfers also needs to be flexible to smooth the entire fiscal management move from one system to another.

3. THE PRESENT SYSTEM OF FEDERAL TRANSFER IN RUSSIA

The overall system of federal transfers to the regions appears disarrayed by lacking criteria of distribution, discoordinating channels of distribution, and absence of transparency. The federal transfers took place not only through the budgetary channel but also in off-budget through the national extrabudgetary funds.

Through the budgetary channel, federal transfers are usually transferred in the following forms:

- General transfers (equalization fund),
- Targeted transfers, and
- Short-term loans.

The role of general transfers changed dramatically since the early 1990. In 1992, general transfers took 44.89 percent of the total federal transfers. Only two year later its share dropped to 22.06 percent.

Most of the federal transfers were distributed as targeted transfers with the 72.69 percent and 77.08 percent of the total federal transfers in 1993 and 1994 respectively. The short-term loans took less than 1 percent, as shown in Table 2.

Table 2--- Russia: Federal Transfers to Regions in 1992-1994 and Budget Plan for 1994 and 1994
(percentage)

	1992 Actual	1993 Actual	1994 Actual	1994 Plan [a]	1995 Plan [a]
Total federal Transfers	100.0	100.0	100.0	100.0	100.0
I. General transfers (equalization fund)	45.1	25.5	22.0	44.1	52.3
1. Subventions	45.1	25.5.	12.0	...	...
2. Federal fund for financial support of territories	...	...	10.3	44.1	52.3
II. Targeted transfers	49.7	72.7	76.9	55.9	47.7
1. Mutual settlements under the budget law	49.7	72.0	74.3	...	...
2. Transfers to "closed cities" and other special areas	...	0.7	2.6	55.9	47.7
III. Short-term loans	5.7	1.8	0.9	...	...

[a] 1994 as per the October 1994 draft budget; 1995 as per budget law passed by the federal Duma on March 15, 1995
Source: World Bank (1996b), pp. 196.

General federal transfers

The system of general federal transfers in Russia has been accompanied by the system of revenue sharing. The revenue-sharing system in Russia inherited from the former Soviet Union, and in place at the end of 1991 (Wallich 1992). The system is characterized by "upward-sharing" revenue between the federal and provincial budgets. Virtually all revenue are collected at the sub-national level, and they are then shared upward, from rayons, to oblasts, and then to the federal budget.

Once the process of revenue sharing is completed, federal grants are then transferred as general transfers in two forms: subventions and federal funds for financial support of territories. In fact, federal subventions are the only federal general transfers before 1993, and the federal funds for financial support of territories are available only after 1994 when new arrangements were implemented. Under the budgetary plans after 1994, federal subventions were eliminated. However, according to the preliminary results in the actual budget in 1994, 53.85 percent of general federal transfers were still federal subventions. Although it is believed that the revenue collected at the regional level are shared between the federal and regional governments by specifying federal and regional tax base and tax rates, it is in general not clear how the federal and regional governments agree on the assignment of tax base and tax rates. The rules governing the federal subventions are also fuzzy and they are distributed in a non-transparent way.

Revenue-sharing system in 1994

The center-piece of the new arrangements in the new revenue-sharing arrangements which began to be implemented in 1994 is a formula-based grant mechanism. The federal and regional governments share the VAT proceeds by 75 and 25 percent

respectively. The federal revenue from the VAT taxes are the sole resource for the federal general transfers to regional governments (OECD 1995, World Bank 1996).

To provide federal fund for financial support of territories, the federal government contributed 22 percent in 1994 (27 percent in 1995 budget) to the Fund for Regional Support. The revenue sharing system had intended to equalize revenues across regions. The federal transfers to individual oblasts are set by a sharing formula which based on the previous local own revenue and expenditure. The basic formula pertaining to oblast *i* is as follows:[11]

$$TR_i(94) = A_i(93)\ [0.95 R_i(93)]\ POP_i(93)$$

where TR_i denotes the federal transfer to oblast *i* in 1994, A_i is measured by the ratio of the per capita budgetary expenditure in oblast *i* in 1993 to R(93), the average per capita revenue of all provinces (at the oblast level) in the same year. R_i is the per capita revenue province *i*, and POP_i denotes population in oblast *i*.

