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SPATIAL DIFFERENCES IN THE LIFE QUALITY CHANGE IN THE RUSSIAN FEDERATION

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Abstract

The constituent entities of the Russian Federation are distinguished by their geographical location, natural resource potential, historical stages of the economic complex formation, sectoral and territorial economy structure, demographic situation, urbanization processes, and the integration degree into foreign economic relations. The goals of successful socio-economic development mean the formation of a decent standard and quality of life of the population, and the reduction of territorial disparities between and within the constituent entities of the country. The spatial socio-economic situation in the country constituent entity depends on the territorial and sectoral economy structure, the branch/sectoral industry structure, territorial accessibility to digital infrastructure, investment volume in the economy, infrastructure provision and characteristics of urban settlement. Modern challenges are associated with such a process as the digitalization of economic activity which in a broad sense is defined as the inclusion of data and the Internet in manufacturing processes and products. The scientific and practical comprehension of spatial development means solving such an issue as clarifying the territorial differences in the socio-economic growth of the country constituent entities. Life quality as an indicator of socio-economic development is a multidimensional category. It covers emotional, physical, material, and social well-being which is projected at the individual and social levels. The proposed study is aimed at identifying the spatial dynamics of the constituent entities of the Russian Federation by a number of indicators reflecting the main aspects of the population life quality as an indicator of socio-economic changes.

Keywords: Constituent entity, development, employment, education, income, investment

1. Introduction

The methodology of scientific and practical research on the quality of life is based on the use of an index approach for ranking countries or other studied territorial units according to an integral indicator. The study is aimed at identifying leaders and outsiders in terms of the life quality, possible hotbeds of social conflicts, and the research results serve as a rationale for regional policy to reduce socio-economic inequality.

An objective assessment of the life quality can be based on taking into account the standards of needs in meeting the population needs, and on the use of statistical indicators of income, unemployment, and environmental pollution (Tavokin & Tabatadze, 2009). Economic freedom, creativity, higher growth rates of labor productivity in comparison with the growth rates of production and population mean an increase in the life quality of the middle class (Kvint & Okrepilov, 2014). The population life quality in modern world is achieved on the basis of the implementation of the sustainable development principles as the basic foundation for the economic, social, environmental, and cultural growth of territories (Battis-Schinker et al., 2021). Based on the statistical data analysis on:

Population density, the share of the urban population (including for cities with more than 100 thousand inhabitants and over 1 million), the production of gross regional product (GRP) per capita; per capita money income in the context of the constituent entities of the Russian Federation, a conclusion about the exacerbation of socio-economic differentiation of RF constituent entities was made in the 1990s and the very beginning of the 2000s (Anokhin & Fedorov, 2017, p. 327).

Key trends in the labor market in the Russian Federation: the growth of shadow employment, a reduction in the role of small and medium-sized businesses, an increase in interregional labor migration due to the situation polarization on regional labor markets (Antonov, 2019, p. 560).

Education and universities are considered as an urgent condition in the formation of social innovation and the territory sustainable development (Arocena & Sutz, 2021). Social living conditions affect geographic differences in life expectancy as an indicator of sustainable development (Jiang et al., 2018).

It is relevant to take into account the objective conditions affecting various aspects of the population life quality from the standpoint of territorial studies:

1) Territorial and sectoral economy structure. It defines the geography of the centers of territory growth and development as places of concentration of well-being and prosperity, on the one hand, but leading to increased social polarization, on the other hand. The geography of multifunctional successful cities that attract labor migrants, geography of monofunctional urban centers with a concentration of socio-economic disadvantage and an unpromising demographic structure of residents, geography of propulsive sectors of the economy with high labor productivity and high costs for research and development, geography of the service economy, and the geography of peripheral growth are determined

by competitive economy specialization, and the region participation in value chains. Geographic differences in the territory affect the socio-territorial inequality in the population life quality;

2) Branch/sectoral industry structure. Socio-territorial inequality of the Russian space has arisen and is remaining due to the formation of the country constituent entities with an income predominance from the export mining sector of the industry (or the export sector of the manufacturing industry) and the country constituent entities with the production of uncompetitive industrial products;

3) Modern risks to social well-being are caused by territorial inequality of digital infrastructure access which creates unequal opportunities for education, doing business, and for organizing the economic activity of a household. Countries of the world are compared in terms of the digital economy infrastructure based on indexes and indicators such as public and business access to mobile and fixed networks, infrastructure for the Internet of Things, investment in broadband, communication prices, the share of households with Internet access, digital differentiation of urban and rural localities in one country, the number of online shoppers in different age categories, and the number of online students (G20 DETF, 2018);

