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## On the Issue of Poverty in Russia: Facts, Paradoxes, Specifics, and Alleviation Prospects



**Evgenii D.**

**KORMISHKIN**

Ogarev Mordovia State University  
Saransk, Russian Federation

e-mail: kormishkined@mail.ru

ORCID: 0000-0002-7524-4072; ResearcherID: AAK-1819-2021



**Irina A.**

**IVANOVA**

Ogarev Mordovia State University  
Saransk, Russian Federation

e-mail: ivia16@mail.ru

ORCID: 0000-0003-1113-0858; ResearcherID: CAG-4446-2022



**Irina V.**

**MOISEEVA**

Ogarev Mordovia State University  
Saransk, Russian Federation

e-mail: moira-22@mail.ru

ORCID: 0000-0003-2034-5703; ResearcherID: AAV-5336-2021

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**Abstract.** The relevance of the research topic is determined by the need to reduce poverty in Russia to improve the quality of human capital in order to ensure long-term and sustainable growth of its economy. The paradox of the current welfare system in the country has been established: a significant excess of the real poverty rate compared to its maximum permissible value against the background of high indicators of total national wealth and economic potential of the country. The aim of the study is to theoretically substantiate the failure of Russia's transition in 2021 to a new methodology for determining the national poverty line; to statistically test the hypothesis of high regional income inequality as one of the main features of Russian poverty, limiting the possible rates of economic growth; to formulate the minimum necessary tools of state policy to promote poverty reduction in the country. The research methodology is based on the system approach; on the application of methods of correlation, regression, cluster analysis of data (including the method of k-means and hierarchical clustering), methods of classification, comparison, contrast and time series analysis. The models were identified by means of analysis of variance, testing of statistical hypotheses about the reliability of models and the significance of their parameters, coefficient of determination. In the context of the concepts of "social state" and "sustainable development" the inappropriateness of Russia's rejection of the normative approach to the definition of the national poverty line in favor of only a relative approach (44.2% of Me) was substantiated. Regression dependencies between the poverty rate and per capita GRP (taking into account its structural components) were constructed for Russia's constituent entities; four clusters were formed on the basis of such dependencies, within which direct and inverse relationships of different strength between the poverty rate and structural components of per capita GRP were identified. The minimum necessary toolkit of state policy to promote poverty reduction in Russia, taking into account the existing capabilities of its economy, was formed.

**Key words:** economic growth, human capital, social inequality, poverty, cost of living, median income, national poverty line, redistributive policies.

### Introduction

Poverty as "the result of a very long and indirect causal chain that goes back to the basic foundations of the socio-economic system, to its very core" (From the editorial board..., 2015, p. 30), is one of the most acute global problems of the 21st century. Without its solution, "creating a sustainable future in an interdependent world seems impossible" (Bobylev, Solov'eva, 2017, p. 27). This understanding of the importance of overcoming poverty in its various forms "to achieve a better and more sustainable development of the future for all" was officially recognized in the UN concept document "Sustainable Development Goals for the period 2016–2030 for all countries of the world"<sup>1</sup>,

which replaced the Millennium Development Goals (2000–2015). All UN Member States, including the Russian Federation, committed to contribute to the achievement of the adopted goals and the target indicators contained therein by 2030.

According to the World Bank research, in general, humanity has made significant progress in reducing extreme poverty in 1990–2019 (for reference: in 2020, the World Bank raised its minimum global limit from 1.9 to 2.15 U.S. dollars per person per day according to 2017 PPP). However, this positive trend actually stopped in 2020, when the annual increase in the population with incomes below the new global extreme poverty line amounted to about 70 million people. The World Bank report "Poverty and Shared Prosperity" (Washington, October 5, 2022), along with a drop

<sup>1</sup> Transforming our world: The 2030 agenda for sustainable development. UN. Available at: <https://sdgs.un.org/ru/2030agenda> (accessed: June 2, 2023).

in global growth rates, identified the destructive consequences of the COVID-19 pandemic, high food prices and a special military operation as the main reasons that slowed down the fight against poverty. According to the World Bank experts<sup>2</sup>, the share of the world's population below the extreme poverty line has increased from 8.4% in 2019 to 9.3% in 2020; by 2030, almost 600 million people, or about 7% of the world's population, will be forced to live on less than 2.15 U.S. dollars. Rosstat estimated the poverty level in Russia by the end of 2022 (with income below the poverty line of 13,688 rubles per month per person) at 15.3 million people, or 10.5% of the total population of the country, which exceeds the maximum permissible value for this indicator of 7% (Senchagov et al., 2013, p. 305).

In accordance with the main ideas contained in the World Bank report (2022), in the current situation, the world is unlikely to be able to achieve Goal 1 of the UN SDG – to end extreme poverty by 2030, if economic growth rates do not exceed the indicators of previous periods in the rest of the decade.

It is fundamental to say that poverty is a relative and ambiguous concept depending on the general standard of living in a given society. In this context, for example, the Nobel Prize laureates in Economics A. Banerjee and E. Duflo, in relation to the current stage of socio-economic development, define this phenomenon not just as a lack of money, but as an “inability to fully realize their human potential” (Banerjee, Duflo, 2019, pp. 189, 192). It means, according to one of the leading scientists of the world economic science T. Piketty, that the problem of poverty cannot be eliminated; poverty can be reduced or overcome (Piketty, 2020, p. 433).

As world practice shows, the large-scale poverty hinders the strategic development of the country,

which, for example, the Nobel laureate in Economics J. Stiglitz explains its so-called “cumulative effects” (economic, political and social). In his best-selling book, *The Great Divide*, Stiglitz emphasizes: “A high level of poverty leads to short life cycles of economic growth and threatens not only economic, but also political and social stability, ... entails less economic mobility and poorer opportunities for many generations” (Stiglitz, 2016, pp. 327–328).

As for poverty in today's Russia, of course, its spread to actively working citizens and young people, on whom society assigns the mission of reproducing the population and labor potential of the country, is of concern. In other words, it means that the factor such as self-reproduction of poverty has formed in the Russian Federation, due to the low level of income (primarily wages) for the majority of citizens and the official subsistence minimum. The indicated situation is a powerful limiter of labor motivation and economic activity of the population (Kormishkina, Ermakova, 2021); it is fraught with an increase in crime and the risk of social upheaval; it can intensify investor uncertainty, increase transaction costs in the economy.

