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## The scope for competition among regional governments in the Russian Federation

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# Kieler Arbeitspapiere

# Kiel Working Papers

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**The Scope for Competition  
among Regional Governments  
In the Russian Federation**

by

Matthias Lücke

August 1994



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## EXECUTIVE SUMMARY

1. The purpose of this paper is to discuss whether greater regional autonomy, and the ensuing opportunities for competition among regional governments, can promote economic reform in Russia. This issue is relevant for several reasons. First, the diversity of economic conditions across Russia suggests that the optimal time path of economic transformation may vary across regions. Second, it would be difficult to define, a priori, a model to be followed. Institutions in market economies are far from uniform, having evolved over long periods of time in response to specific national conditions. Competition among regions may help to discover institutional innovations that are particularly appropriate under the given circumstances. Third, the ability of national political institutions in Russia to ensure implementation of their decisions has been seriously weakened. At the same time, regional governments have de facto taken over important responsibilities in many areas of economic policy.
2. This paper starts by reviewing the most prominent theoretical approaches to the issue of competition among jurisdictions. The fiscal federalism literature finds benefits from decentralization mainly in the optimal provision of regional public goods. At the same time, many contributions point out possible distortionary effects of inter-jurisdictional competition on the allocation of public goods unless regional governments rely exclusively on benefit taxation for their income. By contrast, the more recent "Leviathan" literature emphasizes the disciplinary role of inter-regional factor movements on bureaucrats who are likely to pursue their own agendas rather than the common good. Finally, inter-jurisdictional competition may also be viewed in the Hayekian sense as a discovery procedure that makes it possible to obtain information that would otherwise remain unknown.
3. We then review the role of regions in the economic transformation of Russia since early 1992. The continuing conflict between the government and parliament over economic policy has led to wide-spread uncertainty about which legal rules are in force in many crucial areas. The ensuing institutional anarchy has particularly affected the intergovernmental relationships. Since early 1992 the national government has also pushed down responsibility for a variety of expenditures such as consumer price subsidies, certain social security payments, airports, utilities, and housing for military personnel to oblast level governments, without providing for compensation in the form of increased transfers. Thus regional governments have acted as a buffer between the majority of the population caught in the economic relationships and the habits of thinking of the old system, and the often unpredictable developments in Moscow, and have helped to stabilize the evolution of events during a time of severe economic, social, and political upheaval. In doing so, however, they relied mainly on defensive strategies to protect regional interests, and used command methods familiar from the old system. Without clearly defined rights and obligations, they were by and large unable to actively promote economic reforms that had become stuck at the national level. This raises the question of whether, under more favourable circumstances, the regions in Russia could play a more active role in economic transformation.
4. We then undertake an empirical analysis of the determinants of inter-regional differences in preferences regarding political and economic reform. Some studies suggest that there exists a North-South divide in political preferences along the lines of resource-rich vs. industrial rustbelt regions. If this is true, the economic case for decentralization in Russia would be weakened to the extent to which economic reform is sought as a vehicle for income redistribution, rather than as a means for satisfying diverging preferences for the provision of particular public goods. Our empirical

analysis indicates that agricultural areas (i.e. regions with high per capita output of important agricultural commodities) tend to be more conservative, while areas with high per capita household income in 1991 tend to be more supportive of reform (*ceteris paribus*). A priori, agricultural areas would not be expected to suffer relatively strongly as a result of economic reform, while pre-reform household income need not be a good predictor of post-reform per capita income. Hence we conclude that, although the presence of distributional concerns cannot be discarded, the regional variations in support for economic and political reform also reflect different "genuine" political preferences.

5. The potential benefits of decentralization and inter-regional competition in Russia are thus straight-forward: Diverging regional preferences regarding economic reform indicate that decentralization of the relevant decision-making powers would improve the welfare of regional populations. Similarly, widely different local conditions suggest that the optimal time paths of economic transformation may differ across regions, and inter-jurisdictional competition may help to detect locally appropriate solutions. Finally, effective democratic control of governments is not yet well-established in Russia. Therefore any effective controls on the behaviour of government bureaucrats, such as factor migration in the context of inter-jurisdictional competition, would be highly welcome.
6. It is beyond the scope of this paper to devise a detailed blueprint for future intergovernmental relations in Russia. Our discussion of the limitations of inter-regional competition in Russia leads us to draw three main lessons, however. First, the effectiveness of inter-regional competition will depend on a constitutional framework that can only be provided by the central political institution. This should include not only basic human rights, but also economic rights such as the free movement of people, goods, and money throughout Russia. In addition, there are also areas such as the legal system and macroeconomic policy where inter-regional differences in preferences are probably small, and which may therefore be delegated to the centre to avoid duplication of effort.
7. Second, an economic case may be made for requiring all regions to share in the financial burdens resulting from Russia's communist legacy. Apart from economic considerations, there is also the possibility of political upheaval if powerful groups stand to suffer excessive income losses. In all likelihood, burden-sharing will require a substantial inter-regional redistribution of income that may well have to be organized through the centre.
8. Third, an institutional framework should be created that takes into account the existing inter-regional differences in political preferences and in the need for inter-regional cooperation. It seems advisable, conceptually, to reconstruct the federal system from bottom to top, and to allocate responsibilities to the centre only if this is in the interest of a very large majority of regions. More limited inter-regional cooperation that involves only sub-groups of regions may occur through specialized supra-regional, medium-level government institutions that are controlled by the participating regions.

## 1. Introduction

Even more than in other former planned economies, successful transformation of the economic system in the Russian Federation involves a sea change in political and economic institutions. A short, and far from exhaustive list includes the restructuring of government budgets at the national, regional and municipal levels, the introduction of financial discipline in enterprises and the financial system, and the ownership of the means of production. The required changes are particularly far-reaching and difficult to implement because Russia is practically without living memory of market-type relations between economic agents.

This raises the question of whether such changes can be imposed from above, i.e. by the central government (with the possible support of foreign economic advisors). At least three objections come to mind. First, the diversity of economic conditions in the country suggests that the time path of institutional change may vary across regions. Second, it would be a hazardous task to define, a priori, the model to be followed. Institutions in market economies are far from uniform, having evolved over long periods of time in response to specific national conditions. Third, while Western attention so far has focussed on the federal (central) institutions in Moscow, their ability to ensure that decisions taken at the national level are implemented locally is now severely limited. Arguably, therefore, the activities of regional (oblast-level) governments are at least of equal importance for the ultimate success, or otherwise, of economic transformation in Russia.

An alternative view of institutional change proceeds from the Hayekian notion of institutions as spontaneous social inventions. This view suggests that, with appropriate incentives, individual institutions will adjust to changes in their environments, and new institutions will be created spontaneously when old ones turn out to be unreformable. The implied process of trial and error can only be sustained in the presence of competition among existing and newly created institutions. This view is particularly attractive in relation to the present situation in Russia because it allows specific national circumstances to influence institutional change and, additionally, permits regional diversity.

The purpose of this paper is to discuss whether greater regional autonomy, and the ensuing opportunities for competition among regional governments, can promote economic reform in Russia. The theoretical background is provided by the fiscal federalism debate: First, economic transformation in Russia will lead to substantial shifts in relative income positions, and thus to demands for protection and compensation. Second, certain inevitable government expenditures have to be financed at the national level (like the conversion of the defence sector), requiring a substantial fiscal burden to be distributed among the regions. Therefore a strong constitutional framework may well be

needed to keep free rider problems in check and ensure that competition among regional governments does not lead to the progressive impoverishment of disadvantaged regions.

This paper starts by reviewing the theoretical and empirical literature on the benefits and limitations of government decentralization and inter-jurisdictional competition. (Section 2.). Then the role is described that the regions have played so far in the economic transformation of the Russian Federation (Section 3.). In the following two sections the conclusions drawn from the survey of the literature in Section 2. are applied to the current situation in the Russian Federation. First, an attempt is made to assess empirically the extent to which interregional differences in popular support for reform stem from genuine differences in political preferences, rather than from distributional concerns (Section 4.). Second, the opportunities for, as well as limits to inter-regional competition in Russia are discussed with a view to throwing some light on the appropriate constitutional framework, and guiding principles for the assignment of functions to the various tiers of government. (Section 5.). Several lessons are finally drawn from this discussion for the future re-ordering of inter-governmental relations in Russia (Section 6.).

## **2. Decentralization of Government and Inter-Regional Competition: Benefits and Limitations**

The economic arguments in favour of decentralization derive mainly from two sources.<sup>1</sup> The first is the theory of fiscal federalism, for which the Musgravian distinction between the allocation, stabilization, and distribution functions of government still provides a suitable starting point. The conclusion of this literature is, briefly, that the macroeconomic stabilization function should rest with the central government. Likewise, central government has a leading role to play in the distribution function, partly because of the potential mobility of the poor. There may, however, be an efficiency argument for some local poor relief (Oates, 1991, p. 4). By contrast, preferences regarding the provision of public goods are likely to differ across regions, particularly in countries as diverse as Russia. Allocation decisions should therefore be taken by those regional units whose citizens will benefit from a particular decision (Boss, 1993).

Hence benefits from decentralization are seen to stem mainly from the optimal allocation of resources in the production of public goods when regional preferences differ. On the other hand, a large number of contributions to the fiscal federalism literature point to potentially large distortionary effects of inter-jurisdictional competition on the provision of

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<sup>1</sup> In a brief summary such as the present one it is obviously impossible to do full justice to the very diversified literature that has sprung up particularly in recent years. The purpose of this section is to identify lessons which are reasonably robust to the precise formulation of the underlying assumptions, and which may therefore be drawn upon in the present policy-oriented discussion.

public goods.<sup>2</sup> Such findings (including whether there is over- or underprovision of public goods) are highly sensitive to the underlying assumptions, especially regarding the tax system. Nevertheless it may be concluded that unless there is pure benefit taxation, competition among jurisdictions will be distortionary more often than not in welfare analytic terms. Pure benefit taxation (such as a head tax), however, is a very restrictive and even implausible assumption if regional authorities are to have any substantial responsibilities and, therefore, financing needs (Musgrave, 1991).

The resulting bias of traditional welfare analysis against decentralization is challenged by a more recent literature that emphasizes the disciplinary role of inter-jurisdictional competition with respect to government activities. The central assumption is that government bureaucrats tend to pursue their own agenda rather than the common good. Empirical studies have shown that, under specific circumstances, budget-maximising behaviour (or, perhaps, plain inefficiency) on the part of bureaucrats may be contained through tight electoral control (Pommerehne, 1989). Frequently, however, direct democracy such as through obligatory referenda may be infeasible or ineffective, especially at levels of government above the municipality. Then the ability of mobile factors of production to emigrate from a high-tax area may exert a similar disciplinary effect. Bureaucrats would find their power to increase taxes and expenditures constrained as the exit of mobile resources leads to a shrinking tax base. In representative democracies, they might also run the risk of not being reelected by voters whose incomes are diminished by the exit of mobile resources (Sinn, 1990).

A related point has been made in the Hayekian tradition by Vihanto (1992). He argues that competition among regional governments may be viewed as a discovery procedure that is likely to unearth information that would otherwise not be available. Hence the possible distortionary effects of competition among jurisdictions (which are known, in principle at least, or may be estimated) have to be weighed against the (a priori unknown) benefits from making discoveries that would otherwise not be made.

The empirical evidence on the Leviathan hypothesis, i.e. the effectiveness of inter-jurisdictional competition in containing the size of government expenditures, is mixed. The studies reviewed in Pommerehne (1989) point to a clearly discernible relationship between the institutional arrangements governing decision-making on taxes and expenditures on the one hand, and the size of government and the cost of specific government services on the other. The contrast here is between direct and representative democracy, however, rather than between decentralized and centralized government. Only if decentralized government implies more stringent control over bureaucrats by the

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<sup>2</sup> Recent contributions include Oates and Schwab (1988), Taylor (1992), and several papers reviewed by Wildasin and Wilson (1991).

electorate may Pommerehne's findings be interpreted as supporting the Leviathan hypothesis. Similarly, Oates (1991) concludes a survey of empirical studies by suggesting that the degree of centralization has only a weak impact, at best, on the size of government. Measures other than decentralization should be sought if one's objective is to contain the size of government. Jansen (1991) undertakes an extensive econometric analysis of the determinants of local government spending in the U.S. and finds that, after accounting for a variety of conceptual and statistical problems, the evidence in favour of the Leviathan hypothesis is rather weak.

This brief survey is sufficient to demonstrate that the costs and benefits of decentralization depend on the circumstances of each country. Judging the desirability, or otherwise, of inter-regional competition therefore presupposes empirical study. Because of the great importance of distributional issues, the conclusions may also depend crucially on value judgements.

### **3. The Position of Regions in the Economic Transformation of Russia**

The transformation of former planned economies requires policy measures in the areas of macroeconomic stabilization, economic restructuring and institutional change (Siebert, 1991). The optimal timing and sequencing of reforms in these three areas has been extensively discussed under the heading of gradualism vs. shock therapy. By now a majority view appears to have emerged that, on the one hand, the interdependence of the issues requires the simultaneous adoption of policy measures in all three areas. On the other hand, the weakness of existing institutions and the lack of administrative capacity especially in the former Soviet Union make it imperative to concentrate on a limited number of reform projects at any given time. The upshot of these arguments is the "minimum bang" strategy (Williamson 1992). It implies that right from the start of reform, a "critical" mass of changes should be introduced that is at the same time large enough to be consistent and credible, and still sufficiently small to be feasible in the face of limited administrative capacity (Lücke 1993a).

