TERRITORIAL DIFFERENTIATION OF LABOR AS A FACTOR IN THE SUSTAINABILITY OF REGIONAL ECONOMIES

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Abstract

One of the factors influencing the sustainability of economic processes is the level of labor force territorial differentiation across the country. In locations with high employment rate among the working-age population, as a rule, the indicators of economic efficiency and sustainability are high. The outflow of labor, in its turn, contributes to a shortage of personnel, a reduction in production and an influx of migrants. Therefore, despite the replaceability of the labor force by robotics and digital technologies, for Russia with its vast space, studying the consequences of interregional inequality can identify strategic areas for economic development. Thus, the purpose of the research is to assess the degree of inter-regional inequality in the provision of the country's regions with labor as one of the economic sustainability factors. The study of territorial inequalities in the economic space promotes the understanding of the importance of the strategic tasks in economic development of a complex, subordinate and multicomponent regional system of the Russian Federation. The processes of territorial inequality are greatly influenced by the migration flows, expressed in the outflow of the population mainly from the eastern regions. Significant migrations are common among rural migrants from the Far Eastern, Siberian and Urals Federal Districts. Therefore, the main influx of migrants is characteristic of the Central, North-Western and Southern districts. The contribution of the present research to economic science consists in justifying the prioritized support and development of the territories that are losing population and, accordingly, labor force.

Keywords: region (RF subject), territorial differentiation, labor force, development factors.

JEL classification: R23, J610

1. Introduction

Most countries across the world with a relatively large territory are characterized by regional differentiation. Reasons for it are quite various: the geographical location of the territory, natural and climatic conditions, the specifics of the demographic potential, natural resources, the history of the region and many others. In addition to these factors of regional heterogeneous development, there are others that can be adjusted, leveled out, or even eliminated. For example, the success level of regional management, the efficiency of using production factors such as labor and material resources, development of innovation clusters in the region. (Napolskikh D., et al. 2019). Therefore, the manifestation of territorial inequality can be both long-term and relatively short-term. Thus, scientists and practitioners focus on these issues.

The system of disproportion factors leads to uneven socio-economic development of cities and regions according to such important quantitative and qualitative parameters as the living standards, contribution to the country's economy, investment and innovation activity, industrial, infrastructural and other potentials, level of development of the digital economy (Gretchenko A.I., et al. 2018, Ivanov O.B., et al. 2018). This is related to the relevance of interregional differentiation as an integral feature of the Russian Federation, which determines the specifics of spatial development.

Territorial differentiation in the socio-economic aspect is the division of the country's regions into groups that differ in the level of socio-economic development as well as in terms of population and labor resources provision. These specific features are connected with the development of the territorial division of labor. One of the main reasons for its development are the differences between territories in natural conditions (Gubanova E., et al. 2019). With the development of productive forces and interregional connections, the growth of the urban

population, agglomeration factors began having an increasing impact on the scale and dynamics of territorial heterogeneity, leading to the localization of production and economic activity in several regions of the country, as well as to differences in the availability of transport infrastructure (Friedmann J. 1966).

The factors of natural territorial differentiation include the nature of population distribution and the demographic situation, which undergo changes in the course of time (Arkhipova L.S., et al. 2019). The nature of the population density of a territory is changing as a result of the economic structure transformation, the development and deployment of new types of economic activity. Such a transformation takes place over a long time period and involves huge expenditures of public resources.

There are economic factors of territorial differentiation connected with the results of resources allocation and their efficient use: the structure of production and employment, the level of infrastructure development, improving the quality of social capital (Papadaskalopoulos A., et al. 2018). Such changes are relatively slow.

Russian and foreign scientists offer different methodological approaches to the assessment of territorial socio-economic differentiation. They have common approaches to assessing the differentiation of the territory, as well as its role in the regional economy (Granberg, 2003, Zubarevich N.V., 2014, Nikolaev I., et al. 2011, Porter, 2001, Krugman P., 1994, and etc.).

2. Materials and Method

The research methodology includes an analysis and assessment of processes that determine the density of economic activity in the regions experiencing labor shortage or, on the contrary, labor surplus.

The research is based on such scientific principles as objectivity and comprehensive analysis of the problem. An objective study of territorial differentiation allows us to define it as a natural and regular process that arose amid uneven population of the territory, various socio-economic potential of the territories. Objective laws rely on real factors in the assessment of the regional provision with such a production factor as labor.

The main research methods are comparative (to assess the labor force participation rate, employment and unemployment by macro-regions of the Russian Federation), analytical (during the assessment of inter-regional differentiation of territories), historical (study of processes retrospectively from 2000 to 2018), statistical (in calculating the coefficients of territorial differentiation), and logical (building the research from analyzing the degree of territorial differentiation to identifying its impact on the sustainability of the country's economy).

3. Analysis and results

The research assesses the level of territorial differentiation of labor force, being one of the main indicators of the economic space polarization. According to the methodology of the Federal State Statistics Service of the Russian Federation (Rosstat), economically active population (or labor force) is the part of the population that ensures the supply of labor for the production of goods and services. In terms of numbers, it consists of the employed and the unemployed (Federal State Statistics Service, 2018).

The main indicators used in the research are those published annually by Rosstat: labor force participation rate, labor force size, employment rate, unemployment rate, and population density.

To assess variabilities in regional differences of territorial inequality indicators, the following parameters were analyzed:

1) the range of variability, which is calculated as the difference between the maximum and minimum indicators.

2) the differentiation coefficient which is the ratio of the maximum indicator to the minimum indicator.

