

What Affects the Russian Regional Governments' Propensity to Subsidize?

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Making certain federal transfers conditional on reform could indirectly influence the pattern of regional subsidy financing in Russia.



Summary findings

Subsidies funded by Russia's regional governments represented about 5.2% of GDP in 1995, almost triple the 2% of GDP in subsidies funded by the federal government. Regional policies vary greatly, influenced more by local factors than by the federal government.

To find out what affects the regional governments' propensity to subsidize, Freinkman and Haney examined available data for 1992–95, asking: How great is the variation across regions in the incidence of subsidies, and what are recent trends in such variation? What are the relative influences of supply and demand factors in shaping the current levels of subsidy? How do federal budget transfers affect regionally funded subsidies to local enterprises? To what extent are federal transfers distortionary, encouraging subsidies and postponing the liberalization of local markets?

Their findings:

- Regional wealth and federal budget transfers to regional governments are two of the most important determinants of regional propensity to subsidize.
- Even when regional budgetary wealth is controlled for, depressed regions (those affected most by industrial decline and unemployment) tend to spend less on subsidies than regions with more favorable economies.

- Federal budget transfers are quite distortionary, that is, they encourage regional governments to continue subsidy policies and postpone structural reforms. In fact, federal transfers tend to be concentrated in regions with the most distortionary policies.

- Housing receives the lion's share of total regional subsidies, and there are greater disparities in housing subsidies than in agricultural subsidies.

- Housing and transportation subsidies are strongly counter-equalizing: Households in wealthier regions receive more in housing subsidies and rural populations have less access to those subsidies, so up to 30% of regional subsidies are questionable in terms of equity.

- Federal transfers have less effect on regional subsidies in agriculture, which are influenced more by the region's own tax base and its share of rural population or by such factors as the political influence of local interest groups.

- To accelerate structural reforms, the federal government might consider reducing the number of recipients of federal budget transfers and changing the rules of allocation of the transfers, in particular by introducing conditional transfers linked to increases in cost recovery.

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**What Affects the Propensity to Subsidize:
Determinants of Budget Subsidies and Transfers Financed by the Russian
Regional Governments in 1992-1995**

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I. Introduction

Macroeconomic analysis suggests that regional budgets in Russia have been becoming a relatively more important source of those budget subsidies and transfers that remain in the economy. While subsidies funded by the federal government were cut dramatically over 1992-95, those funded by regional authorities demonstrated the opposite trend: they increased during 1992-94 and even after a significant drop in 1995, when measured as a percent of GDP, they were still higher than in 1992. The total volume of subsidies¹ funded by regional budgets in 1995 as estimated amounted to 5.2% of GDP, while the federal government spent less than 2% of GDP for these purposes.

At the same time, recent regional developments in Russia demonstrate the large and growing variation in models of economic policy conducted by regional governments. (Lavrov, 1996b; Mau and Stupin, 1997; Polishchuk, 1996; TACIS, 1996; Vereshagin, 1996). In a situation where the federal government has a limited leverage on regional decision-making, regional policies are heavily influenced by numerous local factors, which *de facto* lead to regional experimentation with quite different (sometimes contradictory) policies and approaches to the reform process. The incidence of regional subsidies is an important indicator in such an environment because it could be considered as an informative measure of the policy priorities of particular regional governments as well as of the speed of the regional reform process in general (Balcerowicz and Gelb, 1994; Lavrov, 1996b).

The primary idea of this paper was to examine inter-regional variation in subsidy allocation and to explore the basic determinants of budget subsidies in the 87 regions of the Russian Federation for which data are available from 1992-95.² Central to the analysis has been the attempt to provide some answers to the following three questions:

- (i) How large is the variation across regions in the incidence of subsidies and what are the recent trends in such variation?
- (ii) What are the relative influences of supply and demand factors in determining the current levels of subsidization in Russian regions?
- (iii) What is the role of federal budget transfers to regions in determining the existing level of regionally-funded transfers to local enterprises?

The last issue has attracted special attention because it is closely related to debates about evolving patterns of inter-governmental fiscal relations in Russia (Wallich, 1994; Le Houerou, 1994; World Bank, 1995a). In particular, the present system of federal budget transfers to the regions suffers from many well-known problems. It has too many recipients (Dmitriev, 1996),

¹ In this paper, the term "budget subsidies" includes both conventional budget subsidies allocated to firms and various budget transfers such as investment grants and subsidized budget loans granted to the enterprise sector. However, various cash transfers allocated among households (such as child allowances) were excluded from the analysis. "Off-budget subsidies" includes various explicit forms of government support such as tax exemptions and transfers from extra-budgetary funds. The term "regional budgets" means consolidated budgets of subjects of the Russian Federation.

² Chechnya and Ingushetia are excluded from this analysis due to the absence of data for most variables.

and because of poor targeting tends to freeze but not to reduce the existing inter-regional inequality (Khurtsevich, 1996). While the major declared purpose of the federal budget transfers to regions is widely determined equalization of public consumption across the country, there is growing statistical evidence that this goal has not yet been achieved through the existing mechanisms of transfer allocation. The variation across regions in per capita after-transfer budget revenues is not significantly smaller than the variation in pre-transfer revenues, which means that transfers do not help to reduce the existing gap between wealthy and poor regions (Le Houerou, 1996).

However, aside from the equalization impact of federal transfers, there is an important issue of how the received funds are used by the receiving regions. Federal transfers to regions in Russia are not conditional and recipients are free to spend these funds along the general lines of their economic policy, including financing incremental government's interventions in local markets through price controls and compensatory subsidies and transfers to affected economic agents. Does this actually happen? To what extent are federal transfers to regions actually distortive, i.e. ultimately encourage regional governments to continue subsidization policies and to postpone liberalization of local markets?

The paper provides an overview of the general situation with regionally funded subsidies in Russia, including a discussion of overall trends, types of subsidies, sources of their financing, and peculiarities of the reporting procedures regarding subsidy incidence. The analysis presented in the paper suggests that the existing level of subsidy financing has become one of the major sources of the current fiscal pressures at the regional level as well as a major barrier to the acceleration of structural reforms. At the same time, cross-regional variation in the level of subsidization is quite high and growing, while most subsidies are counter-equalizing and allocated through inefficient channels. There is a strong correlation between subsidy incidence and regional wealth, and federal transfers to regional governments is another important determinant of regional propensity to subsidize.

The paper is structured as follows. The next section provides an overview of the general trends in regional subsidy allocation, which is followed by an analysis of the quality and reliability of the available data on subsidy disbursement. The fourth section presents the analysis of cross-regional variation in the financing of various subsidies over 1992-95. The two sections following that contain the main statistical results with respect to the regression analysis of factors determining cross-regional variation in the level of subsidization. The final section offers some conclusions.

II. Regional Subsidies: General Trends over 1992-95

Russia started transition with a higher level of government subsidies to enterprises than other countries of Eastern and Central Europe³. Since the beginning of the reforms, the federal government

³ See Balcerowicz and Gelb (1994) and Schaffer (1995). Further, at the beginning of transition the level of subsidies in the Russian economy increased, reflecting the inconsistent character of stabilization efforts. As a result, it

has made a number of attempts to improve its fiscal and enterprise policies and to impose a hard budget constraint. The results of these efforts, however, have been mixed: on the one hand, the government succeeded in drastically cutting explicit federal subsidies to enterprises; most of the previously off-budget forms of support were incorporated into the general budget, thus making the process more transparent. On the other hand, these positive steps were at least partially offset by an increase in regional transfers as well as by the failure to control distortive tax benefits and to maintain tax discipline (World Bank, 1996; Alfandari et al., 1996).

Macroeconomic analysis suggests that regional budgets in Russia have been becoming a relatively more important source of remaining fiscal subsidies and transfers. While subsidies funded by the federal government were cut dramatically over 1992-95, those funded by regional authorities demonstrated the opposite trend, increasing during 1992-94. Even after a significant drop in 1995, when measured as a percent of GDP they were still higher than in 1992.

Table 1. Federal and Regional Budget Subsidies in Russia, 1992-95, as percent of GDP.

	1992	1993	1994	1995
Total regional budget subsidies	3.38	5.53	6.19	5.23
Total federal budget subsidies	41.48	10.74	5.79	2.17

Source: World Bank (1996a), Alfandari et al. (1996), other World Bank estimates.

Regional governments expanded their subsidy financing from 3.4% of GDP in 1992 to 6.2% in 1994 and to about 5.2% in 1995 (Table 1). While in 1992 regional subsidies were equivalent to only 8% of those funded by the federal government, in 1995 regional subsidies were 2.5 times larger than federal subsidies. To a large extent, this increase took place in response to the federal government's withdrawal from funding consumer subsidies as well as in reaction to the implementation of the federal policy of cutting traditional consumer subsidies in housing and public transportation which had been provided through cross-subsidization and implicit price control. The increase in real domestic energy prices over 1993-95 brought about additional increases in the real costs of housing and public transportation (through gasoline prices), which, not being accompanied by adequate increases in cost recovery, caused additional demand for regional subsidies.

At least a part of the overall increase in regional subsidies was indirectly funded, especially in 1993-94, by the federal government both through an increase in its transfers to the regions and changes in tax-sharing arrangements (Table 2). The growth in federal transfers to the regions from 1.75% of GDP in 1992 to 2.74% and 3.84% of GDP in 1993 and 1994 respectively was accompanied by the growth in regional subsidies from 3.4% of GDP in 1992 to 6.2% of GDP in 1994. It is worth mentioning that in 1995, when actually disbursed federal transfers came down to 1.82% of GDP due to a high accumulation of federal budget arrears to regions, regional subsidies also decreased. As shown below, cross-regional analysis confirms a positive

took Russia four years to cut the share of subsidies in GDP to the same level that was achieved within the first one or two years of transformation in countries such as the Czech Republic and Poland.

correlation between federal budget transfers to regions and the volume of the regional budget transfers to local enterprises.

Table 2. Inter-government Budget Arrangements in Russia and Regional Budget Expenditure on Subsidy Programs, 1992-95

	1992	1993	1994	1995
Regional budget expenditure as % of consolidated budget expenditure	34.02	46.07	42.90	43.66
Regional budget subsidies as % of total regional expenditures	26.03	32.51	33.92	35.99
Overall regional governments' expenditures on subsidy programs, as % of GDP	3.4	5.5	6.2	5.2
Federal government budget transfers to regions, as % of GDP	1.75	2.70	3.84	1.82

Source: the World Bank

Total subsidies amounted to 36% of the regional budget expenditures.⁴ This is clearly an unsustainable level of subsidy financing. The remaining subsidies comprise the largest single source of the current crisis in regional finance. In addition, such a large degree of subsidization is highly distortive. By depressing prices in housing, agriculture, and transportation, regional governments depress corresponding market activities, which leads to large efficiency losses.

Housing, agriculture and public transportation are the sectors which received the largest amounts of subsidies explicitly funded by regional governments from their budgets (Table 3). Housing subsidies amounted to about 4% of GDP in 1994 and to more than 3.1% of GDP in 1995. They constituted on average 60-65% of the overall budgeted subsidies in 1993-95. The share of agriculture amounted to 15% of the total, and the share of transportation was 7-8%. While steadily increasing since 1994, cost recovery in housing is still on average at the level of 30-35% of actual costs, while average cost recovery in public transportation seems to be less than 50%.

⁴ This in fact underestimates the actual volume of regional subsidies because it does not include budget arrears to municipal utilities, housing maintenance organizations, as well as to other providers of subsidized goods. For instance, by the end of 1994 six cities participating in the World Bank Housing Divestiture Project accumulated in their budget arrears to local utilities and housing maintenance enterprises on average about 50% of their funded expenditures on housing subsidies (World Bank, 1996b). The case study of North Caucasus Railway reveals that the actual disbursed subsidies amounted to only 11% of the actual losses of the railway from commuter transportation, which were supposed to be fully financed by the regional administrations.

