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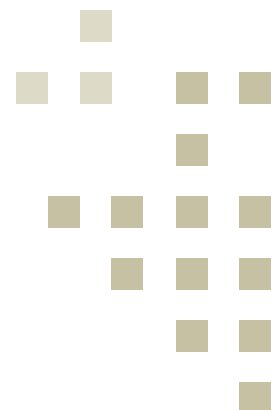
Divergence and dispersion in the Russian economy

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Divergence and dispersion in the Russian economy

Per Botolf Maurseth

Divergence and dispersion in the Russian economy

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Abstract

In the Soviet Union, one result of central planning was geographical decentralisation of economic activity to a large set of remote peripheral regions. For Russian post-Soviet regions an important question is whether centripetal market forces may alter the pre-existing industrial location. This paper addresses some aspects of regional economic development in Russia. The Russian economic landscape differs from what is common in market economies. Peripheral regions are generally richer than the average. During the 1990s, differences in gross regional product increased. These developments have also meant less spatial concentration of economic activity. During the last half of the 1990s, economic growth was higher in central regions than in the peripheries. If these trends continue, the Russian economic landscape will alter significantly in the future, with income per capita, total income and population being concentrated in economic central regions.

1.Introduction

While post-war economic development in market economies was characterised by geographic concentration of economic activity, this was not the case for the Soviet Union. Soviet economic development resulted in a highly dispersed economic landscape with mono-industrial towns scattered around the country. One plausible reason for this was the low perceived transportation costs for Soviet planners. Another reason was that political and not only economical motives governed industrial location (Maurseth, 2001a). In addition to the mere size of the country, these factors made the Soviet Union one of the most transport intensive economies in the world. The post-Soviet Russian economic geography faces Russia with important challenges. Production, population and employment patterns are likely to change dramatically. There are at least four reasons for this hypothesis. The first is structural change in the

Russian economy. Production patterns in Russia were highly distorted. In the future industrial production, and in particular heavy industry, will represent a smaller share of total production while consumer industry and services will probably experience relatively higher growth rates. The second reason to expect a changing economic geography is that transportation costs are likely to increase. While the Soviet Union implicitly subsidised transportation heavily, Russia now faces important challenges due to increasing transportation prices. The third reason for expected changes is population changes. Recently, migration from the climatically least hospitable areas has been growing. In the future, these trends are likely to continue. Fourth, and partly as consequences of the above-mentioned factors, market access will probably become more important for location of Russian industry. The Russian economic landscape will therefore probably become more concentrated in the years to come.

In this paper, the post-Soviet Russian economic geography is discussed. While recent studies have shed considerable light on regional economic development during the Yeltsin period, very few of them have considered the impact of geography. The analysis put forth in this paper shows that Russia has a geographically concentrated economic landscape. Economic welfare is concentrated so that rich regions tend to be located nearby other rich regions. The clusters of relatively rich regions are located in the peripheries and not in the economic centre of the country. This may be a transitional phase. During the 1990s growth in income per capita has been higher in central regions than in peripheral ones. Similarly, population growth has been higher in central regions than in the peripheries. Recent trends therefore predict a changing economic landscape in Russian in which economic activity and will welfare per capita relocate to central regions.

The rest of this paper is organised as follows: The next section discusses some principles of regional development and the inherited Soviet economic geography in Russia. Thereafter the macroeconomic developments in Russia, in particular after the 1998 devaluation, are discussed. Section 4 presents evidence on regional development in Russia, both in a descriptive fashion and by use of more formal descriptive spatial econometric approaches. Section 5 is devoted to recent developments in economic

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policy in Russia. In particular recent developments in federal-regional relations are discussed. Section 6 concludes.

2. Regional developments

Economic geography

What determines where economic activity is located? This very broad question forms the basics of what is known as international economics, regional economics, growth economics and economic geography. While it is far beyond the scope of this paper to review the literature, some core results should be summarised. Three basic results are important.

Firstly, economic theory emphasises the importance of comparative advantages. Regions well endowed with particular resources will tend to produce goods where use of these resources is relatively intensive. For Russian regional development, in which extraction of natural resources has been of particular importance, regions' endowments of natural resources will continue to play an important role. What will happen in a world in which regions are specialised according to their comparative advantages when economic circumstances change? For an integrated country with regional labour mobility the outcome will be migration to those regions that benefit from changed relative prices. Therefore, industrial location will change with less production in regions that lose from price changes and more in those that benefit. Furthermore, in a world in which comparative advantages govern industrial location, increased transportation costs will reduce welfare and economic activity in peripheral regions.

Secondly, it is a stylised fact that economic development tends to result in agglomeration of economic activity. Both in the world economy and within continents and countries, economic activity clusters on limited space. The economics of agglomeration has many facets, but one main message is that agglomeration is a result of various forms of increasing returns in production. Increasing returns at the firm level in combination with transportation costs stimulate firms to locate where markets are large. This will save transportation costs. If markets tend to get large where firms

locate, urbanisation occurs.¹ For the Russian context there are two important messages from the recent theorising on economic geography. The first is that the world is path dependent. For instance, if Moscow has an advantage in terms of its industrial base and market size, this advantage will hardly change in the future. The second message, however, is dramatic: changes might occur. The simple message above was that the combination of increasing returns and transportation costs made a case for concentrated production. But where will production concentrate and to how many clusters? Economic theorising is far less enlightening on these questions. From formal modelling the answers seem to be functions of the importance of transportation costs, the degrees of mobility of the population and the extent of increasing returns.² Even if concentration to a certain extent is self-reinforcing, when changes in transportation costs, mobility or the importance of transportation costs occur, the numbers of industrial centres may change. For the Russian reality, the outcome may become de-industrialisation and depopulation in some areas to the benefit of other areas.

What determines economic development in the long run? Will economic processes result in increasing differences between regions or will there be convergence? Most theories of economic growth focus on the accumulation of (physical and human) capital. Investments today result in increased production capacity tomorrow. Traditional theories of economic growth assumed decreasing returns to individual factors of production. In that case, capital-rich regions would experience lower returns to investments than regions that are poor in capital. In a country with free capital movements therefore, capital would flow to the poorest regions. As time passes by, the marginal productivity of capital was expected to decrease for all regions. To counteract decreasing returns to capital, technological progress is necessary. Thus, regional growth is regarded as being dependent on technological change. If technological progress occurs independently of capital accumulation, it will not change the relative position of rich versus poor regions and economic growth will be characterised by convergence. New theories of economic growth argue that technological progress may occur as a result of investments. If this

¹ A wide set of recent contributions has analysed mechanisms along the above lines. A pioneering contribution is Krugman (1991). Fujita, Krugman and Venables (1999) summarises the literature.

² Concentration of production will be more probable when transportation costs are low, when the degree of mobility of the population is high and when increasing returns are important. The number of industrial clusters will similarly decrease as a function of the same parameters.

is the case, regional economic development may well result in divergence. The reason is that some regions may be lucky and get into a virtuous circle in which technological change breeds investments that in turn breed new innovations. Other regions may become caught in a low-growth trap without investments and technological change.³

In the presence of so-called externalities, in which firms learn from other firms within the same location, human capital accumulation may depend on the size of regions. Thus, tendencies to decreasing returns on capital accumulation may be counteracted by agglomeration effects. Also for this reason, regional economic development may be characterised by divergence.

