VARIATIONS IN SOCIOECONOMIC DEVELOPMENT BY REGION

Inclusive Growth and Regional Sustainability of Russia

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Abstract—The article presents a methodology for assessing inclusive growth in Russian regions by constructing an integral index. We sought to understand how economic growth, based on high energy prices over several years, led to a smoothing of inequalities and reduction in poverty and environmental pressures in regions, as well as the nature of the trends in recent years. It was revealed that a number of developed regions, e.g., Leningrad, Tyumen, Kaluga, Voronezh, Moscow oblasts, the Republic of Tatarstan, and St. Petersburg, significantly improved their indicators from 1998 to 2016, especially in the area of increased life expectancy and household incomes, while reducing environmental load. However, from 2012 to 2015, the value of the inclusive growth index in Russia decreased to the 2007 level, and its differentiation between regions sharply increased. The results of a decade of work to improve the sustainability and uniformity of regional development were partially nullified. In 2016, the value of the index recovered to the 2011 level. To substantiate political recommendations, it is important that regions in which economic growth was accompanied by positive externalities in the social and environmental spheres were more resistant to external shocks. The developed index can further be used for a comprehensive assessment of the socioeconomic development of regions from the aspect of sustainability and inclusiveness.

Keywords: sustainable development, social development, environmental development, inequality, resilience, people's incomes

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In the World Economic Forum (WEF) rating by the Inclusive Development Index (IDI), presented in January 2017[1], Russia occupied 13th place among 78 developing countries, and in the 2018 rating, it fell to 19th place, although in terms of GDP per capita, it occupies ninth place in the same group[2]. This may be evidence that the benefits of economic growth are not fully utilized by all representatives of society, which in turn can lead to instability in their development and vulnerability to social and other risks in the future[3].

Russia's large territory and the mix of natural and economic conditions predetermine strong regional differentiation. The economic growth of a significant number of regions is based on extraction of natural rent, which does not always entail an increase the true well-being of the population, solution of environmental problems, and, accordingly, sustainable develop-

ment. As the experience of 2008−2009 crisis shows, many regions lacking sufficient mineral reserves (Novgorod, Voronezh, Saratov, Ulyanovsk, Tambov oblasts, etc.) showed great stability and resilience to crisis phenomena [8].

In the literature, the ability of regions to withstand external shocks is related to the level of economic diversification, human potential, the strength of the interaction between economic agents and the presence of sectors most vulnerable to the crisis [13, 15, 19, 20]. However, there are hardly any studies directly linking the stability of regional development to the quality of economic growth in previous periods, i.e., how growth contributed to improving living standards, reducing

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[1] See: *The Inclusive Growth and Development Report 2017.* http://reports.weforum.org/inclusive-growth-and-development-report-2017/.

[2] See: *The Inclusive Development Index 2018.* https://www.weforum.org/reports/the-inclusive-development-index-2018.

[3] It is believed that growth of risks (natural, technological, social) and future uncertainty led to popularization of the terms "resilience" and "vulnerability" [22]. Whereas in the 1980s−1990s, the main slogan of integrated socioeconomic research was "sustainable development" associated with inexhaustible resource management and self-supporting development without compromising future generations, in the 2000s−2010s, this function was resilience, the ability to withstand external shocks and recover from them.

social and environmental risks, and, as a result, to what extent such growth can be considered self-supporting and sustainable.

The aim of this work is to quantify the dynamics of regional development in Russia, taking into account inclusive growth that improves the situation of all members of society, including the most vulnerable groups and future generations. According to the initial hypothesis, we assumed that high prices for energy and other minerals as a whole contribute to inclusive growth [7], but a number of commodity regions (the republics of Komi and Karelia; Murmansk and Orenburg oblasts; etc.) with high economic growth rates have at the same time demonstrated lower rates of reduced inequality and environmental load. This, in turn, led to their high vulnerability to external shocks in the 2010s.

The first part of the article discusses various methods for assessing sustainable development and explains why the traditional economic development indicator, GRP per capita, cannot be fully used for this. The second part describes how the methodology for constructing the WEF inclusiveness index was adapted to analyze regional development of Russia. The third part discusses the results obtained and their relevance to these hypotheses.

