ASSESSMENT AND MECHANISM OF REGULATING INTER-REGIONAL SOCIO-ECONOMIC DIFFERENTIATION (CASE STUDY OF THE RUSSIAN FEDERATION)

Elena GUBANOVA
Doctor of Sciences (Economics), Professor, Head of the Finance and Credit Department, Federal State Budgetary Educational Institution of Higher Education "Vologda State University", Russia
gubanova_elena@mail.ru

Nikolai VOROSHILOV
Candidate of Sciences (Economics), Research Associate of the Sector for Research in the Effectiveness of Management of Socio-Economic Systems of the Department for Issues of Socio-Economic Development and Management in Territorial Systems, Federal State Budgetary Institution of Science "Vologda Research Center of the Russian Academy of Sciences", Russia
niks789@yandex.ru

Abstract

The existence of significant differences in the levels of socio-economic development of Russian regions and the need to determine state impact methods aimed at reducing inequality indicate the existence of territorial differentiation; this is the problem the article authors address. The paper proposes a methodological approach to the assessment of inter-regional differentiation, which helps solve a set of inter-related tasks on the basis of the data of state statistics and expert surveys. To assess the extent and size of territorial inequalities, the variation and Theil indices are used. The correlation and regression analysis discloses a trend to reduce differences among Russian regions in 2005-2017. On the basis of the author's method, the integral index (aggregating 22 private indicators) is calculated; on its basis, RF subjects are grouped according to a socio-economic development level. The complexity and scale of the differentiation problem is emphasized by the fact that at the end of 2017, 43 subjects belong to the groups with below average and low development levels. The work identifies "backward regions" (18) and "regions with a sign of depression" (13), which should become a priority object of the federal regional policy. The analysis proves the hypothesis about weak influence of the state policy tools of regional development in Russia on processes of territorial development and confirms reduction in the scale and consequences of differentiation. The authors propose a conceptual scheme of the mechanism to manage the process of reducing inter-regional differentiation and overcoming its consequences, which can be used when implementing the Strategy for Spatial Development of the Russian Federation and other strategic planning documents. The results can be used by federal authorities to improve methods and tools for implementing the state policy of regional development, as well as serve as the basis for further research on this topic.

Keywords: Russian Federation, region (RF subject), inter-regional differentiation, gross regional product, convergence.

JEL classification: R1, R5

1. Introduction

The country's economic space is characterized by significant heterogeneity, which is gradually increasing due to innovations introducing in all spheres of human activity. Differences in resources, opportunities and development conditions cause significant gaps in key socio-economic parameters of countries, regions (RF subjects) and municipalities. Differentiation of Russian regions is one of the highest among most world countries, while the level of differences in the socio-economic development among municipalities is higher than among RF subjects. An increase in uneven development leads not only to a rise in the number of problem areas that require special state support measures, but also to slowing down of development and "extinction" of entire settlements. Recognizing the existence of differentiation as an objective reality, it is necessary to assess its depth and scale, causes of the existing differences in the level of socio-economic development of territories in order to overcome excessive inequality and its negative consequences. The current mechanisms of

territorial development management are mainly focused on equalizing a level of budgetary provision of territories and do not take into account the specifics of their socio-economic development and potential. Hence, it is necessary to find such forms and methods of governance that would take into account features of territorial development (both at federal and regional levels) and prevent destructive phenomena and growing disunity of residents of a huge federal state.

The urgency of solving these problems in Russia is discussed at the federal level. Thus, in accordance with the Strategy for Spatial Development of the Russian Federation 2025 (approved by the Order of the RF Government as of February 13, 2019, No. 207-p), the objective of spatial development of the Russian Federation is to ensure sustainable and balanced spatial development of the Russian Federation, aimed at reducing inter-regional differences in the living standard and life quality of the population, accelerating economic growth and technological development, as well as ensuring the country's national security.

Similar goals and objectives to reduce inter-territorial differences are stated in many other world countries. It should be noted that the spatial development policy in the European Union is aimed at striving for a balanced and sustainable development of the EU territory. Three fundamental objectives of European policy should be equally achieved in all EU regions: 1) economic and social unity; 2) conservation and rational use of natural resources and cultural heritage; 3) more balanced competitiveness of the European territory [21].

The Territorial Agenda of the European Union 2020 stipulates that the challenges to territorial development require common attention and, where appropriate, joint efforts to address them and use territorial potential. This document identifies 6 territorial priorities for the EU that can contribute to successful implementation of the Europe 2020 strategy: 1) promoting polycentric and balanced territorial development; 2) encouraging integrated development in cities, rural areas and individual regions; 3) territorial integration in cross-border and transnational functional regions; 4) ensuring global competitiveness of regions on the basis of a strong local economy; 5) improving territorial relations between individuals, communities and enterprises; 6) management and connection of environmental, landscape and cultural values of regions [26].

Thus, the scientific and practical task to assess importance (depth and scale) of regional development differentiation and substantiate the mechanism aimed at reducing and overcoming its negative consequences is relevant.

2. Research methods

Russian and foreign scientists offer different methodological approaches to the assessment of territorial socio-economic differentiation.

The most common is the approach presented in works of A.G. Granberg [4], R.M. Mel'nikov [9], S.A. Suspitsyn [15], O.A. Polynev [14], I. Nikolaev [11], etc., which involves the use of certain statistical indicators to assess variation and then differentiation (indicator average value; variation range; variation coefficient; oscillation coefficient; asymmetry and kurtosis coefficients; share (in %) of each territory in the total value of the variation coefficient; Theil index).

