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## VARIATIONS IN SOCIAL-ECONOMIC DEVELOPMENT BY REGION

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# Regional Inequality in Large Post-Soviet Countries

N. V. Zubarevich and S. G. Safronov

*Geography Department, Moscow State University, GSP-1, Leninskie gory, Moscow, 119991 Russia*

*e-mail: zubarevich@tochka.ru*

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**Abstract**—This article highlights the factors of differentiated socio-economic development by region and methodological approaches to measuring regional inequality. The analysis of the level of inequality has been implemented for three CIS countries: Russia, Ukraine, and Kazakhstan, which made it possible to identify similarities in trends of economic divergence and differences in social inequality, determined by state policy of the countries in question.

**Keywords:** Russia, Ukraine, Kazakhstan, economic and social inequality, divergency, convergency, spatial development.

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### PROBLEM STATEMENT

Research of spatial inequality is one of the main tasks for economic geography and regional economy. Regional differences in the level of development within large countries can be as significant as differences among countries themselves. The issue of regional inequality is highly politicized, especially in Russia since its territory is rather vast and heterogeneous. Both politicians and public opinion are influenced by a number of settled stereotypes concerning the issue:

regional inequality is so deep that it becomes an obstacle to further development;

inequality is growing in Russia, as opposed to the developed countries;

inequality can be reduced by applying a policy of large-scale equalizing of the development levels of regions.

Many geographers and regional economists, at least in Russia, agree with these opinions. Consensus in the expert community has not yet been reached on the issue of the *objective nature of inequality of spatial development*.

Below, an attempt is made to verify the abovementioned stereotypes by applying theories and conceptions of spatial development, carrying out analysis of Russian and foreign research, as well as using the author's estimations of regional inequality conducted not only for Russia, but also for two other large countries of CIS: Kazakhstan and Ukraine. Comparative analysis of the levels and dynamics of regional inequality in large countries of CIS has not been implemented before, while such a comparison makes it possible to assess the general traits and differences in spatial development of the post-Soviet space.

The main goals of this article can be represented through a list of questions:

Is there an interrelation between spatial development and inequality?

How can regional inequality be measured and what are the differences between actual measuring approaches?

What is the degree of regional inequality in the large post-Soviet countries, namely, Russia, Ukraine, and Kazakhstan?

What are the trends (convergent, divergent) of economic and social development of regions of these countries?

What regional policy should be applied in view of objective trends in regional inequality?

### FACTORS AND TRENDS IN SPATIAL INEQUALITY

Long ago regional science conclusively showed that spatial inequality emerges as an objective effect of concentration of competitive advantages in certain territories and lack of these advantages in others. The tendency toward concentration of economic activity in territories with conditions favorable for businesses was discovered by G. Myrdal in the middle of the 20th century [18]. Core–periphery theory (the theory of polarized development) by J. Friedmann [13] has become an important contribution to understanding spatial development patterns. The *new economic geography* was established at the end of the 20th century. It applies quantitative methods to explain the causes of concentration of economic activity and of workforce mobility.

Paul Krugman, the originator of the *new economic geography* approach, has arranged competitive advantages of territories by defining the two groups of factors

[14]. *First nature causes* include abundance of natural resources (mineral resources, land, etc.) that are in high demand, as well as geographical location, including the location within global trade routes which reduces transportation costs and makes translation of innovations easier. These advantages exist regardless of human activity. *Second nature causes* are those that have been created by the efforts of people and society as a whole. They are the agglomeration effect (high population density in cities allowing scale economies); human capital (education, health, labor motivation, mobility and flexibility of the population); institutions that promote a better entrepreneurial climate, higher population mobility, and more intensive introduction of innovations, etc.; and infrastructure as a factor of shrinking economic distances.

All these causes have impacts on development of regions of Russia, Kazakhstan, and Ukraine, though the sets of effects differ in composition and force. Dominance of *first nature causes* is a characteristic trait of the post-Soviet countries. First of all, it is the abundance of mineral resources (oil, gas, and metals) are globally in demand. *Second nature causes* in post-Soviet countries often take shape of impediments to development: the institutional environment continues to be unfavorable; human capital investments are low; agglomeration effects are often rather weak (the Moscow agglomeration, the largest, is an exception); while population decline in Russia and Ukraine is an impediment for growth of population density. Moreover, Kazakhstan and Russia have underdeveloped infrastructure and low density of population and cities (only 91 out of 1099 cities in Russia have a population over 200000 people). Another impediment for these two countries is their isolated geographical location. Even in the relatively densely populated European part of Russia, more than 40% of municipalities are peripheral and feature depressiveness traits [8].

The actual impediments are rather strong, but the composition of leading causes will be changing. As global experience shows, the significance of the abundance of natural resources and the geographical location decline as countries and regions develop. The basic trend is that *second nature causes* grow in significance in the course of investment in human capital, development of infrastructure, and modernization of institutions.

Shifts in sets of competitive advantages of regions influence the dynamics of spatial inequality. The World Bank Report 2009 shows that, in the United States and the developed European countries, regional inequality was the deepest at the end of 19th century and the first half of the 20th century, which means at the same time as industrial development took place. Growth of inequality became slower by the end of the 20th century [19]. One of the causes of this is the accumulation of national wealth in developed countries and the increase in the scale of spatial state-driven redistribution. However, there is still another cause of

it, namely, increasing human capital and further development of infrastructure and modernization of institutions in all these countries. In the long run, precisely the *second nature causes* will slow down the growth of economic inequality of regions and create new growth zones.

At the same time, economic growth itself only makes regional inequality more severe, so that regional differences are not being smoothed. As F. Martin's research shows, divergent and convergent tendencies do not coincide for countries and respective regions [16]. Thus, less-developed countries of Western Europe that joined the EU in the 1970s–1980s have managed to close the development gap as measured by per capita GDP, which existed between them and the older EU members. But the price of success was the growth of regional inequality in the majority of these countries. During the period from 1990 till 2000, inequality dynamics was measured by standard deviation of per capita GDP at the levels of EU countries and those of NUTS 2 regions.<sup>1</sup> Other studies have also shown that during the period from the mid-1980s till the end of the 1990s, differences in development levels among EU members declined by 25%, while disproportions in development of their regions grew by 10% [11].