In this context, it becomes obvious that reducing the poverty and overcoming serious internal contradictions entailed by it cannot be provided by “one-time decisions “On assistance to low-income segments of the population” (Bobkov, Odintsova, 2020, p. 10); they should be one of the main missions of the modern Russian state as a social state in the full sense of the word (Ilyin, 2017, p. 12), whose policy, in accordance with paragraph 1 of Article 7 of the Constitution of the Russian Federation, is aimed at creating conditions that ensure a decent life and free human development.

Against the above-mentioned background, the theoretical and methodological aspects of poverty, related to the clarification of its criteria (qualitative and quantitative), verification of adequacy and improvement of its measures, justification of

<sup>2</sup> Reference source: Adjusting the international poverty line values. Available at: <https://www.vsemirnyjbank.org/ru/news/factsheet/2022/05/02/fact-sheet-an-adjustment-to-global-poverty-lines#18>

effective ways and tools for reducing and overcoming the phenomenon of new poverty, which form a special subject area for responsible scientific research and development, require further understanding.

#### **Current state of research on this problem**

Poverty is one of the acute and topical scientific problems with unfinished theoretical discussion, despite the existence of numerous works devoted to the study of this phenomenon in different time periods. After the global crisis of 2008–2009, the works of J. Sachs (Sachs, 2011), A.V. Banerjee and E. Duflo (Banerjee, Duflo, 2011; Banerjee, Duflo, 2019), T. Piketty (Piketty, 2014), J.E. Stiglitz (Stiglitz, 2015; Stiglitz, 2016), in which property injustice and poverty were positioned as an inherent property of not only peripheral but also industrialized countries, were widely popularized and actively discussed in the scientific community, (From the editorial board..., 2015, p. 32). At the same time, poverty researchers highlight the innovation of T. Piketty associated with the attempt of a different (inverted) interpretation of the well-known hypothetical curve of S. Kuznets (Kuznets, 1955) and the creation of a “fundamental law” to explain the relationship between the rate of economic growth and the level of inequality and poverty in the country.

It is worth noting that there is no unambiguous universally accepted definition of poverty in the scientific literature, as this definition is relative in nature, constantly being specified and modified (Ovcharova, 2009, p. 8). At the moment, the theory of poverty definition can be distinguished between four conceptual approaches: welfarist, deprivation, functional capacity theory and subjective. The first of them relies on such welfare indicators as household income or consumer expenditures, and predominantly on monetary tools of absolute poverty (subsistence minimum, global PPP poverty line). We should say that this approach was used in the 1960s by the American economist and

statistician M. Orshansky (Orshansky, 1965) as a methodological basis for calculating the poverty threshold for the United States; the formula created in this case is still used by the U.S. government.

The deprivation approach proposed by British economist P. Townsend (Townsend, 1979), poverty is assessed on the basis of insufficient resources to meet the consumption standards (basic needs) established in society. He expertly formed a list of “deprivations” experienced by an individual, indicating that it is impossible for them to maintain a way of life that is considered minimally acceptable at a given development stage (Kormishkina, Ermakova, 2021). We should note that it was Townsend who drew attention to the fact that a significant concentration of individuals (households) experiencing “deprivations” is observed up to the level of income equal to 50–60% Me. It is noteworthy that in the 1990s this approach to the definition of poverty was widely recognized in developed economies.

In the theory of functional capabilities, developed by the Nobel Prize winner in the field of economics A. Sen, poverty is considered as an extreme form of economic inequality and is presented as a result of deprivation of basic “functional capabilities”. Moreover, the choice of “opportunity set”, according to this theory, depends on the system of values shared by an individual; it also reflects their freedom to choose one of many ways of life (Sen, 1987). In such a context, reducing the analysis of poverty solely to the study of differences in income is recognized by A. Sen is recognized as erroneous.

Regarding the subjective approach to poverty assessment, we consider it necessary to note that its most specific methods and models are proposed by A.V. Banerjee and E. Duflo (Banerjee, Duflo, 2012; Banerjee, Duflo, 2019), M. Lobue and F. Polmisano (Lobue, Polmisano, 2021). A greater use of randomized experiment is here proposed as an effective applied policy tool for poverty reduction.

The previously mentioned Nobel laureates in economics A.V. Banerjee and E. Duflo were at the forefront of the experimental revolution in the fight against poverty and the creation of the concept of development economics. In the context of the latter, one of the main obstacles and real constraints to possible growth rates and economic development is the “low-income trap” (J.B. DeLong, L.H. Summer, P. Lucas) and the “middle-income trap” (the term was introduced in 2007), caused by the inability of a country to support the transition from low-value-added to high-value-added industries, insufficient social capital and problematic institutions, the growth of the informal economy, etc. (Guriev, Treisman, 2019).

In Russian economic science, the phenomenon of poverty was identified as a research subject only in the early 1990s (in pre-reform Russia there was an ideological denial of this problem). To date, the most widely known and scientifically recognized works of L.N. Ovcharova (Ovcharova, 2009; Ovcharova, 2017; Ovcharova et al., 2022), V.A. Litvinov (Litvinov, 2021), V.N. Bobkov and E.V. Odintsova (Bobkov, Odintsova, 2019; Bobkov et al, 2020), which present identification criteria and poverty indicators; show the features of Russian poverty and its profile; propose and substantiate measures to reduce extreme poverty, taking into account the current capabilities of the Russian economy.

Recently, growing attention of Russian scholars and specialists has been attracted by the issues caused by the change in the methodology of determining the basic poverty line in the country in 2021. The Government of the Russian Federation abandoned the approach related to the use of the consumer basket in favor of the approach in which the poverty line is calculated as a percentage of Me. According to a number of Russian scholars (Bobkov et al., 2022), such “innovation” deprives society of the possibility of control over the correctness of calculations.

Thus, we can state that the discussion is incomplete and some fundamental theoretical and methodological aspects of poverty are underdeveloped. This situation, in addition to distorting the real picture of Russia’s well-being, limits the possibility to use competitiveness factors (primarily the quality of human capital) in order to ensure long-term and sustainable economic growth.

The aim of the research is to theoretically substantiate the failure of Russia’s transition to a new methodology for determining the national poverty line in 2021; to statistically test the hypothesis of high regional income inequality as one of the main features of Russian poverty, limiting the possible economic growth rates; to formulate the minimum necessary tools of state policy to promote poverty reduction in the country.