Another widely used approach is based on the construction of various kinds of integrated ratings of RF subjects and municipalities[1]: investment attractiveness, level of socio-economic

[1] For example: Investment climate of regions – 2017 // Rating Agency "Expert RA". – Available at: https://raexpert.ru/ratings/regions/2017/att1; Results of the V annual rating of investment attractiveness of Russian regions // National Rating Agency. – Available at: http://www.ra-national.ru/sites/default/files/analitic_article/Инвестрегионы%202017.pdf; Abdrakhmanova I.G., Bakhtin P.D., Gokhberg L.M. Rating of innovative development of RF subjects. Issue 5; under editorship of L.M. Gokhberg. – Moscow: Higher School of Economics, 2017. – 260 p.; Rating of Regions (Methodological Approaches to the Comparative Assessment of Socio-Economic Development of the Russian Federation). – Moscow: Publishing house "State Scientific Institution "State Research Institute of System Analysis of the Accounts Chamber of the Russian Federation", 2009. 155 p.; Rating of socio-economic situation of RF subjects. Results of 2016 // RIA Rating. – Available at: http://vid1.rian.ru/ig/ratings/rating_regions_2017.pdf

development, innovation activity, government performance, etc. Its advantage is a clear character of the differences among territories according to various indicators and development areas, and thepossibility of identifying types (groups) of territories, where differentiated measures of state support should be applied.

Some scientists propose to assess the possibility of reducing inter-regional inequality by key socio-economic parameters in terms of establishing presence/absence of conditional and unconditional convergence [8; 19].

It should be noted that in the framework of the above approaches researchers solved various scientific and applied, often quite narrow, problems. Still we think it important to elaborate an integrated approach to the analysis and assessment of inter-regional differentiation, which will help use acquired results and conclusions for purposes of managing spatial development of the country. The content of the proposed approach is revealed in the following stages.

Stage 1. The depth and scale of differentiation is estimated on the basis of calculated dynamics of variation indicators selected for the analysis of indicators (in this article we will present results of calculating a variation coefficient, a ratio between maximum and minimum values of the index among RF subjects, and a Theil index). This will make it possible to assess the depth and scale of inter-regional differentiation at a certain point in time, as well as identify areas of socio-economic development, where differences in key parameters should be reduced in the first place. In this article the level and scale of Russian regions differentiation is studied on the basis of the indicator of gross regional product per capita.

Stage 2. Analysis of trends in inter-regional differentiation will show the possibility of reducing differences between regions both due to objective, natural conditions, and due to the impact of certain factors of state regulation.

Stage 3. Identification of groups (types) of regions (RF subjects) with similar indicators and features of socio-economic development will be the basis for implementing a differentiated approach to the provision of state support measures to RF subjects with different levels and characteristics of development.

Next, in the framework of the proposed approach we will consider the specifics of calculating individual indicators.

The Theil index was proposed in 1967 by the Dutch scientist Henri Theil to measure social inequality. Later it was interpreted for the purpose of assessing the extent of economic inequality, in particular in the work of R.M. Mel'nikov [9]. Calculation of this index is of particular relevance at the present time, as the coordination of management of spatial development of the country is currently being considered within the 12 macro-regions. However, strategic documents on macro-region development have not been adopted and management system has not been formed yet. Therefore, in this study 8 federal districts are considered as macro-regions.

The Theil index (TI) for each indicator is determined by the formula:

$$IT = \sum_{j=1}^{n} \frac{X_j}{X} \cdot \ln\left(\frac{X_j/P_j}{X/P}\right) = \sum_{j=1}^{n} \frac{X_j}{X} \cdot \ln\left(\frac{x_j}{x}\right), \qquad (1)$$

where X_j – absolute value of the indicator in the j-th territory; X – total value of the indicator for all territories; P_j – population in the j-th territory; P – total population; x_j – value of the indicator in the j-th territory per capita; x – average value of the indicator for all territories per capita; n – number of territories; $\ln(x_j/x)$ – natural logarithm of quotient of two numbers.

The Theil index is used to decompose the overall inter-regional inequality into 2 components that reflect inter-group (TI_{interg}; among groups of regions, selected according to any indicator) and intra-group (TI_{intrag}; among regions within each separate group) inequality:

$$IT = IT_{interg} + IT_{intrag}, \qquad (2)$$

where

$$IT_{interg} = \sum_{k=1}^{5} \frac{X_k}{X} \cdot \ln\left(\frac{X_k/P_k}{X/P}\right), \qquad (3)$$

$$IT_{intrag} = \sum_{k=1}^{5} \frac{X_k}{X} \cdot IT_k, \qquad (4)$$

$$IT_k = \sum_{j=1}^{J_k} \frac{X_{kj}}{X_k} \cdot \ln\left(\frac{X_{kj}/P_{kj}}{X_k/P_k}\right), \quad (5)$$

where X_{kj} – absolute value of the indicator of the j-territory for the k-th group; P_{kj} – population of the j-th territory for the k-th group; X_k – absolute value of the indicator for the k-th group; P_k – population of the k-th group; X – total value of the indicator for all territories; P – total value of the population.

In case of absolute inter-regional parity (equality of per capita values of indicators in all territories), IT has a minimum value, equal to zero. The greater inter-regional inequality degree, the greater IT.