The difference of trends in countries and in their regions is explicable. The inequality of regions within a country grows because the business, to reduce costs, invests in those regions that feature competitive advantages. The investment priority in strong regions, therefore, polarizes the economic space. Meantime, differences among countries become smoother because regions with competitive advantages provide higher returns on investments and, thus, make the whole country's economy grow faster. So, the European integration stimulates convergence at the level of countries but does not lead to convergence of their regions, which is most conspicuous in less-developed countries.

Countries of Central and Eastern Europe that joined the EU during the past decade face the same tendencies. Companies make their investments, first of all, in regions proximate to capitals and to the western borders with older EU members. Such an investment strategy allows using competitive advantages, such as the agglomeration effect and short distance to markets, which reduces costs. As a result, in these countries regional inequality also grows, so that leaders leave peripheral regions far behind. However, this is the only way for new EU members to close the economic gap with the developed European countries.

In large developing countries on different continents, spatial economic inequality also grew at the end of the 20th century. This is a consequence of acceler-

<sup>1</sup> In the EU, three levels of NUTS (Nomenclature of Territorial Units) are used for the purposes of statistics. The NUTS 2 level addresses relatively large regions.

ated development of regions with explicit competitive advantages. In China they are maritime regions; in Brazil, agglomeration; and in India, territories featuring higher human capital. This led to faster economic growth of these countries as a whole. Only in recent years has China begun paying attention to development of inner territories. However, even then the policy was to promote development of localities with competitive advantages, first of all, infrastructural and agglomerative.

All in all, the global experience shows that *catch-up development always takes place in localities and makes polarity of the space even stronger*. For developing countries the main priority is to promote economic development of territories with competitive advantages such as favorable geographical location, agglomerative effect, and availability of in-demand natural resources.

There exists another aspect of the problem, along with the economic inequality of regions measured by per capita GRP. This aspect is social inequality, which is measured by a set of indicators, namely, differences in income and employment rates, as well as qualitative features, such as health and education. The social inequality of regions hinders the growth of human capital and modernization of institutions. Therefore, its growth adversely affects the development itself. How does social inequality change in the long run? The World Bank's research shows that during the 1960s–1970s, social inequality measured by per capita income rates and salaries and wages decreased in many developed countries [19]. Martin has conducted a study of NUTS 2 regions in France and has shown that while their economic inequality grew from 1983 and 1999, inequality of per capita income of the population declined [16]. An important cause of this change is the effective target redistributing policy of a state aimed at support for low-income groups of the population. However, the trend of alleviation of social inequality is not comprehensive. Martin refers to research conducted by V. Monastiriotis in the United Kingdom [17]. This research has revealed growth of both economic (per capita GRP) and social (per capita income) inequality by region. In the United Kingdom, as in the United States, redistributing social policy plays a less important role than in France. On the whole, the European experience shows that inequality of regions by income levels can be smoothed, which, however, can be achieved by effective redistributing social policy, rather than by stimulating regional policy aimed at attracting investments and creating of jobs in less-developed regions.

Differences in the employment and quality of the population are much harder to smooth. The labor market depends strongly on the condition of the economy: if investments are scarce, new jobs will hardly emerge. Moreover, inequality by employment is more difficult to measure because of labor market cycles. During economic growth, more developed regions

with low unemployment have higher employment growth rates, while during crises they face faster declines in employment. Weak regions having high unemployment rates feature more stable indices and are less susceptible to economic cycles. As a result, regional inequality in employment is rather volatile and depends strongly on the current economic conditions.

Development of human capital in the least developed and problem regions requires large-scale state investments in the social sector. Along with finance resources, modernization of social services networks (education, health care) is needed. These services create the human capital and increase the spatial mobility of the population. It is also needed to override the traditionalist value system hindering the modernization of the lifestyle of the population. Institutional and, especially, value system modernization is a slow process. Its successes can be assessed by indicators of life expectancy and infant mortality, which are widely applied for international comparisons.

There are still not many studies of the causes and trends in regional inequality conducted in Russia. The assessment methodology is being refined continuously. However, at the moment the most widespread approach to measuring is comparison of indices of Russia's regions (or their groups) with extreme characteristics, the results of which are then used to argue that regional differentiation in Russia is extremely high and ever growing. Only the 2000s saw the first quantitative studies applying modern methodologies. Notice should be taken of two papers issued by the Institute for the Economy in Transition [3, 10], in which spatial econometrics methods are applied to verify the two interrelated conceptions of the convergence, using Russia's regional inequality as a case study. Two hypothesis were tested: that  $\beta$ -convergence exists implying an accelerated development of poorer regions, which should lead to equalization of the level of economic development, and that  $\sigma$ -convergence exists, which implies the reduction of interregional variation of per capita GRP. For calculations, data was used on per capita GRP adjusted for cost of living in the regions for 1996 to 2004. The  $\sigma$ -convergence hypothesis is not confirmed: the fluctuations of the coefficient of variation were not statistically significant, which means there is no apparent tendency of a decrease or increase in regional disparities. Similar results were obtained for  $\beta$ -convergence in general, although the calculations of conditional  $\beta$ -convergence (the influence of the neighborhood) show that, other things being equal, there is a positive influence of more developed regions on the dynamics of the neighboring less-developed regions.

In a study by Novosibirsk economists, the decomposition method was used to identify the contribution of individual industries to the inequality of regions by per capita GRP [6]. Regional differences in employment and incomes in the dynamics of the 2000s were

considered for different kinds of activities [5]. The results of this study are unexpected: it was found that the service sector (including nonmarket) plays a differentiating role in employment and wages, while employment and wages in manufacturing industries of a region play a smoothing role. The authors of this article analyze the social and economic inequality of regions of Russia [4, 9] and Kazakhstan [1] applying the adjusted Gini coefficient.

In general, quantitative studies showed no sustained trend of divergence or convergence of regions of Russia. The mixed results are understandable. First, the measurement period is too short: modern statistics of GRP, employment and income of the population did not appear until the mid-1990s. Second, Russia and other CIS countries have experienced several crises and a period of growth, while various economic trends may have different impacts on regional disparities. Third, the reliability of regional statistics is very low, especially for income of the population and GRP. The latter figure can change dramatically in one to two years because of institutional causes, for example, due to registration of a large company in a region or termination of such registration. Before 2005, there were regions in Russia functioning as inner offshore zones; they had an overpriced GRP. Fourth, the studies used different methods of measurement of regional inequality, which in the absence of an explicit trend in dynamics significantly affects their results.

#### HOW TO MEASURE INEQUALITY: FEATURES OF DIFFERENT METHODS

In studies of regional inequality and its trends (convergence or divergence) different estimation methods can be applied. They can be divided into four groups by the criterion of the nature of the inequality measured.