Table 3. Subsidies Financed from the Russian Regional Budgets, 1992-95, as % of GDP

	1992	1993	1994	1995
TOTAL	3.38	5.53	6.19	5.23
<i>A. Transfers to the enterprise sector</i>	1.25	1.43	1.27	0.86
A1. Budget subsidies	1.05	0.84	0.64	0.68
- Agriculture	1.05	0.78	0.60	0.68
- Others	n.a.	0.06	0.04	n.a.
A2. Budget Investment Grants	n.a.	0.29	0.27	0.18
- Agriculture	n.a.	0.29	0.27	0.18
A3. Budget Loans	0.20	0.30	0.35	0.49
<i>B. Indirect subsidies to households</i>	2.13	4.10	4.92	3.89
B1. Budget subsidies	2.13	4.05	4.87	3.80
- Housing & utilities	1.32	3.31	4.17	3.16
- Public Transportation	0.42	0.54	0.34	0.63
- Consumer goods price subsidies	0.39	0.20	0.36	n.a.
B2. Budget Investment Grants	n.a.	0.05	0.05	0.09
- Public Transportation	n.a.	0.05	0.05	0.09
Memo: Tax arrears and deferrals, annual flows	n.a.	0.76	0.74	1.14

Source: The World Bank

While regional transfers are mainly targeted at compensating producers affected by locally imposed price controls, there is some evidence that enterprises outside of the three sectors mentioned above also frequently benefit from regional government support. However, these kinds of transfers are quite badly documented. Despite the growing role of regionally funded subsidies, there are no reliable public finance statistics to clarify the structure of local spending on the enterprise sector. The growing share of regional subsidies to enterprises is either reflected in the budget items "loans" and "others" or provided from outside of the regional budget altogether. The latter includes transfers from regional extrabudgetary funds⁵, various local tax benefits, and

⁵ Serova and Melyukhina (1995) describe the Ulyanovsk model of extensive regional government price control and food rationing. The distinctive feature of the model is the existence of an informal agreement between local enterprises and the administration to comply with regional price and trade controls and provide transfers to the regional extrabudgetary fund used primarily for price subsidization.

benefits provided through preferential utility prices and rates of asset lease, etc.⁶ It is estimated from data of the State Tax Service that regional governments provided more than 1% of GDP in tax exemptions in 1995, which constitute about 20% of their funded budget subsidies (Table 3). In Tatarstan, which is probably an extreme case of regional government intervention, a case study revealed that in 1995 off-budget subsidies, i.e. the most implicit part of the overall subsidy program, exceeded 50% of those which were reflected in the budget (Table 4)⁷.

Table 4. Tatarstan: various subsidies in 1995.

	In trln. rbl.	As % of total
Subsidies from the regional budget, o/w:	3.65	64.83
-consumer	1.95	34.64
-producer	1.70	30.20
Subsidies to enterprises from regional extrabudgetary funds	1.65	29.31
Tax benefits granted to local enterprises	0.33	5.86
TOTAL	5.63	100.00

Source: the World Bank

In addition, a number of case studies suggest that the regional allocation of transfers to industrial enterprises is biased towards regionally dominating "crisis" industries and strong sectoral interest groups. For example, in Kemerovo oblast subsidies for the regional coal company Oblkemerovougol amounted to 6.6% of all expenditures in the 1996 draft oblast budget, and budgeted subsidies per ton of coal produced were higher than the average per ton federal coal subsidies provided by the federal budget (Bodnar et al., 1996). Correspondingly, there is evidence that some regions in Central Russia, depending on peculiarities of their industrial structure, provide relatively more in budget support for local textile industry (Cherniavski and Smirnov, 1994) and defense enterprises (Freinkman and Titov, 1994). At the same time, regional governments disburse very little in strategic subsidies which would be targeted at sectors with long-term comparative advantages and, in particular, there is no significant support for new private entry (Alfandari et al., 1996; Halligan et al., 1996).

All types of regional subsidies presented in this paper can be divided into two major groups. Most regional subsidies (on average about 80% of the total) are consumer focused, that

⁶ A relatively new tendency in this area is the introduction of various import restrictions, including a special sale tax on goods imported from other regions, in order to help local producers (Lavrov, 1996b). This kind of off-budget subsidies is funded through an implicit taxation of final consumers.

⁷ Halligan et al. (1996) provided detailed estimates for tax benefits granted by regional governments in Yaroslavl and Novgorod oblasts and found substantial inter-regional variation.

is, they are designed to have the local population as their major beneficiary. Producer subsidies, benefits from which supposed to remain mainly with their recipients in the enterprise sector, are less important. However, consumer subsidies in Russia are not disbursed directly to the final consumers of subsidized goods and services⁸ but instead, to local enterprises involved in provision of these goods and services. Consumer subsidies (in housing and transportation, as well as food subsidies) are received by regional companies (e.g., housing maintenance firms, bus companies, food processing plants) mainly as compensation for regionally introduced price controls over their products and services sold to households. This manner of allocating subsidies is very distortive: it actually shifts an essential portion of a nominal subsidy value from consumers to producers because it does not set the right incentives either for rationalization of consumption by households or for productivity growth by producers. In addition, such instruments of subsidy provision do not allow effective targeting and therefore are counter-equalizing⁹.

The allocation of housing subsidies by regional governments may be considered a typical example of such a distortive institutional setting. There are two main recipients of housing subsidies: local utilities and local housing maintenance companies (World Bank, 1996b). The former receive subsidies primarily for purchases of fuel, including accumulation of seasonal inventories, and for capital repair. The latter are subsidized mainly to cover differences in tariffs for heat provided by local utilities as well as for general maintenance and repair of the housing stock. In addition, a substantial part of subsidies remains implicit because they are still funded through cross-subsidization of electricity and network gas tariffs. Subsidies related to financing of provision of heat and hot water to tenants prevail in the overall budget expenditure on housing, which amounts to 60-65% of the total budgeted subsidies. The inefficient system of subsidy allocation combined with the lack of metering of utility services and with poor corporate governance and regulation of utility companies lead to the accumulation of enormous efficiency losses in the housing sector. Energy consumption in a typical Russian apartment building is 2-3 times higher than in market economies with comparable climatic conditions (Martinot, 1997). Wealthier households tend to have larger apartments and, thus, receive more in housing subsidies.

III. Comments on the Data: Peculiarities of Major Indicators, Availability, Sources

The Russian budget reporting system does not provide statistically accurate data on budgeted subsidies as a part of the overall budget spending. The budget classification in use before 1995 was based on principles quite different from those since put in place. The old classification was basically the traditional Soviet classification with small modifications and it was focused on the aggregated sectoral breakdown of total expenditures. And the data on regional spending collected by the federal Ministry of Finance did not provide sufficient information to build a detailed functional classification of budget expenditure (Freinkman and Titov, 1994). The new budget classification introduced in 1995 is based on internationally recognized principles, and, when fully implemented, will fill this informational gap. However, at the time this paper was

⁸ Through cash allowance or food stamp types of instruments.

⁹ In particular, actual beneficiaries of livestock subsidies are firms in procurement and meat processing but not livestock producers (Serova and Melyukhina, 1995).

being prepared, only preliminary data on the 1995 budget execution were available, and these were also not sufficiently detailed.

Thus, instead of precise data on regional budget spending on subsidies, the paper utilizes the available broad measures of subsidy incidence which characterize important components of the total subsidy expenditure but still do not provide comprehensive coverage of the total regional spending on these purposes. Three primary budget items were used as broad measures: national economy expenditures (the major, most informative indicator); total investments; and budget loans. National economy expenditures, as defined by the Russian budget classification in 1992-94, were expenditures on agriculture, housing, transportation, and other sectors (including food price subsidies¹⁰). While far from perfect, all of these indicators are still informative enough to reflect both major trends in regional fiscal policies and the scale of market distortions imposed by the provision of subsidies. The selection of these indicators should be considered as a reasonable compromise between a demand for more accurate measurement of fiscal processes and actual constraints associated with the undeveloped state of the Russian fiscal statistics.

The major potential distortions deriving from the analysis of these "imperfect" indicators are the following:

(i) While most of the budget spending reported under the heading "national economy" represented in fact various subsidies and transfers to corresponding sectors of the regional economy, some portion of the actual expenditures under this heading could have a different functional purpose. The most important example is probably spending on housing, which covers both housing subsidies (the dominant item) and expenditures on urban development (up to 15% of the total housing expenditures). Similarly, expenditures on agriculture include some relatively small amounts spent on administration and provision of public services to this sector (e.g. veterinary services). While by our estimates 80-85% of the total subsidized loans funded by regional governments were granted to local enterprises, the remaining part was allocated among non-commercial entities (such as universities) and therefore cannot be treated as a subsidy. Such non-subsidy components of predominantly subsidy-type expenditures may vary in their significance across the regions, which could bring about biases in statistical results.¹¹

(ii) At the same time, a portion of the overall subsidies funded by regional governments is not covered by available indicators and therefore is not reflected in this study. This is caused, first, by the fact that some newly established, less transparent forms of government financial assistance to enterprises and households are not reflected under the item "national economy" and are included in the category "other expenditures", which in 1994, the last year of the old classification, increased to 8.4% of total regional budget spending. For instance, there is some

¹⁰ Major subsidized commodities are bread, milk and meat.

¹¹ In particular, "Total investments" is the least reliable measure selected in our study because it combines all types of budget investments -- public and quasi-public investments (local infrastructure, housing, social assets) and investment grants to commercial entities. It is known that the former is substantially larger than the latter and that investment grants outside the agricultural sector have been relatively small recently. It was decided to keep this indicator in the study basically for comparative purposes, i.e. in order to figure out how, if at all, the determinants of subsidies and investments differ.

evidence that short-term budget loans to local enterprises were partially reflected in 1993-94 as "other expenditures" instead of being reported as "loans". Second, and even more importantly, some remaining forms of government assistance are deliberately excluded from the regional budget documents. The main types of these off-budget transfers are spending from extra-budgetary funds and various tax benefits, granted by local authorities¹². In addition, as mentioned earlier, the Russian budget data are reported on a cash basis, and therefore do not reflect the volume of accumulated government payables to local producers with regard to budgeted subsidies. The existing budget statistics provide neither data on accrual budget expenditure nor separate information on the accumulated stock of budget arrears.

(iii) An additional caveat regarding the data has to do with peculiarities of the Russian reporting on the federal budget transfers to regions. The existing reporting system reflects only conventional budget transfers and does not capture various regional benefits allocated through the preferential tax agreements between some of the regions and the Federal Government. As the case of Tatarstan shows, a few regions, which enjoyed a special fiscal regime within the federation, received most of their federal support through such off-budget channels.

All budgetary data used in this paper were taken from Russian Ministry of Finance sources. For all years data were deflated by regional CPIs to remove the influence of the variation in price levels in the different regions of Russia. Note, however, that some variation was already present in the regional price levels by 1991. The absence of a suitable deflator for this year makes it impossible to correct for this variation. But the fact that price controls were, by and large, still in effect in 1991 heavily restricted price variation and renders this a good base year.¹³

In 1995, after the introduction of new budget classifications, the term "national economy" was no longer in Russian Ministry of Finance usage. The term is used in this analysis in relation to 1995 for purposes of convenience and comparability to earlier years, and the "national economy" indicator for 1995 was created from reported expenditures on agriculture and fishing ("Agriculture"); housing ("Housing"); industry, energy and construction ("Industry"); and transportation, roads, communications and telecommunications ("Transportation").