REVIEW OF THE LITERATURE:
WHY GDP IS NOT THE BEST INDICATOR
OF SUSTAINABLE DEVELOPMENT
AND WHAT SHOULD REPLACE IT

For a long time, the main criterion for country and regional development was economic growth, as measured by the growth of gross domestic (or regional) product in its various modifications. However, since the late 1970s, with the increasing relevance of environmental protection problems, the concept of sustainable development has gradually spread. A decisive contribution to its formation was made by D. Meadows' et al. report "The Limits to Growth" to the Club of Rome, raising for the first time the question of optimal scenarios for human development[4]. Unfortunately, owing to the difficulty in translating the word "sustainable" into Russian, even now Russia has various interpretations of the concepts "uniform economic growth" and "constant GDP growth," which highlights only one aspect of sustainability, but does not take into account social integration and environmental protection. In essence, sustainable growth implies meeting the needs of the current generation without compromising future ones; i.e., it should not lead to an increase in inequality, exhaustion of natural resources, or increasing pollution[5].

In 2015, the UN General Assembly adopted a resolution that formed the agenda for sustainable development until 2030[6]. It formulates 17 sustainable development goals (SDGs), each of which corresponds to specific objectives (169 in total) and indicators (more than 230). The goals take into account economic growth (goal 8), industrialization, innovation and infrastructure development (goal 9), eradication of poverty (goal 1), better health (goal 3), better education (goal 4), reducing inequality (goal 5, 10), ensuring access to clean water (goal 6), use of renewable energy sources (goal 7), and conservation of ecosystems (goals 12–15)[7]. The resolution states that "goals and objectives should be achieved in the interests of all countries and peoples and all strata of society... first of all, the most lagging"[8].

Traditionally measured using the GDP indicator, economic growth covers only a few SDGs, not even the majority. Nor does not always reflect the real level of progress [11]. Today, there are many alternative approaches to assessing development: the human development index [3, 23], green growth index [1, 10, 17, 18], general progress indicator [18], life satisfaction index [24], knowledge economy index [16], and many others [5]. In recent years, several reports by international and Russian organizations on inclusive development have been published: reports by the International Monetary Fund [12], Organization for Economic Cooperation and Development [13], World Bank [21], and Russian State Analytical Center [2].

Inclusive growth, according to WEF experts, should contribute to development of the currently most vulnerable groups and take into account the needs of future generations[9], i.e., directly linked to the SDGs. The WEF report presented an appropriate tool for assessment: the inclusive development index, which involves an annual assessment of development for more than 100 countries[10]. The index evaluates three components: growth and development, inclusiveness, and intergenerational equality and sustainability.

Countries are ranked by their current level of inclusive development, along with an assessment of the quality of life dynamics over the past 5 years. Ranking is done separately for developed and developing countries. In 2018, the list of leaders included mainly small developed countries in Europe (Norway, Iceland, Luxembourg) and large developed countries (Austra-

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[4] See: *Transforming our world: the 2030 Agenda for Sustainable Development*. https://sustainabledevelopment.un.org/index.php?menu=2361. See also [9].

[5] See: *Inclusive Growth* (2014). OECD. https://www.oecd.org/mcm/IG_MCM_ENG.pdf.

[6] See: *Transforming our world: the 2030 Agenda for Sustainable Development*.

[7] See: *Sustainable Development Goals*. https://sustainabledevelopment.un.org/?menu=1300.

[8] See: *Transforming our world: the 2030 Agenda for Sustainable Development*.

[9] See: *The Inclusive Growth and Development Report 2017*.

[10] See: *The Inclusive Development Index 2018*.

Table 1. Structure of indicators of international and Russian inclusive development indices

Indicators used by WEF	Integral index of inclusive development of Russian regions		
	Indicator	Max. value	Min. value
Growth and development			
GDP per capita, USD	–	–	–
Labor productivity (ratio of GDP to number of employed), USD purchasing power parity	GRP to average number of employees at base year prices, taking into account interregional price index, RUB mln	5	0.1
Employment (ratio of employed to working-age population), %	Employment (ratio of employed to working-age population), %	100	0
Life expectancy, years	Life expectancy, years	90	50
Inclusiveness			
Gini index to income	Gini index to income	1	0
Poverty level, %	Poverty level (share of population with cash incomes below subsistence level), %	100	0
Median household income, USD thou.	Real cash incomes of population at base year prices taking into account interregional price index, RUB thou.	50000	1000
Gini index to wealth	–	–	–
Intergenerational equality and sustainability			
Adjusted net accumulation index, %	Share of investment in fixed assets in GRP, %	100	0
Demographic load, %	Demographic load (non-working age persons per 1000 people of working age), ‰	1000	100
Ratio of public debt to GDP, %	Share of regional revenues in tax and nontax revenues, %	100	0
CO_2 emissions, thou. t per USD 1 bln GDP	Ratio of atmospheric pollutant emissions from stationary sources and road transport to GRP, thou. t per RUB 1 bln	10	0

Source: Official Rosstat and RF Treasury data.

lia, Germany). Russia is part of the group of developing countries, in which it occupies rather modest 19th place, immediately after Turkey, Thailand, and Algeria, overtaking Paraguay and the Dominican Republic. The leaders on the list of developing countries are Lithuania, Hungary, and Latvia.