The policy of the Russian political leadership since the beginning of 1992 has differed substantially from this prescription.<sup>3</sup> At the national level, attempts at macroeconomic stabilization have been thwarted by the failure of government and parliament to agree on a strategy for consolidating the federal budget. Structural adjustments have been hampered by the unwillingness of the political leadership to allow domestic relative prices to adjust fully to the world market relationships. Energy prices in particular are still controlled and remain far below the world market level, in spite of the January 1992

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<sup>3</sup> Brief descriptions of developments in Russia since the dissolution of the Soviet Union may be found in DIW et al., various issues.

"general" price liberalization and the nominal liberalization of coal and oil prices in the first half of 1993.

In the area of institutional reform some progress has been made with privatization in services and industry. Nominal changes in ownership alone, however, will not transform socialist enterprises into capitalist firms. It is of crucial importance to eliminate, simultaneously, the lack of financial discipline, sometimes termed the "soft budget constraint", which characterized enterprise behaviour under the old system (Kornai, 1993).<sup>4</sup> The required changes in the financial and legal systems, however, have not been introduced. In sum, while the traditional system of intermediation is clearly gone for good, attempts at economic reform have become bogged down due to the inability of the government and parliament to agree on, and implement a consistent programme for market-oriented reform.

The continuing conflict between the government and parliament over economic policy has led to wide-spread uncertainty about which legal rules are in force in many crucial areas. The relationship between the central and regional (oblast-level) governments has been a particularly prominent victim of the ensuing institutional anarchy. During Soviet times, the regions within the Russian Federation were *de facto* little more than administrative units, independent of their legal status as autonomous republics, krais, or oblasts. Throughout the former Soviet Union, a complicated system of direct and indirect inter-regional transfers was used by the "centre" to channel savings into centrally directed investment, and to ensure that regional standards of living did not diverge excessively (Orlowski, 1992; 1993). Details of the transfer system remained secret (and are still difficult to ascertain today), and there was not even an open debate permitted about the system in general terms.

The dissolution of the Soviet Union has entailed the disintegration of the transfer system among its former constituent republics. Direct (budgetary) transfers were terminated immediately. Now the gradual adjustment of relative prices in inter-state trade to world market relationships is doing the same to indirect transfers, which occurred mainly through underpriced energy exports from Russia.

Within Russia, the traditional transfer system through the central government has been undermined by several separate developments. For a number of years now, increased freedom of debate has enabled the populations of resource-rich areas particularly in Siberia to demand (and go on strike for) restrictions on the implicit outflow of funds from their areas, given their own miserable living conditions. Recently many regions have

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<sup>4</sup> The traditional system of interactions among economic agents is often referred to as central planning. Naishul (1993) has pointed out that during the last two decades at least, the term "bureaucratic market" is more appropriate to characterize the system of intermediation.

obtained the right to an enlarged share of the revenue from the sale of local natural resources. This is equivalent to giving regions a greater share of the resource rent.<sup>5</sup>

Since early 1992, the national government has been pushing down responsibility for several types of expenditure to oblast level governments without providing compensation in the form of increased transfers. Such expenditures included not only consumer price subsidies for some basic foodstuffs and cash payments to certain vulnerable groups, but also capital investment projects of national importance such as airports, utilities, and housing for military personnel (Wallich, 1992, p. 42). Local governments (which are in turn funded largely by oblast-level budgets) have also had to take over many social services previously provided by enterprises.

Saddled with new tasks but without the proper means to fulfil them, oblast-level governments have increasingly defaulted on the transfer of locally collected taxes to the central government. At present, these regions have only limited control over their tax revenue. They have recently been allowed (within certain limits) to set the rate of the regional portion of the corporate profit tax, which is of dubious value when enterprises are frequently lossmaking or otherwise default on payments. They also receive fixed shares of the revenue from the personal income tax, some excises, resource taxes, and other, less important taxes over whose bases or rates they have no control. The federal government continues to hold exclusive control, however, over several important taxes such as the value added and export taxes (Wallich, 1992, p. 31; DIW et al., 1994, pp. 18ff.).

The relatively small size of many oblast-level units has entailed a need for cooperation among regions, both in terms of coordinating policies (such as on intra-regional trade) and jointly representing regional interests vis-à-vis the central government. Regional governments responded to this need quickly by setting up regional associations almost throughout the territory of the Russian Federation (Radvanyi, 1992; Jarygina, Martschenko, 1993, pp. 217ff.). While the scope of the activities and the political clout of these regional associations differ considerably, their spontaneous formation suggests that regional governments are both aware of and willing to realize the benefits of cooperation.<sup>6</sup>

This brief review of the role of regions in the economic development of Russia since early 1992 supports the view articulated by Schlögel (1994) that during a time of severe

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<sup>5</sup> In a related development, many regions enforced restrictions on extra-regional exports by local enterprises when the inter-regional payments system broke down in early 1992 and both foodstuffs and critical industrial inputs could often be obtained only through barter deals.

<sup>6</sup> The experience of the Siberian Agreement illustrates both the opportunities for effective representation of regional interests, and the pitfalls of excessive politicization (Hughes, 1993). In a sense, the "regional associations" in Russia may be compared to new types of specialized, supra-regional institutions set up in many Western countries to perform tasks not adequately dealt with either at the national or the local level. These include e.g. public transport authorities in metropolitan areas, boards of education, and bodies running specialized hospitals (cf. Oates, 1991).

economic, social, and political upheaval, regional governments have played a crucial role in stabilizing the evolution of events. They have provided a buffer between the majority of the population caught in the economic relationships and the habits of thinking of the old system, and the often unpredictable developments in Moscow. In providing stability, however, many regional governments relied on defensive strategies to protect their interests, and used command methods familiar from the old system. Without clearly defined rights and obligations, they were by and large unable to actively promote economic transformation at the regional level.<sup>7</sup>

This raises the question of whether, in a reformed policy environment, regions can make a more constructive contribution to economic transformation. Since many regional administrations are dominated by unreformed cadres of the old regime, fundamental reform may also be required at the level of the regional units themselves. This may involve organizational reform to shake up established relationships among individual bureaucrats, or even the redrawing of borders to form larger regions with clearer regional identities. The following two sections enquire to what extent certain preconditions for successful decentralization and inter-regional competition are satisfied, and establish some general guidelines for the constitutional framework and assignment of functions to the central vs. regional government.

#### 4. Determinants of Popular Support for Economic and Political Reform

It has been pointed out in Section 2. that the concept of competition among jurisdictions relies on the assumption that preferences for the provision of public goods vary across jurisdictions. The results of several nation-wide elections and referenda in Russia since 1991 do indeed point to pronounced inter-regional differences in popular support for market-oriented economic and political reforms. Several studies conclude, however, that such support is mainly a function of regional economic structures that determine how voters' incomes will be affected by reforms (Yasin et al., 1994). These studies suggest that distributional concerns, rather than diverging preferences regarding public goods such as the *Wirtschaftsordnung* (economic system) per se, dominate popular attitudes towards reform. If this hypothesis is true, the case for decentralization in Russia would be weakened to the extent to which economic reform is sought as a vehicle for income redistribution, rather than as a means for satisfying diverging preferences for the provision of particular public goods. The purpose of this section is to undertake an empirical test of

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<sup>7</sup> One obvious exception is Nizhnii Novgorod oblast where a number of factors coincided to make the oblast an experimenting ground for the potential for local economic reform (Cline, 1994). The attempts made by the central government to formalize relationships with the regions through the Federation Treaties signed in early 1992 are reviewed by DIW et al. (1993) and Shaw (1992).

the relative importance of genuine diverging political preferences vs. distributional concerns in determining attitudes towards reform.

To this end, it is necessary, first, to measure popular support for reform in individual regions. All in all, seven indicators are employed in the analysis, and are presented in Appendix Table A1. Emphasis is placed on the results of the Spring 1993 referendum on whether people supported ('reformist') President Yeltsin personally (*YEL93*), or the ('reformist') economic and social policies of the government at the time (*ECSO93*), or whether they supported early elections to replace the ('reformist') president (*ELPA93*), or to replace the ('conservative') parliament (*ELPA93*). Information is available on actual regional percentage shares of "yes" votes on each of these question (Yasin et al., 1994, Annex 1). By contrast, the results of the December 1993 election for the parliament, and for the referendum on the new constitution have yet to be published in full (RFE/RL News Briefs, 21.-25.2.94). The only available source of information is newspaper reports with maps of Russia containing the information represented by the (dichotomous) *DEMOCR* and *CONSTID* variables. *DEMOCR* takes the value of 1 if pro-reform, or "democratic" parties (VR, RDDR, Yabloko, PRES) obtained more votes than conservative groups (LDPR, KPRF, Agrarian Party RF). *CONSTID* is set to 1 if more than half the votes cast were in favour of the new constitution. *LLYEL* represents analysts' judgements on where support for Yeltsin has been weakest from 1991 through 1993 (and is equal to 1 for all other areas).

The large number of possible indicators raises the question to what extent they are correlated with one another, i.e., whether they tend to identify similar sets of regions as supportive of, or opposed to reform. In order to analyse the degree of interdependence, correlation or contingency coefficients have been calculated for each pair of indicators, depending on whether at least one in a given pair is categorical. Generally speaking, correlation among these variables is found to be high but less than perfect. By using a variety of indicators, this empirical analysis seeks to put into perspective the difficulties that may be involved in the interpretation of results for any one variable.

These indicators of regional support for reform are employed as dependent variables in regression and probit analyses, depending on whether each dependent variable is dichotomous or not. The explanatory variables in these analyses have been chosen to reflect both possible distributional concerns, and regional characteristics that may be related to diverging preferences for public goods.

It is assumed, in line with the studies previously cited, that distributional concerns are related to the structure of regional output: Regional electorates are suspected to be more or less supportive of economic and political reform depending on how their predominant sources of income are likely to be affected. For example, regions which depend on heavy industry for a large share of their employment are suspected to be less favourably inclined

towards reform, *ceteris paribus*, because many enterprises may no longer be viable once economic reform has led to the adjustment of relative input prices to world market levels.

While it would have been desirable to use sectoral shares in regional value added, this was impossible because, due to still widespread price distortions, no meaningful data are available.<sup>8</sup> The number of explanatory variables that was subsequently chosen to describe regional production structures (cf. Tables A2 through A4) would have been too large to allow meaningful regressions to be run. Therefore, factor analysis has been applied to the variables representing each of the three sectors (agriculture, raw materials, industry). In this way it has been possible to condense the information contained in each subset of data into a manageable number of explanatory variables (factors), each with an economic interpretation.

The three explanatory variables listed in Table A5 are supposed to represent political preferences not directly linked to distributional concerns.<sup>9</sup> *DNAT* takes the value of 1 if a region enjoys autonomous status (republic, oblast, or okrug) because of the presence of a significant non-Russian population. Autonomous regions are generally thought to have benefited from greater independence due to political reform. *URBPOP* represents the degree of urbanization measured as the percentage of the population residing in urban-type settlements according to the traditional Soviet definition. Almost universally, urban people tend to be less conservative than rural populations. *PCAPY* is per capita 'money' (i.e., household) income of the population in 1991.

It is plausible to assume that economic restructuring, which had not started in earnest in 1991, will entail a substantial redistribution of incomes. If this is true, 1991 income per head may not be a reliable predictor of future, post-reform income. Instead, it may be thought of as proxying factors such as educational attainment, political awareness, etc.

The results of the OLS regression and probit analyses are reported in Tables 1 and 2, respectively. Each dependent variable is regressed first on the indicators of regional production structures, then on the variables representing possible determinants of 'genuine' political preferences, and finally on all explanatory variables. This procedure gives an impression of the explanatory value of each group of variables. In the case of the referendum results (Table 1), the low values of the Durbin-Watson statistic for the regressions with only a subset of explanatory variables suggest a possible specification

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<sup>8</sup> The data that were used are reproduced in full in Appendix Tables A2 through A4. Table A2 lists the output per head of the population of various agricultural commodities. Table A3 reports on the regional dispersion of the more important raw materials, with information on the existence of enterprises substituting for actual output figures whenever the latter are unavailable. Table A4 lists employment in some important branches of industry as well as the "non-productive" (tertiary) sector relative to total population.

<sup>9</sup> In addition to the explanatory variables, Table A5 lists the total population of each region.

problem. Observations are arranged by "economic (macro) regions" as traditionally defined, each comprising between five and fifteen oblast-level regional units. Hence a low DW value indicates that residuals tend to be either positive or negative in each macro region. This specification problem is apparently alleviated when all explanatory variables are included. The latter regressions also have substantially higher coefficients of determination. Of the seven dependent variables, only *ELPA93* (support for early elections for the parliament) shows little relationship with the independent variables with a coefficient of determination of .16. The estimates with *ELPR93* as the dependent variable (where a high percentage indicates disapproval of reform) are practically a mirror image of the estimates for *YEL93* and *ECSO93*.