A similar reclassification was done regarding the total regional budget revenues in 1995. To render this indicator comparable with those for the previous years, it was determined as the sum of pre-transfer (i.e. own) budget revenues of regional governments and the total federal transfers received. Thus, it should be noted that 1995 data are not fully comparable with those for previous years because of the different budget classifications.¹⁴

¹² And wealthier regions tend to have larger off-budget spending on subsidies and transfers (Freinkman and Titov, 1994). See also Table 4 in the previous section.

¹³ However, already in 1991 a few regions in the Far North were characterized by both a much higher price level and higher nominal wages. There are no data available to eliminate biases associated with such 1991 price differences. But the total effect of these initial distortions seems to be limited, especially in later years when accumulated price changes eroded the initial price variation across regions.

¹⁴ In addition, because the new budget classification was in use in 1995 for the first time, there was probably additional noise in the data resulting from various mistakes associated with misclassification.

In this paper total federal budget transfers to regions were defined as the sum of mutual settlements, subventions, short-term loans, and budget loans received by the regions (World Bank, 1995a). Additionally, in 1994 and 1995, grants received by the regions under the Federal Fund for the Support of the Regions (created in 1994) were included. At the very least, mutual settlements were received by all regions and thus, total transfer data exist for all regions in all years.¹⁵

All information on non-fiscal indicators derive from various Goskomstat publications. Many of them are the same used by Kitty Stewart in her study (Stewart, 1996), who kindly provided us with access to her data base. Data for the autonomous regions, which are the smallest administrative units in terms of population, are not available in the case of some variables, and for this reason sample sizes of 77 and 78 instead of 87 will be noted in some regressions. No significant differences in statistical results associated with the change in the sample size were found.

In the regressions for each year, variables from that year are used, unless otherwise indicated. In 1995, a number of social and demographic variables from 1994 were used in the absence of these data for 1995; but these would not have changed appreciably from one year to the next. The estimates for real household incomes for 1995 were calculated based on the nominal mid-year data, while for other years average annual nominal incomes were used.

Factors used in the analysis

Our analysis was focused on the identification of determinants of overall national economy expenditures as well as the components of those expenditures. In all, a total of twenty-four unique (that is, not counting twice the same type of data for different years) independent variables were examined as potential subsidy determinants in the regression analysis. These variables represent both supply-side factors characterizing the availability of financial resources in regions which potentially might be spent on subsidization, and demand, or "need" factors.¹⁶

The analysis below is based on the following descriptive model of the subsidy allocation process. Regional governments allocate subsidies according to signals and pressures exercised by local interest groups and taking into account their overall budget constraints. Our demand-side factors listed below reflect various aspects of regional intensity of the economic crisis. In other words, it is assumed that these indicators measure, first, to what extent local economic agents are affected by current economic and social difficulties (i.e. how strong is their need for help?) and, second, how intensively they pressure regional governments for budget support (i.e. how strong

¹⁵ The only exception is Bashkortostan, which did not report receiving any transfers in 1995.

¹⁶ Note that our definition of demand-side factors is different from the traditional approach used in political science, in particular, for analysis of inter-governmental fiscal relations (Stein, 1981). In such an approach, supply-side factors are primarily the objectives of the agency (e.g. the Central Government) allocating funds. At the same time, our definition of demand-side factors as characteristics of recipients' need is quite traditional.

are their demands for subsidies?). Regional governments respond to these demands based on (i) intensity of these pressures; (ii) the structure of their own preferences; and (iii) their own access to fiscal resources (budget constraints of regional governments). Our supply-side factors reflect various aspects of regional economic wealth, and therefore seems could be used as a measure of budget constraint hardness.

The variables are listed below by type. Unless otherwise noted, all ruble-denominated indicators used in the regressions were per capita in 1991 prices.

Supply-side factors

Economic variables

1. Pre-transfer budget revenue
2. Federal budget transfers
 - of which: 3. Mutual settlements
 4. Subventions
 5. Federal Fund for Regional Support (in 1994-95)

Social variables

6. Household gross money income
7. Doctors per 10,000 population
8. Hospital beds per 10,000 population
9. Car ownership (cars per 1,000 population)

Demand-side factors

Economic variables

10. Wage-arrears per worker (end of 1993 data used in 1993-95 regressions)
11. Index of real industrial output (as % of 1990 level)
12. Loss-making enterprises (% of registered enterprises in major sectors, 1994 data only)
13. Loss-making enterprises in industry (% of registered enterprises in industry, 1994 data only)
14. Unemployment level (registered unemployed as % of labor force)
15. Percentage of national income obtaining to industry (1992 data only)
16. Index of meat production (proxy for overall decline in the agricultural sector, as % of 1991 level)

Social and other non-monetary variables

17. Life expectancy (years)
18. School children per 1,000 population

19. Population of retirement age (% of population, 1993 data only)
20. Poverty headcount (% of population below regional poverty level, 1994 data only)
21. Crime rate (registered criminal offenses per 100,000 population)
22. Population density (1,000 population per square kilometer, 1994 data only)
23. Percent of total population living in rural locations (1994 data only)
24. Percent of industrial workers working in poor working conditions (1994 data only)

This list of potential determinants is far from complete. In particular, we did not have access to and so did not use two important groups of indicators which reflect variation: the regional political environment and the impact of economic geography factors such as location¹⁷. This may be an important area for further research, which could explore, for instance, the links between the regional expenditure policy and local political dynamics. Over the years of reforms, Russia became quite politically heterogeneous with remarkable spatial variation in electoral preferences (Clem and Craumer, 1995; Gambaryan and Mau, 1997). Lavrov (1996a) provides an analysis of another important dimension of regional political setting -- the degree of centralization within regional budget systems. He found a positive correlation between the incidence of regional subsidies and the degree of centralization of regional finance in the hands of regional governments (as opposed to municipal and rayon governments). This phenomenon has a straightforward interpretation. Social and other basic public expenditures are funded in Russia mainly from local budgets (i.e. by municipal and rayon governments). Regional (i.e. provincial) budget expenditures are mainly focused on dealing with issues of special priority and regional importance. In the Russian political context, this often means the provision of budget support to major regional enterprises or to the most influential local interest groups, i.e. allocation of subsidies in the general sense. When more funds are concentrated at the regional level (i.e. the consolidated regional budget is more centralized), then, all other factors equal, the share of subsidies in total expenditures goes up.¹⁸

IV. Major Trends in National Economy Expenditure of Regional Budgets

A look at the dynamic processes in budgetary revenues and expenditures in the years 1992-95 as well as some other variables will set the stage for the regression analysis of the data.

Table 5 shows trends in average per capita national economy spending and per capita total expenditures of regional budgets. Both categories (the former a subset of the latter) peaked in 1993, after which both declined in 1994 and 1995, for a total decline over the period 1992-95 of 15-18%. The decline from the peak year, 1993, to the low year, 1995, was 32% for both national economy and total expenditures. As a percentage of total expenditures, per capita national economy expenditures have held steady at about 42-44%.

¹⁷ Polishchuk (1996) suggests that economic geography is an important determinant of regional governments' attitude to the reform process.

¹⁸ This finding seems to be consistent with international experience. Thus, Davoodi and Zou (1996) found that in developing countries fiscal decentralization has a positive impact on economic growth when it brought about as a result of smaller state (provincial) government and larger local government.

This decline in real spending should not be misinterpreted. It is estimated that Russian GDP dropped by 40% over 1991-1995. Thus, when measured as a percent of GDP, regional budget expenditures in 1995 were still above their 1991 level. And given the much higher rate of decline in federal budget expenditures, it is worth noting that in 1995 Russian regions controlled a higher share of the consolidated budget than in 1992, which reflects a dramatic fiscal decentralization in Russia that took place over 1991-1994 (World Bank, 1995a).¹⁹

The individual components of the national economy expenditures show widely varying trends over time. Food subsidies (never a large percentage of the total) were given by fewer and fewer regions from one year to the next, and for 1995 no food subsidy data were reported in the budget. The single largest category of expenditure, housing, dropped by 24%, that is, less than overall national economy expenditures in the period 1993-95 (thus, from 1993 to 1995 housing expenditures as a percentage of national economy expenditures increased from 56% to 62%.) The 34% decline in agricultural subsidies from 1993-95 matched the decline in overall national economy expenditures in that period, while transportation rose slightly from 1993 to 1995 (albeit with a dip in 1994), and the category "other", representing mainly subsidies to industry, energy and construction, declined by 59% from 1993 to 1995 (recall, however, the qualification to the comparability of 1993 and 1994 data with those of 1995.)

Per capita investment in the Russian Federation dropped on average by 33% in real terms over the period 1992-1995, while loans to enterprises remained basically unchanged, while constituting a relatively small part of overall expenditures.

The relative declines in per capita total budget revenue were greater than for total budget expenditures. As a result, the regional budget surplus, which was quite large in 1992, almost disappeared. From 1992-95, pre-transfer revenue dropped by about 27% on average across the country, and average transfers declined by 28%. Transfers dropped by 2.3 times in 1995 after three years of growth.

The only non-budgetary category shown in Table 5, household income, is also the only category that has steadily grown in real terms from one year to the next, rising by 48% from 1992 to 1995²⁰, which reflects the gradual recovery of household incomes after their dramatic decline in 1992 following price liberalization.

¹⁹ In fact that trend stopped in 1995, when the relative share of local budgets dropped compared to 1994 mainly due to a drastic decline in federal transfers to the regions. See also Table 2 in the previous section.

²⁰ There are some inconsistencies between reported trends in household incomes in Table 1 and those in traditional statistical reports by Goskomstat. The difference is the largest for the change from 1992 to 1993. Table 5 suggests that real incomes increased by 22% while regular Goskomstat publications report a 10% increase. This difference should be attributed to some inconsistencies between Goskomstat's reports on regional CPI and regional nominal incomes and their aggregate national equivalents, which reflects general weaknesses of the existing Russia income statistics and underlying household surveys (World Bank, 1995b)

Table 5. Per Capita Regional Budget Expenditures and Revenues, and Per Capita Household Incomes 1992-95, in 1991 Rubles (Weighted by Regional Population Averages for the Russian Federation). All Variables Deflated By Annual Regional CPIs

	1992	1993	1994	1995
I. Total budget expenditures	1,171	1,402	1,347	959
- National economy	502	623	563	425
Housing	--	346	364	262
Agriculture	--	96	84	63
Transportation	--	55	40	54
Other (93/94)/Industry	--	113	73	45
(95)				
Food	39	17	5	--
National economy as % of total expenditures	43	44	42	44
- Total Investment	189	226	186	139
as % of total expenditures	16	16	14	14
- Budget loans*	38	47	32	38
as % of total expenditures	3	3	2	4
II. Total budget revenue**	1,379	1,510	1,418	1,004
- Pre-transfer revenue	1,212	1,286	1,131	884
- Federal transfers	168	220	276	121
III. Household gross money incomes	3,443	4,190	4,644	5,096

* For budget loans, reported data from the regions are likely to be incomplete, with data for more and more regions reported each year.

** In 1993 and 1994 total revenue as reported here is slightly higher than the sum of pre-transfer revenue and federal transfers because the calculation for transfers did not include some minor items (such as commercial bank loans) that are captured in the total revenue.

The data also give a sense of the relative size of Russian regional budgets compared to monetary incomes of the Russian population. In per capita terms, regional governments spent in 1992-93 the equivalent of one third of per capita household income. This ratio fell to one fifth by 1995 due to the simultaneous recovery in personal incomes and the squeeze in regional budgets.

The coefficient of variation (the standard deviation relative to the mean) was used as an indicator of the degree of the cross-regional variability in the variables (Table 6).