The WEF report[11] shows that high rates of economic growth in Russia in the 2000s led to a reduction in poverty—the incomes of 40% of the poorest Russians grew faster than the rest—but the country is still characterized by an uneven income distribution. Such growth can be called inclusive, but improvement of the investment climate, diversification of the economy, and the solution of infrastructure problems have slowed in recent years, which reduces opportunities

[11]See: *The Inclusive Growth and Development Report 2017.*

for future development. The rate of economic growth significantly outpaces the indicators for reduced inequality. In addition, despite low state debt, Russia is actively reducing its natural resources and but not the energy consumption of the economy. In general, Russia's integral index is stable.

RESEARCH METHODOLOGY

This study has adapted the proposed WEF methodology in accordance with the availability, reliability, and relevance of indicators for Russian regions. Table 1 shows the original indicators of the Inclusive Development Index and the indicators used to calculate the index for Russian regions.

We excluded the indicator GRP per capita from the calculated integral index. This indicator in Russia is

highly distorted: its values are overestimated in sparsely populated resource regions. In addition, our task was to compare economic growth (in our case, GRP per capita and its growth) with that of other development indicators. The use of two strongly related indicators (GRP per capita and GRP with reference to the number of employed) is also methodologically incorrect, since it amplifies the influence of economic growth indicators on the final index.

The Growth and Development block directly evaluates the level of regional development. In this case, labor productivity should be considered an indicator of regional technological development: the higher it is, the higher the quality and demand for products, the level of automation of production, and the qualifications of employees. The employment indicator is necessary for assessing involvement of the population in economic processes; it reflects employment opportunities as the basis for development of households and improving quality of life. The growth of labor productivity in our case should not lead to a decrease in employment (in practice, this often happens differently)[12]. Life expectancy is a key indicator of human development [23], reflecting the quality characteristics of the health care system and quality of life of the population.

The Inclusiveness block evaluates regional social development, i.e., standard of living and level of social inequality. The median cash income level in regions is not available for the entire period, so we replaced it with a simpler cash income indicator adjusted for regional price differences. The indicator is used to assess the general standard of living and financial opportunities of households[13]. The poverty level determines the proportion of the most vulnerable groups in a region. The Gini index to income is a traditional indicator for measuring inequality, but the Gini index to wealth, unfortunately, has not been calculated for Russian regions.

The Intergenerational Equality and Sustainability block examines indicators measuring to what extent economic growth and the well-being of current generations can adversely affect future ones. The adjusted net accumulation index shows investments in human capital minus natural resource expenditures and pollution damage, but there are no data for regions, so we replaced them with the ratio of investments to GRP. This is a more general indicator that shows how much value added is spent on investments in fixed assets,

i.e., for accumulation of capital. The ratio of debt to GDP indicates how much modern growth is funded by the debt of future generations. At the regional level in Russia, the opposite indicator is a more suitable[14]: the share of regional budget revenues. The lower this share, the more the region borrows from the federal budget, deals on foreign markets, and, accordingly, the more it reduces its budget balance. The level of the current demographic load indicates an increase in pressure on future generations, which will bear the burden of supporting the young and old. The ratio of carbon dioxide emissions to GDP can partially measure the country's contribution to global warming. At the regional level, a similar indicator is the ratio of pollutant atmospheric emissions from stationary sources and personal vehicles to GRP.

In accordance with the selected indicators, the authors have calculated the integral inclusive growth index ($Inclus1$) for Russian regions by the formula

$$Inclus1_{i,t} = \left(\frac{GRP_{i,t} + Emp_{i,t} + Lif_{i,t}}{3} \right.$$
$$+ \frac{Inc_{i,t} + (1 - Gini_{i,t}) + (1 - Pov_{i,t})}{3} +$$
$$\left. + \frac{Inv_{i,t} + (1 - Dem_{i,t}) + Budg_{i,t} + (1 - Emis_{i,t})}{4} \right) \Big/ 3,$$

where i is region; t is year; GRP is the GRP to the average number of employees at base year prices, taking into account the interregional price index; Emp is employment (ratio of employed to the working-age population), %; Lif is life expectancy at birth, years; Inc is people's real cash income in base year prices, RUB thou.; $Gini$ is the Gini index to income; Pov is poverty level (share of the population with cash incomes below the subsistence level), %; Inv is the share of investment in fixed assets in GRP, %; Dem is the demographic load (for 1000 people of working age for people of non-working age), ‰; $Budg$ is the share of regional revenues in tax and nontax revenues, %; $Emis$ is atmospheric pollutant emissions from stationary sources to GRP, thou. t per RUB 1 bln.

