Poverty in the Russian Federation: possibilities and specifics of the use of the AROPE multi-criteria index in the poverty monitoring system of the Russian Federation

Marina A. Kartseva[1]

1 *RANEPA, Moscow, 119034, Russia*

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Abstract

The article presents a comparative analysis of the level and structure of poverty of the Russian population using two different concepts of poverty definition — the absolute income criterion currently used by Rosstat, and the AROPE indicator of poverty and social exclusion. The paper also attempts to assess how the change of the methodology for determining poverty can affect the existence of the poverty status of individuals. The study is carried out both at a national level and at a federal district level. The empirical basis of the paper is selective observation of income of the population and participation in social programmes, conducted by Rosstat in 2017.

The results show that in transition from the absolute income criterion to the multi-criteria AROPE index, the poverty level of the population of the Russian Federation significantly increases. The highest growth of poverty is among people over working age. The age structure of poverty also changes significantly. With AROPE, the proportion of older persons among the poor increases and the proportion of children decreases. It is also shown in the article that the transition from the current official methodology of poverty definition to the definition in accordance with AROPE's methodology can lead to loss of the poverty status by part of the population, which, in case of the official transition to using AROPE index as a criterion for receiving social support, can have a negative impact on their socio-economic situation. The obtained results vary significantly by federal districts of the Russian Federation.

Keywords

poverty, multicriteria poverty, AROPE, socially vulnerable categories, federal districts of the Russian Federation

JEL codes: I32, J13, J14

1. Introduction

Currently, the problem of poverty of the population is at the center of socio-political and scientific discussion in the Russian Federation. The fight against poverty is recognized as one of the priority directions of development of the Russian Federation (Decree of the President of the Russian Federation 2018). However, despite the measures taken by the Government, the problem of poverty is still relevant today. Thus, according to official statistics in 2018, the share of the poor in total population in Russia was 12.6%. At the same time this indicator varies significantly by age group. The most vulnerable age group is children between the ages of 0 and 15 – in 2017, one in four children (26.4%) lived in a poor household. Among persons older than the working age (men over 60 years and women over 55 years) poverty is the lowest – according to Rosstat data, only 3.3% of citizens of this age category were poor in 2017.

The current poverty monitoring system in Russia is based on the absolute income concept of poverty. According to Rosstat's methodology, a person is recognized as poor if his or her average per capita income does not exceed the officially established subsistence minimum (hereinafter referred to as SM). SM is the valuation of goods and services that a person needs to maintain health and life. It is worth noting that currently, the methodology for determining SM is subject to considerable criticism (Bobkov et al. 2019; Bobkov 2012; Zlenko 2018; Rzhanitsina and Soboleva 2012).

The key official indicator of poverty in the Russian Federation is the poverty level of the population, that is, the share of the population with incomes below the SM:

$$POV\_LEV = \frac{1}{N} \sum_{i=1}^{N} I\left(inc_i < subs\_lev_i^{reg}\right), \tag{1}$$

where POV_LEV is the poverty level of the population, inc_i is the average per capita income of the i-th individual, $subs\_lev_i^{reg}$ is the subsistence minimum of the i-th individual in the region reg, and N is the population size. This indicator is widely used as a target indicator of programs aimed at overcoming poverty in the Russian Federation. Absolute income poverty is also often used as a criterion for various benefits and other forms of social support.

Currently, monetary approaches to the definition of poverty are subject to considerable criticism in economic and sociological literature. The most critical issue is the use of monetary concepts in measuring poverty in developed countries. Initially, ideas about the inconsistency of the absolute monetary approach to the assessment of the poverty level with the development of Western society appeared in the middle of the twentieth century. A great contribution to the development of non-monetary concepts of poverty was made by British sociologist and economist P. Townsend. He believed that in the modern post-industrial society the issue of physical survival is no longer as acute as it was, for example, at the beginning of the century. Townsend suggested defining poverty as relative deprivation. According to the relative deprivation approach, a person in modern society is considered poor if he or she cannot afford a standard of living that is habitual in the surrounding society. At the same time, the standard of living refers to various aspects of human life – food, clothing, housing conditions, the possibility of participation in social life and much more. Townsend empirically showed that the absence of monetary poverty is not always a guarantee that a person does not experience deprivation (Abel-Smith and Townsend 1965; Townsend 1979, 1987, 1993, 2002). Economist and philosopher, Nobel Prize laureate, A. Sen, developing the ideas of non-monetary approaches to the definition of poverty, proposed the definition of non-monetary poverty on the basis of opportunities (Sen 1992, 1993, 1999). Under this concept, human well-being is determined by

his or her functionings and capabilities and not by any goods or money. In the mid-1990s, the concept of poverty based on social exclusion was developed in the economic literature. Social exclusion usually refers to such negative features as social isolation, inability to participate in public life, humiliation, lack of social guarantees, etc. (Wagle 2008).