Table 6. Coefficients of Variation for Selected Variables

	1992	1993	1994	1995
I. Total budget expenditures	.80	.68	.99	.94
- National economy expenditures	.86	.65	1.10	1.09
Housing	--	.99	1.39	1.14
Agriculture	--	.67	.61	.71
Transportation	--	.69	.92	.90
Other (93/94)/Industry (95)	--	.71	1.33	2.84
Food	.91	1.37	2.47	n.a.
- Total investment	.92	.75	1.21	1.51
- Budget loans	1.64	1.34	2.68	4.16
II. Total budget revenue	.97	.67	1.02	.98
- Pre-transfer revenue	.94	.76	.97	1.08
- Transfers	2.20	1.60	1.90	1.91
III. Household incomes	.54	.51	.57	.73

-- means data are not available for these categories in 1992. "n.a." means not applicable.

Table 6 shows a growing disparity across regions in per capita national economy expenditures. This means that the overall decline in these expenditures seen in Table 5 is not tending to equalize differences between regions. On the contrary, the decline has led to greater inequality. This tendency is also evident in total expenditures but to a lesser degree, suggesting the greater sensitivity to changes in a region's overall fiscal situation of national economy expenditures within overall expenditures.

Table 6 presents results complementary to those observed in earlier studies (Stewart, 1995; Rutkowski, 1996): as a rule, budget social expenditures by Russian regions are much less elastic than expenditures on national economy.²¹ Budget social spending (including those on health and education) are treated as priority items and are more protected against various fiscal strains, while spending on national economy are treated as "less important" goods, with the real level of spending being more flexible in response to changes in the local budget situation.

Of note in Table 6 is the high degree of variability over the period in the coefficients of variation of national economy expenditures themselves. As noted above, the decline in housing subsidies (by far the largest individual component part of national economy expenditures) on

²¹ The similar coefficient of variation for budget health expenditures in 1994 amounted to 0.80, and for education expenditures, 0.92 (Stewart, 1995). It is worth noting that Russian annual budget laws, as a rule, determine some types of budget expenditures as protected, which requires regional governments to give them some priority in budgetary allocations. A larger part of overall budget social spending falls under the definition of such protected expenditures. While *de facto* the federal government does not have real power to force regional governments to follow such established priorities, it appears that regional administrations are quite keen on prioritizing their social liabilities versus those in the area of national expenditures.

average across the Russian Federation from 1993 to 1995 was slightly less than the average decline in national economy expenditures. But in this same period, the coefficient of variation of this spending jumped from 1993 to 1994, and then came down slightly from 1994 to 1995 at which point it was still higher than the 1993 level. This means that the national average for housing expenditures viewed over time is relatively more “misleading” than, say, the national average for agricultural subsidies, because it conceals greater variation in the individual regions. This suggests the greater discretion that regions have in subsidizing housing in Russia.

In sharp contrast to housing and other categories, subsidies to agriculture show relatively low variability from a static point of view (as evidenced by low coefficients of variability in each year), which in the dynamic context indicates a stability in the distribution of agricultural subsidies across regions, suggesting their low susceptibility to forces of change. This indicates the existence across the country of entrenched interests which have been successful at maintaining a stable path of support for agriculture--the sector that has resisted reforms more successfully than any other sector in the Russian economy.

The categories “Other sectors” (1993 and 1994) and “Industry” (1995) also show a large jump from 1993 to 1994 which is continued on into 1995. Recall that real per capita spending on these sectors dropped by 59% from 1993 to 1995; the ever-increasing coefficient of variation suggests that it has *not* been the relatively high-spending regions who have brought their expenditures down towards the average but rather, that the average national drop has been caused by expenditures in the majority of the regions that were average or below-average spenders before.

The extremely high coefficient of variation in subsidies to food producers in 1994 represents the “dying gasps” of this sort of subsidies: as more and more regions phased out price controls and stopped providing these subsidies, a few persisted in supporting the prices of basic foodstuffs, and therefore the real range of subsidies was great (Berkowitz et al., 1996).

Budget loans demonstrate a high initial degree of variability that increases greatly over the period at the same time that the per capita average for budget loans remained intact, in opposition to the general trend. The large coefficients of variation reflect the extremely high per capita expenditures of this sort (and, to a lesser degree, on investment) that characterizes some small, autonomous regions in Russia. If the Chukotsky, Koryaksky and Yamalo-Nenetsky autonomous regions are removed from the analysis, the coefficients of variation for the years 1992-1995 change to 1.53, 1.37, 0.93 and 0.99 respectively, which shows the reverse trend towards equalization across most of Russia’s regions.

Table 6 also provides some important insights into the patterns with which federal transfers to regions are allocated. The variation in pre-transfer regional revenue and federal transfer revenue follows the same pattern over the years, although the relative starting points are somewhat different. In both cases, the coefficients of variation show a large drop from 1992 to 1993 (thus, a move towards equalization) and then increase in 1994 to the levels similar to those in 1992. But in and of themselves, these two parts of total revenue say nothing about how the

federal transfers to regions are distributed, that is, whether truly needy regions receive them. For this, the coefficient of variation for total regional revenue is the better guide. It, too, shows a large drop from 1992 to 1993, an even larger increase in 1994 and some decline in 1995, at which point it is not much different from its 1992 level.

The comparison of the coefficients of variation for pre-transfer and total (i.e. post-transfer) revenues reflects the degree of equalization effected by the federal transfers. It indicates that in two years, 1993 and 1995, an only slight move towards equalization resulted from federal transfers, while in 1992 and 1994 transfers were counter-equalizing--cross-regional budget inequality was greater after the allocation of transfers than before.

Tables 7 and 8 present the regions with the largest and lowest subsidy levels as reflected by their reported budget expenditures on national economy and on housing. The variation is striking. Even when controlling for most of the differences associated with regional price variation, the differential between the top and bottom regions amounts to 900%, while shares of budget expenditure spent on national economy varied from 14% to 61% of the total in 1995. The tables suggest that among regions with the lowest subsidy spending one could find a number of regions which are the most rural as measured both by the share of rural population and the role of agriculture in the local economy. At the same time, most regions which are at the top of the list are the most urbanized and industrially developed territories.

V. Impact of Federal Budget Transfers on Regional Subsidy Spending: Regression Results

This section focuses on the analysis of the impact of federal budget transfers on regional budgetary policy. What we are trying to clarify here is how, if at all, the federal money influences regional governments' relative expenditure preferences, and on what purposes, given the fungibility of money, federally transfers have been spent. We address these questions by analyzing three types of links: (i) between the levels of per capita federal transfers and per capita regional spending on subsidies; (ii) between the share of federal transfers in total regional budget financing and the level of regional subsidy spending, and (iii) between the level of federal transfers and the share of subsidy spending in total regional expenditures.

Before discussing the regression results, two general principles which have been used for designing these simple statistical models merit mention.

- Controlling for income variation. Given the large cross-regional disparity in incomes and the positive elasticity of most public expenditures relative to income, it was expected that variables reflecting variation in regional income would be highly significant and could interfere with the influence of other factors, including that of federal transfers. Thus, to obtain accurate estimates of the impact of other factors it was decided to control for income variation (measured by own (pre-transfer) budget revenues).

- No weighting. Despite the fact that Russian regions vary substantially by size and economic potential, the analysis below does not attempt to eliminate these scale differences by any type of regional weights. Instead, the underlying assumption of the models was that all regional governments are similar independent decision-making units which determine their budget expenditure allocations according to the combined local impact of identical supply and demand factors.

V.1. Relationship between the level of received transfers and the amount of subsidy spending.

In all years, a high degree of the variation in total national economy expenditures and in their major components can be explained by two variables on the supply side: pre-transfer regional revenue and received federal transfers. This means that fiscally wealthier regions and regions receiving more federal transfers spent more on national economy items. Table 9 gives β coefficients, t-stats, constants and adjusted R^2 values for the two-variable regressions in each year for the total national economy expenditures²².

Table 9. National Economy Regression Results, Primary Supply Factors, 1992-95 (OLS estimates here and in all following tables, t-stats are in brackets)

	1992*	1993	1994	1995**
	(N=86)	(N=87)	(N=87)	(N=86)
Pre-transfer regional revenue	.368 (27.9)	.389 (21.5)	.396 (21.2)	.440 (29.5)
Federal transfers	.1364 (7.7)	.2846 (14.9)	.362 (20.2)	.308 (12.0)
Constant	34.3 ???	36.07 (1.2)	-43.4 (-1.5)	-30.8 (-1.6)
Adjusted R²	.91	.87	.92	.93

*Excluding Koryaksky AO.

**Here and in the following tables, Bashkortostan not included due to non-receipt of transfers in 1995.

The results in Table 9 could be expected to some extent from both statistical and substantive considerations. On the statistical side, it did not come as a surprise that the correlation between the level of pre-transfer revenues and the level of expenditures on the national economy is very strong, because of some degree of collinearity in these indicators. Given that regional budgets are balanced on the basis of cash (i.e., total revenues are very close to total expenditures for all years and all regions), and both pre-transfer revenues and national economy expenditures constitute a substantial portion of total revenues and expenditures respectively, it should be expected that these two indicators are correlated. The real news here is that, when controlled for variation in pre-transfer revenues, there is a strong positive correlation between the levels of federal transfers and regional subsidization.

It is also not very surprising to see that the correlation between these variables is positive.

²² In this and other tables outliers have been defined as those regions whose inclusion causes the coefficient of variation to rise above 2.0, and they have been excluded in all regressions.

Table 7. Regions with highest and lowest shares of budget subsidies per capita. Data from 1995 budgets, in 1991 rubles.							
Lowest shares of Nat. economy expenditures				Highest shares of Nat. economy expenditures			
1	Taymyrskiy AO	13.88		1	Moskovskaya oblast	61.06	
2	Nenetskiy AO	19.80		2	Khanty-Mansiyskiy AO	54.75	
3	Aginskiy Buryatskiy AO	21.34		3	Kamchatskaya oblast	54.46	
4	Komi-Permyatskaya AO	23.05		4	Khabarovskiy krai	49.69	
5	Tuva republic	23.15		5	Yamalo-Nenetskaya rep.	49.61	
6	Adygeya republic	23.35		6	Magadanskaya oblast	48.66	
7	Chitinskaya oblast	23.76		7	Tatarstan republic	48.24	
8	Gorniy Altay republic	23.82		8	Primorskiy krai	47.21	
9	Kalmykia republic	24.54		9	St. Petersburg	46.23	
10	Ust-Ordynskiy Buryat. AO	25.09		10	Moscow	45.91	
Lowest shares of Housing expenditures				Highest shares of Housing expenditures			
1	Komi-Permyatskaya AO	8.76		1	Moskovskaya oblast	49.12	
2	Nenetskiy AO	9.36		2	Yamalo-Nenetskaya rep.	41.29	
3	Taymyrskiy AO	10.51		3	Khanty-Mansiyskiy AO	40.07	
4	Kalmykia republic	11.99		4	Leningradskaya oblast	36.14	
5	Mordovia republic	12.64		5	Evenkiyskiy AO	36.10	
6	Novosibirskaya oblast	12.76		6	Moscow	34.50	
7	Chitinskaya oblast	13.19		7	Buryatia republic	32.31	
8	Aginskiy Buryatskiy AO	13.31		8	Komi republic	32.30	
9	Tuva republic	13.55		9	Primorskiy krai	31.07	
10	Adygeya republic	13.92		10	Kostromskaya oblast	30.88	