Each variable was normalized by the linear scaling method (maximum and minimum values in Table 1). The integral inclusiveness index ($Inclus2$) was calculated separately, from which indicators directly related to economic growth are excluded: GRP to the number of employed, people's incomes and investments (GRP, Inc, Inv), in order to understand how the situation has changed in areas not directly related to the results of development of the oil and gas sector:

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[12]Moreover, modern automation processes designed to significantly increase labor productivity increase risks of technological unemployment. The experience of Tolyatti-based OJSC AvtoVAZ with automation, where the number of employees decreased from 110 000 to 35 000, confirms such concerns, hence the importance of taking into account the employment level in an integral index.

[13]We did not use wage estimates due to distortions related to development of the informal economy and partial concealment of wages for tax evasion.

[14]The debt burden in Russian regions significantly depends on the structure of the debt portfolio. However, in the current institutional system, the negative consequences of a high debt burden are not obvious: debts are being restructured, in fact, a region cannot be declared bankrupt. Moreover, regional revenues create conditions and opportunities for sustainable self-development in the future.
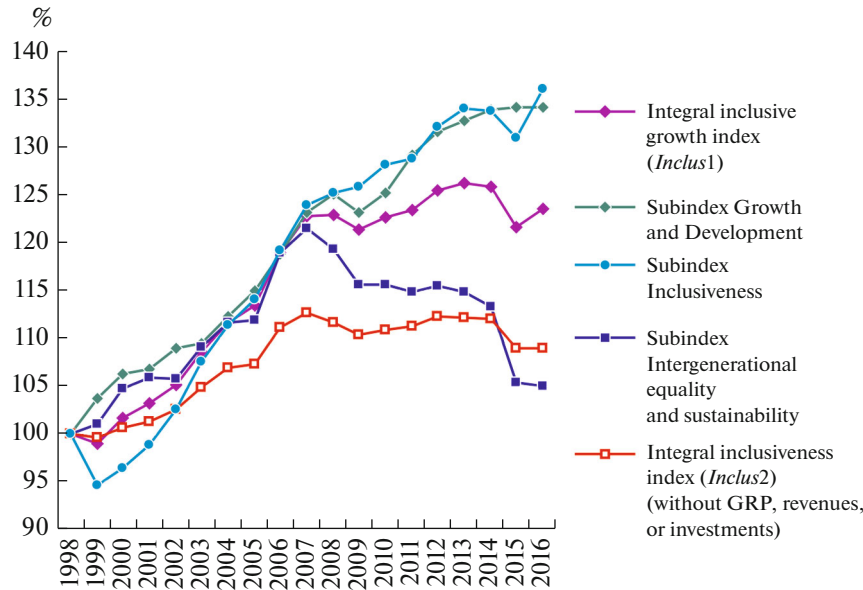
Fig. 1. Dynamics of the integral inclusive growth index and its subindices by blocks for Russia (1998 = 100%).

$$Inclus2_{i,t} = \left(\frac{Emp_{i,t} + Lif_{i,t}}{2} + \frac{(1 - Gini_{i,t}) + (1 - Pov_{i,t})}{2} + \frac{Dem_{i,t} + Budg_{i,t} + (1 - Emis_{i,t})}{3} \right) \bigg/ 3.$$

RESULTS AND DISCUSSION

Figure 1 shows the dynamics of the integral inclusive growth index in Russia and the dynamics of its subindices. From 1999 to 2008, on the whole, there was a positive dynamics of all considered indices, which is associated both with the low base effect (drop in the 1990s) and with an objectively favorable economic pricing environment for Russia's main export products (oil, gas, metals, timber, etc.). However, after 2007, most indices showed a decline, except for the subindex in the Inclusiveness block, since, owing to a significant increase in interbudgetary transfers, revenues continued to grow until 2010 and the poverty rate declined [7].

After 2010, the integral index grew due to the subindices Growth and Development and Inclusivity, but in 2014, it began to drop again due to lower incomes. Since 2007, there has been a negative trend in the block Intergenerational Equality and Sustainability due to the increasing demographic load. Note that the early 2000s saw the smallest estimates for the Inclusivity, which were increased thanks to the state's redistributive policy, in particular, an increase in public sector salaries.