The most obvious are assessments of differentiation made in terms of relations of *extreme values of indicators* of the regions or groups. If differences are very large (for example, inequality in per capita GRP), logarithms of the values of indicators can be used. The decile ratio or ratio of funds is usually used for measuring inequality in income within the region, but it can be modified and used for interregional comparisons, for instance, to compare the ten-percent groups of the regions with the highest and lowest values. Percentiles, values separating a certain percentage of the regions (e.g., 5% of the regions with maximum and minimum values), which are widely used in demography, can also be used. Time series of ratios of indices of extreme groups show the gain or smoothing of the differences, but only for these extreme groups. Information on the distribution of a characteristic in the middle of the range is unavailable in that case.

The *spread of values of indicators* is reflected the most fully when the distribution parameters are estimated. Most often the coefficient of variation is used

to assess the socio-economic inequality of regions. It is calculated as the ratio of standard deviation and the mean and reflects the spread of characteristics of regions. However, the disparity of regions requires weighing the values of the indicators; population is usually used as a factor. Measurement without weighting the indices may distort the picture of regional inequality in case of countries with multiple and small or, conversely, very large administrative divisions. For example, in Russia, the disparity in per capita GRP between oil producing Nenets Autonomous Okrug, which has a population of less than 50000 people, and small underdeveloped Ingush Republic are extreme: almost two orders of magnitude.

Coefficients that show the *uniformity of distribution* (Gini and Lorenz coefficients) are also used. They reflect the distribution within the whole range of regions, while they are the most sensitive to inequality and shifts taking place in the middle of a range.

*Entropy measures*, which came from thermodynamics, have been applied in regional science since the quantitative revolution of the 1960s [2, 7]. However, the entropy measures can hardly be used directly for making relative indicators. Therefore, for purposes of spatial analysis, two cartograms are made for the same territorial grid. The weight of each cell of these cartograms is proportional to the absolute values of, respectively, the observable and weighed indicators. The population, for example, may be used as the latter of the two. When inequality is measured, the entropies of these characteristics can be compared. Entropy measures are more sensitive to the shifts taking place in relatively weak (small size or low-performing) countries or regions.

In the foreign papers, the most commonly used measures are estimate indicators of inequality such as the coefficient of variation, the Gini coefficient, the ratio of the upper and lower quartiles of logarithms of indicator values, and the ratio of the maximum and minimum logarithm of values of an indicator by region [12]. Taking the logarithm is used most often in measuring per capita GRP in order to reduce the spread of values of indicators by region during the calculation.

Thus, use of several different estimate indicators is desirable to measure the inequality of regions and convergence or divergence trends. In addition, the procedure of weighting by population should be applied in case of high regional heterogeneity. When interpreting the results, the specifics of different types of measurements should be taken into account, especially when inequality is measured only for extreme groups.

#### THE LEVEL AND DYNAMICS OF REGIONAL INEQUALITY IN RUSSIA, UKRAINE, AND KAZAKHSTAN

To compare the regional differences of these countries, a database for the years 1998–2009 has been developed. However, the database has some shortcom-

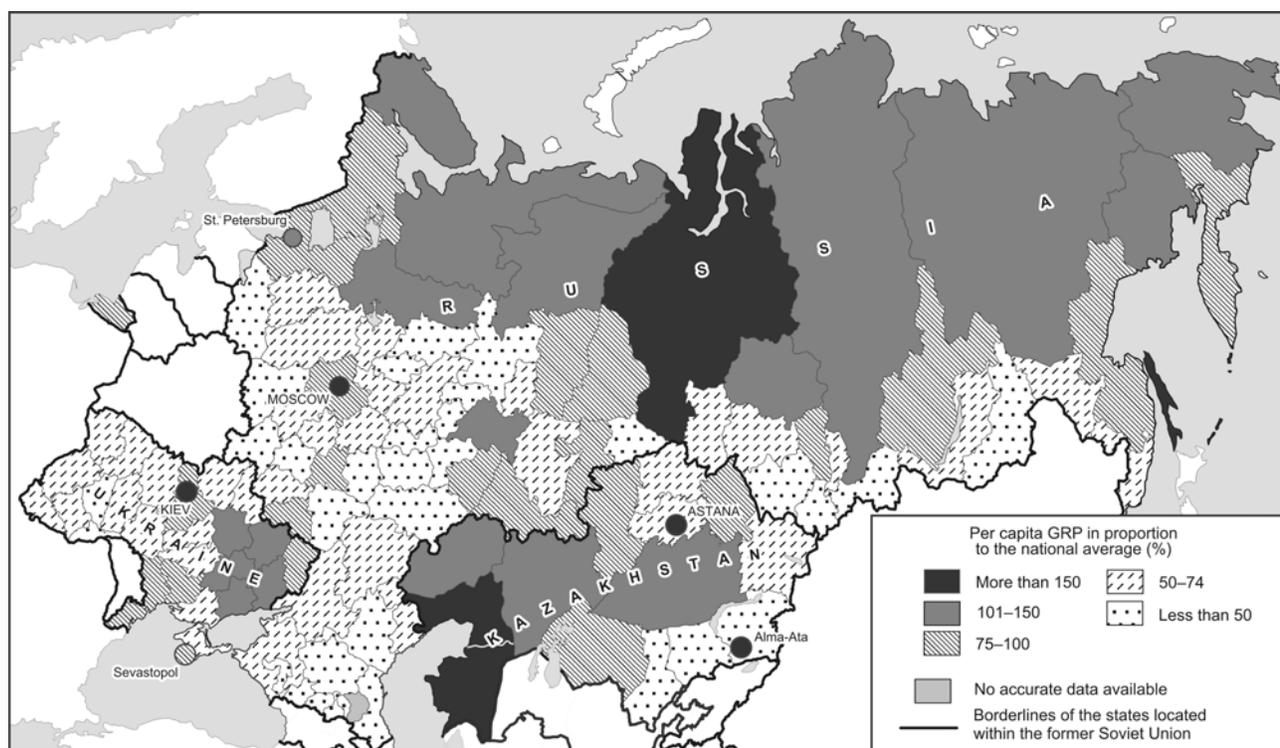


Fig. 1. Per capita GRP in Russia, Ukraine, and Kazakhstan in 2008.

ings. To ensure comparability of the estimations made for regions of Russia in dynamics, data for all the autonomous areas (most of them have been incorporated into other regions in the second half of the 2000s) and the Chechen Republic have been excluded.