Without going into the fine points of particular regression results, three important determinants of support for reform may be identified. First, regions with high per capita household incomes in 1991 tended to support reforms, *ceteris paribus*. Second, regions with substantial agricultural output (particularly animal products and cereals) or large employment in the food industry tended to be more conservative. Third, regions with substantial deposits of precious metals and similar natural resources (*PREMET*: gold and diamonds; *ARGTIT*: silver and titanium) were also more conservative, *ceteris paribus*. Remarkably, the remaining independent variables do not have a clearly identifiable impact on regional support for economic reform. This applies not only to the legal status of regions (autonomous area or not), but also to their dependence on employment in the main branches of civilian and military industry, and to the local availability of mineral raw materials except precious metals. Hence our empirical findings provide no support for the hypothesis (popularized, inter alia, by the Economist, 25 December 1993) that there exists a North-South divide in political preferences in Russia along the lines of resource-rich vs. industrial rustbelt regions. If there is a divide with well-defined regional groupings on either side, it is more likely to be along the lines of more vs. less agriculture and high vs. low income.<sup>10</sup>

These finding now need to be interpreted in terms of our distinction between distributional concerns and diverging political preferences. It is doubtful whether the negative coefficient of the agricultural variables indicates distributional concerns, because it is far from obvious that agricultural areas would lose from market-oriented reforms. It seems more plausible to interpret this finding in terms of diverging political preferences as indicating that rural

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<sup>10</sup> One might think of a cluster analysis as a way of identifying groups of regions with similar characteristics. It was found in an earlier analysis of regional economic structures in the Russian Federation, however, that the results of cluster analysis were quite sensitive to the essentially arbitrary choice of the independent variables Lücke (1993). The purpose of that study was to identify regions sufficiently different from the majority of areas to possibly benefit from separatism. While the choice of independent variables or of the clustering method did not significantly affect the identification of such outliers, it did have a marked impact on the grouping of the other regions.

people are more conservative. Similarly, people in resource-rich areas may no longer feel a need for change now that their relative income situation has improved considerably.

The interpretation of the positive coefficient of per capital household income is more complicated. On the one hand, as suggested above, people in high-income areas may be more fully aware of the inevitability of reform, independent of how it is likely to affect them. On the other hand, they might view transition to a market economy as an opportunity to improve their incomes and living conditions generally. They might also believe that existing inter-regional income differences will widen if redistribution through the centre is weakened by economic and political reform. Equation (13) in Table (1) demonstrates that per capita income is positively correlated with the presence of sectors whose prospects are relatively good, such as precious metals, oil and gas, silver and titanium, and food processing. By contrast, there is a negative correlation with heavy industry where there is usually thought to be a great need for restructuring. Hence, while our findings point to the presence of substantial differences in "genuine" political preferences, the possibility cannot be discarded that *PCAPY* also reflects, to some extent, distributional concerns.<sup>11</sup>

## 5. Guidelines for a Constitutional Framework and Assignment of Government Functions

We now draw on these empirical findings and the discussion in Section 2. to discuss the future contribution of decentralization to economic transformation in the Russian Federation. We first look at the potential benefits, and then address some of the possible pitfalls. On the basis of this discussion, we shall formulate some guiding principles for a constitutional framework for inter-regional competition, and for the assignment of functions to the central vs. regional governments.

The empirical analysis in Section 4. has emphasized the wide inter-regional diversity of preferences for political and economic reform. The inability of national political institutions to implement a coherent economic policy may also be interpreted as a reflection of irreconcilable differences between the sectoral and regional interests that each institution represents. Decentralization would give individual regions considerable leeway in choosing their own paths for structural adjustment and institutional reform, such as privatization. Hence it would permit the provision of public goods in the form of rules for adjustment to conform more closely to the wishes of regional electorates. This argument is in line with the traditional theory of fiscal federalism.

Because of the wide differences in local conditions it would probably be difficult, if not impossible, to devise optimal transformation strategies from the centre. Hence the

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<sup>11</sup> Closer analysis of the regression results does not suggest that the findings are due to multicollinearity involving *PCAPY* and the remaining explanatory variables.

formulation of policies for transformation may benefit from the availability of local information that can only be obtained through the process of search and discovery initiated by inter-regional competition. This is the Hayekian argument as applied by Vihanto (1992).

A new political culture in Russia is still evolving, and it is certainly too early to state that (even representative) democracy has taken firm roots at the central as well as the regional level. Hence it would be desirable if there existed some check on the behaviour of regional governments in the absence of effective electoral control. Such a check could be provided by inter-jurisdictional competition if the cost of migration of factors of production were sufficiently low. This is a variant of the Leviathan argument.

Our review of theoretical approaches to inter-jurisdictional competition earlier in this section also suggests a number of qualifications on any overly optimistic view of the net benefits of decentralization in Russia. These qualifications center around the questions of first, how large are the distortions produced by inter-regional competition, and second, are the necessary conditions for effective inter-regional competition satisfied. After discussing each qualification, we suggest its possible implications for the future relationship between central and regional governments in Russia.

The first qualification stems from the importance of distributional issues. Much of the increase in regional power that has occurred so far has been driven by discontent with the traditional system of explicit and implicit inter-regional transfers. However, starting conditions differ substantially across regions. The legacy of the old economic and political system frequently includes not only distorted structures of regional output, but also serious ecological damage, or concentrations of military units in particular areas. On the positive side, resource-rich regions still benefit from centrally directed investment in the past.

Without substantial redistribution, conditions of life would therefore differ substantially across regions while it would be beyond the power of many regional governments to improve local conditions significantly. Such income differences would be unjustified economically as they would be the result of free-riding by particular regions on a common financial burden. Hence they would probably be unacceptable politically if there were a large number of relatively poor regions, or if powerful groups (such as the military) ended up with incomes below the subsistence level. While theoretically the financial legacy of the past could be distributed among the regions once and for all (cf. Drèze, 1993, pp. 279ff.), this is not a practical option because many of the relevant costs are not yet known. The implication of these arguments is that the Russian regions' common past will necessitate a significant degree of income redistribution for the foreseeable future.<sup>12</sup> Should individual

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<sup>12</sup> The recent literature shows that redistribution does not depend on the existence of a central institution (Thomas, 1993). It may also be organized through agreement among rationally acting regional governments. The mechanism is essentially migration, coupled with the cost of overcrowding in

high-income regions wish to leave the Russian Federation, an economic case may be made for requiring them to compensate the remaining areas to the extent of their probable future contributions.

The second qualification relates to the legal status of the constituent regions of the Russian Federation. The essence of intergovernmental relations in a federation is that the allocation of responsibilities to the centre vs. the regions is decided upon by a central body, such as a constituent assembly. The upshot of this assumption is that citizens are expected to identify, in the first place, with the country as a whole, and only then with a particular region. If this is the case, inter-regional redistribution of incomes may be organized on the presumption that people are prepared to pay for the creation of similar living conditions throughout the country.

Although the present redistribution of incomes among regions in Russia proceeds along these lines, it is not clear that such a consensus still exists. The persistent conflicts between the Russian central government and a number of regions, particularly certain autonomous republics, raise the question of whether Russia should not rather be thought of as a confederation. As such, it would consist of sovereign subjects that have freely decided to delegate certain functions to the confederation, and would be free to decide to leave the confederation should they find this to be in their best interest. Some observers look upon that possibility as the beginning of the disintegration of Russia (e.g. Yasin et al., 1994). Certainly it would not facilitate the definition of rules for the sharing of the common financial burden from the past. On the other hand, it is difficult to see how the central government can hold on to responsibilities that a substantial number of regional governments claim for themselves.

Independent of whether the status of Russia is formally changed to a confederation, it may therefore be useful to allocate responsibilities to the centre only if the vast majority of regions find this in their best interest. This is in line with the subsidiarity principle. At the same time, a framework for supra-regional cooperation should be created that can be used by groups of regional units according to their individual needs. The advantage of such a scheme would be that allocating only limited responsibilities to the centre would allow even regions with limited common interests to participate in the confederation. At the same time, regions with a need for closer cooperation would be free to set up medium-level governmental organizations that would cater to their greater needs for cooperation. Such a reform should also provide for a uniform status of the regions because the distinction between autonomous areas (with a significant non-Russian ethnic group) on the one hand and oblasts and krais on the other is becoming obsolete. The cultural identity of ethnic minorities may be protected more effectively by other means.

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particularly attractive regions. The effectiveness of this mechanism in the Russian context is discussed below.

The third qualification relates to the preconditions for well-functioning competition among jurisdictions. It is far from obvious that these are in place throughout Russia. The fear has even been expressed that decentralization would ultimately lead to the disintegration of Russia into fiefdoms (Yasin et al., 1994), where local warlords might not be inclined to submit to democratic elections, and the cost of emigration for individuals might be prohibitive.<sup>13</sup> In some parts of the North Caucasus such a situation may already be arising. Given the large amounts of weaponry (conventional and other) left over from the Cold War, this prospect seems rather undesirable. It is difficult to see how any institution other than national legislative and jurisdictional bodies can guarantee the preconditions for effective competition. These include, *inter alia*, an encompassing legal system, guarantees for human rights, and especially the right to free inter-regional movement for people, goods, and money.<sup>14</sup>

Finally, it may be noted that the human capital not engaged in rent-seeking types of economic policy-making seems to be in short supply in Russia. In such cases it is generally advisable to centralize decision-making in order to make the best possible use of the available administrative capacity, rather than to spread it out thinly across regions.<sup>15</sup> This observation strengthens the case for centralizing tasks where there would otherwise be duplication of effort. These include especially national public goods such as defence, diplomatic relations, macroeconomic management.

## 6. Conclusions

In sum, will far-reaching decentralization and competition among regional jurisdictions promote economic transformation in Russia? The answer suggested by the above arguments is cautiously affirmative. A return to a unitary state, or to a federation with only very restricted powers for the regions, presently seems out of the question. It is hardly conceivable that regional elites will give up the powers they have wrought from the centre (and the rents that come with them). This should be true even if there were a conservative

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<sup>13</sup> The history of inter-war China provides a graphic example of the type of "low-level equilibrium" that might result.

<sup>14</sup> Even then the cost of migration for people would probably still be so substantial (e.g. in terms of finding new housing) that any distortionary impact of factor movements on the provision of public goods (which arouses such concern in the public finance literature) would remain small in the short to medium term.

<sup>15</sup> A similar point has been made by Levy (1988) who seeks to explain the relatively large size of exporting footwear producers in South Korea compared with Taiwan. Levy argues that business, and particularly international marketing skills were in relatively short supply in post-war Korea. Hence it was desirable to have relatively large firms. The shortage of such specialized skills was arguably less stringent in Taiwan, where firm size is found to have been significantly lower.

backlash in national politics.<sup>16</sup> Further decentralization would give the more reform-minded regions a chance to go ahead, and their example might well transpire to the presently conservative regions. This assertion is supported by the empirical analysis in this paper which has shown that inter-regional differences in support for reform reflect genuine political preferences rather than merely distributional concerns.

It is beyond the scope of this paper to discuss in detail possible strategies for decentralization in areas such as expenditure and tax assignment, privatization policy, financial system reform, etc. This applies particularly because it is not clear whether oblast-level regions will survive in their present form. In devising such strategies, however, three lessons from the above discussion may be drawn upon.

First, the effectiveness of inter-regional competition will depend on a constitutional framework that can only be provided by the central political institution. This should include not only basic human rights, but also economic rights such as the free movement of people, goods, and money throughout Russia. In addition, there are also areas such as the legal system and macroeconomic policy where inter-regional differences in preferences are probably small, and which may therefore be delegated to the centre to avoid duplication of effort.

Second, an economic case may be made for requiring all regions to share in the financial burdens resulting from Russia's communist past. Apart from economic considerations, there is also the possibility of political upheaval if powerful groups stand to suffer excessive income losses. In all likelihood, burden-sharing will require a substantial inter-regional redistribution of income that may well have to be organized through the centre.

Third, an institutional framework should be created that takes into account the existing inter-regional differences in political preferences and in the need for inter-regional cooperation. It seems advisable, conceptually, to reconstruct the federal system from bottom to top, and to allocate responsibilities to the centre only if this is in the interest of a very large majority of regions. More limited inter-regional cooperation that involves only sub-groups of regions may occur through specialized supra-regional, medium-level government institutions that are controlled by the participating regions.

On a cautionary note, we emphasize that the complexity of the current situation does not lend itself to sweeping generalizations. Competition among regions in the framework of a confederation might well leave many Russian citizens worse off than they would be if there were a central government with bureaucrats whose objective function contained only the common good. Such a point of reference, however, is clearly irrelevant. Under present circumstances, formally acknowledging the decentralization that has already taken place,

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<sup>16</sup> Even under the former, "bureaucratic market" system of intermediation (Naishul, 1993) regional elites have long wielded effective power, although this was not obvious in terms of formal institutions.

and giving regions well-defined responsibilities and sources of income offers the best hope of regaining the momentum of economic reform. Relieving the centre of responsibilities that are best born by the regions should also free administrative capacity for those tasks that only central institutions can take care of adequately.