Figure 1 shows the dynamics of the inclusiveness index *(Inclus2)* neglecting the GRP characteristics. The correlation coefficient of this index for GRP per capita is only 0.45, but a nonlinear relationship is observed (Fig. 2). At a certain stage, a significant increase in per capita GRP no longer leads to an increase in the inclusiveness index; other institutional mechanisms are working. The results themselves, not directly related to growth, turned out to be much more modest. Moreover, from 2012 to 2015, the index fell to the level of 2005, i.e. in fact, the results of a decade of work to increase the inclusiveness of economic growth in the regions were nullified.

In the Growth and Development block (Fig. 3), only the labor productivity indicator shows relatively steady growth, associated with high energy prices. However, it also experienced a significant decline in 2009. Employment has been declining since 2011, but it slightly increased in 2016. In recent years, labor productivity has increased not only due to the growth of regional economies, but also due to a decrease in employment. Particular attention should be paid to the fact that the model of the Russian labor market does not imply a significant decrease in employment, workers under crisis conditions are often shifted to a regime with a shorter working day, and therefore employment estimates can somewhat smooth out real problems in the economy. Life expectancy has been constantly growing since 2007, but at a significantly slower pace than labor productivity. The growth in life expectancy can be considered one of the main positive effects related to growth of the Russian economy.

The indicators of the Inclusiveness block (Fig. 4) are characterized by a similar situation: people's real incomes grew until 2013, then began to decline. The poverty level decreased from 2000 to 2013, but already in 2016 it returned to the 2008 level due to intensification of the crisis in the economy and continuing decline in income[15]. The Gini index to income has
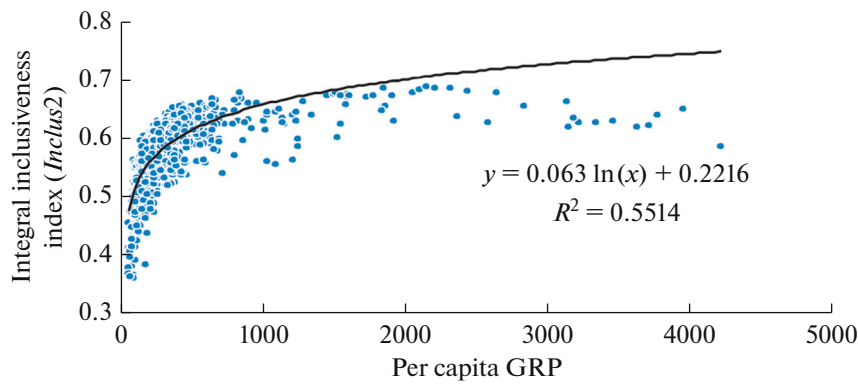
Fig. 2. Relationship between per capita GRP and inclusiveness index *(Inclus2)* for entire period 1998−2016.
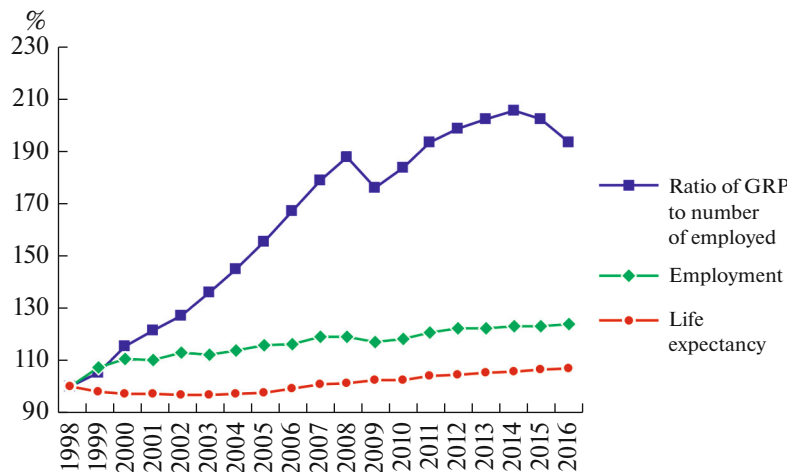

Fig. 3. Dynamics of indicators of Growth and Development block for Russia (1998 = 100%).

declined slightly in recent years, due to a drop in income in the most profitable sectors of the economy, but still remains significantly higher than in the early 2000s. This suggests an uneven distribution of benefits from economic growth in the 2000s.