#### **Research methods**

The methodology of the study is based on a systems approach, which has a high research and explanatory potential. It is a special methodology of scientific analysis and thinking, which gives a comprehensive, integrated, and therefore more objective and constructive approach to the study of economic reality; makes it possible to build a holistic picture of the object under consideration, to review the latter in an organic relationship with the factors of its environment.

We used the following special methods in the study.

1. Formation of databases necessary for displaying poverty lines in Russia and other countries for 2000–2022. The information base are data from Rosstat, Eurostat, usa.gov, the World Bank, annual reports of Credit Suisse Institute, and others.

2. Intelligent data analysis with tool support for Microsoft Excel, PPP SPSS, R, including:

- regression analysis to group the constituent entities of the Russian Federation by the nature of the relationship between the poverty rate

(endogenous variable  $Y$ ) and GRP per capita (exogenous variable  $X$ ); we carried out the identification of the obtained models using analysis of variance, testing of statistical hypotheses about the reliability of models and the materiality of their parameters (Fisher's and Student's criteria), definition of coefficients of correlation, determination and average approximation error;

- k-means method, used within the framework of cluster analysis for preliminary partitioning of a large data set into groups to predict the number of clusters (in our case  $k = 4$ ) and to check the presence of unaccounted data and relationships in the sets. The object composition of clusters is determined based on minimizing the variability of selected parameters within a cluster and maximizing their variability between clusters (Euclidean distances of observations from the so-called centers (mean values) for each parameter);

- structural and comparative analysis of the sectoral GRP structure of Russia's constitute entities within the constructed clusters; comparison of poverty levels with changes in the average indicators of structural components of per capita GRP for each cluster; we constructed a matrix of pair correlation coefficients, and analyzed it using the Chaddock table.

Such analysis is important for testing the hypothesis that significant differentiation of regions by income levels within the same types of activities is one of the features of Russian poverty.

### **Results and their discussion**

#### **Russian welfare system paradox**

The analysis of official factual data shows that, despite the difficult situation caused by the socio-economic implications of the COVID-19 pandemic and international sanctions against Russia, the latter, even according to international estimates, is a productive and wealthy country. This statement is confirmed, first of all, by the results obtained in the course of comparative analysis of the world's countries by per capita GDP (an indicator of the

level of economic activity and quality of life). According to the World Bank, in 2022 its value in the Russian Federation exceeded 15 thousand U.S. dollars and approached the record level of 2013; in the ranking of 145 states by this indicator, Russia rose to 61st place, improving its position compared to 2020 (65th place).

In addition, the analysis confirmed the even stronger position of the Russian Federation in the world ranking in terms of per capita total national wealth (45th place out of 251 countries by the end of 2022). Moreover, in the structure of Russia's national wealth, human capital (46%), rather than natural (20%) and production (33%), accounts for the largest share; however, this value is much lower than in OECD countries (70%)<sup>3</sup>.

The data presented in Table 1 forms a certain idea about the economic and production potential of the Russian Federation in comparison with some other countries. According to them, Russia's national wealth, unfortunately, does not transfer to the welfare of Russians with low incomes (the lower wage level of those employed in the economy, excluding maximum earnings, confirms it); on the contrary, it is accompanied by increasing social inequality due to the growing concentration of national wealth within the upper decile of the population<sup>4</sup> and a significant excess of actual values of the poverty rate over its maximum permissible level of 7%. For reference: the poverty ratio decreased in 2000–2012 from 24.6 to 10.7%; it increased in 2013–2018 (from 10.7 to 13.3%); and declined to 10.5% in 2022 due to social support measures for the poor during the COVID-19 pandemic.

<sup>3</sup> World Bank. Available at: <https://datatopics.worldbank.org/world-development-indicators/>

<sup>4</sup> For instance, according to the World Bank, in 2019 the income Gini coefficient was about 0.38 in the Russian Federation and was lower than in the United States (0.41) but significantly higher than in France (0.285), Germany (about 0.32), and Norway (0.286).

Table 1. Comparative macroeconomic parameters for selected countries of the world, 2017

Indicator	Country	USA	Russia	China	Eurozone
GDP, billion U.S. dollars		19,484	4,027	23,190	12,700
Population, million people		324.4	146.3	1,410	338
Production and agricultural part of GDP* ("real" GDP), % of GDP		20	34	48	27
Legal and illegal migrants, million people		≈20	≈6	no data	≈30
Number of persons registered, but not residing, million people		no data	12–13	no data	no data
Total, million people generating GDP		345	140	1,410	368
Production of real GDP per "real" per capita, U.S. dollars		11,295	9,780	7,900	9,318
Salaries of hired staff (average including top salaries) per month*, U.S. dollars		5,047	1,713	1,764	no data
Salaries of employees (excluding maximum earnings) (95% of personnel) per month, U.S. dollars		≈4000	≈1000	≈1350	no data

\* In PPP U.S. dollars.  
According to: Zanin V. (2023). Russia can quickly become the most developed country in the world. Increase in the well-being of all segments of the population, and the low-income at least 2-fold is possible already in 2023-2024. *Argumenty nedeli*, 5(861), 18–19.

The above allows talking about a special paradox of the welfare system in the Russian Federation, expressed in a significant excess of the real poverty level compared to its threshold value against the background of high indicators of per capita aggregate national wealth and economic potential of the country. In other words, a state's wealth does not guarantee the poverty absence due to high inequality in the distribution of income and wealth.

#### Features of a new methodology for determining the national poverty line in the Russian Federation and its shortcomings

This study once again convinces us of the necessity and significance of raising the issue of objective measurement of poverty, which is the subject of a special current scientific debate. We should remember that since 1990 the World Bank has established a common methodology for international comparisons for all countries of the world – the so-called world poverty line, which is periodically updated as the gaps in price levels in different countries increase. The most recent update of the global poverty line occurred in September 2022; the poverty threshold was raised from 1.90 U.S. dollars per person per day in PPP terms to 1.90 U.S. dollars per person per day in PPP terms. The poverty threshold was raised from 1.90 U.S. dollars per person per day at 2011 PPP to 2.15 U.S.

dollars per person per day at 2011 PPP. The poverty threshold was raised from 1.90 U.S. dollars per person per day at 2017 PPP to 2.15 U.S. dollars per person per day at 2017 PPP. In addition, the World Bank has set higher extreme poverty thresholds for lower-middle and upper-middle income countries at 3.65 U.S. dollars and 6.85 U.S. dollars per person per day, respectively. The World Bank has set higher extreme poverty thresholds for lower-middle and upper-middle-income countries at 3.65 and 6.85 U.S. dollars per person per day PPP 2017, respectively<sup>5</sup>.