In addition, it should be noted that climatic and territorial differences of regions cause significant differences in living conditions of the population and farming (rising costs). The value of a fixed set of goods and services calculated and published by the Federal State Statistics Service of the Russian Federation is an indicator that helps assess these differences in a general way. Therefore, most scientists note that to correctly compare regions in terms of gross regional product (including differentiation assessment), it is necessary to take into account inter-regional differences in the price level with the help of Formula 6:

$$GRP_{adji} = GRP_i \cdot \frac{S_{RF}}{S_i}, \quad (6)$$

where GRP_{adji} – gross regional product of the i-th region in the corresponding year, adjusted for the cost of a fixed set of goods and services (inter-regional differences in the price level); GRP_i – initial value of gross regional product in the i-th region; S_{RF} – average annual cost of a fixed set of consumer goods and services in Russia at the end of the year; S_i – average annual cost of a fixed set of consumer goods and services in the i-th region at the end of the year.

As mentioned above, it is more appropriate to study territorial inequality both with the help of statistical indicators and results of the analysis of the level of socio-economic development of territories and their subsequent typology. Determination of groups of territories, similar in certain parameters, is the basis for a differentiated approach to management of socio-economic development that takes into account specific features of territories and a degree of their inequality. Scientific literature presents various methods for assessing socio-economic development levels. They have shortcomings hindering their use at the regional level, such as presence of a large number of indicators, complexity of the mathematical apparatus of their processing, and use of techniques that significantly smooth out differences and fail to obtain adequate estimates.

We believe that the methodological approach, the key ideas of which are presented in [3], based on determination of an integral index of the level of socio-economic development of territories and their subsequent grouping on its basis, can overcome these disadvatages. In addition, the proposed method is universal in its own way, i.e. it can be used for any type of territory (regions or municipalities). The sequence of assessing a territorial development level is represented by the following algorithm:

The *first stage* involves the formation of blocks and a list of indicators that reflect various aspects of socio-economic development of territories (Table 1).

Table 1. Indicators that assess a level of socio-economic development of regions [3]

Block of indicators	Indicator	Type of indicator
R_1 Economy	1. Gross regional product per 1 resident, thousand rubles	+
	2. Depreciation of fixed assets, %	-
	3. Volume of investment in fixed capital per 1 resident, thousand rubles	+
	4. Innovative activity of organizations,%	+
	5. Specific weight of unprofitable organizations, %	-
	6. Retail trade turnover per 1 resident, thousand rubles	+
	7. Expenses of the consolidated budget of RF subjects per 1 resident, thousand rubles	+
R_2 Demography and healthcare	1. Total fertility rate, ‰	+
	2. Total mortality rate, ‰	-
	3. Total infant mortality rate, ‰	-
	4. Number of doctors per 10,000 population	+
	5. Number of hospital beds per 10,000 population	+
R_3 Living standard	1. Average monthly nominal accrued salary, rubles	+
	2. Share of population with monetary income below subsistence level, %	-
	3. Volume of paid services per 1 resident, thousand rubles	+
	4. Consumer price index, in % to the previous year	-
	5. Level of officially registered unemployment, %	-
R_4 Provision of public amenities	1. Total area of residential premises per 1 resident, m^2	+
	2. Share of housing equipped with water supply, %	+
	3. Percentage of dwellings equipped with the sewage system, %	+
	4. Share of housing equipped with central heating, %	+
	5. Commissioning of residential buildings per 1 resident, m^2	+

Note: (+) – direct indicator; (-) – reverse indicator.

At the *second stage* the indicators that make up block content are standardized relative to the national average values:

$$k_i = x_i / x_{avRF}, \quad (7)$$

$$k_i = x_{avRF} / x_i, \quad (8)$$

where k_i – standardized coefficient, calculated by Formula 7 for direct indicators[2] and by Formula 8 for reverse ones[3]; x_i – value of the i-th indicator in a RF subject; x_{avRF} – mean value of the i-th indicator in all RF regions.

On the basis of standardized indicators, a synthetic indicator for each block (R_j) is determined by the formula:

$$R_j = \left(\sum_{i=1}^{n} k_i \right) / n, \quad (9)$$

where n – number of indicators in the block.

At the *third stage*, an integral index of the socio-economic development level of a territory is calculated (I):

$$I = (R_1 + R_2 + R_3 + R_4)/4, \quad (10)$$

[2] The increase in values of direct indicators indicates positive development trends, improvement of the situation.

[3] The increase in the values of reverse indicators indicates deterioration of the situation, problems in development.

where R_1 – integral index for the block "Economy"; R_2 – integral index for the block "Demography and healthcare"; R_3 – integral index for the block "Standard of living"; R_4 – integral index for the block "Improvement".

The final (*fourth*) stage includes grouping of territories of RF subjects according to the level of socio-economic development, determined by the following interval estimates of the integral index I_{total}:

Level	Range I
High	$I \geq 1.15$
Above average	$1.05 \leq I < 1.15$
Average	$0.95 \leq I < 1.05$
Below average	$0.85 \leq I < 0.95$
Low	$I < 0.85$

The choice of 5 gradations of the development level involves a more detailed interpretation of results, especially at the municipal level, where, as already mentioned, the degree of differentiation is more significant.

When studying socio-economic differentiation of territories, it is important to determine the trajectory of regional growth, dynamics of the gap in parameters of socio-economic development and reduction opportunities. Russian and foreign researchers' works show that these issues are considered in the framework of the convergence theory [8; 19; 20].

There are two concepts of convergence. The first concept is the following: σ-convergence is observed when the variance (variation coefficient) of development indicators tends to decrease; the second concept (β-convergence) shows that when less developed territories have higher rates of economic growth than more developed ones, in the long term the levels of economic development of territories are equalized. In the framework of β-convergence, unconditional and conditional convergence is singled out. Unconditional β-convergence implies that all regions aspire to a single trajectory of proportional growth. Conditional β-convergence suggests that different regions have different trajectories of proportional growth, determined by specific regional development factors [8; 19].