The above equation can be easily rewritten as

$$TR_i(94) = E_i(93)\ [0.95 - R_i(93) / R(93)]$$

where E_i (93) is the per capita budgetary expenditure in oblast *i* in 1993. This equation implies that the more oblast *i* spends and the less it raises, the larger of the federal transfer will be for the oblast. This approach not only discourage regional tax effort. It is also clearly counter-equalizing because rich regions are more likely to be able to change their spending and collection than poor regions..

The implementation of the formula is complicated by the introduction of two earmarked "windows" for the funds to be allocated, one is for "needy" regions and the other is for "very needy" regions. Included as a "needy region" are those areas with their own budgetary revenue below 95 percent of the country's average. "very needy" regions are those areas which run budgetary deficit (after transfers) in 1993, the base year. "Needy" regions receive their federal transfers in inverse proportion to their per capita own revenues and they are positively related to their per capita expenditures. The transfers received by "very needy" regions will amount to filling the gap between regional expenditures and regional revenue including other transfers given by the federal budget.

In 1994, 76.5 percent of the federal fund for financial support of territories was transferred to "needy" regions, and the rest 23.5 percent to "very needy" regions. There were 59 areas benefited from federal transfers as "needy" regions, and 23 as "very needy" regions, including 7 oblasts and krais with above per capita budget revenues and 66 percent of total federal general transfers to all "very needy" regions..

Targeted federal transfers

[11] OECD (1995, pp. 157), "OECD Economic Surveys: The Russian Federation, 1995."

Accounting for more than three quarters of total federal transfers, targeted federal grants are the major part of federal transfers to the regions, and the federal government intended to use more in the near future. These federal transfers are earmarked for specific cities, areas, or functions. These may be distributed as federal funded mandates or through head-on-head bargaining and negotiations between the federal and regional governments, and the criteria used for governing these transfers are usually not clearly spelled out in the actual allocation procedures.

The bulk of the federal targeted transfers, accounting for 98.98 percent of total federal targeted transfers, are used as "mutual settlements". The rest are federal transfers targeted to "closed cities", including subventions and subsidies to, and mutual settles with these cities, serving nuclear and military installations or remotely locate in the far north.

The federal "mutual settlements" transfers represent mostly the federal funded mandates shown in the budget law, such as "many presidential and governmental resolutions on wages increase and diverstitute of enterprises' social assets" (World Bank 1996, p 21). Other "mutual settlements" transfers include grants which are transferred through individual negotiations between the federal and the regional governments, such as compensations for costs incurred by regional budgets.

Although in small percentage, federal short-term credit s are also available as federal transfers to regional governments to finance their "protected expenditures", such as wages, social spending, and so on. These funds are at initial stage issued to the regions as interest-free "credit" which are supposed to be repaid within the year. However, in practice, they are often written off and end up to be treated as the federal-regional mutual settlements funds.

Table 3 reports detailed statistics on regional finance.

4. EVALUATION OF THE SYSTEM OF INTERGOVERNMENTAL TRANSFERS

Due to the strong political centrifugal forces in the early 1990s, Russia has witnessed a far-going fiscal decentralization. Despite of a quite stable consolidated budget[12], indicated by the total revenue amounted to 28.78 percent of GDP in 1992 and 26.70 percent in 1994, the relative size of federal and regional budget has changed dramatically (World Bank 1996b). In relation to GDP, the federal budgetary revenues

[12] Excluding the numbers in the off-budget funds.

shrank from 15.91 percent in 1992 to 12.96 in 1994. In the mean while, regional own revenues expended from 12.87 percent to 14.04 percent. On the spending side, the federal budgetary expenditure took 23.42 percent in 1992 and 18.54 percent in 1994, while the numbers for the regional budget are 12.70 percent in 1992 and 17.50 percent in 1994 respectively.

The rapid rise in the regional expenditure reflected the shift in expenditure responsibilities from the center. Given the relatively slower growth in regional own revenue, which came largely from a few shared federal taxes, the increased grants had to be transferred from the federal budget to the regional governments. At the aggregated level, the intergovernmental transfers accounted for 1.74 percent of GDP in 1992 and 3.50 percent in 1994 respectively. In general, the size of federal transfers to the regions are still small, amounting to 4.6 percent in 1992 and 8.8 percent in 1994 and they are below the average of about 14 percent of general government expenditure in the Western industrial countries (Levin 1991).