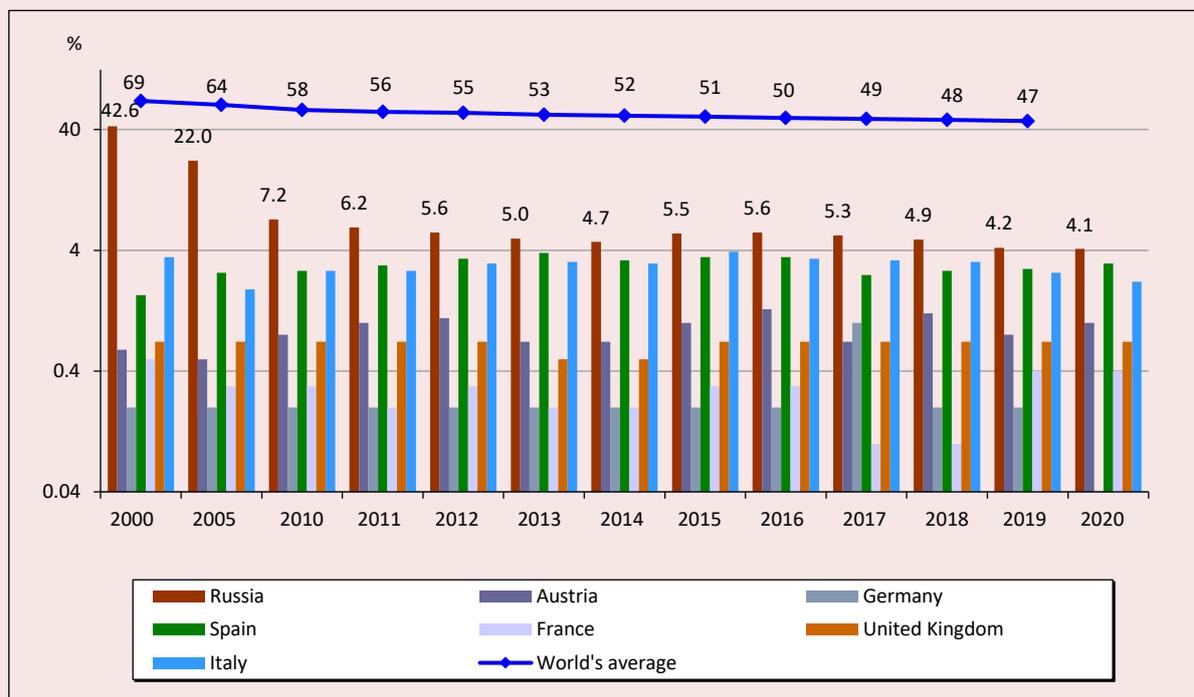
*Figure 1* presents a comparative analysis of the global poverty rate with a similar indicator for individual countries, including Russia, determined on the basis of the global poverty line of 6.85 U.S. dollars per person per day.

The choice of such an indicator of extreme poverty for Russia, in the context of the mentioned above, is conditioned by its positions in the world rankings in terms of "GDP per capita" and "total national wealth per capita".

According to the data in *Figure 1*, 4.1% of Russians were in extreme poverty in 2020 (for reference: 4.9% in 2018; 4.2% in 2019). It is worth

<sup>5</sup> Updating the international poverty line with the 2017 PPPs. Available at: <https://blogs.worldbank.org/opendata/Updating-international-poverty-line-2017-ppps>

Figure 1. Comparative analysis of selected countries and the world as a whole by share of population living below the poverty line, 2000–2020 (in constant 2017 PPP prices)



Source: World Bank data. Available at: <https://datatopics.worldbank.org/world-development-indicators/>

noting that due to the effects of the COVID-19 pandemic and international sanctions, it has become more difficult for Russia to overcome extreme poverty and improve living conditions within the established institutional environment.

It follows from the above that the main purpose of the global poverty line is to track the dynamics of the global level of extreme poverty and assess trends in achieving the global goals of the UN, the World Bank and other international organizations in the field of sustainable development. A national poverty line (absolute, relative, subjective, combined) is needed to assess the effectiveness of the national development model and to work out strategic solutions to reduce multidimensional poverty in the country, taking into account not only monetary but also nonmonetary criteria of this phenomenon.

In Russia, since the USSR period and up to 2020 inclusive, only the absolute approach related

to the consumer basket has been used to calculate the national poverty line (federal subsistence minimum). Moreover, as evidenced by global and Russian practice, the ways of forming such a basket can be different: normative, normative-statistical, statistical. In the Russian Federation since 2014 and before the transition to a new methodology for calculating the national poverty line, the consumer basket was formed by the normative-statistical method, in which only its food component (50% of the basket) had natural content, and the other two (non-food goods and services) were calculated as a percentage of it (25% each) regardless of the inflation rate in the country. The main disadvantage of this method of forming the consumer basket is that it leads to an underestimated level of the minimum wage and social transfers, although it is originally designed to overcome poverty (Kormishkina, Ermakova, 2021).

According to experts, the shortcoming of such a definition of the poverty line could have been eliminated by switching to a normative method of formation of the consumer basket for all its components, which allows taking into account consumer spending “in the real dynamics of the price ratio” (Bobkov et al., 2020). Instead, starting from 2021, the Russian government abandoned the absolute approach to defining the poverty line associated with a specific consumer standard, i.e. the consumer basket, in favor of a relative one in which the national poverty line is calculated as a percentage of median income; it was set at 44.2% of Me. For comparison: in the EU countries this poverty indicator is 60% of Me; in the states of medium development – 50%, and in the least developed countries – 40% (Kormishkina, Ermakova, 2021). It is noteworthy that the basic poverty line has changed insignificantly – from 11.6 thousand rubles (Bobkov et al., 2020); in 2022 it was determined by Rosstat at the level of 13,545 rubles and has not yet been revised in 2023.