3. The macroeconomic backcloth

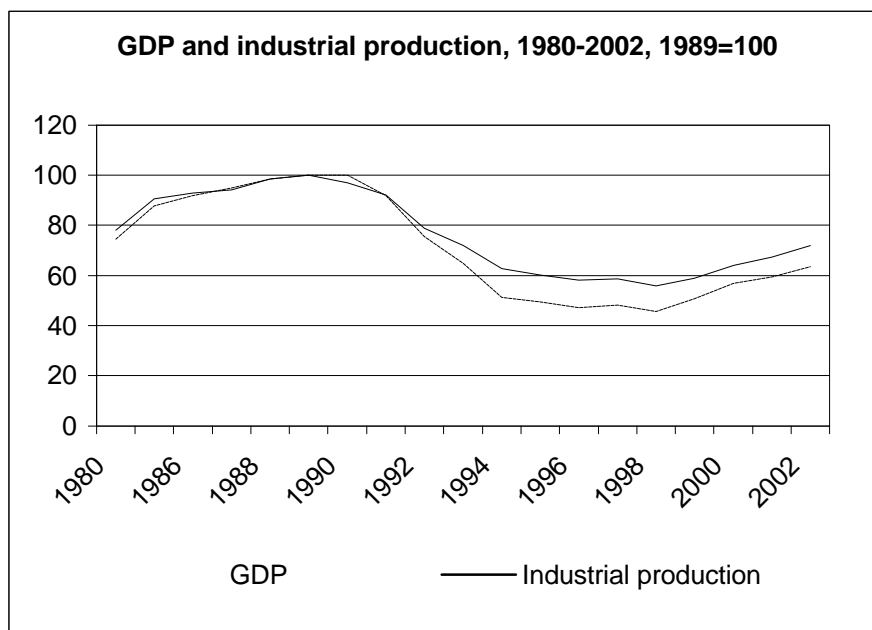
Recent macroeconomic development

Figure 1 reveals the dynamics in Russian GDP and industrial production from 1980 to mid 2002.⁴ The time series from 1980 onwards has been included here to illustrate the fact that Russia has become a poor country during its transition to a market economy. In 1998 real GDP had fallen to below 60 per cent of the peak level in 1989. Industrial production performed worse and contracted to less than 50 per cent of the pre-transition level. The fact that industrial production has fallen more than GDP is a consequence of expected structural changes in the Russian economy. While heavy industry was oversized under the planned economy, services constituted a smaller part of total GDP as compared to their normal share in market economies.

³ Barro and Sala-I-Martin (1995) and Aghion and Howitt (1998) provide surveys of economic growth theory.

⁴ Data before 1990 are for Net Material Product, NMP. For 2002, actual growth for the first six months was converted to annual numbers and used in the figure.

Figure 1



Source: United Nations (1999) and Russian Economic Trends, Monthly Update, October 2002.

After a massive speculative attack on the rouble during the spring in 1998, the rouble was *de facto* devaluated in August 1998, by approximately 80 per cent. A tight monetary policy in order to keep the rouble within the predetermined ‘rouble corridor’ was regarded as an essential ingredient in deflating the economy. This had been achieved since 1995, and modest economic growth in 1997 was regarded as a deserved result of monetary stabilisation. During the summer in 1998 Russia received large credits from the International Monetary Fund in order to defend the rouble. It was feared that a large depreciation would result in renewed hyperinflation, accelerated economic contraction and continued economic crisis for years to come.⁵

From Figure 1, it is clearly visible that the Russian economic development has been favourable after 1998. In the period from 1999 to 2002, the annual growth rate in the Russian economy averaged 6.6 per cent. This has not occurred at the cost of

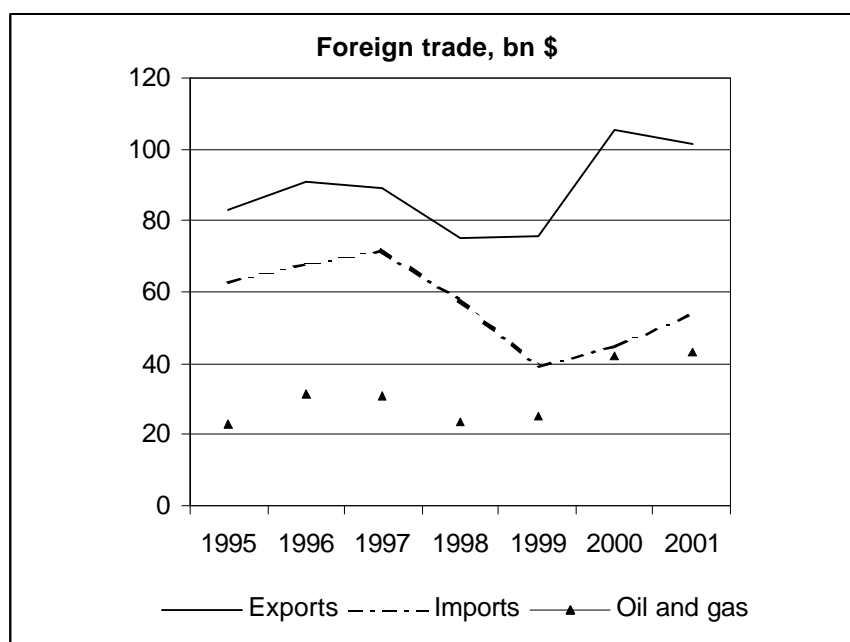
⁵ For pros and cons of fixed versus flexible exchange rates, see Obstfeld and Rogoff (1996) or Rødseth (2000). The IMF has very often favoured fixed exchange rates and the Fund did so also in the case of Russia pre 1998. Several authors (see e.g. Stiglitz, 2002) have criticised the Fund’s role in Russia before the currency crisis. According to the criticism, the Fund’s policy was counter-productive. It defended an overvalued exchange rate that eroded competitiveness, hindered growth and insured Russia’s international creditors at the expense of Russian domestic needs.

financial stability. The rouble has stabilised at a level of about R 30 to the US dollar though in real terms, the rouble has appreciated somewhat since 1998. Inflation has not accelerated. The consumer prices adjusted fully to the devaluation from August 1998, but this price increase did not trigger hyperinflation.

Also, in the aftermath of the devaluation, the Russian trade balance has improved dramatically. As is visible from Figure 2, Russia's trade balance is markedly positive. The figure shows two more interesting aspects of Russia's economic foreign relations. The first is the degree of petroleum dependence for Russia's trade performance. This has caused some concern from observers, for good reasons. It is seen from the figure that exports of oil and gas constitute a major share of total exports. In fact, Russia's exports excluding oil and gas have been fairly constant for the whole period analysed. The second aspect is that the positive growth history from 1998 is probably not entirely export led. The immediate effect of the devaluation was to stimulate import competing industries, at the expense of imports. Only later on have exports increased. Since 1999 import growth has run in tandem with growth in GDP.

For a crisis-ridden country in transition a positive trade balance is not an end in itself. It is probably more the opposite. In order to reconstruct the economy and stimulate needed investments, Russia would benefit more from higher imports of capital goods, even if they caused a trade deficit. A more detailed analysis of the Russian trade account (which is beyond the scope of this paper) reveal that imports of machinery and equipment *decreased* in 1999 and have subsequently only partially recovered.

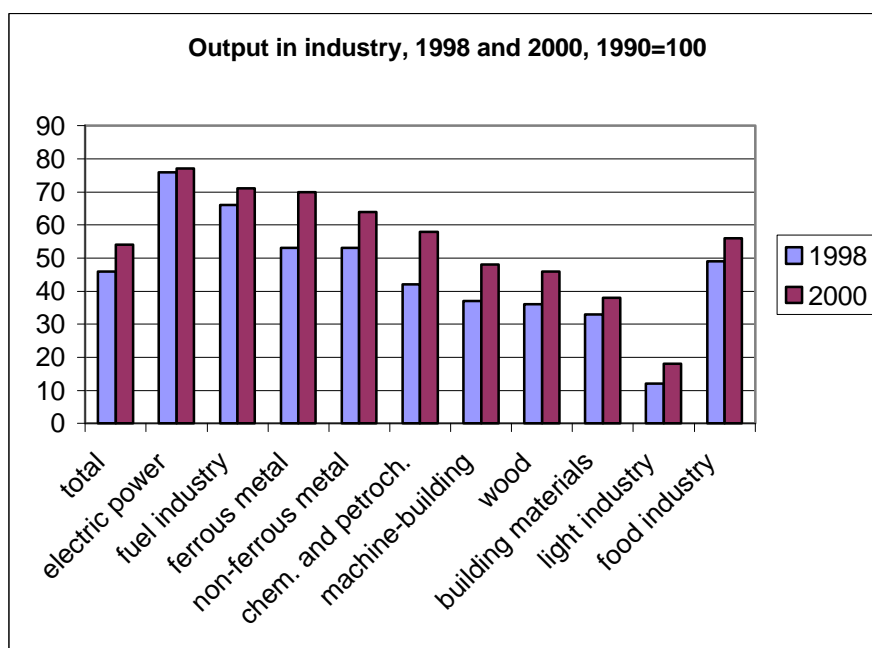
Figure 2



Source: Russian Economic Trends, October 2002.