The development of diverse approaches to the definition of poverty has led to the formation of a modern understanding of poverty as a complex multifactorial phenomenon. For the complex integrated measurement of poverty, a number of multidimensional poverty indices have been developed, aggregating information on the various aspects of individual poverty (e.g. Alkire and Foster 2011a, 2011b; Alkire and Santos 2013; Bellani 2013; Ravallion 2011). Multi-criteria poverty indices are now widely used in the practice of statistical agencies in developed countries, as well as in the practice of international organizations.

Russian statistics also face the problem of creating a comprehensive indicator of multidimensional poverty. The Federal State Statistics Service together with NRU HSE conducts active work in this field (Rosstat 2017). According to the results of a study conducted by Rosstat and HSE, one of the most advanced indices for use in Russia is «At risk of poverty and social exclusion» (abbreviated as AROPE) index. The index aggregates indicators of relative income poverty, substantial material deprivation and exclusion from the labor market. The AROPE indicator is used by official statistical bodies to monitor poverty in the EU (European Commission 2018). Also as the most advanced in terms of measuring multicriteria poverty in the Russian Federation, the AROPE index is noted in the article by Eliseeva and Raskina (2017). In Korchagina et al (2019), an attempt is made of empirical estimation of the AROPE poverty rate using Russian data. The study provided estimates of the AROPE poverty rate and its components in the Russian Federation at the national level.

The present study is devoted to the analysis of changes in the level and structure of poverty of the population of the Russian Federation in the transition from the official absolute income criterion of poverty to AROPE's index of risk of poverty and social exclusion. The focus of the work is on the most socially vulnerable groups of citizens of the Russian Federation – children and the elderly. The paper also examines the intersection of groups of the poor according to the absolute income criterion and the poor according to the AROPE criterion. Such analysis enables identifying a group of people who will lose the status of poor as a result of the methodological transition, assessing its size and structure. People in this group are at risk – if the methodology of poverty is changed, they may lose the right to certain types of social support, despite the low level of average per capita income. It is important that the study has been conducted not only at the national level but also at the level of federal districts.

2. Data

The empirical basis of the study is microdata of the Survey of Income and Program Participation conducted by Rosstat in 2017 (hereinafter – SIPP-2017). The main purpose of the survey is to collect detailed statistical information on the social and economic situation of the population, as well as information on the participation of citizens of the Russian Federation in various social programs. The sample unit of the survey is the household. Sampling is performed using a two-step random selection procedure. The survey collects information both on the household as a whole and on all individuals living in it.

The SIPP survey is conducted in the form of a personal interview with the respondent based on pre-prepared questionnaires. The questionnaires used for the survey contain a wide range

of questions concerning the socio-economic situation of the respondent and his or her household. The survey enables gathering data on all types of income of respondents and determines the total income of their households. Also, the survey data provide detailed information on the demographic structure of households, which enables calculating the average income of individuals as a simple quotient of the division of total income of households by the number of household members, and using various equivalence scales. It should be noted that microdata of the survey contain data on the income of respondents received by them in the year preceding the survey. Thus, data of the SIPP-2017 contain information on income for 2016.

Another key feature of the SIPP-2017 (compared, for example, to a similar survey conducted by Rosstat in 2018) is collection of detailed information on various types of deprivation experienced by a household. Thus, SIPP-2017 data provide a unique opportunity to study poverty in the Russian Federation using both monetary and non-monetary criteria. Moreover, using SIPP-2017 data, it is possible to construct multicriteria indicators of poverty of the population of the Russian Federation, aggregating monetary and non-monetary criteria of poverty. In particular, the survey data enable calculating the AROPE index for the Russian Federation, which is used in official statistics of EU countries. AROPE's methodology of indicator construction, as well as its adaptation to Russian data, is discussed in the next section of the article.

In 2017, the SIPP survey was conducted in all regions of the Russian Federation and had a unique coverage for this survey – 160 thousand households, in which 367 thousand people were interviewed. Taking into account the scope of the survey and its methodology, it can be concluded that the data of the SIPP-2017 represent not only the population of the Russian Federation as a whole, but also enable formulating conclusions on particular socio-demographic groups. The data of the SIPP-2017 are representative of the population of certain federal districts of the Russian Federation.