Presence of unconditional β-convergence is estimated by the following formula:

$$\gamma=a + \beta Y0 + \varepsilon, \quad (11)$$

where γ – logarithm of the average growth rate of the Y indicator (e.g. GRP per capita, income per capita, etc.) for the period ($\gamma = [\ln Y - \ln Y0]/T$, where T –number of years; a and β – coefficients of the linear equation). The conclusion about convergence (divergence) is made according to a sign of the β coefficient. If $\beta<0$, we observe convergence for the variable under consideration; if $\beta>0$, – divergence (increase in the gap in indicators among regions). The rate of convergence (divergence) is determined by a value of the β coefficient and calculated by the formula [8]:

$$\lambda = -\mathrm{Ln}(1 + T\beta)/T \quad (12)$$

Another characteristic of the process of convergence (divergence) is the time to overcome half the distance separating region's economy from the trajectory of balanced state, calculated as follows [4]:

$$hl = \mathrm{Ln}(2)/\lambda \quad (13)$$

The model of conditional β-convergence studies dependence of the growth trajectory of regions not only in terms of an initial level of the indicator, but also additional factors (Z) (for example, level of budgetary support of regions) [8]:

$$y = a + \beta Y0 + Z\varphi + \varepsilon \quad (14)$$

Thus, the use of certain provisions of the convergence concept helps expand the approach used to study socio-economic differentiation of territories.

Domestic researchers, paying considerable attention to the study of spatial development, territorial differentiation in Russia, and elaboration of mechanisms to reduce its excessive level and overcome negative effects, are S.S. Artobolevskii, S.V. Baranov, A.G. Granberg, G.G. Gospodarchuk, S.V. Kuznetsov, B.L. Lavrovskii, G.M. Lappo, V.N. Leksin, R.M. Mel'nikov, P.A Minakir, V.P. Oreshin, A.O. Polynev, V.E. Rokhchin, V.I. Seliverstov, T.P. Skuf'ina, L.L. Smirnyagin, S.A. Suspitsyn, T.V. Uskova, A.N. Shvetsov, B.M. Shtul'berg, G.G. Fetisov and others. They have proposed various mechanisms and tools for regulating territorial differentiation, and attempted to justify differentiated measures of state support for

different types of territories. These issues have long been in focus of foreign scientists' attention [21; 22; 23; 24; 25; 26].

Thus, the methodological approach to the study of inter-regional differentiation presented in this article will help assess this problem and can become the basis for authorities when determining regulatory impacts.

3. Key results of the study

The results of testing the methodological approach to inter-regional differentiation assessment allow us to draw the following key conclusions.

1. In 2000-2010 the differences of all RF subjects in GRP per capita were growing(from 44 to 72 times), in 2011-2015 this trend changed its vector and inequality began to reduce (up to 48 times; tab. 2); however in 2016-2017 we again observed a slight increase in differences. At the same time, without taking into account 3 autonomous okrugs, significant reduction in differentiation is recorded – by 1.8 times (from 30.1 times in 2000 to 16.6 times in 2017). This fact is confirmed by variation coefficients dynamics.

Dynamics of the Theil index (Table 2) shows a slight decrease in intra-group and inter-group differentiation by 2004, with the exception of 2005, when there was a sharp increase, and a gradual decline by 2016, which reached the minimum values of the Theil index for 17 years. In addition, it can be noted that the structure of territorial inequality in terms of GRP per capita is dominated by intra-group inequality, which amounted to 65-75% of the total inequality in 2000-2017. This is due to the fact that each federal district has 1 or 2 subjects, which significantly exceed the rest in terms of GRP per capita: city of Moscow in the Central District, Nenets Autonomous Okrug – in the Northwestern, Tyumen Oblast and its two autonomous okrugs – in the Ural, Krasnoyarsk Krai – in the Siberian, Sakhalin Oblast and Chukotka AO – in the Far East.

Table 2. Indicators of differentiation of gross regional product per capita

Indicator	Type of data	2000	2008	2009	2010	2015	2016	2017
Ratio of maximum and minimum values for 85 RF subjects, times	Init.**	49.7	46.7	67.2	72.1	48.8	53.4	55.1
	Adj.**	42.3***	25.6	34.2	37.4	31.6	34.4	37.2
Ratio of maximum and minimum values for 82* RF subjects, times	Init.**	30.1	19.9	19.1	20.4	16.2	15.1	16.6
	Adj.**	27.3***	13.9	12.9	13.8	11.8	11.3	12.8
Variation coefficient in 85 RF subjects, %	Init.**	124.5	127.0	167.6	159.7	150.0	157.7	163.0
	Adj.**	88.1***	85.7	104.4	107.0	113.5	122.0	129.4
Variation coefficient for 82* RF subjects, %	Init.**	63.9	63.3	69.4	65.8	64.3	62.1	62.2
	Adj.**	47.7***	48.2	48.3	49.1	51.0	48.5	49.8
Theil index (IT) for 85 subjects	Init.**	0.275	0.263	0.234	0.230	0.208	0.206	0.220
	Adj.**	0.139***	0.149	0.130	0.132	0.127	0.125	0.138
Theil index (IT) for 82* subjects	Init.**	0.245	0.245	0.214	0.212	0.187	0.183	0.194
	Adj.**	0.129***	0.144	0.124	0.126	0.114	0.109	0.119

* Excluding autonomous okrugs within the Tyumen and Arkhangelsk oblasts (Khanty-Mansi, Yamalo-Nenets and Nenets Autonomous okrugs).