Table 8. Regions with highest and lowest levels of budget subsidies per capita. Data from 1995 budgets, in 1991 rubles				
Lowest levels of Nat. economy expenditures		Highest levels of Nat. economy expenditures		
1	Aginskiy Buryatskiy AO	75.97	1 Magadanskaya oblast	2860.78
2	Adygeya republic	94.64	2 St.Petersburg	2104.11
3	Kalmykia republic	95.94	3 Chukotskaya AO	1934.57
4	Chitinskaya oblast	123.96	4 Evenkiyskiy AO	1566.02
5	Northern Osetia rep.	125.01	5 Moskovskaya oblast	1403.18
6	Dagestan republic	125.17	6 Yamalo-Nenetskaya rep.	1278.93
7	Mordovia republic	141.75	7 Koryakskiy auton. okrug	1201.57
8	Vladimirskaya oblast	145.87	8 Sakha (Yakutia) republic	1157.37
9	Ust-Ordynskiy Buryat. AO	149.79	9 Komi republic	701.09
10	Komi-Permyatskaya AO	153.09	10 Tyumenskaya oblast	695.51
Lowest levels of Housing expenditures		Highest levels of Housing expenditures		
1	Kalmykia republic	46.85	1 Evenkiyskiy AO	1410.31
2	Aginskiy Buryatskiy AO	47.38	2 Chukotskaya AO	1369.66
3	Adygeya republic	56.41	3 Moskovskaya oblast	1128.76
4	Komi-Permyatskaya AO	58.20	4 St.Petersburg	1124.17
5	Mordovia republic	62.00	5 Yamalo-Nenetskaya rep.	1064.47
6	Chitinskaya oblast	68.84	6 Magadanskaya oblast	1050.71
7	Dagestan republic	75.04	7 Koryakskiy auton. okrug	955.90
8	Northern Osetia rep.	77.76	8 Komi republic	533.36
9	Tambovskaya oblast	78.56	9 Sakha (Yakutia) republic	500.70
10	Kirovskaya oblast	84.13	10 Khanty-Mansiyskiy AO	436.26

There is no reason to think that regional expenditures on subsidies should have a negative income elasticity, and therefore, with more funds being available (as measured by an increase in both pre-transfer revenues and transfers), budget subsidy spending should be expected to grow. However, this consideration does not explain why such an elasticity is in fact so high and substantially exceeds the similar income elasticity for social budget expenditures (see also Stewart, 1995).

The increase in transfers' contribution to national economy expenditures from 1992 to 1993, and then again from 1993 to 1994 (evidenced by the increase in the β coefficients) should be interpreted to mean that in 1994 a much larger portion of every ruble granted in federal transfers to regions was spent by recipients for funding various subsidies. In both absolute terms and relative to the contribution made by pre-transfer revenue, transfers' contribution is greatest in 1994. In 1994, regions received in federal transfers Rb 276 per capita (in 1991 prices) on average. The regression suggests that such a level of transfers led to national economy expenditures amounting to about Rb 100 per capita ($0.362 \cdot 276$), which constitutes 18% of the average regional spending for this purpose. The growing relative contribution of transfers in 1992-94 helps provide more insights into the trends in total national economy spending over the period. In particular, even though pre-transfer revenues fell in 1994 by 12.1%, the impact of this fall on national economy spending was a more moderate decline of 9.6% due to the larger compensatory role of increased federal transfers. Federal transfer contribution fell in 1995 to compare to 1994 but it still remained higher than in 1992-93.

Tables 10 and 11 show β coefficients from the two-variable regressions similar to that one presented in Table 9 for the whole sample of indicators of local subsidy spending -- national economy and its component accounts, total investment and budget loans. Taken together they demonstrate the relative dynamics of these two major determinants of expenditures in the years 1992-1995 when there is no control for other factors.

Of these two independent variables, pre-transfer revenue made a much larger absolute contribution in all years, although its relative position varies and is at its weakest in 1994. The contribution of federal transfers relative to pre-transfer revenue grows from 1992 to 1994, dropping slightly in 1995.

Of the various components of national economy expenditures, housing receives the lion's share of the contributions of both pre-transfer revenue and transfers, absorbing almost all of transfers' contributions to national economy expenditures by 1995, which means that in that year transfers had next to no effect on subsidies to agriculture and transportation. However, federal transfers were significant determinants (when controlled for variation in own revenues) of expenditures on other industries (in 1993-95), agriculture (1993-94), transportation (1994), food (1994) and of investment spending (in 1992-94).

Table 10. β coefficients for Pre-Transfer Regional Revenue, 1992-1995 (significant results)

	1992	1993	1994	1995
National economy (total)	(N=86) .368	(N=87) .389	(N=87) .396	(N=86) .440
Housing	n.a.	(N=87) .270	(N=87) .259	(N=86) .217
Agriculture	n.a.	(N=87) --	(N=87) .015	(N=86) .013
Transportation	n.a.	(N=83) .026	(N=85) .022	(N=85) .030
Other (93/94)/Industry (95)	n.a.	(N=86) .074	(N=86) .093	(N=85) .107
Food	(N=86) .011	(N=84) .010	(N=65) .005	n.a.
Total investment	(N=86) .125	(N=86) .153	(N=87) .157	(N=78) .199
Budget loans	(N=46) .04	(N=63) .033	(N=67) --	(N=73) .060

"n.a." means "not applicable." "--" means results were not significant.

Table 11. β Coefficients for Federal Transfers, 1992-1995 (significant results)

	1992	1993	1994	1995
National economy (total)	.136	.284	.362	.308
Housing	n.a.	.240	.295	.298
Agriculture	n.a.	.02	.015	--
Transportation	n.a.	--	.008	-.012
Other (93/94)/Industry (95)	n.a.	.025	.038	.040
Food	--	--	.003	n.a.
Total investment	.054	.063	.031	--
Budget loans	--	--	--	--

"n.a." means "not applicable." "--" means results were not significant. The number of observations is the same as in corresponding regressions in Table 10.

The statistical results in this section suggest that federal transfers have a significant negative impact on regional economic policies. A substantial portion of federal funds (30-40% of all disbursed transfers) is spent by the recipients on financing various local subsidy programs, primarily in housing. In this respect, the existing mechanisms of transfer allocation seems to be quite harmful for the reform process: they help regional governments to delay restructuring in their expenditure policy and thus delay implementation of major structural reforms promoted by the federal government.

At the same time, given the existing structure of federal transfer programs, one could expect that the correlation between federal transfers and regional expenditure on agriculture would be much stronger and the contribution of federal transfers in determining the level of agricultural expenditure would be much larger than those we found. The federal government has continued to run substantial (and quite inefficient) subsidy programs in agriculture (Mudahar and Sahota, 1996), which are funded by direct federal transfers to regional budgets through the so-called system of "mutual settlements". *De jure*, the mutual settlements constitute the categorical transfers that are supposed to be spent by recipients on purposes determined by the federal government. However, *de facto*, the programs are fully administered by regional governments, as federal authorities have been exercising very little supervision over actual use of disbursed funds.

In particular, the program of agricultural subsidies is the largest single item of mutual settlement flows, and it amounted to Rb 3.5 trln or 0.55% of GDP in 1994.²³ This constituted 15.5% of the overall amount of federal transfers to regions and amounted to 54% of the reported regional budget expenditures on agriculture. Thus, one could expect that the level of total federal transfers to regions would have a substantial impact on their agricultural spending, and the corresponding β coefficients in the Table 11 would be close to 0.08 ($15.5 \cdot 0.54$). That is, 8 kopecks of every ruble received in federal transfers would be spent on agriculture. In fact, the actual coefficient is much smaller -- 0.015 in 1994. Overall, the influence of the federal transfers and other economic indicators on agricultural expenditure is quite marginal (see below). Actual agricultural spending is substantially different from the amounts of received federal transfers designated for agricultural subsidies. In many regions, actual spending on the sector is more than twice higher than the amount of transfers, while 24 regions spent on agriculture less than they received through targeted agricultural transfers, i.e. they redistributed federal money to other purposes according to their expenditure preferences.

The example of federal transfers targeted for agriculture demonstrates another deficiency of the existing system of federal transfers. The system not only prevents from a much needed acceleration in regional reforms, but it did not help the federal government to protect its own expenditure priorities either.

The overall picture regarding the impact of the federal transfers is very unfavorable for the federal government. While transfers to regions are quite expensive and remain one of the

²³ 1994 is the only year for which we have access to the very detailed data on the structure of the federal programs funded through the mechanism of the mutual settlements.

major expenditure items in the federal budget, the federal government managed to “buy” surprisingly little with this money. At the same time, regional governments, despite their heavy dependence on federal assistance, face neither serious pressure for fiscal adjustment nor efficient control over the use of received funds. This provides additional arguments for the earlier proposal that due to its scale and low efficiency, substantial cuts in the overall size of the federal transfer program should be desirable and such cuts are in fact a major potential source of federal budget savings (Dmitriev, 1996).

V.2. Dependence on federal transfers and regional subsidies.

In this section we measure the impact of the overall dependence on federal transfers on the regional propensity to subsidize. While the results in the previous section suggest that the absolute per capita level of received transfers is an important determinant of subsidization, it seems justifiable to expand the analysis in order to explore the role of the relative importance of federal transfers as a source of funding for regional governments. We consider the ratio of total federal transfers and total regional budget expenditures as an indicator of regional dependence on federal transfers. This indicator was used in two-factor regressions similar to those presented in Tables 10 and 11. Thus, the impact of regional dependence was measured in the same way as in the previous section, when variation in own (pre-transfer) regional revenues is controlled for.

On average, Russian regions funded from federal transfers 13-14% of their total expenditures in 1992-93 and in 1995. In 1994, this share jumped to about 20%. However, beyond these average numbers, the variation in the dependence level is high. For example, in 1994 while eight regions received in transfers amounts less than 10% of their total expenditures, the 15 most dependent regions funded more than half of their expenditures with transfers.

Table 12 below contains significant results only. They suggest that regional dependence on federal support is also a substantial determinant of the regional expenditure policy with the structure of significant links similar to those in Table 11. Among particular subsidy indicators, the link is quite sustainable for housing subsidies and expenditures on “other industries”, and also for total investments (for 1992-94). It is worth mentioning that quantitatively the impact of federal transfers in these regressions is quite large. Let us consider 1994, when the impact was the most profound. For the average Russian region, federal transfers provided funding for about 20% of total regional expenditures. According to the regression, an increase in this share up to 40% would result in the growth of national economy spending by 208 ($20 \cdot 10.4$) ruble per capita (in 1991 prices), which constitutes 35% of the average level of regional spending on national economy in 1994.

Again, the results seem to indicate that the federal transfer policy in Russia has quite a negative impact on the reform process at the regional level. More dependent regions tend to spend more on subsidies, which means that the main beneficiaries of federal transfers are those regions which (when the impact of income variation is eliminated) have a higher level of subsidization and therefore those which have a slower rate of reform and less compliance with federal economic policies. The federal government eventually encourages “bad performers” with

relatively more transfers, and therefore creates perverse incentives for regional governments.

This result is unexpected when evaluated based on common sense: it seems controversial for the federal government to run a major budget program whose major beneficiaries are the main offenders of the federal policy. At the same time, the results seems to be similar to those received by Treisman (1997): the allocation of federal transfers in Russia is heavily biased towards the regions which are in deep political confrontation with the federal government. The main recipients of federal funds are the most politically conservative regions. Because political conservatism in Russia is closely related with conservative economic policies, then it is less surprising that we found transfers being concentrated in regions with extensive subsidy programs.

The concentration of transfers in regions with the most distortive policies could increase potential gains for the reform process through the introduction of conditionality in federal transfer mechanisms. More dependent regions could not afford to lose federal transfers, and thus it may be expected that such regions could become more sensitive to federal guidance and could be eager to adjust their policies if non-compliance were to carry the risk of a fiscal loss.