Thus, SIPP-2017 data provide a unique opportunity to conduct a comprehensive analysis of poverty of the population of the Russian Federation at a micro level, as well as the possibility of modelling the effects of changes in the statistics methodology in particular the consequences of transition from the absolute income concept of poverty to the AROPE multi-criteria index. The coverage and sample structure of the SIPP-2017 survey enable carrying out study both at the level of the population of the Russian Federation as a whole and at the level of federal districts, as well as at the level of certain age groups of the population.

3. Methodology of research

This section discusses the methodology of constructing AROPE's risk index of poverty and social exclusion, as well as the peculiarities of calculating this indicator for Russia using data of the SIPP-2017 survey.

3.1. AROPE index

As already noted, AROPE index for risk of poverty and social exclusion is a complex indicator aggregating three types of poverty of the population – relative income poverty, significant material deprivation, and exclusion from the labour market.

According to the international AROPE methodology, a person is recognized as poor by relative income criteria if his or her average per capita income is less than 60% of the median average per capita income of the population as a whole (or the analysed population group).

The average per capita income is calculated on the basis of the OECD equivalence scale, according to which the size of the household is determined by the weights of the following: 1 for the first adult; 0.5 for the second and subsequent adults (14 years and above); 0.3 for each child (0–13 years). Substantial material deprivation is determined if a person, due to lack of funds, experiences four out of nine deprivations fixed in the method (cannot repay debts under housing and utility services, credit; cannot spend at least one week of leave beyond the home; cannot afford food containing meat or equivalent at least every other day; cannot heat housing sufficiently; does not cope with unforeseen expenses; has no colour TV, washing machine, phone, private car). An individual is considered excluded from the labour market when living in a household where, during the previous year, the ratio of total time of employment (in months) of all members of his or her household aged between the ages of 18 and 59, to the sum of all possible time of employment (in months) was less than 0.2. The AROPE integrated risk index of poverty and social exclusion is built on the basis of the three components described above by means of a disjunction operation (logical addition):

$$AROPE = \frac{\sum_{i}^{N}\left(POV_{rel_i} = 1\right)OR\left(S\_DEP_i = 1\right)OR\left(WE_i = 1\right)}{N}, \qquad (2)$$

where POV_{rel_i} is the risk of individual income poverty, S_DEP_i is presence of substantial material deprivation, WE_i is exclusion from the labor market, N is population of the country/federal district/individual population group.

3.2. Calculation of the AROPE index in Russia using SIPP data

The emergence of the SIPP-2017 survey and the availability of its data gave the researchers a unique opportunity to build indices of multicriteria poverty and, in particular, the AROPE index for the Russian Federation. The features of building index components using SIPP-2017 microdata are discussed below.

Calculation of the AROPE relative poverty risk index on the basis of SIPP-2017 does not pose significant difficulties. The calculation is made on the basis of the data on the total monetary income of the household for 2016 (variable "money income – total", R_H_DOX-OD_DEN). Also in the SIPP-2017 database there is detailed information on the age composition of the household, which enables determining the equivalent number of household members according to the OECD scale and calculate disposable household income per capita, following the AROPE methodology. Further, the individual is considered to be at risk of income poverty if he or she lives in a household where disposable per capita income is below 60% of the median income of the country's population. When calculating income poverty risk at the federal district level, the average per capita income of an individual is compared to 60% of the median income of the population of that federal district. It should be noted that in order to ensure comparability of income at the interregional level, the income of the population has been adjusted to the regional subsistence minimum:

$$INC_{adj} = INC \star \frac{SM_{Russia}}{SM_{reg}}, \qquad (3)$$

where INC is the nominal income of the individual, SM_{reg} is the subsistence minimum of the population of the region, and the SM_{Russia} is the subsistence minimum of the population of the Russian Federation as a whole.

The second component of the AROPE poverty index is the existence of substantial material deprivation. A person is considered to be materially deprived if he or she experiences four out of nine deprivations fixed in the method. The SIPP-2017 survey contains the information necessary to determine seven of the nine deprivations, which are part of the international methodology for calculating the index. An exception are deprivations such as lack of ability to adequately heat housing and inability to cope with unforeseen expenses – information on these types of deprivation is not available in the SIPP-2017. The AROPE methodology was adapted in terms of calculation of these types of deprivation taking into account the available data. To calculate the index of material deprivation, the indicator of inability to cope with unforeseen expenses was replaced by a close indicator – the inability to pay for all the necessary daily payments. Houesholds, which during the survey noted that they could with great difficulty "make both ends meet", i.e. pay all the necessary daily bills, were defined as experiencing this deprivation. The second indicator, which reflects the lack of opportunity to adequately heat the housing, was decided not to be used, as the SIPP-2017 data do not contain information close in essence for this indicator. Moreover, the problem of housing heating in Russia is not as acute as in some European countries, due to the prevalence of central heating. Thus, the index of significant material deprivation on SIPP-2017 data is determined by the list of eight types of deprivation. A person is recognized as experiencing substantial material deprivation if he or she experiences four types of deprivation out of eight. Table 1 provides information on the SIPP-2017 data, which is used to determine the existence of individual deprivation included in the AROPE index; it indicates specific questions and variables.