** Init. – calculations are carried out on the basis of initial statistical data on GRP volume in RF subjects;

Adj. – calculations are carried out on the basis of data on GRP volume adjusted for inter-regional differences in price level (by means of the indicator of cost of a fixed set of goods and services) in RF Russian Federation.

*** Data for 2002 are presented.

2. When calculating different β-convergence models, we find out that the most significant are those models that do not consider separately autonomous okrugs, which are part of the Arkhangelsk and Tyumen oblasts. The analysis of β-convergence presence in 2000-2005 and 2005-2016 (in 2017 there was an increase in inter-regional differences, so this year was not taken into account) shows that the concept of β-convergence is not confirmed in the first period and is proved in the second (Table 3), though with an insignificant level of the β coefficient reliability, as well as in the whole equation (this equation describes 16.9% of the indicator variation, which is higher than for the model as a whole for the 2000-2017 period).

Table 3. Assessment of the unconditional convergence model for GRP for 2005-2017, excluding autonomous okrugs within the Russian Federation

Variable	Coefficient	Standard error	t-statistics	p-value
Constant of linear equation	0.19011	0.015185	12.51965	2.99E-20
Logarithm of GRP for 2000	-0.0135	0.00341	-3.96018	0.000166
Determination coefficient				0.169
F-test	15.683	Significance of F		0.000165834

The rate of unconditional β-convergence (Formula 12) is estimated at 1.48% per year. At this rate of convergence, inter-regional differences in GRP per capita are reduced by 1.5 times for 27.3 years and by 2 times for 46.7 years.

Thus, the obtained results do not reject the hypothesis about absolute β-convergence for Russian regions from 2000 (2005) to 2016, but the rate of convergence was low. To estimate unconditional β-convergence, we used two controlling variables: a ratio of aggregate financial assistance from the federal budget to a RF subject's consolidated budget (grant income), average for the period (2005-2016), to GRP; a ratio of amount of budget investments in the region's economy, average for the period (2005-2016), to GRP.

The hypothesis about conditional convergence suggests that in such a regression the sign at the initial level of GRP per capita should be (as before) negative, and the sign at the controlling variable – positive, i.e. a larger volume of transfers or amount of budget's investment in a region lead to a faster growth of GRP per capita. The results of model evaluation with these controlling variables are presented in Table 4.

As can be seen from the presented estimates (Table 4), the coefficients of controlling variables in all cases have a positive sign, but low statistical significance.

Table 4. Estimation of the conditional convergence model (dependence of GRP per capita growth rates on the initial level of GRP with the inclusion of additional variables) for GRP for 2005-2016 excluding autonomous okrugs within the Russian Federation

Variable	Coefficient	Standard error	t-statistics	p-value
Constant of linear equation	0.173697	0.01811	9.591151	8.75E-15
Average annual share of inter-budgetary transfers in GRP	0.035467	0.019989	1.774304	0.079966
Logarithm of GRP for 2005	-0.01045	0.003859	-2.70878	0.008318
Determination coefficient				0.226
F-test	11.250	Significance of F		5.17271E-05
Variable	**Coefficient**	**Standard error**	**t-statistics**	**p-value**
Constant of linear equation	0.171655	0.01786	9.610986	8.02E-15
Average annual share of budget investments in GRP	0.11153	0.055372	2.014206	0.047481
Logarithm of GRP for 2005	-0.01051	0.003697	-2.84205	0.005735
Determination coefficient				0.234
F-test	11.814	Significance of F		3.35103E-05

The results prove that the hypothesis about both conditional and unconditional convergence can not really be rejected for Russian regions in the time interval of 2005-2017, and the federal regional economic policy affects reduction in inter-regional differentiation only slightly so far. Thus, positive signs in the controlling variables mean that the regions that received large transfers from the federal budget show relatively higher growth rates of GRP per capita.

Thus, the study of β-convergence presence in Russian regions development is successful. Differences between Russian subjects in terms of gross regional product have a weak tendency to decline since 2005 (a number of lagging regions in terms of GRP per capita have higher growth rates than developed regions), but if this trend continues, inter-regional differences will decrease 2-fold in no earlier than 47 years. Hence, it is advisable to strengthen the regulatory impact of federal regional economic policy, increase budget support, which, as the study indicates, will have a positive impact on reduction in inter-regional differences.

3. Grouping of Russian regions by the *socio-economic development* level are presented in Table 5.

Table 5. Grouping of Russian regions by the socio-economic development level at the end of 2017