It has been discussed among observers whether the Russian growth post 1998 is sustainable. Russia has profited from high petroleum prices in this period and the high petroleum incomes have allowed increased imports and improved the budgetary situation markedly. However, import-competing industries have benefited considerably from the weakened rouble. This was an immediate effect of the devaluation. GDP started growing already in the last quarter in 1998, driven both by increased production for exports but also for the Russian home market. Maurseth (2001a) reports production dynamics at the regional levels in some industries. Importantly, both export-oriented production, but in particular production of consumables started growing from late autumn 1998. The national picture is revealed in Figure 3. The bars in the figure show output in Russian industries in per cent of the 1990 levels in 1998 and in 2000.

Figure 3

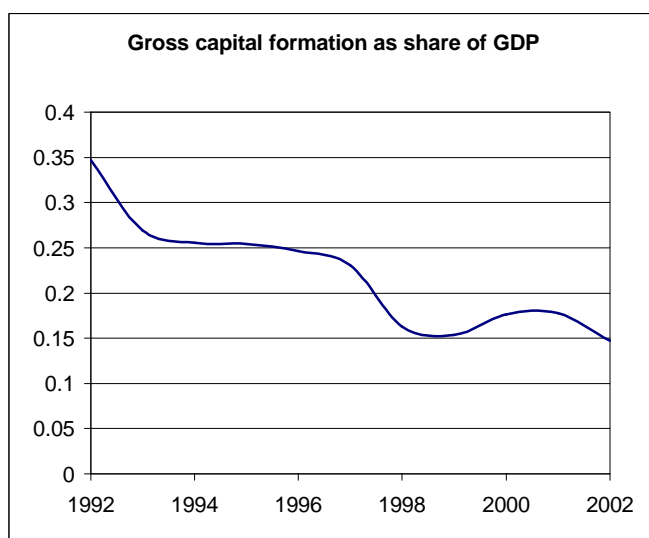


Source: Goskomstat (2001a)

The figure indicates several important characteristics of the Russian economy. Firstly, the post 1998 boom is general: All the macro sectors in Russia have grown. Secondly, the main export industries do not seem to grow faster than other industries. While growth (in volumes) has been modest in the important fuel industry and higher in metal processing, growth has been high for import competing industries (like light industries and machine-building) and in protected industries (like building materials). The evidence about the Russian growth history after the devaluation is therefore one of general growth for the entire economy rather than one of export-led growth.

For growth to be sustainable, high investment levels are important. Russian industry is heavily worn-out, suffering from lack of and wrong investments during the Soviet period and the first transition years. The Soviet economy was characterised by very high investments ratios. This was the case even as late as 1992 when investments constituted about 35 per cent of GDP. Even so, Soviet planners did not succeed in channelling investments to where they had the highest returns. Both on the industrial level and the regional level (see below) investments in Russia had very low social returns.

Figure 4



Source: Goskomstat (1999 and 2001b) and Russian Economic Trends, October 2002.

For Russia, investment ratios (to GDP) are graphed in Figure 4.⁶ That figure gives reasons for scepticism about the recent Russian boom. The investment ratio has fallen considerably from 1995 onwards and it increased only temporarily in the aftermath of the 1998 devaluation. In 2001 it plummeted again. Indeed, if the present Russian boom is to be sustained, it is critical that investments be stimulated.

The Russian crisis, institutional design and rent grabbing.

Since the dissolution of the Soviet Union, Russia has undergone dramatic economic reforms. The reform process included price liberalisation, trade liberalisation, comprehensive privatisation and major market-oriented institutional reforms. The most important steps in the reform process were taken during the severe economic crisis in the Russian economy, with GDP falling steadily year by year. In the literature, the relationships between the crisis and reforms have been heatedly debated. While some argue that reforms were not comprehensive enough (see e.g. Åslund, 1995), others have put the blame for the crisis on the pace and the sequencing of the reforms (see e.g. Chand and Moene, 1999; Roland, 2000; Sapir, 2002; Tompson, 2002.). It is clear, however, that coherent implementation of the market-oriented regime formally introduced during the 1990s did not occur before the Russian recession ended in 1998. During the 1990s, Russians experienced an

⁶ For 2002 the ratio is based on data for the first six months.

unstable, crony, corrupt and inefficient capitalism. Privatisation resulted in an extremely skew asset and income distribution and often in asset stripping, downscaling of production and lack of investments. Economic performance was undermined by lack of credibility, instability and rent-seeking behaviour. Soft budget constraints all over the economy remained and became acute in the period before the 1998 devaluation, as evidenced by e.g. the degree of payment arrears in all sectors in the economy. While the Russian economic crisis during the 1990s is not fully understood, there seems to be agreement that both macroeconomic policy that suppressed aggregate demand, lacking structural reforms that hindered development of new enterprises and institutional malpractice are to blame.

After growth occurred in 1998, the development has been different. As described above, the economy has been growing, but also the direction and the speed of economic reforms have changed. Below, centre and periphery relations will be discussed in more detail. Here, it suffices to refer some important progresses in Russian policy-making. After Putin took office, Russian politics has been more peaceful. The Putin administration is more consensus-seeking than the Yeltsin administration was (see Tompson, 2002). Reform policy has also been more deliberate during the Putin administration than before. After accessing power, the Putin administration has made important progress in areas such as anti-trust policies, corporate governance reform, tax reform, judicial reform, banking reform, land ownership reform, bankruptcy reform and on subsidies for housing, municipalities and transportation and energy. Probably most important, recent reform attempts are not only formal but also indeed real. Laws and regulations are now enforced in Russia rather than just existing. For instance, during the post 1998 boom payments arrears have largely disappeared.

Regional consequences

What are the regional consequences of the macroeconomic developments outlined above? For the purpose of this paper, three aspects are important. The first concerns the potential for regional policies. Russia has now established coherent principles for fiscal federalism and sharing of responsibilities between the local, regional and federal authorities. This was not the case during the 1990s. This period was characterised by frequent shifts in power sharing between the regions and the federal authorities. In some periods, there were dramatic struggles, in other periods, power

sharing changed more as a result of changing political circumstances (Blakkisrud, 2001). In any case, the unstable and changing centre-periphery relations in Russia in this period are archetypical for grabber-friendly institutional design in which rent-seeking behaviour becomes relatively more profitable than productive activities.⁷

The second important consequence of the macroeconomic situation for regional developments is the importance of initial regional specialisations. Figure 3 illustrates the very dramatic industrial recession in Russia. Industrial production fell to less than half of its 1990 level in 1998. The figure also shows, however, that the crisis hit industries differently. While electricity production fell less than 25 per cent, light industry in Russia was almost eroded. Figure 3 therefore indicates the conclusion in van Selm's study of economic performance in Russian regions: 'Put very simple, regions with the right industries did better than regions with the wrong industries' (van Selm, 1998, pp.617-18). As indicated in the figure (and discussed in the next section), the same conclusion is hardly correct for the post 1998 developments.

Third, 1998 may have marked a change in the Russian economy. While market forces were highly distorted during the Yeltsin era, Russia may now have embarked upon a more 'normal' development in which institutions and incentives are better understood. If this is the case, future regional development in Russia will probably better reflect principles of economic geography as outlined in section 2 above than what has so far been the case.