The rise of the size of intergovernmental transfers has implied a strengthened role played by these transfers in financing regional budget. The federal-to-region transfers took 11.90 percent in 1992 and 19.95 percent in 1994 respectively in total regional revenues. These numbers imply that regional budgets had became more reliable on the federal grants. However, these numbers are still smaller than the average of 32.4 percent in developing countries.

Table 4--- Russia: Intergovernmental Fiscal Balance, 1992-1994
(percentage of GDP)

	1992	1993	1994 Actual
Net federal-regional transfers	1.46	2.67	3.43
Total federal transfers	1.75	2.69	3.50
Federal budgetary balance [a]	-8.96	-8.01	-9.38
Regional budgetary balance with federal transfer [a]	1.63	0.69	0.01
Regional budgetary balance without federal transfers [a]	0.17	-1.93	-3.42

[a] Measured by the difference between revenue and expenditure on the cash basis.
Source: World Bank (1996b), pp. 107-117.

One of the key deficiencies of the Russian system of intergovernmental transfers is the absence of correspondence between revenues assigned and expenditure needs. As shown in the Table 4, intergovernmental transfers contributed little to fiscal imbalance among levels of government. In 1992, federal budget transferred 1.75 percent of GDP to regional governments in a situation in which the center run a deficit of 8.96 percent of GDP and the regional budget earned a surplus of 0.17 percent of GDP even without the federal

grants. The counter-balancing trend was however halted in the later years, especially since the new tax sharing arrangements began to implement in 1994.

In addition to the vertical imbalance, the fiscal inequality on the horizontal aspect is also evident. The large inter-regional fiscal disparities in Russian remained intact over the years of fiscal decentralization and the increase in intergovernmental transfers. Disparities in per capita expenditure have widened since 1991. In 1992, the coefficient of variation of total expenditure per capita in Russia was 0.83, and it became 1.19 and 1.02 in 1994 and 1995 respectively.

The evidence of the moderate equalizing grant can also be observed on the revenue side. The average coefficient of variation of regional own revenue in per capita term between 1992 and 1995 is 0.84. The number becomes 0.96 after the federal transfers are taken into account. In practice, federal grants were transferred on an ad hoc basis, leaving the transfers poorly targeted with many oblasts running budgetary surpluses receiving transfers.

Another way to capture the equalizing impact of federal transfers is to look at the difference between the coefficient of variation of regional per capita expenditures and that of regional own per capita revenues in the same year. Measuring in current prices, the coefficient difference of regional per capita expenditures and own revenues in 1992 was -0.061, indicating a 11.9 percent decline and moderate degree of equalizing impact comparing to the previous year. The numbers of the difference the coefficient difference increased to 0.108 and 0.332 respectively in the following two years, suggesting a sharp deterioration in fiscal equalization. Preliminary analysis for the 1995 indicates that the situation was improved in 1995, with the coefficient difference of regional per capita own expenditures and revenues changed from 0.332 in 1994 to 0.086 in 1995. However, the coefficient of variation of regional per capita expenditures are still larger than that of regional own per capita revenues, implying that the equalizing impact of federal transfers are still weak.

As indicated by our early analyses, the present system of federal transfers in Russia is ineffective in generating equalizing effect on regional fiscal disparities. As for the formula governing the allocations of the funds, the approach of basing the transfers on the revenues and expenditures in the previous year (or base year) is ineffective to provide incentive for regional tax or fiscal effort. In addition, provincial or regional performances are very hard for the central or the federal government to monitor, and the asymmetric information will lead serious moral hazard problems and thus make the transfers ineffective in fiscal equalizing. The experience of intergovernmental transfers in China, which adopted similar approaches in most of its post-reform period, provides a convinced example for the malfunctions in equalizing fiscal disparities and providing regional tax or fiscal effort.