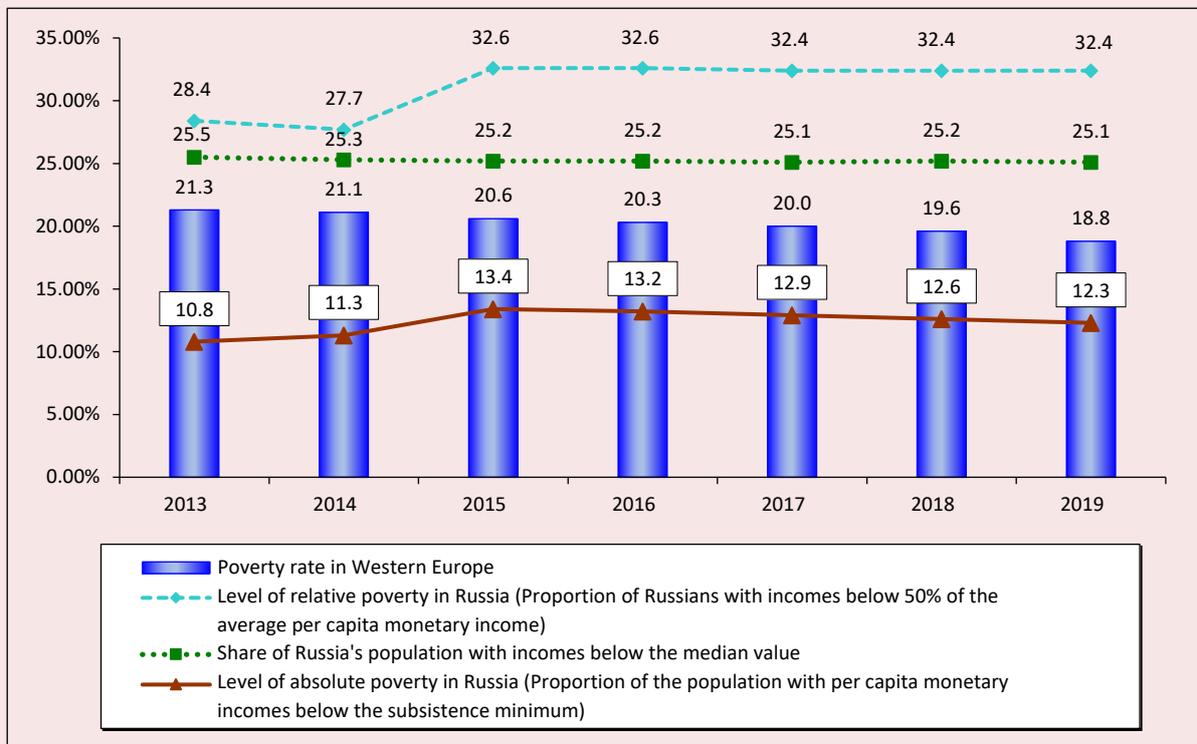
We should note that in all EU countries, in all OECD countries, which account for about 60% of global GDP, in the USA, Kazakhstan and some other economies, both approaches to determining the national poverty line (absolute and relative) are used. At the same time, the latter serves to reveal how the consumption of the poorest strata of society, corresponding to the basket, lags behind the average level of consumption in a country. With a significant lag, either the consumer basket is revised upwards, or additional social support is provided to the most vulnerable segments of the population. In Russia, as we have noted above, currently only the relative poverty line is officially calculated. With this approach, the poverty line, in our opinion, looks doubtful: it analyzes only income and does not include consumer spending, which is the basis for identifying a set of “functional capabilities” of an individual and their quality of life.

We hold the same position as V.N. Bobkov, which consists in the fact that the rejection of the normative approach is also illegal because “the median income has a very distant relation to the lower strata of the population. The mechanism of transparent determination of the subsistence minimum is being destroyed” (Bobkov et al., 2022, p. 80). In other words, society is deprived of the ability to control the correctness of the calculation of the subsistence minimum. In addition, it is important to note that the current official poverty line in Russia does not take into account the nonmonetary aspects of multidimensional poverty (the World Bank indicator) concerning the possibility of solving the housing problem, the availability of high-quality educational and medical services, sanitation, water supply, etc., which not only complement the monetary criteria of poverty, but are also extremely important for improving the quality of life of the poorest segments of the population. In this context, Russian scientists have calculated a socially acceptable poverty line for Russia, which is not 13.5, but 32 thousand rubles (Bobkov et al., 2020). Thus, it is necessary to state the discrepancy between the real and official poverty line, which prevents the reduction of multidimensional poverty in the Russian Federation, characterized by significant human capital.

The data in *Figure 2* form a general idea of absolute and relative poverty in Russia (before the change in the methodology for calculating this phenomenon in the Russian Federation in 2021) in comparison with Western European countries. The indicators presented here confirm the existence of not only a significant discrepancy between the absolute and relative poverty lines, but also an underestimation of the official poverty line in the country, which gives this phenomenon a chronic character in reality.

As we have said above, by the end of 2021, according to Rosstat, the share of Russians with

Figure 2. Comparative analysis of the poverty level dynamics in the Russian Federation and Western Europe before the COVID-19 pandemic, %



According to: Federal State Statistics Service and SPS “KonsultantPlus”.

incomes below the basic poverty line decreased to 10.5% (the lowest value of the indicator in recent years; before that in 2012 – 10.7%). Rosstat explains this fact by the growth of nominal incomes due to social benefits for different categories of citizens (for example, the introduction of a single benefit, which is paid from the 12th week of pregnancy till the child reaches the age of 17); targeted support from the state, the restoration of economic activity after COVID-19, with subsequent employment growth and an increase in wages, and rising income from entrepreneurial activity. At the same time, among the poverty reduction factors, Rosstat identified an increased mortality of pensioners due to COVID-19 (among this socio-demographic group, the share of the poor is very significant)<sup>6</sup>.

<sup>6</sup> Federal State Statistics Service. Available at: <https://rosstat.gov.ru/statistic>

Regarding the profile of Russian poverty, it seems fundamental to state the stability and scale of the so-called new poverty in its structure. In fact, it means the predominance of low-income jobs in the labor market; low wages for a group of actively working citizens with self-awareness inherent in representatives of the middle class (Stiglitz, 2015, p. 62). This situation indicates the need for a radical transformation of the Russian welfare system in the context of the welfare state policy.

**High regional inequality in per capita income determining the persistence of large-scale poverty in Russia**

The research statistically confirmed another feature of Russian poverty – high regional inequality in per capita income, which, given the weakness of social institutions (in their broad sense), steadily reproduces the low-income level

and quality of life of certain territories. At the same time, regional economic inequality in the Russian Federation in the 2000s can be explained mainly by the agglomeration effect of large cities, which is strengthened by the institutional advantages available here, as well as by a special competitive advantage (predetermined by the raw materials export (rent) model of national economic development) in the form of hydrocarbons (oil, gas) or primary processing products demanded by the world market (Aganbegyan, 2017). Obviously, a high indicator of per capita GRP expands the opportunities not only for the formation of the revenue part of the budget, but also for redistributive policy and social support of citizens in need.