Level of socio-economic development	Composition of RF subjects in the group by the development level
High	1. (3*) Nenets AO (2.633**); 2. (1) Yamalo-Nenets AO (2.269); 3. (16) Sakhalin Oblast (1.549); 4. (7) Chukotka AO (1.503); 5. (2) Khanty-Mansi AO – Yugra (1.472); - (4) Tyumen Oblast with AO (1.440); 6. (5) Moscow (1.394); 7. (8) Saint Petersburg (1.359); 8. (9) Magadan Oblast (1.318); 9. (6) Republic of Sakha (Yakutia) (1.244); 10. (39) Leningrad Oblast (1.206); 11. (18) Moscow Oblast (1.202); 12. (11) Republic of Tatarstan (1.176); 13. (-) Tyumen Oblast without AO (1.171); 14. (10) Kamchatka Krai (1.169); 15. (21) Lipetsk Oblast (1.161)
Above average	16. (-***)Sevastopol (1.134); 17. (20) Krasnodar Oblast (1.108); 18. (24) Belgorod Oblast (1.089); 19. (37) Kaliningrad Oblast (1.064); 20. (44) Kaluga Oblast (1.054)
Average	21. (29) Nizhny Novgorod Oblast (1.048); 22. (46) Voronezh Oblast (1.043); 23. (13) Murmansk Oblast (1.040); 24. (17) Khabarovsk Krai (1.034); 25. (69) Tambov Oblast (1.034); 26. (31) Sverdlovsk Oblast (1.015); 27. (51) Republic of Chuvashia (0.989); 28. (27) Tomsk Oblast (0.988); 29. (22) Krasnoyarsk Oblast (0.985); 30. (12) Komi Republic (0.984); 31. (47) Tula Oblast (0.983); 32. (30) Novosibirsk Oblast (0.978); - (48) Arkhangelsk Oblast with AO (0.975); 33. (71) Penza Oblast (0.974); 34. (52) Ryazan Oblast (0.969); 35. (15) Samara Oblast (0.960)
Below average	36. (23) Republic of Bashkortostan (0.945); 37. (66) Kursk Oblast (0.943); 38. (61) Ulyanovsk Oblast (0.942); 39. (56) Amur Oblast (0.941); 40. (40) Yaroslavl Oblast (0.937); 41. (25) Astrakhan Oblast (0.935); 42. (14) Perm Krai (0.931); 43. (35) Rostov Oblast (0.928); 44. (41) Republic of Udmurtia (0.926); 45. (50) Primorsky Krai (0.924); 46. (45) Irkutsk Oblast (0.914); 47. (47) Arkhangelsk Oblast without AO (0.911); 48. (78) Republic of Dagestan (0.908); 49. (54) Tver Oblast (0.904); 50. (49) Novgorod Oblast (0.903); 51. (81) Republic of Ingushetia (0.896); 52. (34) Volgograd Oblast (0.895); 53. (-) Chechen Republic (0.894); 54. (63) Republic of Mordovia (0.894); 55. (64) Vladimir Oblast (0.894); 56. (32) Stavropol Krai (0.891); 57. (65) Republic of Adygea (0.890); 58. (53) Saratov Oblast (0.888); 59. (36) Republic of North Ossetia – Alania (0.886); 60. (26) Chelyabinsk Oblast (0.885); 61. (33) Orel Oblast (0.884); 62. (59) Omsk Oblast (0.879); 63. (-) Republic of Crimea (0.878); 64. (19) Orenburg Oblast (0.878); 65. (70) Kirov Oblast (0.868); 66. (74) Mari El Republic (0.867); 67. (42)

	Smolensk Oblast (0.864); 68. (77) Bryansk Oblast (0.863); 69. (28) Vologda Oblast (0.857); 70. (38) Republic of Karelia (0.856); 71. (62) Kostroma Oblast (0.853)
Low	72. (75) Ivanovo Oblast (0.850); 73. (43) Kemerovo Oblast (0.849); 74. (55) Republic of Kabardino-Balkaria (0.849); 75. (60) Republic of Khakassia (0.839); 76. (73) Jewish Autonomous Oblast (0.836); 77. (57) Altai Krai (0.829); 78. (72) Zabaykalsky Krai (0.816); 79. (67) Republic of Buryatia (0.815); 80. (80) Altai Republic (0.808); 81. (82) Tuva Republic (0.805); 82. (76) Pskov Oblast (0.802); 83. (68) Republic of Karachay-Cherkessia (0.780); 84. (58) Republic of Kalmykia (0.771); 85. (79) Kurgan Oblast (0.759)

* Place occupied by RF subject according to the integral index value in 2000

** The integral index value of the socio-economic development level in 2017 is presented in brackets next to each subject.

*** The integral index for the Chechen Republic was not calculated at the end of 2000 due to the absence of most initial statistical indicators for this subject of the Russian Federation.

According to Table 5, both in 2000 and 2017 more than half of the regions (43-50) fell into the group with below average and low development levels; it indicates the presence of many complex problems in their development. In 2017, compared to 2000, 27 RF subjects moved to the group with a higher level, the situation worsened in 13 regions. This requires the identification of problem regions, which should become *a special (priority) object of state regional policy*. There are two types of problem regions: backward regions and regions with a sign of depression.

The following criterion to classify a region as *backward* is offered[4]: a region belongs to the group with a low socio-economic development level and the integral index value is below 0.85 for several years. Thus, the territories with a low socio-economic development level are as such: the Ivanovo, Pskov, Kurgan oblasts, the republics of Kalmykia, Tuva, and Karachay-Cherkessia. In certain years this group included the Bryansk and Kirov oblasts, the republics of Adygea, Altai, Dagestan, Ingushetia, Kabardino-Balkaria, Mari El, Khakassia, Chechnya, Zabaykalsky and Altai krais (the average value of the integral index of the socio-economic development level for 2000-2017 is below 0.85).

Regions with signs of depression, in our opinion, include those RF subjects that by the socio-economic development level moved downwards by 2 groups, and/or in the integral rating moved downwards more than by 15 places for the studied period (not less than for 10 years, in our case it is 2000-2017) and thus did not belong to the backward category. These are the Astrakhan, Volgograd, Vologda, Orenburg, Orel, Samara, Smolensk, Chelyabinsk oblast, Stavropol and Perm krais, the republics of Karelia, Komi, North Ossetia – Alania.

Thus, the analysis of socio-economic differentiation of Russian regions reveals that:

1) differentiation of regions in terms of GRP per capita remains quite significant, although there is a trend for its reduction;

2) reduction in inter-regional differences in GRP per capita will require considerable time in the absence of active state policy;

3) in Russia there is a large group of problem regions that are in dire need of state support.