The system of intergovernmental transfers has been weak to tackle the problem of inter-regional fiscal disparities. The practice on the federal grant design in early 1992 did not take into account of regional differences in revenue capacity and spending needs. The attempt to rationalize the federal-regional transfer system improved itself in that the

regional shares were governed by an explicitly defined formula. However, as indicated in early analysis, the regional shares of federal grants were related to the revenue and expenditure in the previous years. Given the fact that the regional revenue and expenditure pattern is inherited from the old Union system, the huge inter-regional variations of revenue sand expenditures do not necessary reflect the actual distribution of regional fiscal resources.

In summary, the current fiscal system has been targeted by specific tax-sharing rates without incorporating both regional expenditure needs and revenue capacity. A concrete, objective and simple formula should be introduced to support both revenue effort and equalizing of oblasts.

5. A SIMPLE ANALYSIS OF EXISTING TRANSFER SYSTEM IN RUSSIA THE DISTRIBUTION OF TOTAL FEDERAL TRANSFERS

To provide a preliminary assessment of the distribution of the existing intergovernmental transfers in Russia, a simple analysis of the relations between the per capita own-revenue and per capita federal-regional transfers across the eighty-eight oblasts and krais. Due to the lack of data, we measure the transfers as the net balance between the regional expenditures and regional revenues for these oblasts and krais.

For 1991-1995 the regression equation is:

$$PCT_i = C_0 + C_1 PCR_i$$

where PCT_i is per capita transfers to oblast i, PCR_i is per capita own revenue in the oblast, C_0 and C_1 are estimation coefficients.

The estimation results of the relations between the per capita own-revenue and per capita federal-regional transfers for 1991-1995 are reported in Table 5. For the first three years, the equation provides negative but insignificant correlation between per capita own revenue and per capita transfers in Russia. However, in the last two years (1994 and 1995), a highly-significant, positive correlations have been observed. In fact, one addition thousand rube of own per capita revenue is associated with 128 rube of transfers per capita in 1994, and with 437 rube of transfers per capita in 1995. As indicated in these regression results, there are few indications that the federal-regional transfers have been used to correct fiscal inequality across regions.

In this limited analysis, intergovernmental transfers in Russia has not supported by fiscal equalizing effort. In contrast, counter-equalizing effect has become more evident since the new revenue sharing system was implemented.

Table 5--- Russia: A Simple Analysis of the relations between the per capita own-revenue and per capita federal-regional transfers, 1991-1995

	1991	1992	1993	1994	1995
Intercept (C0)	177.63 (3.71)	6299.40 (3.53)	82524.38 (2.94)	58226.20 (0.46)	-136774.71 (-2.35)
Per Capita Own revenue	-0.030 (-0.90)	-0.116 (-1.88)	-0.084 (-0.54)	0.437 (2.79)	0.128 (5.43)
No. of observations	86	87	87	87	88

Note: t-statistics are in parentheses.
Sources: State Committee of the Russian Federation on Statistics (1993), "Russian Federation in Figures in 1993".

6. THE SIMULATION OF THE DISTRIBUTIVE EFFECT OF FEDERAL TRANSFERS IN RUSSIA

The center-piece in justifying a certain form of intergovernmental transfers is a simple and transparent mechanism in which the designed policy targets can be achieved while gaining net benefit in either equity or efficiency. Given the macroeconomic instability and especially, the early stage of economic reform, there is little doubt the Russian intergovernmental fiscal relations will continue to suffer from ineffectiveness from both the equity and efficiency perspective. Attempting to tackle the problems of fiscal imbalance in Russia, we offer several experiments in designing federal-regional transfers. Our proposals are based on the following concerns (1)inter-regional fiscal inequality (2)minimum provision of selective public service provision, and inter-regional spill-over of benefit and cost of public services.

The principal message in our attempts of distributing federal grants across regions is to help the federal government planners to build a simple and transparent transfer mechanism in which public service of minimum standard can be achieved nation-wide without significantly reducing incentives for regional revenue mobilizations, so that regional finance may operate on a more or less comparable basis.