4. Regional development in post-Soviet Russia

Soviet economic geography

The Soviet pioneers took over a feudal agricultural society in which industrialisation was yet to form society. Therefore, the present Russian economic geography is very much, but not entirely, a function of Soviet industrialisation. During the Soviet period new cities in remote areas were established in large numbers. The Soviet economic geography was determined by other factors than those believed to determine economic geography in market economies. While relative production costs, market

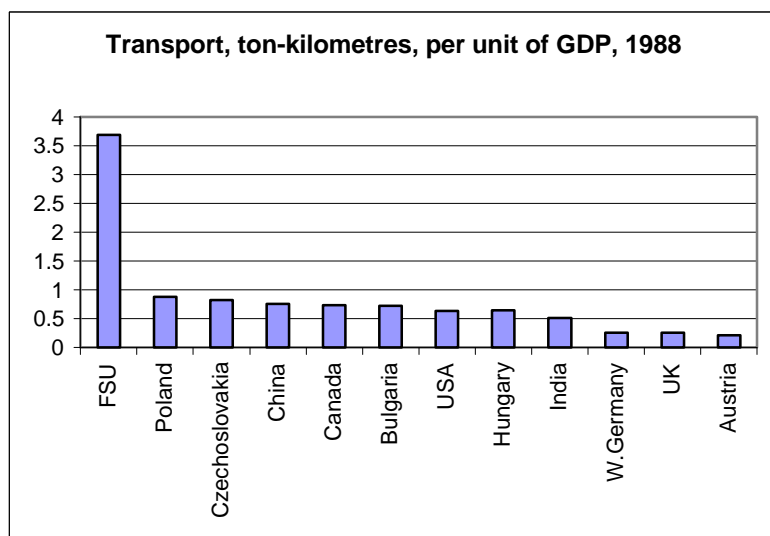
⁷ When resource and power sharing between regions and federal authorities is unclear and unstable, it may become more profitable to lobby for transfers rather than stimulate productive investments. Similarly, when extra incomes are taxed away by upper authorities, regional authorities have fewer incentives for efficient tax collection. Mehlum et al. (2002) discuss institutional design and rent grabbing from a theoretical point of view.

access and transportation costs naturally were considered by Soviet planners, their importance were different from the ones in market economies and other factors also influenced planning. Political and ideological factors were important. Soviet planners were committed to Marxist-Leninist principles that emphasised self-sufficiency both at regional levels (for products like agricultural goods) and at the national level (for a wide set of raw materials and industrial goods). Consequently, the economic geography was characterised by oversized production of several goods in many regions. Similarly, the Marxist-Leninist guidance left the country overly specialised in heavy and military industry as compared to market economies. Furthermore, the planning system itself dictated production in large units and mono-industrial specialisation in cities and regions. The Soviet planning system was centralised and industry based (rather than regional based).⁸ It saved planning resources to concentrate production of goods in specialised cities (Nove, 1981). Partly as a consequence of the limited integration into world markets, relative price structures in the Soviet Union were heavily distorted. Due to large domestic production, energy costs and consequently transportation costs were perceived very low.⁹

The result was that the Soviet Union became a very transport-intensive economy. Figure 5 shows transport ton-kilometres per unit of GDP in the Soviet Union and some other countries. The figures reveal that the Soviet Union was extreme by all standards. It seems that the Soviet Union aggravated all factors that increase transport intensity in other economies. Formerly planned economies rank high in the figures. So does Canada, which is also a large country with a harsh climate. The combination of size, climate and economic system seemed to produce the most extreme result in the case of the Soviet Union.

⁸ This was the case for the whole Soviet period except for a short period before 1965.

Figure 5



Source: Holt (1993).

The Soviet economy was not only transport intensive. OECD (2002) reports use of electricity and gas per unit of GDP. While not as extreme as the figures reported in Figure 5, Russia still has a very energy-intensive economy. Russia ranks highest in terms of gas consumption and second highest in terms of electricity (Norway ranks highest). These results are indicative for the findings of experts on Soviet economy: Soviet regional policy was inefficient and did neither equalise income per capita in the different regions nor did it maximise total production (Koropecy, 1981). For post-Soviet Russia, the transport- and energy-intensive economy inherited from the Soviet period is an important challenge.

Post-Soviet development

There are a limited number of studies on regional economic performance after the dissolution of the Soviet Union. Some of these studies are econometric studies for the sample of regions for which data are available. Others are eclectic in style and draw inferences from some regions that are considered typical. A third type of studies is case studies in which developments in single or a few studies are reported.

Kirkow (1997) summarises existing results in three main points: A) The location and specialisation of industrial production determine, to a large extent, the

⁹ For a discussion of Soviet economic geography, see Koropecy and Schroeder (1981).

economic fortune of Russian regions. B) It seems to be important whether a region has an elitist political leadership or whether there is a network of civic engagement, co-operation and free flow of information. C) Centre-periphery relations are important both between the regions and the federal centre and *within* the regions. Thus, both the location of a region and the degree of centralisation within the region matter for its economic development.

OECD (1995) discerns two types of Russian regions: *introvert* and *extrovert*. Introvert regions include provinces dominated by the military-industrial complex (mainly located in central European Russia and the Urals), and agro-industrial regions specialised in food production. Extrovert regions include resource-rich regions in sparsely populated northern areas and Siberia, the main commercial centres in Russia (Moscow, St Petersburg) and major points of entry into the federation, for example the main ports. According to OECD (1997), this taxonomy reflects both the economic potentials of the regions as well as their likely attitude towards economic reforms.

The extrovert regions are regions that typically have a potential for economic growth as a result of market-oriented reforms. Generally, Soviet industry was not internationally competitive, but Soviet production of raw materials was (Senik-Leygonie and Hughes, 1992). Russian exports have increasingly specialised in raw materials production, especially energy products like oil and gas.

Introvert regions, on the other hand, are regions that, at least in the short run, probably will experience severe problems. They are specialised in industries that are not competitive on international markets and are likely to be considerably downscaled in the Russian market economy. Introvert regions are hypothesised to be more hostile towards radical economic reforms and in favour of a gradual and protectionist transition to a market economy.

Two case studies are reported in Ruble and Popson (1998) and Alexseev and Vagin (1999) for the two neighbour regions Novgorod and Pskov, respectively. While Novgorod has had a pro-market political leadership that has stimulated private entrepreneurs, foreign direct investments, land ownership and the housing market, the Pskov region has been conservative (Pskov is the only region in which a member of the nationalist *liberal-democratic party* has been elected governor) and has had a political leadership that is hostile to the federal authorities. Both of these regions are poorer than the Russian average. The market-friendly policy in Novogord has resulted in higher levels of FDI and a better achievement in terms of new firms, and

therefore higher growth rates on average for the period from 1996 to 1999. Pskov, specialised in industries like machine-building, electrochemical and electronics, performed very badly in the years after the dissolution of the Soviet Union. In 1999 however, the region's gross regional product increased by 17 per cent.

For the defence industry, Izyumov, Kosals, Ryvki and Semagin (2002) report better performance for firms in central regions (in the city of Moscow, Moscow region and the city of St Petersburg), in particular as a result of market orientation of that industry. Similarly, the location of R&D labs and government order policy benefit the central regions. As will become clear, these spatial trends in the Russian defence industry are typical for Russian economic development in recent years.

Econometric studies of the economic performance of Russian regions have partly supported the above classification of introvert and extrovert regions. Sutherland and Hanson (1996) applied shift share analysis and found that growth and contraction in employment in 1993 were weakly correlated with the industrial structure. Other significant explanatory factors were the regions' export performance (positive), the degree of dependence on military production (negative) and the level of nominal wages (weakly negative). In a more eclectic study, van Selm (1998) tests the hypothesis that both industrial structure and political regime influence economic performance in Russian regions. He finds clear evidence in favour of the former, but not of the latter.

Popov (2001) finds that richer regions on average grew faster than poorer regions, when controlling for other variables. This lends support to the findings in Maurseth (2001a) and Hanson (2000) that income differences have indeed increased in Russian regions. Popov also finds that industrial structure and institutional quality matter. However, Popov's findings reject the hypothesis that reform strategies influence on economic performance.

In most studies of Russian regional development, geographical data are lacking. Sachs (1997) presents evidence of the importance of geography for a sample of transition countries. He finds that geography is a major determinant of economic performance at the country level. Countries that are located near large Western European markets seem to do better than countries located further away from these markets. Such geographical effects are probably also of importance in Russia. The mere size of Russia, being the largest country in the world, indicates that geography might be a very decisive factor for regional development. In the transition to a market

economy, transport subsidies have been considerably reduced. In the future, this trend is expected to continue.

In the theoretical discussion above, it was concluded that changes in transportation costs may have ambiguous effects on peripheral industrial production. Welfare may be reduced, but industrial production may increase or decrease as a consequence of increased transportation costs. In the Russian economy, this may be different. The reason is that the geographical distribution of economic activity was not a result of market mechanisms in the first place. Thus, the effects of increased transportation costs in Russia may be a combination of what models of economic geography imply and other effects. It is reasonable that increased transportation costs may give a potential for new production sites near large markets. When transportation costs increase, the profitability of peripheral industry will decrease and the profitability of central industry increase.