The main *indicator of economic development* is the indicator of per capita GRP. Its regional differentiation for each of the three countries (relative to the average value for the country) is shown in Fig. 1. For regions of Russia, it was used in two variants: in nominal terms and adjusted for cost of living in the regions. Adjustment was carried out using the 2002–2008 average regional coefficient of cost of a fixed set of goods and services for interregional comparisons. For regions of the two other countries, such an amendment was not introduced because of less significant regional differences in the cost of living. The indicator of per capita investment in fixed assets was used as an additional parameter.

Two groups of *social indicators* were used. The first includes the socio-economic indicators reflecting labor market conditions (ILO unemployment) and the standard of living. Deviation of regions of each of the three countries from the average rate of unemployment in the country is shown in Fig. 2. The standard of living is measured by per capita cash income of the population (for Russia, by both the nominal and the adjusted for cost of living in a region), average salaries and wages, and the poverty rate. The second group consists of socio-demographic indicators used in

international comparisons: life expectancy and infant mortality. Unfortunately data on poverty and life expectancy is not available for Ukraine.

Still the Gini coefficient and coefficient of variation are the main estimate indicators. In the calculations made, all values of indicators were weighted by the population of the region. Socio-demographic indicators were calculated in percentiles separating the five-percent sets of regions with the highest and lowest performance; weighing was also made.

The *Gini coefficients* calculated for each of the three countries are shown in Figs. 3–5. The economic inequality of regions, as measured by the Gini coefficient, is probably strongest in Kazakhstan, while the indicator for Russia is slightly lower. If Russian indices of per capita GRP are adjusted for the price levels in the regions, Kazakhstan's indicators become much higher than Russia's. This is a consequence of Kazakhstan's dependence on oil extraction, which is even stronger than in Russia, so that per capita GRPs of two leading oil and gas producing regions (Atyrau and Mangistau regions) of Kazakhstan are much higher than those of the *median* regions. The economic inequality of regions of Ukraine, as measured by the Gini coefficient, is substantially lower than in Russia and Kazakhstan.

Calculations show why it is so difficult to determine the trend of changes in economic inequality of regions of Russia: it has been changing. Periods of divergence (the early years of growth after the eco-

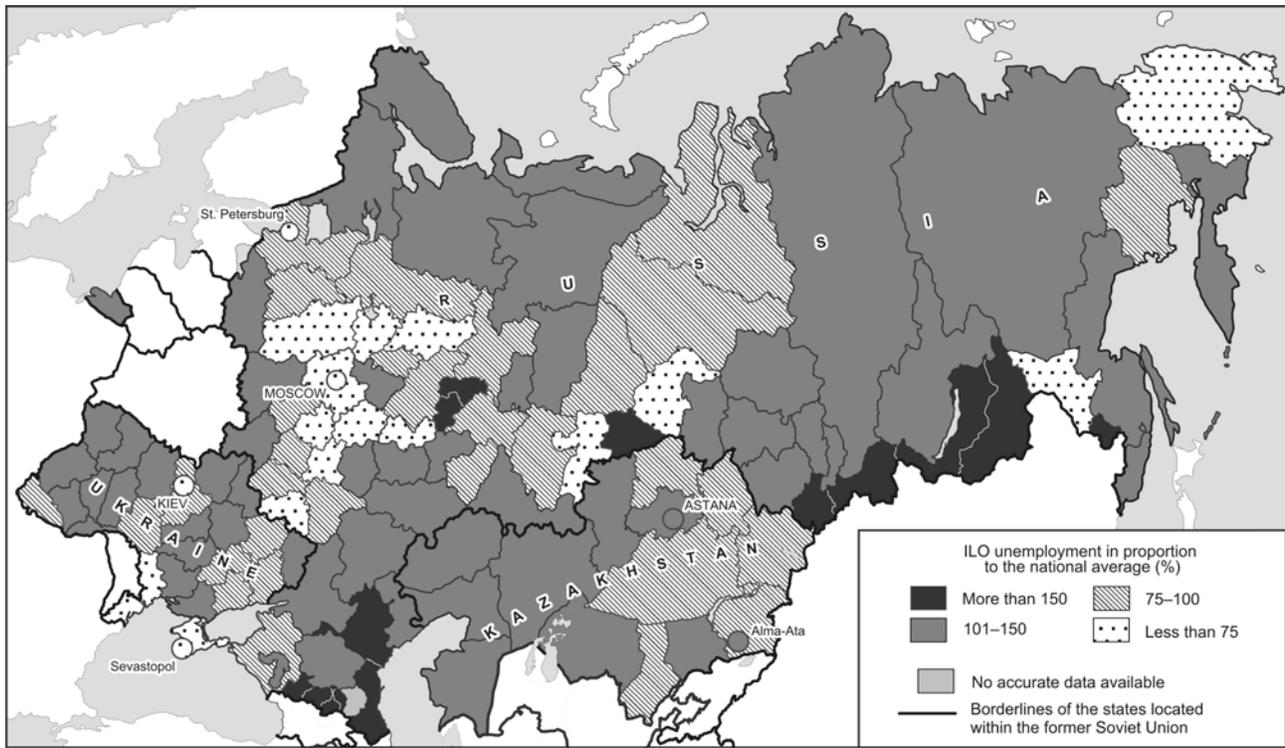


Fig. 2. ILO unemployment in Russia, Ukraine, and Kazakhstan in 2008.

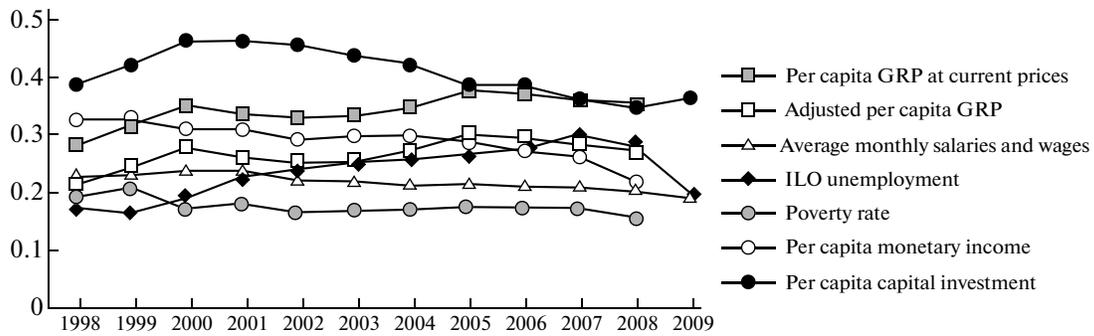


Fig. 3. Inequality of Russia's regions: Gini coefficient for major socio-economic indices.