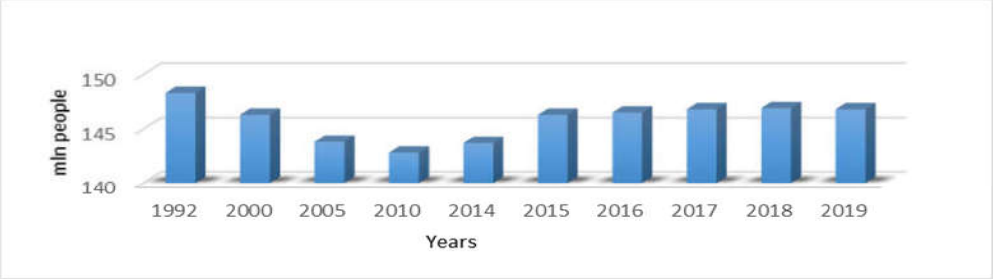
The use of these indicators makes it possible to assess the dynamics of the socio-economic space development and its differentiation during 2000-2018. This period was marked by important events: the 2008-2009 crisis, the introduction of sanctions against Russian

companies. The Russian economic space experiences instability of external and internal factors that influence socio-economic sustainability (Gagarina G. Yu., et al. 2019).

The uneven distribution of labor on the country's territory primarily depends on the demographic situation, the state of its main indicators, and as a result, the population density throughout the country in general.

One of the main indicators is the population size that does not show a positive upward trend (Fig. 1). It declined significantly over the last decade of the twentieth century and demonstrates weak growth dynamics. If in 1992, 148.3 million people lived in the Russian Federation, then by 2019 this figure dropped to 146.8 million people. Certainly, for such a vast territory of the country (17.125 million sq. km), this indicator is insufficient for its economic development and advance.

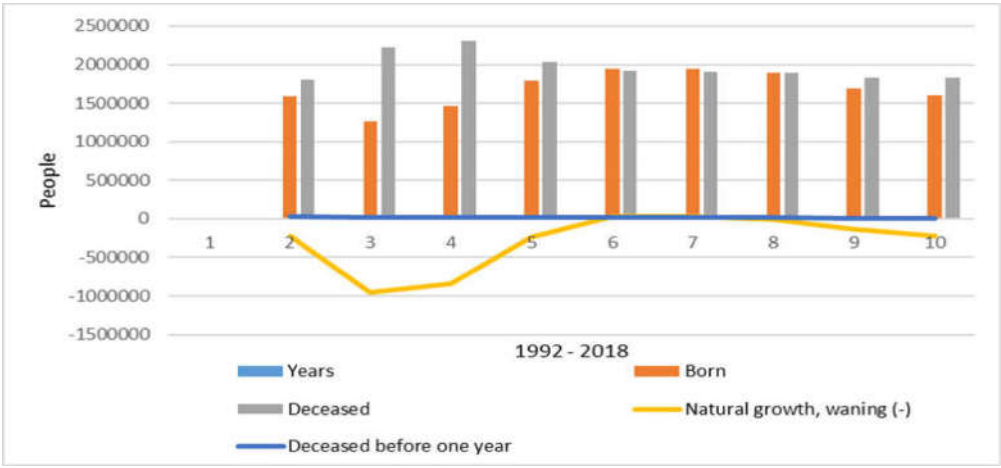
Image 1: Dynamics of population size in the Russian Federation.



Source: compiled by the authors according to the calculation results

During the twentieth century as well as today, Russia suffers very large demographic losses, which are expressed in negative natural growth (depopulation). A particularly high population decline was observed in the mid-2000s, then, following the improvement of the overall macroeconomic situation and the national demographic policy, the natural increase became positive. However, by the end of the second decade of the 21st century, the demographic situation is worsening again, a natural population decline is observed (Image 2).

Image 2. Dynamics of natural population changes, people

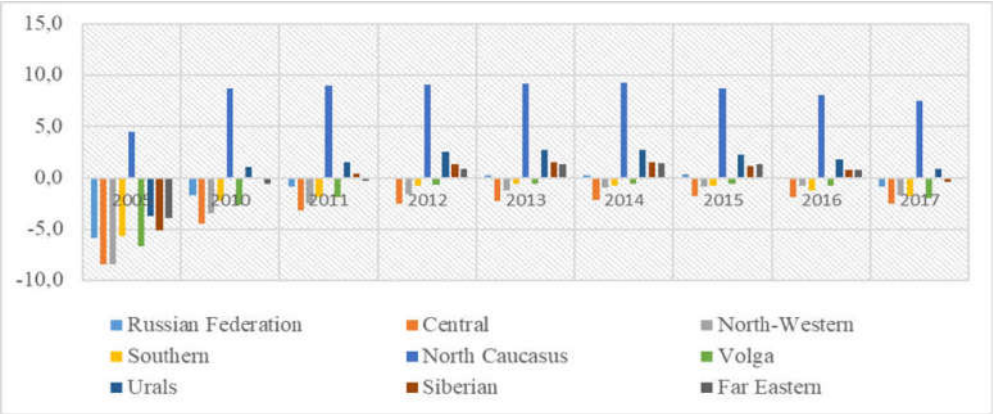


Source: compiled by the authors according to the calculation results

In the territorial context, the natural population decline, calculated using the coefficient of natural growth per 1 thousand inhabitants (or in ‰), is characterized by a negative tendency to decrease to the level of the early 2010-2011 (Image. 3).

The only exception among all macro-regions is the North Caucasus Federal District, where natural growth is persistently high, which is connected with historical traditions and the mentality of the population. There is a slight increase in the Urals District as well. In general, the demographic situation negatively affects the development of human potential, and its differentiation is formed in favor of a small number of regions in the southern and eastern parts of the country.

Image 3. Dynamics of natural growth/decline by federal districts, ‰



Source: compiled by the authors according to the calculation results

However, even if it is possible to maintain a low positive population growth, in the coming decades Russia will not see population growth due to its natural reproduction. The most significant source of growth or stabilization of the population in Russia, as well as in many European countries, can be migration inflow. However, in general across the country it is decreasing and in a number of macro-regions a sustainable trend towards an outflow of the population has developed. Negative migration growth rate is observed in such federal districts as the North Caucasus District – 26, the Volga District – 12, the Siberian District – 16 and the Far East District – 28 (Fig. 3). The European part of the country remains attractive for migrant workers, while the Asian part loses its working population, with the exception of the Urals Federal District, with a large supply of jobs in the extractive industries.