To be more specific, our proposed distributions of federal transfers start with two assumptions. Assumption 1--we assume the there is an agreed compromise between fiscal assignments and intergovernmental grants which leads to a consensus on the percentage of national GDP (or total federal revenues) to be distributed as federal grants to the regions. Assumption 2--in addition to the agreed percentage of national GDP (or total federal revenues) to be the total federal transfers, we also assumed that it is commonly agreed on how much should be distributed across key sectors, such as education, health, sanitation, infrastructure, and so on. Most federal grants for sectoral expenditures would be block transfers. In addition, some conditional grants may also be added to the list of pre-determined federal-regional transfers if necessary.

Although made separately, the two assumptions are not totally independent from each other. One consideration is that the total amount of block grants (and those for pre-determined conditional grants) should be usually within the range marked by the total percentage of national GDP (or total federal revenues) to be distributed as federal grants, as assumed in Assumption 1. However, if the total percentages of block (and pre-determined conditional) grants exceeds the amount of total federal grants at the agreed percentage of GDP (or total federal revenues), general transfers are required to flow upwards from the regional budgets. In this case, a structural reform of revenue and expenditure assignments between levels of government may be necessary.

Assumption 1 defines the net federal-regional grants allocated to each of the regions. It aims to correct the inter-regional fiscal imbalance on the basis of current of system of revenue and expenditure assignments. In the meanwhile, the agreed percentage of the total federal grants controls the vertical fiscal balance on the macro aspect. Under Assumption 2, block grants are distributed by sectors according to the agreed sectoral allocations, so that crucial sectoral services can be provided nation-wide on a unified minimum standard. These block grants will become part of the federal transfers to each of the regions. But the arrears provide flexibility for allocations on conditional grants to correct the spill-over effect and on general grants for fiscal equalizing.

Regional distribution of the total federal grants

The simplest approach to is to distribute the total federal grants across regions solely on the basis of total population of each region. It implies that population is considered a rough proxy of regional “need”.

The total-population-driven approach is obviously oversimplified, given that the fiscal needs are extremely hard and complicated to define in Russia. For the huge land coverage of the Russian federation, population densities are so different that in some remote areas the costs of basic service provisions are indeed much higher than others. The real costs in providing basic public services in these areas are hard to measure because of the distorted prices. Tax base and revenue capacity would also change radically if the regional prices and wages change.

These complications may imply that it would be premature to achieve a comprehensive and distribution of federal transfers which is able to generate a clear pattern of fiscal equalization. However, improvements can still be achieved by introducing other factors to adjust the grant distribution .

To incorporate the spending needs and fiscal capacity, we proposed that the total grants can be distributed in two stages. First, for a given amount of federal transfers, all oblasts are to receive the same amount of federal grant in per capita term at the level of national average. In another word, we distribute federal grants based on spending needs solely reflected by population (the total-population-driven approach). Second, on the basis of national average transfers, the center allocates funds to regions by taking into their economic development stages. The per capita national transfer would not generate equality unless regions have the equal revenue base, which is hard to measure precisely. However, fairness can still be approached, if not reached, when the national average transfer is adjusted by the departure of the regional production output from the national production level.

The formula for the regional distribution of total federal grant is as follows:

$$PCT_i = \frac{FEDT}{POP_R}(1 + \frac{GVRO_i - GVRO_R}{GVRO_R})$$

where PCT_i is per capita transfers to oblast *i*, *FEDT* is the total amount of federal transfers, POP_R is the total population of Russia, $GVPO_i$ and $GVPO_R$ are the gross value of production output in Russia and in any of its region i respectively. In our simulation analyses, we use *GVIAO* (gross value of industrial and agricultural output) as the indicator for *GVPO*.

The above equation suggests a per capita grant adjusted by the levels of economic development. This grant program has several desirable features: simplicity, transparency, flexibility, and incorporation of fiscal need. It is simple since it only needs two commonly recorded indicators in national account. The information of regional population and production output is highly public, and it makes the grant distribution very transparent. By relating to regional economic development, the size of grants become more flexible and predicable.

For the same amount of the total federal grants transferred from the federal government to regional governments in 1993 in Russia, we derived per capita federal transfers for each of the 88 Russian provinces (Oblast level), as shown in Table 6. All oblasts but four rich areas will receive federal grants. The four rich areas are required to turn over part of their own revenues to the federal government.