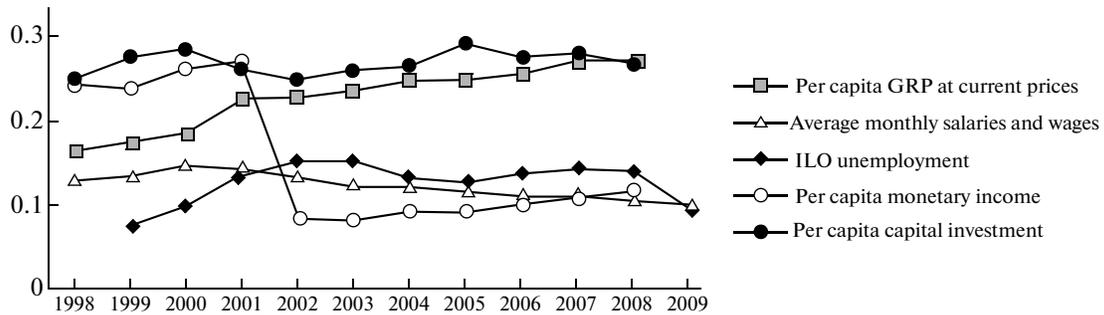


Fig. 4. Inequality of Ukraine's regions: Gini coefficient for major socio-economic indices.

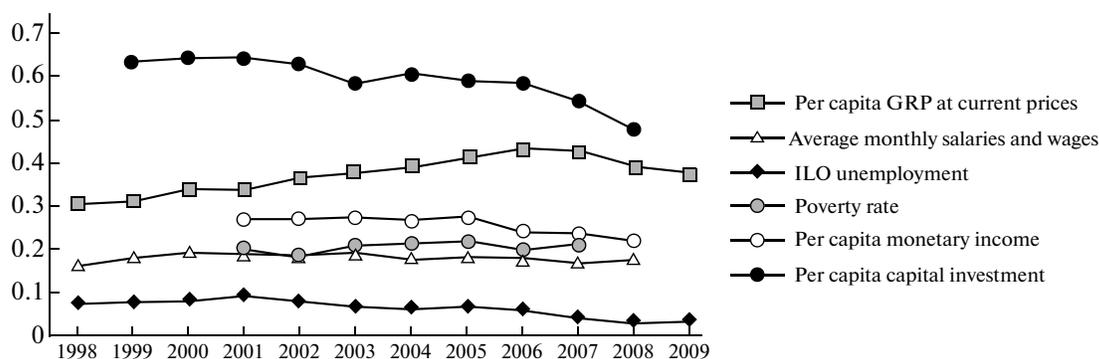


Fig. 5. Inequality of Kazakhstan's regions: Gini coefficient for major socio-economic indices.

economic crisis of 1998 and the beginning of the boom in oil prices in 2004–2005) have been alternating with periods of convergence as a result of domination of redistributing fiscal policy or as the result of the crisis that began in 2008. However, the trend over the period is the same, in general, for the three countries: economic inequality of regions in per capita GRP has increased.

The most consistent growth of economic inequality of the regions until the crisis of 2008 has been recorded in Ukraine (see Fig. 4). Divergence in per capita GRP was typical for Kazakhstan for ten years, but since 2007 it has given place to convergence. The main cause is the economic crisis of 2008–2009, which hit the developed regions, especially in the two capitals of the country, the most severely. Another factor is the redistributive policy of the state, including investment policy. Kazakhstan features a very strong regional differentiation of per capita investment and the most dramatic decline of it during 2006 to 2008 (see Fig. 5). In Russia, the regional differentiation of per capita investment has been also declining due to redistributing policy gaining momentum, but the process was slower. In Ukraine, where per capita investment differentiation by region is much lower, this trend has not been recorded.

The Gini coefficient for per capita income shows the opposite trend (with the exception of Ukraine). In Russia and Kazakhstan, regional inequality in per capita income declines rapidly, which is a consequence of the redistributing state regional policy, but not social policy. Social subsidies for low-income groups, whose proportion is higher in underdeveloped regions, reduce regional income inequality as well.

Russia is featured by convergence of regions in terms of all indicators of the living standard: income, salaries and wages, poverty rate, and consumption, which is measured by per capita retail trade turnover. This is a result of recent successful years and the increased redistribution of oil revenues. Regional inequality in wages has been decreasing due to increase of the earnings of state employees in recent years. It is a measure of social policy, but it also had a regional pro-

jection: the share of employment in the budget sector is higher in underdeveloped regions due to lack of other jobs. Increases in pensions, which took place in 2008, had the strongest impact on income of the population of averagely developed Central and North-western regions, where the age structure of the population is the oldest. The consequence of this is a significant drop in the Gini coefficient, because, as mentioned above, it is more sensitive to differences among medium regions of a range.

Unlike Russia, oil-producing Kazakhstan has not faced the trend of convergence in terms of salaries and wages and of regional disparities in poverty rates. It is caused by the fact that in rural households of southern and western regions of Kazakhstan, which are the main recipients of social assistance, the depth of poverty is stronger than in Russia, and the birth rate is higher. As a result, even increased social subsidies cannot lift poor households with many dependents above the poverty rate.

The poor quality of regional statistics of income is a problem for all CIS countries, but in Ukraine it is aggravated by the changes in the methods of calculation and revaluation of income in 2002. The latter led to a sharp reduction in per capita income indices of the population of Kiev and, thus, to reduction of regional differentiation only on paper. However, the long-term trend has not changed: during all other years, regional disparities in income of the population continued to grow. This can be explained by the weakness of the state: it did not have sufficient financial resources for implementing a redistribution policy. Increases of pensions conducted as an incentive before elections led rather to the growth of regional differentiation of income: the proportion of pensioners is lower in the western regions of Ukraine, which are characterized by the lowest per capita income of the population. However, the income statistics is the least reliable precisely for Western Ukraine. Much of its workforce goes abroad as migrant workers and receives unregistered income. Regional differentiation of salaries and wages was declining in the Ukraine only after the 1998 crisis; later the inequality level stabilized. In general, the