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Table 1 - Economic Determinants of the Results of the April 1993 Referendum - OLS Regression Results (N=85)

| Equation No.<br>Dependent Variable | (1)<br>YEL93 | (2)<br>YEL93 | (3)<br>YEL93 | (4)<br>EC93 | (5)<br>EC93 | (6)<br>EC93 | (7)<br>ELPR93 | (8)<br>ELPR93 | (9)<br>ELPR93 | (10)<br>ELPA93 | (11)<br>ELPA93 | (12)<br>ELPA93 | (13)<br>PCAPY |
|------------------------------------|--------------|--------------|--------------|-------------|-------------|-------------|---------------|---------------|---------------|----------------|----------------|----------------|---------------|
| C                                  | 47.52***     | 12.53**      | 22.17*       | 41.03       | 12.90**     | 19.63*      | 44.01***      | 61.32***      | 63.00***      | 40.35***       | 36.73***       | 37.09***       | 2.11*         |
| DNAT                               |              | 1.94         | -3.07        |             | 1.39        | -2.87       |               | -2.22         | 0.14          |                | -2.48**        | -3.07*         |               |
| URBPOP                             |              | 31.86***     | 2.81         |             | 29.00***    | 2.55        |               | -23.40***     | -13.65**      |                | 0.49           | -4.90          | 4.07***       |
| PCAPY                              |              | 0.39E-02***  | 0.54-02***   |             | 0.32E-02*** | 0.46***     |               | -0.19E-02***  | -0.25E-02***  |                | 0.13E-02***    | 0.15E-02***    |               |
| ANIMAL                             | -4.89***     |              | -4.01***     | -4.16***    |             | -3.40***    | 3.06***       |               | 1.93***       | -0.144         |                | -0.28          | 0.12          |
| CEREAL                             | -2.97**      |              | -1.59        | -1.06**     |             | -0.91       | 1.83***       |               | 0.72          | -0.05          |                | 0.24           | -0.13         |
| VBEGCG                             | -2.59        |              | -2.38        | -2.50*      |             | -2.36       | 0.90          |               | 0.55          | -1.12          |                | -1.32*         | -0.22E-01     |
| PREMET                             | 0.42         |              | -2.50**      | 0.37        |             | -2.10**     | 0.06          |               | 1.46**        | 0.30           |                | -0.51          | 0.48***       |
| OILGAS                             | 2.51*        |              | -0.20        | 2.41**      |             | 0.14        | -1.12         |               | 0.54          | 0.52           |                | 0.02           | 0.37***       |
| IRONIN                             | 0.47         |              | -0.16        | 0.32        |             | -0.22       | -0.32         |               | 0.31          | -0.23          |                | -0.29          | -0.39E-01     |
| PCOAL                              | -0.27        |              | -0.26        | -0.24       |             | -0.25       | -0.46         |               | -0.29         | -0.57          |                | -0.59          | -0.13         |
| AROTIT                             | -0.51        |              | -3.09***     | -0.62       |             | -2.80***    | 0.19          |               | 1.48***       | 0.16           |                | -0.53          | 0.41***       |
| MERCOP                             | 0.14         |              | 0.67         | 0.11        |             | 0.56        | 0.08          |               | -0.51         | 0.18           |                | 0.18           | 0.37E-01      |
| BAUX                               | -2.24        |              | -2.09*       | -2.09       |             | -1.95*      | 0.82          |               | 0.72          | -1.31          |                | -1.25*         | 0.15E-01      |
| FERRALL                            | 1.88         |              | 1.44         | 1.68        |             | 1.30        | -0.97         |               | -0.56         | 0.70           |                | 0.63           | 0.40E-01      |
| HEAVY                              | 0.98         |              | 1.61         | 1.75        |             | 2.20        | -0.68         |               | -0.35         | 0.37           |                | 0.69           | -0.56***      |
| LIGHT                              | -0.86        |              | -1.11        | -0.49       |             | -0.73       | 0.89          |               | 1.27**        | 0.84           |                | 0.76           | -0.13         |
| FOOD                               | -0.41        |              | -2.46**      | -0.46       |             | -2.19       | 0.17          |               | 1.04*         | 0.58           |                | -0.04          | 0.38***       |
| MILIND                             | 0.03         |              | 0.02         | 0.02        |             | 0.64E-02**  | -0.01         |               | 0.12E-02      | 0.02           |                | 0.02           | -0.18E-02     |
| TERTIAR                            | 0.34         |              | 0.08         | 0.38        |             | 0.17        | -0.39*        |               | -0.23*        | 0.08           |                | 0.04           | 0.36E-01      |
| R <sup>2</sup>                     | 0.32         | 0.43         | 0.56         | 0.33        | 0.43        | 0.56        | 0.41          | 0.50          | 0.63          | 0.21E-02       | 0.16           | 0.16           | 0.57          |
| F                                  | 3.47***      | 22.53***     | 6.59***      | 3.53***     | 21.72***    | 6.55***     | 3.56***       | 29.43***      | 8.56***       | 1.01           | 6.41***        | 1.83**         | 7.67***       |
| DW*                                | 1.12         | 1.25         | 1.63         | 1.13        | 1.24        | 1.62        | 1.53          | 1.33          | 1.89          | 1.38           | 1.75           | 1.93           | 1.77          |

\*\*\*(\*\*,\*) Significantly different from 0 at the  $\alpha=0.01$  (0.05; 0.10) confidence level (two-tailed t test). - "Observations are arranged by the traditional "economic regions".

Source: Data see Tables A1 through A5; own calculations with TSP Version 4.2B software.

Table 2 - Economic Determinants of the December 1993 Election Results - Probit Estimation Results ( $dP(DEPVAR=1)/dx$ )

| Equation No.<br>Dependent Variable | (1)<br>DEMOCR | (2)<br>DEMOCR | (3)*<br>DEMOCR | (4)<br>CONST | (5)<br>CONST | (6)<br>CONST | (7)<br>LLYEL | (8)<br>LLYEL | (9)<br>LLYEL |
|------------------------------------|---------------|---------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|
| C                                  | -0.42         | -1.39*        |                | 0.24         | -0.77        | -0.49        | -0.12        | -1.49*       | -1.45        |
| DNAT                               |               | 0.27*         |                |              | 0.09         | -0.16        |              | 0.24         | 0.04         |
| URBPOP                             |               | 0.85*         |                |              | 0.31         | -0.54        |              | 0.23         | -0.23        |
| PCAPY                              |               | 0.10E-03*     |                |              | 0.12E-03     | 0.26E-03*    |              | 0.26E-03*    | 0.40E-03*    |
| ANIMAL                             | -0.26*        |               |                | -0.09        |              | -0.15        | -0.06        |              | -0.10        |
| CEREAL                             | -0.29*        |               |                | -0.07        |              | -0.11        | -0.05        |              | -0.06        |
| VEGEGG                             | -0.10*        |               |                | 0.04         |              | 0.04         | 0.07         |              | 0.19         |
| PREMET                             | 0.05          |               |                | 0.02         |              | -0.17        | 0.21         |              | 0.07         |
| OILGAS                             | 1.21*         |               |                | -0.40        |              | 0.08         | 1.85         |              | 2.04         |
| IROTIN                             | 0.01          |               |                | -0.21        |              | -0.40*       | 0.66         |              | 0.85         |
| PBCOAL                             | 0.04          |               |                | 0.17         |              | 0.22         | 0.88         |              | 1.47         |
| AROTIT                             | -0.03         |               |                | -0.01        |              | -0.23        | -0.39        |              | -0.86        |
| MERCOP                             | 0.22          |               |                | 0.03         |              | 0.03         | 2.41         |              | 3.62         |
| BAUX                               | -0.13         |               |                | -0.05        |              | -0.03        | -2.92        |              | -4.39        |
| FERRALL                            | 0.08          |               |                | 0.03         |              | -0.12E-02    | 6.04         |              | 9.51         |
| HEAVY                              | 0.07          |               |                | 0.01         |              | 0.05         | -0.11        |              | -0.05        |
| LIGHT                              | 0.32E-2       |               |                | 0.05         |              | 0.79E-02     | 0.06         |              | 0.14         |
| FOOD                               | 0.02          |               |                | -0.11        |              | -0.25*       | -0.14*       |              | -0.52*       |
| MLIND                              | -0.12E-2      |               |                | -0.41E-02    |              | -0.43E-02    | -0.18E-02    |              | -0.74E-02    |
| TERTIAR                            | 0.01          |               |                | -0.16E-02    |              | -0.93E-02    | 0.01         |              | -0.69E-02    |
| N                                  | 86            | 86            | 86             | 65           | 65           | 65           | 87           | 87           | 87           |
| per cent pos. obs.                 | 33.7          | 33.7          | 33.7           | 63.1         | 63.1         | 63.1         | 63.2         | 63.2         | 63.2         |
| R <sup>2</sup>                     | 0.77          | 0.31          | 1.00           | 0.24         | 0.07         | 0.39         | 0.50         | 0.23         | 0.85         |

\*Estimate did not converge. - \*t-statistic (parameter estimate divided by standard error) greater than or equal to 2.

Source: Data see Tables A1 through A5; own calculations with TSP Version 4.2B software.

Table A1 - Indicators of Regional Political Preferences

|                      | YEL93 | BCSO93 | ELPR93 | ELPA93 | DEMOCR | CONSTD | LYEL |
|----------------------|-------|--------|--------|--------|--------|--------|------|
| North                |       |        |        |        |        |        |      |
| Karelia              | 65.0  | 56.6   | 30.0   | 42.7   | 1      | 1      | 1    |
| Komi                 | 69.0  | 60.0   | 26.2   | 41.3   | 1      | n.a.   | 1    |
| Archangel'sk         | 64.9  | 60.2   | 30.9   | 46.2   | 1      | 1      | 1    |
| Nenets AOKrug        | 66.3  | 58.6   | 29.5   | 48.0   | 1      | 1      | 1    |
| Vologda              | 63.3  | 56.7   | 36.5   | 48.3   | 0      | 1      | 1    |
| Murmansk             | 72.8  | 63.9   | 23.6   | 44.7   | 1      | n.a.   | 1    |
| Northwest            |       |        |        |        |        |        |      |
| St. Petersburg City  | 72.8  | 65.6   | 23.0   | 48.9   | 1      | 1      | 1    |
| Leningrad Oblast     | 59.9  | 53.0   | 30.4   | 43.8   | 0      | 1      | 1    |
| Novgorod             | 59.4  | 53.0   | 33.0   | 44.6   | 0      | 1      | 1    |
| Pskov                | 49.7  | 44.7   | 41.3   | 45.9   | 0      | 1      | 1    |
| Central              |       |        |        |        |        |        |      |
| Bryansk              | 44.4  | 40.9   | 40.5   | 39.2   | 0      | 0      | 0    |
| Vladimir             | 65.8  | 58.3   | 34.6   | 47.6   | 0      | 1      | 1    |
| Ivanovo              | 64.7  | 58.3   | 33.0   | 48.5   | 0      | 1      | 1    |
| Kaluga               | 53.4  | 48.4   | 38.0   | 47.8   | 0      | 0      | 0    |
| Komarov              | 56.6  | 49.6   | 37.7   | 45.9   | 0      | 1      | 1    |
| Moscow City          | 75.2  | 70.0   | 20.9   | 51.1   | 1      | 1      | 1    |
| Moscow Oblast        | 65.2  | 59.3   | 27.9   | 47.3   | 1      | 1      | 1    |
| Orel                 | 46.3  | 42.6   | 40.8   | 40.9   | 0      | 0      | 0    |
| Ryazan               | 49.8  | 45.1   | 44.2   | 50.5   | 0      | 0      | 0    |
| Smolensk             | 40.2  | 37.2   | 43.7   | 40.2   | 0      | 0      | 0    |
| Tver                 | 53.9  | 49.2   | 36.8   | 45.0   | 0      | 1      | 1    |
| Tula                 | 61.2  | 55.7   | 33.3   | 45.7   | 0      | 1      | 0    |
| Yaroslavl            | 68.8  | 61.4   | 32.0   | 47.0   | 1      | 1      | 1    |
| Volga-Vlatka         |       |        |        |        |        |        |      |
| Mari-El              | 48.1  | 42.2   | 34.8   | 40.4   | 0      | 1      | 0    |
| Mordovia             | 38.0  | 35.0   | 41.9   | 35.9   | 0      | 0      | 0    |
| Chuvashia            | 36.9  | 33.5   | 43.1   | 36.0   | 0      | 1      | 0    |
| Kirov                | 58.6  | 51.1   | 35.1   | 45.5   | 0      | 0      | 1    |
| Nizhni Novgorod      | 63.6  | 56.6   | 29.9   | 43.7   | 0      | 1      | 0    |
| Central Chernozem    |       |        |        |        |        |        |      |
| Belgorod             | 39.6  | 36.1   | 48.6   | 45.1   | 0      | 0      | 0    |
| Voronezh             | 49.7  | 45.2   | 40.2   | 40.5   | 0      | 0      | 0    |
| Kursk                | 42.1  | 38.7   | 42.1   | 38.7   | 0      | 0      | 0    |
| Lipetsk              | 49.2  | 44.7   | 38.8   | 40.2   | 0      | 0      | 0    |
| Tambov               | 44.1  | 40.3   | 43.7   | 45.5   | 0      | 0      | 0    |
| Volga                |       |        |        |        |        |        |      |
| Kalmukia             | 67.1  | 63.9   | 28.5   | 46.6   | 0      | 0      | 1    |
| Tatarstan            | n.a.  | n.a.   | n.a.   | n.a.   | 1      | n.a.   | 1    |
| Astrakhan            | 60.7  | 55.1   | 28.2   | 40.2   | 0      | 1      | 1    |
| Volgograd            | 53.7  | 49.0   | 34.3   | 43.7   | 0      | 0      | 0    |
| Penza                | 45.3  | 41.1   | 41.6   | 40.7   | 0      | 0      | 0    |
| Saratov              | 60.9  | 55.1   | 30.8   | 43.1   | 0      | 1      | 0    |
| Saratov              | 51.8  | 47.6   | 37.4   | 43.4   | 0      | 0      | 0    |
| Ulyanovsk            | 47.5  | 43.7   | 39.9   | 43.7   | 0      | 1      | 0    |
| North Caucasus       |       |        |        |        |        |        |      |
| Adygys               | 43.9  | 40.9   | 37.8   | 37.5   | 0      | 0      | 0    |
| Dagestan             | 14.2  | 14.1   | 55.4   | 23.3   | 0      | 0      | 0    |
| Karachai-Balkaria    | 35.8  | 33.1   | 36.6   | 31.2   | n.a.   | n.a.   | 0    |
| Kabardino-Cherkessia | 25.9  | 24.6   | 50.1   | 31.5   | 0      | 0      | 0    |
| North Ossetia        | 61.3  | 56.1   | 35.3   | 47.6   | 0      | 1      | 1    |
| Ingushetia           | 2.4   | 2.8    | 70.8   | 4.9    | 0      | 1      | 0    |
| Chechnya             | n.a.  | n.a.   | n.a.   | n.a.   | n.a.   | n.a.   | 0    |
| Krasnodar Krai       | 53.8  | 49.3   | 33.6   | 40.7   | 0      | 1      | 1    |
| Stavropol            | 52.3  | 48.1   | 36.6   | 44.5   | 0      | 1      | 1    |
| Rostov               | 55.5  | 51.3   | 34.0   | 43.4   | 0      | 1      | 1    |
| Ural                 |       |        |        |        |        |        |      |
| Bashkortostan        | 39.6  | 35.9   | 42.4   | 37.8   | 0      | 0      | 0    |
| Udmurtia             | 55.9  | 49.0   | 31.0   | 40.1   | 0      | n.a.   | 1    |
| Kurgan               | 50.3  | 45.4   | 38.5   | 44.2   | 0      | 1      | 0    |
| Orenburg             | 50.1  | 45.8   | 36.1   | 41.1   | 0      | 1      | 0    |
| Perm                 | 76.5  | 68.6   | 24.4   | 44.5   | 1      | n.a.   | 1    |
| Komi-Permyak AOKrug  | 62.1  | 59.3   | 35.5   | 44.7   | 0      | 1      | 1    |
| Sverdlovsk           | 84.4  | 76.3   | 22.1   | 52.7   | 1      | n.a.   | 1    |
| Chelyabinsk          | 71.5  | 65.5   | 23.5   | 43.9   | 1      | 1      | 0    |