Economic geography and growth

As indicated in the review above, very few studies of economic performance in Russian regions have taken into account geographical factors. This is striking, given the size of Russia and the potentially highly distorted economic geography inherited from the Soviet planning system. It is the aim of this section to shed some light on the spatial economic developments in Russia in recent years. The data used here cover the gross regional product, GRP, in total and per capita for the period from 1996 to 1999, in constant 1996 prices. Also, data on industrial production and the share of industry in GRP are used. The data cover the 79 federation subjects listed in the appendix. The data for economic performance are taken from Goskomstat (2001a). Geographical data were constructed by means of the location of each region (latitude and longitude in degrees and minutes) and a full great circle distance matrix between all the regions was computed.

The data confirm the findings by others on increasing differences between Russian regions both in terms of GRP levels per capita and in industrial performance. Table 1 reports several aspects of these indicators in Russian regions. The first row in the table shows the standard deviation of the (log of) GRP levels. It is evident that differences in Russian regions continued to increase, also in 1998 and in 1999. The second part of the table shows results from an index of industrial performance (industrial production in per cent of the previous year). While the average region

experienced a dire development in the 1996-98 period with industrial production falling year by year, growth was high in 1999. The three next rows show that this growth was unevenly distributed among the regions. Standard deviation is high and the difference between the worst and the best performing regions is increasing.

Table 1. Indexes of physical production in Russian regions, 1996-99

	1996	1997	1998	1999
<u>GRP per capita</u>				
St.dev.	0.488	0.497	0.498	0.514
<u>Index of ind. prod.</u>				
Mean	87.7	99.4	97.1	113
Min.	60	84	74	82
Max.	115	115	116	171
St.dev.	8.89	6.35	6.48	11.58

While the index of industrial production reveals large differences between the best and the worst performing regions, this exaggerates the developments. Figure 6 shows a scatter plot of this index for 1996 and 1999. The plot does not indicate any clear pattern of winners and losers in the Russian economy. If that were the case, there should have been a neat correlation between the index of industrial production in 1996 and in 1999. Instead, it seems that growth in industrial production in 1996 and in 1999 correlates weakly negative. Most regions are below the 100 per cent age line in 1996 and to the right of the corresponding line for 1999, but being a winner in 1996 was not predictive of the performance in 1999.

Figure 7 graphs the equivalent numbers for GRP. GRP levels as per cent of the previous year in 1997 and 1999 are plotted against each other. Also for this plot, there does not seem to be any clear correlation. The winners in 1997 were not (necessarily) the winners in 1999.

Figure 6. Index of industrial production in per cent of previous year, 1996 and 1999

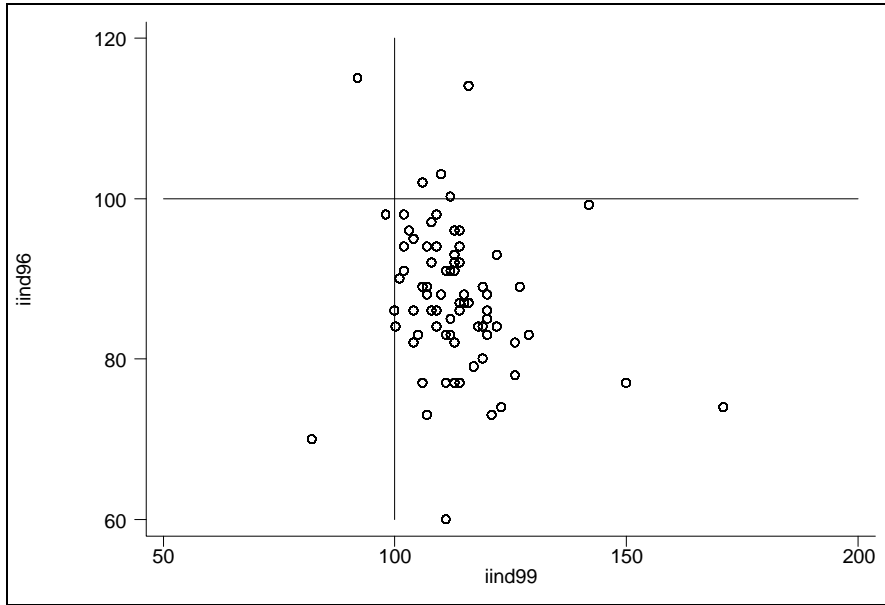
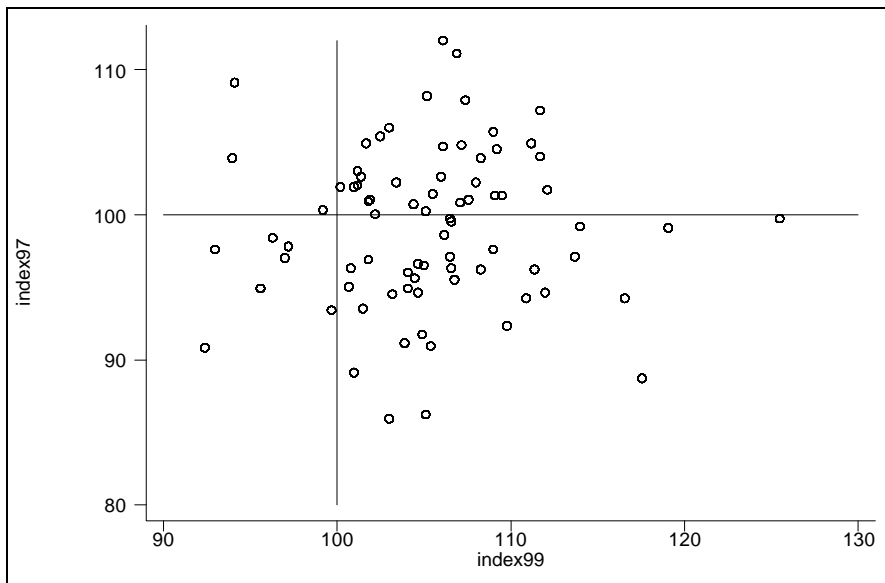
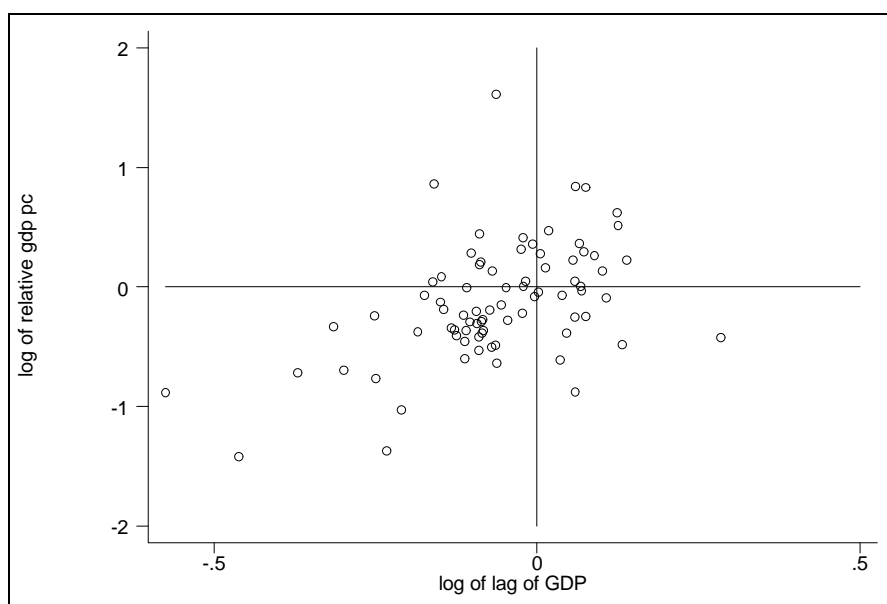


Figure 7. Index of GRP in per cent of previous year, 1997 and 1999



How is the gross regional product per capita located in space? Are (relatively) rich regions located nearby each other or are they scattered around with poor regions between them? Figure 8 is a so-called Moran scatter plot of GRP levels in Russian regions in 1996. The vertical axis denotes normalised GRP levels in the regions. Income levels are normalised to vary symmetrically around zero (as described in the appendix). The horizontal axis denotes the normalised weighted average of GRP levels in other regions. The weights used are falling with distance (as described in the appendix) so that nearby regions receive a higher weight than distant regions. The regions therefore compare each region's GRP level to nearby regions. A clustered economic landscape will be characterised by more observations in the first and the third quadrant than in the second and the fourth.