The indicators of the Intergenerational Equality and Sustainability block (Fig. 5) are characterized by a negative dynamics in the last years of the period. Capital accumulation has been decreasing since 2012, which is related to high macroeconomic and geopolitical risks. Budgetary provision of regional revenues sharply decreased in 2015 following a decrease in business activity and household incomes. Since 2005, the demographic load associated with the aging of the population has been growing. The ratio of emissions to GRP decreased due to equipment upgrades, changes

in technology, and an increase in the share of the service sector. Since 2008, with the decrease in GRP, the number of emissions from personal vehicles has increased. Since 2013, the value of this indicator has been decreasing: industrial emissions continue to decline and there has been a slowing-down in growth of emissions from private cars.

For Russia, the inclusive growth index in 2015 was 0.53; in 2016 it increased slightly to 0.54. The interregional coefficient of variation of the index decreased until 2011, when the trend changed to positive. In other words, the redistributive budget policy pursued earlier worked to narrow the gap between regions until 2011. In 2016, the coefficient of variation reached the lowest values for the entire period.

The leaders in the index in 2016 were regions with the largest agglomerations (Fig. 6) (Moscow, 0.58; St. Petersburg, 0.58; the Republic of Tatarstan, 0.58; Moscow oblast, 0.57) and highly profitable oil and gas production centers (the Yamalo-Nenets Autonomous Okrug, 0.69; Nenets Autonomous Okrug, 0.67; Khanty-Mansi Autonomous Okrug, 0.61; Sakhalin

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[15]In part, the increase in the share of people with incomes below the subsistence minimum is due to a change in 2012 in calculating the basket of consumer goods used to determine the cost of living. However, these statistical corrections are necessary due to changes in the purchasing power of the population, changes in the structure of consumption, etc. Adjustments are made every 5 years.
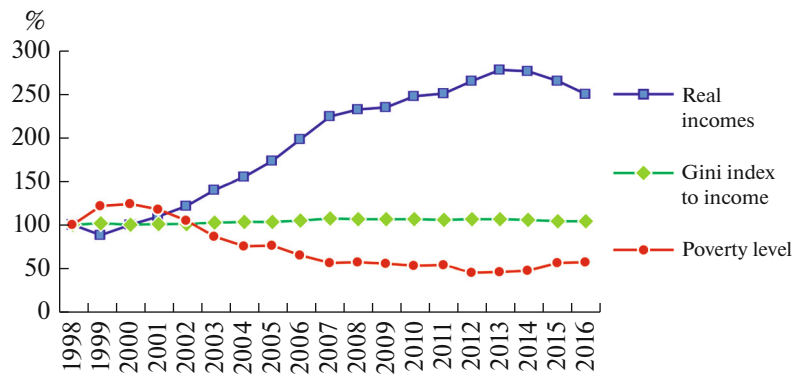
Fig. 4. Dynamics of indicators of Inclusiveness block for Russia (1998 = 100%).
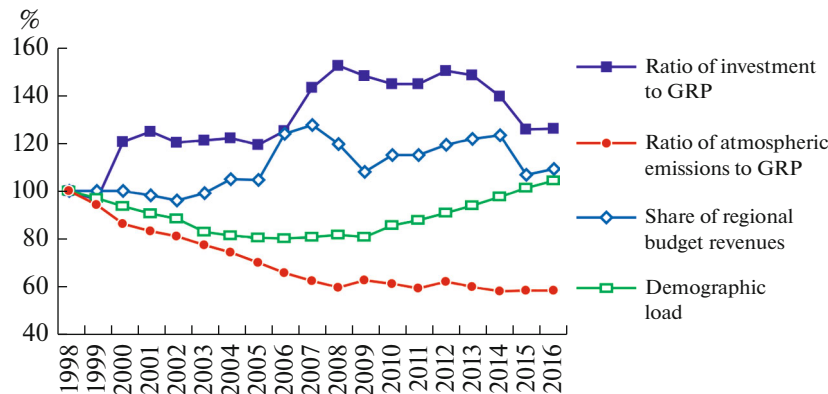

Fig. 5. Dynamics of indicators of block Intergenerational Equality and Sustainability for Russia (1998 = 100%).

oblast, 0.60). The least developed regions have the smallest indices: the Republic of Buryatia (0.48), Chechen Republic (0.48), Republic of Crimea (0.48), Republic of Ingushetia (0.47), Republic of Altai (0.46), and Tyva Republic (0.41).

The numbers on the map indicate the number of years that the region has dropped in 2015 in terms of the integral inclusive growth index (Inclus2).