The third component of the AROPE index is exclusion from the labour market. This indicator reflects the intensity of employment of working-age population. The SIPP-2017 survey contains the questions necessary for the formation of the corresponding indicator, namely questions 14.1 and 29.1 of Section 3. Question 14.1 "How many days in a month and how many hours on average per day did you have to work to receive such or similar monthly salary?" is asked to persons who stated that they were employed the previous year or had a gainful job, including various kinds of part-time work (at least within one week). Question 29.1 "How many days in a month and how many hours on average per day did you have to work to earn such monthly income (reward)?" – is asked to persons engaged in entrepreneurship. However, it should be noted that the relevant data are not published in the public domain, which makes it difficult to analyze the exclusion of the population of the Russian Federation from the labour market at the micro level. In other words, at present, a peculiarity of the application of the AROPE poverty criterion in the Russian Federation is the impossibility of measuring employment exclusion of a household. However, it can be assumed that failure to take into account exclusion from the labour market does not have a significant impact on the complex AROPE indicator in the realities of the Russian Federation. According to previous studies (Rosstat 2017; Korchagina et al. 2019) this phenomenon is not very widespread in the Russian Federation – only one in forty residents of the Russian Federation experience exclusion from the labour market.

Thus, the AROPE index using available SIPP-2017 data, is calculated as follows:

$$\text{AROPE} = \frac{\sum_{i}^{N}\left(\left(\text{POV}_{\text{rel}_i} = 1\right) \text{OR}\left(\text{S\_DEP}_i = 1\right)\right)}{N}, \tag{4}$$

where $\text{POV}_{\text{rel}_i}$ is the individual indicator of relative income poverty, S_DEP_i is presence of the individual significant material deprivation, and N is the number of population of the country or a separate federal district.

Table 1. SIPP-2017 data used to determine the existence of individual deprivation included in the AROPE index.

Deprivation (AROPE methodology)	SIPP-2017 data used for the formation of components of the index of material deprivation
It is not possible to repay debts for housing, utilities, loans	Frequency of debt for housing and utility services due to lack of funds (it happened once; it happened twice or more times; no, we do not have such payments) – variable H07_06_02 Frequency of debt on rent or mortgage on the main housing due to lack of funds (it happened once; it happened twice or more times; no, we do not have such payments) – variable H07_06_01
It is not possible to spend at least one week of vacation away from home every year	Ability to spend one week off every year (yes/no) – variable H07_07_06
Can not afford food containing meat, chicken, fish (or vegetarian equivalent) at least every other day	Can afford food containing meat, chicken, fish (or vegetarian equivalent) at least every other day (yes/no) – variable H07_07_01
Can not afford adequate heating of the home	No equivalent, this deprivation is not used in the calculation of material deprivation in the Russian Federation
Can not cope with unforeseen expenses	Replacement: The ability of the household to pay all the necessary daily payments (with great difficulty, with difficulty, with little difficulty, relatively easily, easily, very easily) – variable H07_03
It is not possible to purchase a phone	Posession of a phone (yes/no) – variable H07_05_02_01 Reason for not possessing a phone (including would like to, but we cannot afford one due to lack of funds) – variable H07_05_02_02
It is not possible to purchase a colour TV	Possession of colour TV (Yes/No) – variable H07_05_01_01 The reason for not possessing colour TV (including we would like to, but we cannot afford one due to lack of funds) is variable H07_05_01_02
It is not possible to purchase a washing machine	Possession of a washing machine (yes/no) – variable H07_05_05_01 The reason for not possessing a washing machine (including we would like to, but we cannot afford one due to lack of funds) – variable H07_05_05_02
It is not possible to purchase a private car	Possession of a personal car (yes/no) – variable H07_05_06_01 The reason for not possessing a private car (including we would like to, but we cannot afford one due to lack of funds) – variable H07_05_06_02

4. Poverty in the Russian Federation: the absolute income criterion and the AROPE criterion

This section presents the statistical analysis of the impact of the transition from the absolute income concept of poverty definition used by the official statistical service of the Russian Federation nowadays, to the multi-criteria AROPE index of poverty, on the main indicators of the economic situation of citizens of the Russian Federation. Changes in the level and structure of poverty, as well as possible risks associated with the loss of a part of the population's status of poverty when changing the methodology of its measurement, are considered.