Figure 8. Moran Scatterplot of Russian income levels, 1996



The figure reveals that the economic landscape in Russia is indeed clustered. In terms of GRP per capita, poor regions are generally clustered together and rich regions are clustered together. This is seen from the fact that there are more regions in the first and the third quadrant than in the second and the fourth. In fact, there is a positive coefficient of correlation of 0.48 between normalised income in the regions and the normalised average of their neighbours.

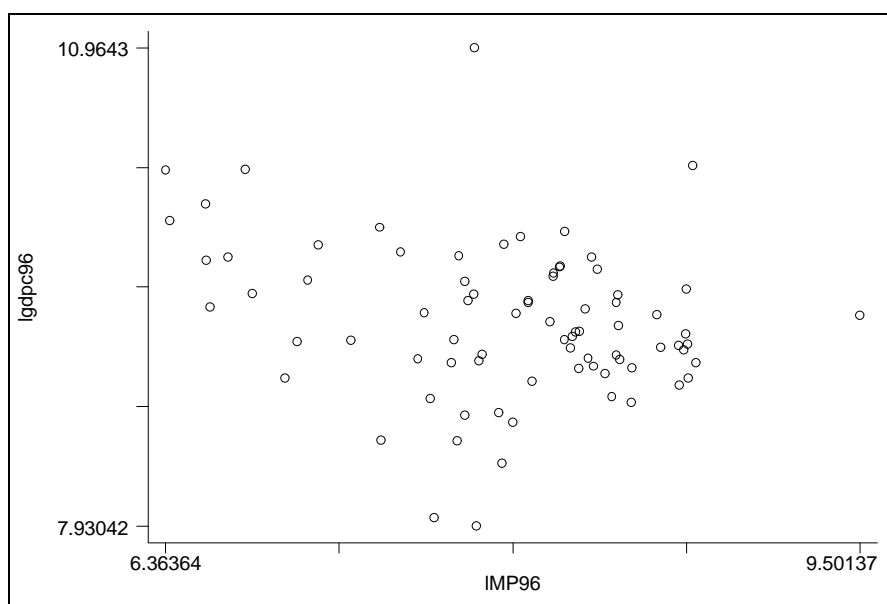
In recent years the clustered landscape in Russia has *weakened*. The corresponding coefficient of correlation as reported for Figure 8 fell to 0.46 in 1997 and to 0.43 in 1999. Therefore, there are no signs of increased concentration of economic welfare in Russia. Rather, income per capita in the subjects of the federation has become more scattered.

The figure above does not indicate *where* the high-income clusters are located. From theories of economic geography and economic growth, a common deduction is that regions that are located near large markets will tend to have higher income per capita and possibly higher growth rates than other regions. The main economic mechanisms for this hypothesis are that market access stimulates industry establishments and that geographically concentrated knowledge spillovers benefit central regions. For European regions and for the world economy (see Maurseth 2001b and 2002), a stylised fact is that income per capita depends positively on measures of market potential. Market potential is commonly constructed as:

$$MP_i = \sum_{j \neq i}^n \frac{\text{income}_j}{\text{distance}_{ij}}$$

Therefore, the market potential will be larger the larger total income in nearby regions is and lower the further away the region is located from the large markets. For Russia the relation between (log of) GRP per capita and (log of) market potential is illustrated in Figure 9 below.

Figure 9. Income per capita and market potential, 1996.

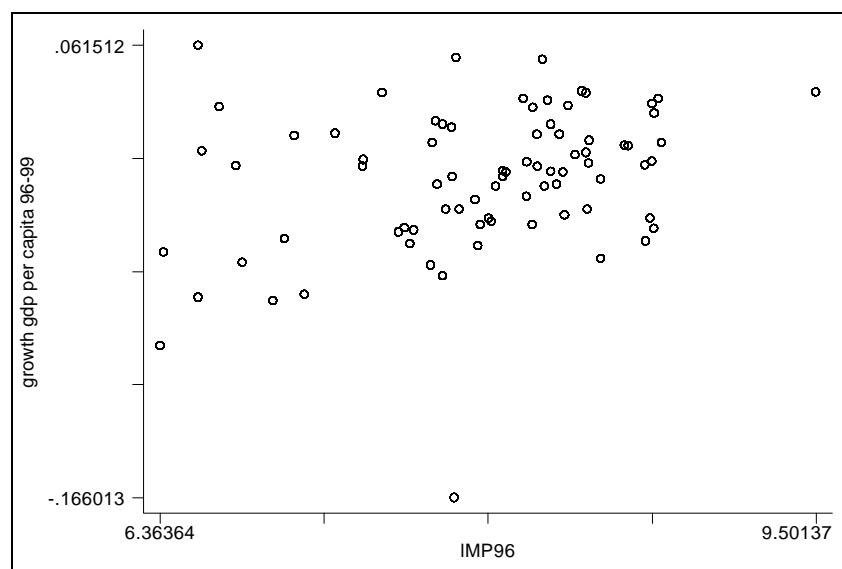


The figure reveals a weak (though significant) *negative* relationship between income per capita and market potential. In Russia the richest regions (in terms of GRP per capita) are located away from the largest markets! This runs counter to what is known about economic geography in market economies. It is beyond the scope of this paper to present a full analysis of the reasons for this. It is very probable though, that the pattern in Figure 10 is a result of industrial policy during the Soviet period. As discussed above, Soviet industrial policy emphasised heavy industry, extraction of raw materials and military industries. For natural and political causes, production of important goods was located in remote, heavily specialised areas away from the European part of Russia. In order to stimulate migration to newly industrialised areas, higher wages and social benefits here were necessary. Therefore, both production and individual incomes were higher in remote areas.

Will the scattered pattern of income levels in Russia remain? Theory suggests it won't. Relative prices have converged and will continue to converge towards world market prices. This implies increased energy and transport costs, which probably make the scattered economic geography less sustainable. In Figure 10 below, an indication of the spatial income distribution dynamic is reported. In that figure,

average annual growth rates in GRP per capita for the period from 1996 to 1999 are plotted against (the log of) market potential in 1996.

Figure 10. Growth rates in Russian regions and market potential



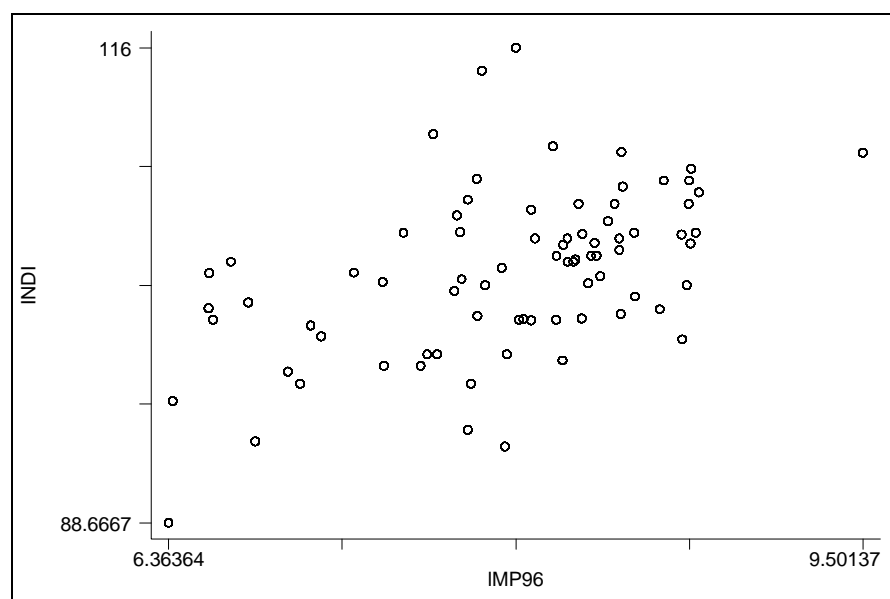
The figure indicates a positive relationship between market potential and growth. The positive correlation is confirmed by a simple regression that gives a positive coefficient significant at (less than) 1 percentage level.¹⁰ In the figure, there is one significant outlier with intermediate market potential and very low growth rates. This is the Ingush Republic. The low growth here probably reflects negative spillover effects from the war in The Chechen Republic.

How does industrial growth correlate with market potential? Figure 11 below reports the similar relationship for the average change in industrial production (in the 1996-99 period) and market potential. There is a clear, positive and significant relationship between industrial growth and market potential.¹¹

¹⁰ The coefficient of (log of) market potential is 0.16. This indicates that a 16 per cent age increase in market potential gives a one per cent age point increase in growth in grp per capita.