Of greatest interest is the group of regions that, for high values of the integral inclusive growth index in 2016 (see Fig. 6)[16], achieved in 1998−2015 per capita GRP growth and inclusiveness index values (Inclus2), exceeding the Russian average. Several of them are mining-related: Nenets and Chukotka autonomous okrugs and Sakhalin and Magadan oblast. However, the majority took advantage of the high concentration of human capital and diversified economy of the largest agglomerations: St. Petersburg, Moscow oblasts, the Republic of Tatarstan, and Tyumen oblast (in the latter case, proximity to oil and gas production is also significant). On average by group, when unfavorable

trends unfolded after 2013, the values of the integral inclusive growth index returned to the values of six to seven years ago (2008-2009). For comparison, all Russian regions saw a return to the 2007 values.

The second group of regions is characterized by high economic growth rates, but insufficient growth rates of the inclusiveness index (Inclus2); i.e., they increased at the expense of future generations, accompanied by increased inequality. On average by group, the integral inclusive growth index decreased to the values that existed seven years ago. Mostly, these are regions that depend on one or more raw materials industries with a favorable market situation: Republic of Sakha (Yakutia) (diamonds, gas), Yamalo-Nenets Autonomous Okrug (gas), and Astrakhan and Orenburg oblasts (gas). Positive externalities of mining to other sectors are limited, which has led to weak growth in social and environmental characteristics. This group also contains regions with a relatively diversified economy: Arkhangelsk, Chelyabinsk, Belgorod, Lipetsk, and Yaroslavl oblasts and Krasnoyarsk krai.

The third group is represented by less developed regions, where low economic growth rates were observed, while federal funding was actively sought to solve social problems. In fact, these regions have ben-

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[16]We consider the period 1998−2015, since 2015 was the year of the largest decline in the inclusive growth index since 2007, and, in accordance with the hypothesis, we need to understand how economic growth affected regional stability.
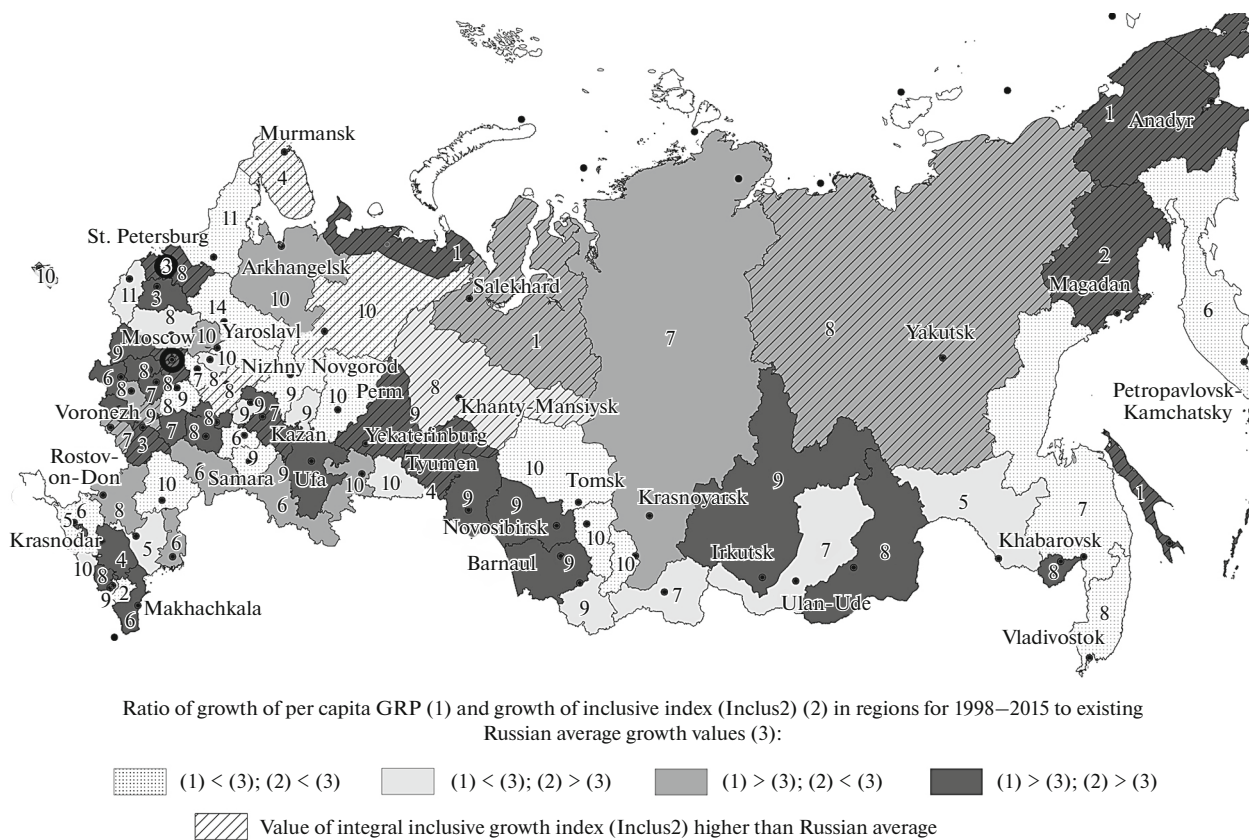
Ratio of growth of per capita GRP (1) and growth of inclusive index (Inclus2) (2) in regions for 1998−2015 to existing Russian average growth values (3):