Within the framework of the research, we have carried out a statistical test of the hypothesis. Basically, this approach is quite consistent with the scientifically recognized idea that it is necessary to consider the problems of economic growth, income inequality and the resulting social processes not separately, but in the aggregate, in the relationship between them in order to determine effective instruments of social policy. We can note, for example, the study by A.Yu. Shevyakov and A.Ya. Kiruta on the impact of excessive

inequality (absolute poverty) on economic growth, which focuses, among other things, on the need to jointly use the effects of income redistribution and economic growth to fundamentally solve the problem of large-scale poverty in Russia (Shevyakov, Kiruta, 2009, p. 148). However, in the framework of analyzing the above-mentioned feature of Russian poverty – the persistence of high regional income inequality – it seems appropriate to find out the impact of economic activity level and GRP sectoral structure on poverty in Russia’s constituent entities.

Based on the visual representation of the constructed clustering dendrograms using PPP Statistica software based on hierarchical procedures: methods of single (“nearest neighbor”), complete (“distant neighbor”), average relationship and Ward’s method – it was assumed that Russia’s constitute entities form four natural clusters according to the linear regression dependence  $Y = a + b \times X + \varepsilon$ , where Y is the poverty rate in the region, reflecting the share of the population with income below the poverty line; X – GRP per capita (rubles), as a generalizing indicator characterizing the level of economic activity and quality of life in a particular entity of Russia and indicating the ongoing changes in regional inequality (*Tab. 2*).

Table 2. Clustering of RF constituent entities by linear regression relationship  $Y = a + b \times X + \varepsilon$

Cluster I (total number of entities: 9)	Cluster II (total number of entities: 13)	Cluster III (total number of entities: 47)	Cluster IV (total number of entities: 13)
Moscow Lipetsk Oblast Leningrad Oblast Nizhny Novgorod Oblast Voronezh Oblast Belgorod Oblast Saint Petersburg Republic of Tatarstan Moscow Oblast	Sverdlovsk Oblast Yaroslavl Oblast Kaluga Oblast Kursk Oblast Tula Oblast Krasnodar Krai Sevastopol Tambov Oblast Tver Oblast Volgograd Oblast Udmurt Republic Republic of Bashkortostan Republic of Adygea	Sakhalin Oblast Chukotka Autonomous Okrug Magadan Oblast Murmansk Oblast Vladimir Oblast Khabarovsk Krai Samara Oblast Rostov Oblast Kostroma Oblast Primorsky Krai Chelyabinsk Oblast Penza Oblast Orlov Oblast Kemerovo Oblast – Kuzbass Ryazan Oblast Archangelsk Oblast Vologda Oblast	Tyumen Oblast Komi Republic Krasnoyarsk Krai Republic of Khakassia Chechen Republic Republic of Buryatia Republic of Sakha (Yakutia) Karachay-Cherkess Republic Jewish Autonomous Oblast Republic of Altai Republic of Kalmykia Republic of Tyva Republic of Ingushatia

End of Table 2

Cluster I (total number of entities: 9)	Cluster II (total number of entities: 13)	Cluster III (total number of entities: 47)	Cluster IV (total number of entities: 13)
		Perm Krai Omsk Oblast Novosibirsk Oblast Ivanovo Oblast Bryansk Oblast Stavropol Krai Novgorod Oblast Kaliningrad Oblast Kirov Oblast Tomsk Oblast Republic of North Ossetia – Alania Orenburg Oblast Ulyanovsk Oblast Saratov Oblast Kamchatka Krai Amur Oblast Smolensk Oblast Pskov Oblast Republic of Karelia Republic of Dagestan Astrakhan Oblast Chuvash Republic Republic of Crimea Republic of Mordova Zabaikalsky Krai Irkutsk Oblast Altai Krai Republic of Mari El Kabardino-Balkar Republic Kurgan Oblast	
Source: own compilation based the constructed correlation equations on the data: <a href="https://www.fedstat.ru/indicator/59577?ysclid=lgknjza0j9446756822">https://www.fedstat.ru/indicator/59577?ysclid=lgknjza0j9446756822</a> (Y); <a href="https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Frosstat.gov.ru%2Fstorage%2Fmediabank%2FVRP_s_1998.xlsx&amp;wdOrigin=BROWSELINK">https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Frosstat.gov.ru%2Fstorage%2Fmediabank%2FVRP_s_1998.xlsx&amp;wdOrigin=BROWSELINK</a> (X)			

Cluster I is characterized by the highest average GRP value per capita (1001957.77 rubles) and the lowest average poverty rate (6.94%); Cluster II has the lowest average GRP value per capita (522283.94 rubles) and moderately high average poverty rate (10.23%); Cluster III is distinguished by moderately average GRP per capita (676616.20 rubles) and noticeably high average poverty rate (13.44%); Cluster IV is described by noticeably high average GRP per capita (747909.70 rubles) and the highest average poverty rate (20.75%).

In addition, the significance of differences between the obtained groups was tested using the k-means method (in our case k = 4).

Table 3 summarizes the qualitative characteristics and criteria of linear regression models for each cluster are summarized, and Figure 3 presents linear regression dependencies of poverty rate on per capita GRP for the four formed clusters.