¹¹ In Figure 11 there is no outlier. The reason is that data for industrial production for the Ingush Republic are lacking.

Figure 11. Growth in industrial production, 1996-99 and market potential 1996

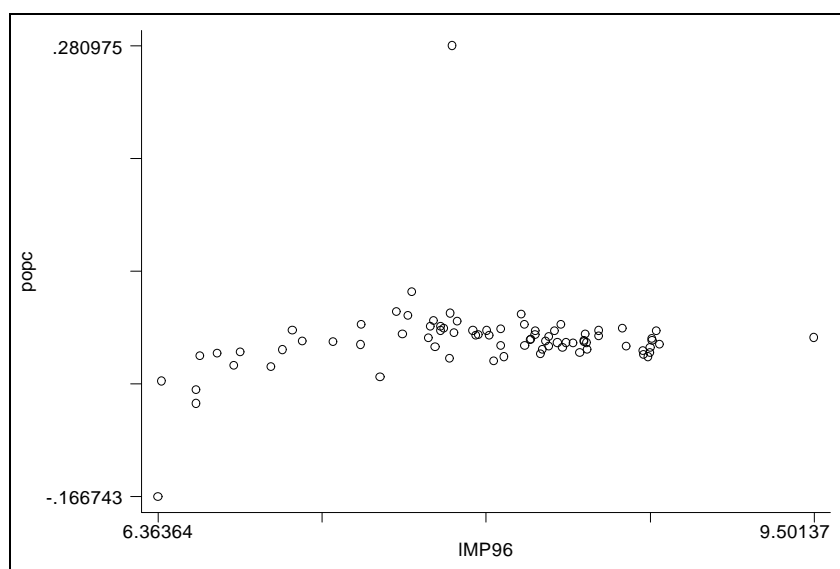


What conclusions can be drawn from the above findings? It is well known from the existing literature on regional economic performance in Russia that no single explanatory variable is able to explain large amounts of the variation in growth during the 1990s. While initial conditions, like industrial structure, are of importance, so are regional political factors, export orientation, the prevalence of new firms, corruption and the share of the private sector in the economy. The evidence presented above adds two characteristics to these established facts: Firstly, the Russian economic geography is distorted as compared to common patterns of location of economic activity in market economies. While market economies are characterised by a clustered economic landscape in which production and income per capita are located near large markets, the opposite pattern apply to Russia: Regions located far away from large markets are richer (in terms of GRP per capita) than those located near large markets. Secondly, there is significant higher growth in GRP per capita in regions being close to larger markets than in regions far away form these markets. Recent evidence therefore indicates a development in which the de-clustered economic landscape in Russia might disappear in favour of a spatial pattern in which central regions (defined as those with a high market potential) will become relatively richer.

Market potential is defined as the weighted sum of total GRP in other regions where the weights are decreasing functions of the distance between the region in question and the regions that enter the sum. Total GRP is the product of GRP per capita and the size of the population. Both of these variables are endogenous. For Russia it is well known that the population has decreased in recent years, due to the grave economic and social crisis since the dissolution of the Soviet Union. In addition, migration has been significant. From the theoretical discussion above, migration may have important consequences for regional developments. If industry moves to where markets are large and if people follow because of higher personal income opportunities here, there is a possibility for self-reinforcing developments. In figure 12 below, average annual population growth rates in the period from 1996 to – 99 are plotted against market potential. There are two outliers in the figure. These are the Ingush Republic and the Chukot Autonomous Area. While the large increase in population in the Ingush Republic is probably due to the war in the Chechen Republic, the Chukot Area is the easternmost region in Russia with extreme climatic conditions. For the other regions there is a positive and significant relationship between population change and market potential.¹²

¹² A simple regression of population growth on (log of) market potential for the 77 regions that are not

Figure 12. Average annual growth rates in population, 1996-99 and market potential, 1996.



The findings reported in this section give some indications of a changing Russian economic geography. The Russian economic landscape is atypical with higher GRP per capita in peripheral regions. Economic reasoning and the recent developments raise questions whether this is sustainable. Growth in GRP per capita, industrial production and population seem to be higher in central regions than in peripheral regions.

5. The political response – fiscal federalism

What is the political answer to the development outlined the above? In this section some aspects of the federal budgetary system, including the federal tax system and transfers to the regions, are discussed. Also, recent policy changes in order to govern economic geographic developments will shortly be discussed. Recent changes in regulations of energy production, extraction of raw materials and landownership will be briefly reviewed.

outliers gives a coefficient of .008 and a p-value of .008.

The Soviet Union was formally a federation in the sense that the Soviet republics, and also the different parts of the Russian Socialist Federal Soviet Republic (RFSR), had some legal autonomy. In reality the Soviet regime was characterised by highly centralised decision making. This applies in particular in the economic realm because of the very centralised nature of the Soviet version of economic planning.

Federalism, in the sense of a formal and real power sharing between the centre and the regions, is a post-Soviet phenomenon in Russia. The political development of Russian federalism has been analysed at length elsewhere (e.g. in Blakkisrud, 2001, Risnes, 2001 and Hønneland, 1999). Here, the discussion focuses on economic aspects and in particular centre-periphery budgetary relations.

In well-functioning market economies, fiscal federalism may promote economic development and economic growth. The literature on market preserving federalism (e.g. North and Weingast, 1989) has revealed important links between efficient federalism and historically rapid growth in England, the United States, China and India. Ideally, the balance of power between local and central authorities should reflect the distinction between common and local needs and provide competition between regions to attract investments and sustain profitable business environments. As a consequence, central authorities should be responsible for the provision of national public goods, macroeconomic stabilisation, inter-regional distribution and correcting for external effects of regional economic developments and decisions. Subnational governments should be responsible for provision of local public goods, according to their populations' preferences and needs and, in competition with other ones, provide the best possible environment both for the population and firms. With the markets expected to 'vote with their feet' (but also their votes), efficiency could be provided together with levels of public services that fit the preferences of the population.

Income generation and distribution

For revenue-generating mechanisms such as taxes and the property rights to natural resources, Russia has gradually adjusted to principles of economic federalism. The legal devices for fiscal federalism in Russia are the 1992 Federation Treaty, the 1993 Constitution, bilateral agreements between federation subjects and the federal authorities, the tax system and the annual federal budgets. Because of the many different legal regulations in federal-regional relations, of which some are internally

inconsistent (Hønneland, 1999), and because of the many bilateral treaties between individual federation subjects and the federation, fiscal federalism on the revenue side was for a long period far from transparent and rule based.

The Russian tax system has undergone dramatic changes in recent years. From the early years in the transition period, a large number of new taxes, both at the national and the subnational levels, were introduced. This was partly a response to the budgetary deficit that appeared after Russian firms were privatised. Previously, the main source of state income was profits from state-owned companies. After privatisation this source dried up. In addition, the economic crisis eroded the tax base of the firms. The many taxes and the increasingly complicated tax system became an important hindrance to investments and the establishment of new firms. The political response was for long not a major tax reform, but overloading the system with tax exemptions, special treatment and privileges for special groups. From the start of transition to 1998, the Russian tax system was very inefficient and constituted a major hindrance to economic recovery. In 1998 a revised tax system was approved, which is more transparent and much less complicated than the previous system. After revisions in 2000, the present tax system in Russia consists of local, regional and federal taxes. Importantly, now most taxes are now of a 'one tax – one budget' type where incomes from each taxes are transferred to one level of authority. The most important taxes are the VAT (which is a purely federal tax), the personal income tax (which is almost purely regional), and the corporate profit tax (which is shared between federal and regional authorities and for which the tax rate may vary between the regions). In addition come social taxes on wage bills and taxes on foreign trade (federal) and regional sales taxes, road taxes and taxes for extraction of natural resources. Importantly, in addition to the regional local income sources described above, important shares of regional and local incomes are transfers from the federal authorities. According to OECD (2002), in 2001 transfers from higher-level budgets and extra-budgetary funds constituted 29 and 35 per cent of regional and local budgets respectively. Government budgets at sub-federal levels in Russia have therefore gradually moved in a direction towards more autonomy, but still clearer and more well-defined rules that give less scope for rent-seeking behaviour.