Another factor for the improvement of the demographic situation is the social policy of the state, which affects the quality of the human capital of the territories (Fedotova, et al. 2018) and involves such tools as monthly baby bonus payout, promotion of the employment of women with children, targeted assistance in social security.

The demographic situation affects the population density of the country and subsequently the density of economic activity. So, the population density of the Russian Federation as of 2018 was 8.6 people/sq. km., with the maximum figure in the Central Federal District reaching 60.5 people/sq. km. The minimum is 1.2 in the Far East (Table 1).

Table 1. Population size by territorial entities of the Russian Federation and density

Russian territorial entity	Populations size, thousand people		Change %	Population density, people/sq.km.		Net migration rate per 1000 people
	Year of 2000	Year of 2018		Year of 2000	Year of 2018	Year of 2018
Central	37 920,0	39 318,1	+ 3,7	58,2	60,5	+ 4,7
North-Western	15 237,0	13 955,7	- 8,4	9,1	8,3	+ 3,6
Southern	12 930,0	16 437,1	+ 27,1	31,7	36,7	+ 3,0
North Caucasus	7 606,0	9 821,8	+ 29,1	44,6	57,9	- 2,6
Volga	31 785,0	29 540,1	- 7,1	30,6	28,3	- 2,2
Urals	12 526,0	12 355,5	- 1,4	7,0	6,8	- 0,5
Siberian	21 068,0	19 286,5	- 8,5	4,1	3,9	- 1,7
Far East	7 950,0	8 371	+ 5,3	1,3	1,2	- 4,0

Source: Authors' calculations based on data from information portals

Moscow and St. Petersburg stand out as absolute leaders, while the Nenets and Chukotka Autonomous Districts – as outsider regions. The decile ratio of differentiation is 44 times.

The fact that in five federal districts the size and density of the population decreased is essential for the diagnosis of differentiation of the country's space. This is a negative factor indicating the problems in spatial development of Russia. Given the fact that the Far Eastern and the Siberian Federal Districts occupy 66.5% of the country's territory and are of crucial strategic importance, the decrease in the size and density of the population becomes not only a geographical, but also a geopolitical factor of socio-economic development.

Labor force participation rate is a relevant indicator of territorial differentiation. According to the methodology of the Federal State Statistics Service, this indicator is the ratio

of the labor force size (employed and unemployed) of a certain age group to the total population size of the corresponding age group, calculated as a percentage.

It reflects the share of the country's working-age population, which is actively involved in the labor market. This indicator reveals the size of the labor supply, seeking to participate in the production of goods and services, relative to the working-age population. Labor force participation rate plays a significant role in the study of factors affecting the development of the labor market (LOSTAT. Geneva).

The classification of labor by macro-regions and regions of the country allows us to assess its distribution depending on the comfort level of the territory and, thus, analyze the features of territorial differentiation. Table 2 presents the dynamics of the labor force participation rate by federal districts of the Russian Federation.

Table 2. Labor force participation rate of the population aged 15-72, in %

Federal districts/Russian Federation	2000	2018	Change
Russian Federation	65,5	68,9	+ 5,2%
Central	65,9	71,3	+ 8,2%
North-Western	66,4	70,5	+ 6,2%
Southern	62,8	66,8	+ 6,4%
North Caucasus	61,2	66,2	+ 8,2%
Volga	65,9	67,7	+ 2,7%
Urals	66,6	69,0	+ 3,6%
Siberian	65,2	66,9	+ 2,6%
Far Eastern	67,0	69,4	+ 3,6%
Max	67,0	71,3	
Min	61,2	66,2	
Range of variability, units	5,8	5,1	
Differentiation coefficient, times	1,09	1,07	

Source: Authors' calculations based on data from information portals

Over 2000-2018, there were significant changes in the spatial distribution of labor:

- while at the beginning of the current century the maximum labor force participation rate in the labor market was observed in the Far East, now Central Russia is becoming more efficient, as there is a high level of demand for labor and a large number of vacancies;
- the labor participation rate in the macro-regions where the main type of economic activity is mining is increasing: the Urals Federal District – the share in the gross added value of this sector is 35%; the Far Eastern and Siberian Districts, respectively, 28.2% and 15.6%. These macro-regions demonstrate the highest supply of jobs and high wages;
- despite the positive increase in labor force participation in the economy in all the federal districts, the European part of Russia is the most attractive territory. Its economic space is characterized by a high level of development, diversified economy, a developed service sector and, thus, high living standards;
- the South of Russia – the North Caucasus – has traditionally been characterized by a low level of labor force participation in the regional economy;
- indicators of territorial inequality show a slight decrease in differentiation: if in 2000 the range of variability was 5.8 units, then in 2018 it decreased to 5.1. The differentiation coefficient underwent less significant changes, decreasing from 1.09 to 1.07 times. These trends are associated with a general increase in employment and a decrease in unemployment in most constituent entities of the Russian Federation.

The next indicator is the *labor force size* which includes the population employed in the production of goods and services, and temporarily unemployed. Labor force, being the main condition for production, reflects the degree of regional development and largely depends on the population size of the territory. Thus, the Central Federal District, which is the leader by the number of inhabitants (39.4 million people), has about a third of the country's workforce. The second place is taken by the Volga Federal District (29.4 million people), which concentrates 20% of the country's labor force. The third place is occupied by the Siberian Federal District (17.2 million people) with 11.3% (Table 3).