**Table 1.** Variation coefficients

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Per capita GRP:												
Russia (adjusted)	3.6	3.9	4.4	4.3	4.2	4.3	4.5	4.9	4.7	4.4	4.3	
Russia	5.1	5.2	5.7	5.8	5.8	6.0	5.8	6.3	6.0	5.8	5.7	
Ukraine	1.6	1.7	1.8	2.6	2.6	2.7	2.7	2.6	2.6	2.8	2.7	
Kazakhstan	2.3	2.6	3.4	3.3	3.7	3.9	3.7	3.9	3.9	3.4	3.6	3.4
Per capita investments:												
Russia	14.0	17.6	25.6	27.4	36.6	36.1	27.4	25.2	37.6	46.9	31.3	19.7
Ukraine	2.5	2.9	2.9	2.9	2.6	2.7	2.9	3.3	3.0	3.1	3.0	
Kazakhstan		8.5	8.3	8.8	8.0	8.3	8.6	9.3	8.3	7.2	6.3	
Unemployment:												
Russia	4.4	4.5	4.2	5.1	6.0	6.6	6.7	8.8	8.7	8.6	8.5	6.2
Ukraine		0.9	1.0	1.4	1.5	1.5	1.3	1.3	1.3	1.4	1.4	1.0
Kazakhstan	0.6	0.7	0.6	0.7	0.6	0.5	0.5	0.5	0.4	0.3	0.2	0.2

state weakly influenced the regional labor markets, both as a regulator and as an employer.

Comparison of the trends in regional disparities in employment shows that in all three countries the period of recovery growth after the 1998 crisis was accompanied by the divergence of regional unemployment rates, while the beginning of the crisis of the 2008 is defined by convergence. In Russia the growth of regional disparities in employment continued until the crisis of 2008, while in Ukraine it ceased earlier, in 2002–2003. One of the causes is low investments due to political instability, which reinforced the regional differences in unemployment rates. In general, the change of trends corresponds to models of developed countries [16]. In regions with low unemployment, economic growth leads to faster job creation, and unemployment tends to decrease more rapidly; while in the initial stage of a crisis it grows more quickly. Underdeveloped regions with higher unemployment rates are more stable in any phase of the economic cycle.

In mild form, these trends are manifested also in Kazakhstan, but they take place against the background of a very low regional differentiation in the unemployment rates (see Fig. 5). This is a side effect of the statistical methods used: one-third of all employees in the country, including the majority of rural workers, are statistically classified as self-employed (the criterion of classification is ownership of subsistence agriculture plots, land, and livestock). In the underdeveloped regions of Kazakhstan, the self-employed compose almost a half of the workforce, as the proportion of the rural population is higher. As a result the unemployment rate is significantly underestimated and its regional differences are artificially smoothed.

Trends in the regional inequality dynamics estimated with use of the Gini coefficient can be compared with the results of estimations using *the coefficient of variation*. The latter computed for economic indicators and employment rates are presented in Table 1. Regional inequality, as measured by the coefficient of variation is much stronger in Russia, including disparities in economic performance and employment. The wide spread of values is caused by the large number of Russia's regions and their heterogeneity in terms of population and the level of development.

However, the trends of the dynamics are mostly the same as the results of calculations using the Gini coefficient. In general, the processes of economic divergence of regions were dominant during the period under review. There are matched in more short-term trends too: they are the accelerated growth of economic inequality during the recovery from the crisis of 1998 and, conversely, its decline in all three countries; the latter is caused by the crisis of 2008 and, for Russia and Kazakhstan, by precrisis strengthening of the redistributing policy. The decadal trends of growth of regional differentiation in unemployment rates in Russia and Ukraine are also similar; however, in that case the coefficients of variation for Russia are much higher.

Differentiation of the three countries by the coefficients of variation of regional living standards and the consumption indicators is also stronger (Fig. 6). In Russia, the spread of values of indicators by region is greatest, including the income of the population adjusted for cost of living in a region. In Kazakhstan, regional differences are lower, except for consumption, because it is concentrated in the two largest metropolitan cities. Inequality in Ukraine is the lowest among the three countries.

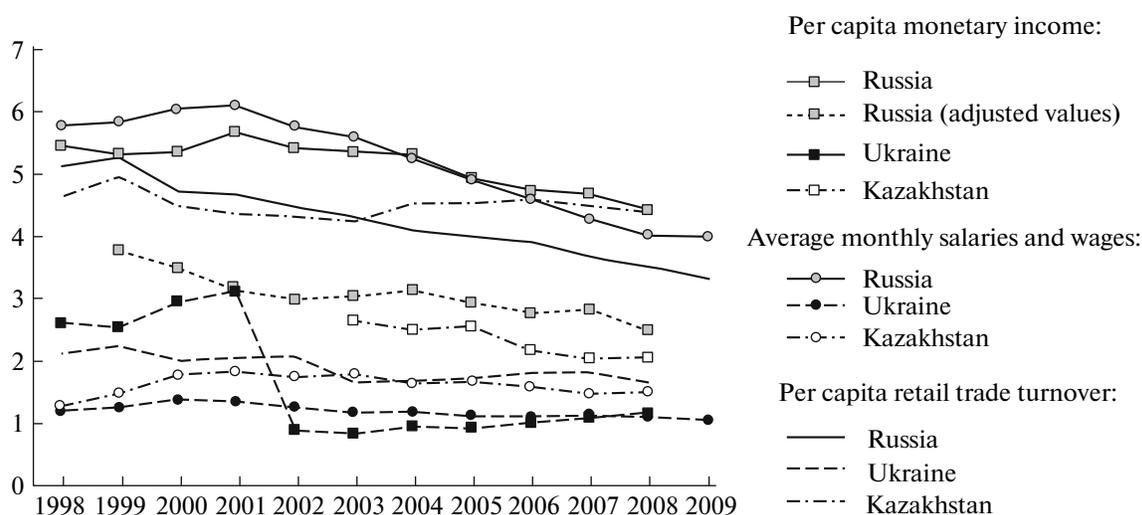


Fig. 6. Variation coefficients for per capita monetary income, per capita salaries and wages, and per capita retail turnover in regions of Russia, Ukraine, and Kazakhstan.