Table 12. β -Coefficients for the Variable "Total Federal Transfers as Percent of Total Regional Expenditures". Controlled for the level of pre-transfer budget revenues. Significant results only.

	1992	1993	1994	1995
National Economy (total)	4.071	7.05	10.40	4.46
Housing	n.a.	5.52	8.01	3.59
Agriculture	n.a.	--	--	--
Transportation	n.a.	--	--	-0.369
Other (93/94)/Industry (95)	n.a.	1.22	1.79	1.56
Food	--	--	0.113	n.a.
Total Investments	2.04	2.27	1.46	--
Budget Loans	--	--	2.68	4.09

V.3. Impact of federal transfers on the structure of regional budget spending.

This section addresses the question which could be considered symmetrical to the problem in the section V.2: what is the impact of the level of federal transfers on the share of subsidies in total regional expenditures? Again, we control for the variation in own budget revenues.

The results for this set of regressions are presented in Table 13. They suggest that the level of transfers has a sustainable negative impact on the shares of the following expenditure items: agriculture, transportation, and investments. The share of housing expenditure is not correlated with the level of transfers received, and for the total expenditures on national economy a statistically significant impact could be identified only for 1992-93.

Table 13. β -Coefficients for the Variable "Per Capita Level of Total Federal Transfers", in thousands of Rbl. Independent variables: shares of corresponding expenditures items in total expenditures. Controlled for the level of pre-transfer budget revenues. Significant results only.

	1992	1993	1994	1995
National Economy (total)	-3.80	-3.75	--	--
Housing	n.a.	--	--	--
Agriculture	n.a.	-1.32	-0.781	-2.00
Transportation	n.a.	-1.38	-0.440	-1.77
Other (93/94)/Industry (95)	n.a.	-1.40	--	--
Food	--	--	--	n.a.
Total Investments	--	-1.82	-1.000	-2.96
Budget Loans	--	--	0.712	5.84

The negative sign for the corresponding coefficients should be interpreted to mean that the share of transfers spent on subsidies is smaller than the share of own regional revenues spent on these purposes. Federal transfers are partially spent on subsidization and therefore they expand the overall amount of regional expenditures on subsidies (positive regression coefficients in Table 11). However, when recipients allocate transfers between various expenditure categories, they spend relatively less on subsidies than when they spend their own budget money (pre-transfer revenues).

At the same time, the quantitative effect of such a negative correlation is relatively weak. In 1993, federal transfers of Rbl 1000 per capita would reduce the share on total regional expenditures spent on national economy by less than 4%. The actual average federal transfer in 1993 amounted to Rbl 220 per capita, i.e. it could decrease the share by less than 1% in a situation where the average region spent 44% of its expenditures on national economy.

VI. Other Determinants of Regional Subsidy Spending

This section provides further analysis of subsidy determinants using multivariate regressions. In what follows, we expand the two-factor regressions reflected in Tables 9-11 to explore the impact of various demand and supply factors listed in section III. Tables 14-21 show results only for significant variables.

VI.1. National Economy

Multivariate regressions for each year as described in Table 14 below tell a story very similar to those in Table 9. Few demand factors prove to be significant in the different years under analysis; in all years by far the most significant explanatory variables remain pre-transfer regional revenue and federal transfer revenue. Moreover, demand, or need, factors (such as per

worker wage arrears) tend to show inverse relations, as evidenced by the negative value of the β coefficients. This is the logical complement of the direct relationship of the supply-side factors: the presence of greater need in a region tends to lead to a reduction in national economy expenditures, not the increase one might expect to meet those needs.

Table 14. National Economy Expenditures, Multivariable Regression Results, 1992-95

	1992* (N=86)	1993 (N=78)	1994 (N=78)	1995 (N=86)
Pre-transfer regional revenue	.367 (28.4)	.351 (10.6)	.386 (16.3)	.391 (22.4)
Federal transfers	.140 (8.1)	.269 (8.5)	.293 (16.2)	.244 (8.9)
Household incomes		.030 (2.5)	.030 (4.1)	.022 (4.4)
Doctors per 10,000	3.32 (2.2)		3.66 (3.2)	
Wage arrears (1993 data)		-.311 (-2.0)	-.449 (-3.4)	
Constant	-104.6 (-1.6)	4.44 (.16)	-230.47 (-4.8)	-81.0 (-3.9)
Adjusted R²	.92	.86	.96	.94

*Excluding Koryaksky AO.

The most obvious observation from Table 14 is that the inclusion of additional variables in the regressions does not unambiguously improve their explanatory force relative to the two-variable regressions in Table 9, as indicated by the adjusted R² values.²⁵

Of note in both Tables 9 and 14 is the stability of pre-transfer regional revenues as a determinant of national economy expenditures, as demonstrated by the β coefficients: holding all else constant, for every extra 1991 ruble of pre-transfer revenue, regions spent an additional 0.37-0.44 rubles on national economy expenditures in the period 1992-95 in the Table 9 regressions, and analogously, 0.35-0.39 rubles in the Table 14 regressions.

VI.2. Housing

The explanatory power of the two-variable regressions used to explain overall national

²⁴ In order to effect the transition from the two-variable regressions in Table 9 to the multivariable regressions in Table 14, all of the independent variables under examination were added one at a time to the two-variable regressions. Significant results for the third variable then led to that variable being used in a three-variable regression, to which fourth variables were added one at a time, and so on. This process was stopped when no addition of an independent variable resulted in significant results for that variable.

²⁵ For some of the independent variables in the Table 14 regressions data were not available for all regions, leading to the drop in both the number of observation (N) and the adjusted R² in 1993 in the Table 14 regressions relative to Table 9.

economy expenditures varies greatly when the component parts of national economy expenditures are examined. Following in each section are the regressions that had the highest explanatory force as measured by the adjusted R^2 values.

In all years on average in the Russian Federation, subsidies to housing constituted by far the single largest portion of national economy expenditures, accounting for between 56% and 65% of expenditures in the years 1993-95 (data for the national economy components are not available for 1992 with the exception of food subsidies.) For this reason, it is to be expected that the regression results for housing largely reflect those for overall national economy expenditures.

Table 15 reflects the regressive character of housing subsidies in Russia: residents in wealthier regions received more in housing subsidies²⁶. Also, as indicated by the variable "Doctors per 10,000" (generally, a proxy for urbanization) in all years, the most urbanized regions (not necessarily the wealthiest) also received more in housing subsidies. The same result is reflected in the negative coefficient for the variable "Rural population" in 1993. The latter reflects another dimension of inequality in housing subsidy allocation: most housing subsidies are provided by local governments through subsidized rates on centralized delivery of heating and hot water, which is a predominantly urban phenomenon. Rural households do not have access to these utilities and, hence, do not receive the subsidies associated with them.

Table 15. Determinants of Housing Subsidies, 1993-95

	1993 (N=87)	1994 (N=78)	1995 (N=86)
Pre-transfer regional revenue	.264 (14.4)	.116 (4.5)	.161 (10.0)
Federal transfers	.231 (12.0)	.245 (11.9)	.217 (8.6)
Household income		.065 (8.5)	.024 (5.3)
Wage arrears (1993 data)		-.572 (-4.0)	
Doctors per 10,000	7.69 (4.5)	3.28 (2.5)	3.54 (2.8)
Share of rural population (1994 data)		-3.11 (-3.3)	
Constant	-418.6 (-5.5)	-178.1 (-3.3)	-209.8 (-3.9)
Adjusted R²	.80	.93	.87

²⁶ Freund and Wallich (1995) show that in a similar situation in Poland the top income quintile of households spent more than five times as much on fuel as the bottom quintile. Hence, price controls in the energy sector are regressive and involve a lot of "leakage" of the price subsidy to the non-poor.

Additionally, federal transfers are strongly correlated with the level of housing subsidization: in the years 1993-95, 22-25% of the average incremental federal transfers to regions were spent on additional subsidization of the housing sector. Table 15 demonstrates the high (relative to other factors) and stable contribution of transfers to housing subsidies. Holding all else constant, from 1993 to 1994 the contribution of pre-transfer regional revenue to housing subsidies dropped from 26 to 12 kopecks for every additional ruble of such revenue (recall that in the same period the coefficient of variation increased from 0.99 to 1.39), increasing to 16 kopecks in 1995 (when the coefficient of variation decreased to 1.14.) At the same time, the contribution of federal transfers to housing subsidies was stable with 22-25 kopecks for every additional ruble of transfers.

The close link between federal transfers and local housing subsidies creates favorable conditions for a more active federal government policy towards increased cost recovery in housing. In particular, it suggests that the GOR might consider introducing a minimum cost recovery level in housing as a primary condition for receiving equalization transfers. This might be seen as a sort of "win-win" strategy: regional governments either will implement measures to increase cost recovery on their own in order to gain access to federal grants or, if they decline to do so, they will receive less in transfers, which, as the regression results suggest, ultimately will lead to a decrease in housing subsidies because of general fiscal constraints.

VI.3. Agriculture

In 1993-95 subsidies to agriculture accounted for a stable 15% of overall national economy expenditures. Given the relatively small weight of agricultural subsidies in the total, it is not surprising that agricultural subsidies were less successfully explained by the combination of pre-transfer revenue and transfers than housing subsidies. However, it was not expected that the drop in the explained variation would be so large. In particular, the values of the R^2 in the regressions for agriculture are much lower than in regressions for transportation and other industry subsidies, which constitute smaller components of the total expenditures on national economy. At the same time, as we will see in another section below, expenditures on agriculture are heavily autocorrelated from one year to the next, which together with their low variation suggests a high degree of uniformity in expenditure trends in this sector across Russia. Such uniformity could be interpreted to mean that factors beyond the scope of our analysis are more important in determining regional budget expenditures on agriculture, such as the vested interests that have resisted agricultural reform in Russia. In contrast to other kinds of regional subsidies, especially housing subsidies, in multivariate models the level of regional agricultural expenditures is almost independent from the federal transfers provided.²⁷ This link is not statistically significant despite the fact that some federal transfer programs are targeted at provision of subsidies to farmers.

This means that the federal government has much less leverage over reductions in the

²⁷ In 1995 the relationship is significant but it is an inverse relationship. Holding constant the other independent variables, for every extra ruble received in federal transfers in 1995, subsidies to agriculture decreased by 0.03 rubles.

scale of regional intervention in this sector: on average regional governments do not intend to reduce agricultural support in response to simple cuts in federal transfers. The federal government will need to use a more comprehensive policy to influence regional decision-makers to reform their agriculture policy. One of the components of such a policy should be the redesign of the existing federal transfers for agricultural subsidies. Such subsidies and therefore transfers must be eliminated. If the federal government wants to continue the provision of support for the sector, it should, first, switch such assistance to less distortive types of interventions²⁸, and, second, set up monitoring mechanisms to ensure that corresponding transfers are actually spent on the designated purposes of agricultural or rural development and can not be reallocated by regional governments.

Table 16. Determinants of Subsidies to Agriculture, 1993-95

	1993 (N=78)	1994 (N=78)	1995 (N=77)
Pre-transfer regional revenue	.045 (2.75)	.042 (5.3)	.065 (6.8)
Federal transfers			-.028 (-3.3)
Unemployment level	-6.97 (-1.7)	-4.28 (-2.2)	-4.81 (-3.7)
Share of rural population, 1994 data	1.79 (2.8)	1.51 (4.2)	1.36 (4.8)
Constant	43.61 (1.0)	33.4 (1.4)	15.3 (0.9)
Adjusted R²	.14	.35	.48

Table 16 demonstrates the familiar positive relationship between pre-transfer regional revenue and regional expenditures on subsidies. Another factor that has a positive influence on agriculture expenditures is the percentage of people living in rural locations in the region, which is a demand factor. Holding constant the other independent variables in each regression, for every 10% increase in the rural population compared to the average level, per capita expenditures on agriculture went up by 14-18 rubles or by 20% of the average spending on agriculture. The share of the rural population is the demand factor identified in our analysis which has the most substantial impact on subsidy financing.