4) The population employment may undergo transformation owing to the emergence of new technical and technological requirements for workers in the industrial and service sectors of the economy under the influence of the trend of the economy digitalization and changes in the labor quality. The employment shift to the online space may negatively affect the working opportunities of the older age population. In territorial terms, this will enhance inequality in income, labor and employment between the country constituent entities with different demographic population structure. The labor market of single-industry towns and its transformation is relevant to apply in the policy development for leveling territorial socio-economic disproportions (Zubarevich, 2017);

5) The volume of investments in the country's economy affects territorial shifts in the formation of socio-economic centers and peripheral regions. For example, in 2019, investments in fixed assets of the North Caucasian Federal District in the amount of 610 billion rubles were lower than in the Republic of Tatarstan (640 billion rubles); 50 % of all Russian investments were concentrated in 12 constituent entities of the Russian Federation, including 15 % in Moscow. This testifies to the formation of inequality of the country's constituent entities in terms of attracted investments which is reflected in the inequality of the population life quality;

6) Infrastructure security. The territorial and infrastructural complex forms modern civilized conditions affecting the social, financial, economic, environmental, transport, communication aspects of the population life quality;

7) Territorial specificity of the urbanization processes development. Urbanization as a social process means an increase in the population living standard in the urban environment due to the agglomeration economy development. Urbanization as a geographic process can lead to ambiguous consequences for spatial development. Urban settlement as a system of interconnected cities distinguished by the population originality, the labor market, the population employment structure, management, and the influence on the surrounding space has a differentiating effect on the socio-economic development process. The population life quality of agglomerations and autonomous settlements, urban and rural areas, and cities and suburbs are formed under the influence of reproduction clusters with various growth levels.

2. Problem Statement

The Russian Federation is a unique country in terms of natural and climatic conditions, administrative-territorial division, participation in the system of international geographical division of labor, and geopolitical role in the world space. The political transformation of the country after 1990 influenced the formation of economic, social, and environmental inequality of the country constituent entities. A study aimed at identifying such a problem as a spatio-temporal change in the population life quality of the country constituent entities by 2019 compared to 2000 was carried out in the paper.

3. Research Questions

The research subject is to determine constituent entities of the Russian Federation with different levels of dynamics of the population life quality by 2019 compared to 2000 based on the calculation of the integral indicator which implies the solution of the following tasks:

- development of an integral indicator of the dynamics of the quality of life (IDQL) to determine the change in the population life quality for the period from 2000 to 2019, the calculation of this indicator for the constituent entities of the Russian Federation;
- ranking of constituent entities of the Russian Federation according to the calculated indicator.

4. Purpose of the Study

The purpose of the study is to determine the spatial differences in the change in the population life quality at the level of the constituent entities of the Russian Federation which occurred by 2019 compared to 2000 based on the integral indicator calculation of the life quality.

5. Research Methods

The index dynamics of the population life quality of each constituent entity of the Russian Federation was calculated by the formula:

$$I = \sqrt[11]{\left(\left(\frac{K}{K1}\right)*\left(\frac{K}{K2}\right)*\left(\frac{K}{K3}\right)*\left(\frac{K}{K4}\right)\right)*0,4*\left(\left(\frac{K}{K5}\right)*\left(\frac{K}{K6}\right)*\left(\frac{K}{K7}\right)\right)*0,3* \\ *\left(\left(\frac{K}{K8}\right)*\left(\frac{K}{K9}\right)*\left(\frac{K}{\left(\frac{1}{K10}\right)}\right)\right)*0,2*\left(\frac{K}{\frac{1}{K11}}\right)*0,1}$$

where

I – dynamics index of the population life quality for a certain period of time,

K – population dynamics coefficient,

K1 – dynamics coefficient of the number of people employed in the economy,

K2 – dynamics coefficient of average per capita income,

K3 – dynamics coefficient of fixed assets input,

K4 – dynamics coefficient of fixed capital investment,

K5 – dynamics coefficient of the number of students enrolled in bachelor's, specialist's, and master's programs,

K6 – dynamics coefficient of researchers,

K7 – dynamics coefficient of organizations performing research and development,

K8 – dynamics coefficient of housing provision per capita,

K9 – dynamics coefficient of the number of theater visitors,

K10 – dynamics coefficient from stationary sources emission,

K11 – dynamics coefficient of the demographic load on the working-age population.

With an index value of less than 1, the population life quality in the constituent entity of the Russian Federation improved by 2019 compared to 2000, with an index value of more than 1, the population life quality in the constituent entity of the Russian Federation has deteriorated by 2019 compared to 2000.