Comparison of the dynamics of coefficients of variation of the three countries confirms the similarities and differences in the trends identified through use of the Gini coefficients. In Russia, a convergence trend for all regional indicators of living standard and consumption during the 2000s is the most pronounced. Inequality grew only in the first years of economic growth after the crisis of 1998. In Kazakhstan, the convergence processes are less pronounced: in terms of salaries and wages, they became apparent only in the mid-2000s, while in terms of consumption there was no convergence trend during the 2000s at all. In Ukraine, the trends are the most dissimilar to each other, although some convergence of regions in terms of salaries and wages, and consumption (but not in terms of income) can be seen in general for the period under review. Perhaps the implicit dynamics is affected by relatively small regional differences in living standards compared to other major countries of the CIS.

Socio-demographic indicators reflect disparities of regions in the population quality and human capital. Three estimate indicators, namely the Gini coefficient, the coefficient of variation, and the percentiles (for Russia), make it possible to more accurately identify trends in inequality, which can be seen by scrutinizing the *middle* of the range, the spread of all values, and the disparities between the extremes.

Trends in inequality differ both by estimate indicators and by countries. In Russia, regional disparities in life expectancy have increased if measured over the entire period under review; they reached the maximum in the mid-2000s but declined over the past three years. This is reflected by both the Gini coefficient and the coefficient of variation (Table 2), as well as by the percentile chart (Fig. 7). The growing disparities between the boundary values for extreme five-percent groups of regions in the first half of the 2000s gave way

to convergence in 2006 due to outrunning the growth of life expectancy in the most troubled regions. The ratio of boundary values for five-percent groups of the *best* and the *worst* regions declined from 1.14 in 2005 to 1.12 in 2008.

The change of the trend in Russia is a positive result of the implementation of the “Health” national project. Funding under this project made it possible to equip medical facilities, including those in less-developed regions, with necessary medical facilities and medicines. But these measures are unlikely to be enough for a long time, as the volume of regional health care funding dropped in 2008–2009.

In Kazakhstan, the Gini coefficient does not show any obvious trend in inequality in life expectancy, while the coefficient of variation shows the growth of regional disparities. It means that in the regions with *average* showings there are no significant shifts, while differences in the *best* and *worst* regions are growing. In Kazakhstan, the greatest problems are industrial regions with acute environmental problems, a higher proportion of Russians in the population, and widely spread alcoholism, rather than underdeveloped regions.

The infant mortality index is less stable at the regional level because a small number of cases inevitably means sharp fluctuations from year to year. The severely oscillating dynamics of the coefficient of variation is difficult to analyze, so the Gini coefficient is more representative. In Russia it was declining during the first half of the 2000s, but has significantly increased since 2005. It is also a consequence of governmental policy. Fertility promotion through subsidies in the form of so-called *maternal capital* influenced the fertility behavior of the rural population and the population of small peripheral towns and underdeveloped republics where the demographic transition

**Table 2.** Estimate indicators of socio-economic disparities of regions

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Life expectancy:											
Gini coefficient*											
Russia	0.012	0.015	0.016	0.017	0.018	0.022	0.024	0.025	0.021	0.020	0.020
Kazakhstan		0.014	0.012	0.013	0.013	0.013	0.013	0.012	0.015	0.017	0.015
Variation coefficient											
Russia	0.31	0.32	0.35	0.38	0.44	0.45	0.46	0.40	0.40	0.40	0.40
Kazakhstan	0.09	0.09	0.08	0.10	0.10	0.10	0.10	0.10	0.11	0.13	0.13
Infant mortality:											
Gini coefficient											
Russia	0.10	0.12	0.11	0.11	0.10	0.10	0.10	0.12	0.13	0.14	0.13
Ukraine	0.05	0.05	0.06	0.07	0.07	0.08	0.08	0.09	0.09	0.09	0.09
Kazakhstan	0.06	0.08	0.11	0.11	0.10	0.08	0.07	0.10	0.12	0.13	0.09
Variation coefficient											
Russia	2.54	2.58	2.61	2.88	2.84	3.23	2.42	2.53	3.32	2.99	2.27
Ukraine	0.50	0.50	0.57	0.65	0.62	0.75	0.66	0.81	0.91	0.80	0.87
Kazakhstan	0.49	0.77	0.85	0.83	0.71	0.66	0.57	0.82	0.90	0.83	0.59

\* Because life expectancy differentiation is low, computations of the Gini coefficients are presented in figures rounded off to three decimal places.

has not yet been completed. Health care levels are worse in all these areas. As a result, the growth of fertility was accompanied by an increase of regional differentiation in infant mortality.

The percentile diagram shows, as it may seem, sustained convergence of the boundaries of extreme groups for the last decade due to a general decline in infant mortality rates (see Fig. 8). But the ratio of values separating extreme groups of the *best* and *worst* regions increased during 2005–2008 from 1.93 to 2.25; i.e., the disparity between the extreme groups has, in fact, increased.

For Ukraine, where social policy is weaker, the Gini coefficient shows a steady increase in the differentiation of regions by infant mortality. In Kazakhstan, oscillations of the coefficient do not reveal a clear trend of divergence or convergence, although in general during the period under review, regional disparities in infant mortality also increased. This is quite expected, as in all post-Soviet countries, health expenditure is small, the health care services system is obsolete and inefficient, while paid medical services, which are not available to all, grow in proportion. Against the background of the two other countries, Russia's trends can still be interpreted as more positive, but regional differences in socio-demographic indicators are much higher.

## CONCLUSIONS

The dynamics of regional inequality in three post-Soviet countries has both significant similarities and

differences. The general trend of the past decade, coinciding with the trend in other countries of the world, has been the growth of economic inequality of regions of Russia, Ukraine, and Kazakhstan until the beginning of the crisis of 2008–2009. In Russia the growth of economic inequality has been less stable and even alternated sometimes with the trend of convergence under the influence of large-scale redistributing fiscal measures. In Kazakhstan and Ukraine, trends of economic divergence of regions have been more explicit, which are consequences of stronger resource specialization of the economy (Kazakhstan) and of weak redistributing and investment policy of the state in conditions of political instability (Ukraine).

Regional disparities in living standards most noticeably decreased in Russia, which is a consequence of social policy to redistribute huge oil revenues. This trend is similar to the dynamics of regional income inequality in developed countries with strong social policies (France and others). However, the strengthening of the state does not always lead to a convergence of regions by the population's income. In Kazakhstan, where the state's role is not less important, the process of convergence of regions is noticeable only in terms of per capita income of the population and is not present in terms of salaries and wages and the poverty rate. Perhaps this is a consequence of more liberal social policy, and of the lower standard of living of the rural population. Ukraine is the most striking example of divergence of regions by all indicators of living standard caused by the weakness of state social policy.