4.1. Poverty rate

According to official statistics, in 2016 13.1% of the population of the Russian Federation were recognized as poor according to the absolute income criterion. In other words, one in eight Russian citizens had incomes below the subsistence minimum. However, the official poverty rate varied significantly in the federal districts of the Russian Federation – from 7.3% in the Central Federal District to 28.8% in the North Caucasian Federal District (Table 2). For illustrative purposes, the official indicators of the poverty level in the federal districts of the Russian Federation are presented in Fig. 1.

The level of absolute income poverty in the Russian Federation differs greatly by age groups. The highest level of poverty in 2016 in the Russian Federation was observed among children aged between 0 and 15 – over a quarter of children (27.0%) lived in

Table 2. Absolute income poverty level in Russia and its federal districts, 2016, percentage of the population

	RF	Central Federal District	Northwestern Federal District	Volga Federal District	Ural Federal District	Siberian Federal District	Far Eastern Federal District	Southern Federal District	North Caucasian Federal District
Share of population	13.1%	7.3%	7.9%	12.5%	13.7%	17.8%	15.5%	16.4%	28.8%
Rank of Fed. district by poverty level		1	2	3	4	7	5	6	8

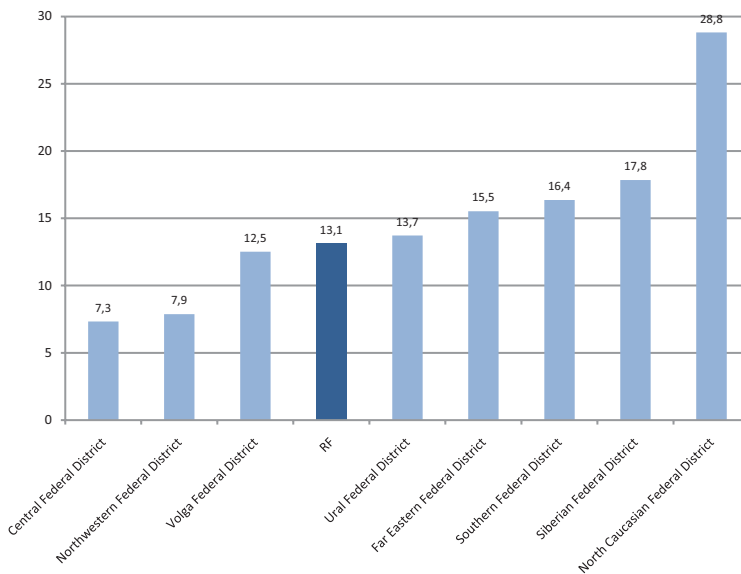**Source:** Estimation based on SIPP-2017 data.

Figure 1. Absolute income poverty level in Russia and its federal districts, 2016, percentage of the population. **Source:** Estimation based on SIPP-2017 data.

families with an average per capita income below the subsistence minimum. Among the working-age population the same indicator was 12.7%. People over working age (women 55 years and over, men 60 years and over) are the least likely to fall into poverty (3.9%), as determined by the official criterion. It should be noted that this situation is typical for all federal districts of the Russian Federation – in any of them the minimum level of absolute income poverty is observed for persons older than working age, and maximum for children (Fig. 2). For all age groups, the highest level of poverty is found in the North Caucasian Federal District and the lowest in the Central Federal District. For example, in the North Caucasian Federal District the proportion of poor children is 44.7%, and in the Central Federal District only 16.8%. In the Central Federal District only 2.2% of persons older than working age have incomes below the subsistence minimum, and in the North Caucasian Federal District the share of the poor among this age group is six times higher – 13.5%.
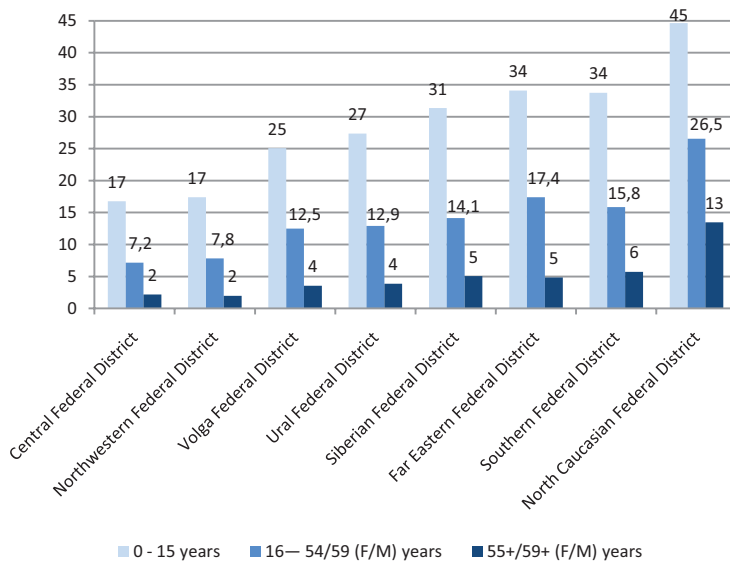

Figure 2. Level of absolute income poverty in the federal districts of the Russian Federation by age groups, 2016, percentage of the population. **Source:** Estimation based on SIPP-2017 data.