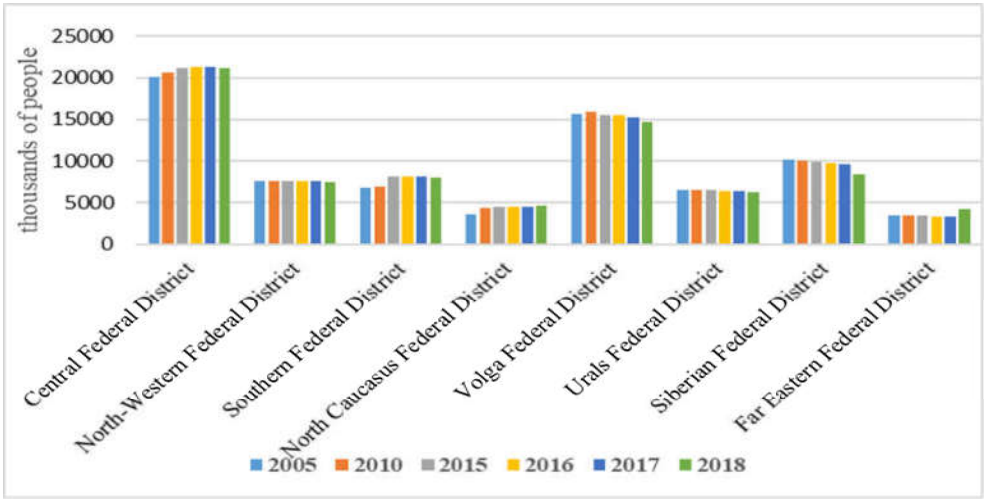
Table 3. Dynamics of labor force size (thousand people)

Federal districts / Russian Federation	Year of 2000	Year of 2018	Labor force size change	Population size change
Russian Federation	72 769,95	76 011,38	+ 4,5%	+ 1,2%
Central	19 530,8	21 337,634	+ 9,3%	+ 3,5%
North-Western	7 394,627	7 499,7	+ 1,4%	+ 0,15%
Southern	6 720,8	8 206,708	+ 22,1%	+ 17,6%
North Caucasus	3 272,3	4 639,1	+ 41,8%	+ 9,9%
Volga	15 785,39	15 041,906	- 4,7%	- 5,2%
Urals	6 359,554	6 358,7	- 0,01%	- 0,15%
Siberian	9 057,7	8 618,12	- 4,9%	- 3,9%
Far Eastern	4 648,7	4 309,5	- 7,3%	- 7,9%
Max	19 530,8	21 337,634		
Min	4 648,7	43 09,5		
Range of variability, units	**14882,1**	**17028,134**		
Differentiation coefficient, times	**4,20**	**4,95**		

Source: Authors' calculations based on data from information portals

The change in labor force size geographically coincides with the dynamics of the population size by region of the country. With population growth in the European regions (without the Volga Federal District), an increase in the labor force size was observed. And, on the contrary, a decrease in the population size in the eastern regions (including the Volga Federal District) is accompanied by a decrease in the labor force size. These trends clearly indicate the negative factors of spatial development of Russia (Image 4).

Image 4. Dynamics in labor force size by federal districts of the Russia, thousand people



Source: compiled by the authors according to the calculation results

An indicator of *population employment* is also of interest. It reflects the number of the employed in the total population aged 15 years and older.

In general, the employment rate in the Russian Federation and federal districts is increasing, which is a consequence of state implementation of its main social goals in the labor market (Table 4). The employment rate in the North Caucasus Federal District increased most significantly (by 10.5%), which is connected with unemployment reduction measures.

Despite the positive facts, differences between macro-regions persist. The maximum employment rate is observed in the European part of Russia in the Central and North-Western Federal Districts, where the employment rate is higher than the average Russian level. The minimum employment rate remains in the North Caucasus.

Table 4. Employment rate of population aged 15-72

Federal districts/Russian Federation	Year of 2000	Year of 2018	Change
Russian Federation	58,5	65,6	+ 12%
Central	60,7	69,3	+ 14%
North-Western	60,0	67,8	+ 13%
Southern	54,7	63,1	+ 15%
North Caucasus	48,7	59,2	+ 22%
Volga	59,5	64,7	+ 9%
Urals	59,9	65,8	+ 10%
Siberian	57,1	62,6	+ 10%
Far Eastern	57,9	65,1	+ 12%
Max	60,7	69,3	
Min	48,7	59,2	
Range of variability, units	**12**	**10,1**	
Differentiation coefficient, times	**1,25**	**1,17**	

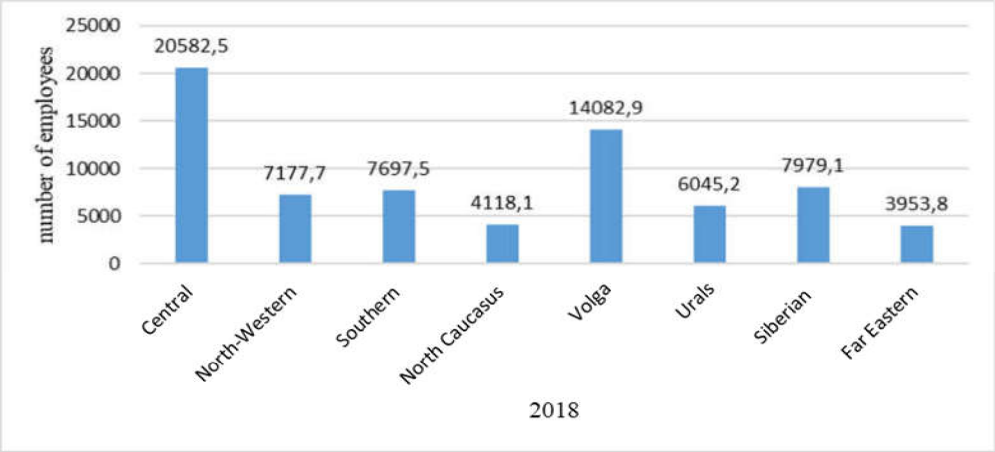
Source: Authors' calculations based on data from information portals

The Urals Federal District also stands out as the employment rate is higher there than the figure for the Russian Federation, which is connected with high demand for labor in the extractive and manufacturing economic sectors.