Table A1 continued

|                          | YEL93 | ECS93 | ELPR93 | ELPA93 | DEMOCR93 | CONSTID | LLYEL |
|--------------------------|-------|-------|--------|--------|----------|---------|-------|
| West Siberia             |       |       |        |        |          |         |       |
| Altai Republic           | 48.4  | 43.4  | 37.9   | 40.8   | 1        | 1       | 1     |
| Altai Krai               | 47.7  | 42.9  | 36.0   | 39.0   | 0        | 1       | 0     |
| Kemerovo                 | 52.5  | 47.7  | 30.3   | 38.0   | 0        | 1       | 1     |
| Novosibirsk              | 54.6  | 48.4  | 32.6   | 42.9   | 0        | n.a.    | 0     |
| Omsk                     | 56.1  | 49.8  | 34.9   | 45.6   | 0        | 1       | 1     |
| Tomsk                    | 66.8  | 59.6  | 26.2   | 43.2   | 1        | n.a.    | 1     |
| Tyumen                   | 58.4  | 52.0  | 30.6   | 41.0   | 0        | n.a.    | 1     |
| Khanty-Mansi AOkrug      | 83.2  | 74.5  | 19.6   | 42.2   | 1        | n.a.    | 1     |
| Yamal-Nenets AOkrug      | 82.8  | 74.1  | 22.9   | 49.3   | 1        | n.a.    | 1     |
| East Siberia             |       |       |        |        |          |         |       |
| Buryatia                 | 51.8  | 46.2  | 33.5   | 38.3   | 0        | 1       | 1     |
| Republic of Tyva         | 56.1  | 50.5  | 35.0   | 40.9   | 1        | 0       | 1     |
| Khakassia                | 57.9  | 51.9  | 28.8   | 37.4   | 0        | n.a.    | 1     |
| Krasnoyarsk              | 65.7  | 59.2  | 27.9   | 42.1   | 0        | n.a.    | 1     |
| Taimyr AOkrug            | 76.8  | 68.1  | 23.7   | 48.5   | 1        | 1       | 1     |
| Evenk AOkrug             | 70.5  | 62.4  | 28.1   | 45.0   | 1        | 1       | 1     |
| Irkutsk                  | 58.6  | 51.7  | 29.7   | 40.6   | 1        | n.a.    | 1     |
| Ust' Orda Buryat AOkrug  | 48.8  | 43.5  | 43.9   | 46.2   | 0        | 1       | 1     |
| Chita                    | 43.3  | 39.1  | 37.0   | 37.6   | 1        | n.a.    | 0     |
| Agia Buryat AOkrug       | n.a.  | n.a.  | n.a.   | n.a.   | 0        | n.a.    | 1     |
| Far East                 |       |       |        |        |          |         |       |
| Sakha (Yakutia)          | 68.1  | 60.8  | 32.0   | 47.9   | 1        | 1       | 1     |
| Primorsky                | 64.3  | 56.8  | 25.3   | 38.4   | 1        | n.a.    | 1     |
| Khabarovsk               | 70.3  | 62.4  | 26.3   | 40.8   | 1        | 0       | 1     |
| Jewish Autonomous Oblast | 58.6  | 52.8  | 29.4   | 38.4   | 0        | n.a.    | 1     |
| Amur                     | 43.2  | 39.7  | 36.4   | 44.5   | 0        | 0       | 0     |
| Kamchatka                | 70.3  | 61.6  | 24.5   | 45.5   | 1        | n.a.    | 1     |
| Koryak AOkrug            | 67.0  | 54.6  | 32.7   | 52.4   | 1        | 1       | 1     |
| Magadan                  | 74.4  | 65.1  | 23.1   | 43.6   | 1        | n.a.    | 1     |
| Chukotka AOkrug          | 74.2  | 63.5  | 27.2   | 51.0   | 1        | 1       | 1     |
| Sakhalin                 | 60.9  | 51.6  | 27.3   | 38.0   | 0        | n.a.    | 1     |
| Kaliningrad Oblast       | 60.3  | 54.3  | 30.7   | 44.5   | 0        | 1       | 1     |

YEL93: support for Yeltsin in April 1993 referendum (per cent of votes cast). - ECS93: support for the economic and social policies of the Russian government in April 1993 referendum (per cent of votes cast). - ELPR93: support for early elections for the presidency (per cent of registered voters). - ELPA93: support for early elections for the parliament (per cent of registered voters). - DEMOCR93: equal to 1 if democratic parties (VR, RDD, Yabloko, PRRS) obtained at least as many votes as conservative parties (LDPR, KPRF, Agrarian Party RP) in December 1993 parliamentary election. - CONSTID equal to 1 if majority of voters approved the new constitution. - LLYEL: equal to 1 for areas other than those judged to be least supportive of Yeltsin from 1991 through 1993.

Source: Segodnya, December 21, 1993; Teague (1993); Yasin et al. (1994).

Table A2 - Per capita Gross Output of Agricultural Commodities, 1991 (Russian Federation = 100)

|                   | Cereal | Sugar beet | Sunflower seeds | Potatoes | Vegetables | Meat | Milk | Eggs |
|-------------------|--------|------------|-----------------|----------|------------|------|------|------|
| All Russia        | 100    | 100        | 100             | 100      | 100        | 100  | 100  | 100  |
| North             | 13     |            |                 | 68       | 38         | 64   | 69   | 95   |
| Karelia           |        |            |                 | 68       | 39         | 50   | 60   | 110  |
| Komi              |        |            |                 | 78       | 34         | 44   | 46   | 90   |
| Arkhangelsk       | 12     |            |                 | 71       | 36         | 60   | 67   | 100  |
| Nenets AOkrug     |        |            |                 |          |            | 117  | 58   | 0    |
| Vologda           | 44     |            |                 | 112      | 69         | 121  | 143  | 111  |
| Murmansk          |        |            |                 | 5        | 9          | 30   | 19   | 68   |
| Northwest         | 7      |            |                 | 47       | 76         | 58   | 62   | 99   |
| Leningrad Oblast  | 6      |            |                 | 146      | 268        | 160  | 154  | 395  |
| Novgorod          | 17     |            |                 | 90       | 106        | 118  | 118  | 90   |
| Pskov             | 36     |            |                 | 93       | 117        | 141  | 202  | 105  |
| Central           | 49     | 32         |                 | 115      | 96         | 68   | 82   | 101  |
| Bryansk           | 101    | 70         |                 | 480      | 154        | 141  | 155  | 125  |
| Vladimir          | 48     |            |                 | 154      | 158        | 74   | 87   | 95   |
| Ivanovo           | 53     |            |                 | 119      | 112        | 88   | 92   | 101  |
| Kaluga            | 70     |            |                 | 200      | 117        | 113  | 147  | 116  |
| Kostroma          | 63     |            |                 | 134      | 121        | 104  | 123  | 127  |
| Moscow Oblast     | 13     |            |                 | 95       | 167        | 61   | 79   | 215  |
| Orel              | 314    | 505        |                 | 328      | 92         | 200  | 219  | 124  |
| Ryazan            | 189    | 111        |                 | 243      | 106        | 143  | 184  | 118  |
| Smolensk          | 61     |            |                 | 129      | 94         | 125  | 178  | 91   |
| Tver              | 36     |            |                 | 106      | 64         | 107  | 135  | 108  |
| Tula              | 141    | 147        |                 | 187      | 116        | 107  | 100  | 118  |
| Yaroslavl         | 23     |            |                 | 92       | 197        | 71   | 95   | 110  |
| Volga-Viatka      | 101    | 23         | 1               | 180      | 114        | 114  | 126  | 99   |
| Mari-El           | 120    |            |                 | 272      | 131        | 167  | 147  | 97   |
| Mordovia          | 126    | 93         | 3               | 192      | 111        | 146  | 153  | 109  |
| Chuvashia         | 85     |            | 0               | 266      | 73         | 124  | 128  | 87   |
| Kirov             | 151    |            |                 | 171      | 131        | 139  | 159  | 96   |
| Nizhni Novgorod   | 73     | 26         | 0               | 130      | 118        | 79   | 99   | 102  |
| Central Chernozem | 215    | 873        | 278             | 137      | 136        | 179  | 160  | 117  |
| Belgorod          | 195    | 1235       | 354             | 105      | 134        | 217  | 189  | 123  |
| Voronezh          | 194    | 663        | 448             | 92       | 112        | 170  | 143  | 113  |
| Kursk             | 239    | 1292       | 3               | 238      | 171        | 179  | 187  | 117  |
| Lipetsk           | 241    | 768        | 71              | 164      | 139        | 161  | 144  | 114  |
| Tambov            | 230    | 553        | 349             | 128      | 145        | 172  | 145  | 122  |
| Volga             | 145    | 73         | 186             | 82       | 114        | 125  | 115  | 103  |
| Kalmykia          | 348    |            | 220             | 9        | 92         | 272  | 94   | 69   |
| Tatarstan         | 115    | 133        |                 | 177      | 82         | 116  | 124  | 106  |
| Astrakhan         | 27     |            |                 | 14       | 346        | 75   | 54   | 68   |
| Volgograd         | 233    |            | 352             | 30       | 146        | 134  | 114  | 95   |
| Penza             | 146    | 256        | 75              | 129      | 108        | 162  | 145  | 112  |
| Samara            | 106    | 31         | 248             | 58       | 59         | 101  | 88   | 100  |
| Saratov           | 166    | 23         | 328             | 31       | 128        | 135  | 134  | 109  |
| Ulyanovsk         | 143    | 118        | 192             | 100      | 83         | 132  | 130  | 128  |