With the transfers, the fiscal equality on the horizontal basis is improved. Under the old (existing) transfer system, the coefficient of variation of provincial revenue is 0.78, as shown in Table 7. That number drops to 0.49 after the federal grants are transferred under the proposed system. The level of fiscal imbalance is even lower than that in the pre-transfer regional finance, indicated by 0.67, the coefficient of variation of provincial

revenue before the federal grants are transferred. This suggests the proposed system of transfers has a positive impact on the equal distribution of provincial (oblast level) fiscal resources.

Table 7--- Russia: Regional equalization effect with proposed federal transfers, 1993

	(1)	(2)	(3)	(4)	(5)
	Regional own revenue	Regional total revenue with existing transfers	Per capita total transfers adjusted by economic development	Total proposed regional transfers adjusted by economic development	Total regional revenue with the proposed transfers
	mln. rube	mln. rube	Rube	mln. rube	mln. rube
Standard deviation	100,560.3	171,234.4	23,874.6	62,387.6	88,175.2
Maximum	565,258.1	1,189,237.3	58,437.1	351,813.0	530,160.2
Minimum	20,970.3	100,610.5	-115,293.1	-155,530.4	42,279.6
Average	149,827.6	219,704.6	29,408.5	49,546.0	178,979.1
Coefficient of variation	0.67	0.78	0.81	1.26	0.49

Source: Authors' estimations based on State Committee of the Russian Federation on Statistics (1993), "Russian Federation in Figures in 1993".

Block grants for selective sectors: Education and Health

Not like general grants, block grants are designed for the purpose specified by the grantor government regarding respective service sectors, such as education, public health and social safety nets. However, they are similar in that both grants are distributed without proposing any specific requirement on the use of the grants or demanding regional matching funds.

For merit goods such as education and public health, ensuring all citizens equal access and making the public service provision portable from one jurisdiction to another would be a national interest which the federal government may often have. This is especially important when the benefit of particular regional public goods or services spill-over to nonresident free-riders and it keeps the regional government from providing these goods or services. Research and human resource development, especially education and manpower training, health and social services other than income maintenance, are the major national concern for the federal-regional transfers when these services are assigned to regional governments. Block federal grants are necessary to compensate the net loss of regional government in providing these services. They are also crucial to maintain the minimum standard of these services nation-wide.

The allocation of block grants comes upon the amount of total federal fund to be transfers to the regions. Once the total sectoral grants are determined, as required by Assumption 2, regional distributions will be generated. For any one region, the amount of block grants should be in principal below the total amount of federal transfers to this very region. With the pre-determined sectoral allocation of the total federal grants, the nation-wide minimum standard of the sectoral services is established. The issue of equity thus becomes a dominant concern.

To determine the grant size for any particular sector in any region, the factor of need should be the key concern. As usual, population would be a strong candidate to measure regional need, modified for the concerned sector. For example, the share of federal grants to be spent as block grants for education should be higher if the proportion of "educational population" is higher. Among many other ways, "educational population" could be defined by age in that it covers all population aging from 6 to 18 so that this proportion of population may receive at least 12 years of education. It may also be the enrollment rate of primary and secondary schools. To cover more broadly, "educational population" may also include all population which never receive education at levels higher than primary school regardless of their ages. No matter how "educational population" is defined, the principal message is that the size of block grant for education will be based on jurisdictional need.

Capacity would be a minor concern for allocating block grants, because the size of total federal grants to the region has been adjusted according to the stage of regional economic development. The stage of regional economic development is normally measured by some indicators of regional production output, such as regional GDP, per capita income, per capita household income, and regional GVIAO (gross value of industrial and agriculture output) in most of the centrally-planned economies.

The proposed formula for sectoral block grants is as followed:

$$SBG_{ij} = \frac{SPOP_{ij}}{SPOP_j} SBG_j$$

where *SBG* denotes sectoral block grant, *SPOP* is sectoral population and *i* and *j* are index of sectors and regions respectively. As assumed, the total amount of block grants for sector *j* is pre-determined.

The sectoral-population-driven approach for block grant distribution implied a unique "sectoral population" for each sector. In some sectors, such as education and health, candidates for "sectoral population" may handily present but not so in others. It is generally difficult to define "sectoral population", which should be measured case by case.