When moving from the absolute income poverty indicator to the measurement of poverty with the use of the AROPE index, the poverty level increases significantly both in the Russian Federation as a whole and in each federal district (Table 3 and Fig. 3). According to the calculations of 2016, a quarter of the population of the Russian Federation (25.4%) experienced poverty according to the AROPE criterion. This increase in the level of poverty, when changing the methodology, is not surprising and is mainly due to the shift from absolute to relative concepts of income poverty measurement. Moreover, the AROPE poverty index takes into account not only income poverty, but also deprivation poverty. However, according to previous studies, the contribution of deprivation poverty to the overall AROPE index in Russia is relatively small (Korchagina et al. 2019; Maleva et al. 2019).

Table 3. Poverty rate according to the AROPE criterion in federal districts of the Russian Federation by age groups, 2016, percentage of population.

	RF	Central Federal District	North-western Federal District	Volga Federal District	Ural Federal District	Siberian Federal District	Far Eastern Federal District	Southern Federal District	North Caucasian Federal District
Share of population	25.4%	28.4%	19.8%	52.2%	34.9%	46.0%	15.7%	48.4%	61.9%
Rank of the federal district according to the poverty level		3	2	7	4	5	1	6	8

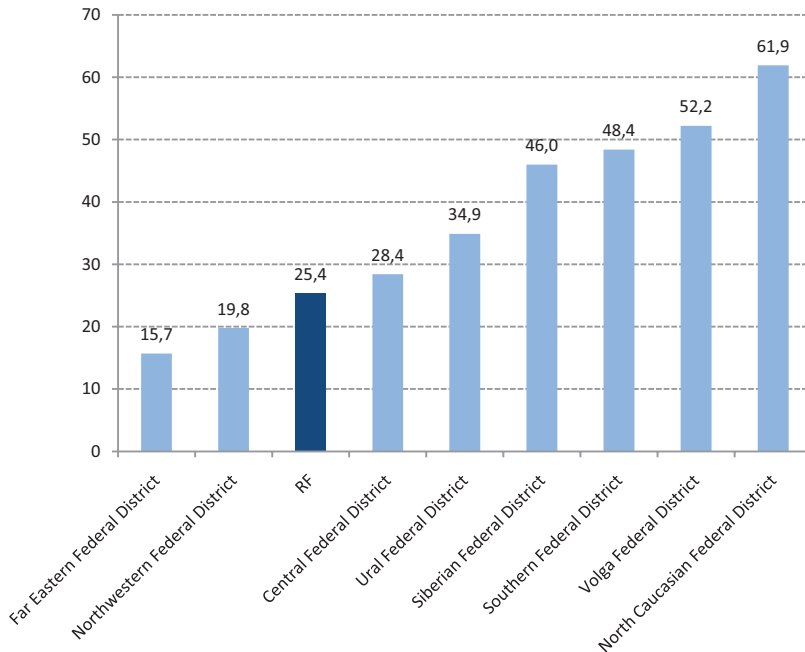**Source:** Estimation based on SIPP-2017 data.

Figure 3. Poverty rate according to the AROPE criterion in federal districts of the Russian Federation by age groups, 2016, percentage of population. **Source:** Estimation based on SIPP-2017 data.

As well as the indicator of absolute income poverty, the AROPE level of poverty also varies significantly across federal districts of the Russian Federation – from 15.7% in the Far East Federal District to 61.9% in the North Caucasian Federal District. It should be emphasized that when the poverty calculation methodology changes, the ranking of federal districts by the proportion of the poor population also changes. Thus, in the Far Eastern Federal District there is a relatively high level of absolute income poverty (ranked 5), but

the level of poverty according to the AROPE criterion in the Far Eastern Federal District is minimal among all federal districts (ranked 1). Also, when switching to the AROPE criterion the relative rank of the Siberian Federal District improves by two positions. The rating of the Volga Federal District, on the contrary, significantly reduces –according to the absolute income criterion the Volga Federal District is ranked 3, however, according to AROPE this district is ranked 7, i.e. penultimate. The rating of the Central Federal District is also reduced (by two positions). The position of the Ural Federal District, the North-western Federal District, the Southern Federal District and the North Caucasian Federal District remains unchanged.