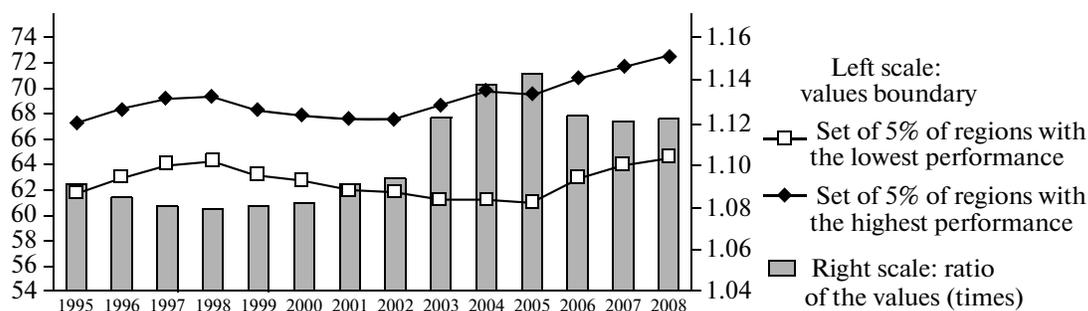


Fig. 7. Russia's population life expectancy (in years) percentiles (weighted values separating the sets of 5% of regions with the lowest and of 5% of regions with the highest performance).

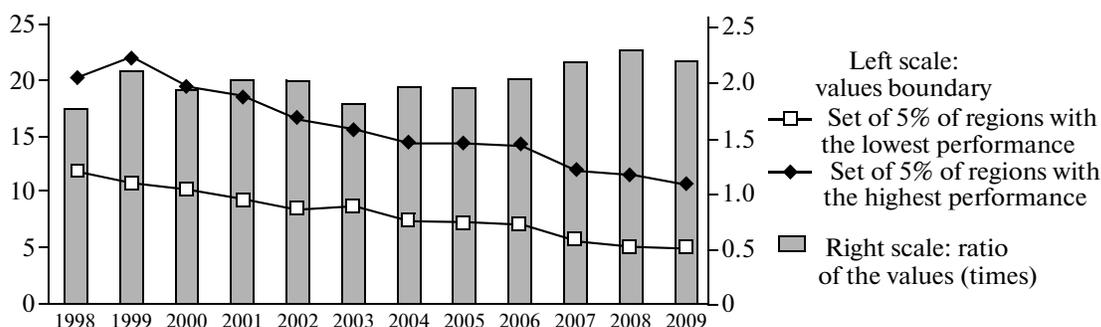


Fig. 8. Percentiles of infant mortality of Russia's population, people per 1000 live births (weighted values separating the sets of 5% of regions with the lowest and of 5% of regions with the highest performance).

In terms of employment, which is more closely dependent on the condition of the regional economy, the prevailing trends are trends of divergence of regions, particularly in Russia. These trends are affected also by economic cycles: in periods of economic growth, divergence prevails, while in times of crises, regional differences in unemployment rates decline. But in the case of an unusual employment structure (a very high proportion of the self-employed in Kazakhstan), it is impossible to identify trends, because unemployment is disguised as self-employment.

Regional differentiation of the quality of the population decreased only in Russia. The decrease was slight, though, and rather restricted: only in recent years and only in terms of life expectancy. In Ukraine and Kazakhstan, the trend of increasing socio-demographic differences has gained momentum in general. As a result, regional differentiation of human capital is growing. This factor is one of the most important *second nature causes* in promoting spatial development.

Thus, among the three CIS countries in question, Russia has shown more explicit convergence trends in social development of regions during the 2000s, while initial differences had been very high. Ukraine displays the opposite case, divergence of regional social development levels has taken place, while initially inequality had been less pronounced. Kazakhstan is in-

between these two countries in terms of trends in regional disparities in social indicators. Although authoritarian regimes are more likely to have a policy of equalization, in Kazakhstan there is a synthesis of a relatively liberal social policy and dirigisme in regional economic policy. In Russia, an authoritarian regime is more consistent: redistributive paternalism of social policy and redistributive dirigisme of regional policy fit together.

The laws of spatial development are stronger than political regimes. Spatial development is inertial, its factors and barriers have a long-term nature. It is unlikely that in the next 10–15 years significant changes in the major CIS countries will take place, including significant weakening of the barrier function of *second nature causes* and lessening of the geographical scope of spatial marginality. The actual drives and barriers will continue to influence the trends in regional inequality in the same way. This means that economic disparities among the regions of the CIS countries will grow under the influence of objective factors of competitiveness. The dynamics of regional disparities of economic indicators and indicators of the labor market will be additionally impacted by economic cycles, which lead to divergence in the periods of growth and convergence in times of crisis downturn.

Opportunities for mitigating economic and social disparities among regions are one of the most contro-

versial topics in regional science. In recent years, under the influence of “new economic geography,” there has been a paradigm shift from a rigid equalizing policy to more adequate vision of the range of opportunities to address this problem. Considerable contribution to the shift was made by studies of Krugman, Martin [15], and others, and by the aforementioned Report of the World Bank on world development for 2009.

However, the role of regional policy should not be overestimated. In Russia and Ukraine its priorities have not yet been defined, and its measures are ineffective. In Kazakhstan and Russia, regional policies lie in the framework of dirigisme: objective factors and barriers to regional development are not taken into account appropriately, which reduces the effectiveness of decisions taken. As a result, these policies have almost no effect on regional disparities in economic development. In other countries, there are few examples when dirigisme becomes a successful policy of spatial development.

More significant impacts on regional development can be drawn by measures of social and institutional policies, instead of regional policies, aimed at increasing human capital and population mobility, at targeted social support to vulnerable population strata, and at the modernization of institutions. These recommendations have become commonplace, but it is necessary to repeat them again and again, as the main barriers of development of Russia are the bad institutions and deterioration of human capital. For the future development of the country, it is necessary to alleviate the social disparities among regions. As the experience of developed countries of the EU shows, one of the means to achieve this goal is a large-scale and efficient social policy, which becomes feasible with the growth of state revenues and modernization of institutions. The second tool is promotion of development zones in less-developed regions, i.e., zones featuring competitive advantages, to accelerate the development of a region as a whole. As international experience shows, such a policy rarely turns out to be successful; however, success is still possible if effective institutions are in place. As a result, the circle closes: without modernizing of institutions, the problems of regional inequality in Russia and other major countries of the CIS cannot be solved.

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