The growth of the employment rate in the macro-regions of the country positively affected the decrease in territorial differentiation. A decrease in the range of variability (from 12 times in 2000 to 10 times in 2018) and the differentiation coefficient (1.25 in 2000 to 1.17 in 2018) indicate that the country's economic space according to this indicator is becoming more homogeneous and of high quality.

However, in terms of the absolute number of the employed, differentiation exceeds 5 times. According to the population distribution, the maximum number of the employed is observed in the Central and the Volga districts (Image 5).

Image 5. Differentiation by the number of the employed aged 15-72, thousand people



Source: compiled by the authors according to the calculation results

Differentiation by *the unemployment rate* makes it possible to register high figures in the southern regions and in the Far East (Table 5). Reducing unemployment in these macro-regions of the country is a state strategic task. Nevertheless, the unemployment rate in these territories remains one of the highest ones, exceeding the figure for the Russian Federation as a whole.

Table 5. Unemployment rate

Federal districts	2000	2018	Change
Russian Federation	10,6	4,8	- 55%
Central	7,8	2,9	- 63%
North-Western	9,6	3,9	- 59%
Southern	12,9	5,6	- 57%
North Caucasus	20,4	10,6	- 48%
Volga	9,8	4,4	- 55%
Urals	10,1	4,7	- 53%
Siberian	12,4	6,5	- 48%
Far Eastern	13,5	6,3	- 53%
Max	20,4	10,6	
Min	7,8	2,9	
Range of variability, units	***12,6***	***7,7***	
Differentiation coefficient, times	***2,6***	***3,7***	

Source: Authors' calculations based on data from information portals

If the difference between the highest and lowest unemployment rates in the Russian Federation in general has significantly decreased, then territorial inequality has increased.

This indicates the persistence of significant spatial differences in the labor market, where this problem remains one of the most important ones. If in the center of the country the unemployment rate (2.9%) is lower than the figure for the Russian Federation (4.8%), then in the North Caucasus it is the highest and equals 10.6%. The reasons for the negative situation on the labor market are traditionally historical in nature, as a significant part of the population prefers to develop their own households and be employed in trade. Apart from that, shadow employment remains, resulting in a distortion of statistical information.

A significant role in the differentiation of the country's territory is played by *migration*. The five most attractive regions include territorial entities of the Russian Federation with a developed labor market, favorable climatic conditions and high living standards. The capital city of Moscow occupies the 7th place. The city of Sevastopol leads by the influx of migrants into the cities (Table 6).

Table 6: Regions that are leaders in positive migration balance, 2018

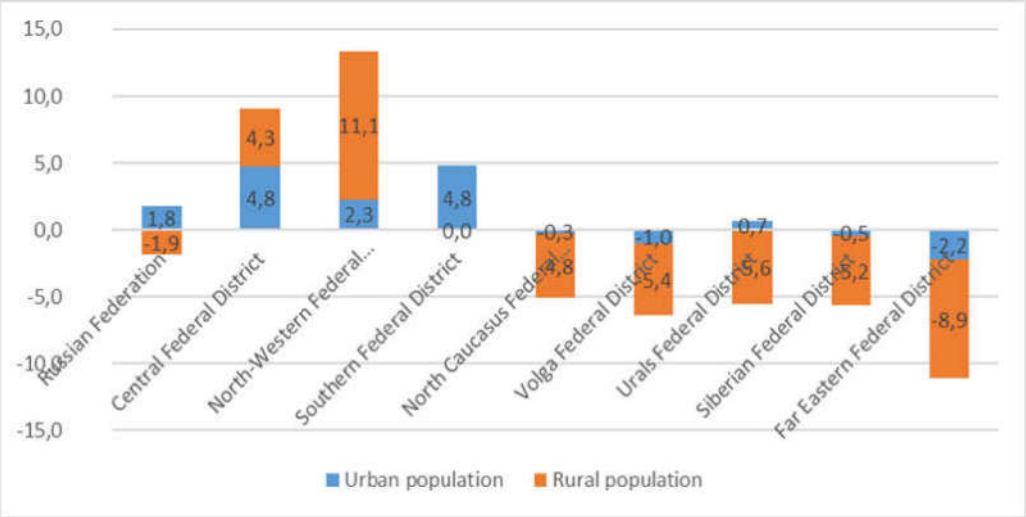
	Net migration rate per 1000 people			Ranks of net migration rates among all territorial entities of the Russia	
	Total population	urban	rural	urban	rural
Leningrad Region	23,9	6,1	55,6	9	2
City of Sevastopol	17,6	18,8	1,4	1	14
Moscow region	14,0	12,3	21,5	5	3
Kaliningrad region	9,5	12,3	-0,4	3	18
Krasnodar Krai	8,5	12,3	3,7	4	10

Source: Authors' calculations based on data from information portals

It is important that this group of territorial entities features the Leningrad and Moscow regions that occupy, respectively, the 2nd and 3rd places by the influx of migrants into the rural areas. This is definitely connected with the proximity of the capitals with a large supply of labor. Moscow takes the first place by the migration influx of the rural population. This fact confirms the current trend of the population leaving the rural areas.

The impact of migration flows on the differentiation of the territory is expressed in the outflow of the population mainly from the eastern regions (Image 6). Moreover, significant indicators are characteristic of rural migrants from the Far Eastern, Siberian and Urals Federal Districts. Thus, the main influx of migrants is characteristic of the Central, North-Western and Southern districts. The first two mainly receive rural migrants. Therefore, the rural areas are losing population, i.e. future generations who could have worked in the agricultural sector.