Unemployment, which is similar to wage arrears as an indicator of regional distress (i.e. a demand factor) and which is so far mainly an urban phenomenon in Russia, shows a negative relationship: growth in registered unemployment leads to a drop in agriculture subsidies.

²⁸ For instance, subsidize public investments in rural areas (in the form of matching grants) instead of current financing of subsidies on agricultural inputs.

VI.4. "Other sectors" (1993-1994) and Industry (1995)

Table 17. Determinants of Subsidies to Other Industries, 1993-95

	1993* (N=86)	1994** (N=86)		1995*** (N=85)
Pre-transfer regional revenue	.118 (10.3)	.122 (14.0)	Pre-transfer regional revenue	.108 (10.1)
Federal transfers		.037 (7.0)	Federal transfers	.033 (2.3)
Household incomes	-.014 (-3.1)	-.017 (-4.5)		
School children, per 1000		.677 (2.6)	School children, per 1000	.674 (2.1)
Share of loss-making enterprises, 1994 data	1.85 (3.5)			
Share of rural population, 1994 data	1.45 (3.5)			
Constant	-70.65 (-3.2)	-89.2 (-2.2)	Constant	-145.1 (??)
Adjusted R²	.69	.84	Adjusted R²	.60

*Excluding Ulyanovskaya oblast. **Excluding Gornyi Altay. ***Excluding Yamalo-Nenetsky AO.

Although the two categories "Other sectors" and "Industry" (representing industry, energy and construction) are not identical, the analysis of their determinants reveals some interesting similarities. Primarily this concerns the high degree of significance and the stability of the contribution of pre-transfer revenue in determining expenditures and the relatively small but significant role of transfers in the same process.

The positive relationship in 1994 and 1995 between the relative number of school children and subsidies to industry reflects the fact that those regions that have high birth rates (notably some of the Russian autonomous republics) tend to have lower household real incomes and to experience lower rates of economic reforms, and to allocate higher than average transfers to local industry.

VI.5. Transportation

Here, too, federal transfers are relatively less successful in explaining the allocation of subsidies to the transportation sector, and are significant and positive only in 1994. Not surprisingly, more urbanized regions tend to spend more on public transportation, as evidenced by the negative values of the β coefficients in all three years for the factor "Rural population." In

1995 the impact of transfers on transportation subsidies is negative, which is an unique situation in our analysis.²⁹ Our interpretation for this is substantial growth in transportation subsidies that year in regions less dependent on federal transfers, such as Moscow and Saint Petersburg.

In their level of explanatory power and the role of the main explanatory factors (other than federal transfers), these regression results are much closer to those obtained in the case of housing than those for agriculture. Subsidies to transportation are also of a regressive nature and discriminate against rural households. However, in contrast to housing, transportation subsidies are less determined by federal transfers.

Table 18. Determinants of Subsidies to Transportation, 1993-95

	1993 (N=83)	1994 (N=77)	1995 (N=86)
Pre-transfer regional revenue	.023 (6.1)	.026 (6.3)	.022 (6.5)
Federal transfers		.023 (6.8)	-.093 (-2.2)
Household incomes			.002 (2.0)
Unemployment level		-2.18 (-2.6)	
Share of rural population, 1994 data	-.477 (-2.4)	-.488 (-3.0)	-.514 (-3.1)
Constant	40.5 (4.2)	39.14 (3.7)	31.73 (3.9)
Adjusted R²	.45	.74	.64

²⁹ The same effect was observed earlier in Tables 11 and 12.

VI.6. Food Subsidies

Table 19. *Determinants of Subsidies to Food Producers, 1992-94*

	1992*	1993	1994**
	(N=86)	(N=84)	(N=62)
Pre-transfer regional revenue	.012 (4.1)	.009 (3.1)	.011 (6.31)
Federal transfers			.007 (2.79)
Household incomes			-.003 (-5.2)
Unemployment level			-1.34 (-3.7)
Constant	21.5	6.64	11.77
Adjusted R²	.15	.11	.45

*Excluding Koryaksky AO. **Excluding Gornyi Altay, Chukotsky AO, Yamalo-Nenetsky AO.

The food subsidies component of national economy expenditures in 1992-93 is the least explained by the regressions presented in this analysis. The only variable that proved to be significant in 1992 and 1993 was pre-transfer revenue, and the overall explanatory power of the regressions was low. There is some similarity between the two sets of regressions estimated for agricultural and food subsidies. This should not be treated as simple coincidence: in Russia, food price subsidies are disbursed directly to producers in food industry, not to the final consumers. As a result, the overall benefits associated with these subsidies are shared between two groups (households and industry) in an implicit, non-formalized way. Given the close existing links between farms and food processing plants, it seems that the same social and political variables which determine allocation of subsidies to agriculture and which were left beyond the scope of this study, might be also relevant in explaining allocation of food subsidies.

It is likely that the incidence of food subsidies follows the scale of locally imposed food price control. The latter suggests that one of political determinants of food subsidies should be related to the personality of the regional governor. To impose an efficient regional price control in Russian circumstances requires a strong regional leader capable of suppressing the interests of local producers and traders to liberalize local markets. The efficient price control also needs a strong administrative machine to prevent both large violations of the price regime and exports of subsidized commodities outside of the region. This "strong leadership" factor explains, in our view, why even in some very reform-oriented regions with a strong governor (e.g. in Nizhny Novgorod), the phasing out of the price control has been quite slow (Lavrov, 1996b).

By 1994, when only 68 regions continued to provide some amount (often small) of funds to food producers in order to restrain increases in retail prices, in addition to pre-transfer revenue two other variables--unemployment and household incomes--proved to be significant, leading to a relatively high adjusted R² value compared to 1992 and 1993.

VI.7. Total investments

Table 20. *Determinants of Investment Expenditure, 1992-95*

	1992* (N=86)	1993 (N=78)	1994 (N=85)	1995 (N=73)
Pre-transfer regional revenue	.125 (10.1)	.162 (11.5)	.147 (16.6)	.146 (5.2)
Federal transfers	.054 (3.3)	.120 (6.3)	.065 (4.6)	.047 (2.0)
Wage arrears (1993)	n.a.	-.533 (-6.2)		-.430 (-4.6)
Real household incomes				.011 (2.4)
Meat production (1994/1991)			-3.26 (-4.0)	
Hospital beds, per 10,000 (1993 data)			-1.01 (-2.1)	
Life expectancy (1993 data)				7.59 (2.4)
Constant	39.6 (1.9)	21.5 (1.3)	189.4 (2.7)	-529.9 (-2.6)
Adjusted R²	.58	.64	.81	.68

*Excluding Koryaksky AO.

In each year, pre-transfer revenue and transfers are significant determinants of investment, and the relationship between the two is relatively stable.

In 1993 and 1995, wage arrears, a needs factor, demonstrated an inverse relationship with investment expenditures: in these years, holding constant other variables, every additional 1991 ruble of wage arrears resulted in 0.35 rubles less spent on investment. Similarly, in 1994, regions experiencing a greater decline in meat production (used here as a proxy for overall decline in agricultural production) also spent less on investment.

Table 20 suggests that federal transfers to the regions is a statistically significant determinant of regional budget investments. While small in absolute terms (a 0.05-0.08 Rb increase with every ruble increase in federal transfers), Table 20 demonstrates that, even given all the deficiencies of the federal transfer allocation mechanism, it still provides some equalization effect--federal transfers influence positively local, predominantly public, investments, which in turn are crucial for future economic development.

VI.8. Budget Loans

Budget loans is a growing type of government assistance to the enterprise sector. In fact, in most cases, such loans are implicit subsidies to recipients because they are granted at low,

usually negative interest rates, and their default rates are extremely high. In addition, budget loans are less transparent transfers than conventional subsidies. Under the current fiscal management system, it is much easier for regional governments to hide information about particular recipients of budget funds from both the federal government and the local legislature when these funds are disbursed as "budget loans" or "other expenditures" instead of "expenditure on a particular sector".

Table 21. *Determinants of Budget Loans, 1992-95*

	1992 (N=46)	1993 (N=59)	1994* (N=63)	1995** (N=79)
Pre-transfer regional revenue	.010 (7.3)	.065 (6.8)		.074 (9.5)
Federal transfers			.028 (3.1)	
Household incomes	-.010 (-2.6)	-.012 (-3.2)		-.005 (-2.0)
Meat production (1994/1991)				1.47 (2.8)
Wage arrears (1993)		.100 (2.1)		
Index of Industrial Output			.315 (1.7)	
Share of loss-making enterprises	n.a.	n.a.	-.912 (-3.8)	
Unemployment level			-2.86 (-2.0)	
Constant	6.29 (0.6)	-6.39 (-0.7)	51.1 (18.4)	-36.7 (-2.3)
Adjusted R²	.61	.47	.29	.61

*Excluding Chukotsky AO and Koryaksky AO. **Excluding Chukotsky AO.

Pre-transfer revenue was the most significant determining factor of loans to enterprises in 1992, 1993 and 1995. The exception to this pattern, 1994, is the year when per capita spending on loans dropped from 34 to 26, and also the year least successfully explained by the regression analysis. Transfers are significant only in 1994.

Note that in 1994, various indicators directly linked to industrial production proved to be significant in the determination of loans to enterprises, with better-off regions providing relatively more in loans than regions that demonstrated greater need. Thus, the index of industrial output has a positive effect on loans, while the percentage of loss-making enterprises negatively affects loans (the two variables are in some sense negative images of each other.) Similarly, regions with higher unemployment spend less on loans to enterprises. The same effect is seen in 1995: regions less affected by agricultural decline (measured by the meat production index) granted more loans that year.

VI.9. Autocorrelation coefficients for main variables.

Table 22 shows the coefficients of correlation of the dependent variables--per capita budget spending on various subsidies--for each year examined in this analysis with the analogous variable from the preceding year. Those cases where the previous year's variable is significant when added to the regression as reported in tables above and increases the adjusted R^2 value of the regression are shown in bold face. Outliers as identified in the regression analyses above have been removed from the data.

Table 22. Coefficients of Correlation with the Previous Year, 1993-1995

	<u>1993</u>	<u>1994</u>	<u>1995</u>
National Economy	.825	.910	.884
Housing*		.948	.863
Agriculture*		.639	.771
Other/Industry*		.656	.795
Transportation*		.664	.585
Food	.601	.516	n.a.
Investment	.618	.912	.798
Loans	.455	-	.744

* No correlation can be computed for 1993 in the absence of a breakdown for national economy expenditures in 1992.

Many variables show high positive correlations with the same type of variable in the previous year when examined in isolation, supporting the notion of substantial "inertia" in the budget-allocation process. And although several meet the dual criteria of significance and increasing the adjusted R^2 value when added to the regression, in most cases the improvement to the regression results was slight.

That is, expenditures on housing, transportation, other industries are better explained by other factors presented in Tables 15, 17 and 18, and one should not make too much of the high autocorrelation values for these factors as shown in Table 22.

Subsidies to agriculture are a noteworthy exception. In this case the addition of the previous year's variable in the regressions for 1994 and 1995 reported above in Table 16 led to that variable's becoming the most significant, and to very large increases in the adjusted R^2 values (from 0.35 to 0.62 in 1994 and from 0.48 to 0.77 in 1995.) This bespeaks a very high degree of inertia in the budget-making process for agriculture subsidies, which again confirms this sector's high resistance to the forces of change in Russia.