6. Findings

The ranking results of the constituent entities of the Russian Federation according to the calculated IDQL are presented in Table 01.

Table 1. Ranking results of RF constituent entities by IDQL by 2019 compared to 2000

RF constituent entities	IDQL	RF constituent entities	IDQL	RF constituent entities	IDQL
Tyumen Region without AD	0.57	Novosibirsk Region	0.30	Kurgan Region	0.28
Moscow	0.43	Moscow Region	0.30	Republic of Altai	0.28
Republic of Marij El	0.40	Novgorod Region	0.30	Kaluga Region	0.27
Republic of Kalmykia	0.38	Republic of Karelia	0.30	Republic of Khakassia	0.27
Krasnodar Territory	0.38	Republic of Tatarstan	0.30	Vologda Region	0.27
Khanty-Mansijsk AD	0.36	Kabardino-Balkarian Republic	0.30	Ivanovo Region	0.27
Tyumen Region	0.36	Rostov Region	0.30	Kursk Region	0.27
Tomsk Region	0.36	Bryansk Region	0.30	Murmansk Region	0.27
Saint Petersburg	0.36	Yaroslav Region	0.30	Chuvash Republic	0.27
Udmurt Republic	0.35	Tver Region	0.30	Nizhni Novgorod Region	0.27
Republic of Daghestan	0.35	Vladimir Region	0.30	Republic of Mordovia	0.27
Saratov Region	0.34	Pskov Region	0.30	Smolensk Region	0.27
Republic of Bashkortostan	0.34	Perm Territory	0.29	Nenets Autonomous District	0,27
Kemerovo Region	0.34	Irkutsk Region	0.29	Voronezh Region	0.26
Leningrad Region	0.34	Kaliningrad Region	0.29	Primorsky Territory	0.25
Belgorod Region	0.33	Republic of North Ossetia-Alania	0.29	Arkhangelsk Region	0.25
Astrakhan Region	0.33	Republic of Buryatia	0.29	Ryazan Region	0.25
Samara Region	0.33	Republic of Adygeya	0.29	Ulyanovsk Region	0.25
Yamalo-Nenets AD	0,33	Komi Republic	0.29	Tula Region	0.24
Oryol Region	0.33	Penza Region	0.29	Chukotka Autonomous District	0.24
Kostroma Region	0.32	Republic of Ingushetia	0.29	Magadan Region	0.24
Krasnoyarsk Territory	0.32	Omsk Region	0.29	Amur Region	0.24
RF	0.32	Orenburg Region	0.29	Republic of Tuva	0.23
Kamchatka Territory	0.31	Khabarovsk Territory	0.29	Sakhalin Region	0.23
Republic of Sakha (Yakutia)	0.31	Chelyabinsk Region	0.28	Lipetsk Region	0.23
Sverdlovsk Region	0.31	Kirov Region	0.28	Zabaikalye Territory	0.23
Stavropol Territory	0.30	Altai Territory	0.28	Tambov Region	0.23
Volgograd Region	0.30	Karachayevo-Cherkessian Republic	0.28	Jewish Autonomous Region	0.20

7.   Conclusion

The most intense positive changes in the population life quality occurred in the following constituent entities of the Russian Federation by 2019 compared to 2000: a) constituent entities of the Far Eastern Federal District: 1) the most distant from the European part of the Russian Federation, with the economy primary sector, with extreme natural and climatic conditions, with the population decrease from 2000 to 2019: Chukotka AD, Magadan Region, Amur Region, Zabaikalye Territory, and Jewish AD; 2) constituent entities with a favorable coastal economic and geographical location, development of port complexes, export infrastructure: Primorsky Territory; b) constituent entities of the Russian Federation, where million-plus cities as centers of socio-economic development are in the system of urban settlement: Nizhni Novgorod Region, Chelyabinsk Region, Perm Territory; c) subsidized constituent entities of the Russian Federation. The least intensive positive changes in the population life quality occurred in the following constituent entities of the Russian Federation by 2019 compared to 2000 (IDQL is higher than the average Russian indicator): a) budget-forming constituent entities of the country: a) oil and gas producing regions of the country (Tyumen Region without AD, Khanty-Mansijsk AD, Yamalo-Nenets AD); b) federal capitals of the Russian Federation; 3) subsidized constituent entities of the Russian Federation with a disadvantageous geographical location (Kalmykia), with a single-industry industrial structure of the economy (Kemerovo Region, Belgorod Region, Astrakhan Region).

Generally, all the considered constituent entities of the Russian Federation where the indicators are presented in the required volume for calculating the IDQL were characterized by an improvement in the population life quality by 2019 compared to 2000.

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