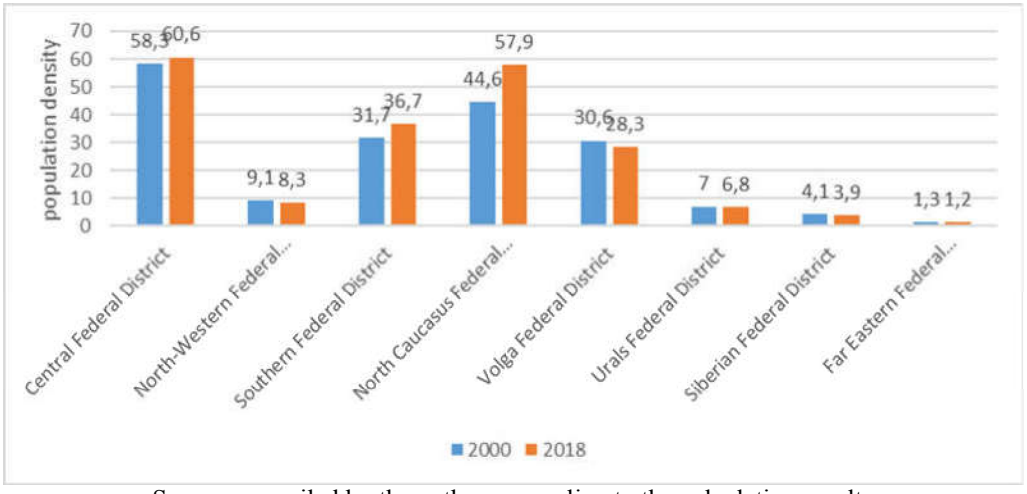
Image 6. Differentiation of federal districts migration balance (per 1000 people)



Source: compiled by the authors according to the calculation results

This conclusion is confirmed by the interconnection of a decrease in the average population density and migration movement. In five districts with a significant outflow of the population, the average population density decreases (Image 7). The exception is the North Caucasus, where, despite the increase in population and average density, there is a large outflow of the population, which is associated with the desire of people to live and work in those regions where there is a supply of labor and high living standards.

Image 7. Dynamics of population density by federal districts of the Russia, million people



Source: compiled by the authors according to the calculation results

The bulk of the population of the Russian Federation lives in four federal districts (Central, Volga, Southern and North Caucasus), their area being approximately 1.9 million square km or 11.1% of the country. The average population density here is 54.5 people/km², which is significantly higher than in the Urals, Siberia and the Far East of Russia, where the average population density is 9.4 people/sq. km (Sorokina, Gubarev, 2019). The solution to the problem of uneven distribution of population and employment in the medium term is almost impossible and irrational due to objective reasons such as differences in climatic conditions and living standards. Therefore, differentiation according to these indicators is an integral quality of the Russian space.

The population of the Russian regions and its labor resources to a large extent determine the *sustainability of the domestic economy*. Rosstat data on the production indices for the selected types of economic activity for 2018 were analyzed as sustainability parameters and the correlation between labor market parameters and industrial production indices, including manufacturing industries, was calculated.

Table 7. Correlation between labor market parameters and sustainability of economy

	Employment rate	Unemployment rate	Industrial production index	Manufacturing index
Labour force participation rate	85%	- 21%	19%	10%
Employment rate	1	- 69%	20%	-4%
Unemployment rate		1	- 12%	20%
Industrial production index			1	57%
Manufacturing index				1

Source: Authors' calculations based on data from information portals

High correlation between the labor force participation rate and the employment rate is obvious and amounts to + 85% (Table 7). A weak, but still existing correlation was formed between labor force participation rate and the employment rate, and the industrial production index while the inverse relationship was formed with the unemployment rate. The higher the labor force participation rate and the employment rate, the higher the indices of industrial production (+19% and +20%). And the lower they are, the higher the unemployment rate (-12%). Manufacturing indices are interconnected with indices of industrial production - +57%. Thus, the development of the labor market, the increase in the employment rate have a positive impact on the development of such economic activities as industrial production, which significantly affects the sustainability of the Russian economy.

Sustainability of the region's economy involves ensuring economic growth in order to increase the level and quality of life. Territorial differentiation influences the implementation of these goals both in terms of labor supply and indicators of economic development. Negative trends can lead to economic instability of society, which means such a state when there is a decrease in the rate and dynamism of economic development and stagnant processes. Therefore, the research analyzed the main indicators characterizing the sustainable development of regions, namely, indices reflecting annual changes in gross regional product, industrial production in manufacturing industries, labor force, and average annual number of employees. It was identified that they influence the economy.

Favorable factors for enhancing stability of the Russian economy in recent years include the growth of such macroeconomic indicators as the labor force participation rate, employment rate and labor force size.

Labor force participation rate has increased, both generally across the country (+ 3.4%) and in macro-regions (Table 8). Moreover, as noted above (Table 2), the differentiation between regions according to this indicator is reducing. The indicator is growing in regions specializing in mining. This area of activity is the main factor in the growth of gross regional product and, accordingly, the index of its physical volume.

Table 8. Labor force participation rate of the population aged 15-72, %

Federal districts /Russian Federation	2000	2010	2014	2015	2016	2017	2018	in % to 2000
Russian Federation	65,5	67,7	68,9	69,1	69,5	69,1	68,9	+ 3,4
Central	65,9	68,3	70,6	70,7	71,5	71,4	71,3	+ 5,4
North-Western	66,4	70,8	70,7	71,3	71,6	71,3	70,5	+ 4,1
Southern	62,8	64,5	65,7	66,4	66,9	66,8	66,8	+ 4,0
North Caucasus	61,2	63,9	66,1	65,3	65,6	65,5	66,2	+ 5,0
Volga	65,9	67,8	68,4	68,9	69,2	68,3	67,7	+ 1,8
Urals	66,6	69,1	70,0	70,4	70,1	69,4	69,0	+ 2,4
Siberian	65,2	67,2	67,6	67,9	68,2	67,1	66,9	+ 1,7
Far Eastern	67,0	67,3	68,8	69,0	69,2	69,3	69,4	+ 2,4

Source: Authors' calculations based on data from information portals

An increase in the employment rate (+ 7.1%) has a positive effect on the economy. The North Caucasus region is especially distinguishing as it saw an increasing interest in the work of the population previously employed in the informal sector. Employment in the Central and Southern Federal Districts (Table 9) increased considerably. An increase in the indicator in the Far East, where an unfavorable demographic situation has developed and an outflow of

the population is observed, is also worth noticing. Thus, in general, the population able to work is increasingly striving for work due to the motivation to improve the quality of life.