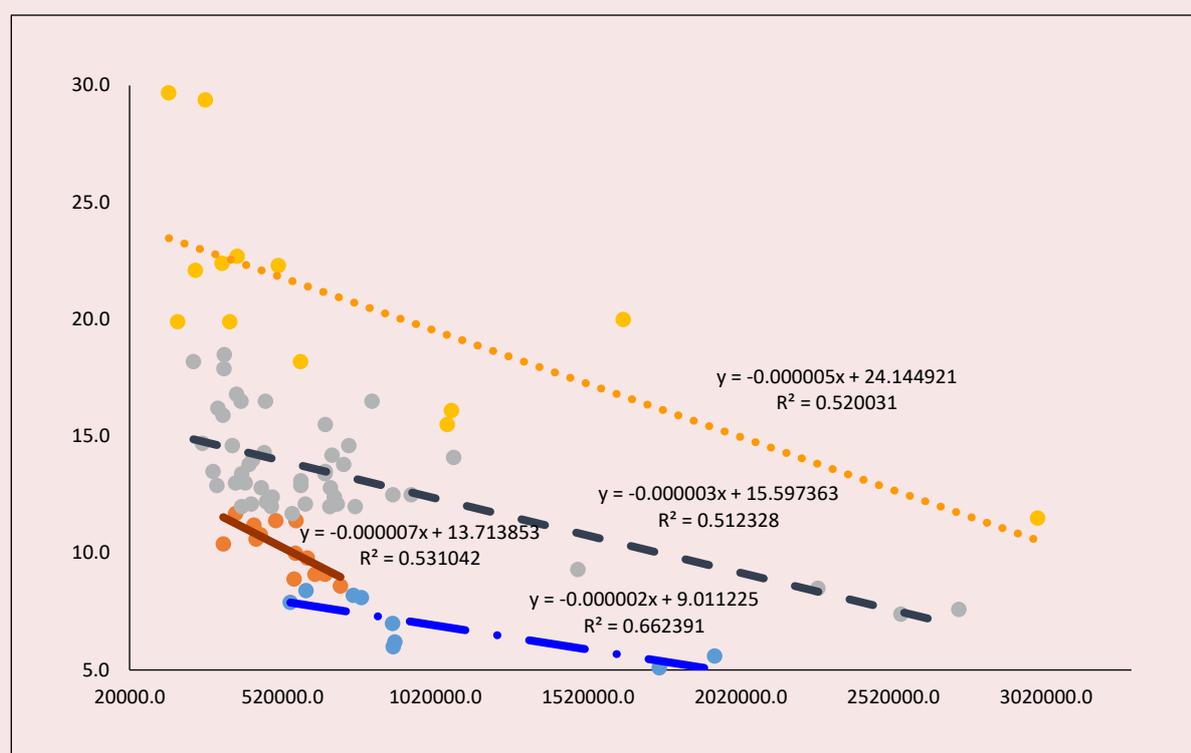
The linear correlation coefficients ( $r_1 = -0.814$ ;  $r_2 = -0.729$ ;  $r_3 = -0.716$ ;  $r_4 = -0.721$ ) indicate a strong inverse relationship between poverty and per capita GRP for each of the four clusters constructed. The determination coefficients ( $R_1^2 = 0,662$ ;  $R_2^2 = 0,531$ ;  $R_3^2 = 0,512$ ;  $R_4^2 = 0,52$ ), characterizing the share of variation of the dependent variable (Y) due to the variation of the explanatory variable (X), exceed 0.5.

Table 3. Qualitative characteristics and criteria of linear regression models for each cluster formation of the RF constituent entities

Cluster	I	II	III	IV
Number of cluster $N_i$	9	13	47	13
Average poverty rate, % $\bar{Y}_i$	6.94	10.23	13.44	20.75
Average GRP volume per capita, rubles $\bar{X}_i$	1001957.77	522283.94	676616.20	747909.70
Correlation coefficient $r_i$	-0.814	-0.729	-0.716	-0.721
Determination coefficient $R_i^2$	0.662	0.531	0.512	0.520
Linear regression	$Y = 9.011225 - 0.000002 \times X + \varepsilon$	$Y = 13.713853 - 0.000007 \times X + \varepsilon$	$Y = 15.593363 - 0.000003 \times X + \varepsilon$	$Y = 24.144921 - 0.000005 \times X + \varepsilon$
Fisher's criterion F	13.734 (F significance = 0.008)	12.456 (F significance = 0.005)	47.275 (F significance = 0.000)	11.918 (F significance = 0.005)
Average relative error of approximation, %	8.86	5.16	9.75	13.06

Source: own compilation.

Figure 3. Linear regression dependencies of poverty rate on GRP per capita for clusters of RF constituent entities



Source: own compilation.

Table 4. Correlation analysis of the impact of GRP components (X1–X19) on the poverty rate (Y)

Cluster		I	II	III	IV
Poverty rate, %	Y	1.00	1.00	1.00	1.00
GRP per capita	X	-0.81	-0.73	-0.72	-0.72
Agriculture	X <sub>1</sub>	0.52	0.21	0.25	0.47
Mining	X <sub>2</sub>	-0.14	0.15	-0.36	-0.63
Processing	X <sub>3</sub>	0.68	-0.42	0	-0.48
Electric power supply	X <sub>4</sub>	0.39	-0.03	-0.17	-0.14
Water supply	X <sub>5</sub>	0.5	-0.43	0.21	-0.15
Construction	X <sub>6</sub>	0.51	0.03	0.04	0.31
Trade	X <sub>7</sub>	-0.6	-0.01	0.25	0.3
Transport and storage	X <sub>8</sub>	0.08	-0.16	0.08	-0.01
Hotels and catering	X <sub>9</sub>	-0.45	0.05	0.25	0.03
IT and communications	X <sub>10</sub>	-0.48	0.08	0.45	0.81
Finances	X <sub>11</sub>	-0.58	-0.33	0.28	-0.34
Real estate	X <sub>12</sub>	-0.61	0.26	0.37	0.76
Science	X <sub>13</sub>	-0.4	-0.26	0.04	-0.44
Administrative activities	X <sub>14</sub>	-0.62	-0.04	0.05	-0.12
Public administration	X <sub>15</sub>	0.01	0.22	0.21	0.86
Education	X <sub>16</sub>	0.32	0.55	0.49	0.83
Health care	X <sub>17</sub>	0.11	0.42	0.44	0.87
Culture	X <sub>18</sub>	-0.26	0.02	0.07	0.88
Other services	X <sub>19</sub>	-0.46	-0.05	0.29	0.39

Source: own compilation.

It means that the poverty rate in each regression model (Y) built for the region is explained by more than 50% by the change in GRP per capita (X) and the remaining share by the change in the factors we did not take into account. The value of R<sup>2</sup> more than 50% allows considering the constructed regression models acceptable for further research.

The coefficients of the linear regression equations ( $Y = 9.011225 - 0.000002 \times X + \varepsilon$ ;  $Y = 13.713853 - 0.000007 \times X + \varepsilon$ ;  $Y = 15.593363 - 0.000003 \times X + \varepsilon$ ;  $Y = 24.144921 - 0.000005 \times X + \varepsilon$ ) are statistically important at the significance level of  $\varepsilon = 0.01$ , the regressions themselves are reliable by Fisher criterion at the significance level of  $\varepsilon = 0.01$  and therefore, applicable for research and forecast.

In addition, we conducted a correlation analysis of the dependence of the poverty rate on the GRP components (types of economic activity) for each of the four clusters; in other words, on the

differences in economic status in terms of the economic importance of sectoral groups and their competitiveness (Tab. 4).