Similarly, when 1992 food expenditures were added to the regression for 1993 expenditures the adjusted R^2 value increased from .11 to .34, confirming the similarities between agriculture and food subsidies mentioned earlier.

VII. Conclusions

This analysis has demonstrated the high degree of significance of pre-transfer regional revenues and federal transfers to regions in explaining national economy expenditures funded by Russian regions. To a lesser degree, these two variables also influence investment and, to a lesser degree yet, loans to enterprises. But federal transfers are particularly weak in explaining the variation in loans provided by regions.

The implications of the significance of these two supply-side factors is clear: fiscally wealthier regions and those regions that receive more in federal transfers have, on average in the years under examination, spent more on various types of budget subsidies. While it might seem that these two independent variables are associated with two fundamentally different types of regions in Russia (the former being the wealthier, the latter being the needier regions) and that, therefore, a degree of equalization is implicit in the regression results, it should be noted that the determination of federal transfers to the regions is not a completely transparent process and that other studies indicate the flawed nature of the formula used to determine "needy" and "very needy" regions.³⁰ Indeed, as Table 6 demonstrates, the comparison of the coefficients of variation for pre-transfer revenue and for total (i.e., post-transfer) revenue indicates no significant movement towards equalization in the regions of Russia as a result of federal transfers.

Although the important question of exactly how and in what amounts federal transfers to the regions are determined is outside the scope of this analysis, it will be recalled that, at least as far as the total amount of transfers to the regions is concerned, it is not a foregone conclusion that the neediest regions receive the most in transfers.

The analysis also suggests that the demand factors, i.e. indicators of regional need for government interventions, are not critical in determining the level of regional budget subsidization. Even when controlling for regional budget wealth, depressed regions (i.e., those which are more affected by industrial decline, unemployment, etc.) tend to spend less on subsidies than regions in a more favorable economic situation. The share of rural population is the demand factor identified in our analysis which has the most substantial impact on subsidy financing.

Of the various components of national economy expenditures, housing receives the lion's share of the contributions of both pre-transfer revenue and transfers, absorbing almost all of transfers' contributions to national economy expenditures by 1995, which means that transfers had next to no effect on subsidies to agriculture, transportation and industry.

Our results represent, in a sense, average effects across all regions and, therefore, are indicators of trends across the country. But they conceal variation within each variable (such as are captured by the residuals in the regressions), an important analytical concern best measured by the coefficient of variation. Most indicators of subsidies show growing inter-regional variation accompanied by reduction in real per capita spending. However, these trends in variation are quite uneven. Thus, the variation in housing subsidies is much wider than that in agriculture,

³⁰ See, for example, World Bank (1995), Treisman (1996).

implying greater disparities in subsidization of housing across Russia and greater uniformity in subsidies to agriculture.

Coefficients of autocorrelation are useful in providing evidence of inertia in the budget-making process, when a given year's spending on a given account is influenced significantly by the previous year's level of spending, that is, not solely responsive to conditions existing in that year. High autocorrelations exist between a number of like variables in consecutive years. But the previous year's variable had a substantially significant effect on the regression results only as concerns subsidies to agriculture and food producers, suggesting the particular relevance of inertia in the budget-making process in these cases.

The major conclusions of the study regarding the role of federal transfers may be presented as following:

- Federal transfers are important determinants of major regional budget subsidies granted to consumers such as housing and, to a much smaller extent, industrial producers (other subsidies). Our results confirm that both major types of consumer subsidies (housing, transportation) are strongly counter-equalizing: wealthier households receive more in housing subsidies and, furthermore, rural populations have less access to these subsidies. Thus, up to 30% of regional budget expenditures is spent in a questionable manner, at least as concerns the issue of social equality. However--what might be even more important--such policies are directly supported by the federal government through federal transfers. Over the years 1993-95, up to 30% of every incremental ruble of federal transfers was spent by regions for housing subsidies.
- Federal transfers continue to be a statistically significant determinant of regional budget investments, which in the long term may have an important equalization impact on regional economic development. However, the incremental impact of transfers on regional investments is much smaller than in the case of consumer subsidies and it dropped further in 1994-95 compared to 1992-93.
- Federal transfers are relatively less important in determining the regional variation of producer subsidies measured as the volume of agricultural expenditures, and the volume of preferential budget loans. These categories of spending are predominantly determined either by the regions' own tax base and economic wealth (budget loans) or by other factors which, it seems, reflect the political influence of local interest groups (agriculture, partially food subsidies).
- It follows that in the case of consumer subsidies, especially housing, the federal government is in a favorable position to influence the acceleration of sectoral reforms and reductions in local subsidies. The GOR may consider reduction in a number of recipients of federal transfers and changes in rules of their allocation. If the GOR introduces conditional federal transfers and sets fixed cost recovery levels in housing and transportation as a major conditionality for recipients, then regions will either have to reduce local subsidies in order to get federal grants, or continue the existing policy of subsidies without receiving federal assistance. However, in the latter case, as our results suggest, without federal assistance regions ultimately

will be forced to reduce subsidies in response to general fiscal strains.

- The concentration of transfers in regions with the most distortive policies could increase potential gains for the reform process through the introduction of conditionality in federal transfer mechanisms. More dependent regions could not afford to lose federal transfers, and thus it may be expected that such regions would become more sensitive to federal guidance and would be eager to adjust their policies if non-compliance were to carry the risk of a fiscal loss.

REFERENCES

- Alfandari, Gilles, Qimiao Fan and Lev Freinkman (1996) Government Financial Transfers to Industrial Enterprises and Restructuring. In Simon Commander, Qimiao Fan, and Mark E. Schaffer (Eds.). Enterprise Restructuring and Economic Policy in Russia. EDI Development Studies. The World Bank, Washington, DC.
- Balcerowicz, Leszek, and Alan Gelb (1994) Macropolicies in Transition to a Market Economy: A Three-Year Perspective. In Proceedings of the World Bank Annual Conference on Development Economics. Washington, DC.
- Berkowitz, Daniel M., David N. DeJong and Steven Husted (1996) Transition in Russia: It's Happening. University of Pittsburgh. Department of Economics. Working Paper No. 306.
- Bodnar, Patrick, Lev Freinkman, Vladimir Lexin and Alexander Shvetsov (1996) Russia: Financing and Maintenance of Social Assets Divested from the Coal Industry. The World Bank. Mimeo, June.
- Clem, Ralph S. and Peter R. Craumer (1995) The Politics of Russia's Regions: A Geographical Analysis of the Russian Election and Constitutional Plebiscite of December 1993. Post-Soviet Geography, Vol. 36, No. 2, pp.67-86.
- Cherniavski, Andrei and Sergei Smirnov (1994) Financial Transfers to Enterprises in Vladimirskya Oblast. Report for the World Bank. Moscow, October.
- Davoodi, Hamid and Heng-fu Zou (1996) Fiscal Decentralization and Economic Growth: A Cross-Country Analysis. The World Bank. Mimeo, March.
- Dmitriev, Mikhail (1996) Budget Policy in Russia under Fiscal Stabilization. Moscow Office of Carnegie Foundation. Mimeo. October.
- Freinkman, Lev and Stepan Titov (1994) The Transformation of the Regional Fiscal System in Russia: the Case of Yaroslavl. World Bank, IDP-143, Washington, DC.
- Freund, L. Caroline, and Christine I. Wallich (1995) Raising Household Energy Prices in Poland. Who Gains? Who Loses? Policy Research Working Paper No. 1495. The World Bank, August.
- Halligan, Liam, Teplukhin Pavel and Dirk Willer (1996) Subsidization of the Russian Economy. Russian Economic Trends, Vol. 5, No. 1, pp.109-128.
- Gambaryan, M. and Vladimir Mau (1997) Ekonomika i Vubory: Oput Kolichestvennogi Analiza. Voprosy Ekonomiki, No. 4.

- Khurtsevich, Sergei (1996) Analiz Vzaimootnoshenii Federal'nogo Budzheta s Budzhetaми Subyektov Federatsii Rossiiskoi Federatsii v 1993-96 Godakh. Mimeo, Moscow.
- Lavrov, Alexei (Ed., 1996a) Budget System of Subjects of the Russian Federation. Report prepared for the World Bank. Mimeo. October 11.
- Lavrov, Alexei (Ed., 1996b) Economic Policy of Subjects of the Russian Federation. Report prepared for the World Bank. Mimeo. November.
- Le Houerou, Philippe (1994) Decentralization and Fiscal Disparities Among Regions in the Russian Federation. World Bank, IDP-138, Washington, DC.
- Le Houerou, Philippe (1996) Data Update on Fiscal Disparities among the Regions of the Russian Federation, The World Bank. Mimeo, January 18.
- Martinot, Eric (1997) Investments to Improve Energy Efficiency of Existing Residential Buildings in Countries of the Former Soviet Union. The World Bank. Mimeo, April.
- Mau, Vladimir and Vadim Stupin (1997). The Political Economy of Russian Regionalism. Communist Economies and Economic Transformation, vol. 9, No 1, pp. 5-26.
- Mudahar, Mohinder S. and Gian S. Sahota (1996) Quantitative Analysis of Resource Transfers to Agricultural Sector in Russia. The World Bank. Mimeo, June.
- Polishchuk, Leonid (1996) Russian Federalism: Economic Reform and Political Behavior. Social Science Working Paper No. 972, California Institute of Technology.
- Rutkowski, Michal (1996) Federal Transfers in Russia and their Impact on Regional Revenues and Incomes, The World Bank. Mimeo, July 12.
- Schaffer, Mark E. (1995) Government Subsidies to Enterprises in Central and Eastern Europe: Budgetary Subsidies and Tax Arrears. In David M.G. Newbery (Ed.) Tax and Benefit Reform in Central and Eastern Europe. London School of Economics. Centre for Economic Performance.
- Serova, Eugenia, and Olga Melyukhina (1995) Finance Subsidies and Pricing in the Russian Food and the Agriculture Sector in Transition. Discussion Paper. Institut für Ernährungswirtschaft und ernährungspolitik, Christian-Albrechts-Universität. Kiel, April.
- Stein, Robert M. (1981) The Allocation of Federal Aid Monies: The Synthesis of demand-Side and supply-Side Explanations. American Political Science Review, Vol. 75, pp.334-343.
- Stewart, Kitty (1996) The Impact of Fiscal Decentralization on Social Expenditures in the

Regions of the Russian Federation, The World Bank. Mimeo, January 31.

TACIS (1996) Analysis of Tendencies in Development of Russia Regions. Vol. 1, March, and Vol. 2 October.

Treisman, Daniel (1996) The Politics of Intergovernmental Transfers in Post-Soviet Russia. *British Journal of Political Science*, July, pp.299-335.

Treisman, Daniel (1997) Fiscal Redistribution in a Fragile Federation: Moscow and the Regions in 1994. *British Journal of Political Science*, July, pp.299-335.

Vereshagin, Victor (Ed., 1996) Economic and Social Reforming of Russian Regions. Moscow: Expert Institute of the Russian Union of Industrialists and Entrepreneurs.

Wallich, Christine I., Ed. (1994) *Russia and the Challenge of Fiscal Federalism*. Washington: The World Bank.

World Bank (1995a). *Fiscal Management in the Russian Federation*, Report No. 14862-RU. Washington, DC.

World Bank (1995b) *Russian Federation: Poverty Assessment*. Washington, DC.

World Bank (1996a) *Russian Federation: Toward Medium-Term Viability*. Washington, DC.

World Bank (1996b) *Enterprise Housing Divestiture Project: the Russian Federation*, Report No. 14862-RU, April 17. Washington, DC.

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