Table 9. Employment rate of the population aged 15-72

Federal districts /Russian Federation	2000	2010	2014	2015	2016	2017	2018	in % to 2000
Russian Federation	58,5	62,7	65,3	65,3	65,7	65,5	65,6	+ 7,1
Central	60,7	65,1	68,4	68,2	69,0	69,0	69,3	+ 8,6
North-Western	60,0	66,6	67,8	67,9	68,3	68,2	67,8	+ 7,8
Southern	54,7	59,6	61,6	62,0	62,6	62,8	63,1	+ 8,4
North Caucasus	48,7	53,3	58,7	58,0	58,3	58,3	59,2	+ 10,5
Volga	59,5	62,7	65,3	65,6	65,9	65,1	64,7	+ 5,2
Urals	59,9	63,6	66,0	66,0	65,8	65,6	65,8	+ 5,9
Siberian	57,1	61,5	63,1	62,9	62,9	62,4	62,6	+ 5,5
Far Eastern	57,9	61,2	63,9	64,2	64,5	64,7	65,1	+ 7,2

Source: Authors' calculations based on data from information portals

Unlike the two indicators mentioned above, an analysis of the dynamics of the labor force size showed that, if generally across the Russian Federation there is an increase of 4.5%, then in half of the macro-regions there is a decrease to the level of 2000 (Table 10). These are the eastern macro-regions of the country where the total population has declined. Therefore, the labor force size decreased. The Far East stands out, as despite the increase in the number of territorial entities (since 2018, the Republic of Buryatia and Zabaykalsky Krai have been included in its structure), the decrease in the labor forces size has reached 7.3% there. As mentioned above (Table 3), the differentiation between regions according to this indicator has increased significantly.

Table 10. Dynamics in the labor force size, thousand people

Federal districts /Russian Federation	2000	2010	2014	2015	2016	2017	2018	in % to 2000
Russian Federation	72770	75478	75428	76588	76636	76109	76011	104,5
Central	19531	20677	21126	21108	21282	21282	21337	109,2
North-Western	7395	7641	7535	7604	7608	7557	7499	101,4
Southern	6721	6968	6952	8180	8166	8178	8206	122,1
North Caucasus	3272	4358	4544	4492	4535	4559	4639	141,9
Volga	15785	15863	15516	15502	15457	15185	15042	95,3
Urals	6360	6524	6508	6509	6448	6385	6359	99,9
Siberian	9058	10010	9835	9816	9785	9621	8618	95,1
Far Eastern	4649	3437	3412	3376	3355	3340	4309	92,7

Source: Authors' calculations based on data from information portals

From 2000 to 2018, the average annual employed population decreased, which is also directly proportional to the total population and labor force. These indicators had a negative influence on the economic stability of Siberia and the Far East.

An analysis of the average annual number of employed indices shows that in almost all macro-regions of the country, the values of employment indices are reducing compared to the previous year (Table 11). The only macro-region with an increase in the average annual number of employees is the North Caucasus Federal District, where the increase was 101.9% in 2018 compared to 2017. However, it did not reach the values of 2000. This situation does not meet the criteria of labor market stability.

An unfavorable demographic situation and difficulties in regional labor markets have led to an increase in inter-regional differentiation. It can be stated that the influence of the analyzed indicators has a significant impact on the main economic indicators of the Russian economy – the index of GRP physical volume, the index of industrial production, especially in the manufacturing sector.

Table 11. Change in the average annual number of employees, in % to the previous year

Federal districts /Russian Federation	2000	2010	2014	2015	2016	2017	2018	in % to 2000
Russian Federation	100,6	100,2	99,9	99,1	99,5	99,7	99,6	-1,0
Central	100,7	100,1	100,6	99,0	100,0	100,4	99,7	-1,0
North-Western	101,5	100,0	99,6	99,5	99,4	98,8	98,9	-2,6
Southern	100,3	99,6	99,1	99,7	99,5	100,7	99,9	-0,4
North Caucasus	102,4	101,9	100,8	100,1	100,9	101,6	101,9	-0,5
Volga	100,2	99,7	99,6	98,4	99,3	98,1	98,8	-1,4
Urals	99,6	100,4	99,7	99,4	98,8	100,3	99,8	-0,2
Siberian	100,6	100,8	99,4	98,7	98,2	99,3	99,8	-0,8
Far Eastern	101,5	100,3	99,1	98,8	100,4	99,3	99,8	- 1,7

Source: Authors' calculations based on data from information portals

The dynamics of GRP physical volume indices for 2000-2017 shows that the economy did not fully recover (Table 12). However, after a difficult period during the crisis of 2014-2015 (the imposition of Western sanctions, the instability of global markets), there has been a trend towards an increase in GRP in all macro-regions except the Far East.