Table A2 continued

|                          | Cereal | Sugar beet | Sunflower seeds | Potatoes | Vegetables | Meat | Milk | Eggs |
|--------------------------|--------|------------|-----------------|----------|------------|------|------|------|
| North Caucasus           | 216    | 257        | 476             | 51       | 171        | 131  | 99   | 100  |
| Adygeya                  | 141    | 206        | 290             | 22       | 207        | 122  | 89   | 74   |
| Dagestan                 | 38     |            | 24              | 22       | 177        | 60   | 52   | 43   |
| Karbadino-Balkaria       | 106    |            | 183             | 84       | 169        | 79   | 97   | 62   |
| Karachaevo-Cherkessia    | 64     | 465        | 60              | 191      | 142        | 121  | 119  | 90   |
| North Ossetia            | 82     |            | 59              | 92       | 99         | 84   | 65   | 58   |
| Chechnya                 | 51     | 36         | 35              | 19       | 108        | 46   | 58   | 31   |
| Ingushetia               |        |            |                 |          |            |      |      |      |
| Krasnodar Krai           | 276    | 747        | 656             | 64       | 239        | 178  | 116  | 115  |
| Stavropol                | 344    | 195        | 524             | 65       | 137        | 163  | 114  | 155  |
| Rostov                   | 265    |            | 757             | 29       | 145        | 137  | 107  | 116  |
| Ural                     | 83     | 43         | 48              | 111      | 79         | 101  | 106  | 98   |
| Bashkortostan            | 117    | 221        | 90              | 135      | 48         | 125  | 135  | 91   |
| Udmurtia                 | 84     |            |                 | 178      | 119        | 117  | 120  | 87   |
| Kurgan                   | 180    |            |                 | 140      | 139        | 216  | 222  | 110  |
| Orenburg                 | 239    |            | 249             | 68       | 99         | 142  | 161  | 104  |
| Perm                     | 45     |            |                 | 99       | 90         | 75   | 74   | 96   |
| Komi-Permyak             | 75     |            |                 | 284      | 143        | 139  | 150  | 16   |
| AOkrug                   |        |            |                 |          |            |      |      |      |
| Sverdlovsk               | 25     |            |                 | 107      | 67         | 62   | 61   | 108  |
| Chelyabinsk              | 27     |            |                 | 80       | 65         | 78   | 82   | 97   |
| West Siberia             | 113    | 26         | 28              | 117      | 82         | 113  | 130  | 103  |
| Altai Republic           | 29     |            |                 | 55       | 50         | 152  | 126  | 81   |
| Altai Krai               | 225    | 148        | 144             | 132      | 107        | 159  | 189  | 115  |
| Kemerovo                 | 54     |            | 1               | 108      | 69         | 72   | 81   | 102  |
| Novosibirsk              | 143    |            | 5               | 129      | 114        | 126  | 153  | 93   |
| Omsk                     | 115    |            | 7               | 145      | 98         | 168  | 194  | 114  |
| Tomsk                    | 80     |            |                 | 105      | 100        | 99   | 106  | 103  |
| Tyumen                   | 154    |            |                 | 191      | 69         | 134  | 159  | 215  |
| Khanty-Mansi AOkrug      |        |            |                 | 19       | 7          | 12   | 10   | 11   |
| Yamal-Nenets-AOkrug      |        |            |                 | 5        | 3          | 20   | 5    | 7    |
| East Siberia             | 99     |            |                 | 112      | 76         | 93   | 88   | 90   |
| Buryatia                 | 72     |            |                 | 82       | 78         | 105  | 71   | 81   |
| Republic of Tyva         | 54     |            |                 | 45       | 28         | 124  | 65   | 65   |
| Khakassia                | 112    |            |                 | 113      | 125        | 117  | 104  | 108  |
| Krasnoyarsk              | 146    |            |                 | 144      | 88         | 109  | 117  | 105  |
| Taimyr AOkrug            |        |            |                 |          |            | 30   | 16   | 6    |
| Evenk AOkrug             |        |            |                 |          |            | 38   | 23   | 13   |
| Irkutsk                  | 41     |            |                 | 110      | 69         | 55   | 51   | 98   |
| Ust' Orda Buryat AOkrug  | 438    |            |                 | 325      | 153        | 329  | 399  | 29   |
| Chita                    | 99     |            |                 | 68       | 46         | 82   | 80   | 54   |
| Agia Buryat AOkrug       | 298    |            |                 | 49       | 54         | 181  | 163  | 68   |
| Far East                 | 24     |            | 1               | 71       | 65         | 63   | 52   | 85   |
| Sakha (Yakutia)          | 3      |            |                 | 35       | 39         | 62   | 64   | 46   |
| Primorsky                | 20     |            | 2               | 65       | 68         | 47   | 39   | 90   |
| Khabarovsk               | 2      |            | 0               | 58       | 51         | 48   | 24   | 98   |
| Jewish Autonomous Oblast | 36     |            |                 | 198      | 103        | 72   | 118  | 67   |
| Amur                     | 120    |            | 2               | 132      | 94         | 106  | 101  | 80   |
| Kamchatka                |        |            |                 | 68       | 66         | 59   | 45   | 91   |
| Koryak AOkrug            |        |            |                 | 33       | 475        | 122  | 37   | 57   |
| Magadan                  |        |            |                 | 27       |            | 66   | 49   | 140  |
| Chukchi AOkrug           |        |            |                 |          |            | 65   | 12   | 9    |
| Sakhalin                 |        |            |                 | 78       | 89         | 77   | 56   | 101  |
| Koliningrad Oblast       | 90     |            |                 | 85       | 156        | 117  | 175  | 120  |

Source: Goskomstat Rossii (1992).

Table A3 - Regional Per Capita Availability of Mineral Resources (Russian Federation  $\pm$  100)

|                       | Perod                  | Natural Gas | Coal | Iron ore | Copper                 | Lead/Zinc | Processing | Titanium/Magnesium | Bauxite | Mercury | Tin etc. | Gold ore                      | Silver ore | Diamonds |
|-----------------------|------------------------|-------------|------|----------|------------------------|-----------|------------|--------------------|---------|---------|----------|-------------------------------|------------|----------|
|                       | (1990 physical output) |             |      |          | (1989 value of output) |           |            |                    |         |         |          | (number of enterprises, 1989) |            |          |
| All Russia            | 100                    | 100         | 100  | 100      | 100                    | 100       | 100        | 100                | 100     | 100     | 100      | 100                           | 100        | 100      |
| North                 | 73                     | 31          | 179  | 477      | 0                      |           | 727        |                    | 63      |         | 789      |                               |            |          |
| Kamla                 |                        |             |      | 1619     |                        |           |            |                    |         |         |          |                               |            |          |
| Komi                  | 331                    | 150         | 877  |          |                        |           |            |                    |         |         |          |                               |            |          |
| Arkhangelsk           | 23                     | 1           |      |          |                        |           |            |                    | 255     |         |          |                               |            |          |
| Nenets AOKrug         |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Vologda               |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Murmansk              | 0                      |             | 0    | 1419     | 0                      |           | 3885       |                    |         |         | 4215     |                               |            |          |
| Northwest             |                        |             |      |          |                        |           |            |                    | 1024    |         |          |                               |            |          |
| St. Petersburg City   |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Leningrad Oblast      |                        |             |      |          |                        |           |            |                    | 5062    |         |          |                               |            |          |
| Novgorod              |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Pskov                 |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Central               |                        |             |      | 17       |                        |           |            |                    |         |         |          |                               |            |          |
| Bryansk               |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Vladimir              |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Ivanovo               |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Kaluga                |                        |             |      | 11       |                        |           |            |                    |         |         |          |                               |            |          |
| Kostroma              |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Moscow City           |                        |             |      | 2        |                        |           |            |                    |         |         |          |                               |            |          |
| Moscow Oblast         |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Orel                  |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Ryazan                |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Smolensk              |                        |             |      | 12       |                        |           |            |                    |         |         |          |                               |            |          |
| Tver                  |                        |             |      | 7        |                        |           |            |                    |         |         |          |                               |            |          |
| Tula                  |                        |             |      | 250      |                        |           |            |                    |         |         |          |                               |            |          |
| Yamalo-Nenets         |                        |             |      | 0        |                        |           |            |                    |         |         |          |                               |            |          |
| Volga-Viatka          |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Mari-El               |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Mordovia              |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Chuvashia             |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Kirov                 |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Nizhni Novgorod       |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Central Chernozem     |                        |             |      | 854      |                        |           |            |                    |         |         |          |                               |            |          |
| Belgorod              |                        |             |      | 2779     |                        |           |            |                    |         |         |          |                               |            |          |
| Voronezh              |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Kursk                 |                        |             |      | 2044     |                        |           |            |                    |         |         |          |                               |            |          |
| Lipetsk               |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Tambov                |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Volga                 | 95                     | 8           |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Kalmykia              | 41                     | 15          |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Tatarstan             | 278                    | 8           |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Astrakhan             | 1                      | 48          |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Volgograd             | 24                     | 5           |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Penza                 | 1                      |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Samara                | 134                    | 5           |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Saratov               | 14                     | 7           |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Ulyanovsk             | 1                      |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| North Caucasus        | 15                     | 7           | 43   |          | 29                     | 57        | 23         |                    |         |         |          |                               |            |          |
| Adygeya               |                        |             | 36   |          |                        |           |            |                    |         |         |          |                               |            |          |
| Dagestan              | 9                      | 10          |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Karabach-Balkaria     |                        |             |      |          |                        |           |            | 502                |         |         |          |                               |            |          |
| Karachaevo-Cherkessia |                        |             | 0    |          | 1161                   |           |            |                    |         |         |          |                               |            |          |
| North Ossetia         |                        |             |      |          |                        | 1406      |            |                    |         |         |          |                               |            |          |
| Ingushetia            | 94                     | 26          |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Chechnya              |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Krasnodar Krai        | 12                     | 7           |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Stavropol             | 20                     | 6           | 1    |          |                        |           |            |                    |         |         |          |                               |            |          |
| Rostov                | 2                      | 249         |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Ural                  | 81                     | 48          | 44   | 141      | 703                    | 0         | 44         | 728                | 294     |         | 82       | 144                           |            | 182      |
| Basikortostan         | 183                    | 3           | 11   | 7        | 1722                   | 0         |            |                    |         |         |          |                               |            |          |
| Udmurtia              | 199                    | 1           |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Kurgan                |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Orenburg              | 114                    | 435         | 50   | 13       | 2972                   |           | 411        |                    |         |         |          |                               |            |          |
| Perm                  | 116                    | 5           | 41   |          |                        |           | 5          | 5043               |         |         |          |                               |            | 1261     |
| Komi-Permyak AOKrug   |                        |             |      |          |                        |           |            |                    |         |         |          |                               |            |          |
| Sverdlovsk            |                        |             | 35   | 434      | 194                    | 0         |            |                    | 1159    |         |          | 508                           |            |          |
| Chelyabinsk           |                        |             | 126  | 214      |                        |           | 109        |                    | 150     |         | 461      | 264                           |            |          |

Table A3 continued

|                          | Petrol                 | Natural Gas | Coal | Iron ore | Copper                 | Lead/Zinc | Fluor-silicop | Titanium/Magnesium | Bauxite | Mercury                         | Vanadium | Gold (oz) | Silver (oz) | Diamonds |
|--------------------------|------------------------|-------------|------|----------|------------------------|-----------|---------------|--------------------|---------|---------------------------------|----------|-----------|-------------|----------|
|                          | (1990 physical output) |             |      |          | (1989 value of output) |           |               |                    |         | (millions of enterprises, 1989) |          |           |             |          |
| West Siberia             | 714                    | 866         | 374  | 40       | 183                    |           |               |                    |         | 980                             |          |           |             |          |
| Altai Republic           |                        |             |      |          |                        |           |               |                    |         | 75103                           |          |           |             |          |
| Altai Krai               |                        |             |      |          | 551                    |           |               |                    |         |                                 |          |           |             |          |
| Kemerovo                 |                        |             | 1772 | 193      | 411                    |           |               |                    |         |                                 |          |           |             |          |
| Novosibirsk              | 0                      |             | 12   |          |                        |           |               |                    |         |                                 |          |           |             |          |
| Omsk                     |                        |             |      |          |                        |           |               |                    |         |                                 |          |           |             |          |
| Tomsk                    | 299                    | 5           |      |          |                        |           |               |                    |         |                                 |          |           |             |          |
| Tyumen                   | 0                      | 503         |      |          |                        |           |               |                    |         |                                 |          |           |             |          |
| Khanty-Mansi AOkrug      | 6891                   | 512         |      |          |                        |           |               |                    |         |                                 |          |           |             |          |
| Yamal-Nenets AOkrug      | 3217                   | 24583       |      |          |                        |           |               |                    |         |                                 |          |           |             |          |
| East Siberia             | 0                      | 0           | 402  | 197      | 191                    | 917       |               |                    |         |                                 | 156      | 422       |             |          |
| Buryatia                 |                        |             | 161  |          |                        | 100       |               |                    |         |                                 |          |           |             |          |
| Republic of Tyva         |                        |             | 131  |          |                        | 184       |               |                    |         |                                 |          |           |             |          |
| Khakassia                |                        |             | 439  | 1030     |                        | 396       |               |                    |         |                                 |          |           |             |          |
| Krasnoyarsk              | 0                      | 0           | 661  | 150      | 111                    |           |               |                    |         |                                 | 0        | 645       |             |          |
| Tyva AOkrug              |                        |             | 55   |          |                        | 149445    |               |                    |         |                                 |          |           |             |          |
| Evsk AOkrug              |                        |             |      |          |                        |           |               |                    |         |                                 |          |           |             |          |
| Irkutsk                  |                        |             | 332  | 285      |                        |           |               |                    |         |                                 | 17       | 176       |             |          |
| Ust' Orda Buryat AOkrug  |                        |             | 40   |          |                        |           |               |                    |         |                                 |          |           |             |          |
| Chita                    |                        |             | 286  |          |                        | 817       | 51            |                    |         |                                 | 1025     | 2559      |             |          |
| Agz Buryat AOkrug        |                        |             |      |          |                        |           | 1423          |                    |         |                                 |          |           |             |          |
| Far East                 | 7                      | 9           | 333  |          | 1214                   | 26        |               |                    |         |                                 | 867      | 717       | 1851        | 1389     |
| Sakha (Yakutia)          | 1                      | 29          | 583  |          |                        |           |               |                    |         |                                 |          | 2633      |             | 10204    |
| Primorsky                |                        |             | 259  |          | 4208                   | 92        |               |                    |         |                                 | 0        |           | 379         |          |
| Khabarovsk               |                        |             | 48   |          |                        |           |               |                    |         |                                 | 3361     | 294       | 535         |          |
| Jewish Autonomous Oblast |                        |             |      |          |                        |           |               |                    |         |                                 | 6663     |           |             |          |
| Amur                     |                        |             | 234  |          |                        |           |               |                    |         |                                 |          | 1339      |             |          |
| Kamchatka                |                        |             | 0    |          |                        |           |               |                    |         |                                 |          |           |             |          |
| Koryak AOkrug            |                        |             | 16   |          |                        |           |               |                    |         |                                 |          |           |             |          |
| Magadan                  |                        |             | 200  |          |                        |           |               | 0                  |         |                                 | 0        | 2643      | 21688       |          |
| Chukotka AOkrug          |                        |             | 315  |          |                        |           |               | 0                  |         |                                 |          |           | 29956       |          |
| Sakhalin                 | 26                     | 58          | 260  |          |                        |           |               | 0                  |         |                                 |          |           | 1217        |          |
| Kaliningrad Oblast       | 38                     |             |      |          |                        |           |               | 0                  |         |                                 |          |           |             |          |

Source: Goskomstat RSFSR (1991); Plancon Enterprise Databank.