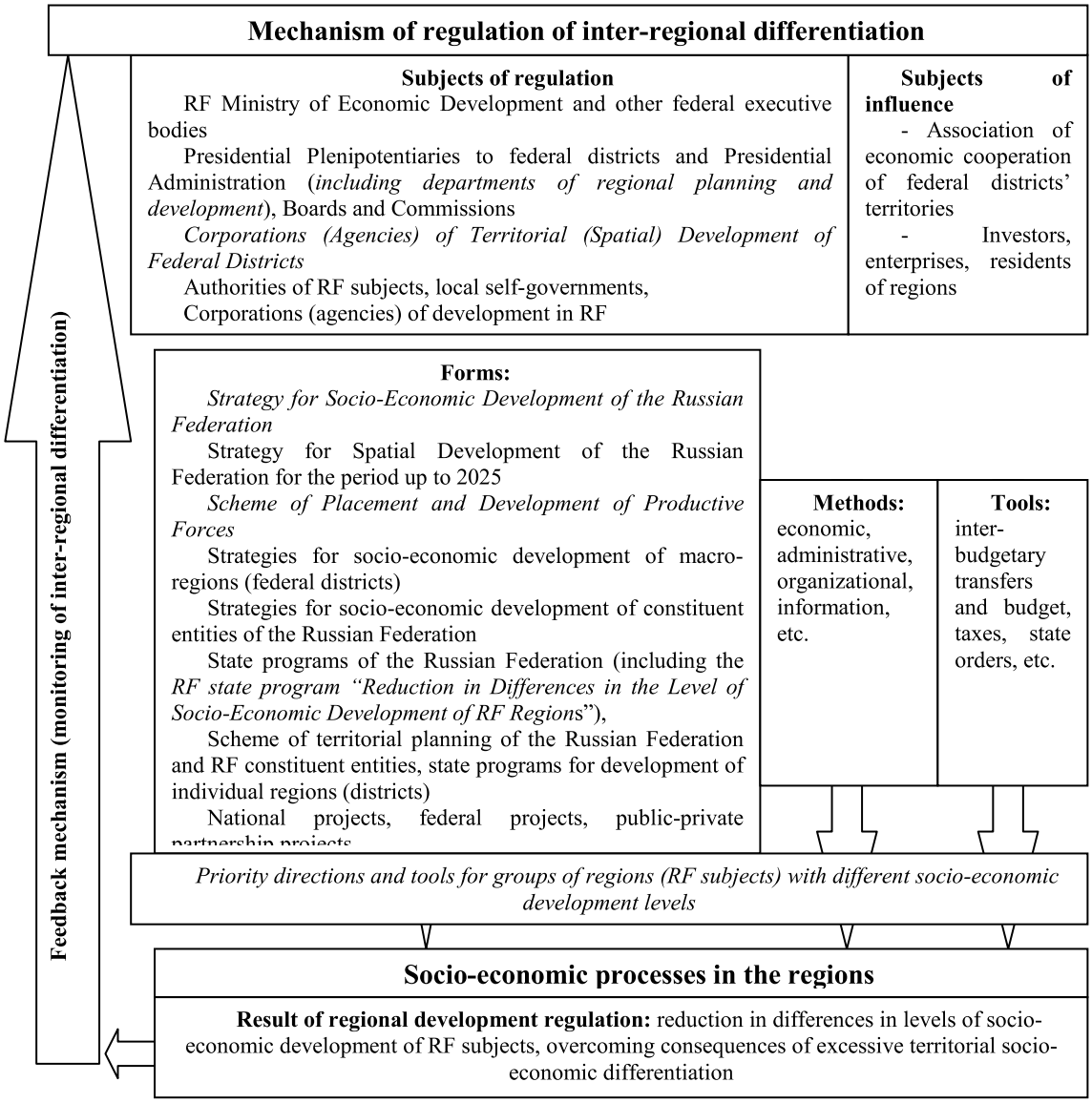
4. Mechanism of regulation of inter-regional differentiation and its mitigation

For Russia, characterized by a large territory and length, federal regional policy is of paramount importance for revitalizing and developing regional economy, reducing inter-regional differences, and overcoming negative consequences of territorial differentiation. This policy effectiveness largely depends on the mechanism that helps coordinate strategic objectives, goals, tasks and activities of authorities of all levels and takes into account Russian regions' specifics.

[4] Voroshilov N.V., Gubanova E.S. Assessment of the level of socio-economic development of regions of Russia // Journal of Economy and entrepreneurship. – 2013. – No. 12 (part 3). – Pp. 325-332.

We propose the following scheme (model) of managing the process of territorial differentiation (Figure). The currently missing organizational and program elements are shown in italics.

Figure: Model (conceptual scheme) of regulation of territorial differentiation processes



Within the framework of inter-regional differentiation regulation in accordance with the proposed model, it is important to:

1. analyze and forecast socio-economic development of federal districts and their constituent entities, identify key problems and parameters of underdevelopment, analyze development capacities of districts and RF subjects, and elaborate a typology of regions;
2. work out tools and measures of regional policy (inter-budgetary relations, investment, tax, structural policy) for territories with different socio-economic development levels; develop clusters, territories of advanced socio-economic development, and zones of territorial development;
3. develop and implement investment projects in economic and social spheres, aimed at reducing the backlog of RF subjects by key indicators from average Russian values using PPP mechanisms; seek for investors, create and upgrade infrastructure; attract personnel to certain territories;
4. encourage and support inter-regional and inter-municipal cooperation processes (including economic); develop and implement joint projects.

To implement this scheme in Russia, it is necessary to build a unified system of state bodies that will engage in the implementation of state regional policy. The main role in this system should be played by the *RF Ministry of Economic Development*, working out key directions of the country's economy development with regard to regional specifics, realizing and adjusting the implementation of state policy measures on the basis of the actual situation.