To illustrate the sort of work that needs to be done, we have prepared the simulations of block grants for education and health sectors with the limited available data.

In our simulations for education and health, we define sectoral population as the following.

For education, sectoral population includes those age below 15 and those age above 15 but never receive a complete secondary or higher level of education. For health, a resident whose age are between 15 to 59 for male and 15 to 54 for female is counted as one sectoral person. Each of the very young (age below 15) and very old (age above 60 for male and 55 for female) is counted as 1.5 sectoral person. The arbitrary coefficient of 1.5 reflects the higher cost to serve the very young and very old than ordinary people.[13]

General grants

The fundamental purpose of general grants is to equalize the fiscal capacity on a horizontal basis while correcting the federal-regional vertical balance. It favors in nature for the argument of "population-approach". If by itself, fiscal equalizing is proposed even without concerning any other type of grants, then general grants would be distributed by the "total-population-driven approach" adjusted by regional economic development.

In our simulations, general grants are allocated after block and conditional grants are determined across regions. Under Assumption 1, the total federal transfers will be first allocated to the regions as regional transfer caps without differentiating them by the form of these grants. This is to build up federal-regional fiscal balance on an equal basis across regions. Once any one region receives its share, these federal grants will be allocated within the region in the form of block, conditional, and non-conditional or general grants. The block grants will be determined first to finance the sectoral expenditures, such as education, health, sanitation, infrastructure, and so on, according to sectoral needs or regional priorities. After block and conditional grants are allocated, the rest of the regional receipts will be distributed as general grants. It is not surprising that some regions will come up with upward transfers from the regions for the equalizing concern.

Table 8 reports the simulation results of block grants for education, health and general grants. In the simulations, conditional grants are not explicitly considered, and the percentage of education and health grants are selected at the same sectoral proportions of federal spending in 1993.

The simulation for intergovernmental transfers as described above can be practiced in many different ways, so long as the two assumptions are admitted. In other words, many grant distribution pattern can be generated once the consensus of agreeable proportion of total federal transfers and for each key sectors are reached. Suppose we still allocate sectoral transfers to education and health as the same proportions as in federal expenditures in 1993, but we raise the total federal transfers to the averaged level in OECD countries (14 percent of general government spending). The simulation results suggest a lower coefficient of variation of the total regional revenue after the federal grants are transfers, as shown in Table 9.

Table 9--- Russia: Regional equalization effect with proposed federal transfers, 1993

	(1)	(2)	(3)	(4)	(5)

[13] The coefficient of 1.5 could be other positive numbers as long as it is greater or equal to 1.

	Regional own revenue	Regional total revenue with existing transfers	Per capita total transfers adjusted by economic development	Total proposed regional transfers adjusted by economic development	Total regional revenue with the proposed transfers
	mln. rube	mln. rube	Rube	mln. rube	mln. rube
Standard deviation	100,560.3	171,234.4	41,786.7	109,194.6	82,283.6
Maximum	565,258.1	1,189,237.3	102,280.1	615,764.2	505,772.5
Minimum	20,970.3	100,610.5	-201,793.0	-272,218.7	-7,780.4
Average	149,827.6	219,704.6	51,472.6	86,718.4	200,850.4
Coefficient of variation	0.67	0.78	0.81	1.26	0.41

Source: Authors' estimations based on State Committee of the Russian Federation on Statistics (1993), "Russian Federation in Figures in 1993".

7. CONCLUDING REMARKS

Our studies use empirical evidences to suggest that the present system of intergovernmental transfers is unsuccessful in correcting fiscal inequalities in Russia. With limited data, we also provide simulations to allocate intergovernmental transfers including federal block grants and general grants. The simulation results indicate that fiscal balance can be approached with our proposed approach.

To be as simple and as flexible as possible, we consider only two factors in our grant formula constructions. The principal message is that the transfers of the federal-regional grants should be in general reached to the regions as a package, which includes general grants, block grants, and other conditional grants. The size of total regional receipts sets the basis on which the fiscal equality may be built. The separate requirement of sectoral block grants provide minimum public services across regions, and finally, the general grants balance the gap between the total federal transfers and requirements of sectoral and conditional grants.

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