Table A4 - Per Capita Employment in Branches of Industry 1989 (Russian Federation = 100)

| USSR                | Food<br>20/21 | Light<br>industries<br>22/23/25/<br>31/39 | Wood/<br>furniture<br>24/26 | Printing<br>27 | Chemicals<br>etc.<br>28/29/30/32 | Metallurgy<br>33 | Capital<br>goods<br>34/35/36/<br>37/38 | Military<br>industrial<br>complex <sup>a</sup><br>1985<br>(VKP) |
|---------------------|---------------|-------------------------------------------|-----------------------------|----------------|----------------------------------|------------------|----------------------------------------|-----------------------------------------------------------------|
| All Russia          | 100           | 100                                       | 100                         | 100            | 100                              | 100              | 100                                    | 100                                                             |
| North               | 107           | 49                                        | 498                         | 67             | 53                               | 143              | 39                                     | 41                                                              |
| Karelia             | 83            | 61                                        | 856                         | 147            | 77                               | 44               | 75                                     | 27                                                              |
| Komi                | 48            | 41                                        | 445                         | 50             | 48                               | 3                | 18                                     | 13                                                              |
| Akhangelak          | 79            | 36                                        | 770                         | 63             | 42                               | 0                | 19                                     | 87                                                              |
| Nenets AOkrug       | 134           | 0                                         | 114                         | 47             | 11                               | 0                | 0                                      | 0                                                               |
| Vologda             | 92            | 92                                        | 428                         | 65             | 87                               | 604              | 54                                     | 47                                                              |
| Murmansk            | 241           | 19                                        | 50                          | 39             | 15                               | 15               | 50                                     | 16                                                              |
| Northwest           | 85            | 126                                       | 104                         | 177            | 97                               | 29               | 110                                    | 151                                                             |
| St. Petersburg City | 85            | 144                                       | 39                          | 259            | 79                               | 32               | 143                                    | 175                                                             |
| Leningrad Oblast    | 62            | 76                                        | 282                         | 20             | 123                              | 37               | 31                                     | 89                                                              |
| Novgorod            | 94            | 102                                       | 205                         | 78             | 190                              | 0                | 63                                     | 185                                                             |
| Pskov               | 126           | 137                                       | 43                          | 91             | 64                               | 17               | 111                                    | 102                                                             |
| Central             | 85            | 198                                       | 62                          | 281            | 118                              | 74               | 131                                    | 109                                                             |
| Bryansk             | 139           | 144                                       | 94                          | 44             | 109                              | 111              | 158                                    | 167                                                             |
| Vladimir            | 84            | 327                                       | 95                          | 71             | 203                              | 113              | 132                                    | 250                                                             |
| Ivanovo             | 95            | 828                                       | 75                          | 83             | 61                               | 6                | 88                                     | 11                                                              |
| Kaluga              | 87            | 118                                       | 105                         | 101            | 68                               | 91               | 116                                    | 202                                                             |
| Kostroma            | 85            | 185                                       | 411                         | 86             | 56                               | 11               | 84                                     | 57                                                              |
| Moscow City         | 72            | 121                                       | 29                          | 373            | 76                               | 63               | 138                                    | 92                                                              |
| Moscow Oblast       | 47            | 239                                       | 31                          | 147            | 144                              | 68               | 113                                    | 92                                                              |
| Orel                | 156           | 73                                        | 5                           | 63             | 61                               | 386              | 153                                    | 56                                                              |
| Ryazan              | 136           | 119                                       | 46                          | 99             | 91                               | 55               | 126                                    | 127                                                             |
| Smolensk            | 121           | 178                                       | 55                          | 194            | 93                               | 40               | 111                                    | 87                                                              |
| Tver                | 96            | 242                                       | 148                         | 304            | 163                              | 3                | 113                                    | 34                                                              |
| Tula                | 114           | 92                                        | 64                          | 109            | 214                              | 119              | 123                                    | 204                                                             |
| Yaroslavl           | 110           | 138                                       | 56                          | 129            | 198                              | 49               | 249                                    | 131                                                             |
| Volga-Vlatta        | 93            | 118                                       | 141                         | 64             | 111                              | 78               | 157                                    | 146                                                             |
| Mari-El             | 101           | 84                                        | 186                         | 66             | 48                               | 0                | 28                                     | 176                                                             |
| Mordovia            | 100           | 66                                        | 51                          | 81             | 129                              | 141              | 198                                    | 69                                                              |
| Chuvashia           | 75            | 143                                       | 131                         | 69             | 100                              | 39               | 184                                    | 80                                                              |
| Kirov               | 88            | 146                                       | 306                         | 68             | 63                               | 103              | 31                                     | 132                                                             |
| Nizhni Novgorod     | 99            | 116                                       | 83                          | 57             | 145                              | 82               | 221                                    | 190                                                             |
| Central Chernozem   | 134           | 62                                        | 14                          | 55             | 98                               | 133              | 184                                    | 87                                                              |
| Belgorod            | 184           | 35                                        | 7                           | 54             | 127                              | 139              | 74                                     | 32                                                              |
| Voronezh            | 47            | 33                                        | 8                           | 31             | 60                               | 0                | 87                                     | 152                                                             |
| Kursk               | 185           | 101                                       | 20                          | 110            | 137                              | 0                | 132                                    | 49                                                              |
| Lipetsk             | 174           | 56                                        | 6                           | 51             | 97                               | 670              | 159                                    | 33                                                              |
| Tambov              | 156           | 112                                       | 37                          | 51             | 98                               | 5                | 86                                     | 115                                                             |
| Volga               | 102           | 78                                        | 40                          | 78             | 137                              | 46               | 145                                    | 124                                                             |
| Kalmykia            | 90            | 56                                        | 0                           | 93             | 18                               | 0                | 13                                     | 16                                                              |
| Tatarstan           | 76            | 76                                        | 40                          | 64             | 145                              | 0                | 154                                    | 128                                                             |
| Astrakhan           | 194           | 84                                        | 71                          | 67             | 71                               | 0                | 59                                     | 65                                                              |
| Volgograd           | 119           | 73                                        | 22                          | 78             | 178                              | 252              | 122                                    | 82                                                              |
| Penza               | 128           | 87                                        | 98                          | 50             | 71                               | 0                | 139                                    | 105                                                             |
| Samara              | 86            | 50                                        | 26                          | 78             | 166                              | 17               | 233                                    | 177                                                             |
| Saratov             | 103           | 74                                        | 16                          | 124            | 170                              | 13               | 91                                     | 128                                                             |
| Ulyanovsk           | 86            | 157                                       | 74                          | 59             | 60                               | 5                | 158                                    | 148                                                             |

Table A4 continued

| USSR                      | Food<br>20/21 | Light<br>industries<br>22/23/25/<br>31/39 | Wood/<br>furniture<br>24/26 | Printing<br>27 | Chemicals<br>etc.<br>28/29/30/32 | Metallurgy<br>33 | Capital<br>goods<br>34/35/36/<br>37/38 | Military<br>industrial<br>complex*<br>1985<br>(VKP) |
|---------------------------|---------------|-------------------------------------------|-----------------------------|----------------|----------------------------------|------------------|----------------------------------------|-----------------------------------------------------|
| North Caucasus            | 126           | 97                                        | 23                          | 58             | 69                               | 24               | 73                                     | 41                                                  |
| Adygeys                   | 231           | 143                                       | 105                         | 123            | 44                               | 0                | 30                                     | 13                                                  |
| Dagestan                  | 98            | 83                                        | 1                           | 29             | 31                               | 0                | 20                                     | 59                                                  |
| Karabado-Balkaria         | 125           | 118                                       | 7                           | 58             | 49                               | 39               | 55                                     | 50                                                  |
| Karachaevo-Cherkessia     | 80            | 133                                       | 29                          | 41             | 143                              | 0                | 46                                     | 74                                                  |
| North Ossetia             | 121           | 117                                       | 29                          | 91             | 46                               | 120              | 52                                     | 103                                                 |
| Ingushetia *              | 78            | 78                                        | 14                          | 44             | 86                               | 0                | 36                                     | 6                                                   |
| Chechnya *                |               |                                           |                             |                |                                  |                  |                                        |                                                     |
| Krasnodar Krai            | 170           | 76                                        | 51                          | 43             | 71                               | 1                | 51                                     | 10                                                  |
| Stavropol                 | 106           | 87                                        | 1                           | 68             | 83                               | 0                | 50                                     | 34                                                  |
| Rostov                    | 110           | 122                                       | 9                           | 76             | 70                               | 67               | 157                                    | 68                                                  |
| Ural                      | 77            | 67                                        | 98                          | 80             | 102                              | 312              | 100                                    | 150                                                 |
| Bashkortostan             | 81            | 81                                        | 66                          | 54             | 136                              | 83               | 67                                     | 107                                                 |
| Udmurtia                  | 62            | 33                                        | 116                         | 44             | 33                               | 9                | 53                                     | 281                                                 |
| Kurgan                    | 130           | 46                                        | 36                          | 87             | 69                               | 0                | 131                                    | 74                                                  |
| Orenburg                  | 86            | 89                                        | 8                           | 48             | 73                               | 183              | 87                                     | 52                                                  |
| Perm                      | 73            | 73                                        | 209                         | 179            | 144                              | 176              | 48                                     | 198                                                 |
| Komi-Permyak AOkrug       | 46            | 12                                        | 214                         | 63             | 9                                | 6                | 22                                     | 0                                                   |
| Sverdlovsk                | 71            | 63                                        | 155                         | 73             | 119                              | 568              | 127                                    | 204                                                 |
| Chelyabinsk               | 71            | 60                                        | 28                          | 71             | 71                               | 664              | 165                                    | 119                                                 |
| West Siberia              | 100           | 53                                        | 72                          | 62             | 100                              | 91               | 68                                     | 86                                                  |
| Altai Republic            | 60            | 55                                        | 138                         | 55             | 18                               | 0                | 4                                      | 15                                                  |
| Altai Krai                | 146           | 67                                        | 37                          | 54             | 129                              | 5                | 143                                    | 78                                                  |
| Kemerovo                  | 92            | 58                                        | 36                          | 51             | 142                              | 368              | 58                                     | 57                                                  |
| Novosibirsk               | 114           | 61                                        | 24                          | 104            | 61                               | 53               | 71                                     | 169                                                 |
| Omsk                      | 81            | 65                                        | 35                          | 78             | 133                              | 0                | 44                                     | 143                                                 |
| Tomsk                     | 86            | 30                                        | 301                         | 53             | 146                              | 51               | 90                                     | 43                                                  |
| Tyumen                    | 103           | 63                                        | 185                         | 53             | 47                               | 0                | 52                                     | 46                                                  |
| Khanty-Mansi AOkrug       | 50            | 0                                         | 108                         | 21             | 24                               | 0                | 2                                      | 0                                                   |
| Yamal-Nenets-AOkrug       | 80            | 1                                         | 20                          | 26             | 21                               | 0                | 0                                      | 34                                                  |
| East Siberia              | 75            | 60                                        | 253                         | 50             | 99                               | 71               | 51                                     | 50                                                  |
| Buryatia                  | 91            | 61                                        | 177                         | 59             | 53                               | 0                | 50                                     | 57                                                  |
| Republic of Tyva          | 53            | 25                                        | 40                          | 64             | 29                               | 0                | 0                                      | 0                                                   |
| Khakassia                 | 111           | 202                                       | 153                         | 32             | 45                               | 179              | 44                                     | 29                                                  |
| Krasnoyarsk               | 67            | 64                                        | 278                         | 47             | 123                              | 73               | 75                                     | 69                                                  |
| Taymyr AOkrug             | 125           | 0                                         | 0                           | 64             | 0                                | 0                | 0                                      | 0                                                   |
| Evenk AOkrug              | 11            | 0                                         | 78                          | 51             | 0                                | 0                | 0                                      | 0                                                   |
| Idkutsk                   | 82            | 41                                        | 393                         | 55             | 158                              | 106              | 51                                     | 56                                                  |
| Un' Orda Buryat<br>AOkrug | 38            | 7                                         | 140                         | 36             | 0                                | 0                | 0                                      | 0                                                   |
| Chita                     | 63            | 50                                        | 99                          | 46             | 18                               | 34               | 24                                     | 19                                                  |
| Agia Buryat<br>AOkrug     | 42            | 0                                         | 39                          | 36             | 3                                | 0                | 0                                      | 0                                                   |
| Far East                  | 162           | 37                                        | 137                         | 61             | 57                               | 28               | 40                                     | 61                                                  |
| Sakha (Yakutia)           | 48            | 16                                        | 60                          | 76             | 31                               | 0                | 6                                      | 58                                                  |
| Primorsky                 | 175           | 38                                        | 86                          | 53             | 69                               | 13               | 41                                     | 55                                                  |
| Khabarovsk                | 115           | 41                                        | 272                         | 49             | 70                               | 115              | 63                                     | 115                                                 |
| Jewish                    |               |                                           |                             |                |                                  |                  |                                        |                                                     |
| Autonomous Oblast         | 79            | 196                                       | 109                         | 53             | 85                               | 0                | 79                                     | 5                                                   |
| Amur                      | 97            | 43                                        | 91                          | 58             | 60                               | 5                | 47                                     | 18                                                  |
| Kamchatka                 | 551           | 20                                        | 13                          | 59             | 27                               | 0                | 41                                     | 7                                                   |
| Koryak AOkrug             | 622           | 0                                         | 0                           | 119            | 0                                | 0                | 0                                      | 0                                                   |
| Magadan                   | 106           | 33                                        | 43                          | 78             | 50                               | 0                | 37                                     | 234                                                 |
| Chukchi AOkrug            | 78            | 13                                        | 0                           | 70             | 22                               | 0                | 0                                      | 0                                                   |
| Sakhalin                  | 312           | 19                                        | 346                         | 81             | 49                               | 0                | 25                                     | 2                                                   |
| Kalininingrad Oblast      | 135           | 57                                        | 196                         | 87             | 27                               | 7                | 95                                     | 58                                                  |

\*Not included in individual branches.