Analysis of the data in Table 4, which implies taking into account the closeness (strength) of the correlation between the poverty rate and GRP components, taking into account the well-known Chaddock table in the context of the constructed clusters (see Tab. 2), allows us not only to conclude that there is a noticeable or strong inverse relationship between the poverty rate and GRP components (types of economic activities) characteristic of the rent (export-raw material) model of economic growth (mining, agriculture, finance and banking, real estate, trade, administrative activities, etc.), but also to draw a realistic conclusion about the lack of proper distributional coherence of the Russian economy. In other words, despite the extreme simplicity, the model makes it possible to draw a realistic

conclusion about the lack of proper distributional coherence of the Russian economy.

**Priority government policy measures to improve the Russian welfare system and reduce large-scale poverty in the RF, taking into account its economy's capacity**

Undoubtedly, a radical change in the current situation in Russia with multidimensional poverty, determined by high social inequality, although it depends on many objective and subjective factors, but ultimately determined by the potential for sustainable (in the criteria of the global Agenda 2030) economic growth. The joint use of the effects of the latter and income redistribution can provide a fundamental solution to the problem of extreme poverty and increase the well-being of low-income groups of the Russian population.

In this context, without waiting for the completion of the special military operation, in our opinion, it is necessary to fundamentally improve the current welfare system in Russia, including radical measures to reduce the multidimensional poverty and based on the current capabilities of its economy.

Taking into account the paradoxes of the Russian welfare system (“rich country – poor population”; “poor – actively working citizens”) and the confirmed poverty features in the Russian Federation (underestimated official poverty line, which determines the chronic nature of extreme poverty; high regional income inequality, determining large-scale new poverty), based on the analysis and generalization of the best world practices, the works of leading domestic and foreign scientists in the subject area of scientific knowledge under consideration, as well as the available developments on the phenomenon of inequality and poverty (Kormishkina et al., 2021), we propose the following:

1) it is necessary to develop a new model of national poverty monitoring, the methodological basis

of which should be a national harmonized poverty line, obtained by combining various alternative poverty lines with relevant indicators and indicators, which is of fundamental importance for an objective assessment of the rate and profile of poverty in the country in order to form effective social support for poor and low-income households at different stages of their life cycle;

2) taking into account the prevalence of working-age population in the profile of Russian poverty and the associated paradox of “actively working but poor”, in order to eradicate this negative phenomenon, it is extremely important to bring the price of labor of employees in the Russian Federation in line with its standards in developed countries; it is of fundamental importance to accelerate the neo-industrial modernization of the Russian economy, creating the necessary conditions to overcome the previously mentioned “trap of low incomes and technology” and increase productivity;

3) a radical revision of the redistributive policy of the state is needed by increasing the incomes of the poor in order to address the growing “rich – poor” gap, for example, abolishing personal income tax for citizens living below the poverty line, accompanied by a gradual increase in the tax burden on super-income (up to 30–35% of monthly income); in addition, the construction of expensive housing, expensive hotels and retail chains unavailable to the middle class should be subject to increased taxation;

4) a transition from the current (predominantly passive) social protection system to its new development-oriented model (measures within the framework of the “new family policy”; expansion of the practice of contracting for the adaptation of able-bodied unemployed members of households, etc.) is required, which will increase the role of targeted programs in reducing the depth of poverty and social inequality in the country.

### Conclusion

Summarizing the above, we note that the results of the conducted research on the poverty phenomenon contribute to a certain increment of scientific knowledge in the following:

1) putting forward and theoretically substantiating the idea of the paradox of the welfare system that has developed in Russia, which consists in a significant excess of the real poverty rate compared to its threshold value against the background of high indicators of the total national wealth and economic potential of the country (“rich country of low-income people”) and requires rapid improvement of public relations, including the development of a set of radical measures to reduce extreme poverty, relying on the existing capabilities of the national economy;

2) theoretical justification (from the standpoint of the concepts of the “welfare state” and “development economy”) of the illegality of Russia’s rejection of the normative approach to determining the basic poverty line in 2021 (allows taking into account, along with monetary income, consumer spending in the real dynamics of the price ratio) in favor of only relative (44.2 Me), which destroys the mechanism transparent measurement of the subsistence minimum, underestimates the real poverty rate, gives it a chronic character and, ultimately, limits the possible growth rates of the economy;

3) construction of regression dependencies suitable for research and forecasting between the poverty rate and per capita GRP (taking into

account its sectoral structure) for Russia’s constitute entities, which not only confirm the presence of a noticeable and strong feedback between the poverty rate and GRP components (types of economic activity), characteristic of the rent-based (raw materials-exporting) model of economic growth established in Russia, but also reveal a noticeable interregional differentiation of per capita income within industries (types of economic activity), this indicates the lack of proper distributional connectivity of the Russian economy; clusters formed on the basis of such regression dependencies confirm the persistence of high regional income inequality as one of the key features of Russian poverty, which make multidimensional poverty in the Russian Federation chronic in its nature;

4) we propose the minimum necessary economic tools of the state policy in the field of assistance in reducing poverty in its extreme forms.

And it is worth noting the last thing. We are fully aware that the range of issues raised in this article is so complex and large-scale that it leaves little chance of developing final answers to them. It is necessary to take into account the incompleteness of the discussion on certain theoretical and methodological aspects of the phenomenon of poverty, for example, on a new model of its monitoring, on the universality and alternativeness of poverty lines, etc. In this regard, it is important to study in more depth the methodology of combining multiple alternative poverty lines, which is of fundamental importance in helping to reduce poverty in Russia.

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### Information about the Authors

Evgenii D. Kormishkin – Doctor of Sciences (Economics), Professor, professor of department, Ogarev Mordovia State University (68, Bolshevistskaya Street, Saransk, Republic of Mordovia, 430005, Russian Federation; e-mail: kormishkined@mail.ru)

Irina A. Ivanova – Candidate of Sciences (Economics), Associate Professor, deputy director of the economics institute, associate professor of department, Ogarev Mordovia State University (68, Bolshevistskaya Street, Saransk, Republic of Mordovia, 430005, Russian Federation; e-mail: ivia16@mail.ru)

Irina V. Moiseeva – Senior Lecturer, Ogarev Mordovia State University (68, Bolshevistskaya Street, Saransk, Republic of Mordovia, 430005, Russian Federation; e-mail: moira-22@mail.ru)

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