In transition to AROPE's multi-criteria indicator of poverty, the proportion of the poor increases in all age groups considered (Fig. 4). The level of poverty according to the AROPE criterion exceeds the level of absolute income poverty by 1.3 times for children and 1.7 times for the working-age population. The greatest increase in the level of poverty with the change of methodology is in persons older than the working age – by 7.2 times. However, on average in Russia children are still the most vulnerable group – 34.5% of children are poor according to the AROPE index, while a similar indicator for the work-ing-age population and for of the population over the working age is 21.4% and 27.9% respectively.

Interestingly, at the federal district level, the AROPE poverty rate among children is gen-erally comparable to that of those over working age. An exception is the Southern Federal District and North Caucasian Federal District, where the level of multicriteria child poverty exceeds the poverty level of pensioners by 8-10 p.p. Thus, when using AROPE's poverty indicator older persons turn to be not the most protected category of citizens. Moreover, at the district level, they are as vulnerable as children.
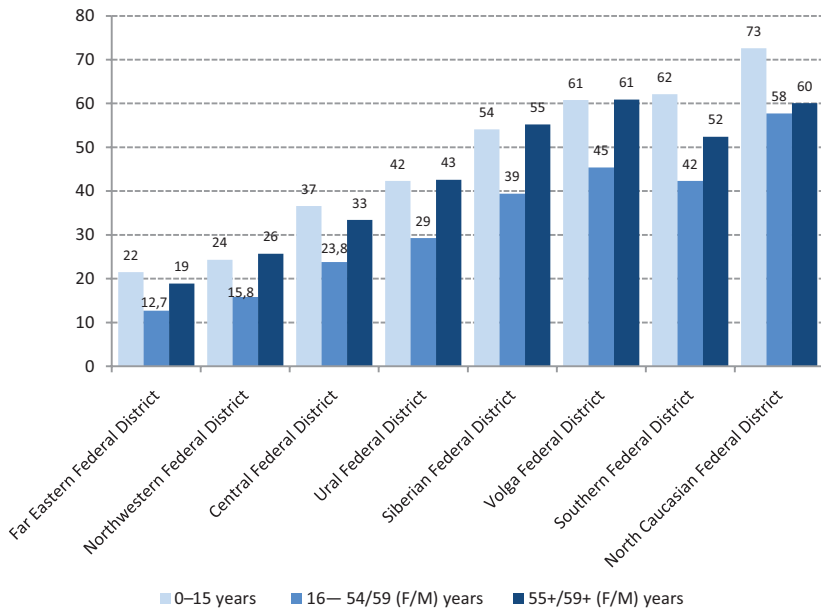

Figure 4. Poverty rate according to the AROPE criterion in federal districts of the Russian Federation by age groups, 2016, percentage of population. **Source:** Estimation based on SIPP-2017 data.

4.2. Age structure of the poor people

Poverty is certainly the most important indicator of the social and economic situation of the population. In Russia, it is a key indicator of the effectiveness of social policy. However, formation of social policies is based not only on the scaly of poverty but also on socio-demographic structure of the poor. Analysis of the socio-demographic composition of the poor allows forming a profile of poverty and understand main drivers of the risk of poverty. This section discusses the age profiles of the poor population of the Russian Federation when using different approaches to the definition of poverty.

The calculations showed that over half (55.1%) of the poor according to the official absolute income criterion are people of working age. Children from 0 to 15 years account for 37.5% of citizens with incomes below the subsistence minimum. The proportion of pensioners among the poor according to the absolute income criterion is relatively small, accounting for only 7.4%. At the federal district level, the age structure of the poor is similar (Fig. 5). The proportion of the working-age population among the poor ranges from 52.9% in the North Caucasian Federal District to 57.4% in the Northwestern Federal District, the share of children – from 36.1% in the Southern Federal District to 39.6% in the Ural Federal District. Pensioners are the least represented among the poor via the absolute income criterion in all federal districts without exception (from 6.2% in the Siberian Federal District to 9.1% in the Southern Federal District).