Responsibilities

The division of responsibilities between levels of government in Russia partly reflects principles of fiscal federalism.¹³ This implies that expenditure assignments are the sole responsibilities of one level of authority. In cases of exemptions, there are clear rules for expenditure sharing. Sub-federal governments are responsible for covering expenditures such as health, primary education and housing subsidies. The federal government is responsible for macroeconomic stabilisation, inter-regional distribution and the provision of national public goods such as defence.

Landownership, extraction of resources and pending reforms

There is no doubt that the last decade in many ways has formed regional-federal relations in Russian society. An important ingredient in Russian federalism is that the scope of regional legislation is not limited by federal legislation unless equivalent federal legislation exists (Skyner, 2001 and Risnes, 2001). Thus, in the period shaping regional-federal relations, there was vast scope for ‘authority-grabbing’ by sub-federal authorities. Today many important areas are the subjects of varying legislation in the different regions. For land ownership, the regions have adopted different legislation (Skyner, 2001), for regulation and production of energy vast regional differences remain (OECD, 2002) and in a wide set of other areas, there are important differences in regional legislation. For extraction of raw materials, resources onshore are under the joint jurisdiction of regional and federal authorities. Implicitly, effective extraction of raw materials in Russia, and the sharing of generated income, depend on explicit contracts between the Federation and the respective region. In many cases, like for Sakha’s diamond industry, early response from regional authorities secured the regions’ interests vis-à-vis the Federation.¹⁴ Oil and gas extraction is subject to the Subsurface Resources Law which explicitly mandates that such extraction is subject to joint management between the federal authorities and the subjects of the Federation. Practices have been different for oil than for gas, with more centralised decision making in the case of gas and between different regions. The republics, in particular those with bilateral agreements with the Federation, gained more

¹³ See e.g. annex 1 in OECD (2000).

¹⁴ In the case of Sakha, the diamond industry was corporatised and federal authorities, regional authorities and other interests received well-defined property rights. See e.g. Tichotsky (2000).

independence while others (like Tyumen Oblast that is the main oil-producing province) gained less. Still, oil and gas production is very much managed according to bilateral agreements between the regions and the centre. Moe and Kryukov (1998) conclude that 'it appears that the future development of this system in Russia will be dependent on the bilateral relations between each individual region and the Federal government'.

6. Concluding remarks

The recent Russian upswing has occurred simultaneously with important steps in order to strengthen regulations of the Russian market economy. While the pace of reform was very high during the first years of transition, including privatisation, price reform, deregulation and market-oriented institutional reforms, implementation was weak, partly lacking and arbitrary. In particular, regional-federal relations were shaped by negotiations between the individual regions and the federal authorities as e.g. witnessed by the many bilateral agreements between regions and the federal authorities. Under the Putin administration, reform efforts have been more deliberate and combined with more energy to actually enforce regulations and rules. What is now appearing in Russia is a normal federal state in which market forces will tend to form the country's economic geography and politics might have a market-preserving role, but definitely be of less importance for regional economics. This is the case for fiscal politics, but less so for structural reforms, as in e.g. regulations for extraction of raw materials.

Recent economic developments seem to be in accordance with such a hypothesis. The Soviet economic geography was highly dispersed with mono-industrial cities scattered around the country according to political and ideological considerations, and guided by crucially different economic circumstances. In recent years, economic activities seem to have started a relocalisation process towards economically central regions. Growth in income per capita and in population are higher in central regions than in the peripheries.

Appendix

Construction of normalised income levels

In several of the figures reported in the text, the following distance weight was used:

$$w_{ij} = \frac{1/d_{ij}}{\sum_{n=1}^N 1/d_{ij}}$$

Above, w_{ij} denotes the constructed weight while d_{ij} denotes the distance between region i and region j . The weights sum to one for each region and they are therefore well suited for constructing weighted averages. In Figure 8, the normalised income for each region was constructed according to the following formula:

$$y_i = \ln\left(\frac{Y_i}{\bar{Y}}\right)$$

Above, y_i denotes the resulting variable, Y_i GRP per capita and \bar{Y} denotes the average GRP per capita. For region i , the weighted average of other regions was constructed according to the formula:

$$\bar{y}_i = \ln\left(\frac{\sum_{j=1}^N w_{ij} Y_j}{\bar{Y}}\right)$$

Regions included in the analysis:

Altaysky Kray (Altai Kray)
Amurskaya Oblast (Amur Oblast)
Arkhangelskaya Oblast (Arkhangelsk Oblast)
Astrakhanskaya Oblast (Astrakhan Oblast)
Belgorodskaya Oblast (Belgorod Oblast)
Bryanskaya Oblast (Bryansk Oblast)
Chelyabinskaya Oblast (Chelyabinsk Oblast)
Chitinskaya Oblast (Chita Oblast)
Chukotsky Autonomous Okrug
Chuvashskaya Republic (The Chuvash Republic)
City of St Petersburg
Evreyskaya (Jewish) Autonomous Oblast
Irkutskaya Oblast (Irkutsk Oblast)
Ivanovskaya Oblast (Ivanovo Oblast)
Kaliningradskaya Oblast (Kaliningrad Oblast)
Kaluzhskaya Oblast (Kaluga Oblast)
Kamchatskaya Oblast (Kamchatka Oblast)
Kemerovskaya Oblast (Kemerovo Oblast)
Khabarovskiy Kray (Khabarovsk Kray)
Kirovskaya Oblast (Kirov Oblast)
Kostromskaya Oblast (Kostroma Oblast)

Krasnodarsky Kray (Krasnodar Kray)
Krasnoyarsky Kray (Krasnoyarsk Kray)
Kurganskaya Oblast (Kurgan Oblast)
Kurskaya Oblast (Kursk Oblast)
Leningradskaya Oblast (Leningrad Oblast)
Lipetskaya Oblast (Lipetsk Oblast)
Magadanskaya Oblast (Magadan Oblast)
Moscow City
Moskovskaya Oblast (Moscow Oblast)
Murmanskaya Oblast (Murmansk Oblast)
Nizhegorodskaya Oblast (Nizhni Novgorod Oblast)
Novgorodskaya Oblast (Novgorod Oblast)
Novosibirskaya Oblast (Novosibirsk Oblast)
Omskaya Oblast (Omsk Oblast)
Orenburgskaya Oblast (Orenburg Oblast)
Orlovskaya Oblast (Oryol Oblast)
Penzenskaya Oblast (Penza Oblast)
Permskaya Oblast (Perm Oblast)
Primorski Kray
Pskovskaya Oblast (Pskov Oblast)
Republic of Adygeya (The Adygei Republic)
Republic of Altai
Republic of Bashkortostan
Republic of Buryatia (The Buryat Republic)
Republic of Dagestan
Republic of Ingushetya (The Ingush Republic)
Republic of Kabardino-Balkariya
Republic of Kalmykia (The Kalmyk Republic)
Republic of Karachaevo-Cherkesya
Republic of Kareliya (The Karelian Republic)
Republic of Khakassya (The Khakass Republic)
Republic of Komi (The Komi Republic)
Republic of Mariy-El (The Mariy-El Republic)
Republic of Mordovya (The Mordovian Republic)
Republic of Sakha (Yakutiya)
Republic of Severnyya Osetya-Alanya
Republic of Tatarstan
Republic of Tuva
Rostovskaya Oblast (Rostov Oblast)
Ryazanskaya Oblast (Ryazan Oblast)
Sakhalinskaya Oblast (Sakhalin Oblast)
Samarskaya Oblast (Samara Oblast)
Saratovskaya Oblast (Saratov Oblast)
Smolenskaya Oblast (Smolensk Oblast)
Stavropolsky Kray (Stavropol Kray)
Sverdlovskaya Oblast (Sverdlovsk Oblast)
Tambovskaya Oblast (Tambov Oblast)
Tomskaya Oblast (Tomsk Oblast)
Tulskaya Oblast (Tula Oblast)
Tumenskaya Oblast (Tyumen Oblast)
Tverskaya Oblast (Tver Oblast)
Udmurtskaya Republic (The Udmurt Republic)
Ul'anovskaya Oblast (Ulyanovsk Oblast)
Vladimirskaaya Oblast (Vladimir Oblast)
Vologradskaya Oblast (Volograd Oblast)
Vologodskaya Oblast (Vologda Oblast)
Voronezhskaya Oblast (Voronezh Oblast)
Yaroslavskaya Oblast (Yaroslavl Oblast)

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