(1) < (3); (2) < (3)	(1) < (3); (2) > (3)	(1) > (3); (2) < (3)	(1) > (3); (2) > (3)

Value of integral inclusive growth index (Inclus2) higher than Russian average

Fig. 6. Groups of regions according to dynamics of growth of inclusiveness index *(Inclus1)* and GRP per capita. Numbers on map indicate number of years that region has dropped in 2015 by integral inclusive growth index *(Inclus2)*. Calculations for Republic of Crimea and Sevastopol are not given due to lack of number of indicators.

efited most from implementation of the redistribution system. These are the Udmurt Republic, Republic of Altai, Tyva Republic, Republic of Buryatia, Republic of Kalmykia and Amur, Tver, Pskov, and Ivanovo oblasts. However, the risks of such development are higher: according to the inclusive growth index, these regions returned to the 2007 values.

The fourth group consists of regions that developed at a slow pace both in per capita GRP and inclusiveness index *(Inclus1)*. The regions with the highest vulnerability to external shocks are distinguished in this category (the inclusive growth index corresponds to the values 10−14 years ago). These are, firstly, the Non-Chernozem regions that have lost human capital in rural areas: Vologda and Pskov oblasts and the Republic of Karelia; second, coal mining regions that failed to diversify their economy: Kemerovo oblast, Komi Republic; third, regions with large lagging agglomerations [4, 6]: Perm krai and Volgograd oblast.

To some extent, our calculations confirm the hypothesis that the higher the inclusive growth index of a region, the lower the social and environmental risks there and the higher its resistance to external shocks (Fig. 7). Note that this dependence on the ini-

tial level of regional development (inclusive growth index in 1998) is not observed.

CONCLUSIONS

Updating the sustainable development agenda at the level of most countries dictates the need to adjust understanding and measure progress at the country and regional levels. Development involves not only economic growth, related mainly to the output of goods and services, but also taking account of the situation of all members of society, including the most vulnerable groups and future generations, as well as understanding the need to protect the environment, preserve ecosystems, and counteract climate change. Therefore, traditional economic growth indicators alone are unsuitable for analyzing inclusive growth.

Calculation of the inclusive growth index for Russian regions has confirmed our initial hypothesis, since overall regional growth due to the budget redistribution system created in the country was accompanied by a decrease in social and environmental risks during the period of high oil prices. However, in a number of regions, there was a significant lag in social characteristics behind the regional average values of
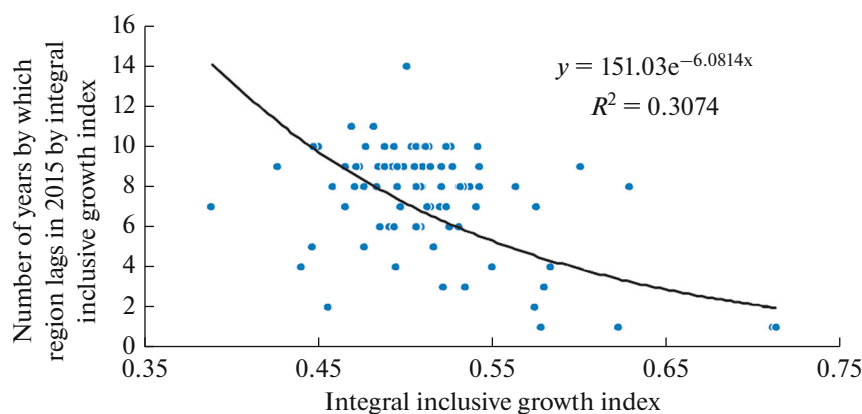
$$y = 151.03e^{-6.0814x}$$
$$R^2 = 0.3074$$

Fig. 7. Relationship between integral inclusive growth index and a region's vulnerability to external shocks.

economic growth. In regions where economic growth was accompanied by positive externalities in the social and environmental spheres, a socioeconomic system less vulnerable to external shocks formed, which confirms our second hypothesis.

The system of indicators proposed by the authors is relatively simple, based on available data, and can therefore be used to monitor regional socioeconomic development.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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