Table 12: Index of gross regional product physical volume, in % to the previous year

	2000	2010	2011	2012	2013	2014	2015	2016	2017
Russian Federation	110,6	104,6	105,4	103,1	101,8	101,3	99,4	100,8	101,8
Central	114,9	103,0	104,8	103,7	101,6	100,8	99,3	101,3	101,9
North-Western	109,7	104,4	106,1	103,8	100,3	100,9	101,5	101,7	100,5
Southern	111,7	105,4	106,5	103,7	104,0	102,1	99,5	101,3	103,0
North Caucasus	110,9	103,5	106,5	103,4	103,6	104,6	99,8	100,9	101,1
Volga	108,4	105,5	106,8	104,1	102,4	102,0	98,7	100,0	101,4
Urals	110,1	106,8	104,6	101,5	102,2	99,0	98,8	100,3	103,0
Siberian	107,5	104,4	105,0	103,0	102,1	101,6	98,8	100,3	102,3
Far Eastern	103,1	106,8	105,3	98,6	99,1	101,9	100,7	100,3	99,8

Source: Authors' calculations based on data from information portals

Following the results of 2017, the socio-economic development of Russia as a whole can be considered positive, since the decline in the gross regional product in 2014-2015 was changed to growth, although small, corresponding to 1.0% (Table 11). An increase in the indices of GRP physical volume is characteristic of five out of eight macro-regions, which is a positive trend that demonstrates the stability of the economy of territories.

Industrial production in the manufacturing sectors where high value-added products are manufactured has shown positive dynamics in recent years – production growth in 2017 amounted to 2.6% in general across the country (Table 13).

Table 13. Indices of industrial production by type of economic activity "Manufacturing"

	2005*	2010	2011	2012	2013	2014	2015	2016	2017
Russian Federation	107,6	110,6	108,0	105,1	100,5	102,1	94,6	100,1	102,6
Central	113,8	105,3	107,8	106,7	102,3	101,7	97,4	104,8	109,9
North-Western	108,8	112,5	113,6	104,7	100,2	96,6	94,4	102,0	104,1
Southern	111,9	109,3	110,5	108,4	103,9	105,2	109,9	105,0	105,6
North Caucasus	120,8	105,9	113,5	109,9	110,3	99,8	104,0	109,1	103,6
Volga	104,9	114,2	114,5	106,7	102,4	103,8	96,5	101,4	102,0
Urals	106,3	111,2	108,2	107,6	104,1	103,5	98,9	101,4	107,2
Siberian	104,2	108,5	105,0	103,0	103,1	102,6	97,5	97,3	103,8
Far Eastern	111,0	114,5	121,3	108,9	104,9	102,7	91,1	100,1	101,9

* - no data for 2000. Source: Authors' calculations based on data from information portals

The maximum indicator – 109.9% – is in the Central Federal District, which concentrates 27% of the country's population and 29% of highly skilled workforce. The minimum indicator is in the Far East, where there is a natural and mechanical decline in the working-age population.

The index of the physical volume of investments in fixed assets also shows positive dynamics. After the recession in 2014-2016, investment growth rates are recovering to the level of 2013.

Table 14. Index of physical volume of investments in fixed assets, in % to the previous year

	2000	2010	2011	2012	2013	2014	2015	2016	2017	2018
Russian Federation	117,4	106,3	110,8	106,8	100,8	98,5	89,9	99,8	104,8	104,3
Central	113,5	104,4	107,2	112,9	105,2	102,8	94,1	98,7	108,4	108,9
North-Western	107,0	115,5	110,0	104,0	90,6	95,7	90,8	113,4	105,0	104,4
Southern	155,6	119,2	110,3	107,4	114,6	88,3	85,6	84,9	120,3	91,1
North Caucasus	136,5	111,8	103,3	112,2	107,8	104,2	87,5	96,4	98,8	102,4
Volga	125,0	108,1	110,1	109,5	106,9	100,1	93,1	92,9	96,7	98,3
Urals	153,4	109,1	114,2	106,4	101,4	103,2	89,7	107,1	102,0	104,5
Siberian	118,4	113,5	116,2	111,8	94,1	99,2	83,4	98,5	102,3	105,5
Far Eastern	98,4	106,1	126,5	88,1	83,2	93,4	98,9	98,8	110,8	102,6

Source: Authors' calculations based on data from information portals

However, in the Southern and Volga federal districts, there was no recovery, which indicates an insufficiently active modernization of fixed assets, the use of obsolete equipment. (Table 14). The priorities of the state and business can be seen in the growth of investment in fixed assets in such strategically important macro-regions as the Urals, Siberia and the Far East

4. Conclusions

One of the main reasons for territorial differentiation are the differences between the regions in natural conditions: the character of the population distribution and the demographic situation, which undergo changes over time. The economic factors connected with the results of resource allocation and their effective management also have an impact.

Working-age population actively participating in the labor market has been moving from the regions of the Far East to Central Russia since the beginning of the 2000s. Differentiation between the regions by employment rate persists, however, general trends indicate its decrease.

The difference between macro-regions with high and low unemployment rates in the Russian Federation in general has substantially decreased, but territorial inequality has increased, i.e. significant spatial differences in the labor market persist.

The population density, reflecting the degree of population of the country and regions, has changed significantly since 2000. Three federal districts (Central, South and North Caucasus) observed the population size growth and, thus, the average density increased.

The processes of territorial inequality are greatly influenced by the migration flows of the population, expressed in the outflow of the population mainly from the eastern regions. Significant migrations are characteristic of rural migrants from the Far Eastern, Siberian and Urals Federal Districts. Therefore, the main influx of migrants is characteristic for the Central, North-Western and Southern districts. As a result, rural areas are losing population, i.e. future generations who could have worked in the agricultural sector.

A correlation has developed between the employment rate, a decrease in the labor force size and industrial production indices.

Thus, despite the measures of state policy aimed at the reduction of regional inequality, polarization and differentiation in terms of provision with the population, labor resources and labor force are preserved, which negatively affects the sustainability of the economy in the eastern regions of Russia. Nevertheless, the positive dynamics of recent years is characteristic of such macroeconomic indicators as the employment rate, the labor force size, the labor force participation rate. Indices of growth in the sustainability of the regional economies include the indices of the physical volume of gross regional product, the index of industrial production of manufacturing industries, and the index of the physical volume of investment in fixed assets. Therefore, we can state that territorial differentiation of labor influences the stability of the regional economies in a relatively narrow aspect, namely, the more successful development of the western territories of the country where human capital is concentrated.

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