The creation of 7 federal districts (currently 8) in 2000 played a significant role in the formation of a single legal and economic space of Russia. However, while the role of Presidential Plenipotentiaries to federal districts and the Presidential Administration is reduced only to management and supervisory functions, as well as ensuring consistency of public authorities' actions. Therefore, it is advisable to create *departments of territorial planning and development* in the structure of the Office of Plenipotentiaries; they which will adjust and implement strategies for district development, analyze and forecast development of district regions together with authorities of a RF subject, identify key problems in their development, priorities of state policy, including the ones differentiated for areas with different development levels, the implementation of which is required to reduce the backlog of district's regions by various parameters of socio-economic development from the national average and other acceptable standards.

Creation of a Corporation (Agency) for Spatial Development and Territorial Planning will boost development and implementation of major investment projects, including inter-regional ones, and facilitate work with investors, regional authorities, and associations of economic cooperation of district territories. Such associations may participate in elaboration of a unified and coordinated socio-economic policy of the Russian Federation and realization of inter-regional projects.

The country's Strategy for Socio-Economic Development should clearly identify territorial priorities, the role of different regions, and mechanisms for managing spatial development. This should also be reflected in more detail in the RF Strategy for Spatial Development and the Scheme of Placement and Development of Productive Forces.

The Northwestern Agency for Development and Investment, established in 2002, is currently one of the leading regional organizations in the field of implementation of regional policy to attract investment and create a positive image of the region in Russia and abroad. The main objectives of the Agency are to ensure realization of the investment policy adopted in the Northwestern Federal District and promote creation of an investment-friendly environment to attract Russian and foreign investors to the region's economy.

Inter-regional associations of economic cooperation were set up in Russia in the 1990s. For example, the Association for Economic Cooperation of the Territories of the North-West of the Russian Federation was founded in January 1991 by executive and legislative authorities of RF subjects located within the Northwestern Federal District. The Association's activities are focused on developing programs and projects that are attractive for investment, coordinating work of permanent specialized committees, commissions and meetings, making contacts with business partners, and providing information support to territorial governing bodies, and, if necessary, the RF Government. The Strategic Partnership "North-West" is a new format of this Association created September 28, 2012. Its founders were 11 constituent entities of the Russian Federation included in the Northwestern Federal District, as well as 42 largest regional companies and business associations [12].

Let us note that such corporations and association can become active participants in development and implementation of the RF State Program "Reduction in Differences in the Level of Socio-Economic Development of Russian Regions" (a similar federal target program for RF subjects to reduce the level of regional development existed in the 2000s). The Program should focus on reducing differences in the socio-economic development level of Russian regions, decreasing the gap in key indicators of socio-economic development among the most developed and lagging regions.

Assets of the State Program "Reduction In differences in the Level of Socio-Economic Development of Russian Regions" should be accumulated in a specially created regional development fund (RDF) (a similar fund already existed in the 2000s). It is intended for equity financing of investment projects (programs) (new construction, expansion, reconstruction, technical re-equipment) for development of social and engineering

infrastructure in regions in order to align levels of their socio-economic security and the overall development level. We consider it expedient to form two parts of the program (Fund).

The *first part* (mandatory) will provide priority support for investment and social projects to RF subjects with a below average development level (the integral index of which is below 1) according to the following method. Subsidies from a RDF are allocated to co-finance expenses for measures of complex target programs of socio-economic development of RF subjects. The amount of Fund's assets distributed among regions is determined in the first half of each year. Up to September 1, a RF subject submits a project(s) in the field of healthcare, education, social protection, and public infrastructure development within the amount of allocations under the *first part of the Fund* to the corresponding authorized federal body of regional executive authorities. At the same time, it is necessary to determine a mandatory share of co-financing these projects on the part of the regional budget and extra-budgetary sources (from 10 to 40%) according to the overall socio-economic development level and state of the regional budget. The implemented project(s) should be aimed at solving a specific goal and objectives of the program and have a measurable result, expressed in increased availability of certain services, infrastructure, etc. A list of projects to be supported is determined by a special methodology and criteria. Any RF subject, not only the ones with a below average development level, can receive allocations from the *second part of the Fund*. The size of the second part of the Fund (program) may be equal to half of the size of the first part.

Thus, the proposed organizational and economic mechanism of the federal regional policy to reduce inter-regional differentiation and overcome its consequences includes both equalizing (presence of a RDF mandatory part for territories with a low development level in order to implement priority measures for reducing their backlog by social and infrastructure parameters) and stimulating components (a RDF competitive part in order to realize effective and priority projects). Such a structure of the mechanism will help solve key problems of regional development, improve living conditions of the population, and restrain a significant migration outflow from territories with a low socio-economic development level. This, in turn, will reduce differentiation of regions and its negative consequences; the specifics of territorial development will be taken into account and differentiated regional policy measures for different territories will be elaborated.

The results of the inter-regional differentiation analysis presented in the article, as well as the general conceptual scheme of the mechanism of its regulation can be used to solve problems, stated in the Strategy for Spatial Development of the Russian Federation 2025 (approved by the order of the RF Government as of February 13, 2019 No. 207-p), such as reduction in the level of inter-regional differentiation in RF subjects' socio-economic development and decrease in intra-regional socio-economic differences.

5. Acknowledgments

This article was prepared in accordance with the state assignment to the Vologda Research Center of the Russian Academy of Sciences on the topic of the research project No. 0168-2019-0004 "Improvement of mechanisms of development and effective use of socio-economic systems' capacities".

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