Source: Planecon Enterprise Databank; Horrigan (1992).

Table A5 - Population, Income, Social Characteristics

|                     | Population 1992<br>(thousands) | DNAT<br>(1 for autonomous<br>areas) | URBPOP<br>(percentage share of<br>population in<br>urban-type<br>settlements) | TERTIAR<br>Share of employees<br>in "non-production"<br>(tertiary) sector | PCAPY<br>(household income<br>per capita) |
|---------------------|--------------------------------|-------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------------------|
| All Russia          | 148704                         |                                     | 73.8                                                                          | 27.2                                                                      |                                           |
| North               | 6136                           |                                     | 76.8                                                                          | 26.5                                                                      | 6157                                      |
| Karelia             | 800                            | 1                                   | 82.1                                                                          | 28.4                                                                      | 6111                                      |
| Komi                | 1255                           | 1                                   | 75.5                                                                          | 27.4                                                                      | 6922                                      |
| Arkhangelsk         | 1517                           | 0                                   | 73.6                                                                          | 26.0                                                                      | 5472                                      |
| Nenets AOkrug       | 54                             | 1                                   | 64.1                                                                          | 26.0                                                                      | 5472                                      |
| Vologda             | 1362                           | 0                                   | 66.0                                                                          | 23.1                                                                      | 5159                                      |
| Murmansk            | 1148                           | 0                                   | 92.2                                                                          | 29.4                                                                      | 7467                                      |
| Northwest           | 8279                           |                                     | 86.8                                                                          | 32.3                                                                      | 5836                                      |
| St. Petersburg City | 5004                           | 0                                   | 100.0                                                                         | 37.2                                                                      | 6382                                      |
| Leningrad Oblast    | 1673                           | 0                                   | 66.2                                                                          | 26.1                                                                      | 4787                                      |
| Novgorod            | 752                            | 0                                   | 70.5                                                                          | 22.8                                                                      | 5238                                      |
| Pskov               | 841                            | 0                                   | 64.3                                                                          | 22.3                                                                      | 5200                                      |
| Central             | 30383                          |                                     | 83.0                                                                          | 32.0                                                                      | 6307                                      |
| Bryansk             | 1464                           | 0                                   | 68.6                                                                          | 21.6                                                                      | 5280                                      |
| Vladimir            | 1656                           | 0                                   | 79.8                                                                          | 22.1                                                                      | 4890                                      |
| Ivanovo             | 1312                           | 0                                   | 81.7                                                                          | 23.8                                                                      | 5364                                      |
| Kaluga              | 1081                           | 0                                   | 73.6                                                                          | 25.7                                                                      | 5062                                      |
| Kostroma            | 812                            | 0                                   | 68.8                                                                          | 26.0                                                                      | 4911                                      |
| Moscow City         | 8957                           | 0                                   | 99.9                                                                          | 45.1                                                                      | 9059                                      |
| Moscow Oblast       | 6707                           | 0                                   | 79.5                                                                          | 33.8                                                                      | 5239                                      |
| Orel                | 903                            | 0                                   | 63.0                                                                          | 20.0                                                                      | 5806                                      |
| Ryazan              | 1344                           | 0                                   | 66.9                                                                          | 23.2                                                                      | 4934                                      |
| Smolensk            | 1163                           | 0                                   | 69.1                                                                          | 22.3                                                                      | 4786                                      |
| Tver                | 1668                           | 0                                   | 72.1                                                                          | 23.8                                                                      | 4897                                      |
| Tula                | 1844                           | 0                                   | 81.6                                                                          | 22.9                                                                      | 5304                                      |
| Yaroslavl           | 1472                           | 0                                   | 81.7                                                                          | 23.1                                                                      | 5170                                      |
| Volga-Viatka        | 8483                           |                                     | 69.8                                                                          | 23.1                                                                      | 4795                                      |
| Mari-El             | 762                            | 1                                   | 62.2                                                                          | 25.7                                                                      | 4432                                      |
| Mordovia            | 964                            | 1                                   | 58.1                                                                          | 22.0                                                                      | 4478                                      |
| Chuvashia           | 1353                           | 1                                   | 59.9                                                                          | 23.5                                                                      | 4499                                      |
| Kirov               | 1700                           | 0                                   | 70.8                                                                          | 22.7                                                                      | 4805                                      |
| Nizhnii Novgorod    | 3704                           | 0                                   | 77.7                                                                          | 23.2                                                                      | 5055                                      |
| Central Chernozem   | 7762                           |                                     | 61.4                                                                          | 22.1                                                                      | 4699                                      |
| Belgorod            | 1408                           | 0                                   | 64.3                                                                          | 22.4                                                                      | 5209                                      |
| Voronezh            | 2475                           | 0                                   | 61.7                                                                          | 23.3                                                                      | 4227                                      |
| Kursk               | 1335                           | 0                                   | 59.7                                                                          | 20.8                                                                      | 4772                                      |
| Lipetsk             | 1234                           | 0                                   | 63.9                                                                          | 21.3                                                                      | 4970                                      |
| Tambov              | 1310                           | 0                                   | 57.3                                                                          | 21.7                                                                      | 4714                                      |
| Volga               | 16641                          |                                     | 73.5                                                                          | 23.8                                                                      | 5069                                      |
| Kalmykia            | 327                            | 1                                   | 46.5                                                                          | 28.6                                                                      | 6917                                      |
| Tatarstan           | 3696                           | 1                                   | 73.6                                                                          | 24.2                                                                      | 4734                                      |
| Asrakhan            | 1010                           | 0                                   | 67.2                                                                          | 27.3                                                                      | 4922                                      |
| Volgograd           | 2643                           | 0                                   | 75.8                                                                          | 23.5                                                                      | 5261                                      |
| Penza               | 1514                           | 0                                   | 62.9                                                                          | 24.5                                                                      | 4670                                      |
| Samara              | 3296                           | 0                                   | 80.9                                                                          | 20.2                                                                      | 5496                                      |
| Saratov             | 2711                           | 0                                   | 74.5                                                                          | 23.7                                                                      | 4964                                      |
| Ulyanovsk           | 1444                           | 0                                   | 72.4                                                                          | 22.5                                                                      | 4902                                      |

Table A5 continued

|                             | Population 1992<br>(thousands) | DNAT<br>(1 for autonomous<br>areas) | URBPOP<br>(percentage share of<br>population in<br>urban-type<br>settlements) | TERTIAR<br>Share of employees<br>in "non-production"<br>(tertiary) sector | PCAPY<br>(household income<br>per capita) |
|-----------------------------|--------------------------------|-------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------------------|
| North Caucasus              | 17246                          |                                     | 57.4                                                                          | 25.6                                                                      | 4964                                      |
| Adygeya                     | 442                            | 1                                   | 52.7                                                                          | 27.5                                                                      | 4643                                      |
| Dagestan                    | 1890                           | 1                                   | 43.9                                                                          | 28.9                                                                      | 3475                                      |
| Karabaido-Balkaria          | 784                            | 1                                   | 61.4                                                                          | 29.2                                                                      | 4070                                      |
| Karachaevo-<br>Cherkessia   | 431                            | 1                                   | 49.4                                                                          | 23.9                                                                      | 5469                                      |
| North Ossetia               | 695                            | 1                                   | 67.8                                                                          | 29.7                                                                      | 4485                                      |
| Ingushetia *                | 1308                           |                                     | 49.9                                                                          | 29.1                                                                      | 4295                                      |
| Chechnya *                  |                                |                                     |                                                                               |                                                                           |                                           |
| Krasnodar Krai              | 4797                           | 0                                   | 54.5                                                                          | 25.6                                                                      | 5314                                      |
| Stavropol                   | 2536                           | 0                                   | 54.3                                                                          | 24.6                                                                      | 5495                                      |
| Rostov                      | 4363                           | 0                                   | 70.9                                                                          | 23.9                                                                      | 5333                                      |
| Ural                        | 20430                          |                                     | 74.8                                                                          | 24.4                                                                      | 5024                                      |
| Bashkortostan               | 4008                           | 1                                   | 64.0                                                                          | 23.9                                                                      | 4613                                      |
| Udmurtia                    | 1637                           | 1                                   | 70.2                                                                          | 23.8                                                                      | 5229                                      |
| Kurgan                      | 1115                           | 0                                   | 55.1                                                                          | 23.2                                                                      | 4956                                      |
| Orenburg                    | 2204                           | 0                                   | 65.1                                                                          | 23.7                                                                      | 4686                                      |
| Perm                        | 2949                           | 0                                   | 80.1                                                                          | 24.8                                                                      | 4756                                      |
| Komi-Permyak                |                                |                                     |                                                                               |                                                                           |                                           |
| AOkrug                      | 160                            | 1                                   | 30.0                                                                          | 24.8                                                                      | 4756                                      |
| Sverdlovsk                  | 4719                           | 0                                   | 87.3                                                                          | 25.7                                                                      | 5243                                      |
| Chelyabinsk                 | 3638                           | 0                                   | 81.7                                                                          | 24.2                                                                      | 5550                                      |
| West Siberia                | 15167                          |                                     | 72.4                                                                          | 28.1                                                                      | 6515                                      |
| Altai Republic              | 198                            | 1                                   | 26.8                                                                          | 29.2                                                                      | 4241                                      |
| Altai Krai                  | 2666                           | 0                                   | 55.4                                                                          | 22.8                                                                      | 5098                                      |
| Kemerovo                    | 3181                           | 0                                   | 87.3                                                                          | 23.7                                                                      | 6219                                      |
| Novosibirsk                 | 2803                           | 0                                   | 74.9                                                                          | 28.0                                                                      | 6196                                      |
| Omsk                        | 2170                           | 0                                   | 67.9                                                                          | 25.5                                                                      | 5144                                      |
| Tomsk                       | 1012                           | 0                                   | 68.7                                                                          | 31.1                                                                      | 6453                                      |
| Tyumen                      | 1353                           | 0                                   | 60.1                                                                          | 23.6                                                                      | 9403                                      |
| Khanty-Mansi AOkrug         | 1305                           | 1                                   | 91.4                                                                          | 23.6                                                                      | 9403                                      |
| Yamal-Nenets-<br>AOkrug     | 479                            | 1                                   | 82.7                                                                          | 23.6                                                                      | 9403                                      |
| East Siberia                | 9260                           |                                     | 71.8                                                                          | 27.3                                                                      | 5785                                      |
| Buryatia                    | 1059                           | 1                                   | 59.5                                                                          | 29.7                                                                      | 4898                                      |
| Republic of Tyva            | 306                            | 1                                   | 48.0                                                                          | 37.7                                                                      | 4224                                      |
| Khakassia                   | 581                            | 1                                   | 72.5                                                                          | 24.7                                                                      | 4704                                      |
| Krasnoyarsk                 | 2973                           | 0                                   | 73.0                                                                          | 25.5                                                                      | 6523                                      |
| Taymyr AOkrug               | 53                             | 1                                   | 67.9                                                                          | 25.5                                                                      | 6523                                      |
| Evenk AOkrug                | 25                             | 1                                   | 28.0                                                                          | 25.5                                                                      | 6523                                      |
| Irkutsk                     | 2732                           | 0                                   | 83.9                                                                          | 26.9                                                                      | 6182                                      |
| Ust' Ona Buryat<br>AOkrug   | 140                            | 1                                   | 18.6                                                                          | 26.9                                                                      | 6182                                      |
| Chita                       | 1312                           | 0                                   | 67.8                                                                          | 29.7                                                                      | 4818                                      |
| Agia Buryat AOkrug          | 79                             | 1                                   | 32.9                                                                          | 29.7                                                                      | 4818                                      |
| Far East                    | 8032                           |                                     | 76.0                                                                          | 28.2                                                                      | 7318                                      |
| Sakha (Yakutia)             | 1093                           | 1                                   | 66.4                                                                          | 33.2                                                                      | 9423                                      |
| Primorsky                   | 2309                           | 0                                   | 77.6                                                                          | 24.7                                                                      | 6050                                      |
| Khabarovsk                  | 1634                           | 0                                   | 80.7                                                                          | 28.5                                                                      | 6657                                      |
| Jewish Autonomous<br>Oblast | 221                            | 1                                   | 65.6                                                                          | 28.5                                                                      | 6657                                      |
| Amur                        | 1075                           | 0                                   | 66.3                                                                          | 26.9                                                                      | 6134                                      |
| Kamcharka                   | 433                            | 0                                   | 85.2                                                                          | 29.1                                                                      | 8961                                      |
| Koryak AOkrug               | 39                             | 1                                   | 38.5                                                                          | 29.1                                                                      | 8961                                      |
| Magadan                     | 363                            | 0                                   | 84.8                                                                          | 30.5                                                                      | 10737                                     |
| Chukchi AOkrug              | 146                            | 1                                   | 73.3                                                                          | 30.5                                                                      | 10737                                     |
| Sakhalin                    | 719                            | 0                                   | 85.3                                                                          | 28.9                                                                      | 8075                                      |
| Kaliningrad Oblast          | 894                            | 0                                   | 78.9                                                                          | 28.1                                                                      | 5726                                      |

Source: Unpublished material provided by the Research Institute of the Parliamentary Centre of the Russian parliament; Goskomstat Rossii (1992).