When the AROPE multi-criteria index of poverty is used, the age structure of the poor in the Russian Federation changes – among the poor the proportion of pensioners increases by 3.7 times (up to 27.2%), while the share of working-age population decreases (to 48.1%) and children (to 24.7%) (Figure 6). This trend is true for all federal districts. When using a multi-criteria definition of poverty, the proportion of persons older than working age among the poor in seven federal districts out of eight is about 30% (26.2% – 33.7%, depending on the of the federal district) and exceeds the proportion of children
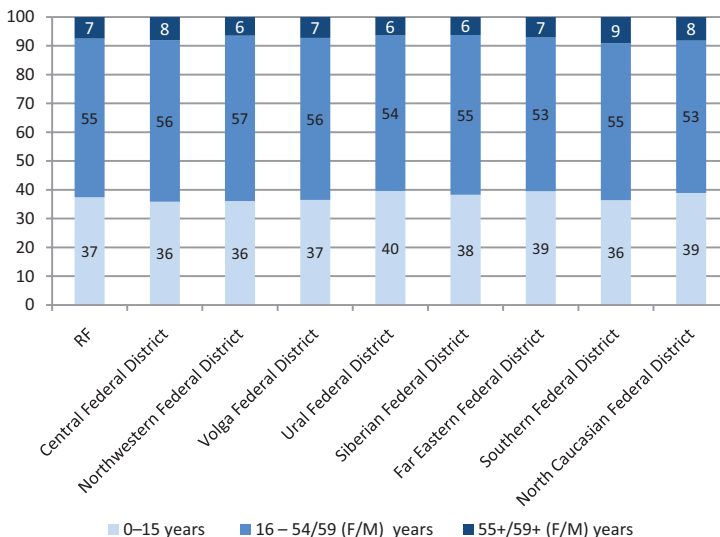

Figure 5. Age structure of the poor population (absolute income criterion) in the Russian Federation and its federal districts, 2016, as a percentage of the poor population. **Source:** Estimation based on SIPP-2017 data.
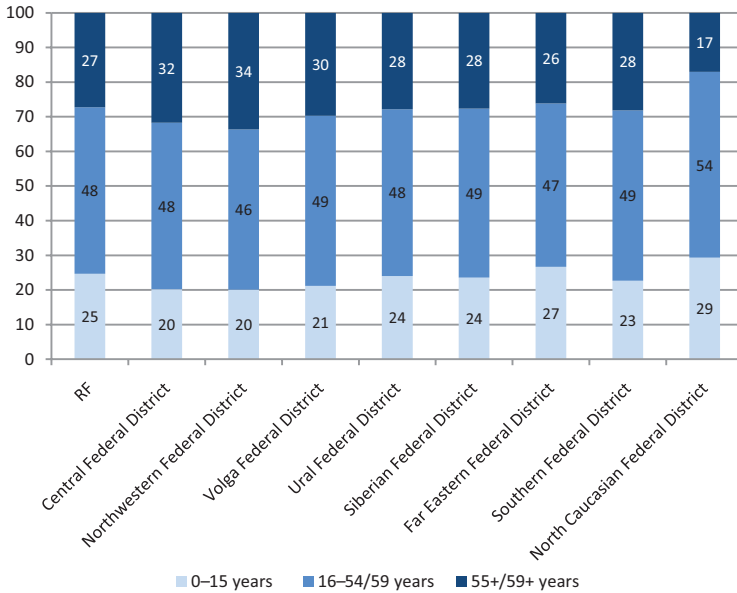
Figure 6. Age structure of poor population (AROPE criterion) in Russia and its federal districts, 2016, as a percentage of poor population. **Source:** Estimation based on SIPP-2017 data.

(20.1% to 24.0%). In the North Caucasian Federal District, the share of pensioners among the poor is also increasing in comparison with other federal districts, but to a much smaller extent – only to 17.1%. The proportion of pensioners among the poor according to the AROPE criterion in the North Caucasian Federal District is the lowest among all federal districts. At the same time, the proportion of children among the poor in the use of the multi-criteria index in the North Caucasian Federal District decreased to 29.2% (the highest among federal districts). Thus, in the North Caucasian Federal District, children are more represented among the poor according to the AROPE criterion than in other districts. It is interesting to note that in the North Caucasian Federal District the change in the structure of the poor is mainly due to the redistribution of poverty shares between children and pensioners, while the share of the working-age population remains almost unchanged.

4.3. Officially estimated poor and poor according to the AROPE criteria: intersection of the groups

The question of how the group of the poor calculated according to the absolute income criterion currently used in the official statistics of the Russian Federation intersects with the group of the poor calculated according to the AROPE criterion, is one of the key ones in discussing the possibility of moving from one concept of poverty to another. At the national level, the vast majority (90%) of citizens with incomes below the subsistence minimum are also poor according to the multi-criteria concept of poverty (Fig. 7). However, 10% of the citizens who are poor according to the absolute income criterion (1.3% of the population of the Russian Federation) are not poor according to the AROPE criterion. This observation is

largely explained by the fact that the AROPE methodology uses an equivalence scale to calculate per capita income in assessing relative income poverty, while in the framework of the official methodology of Rosstat, scaling is not applied. It is these 1.3% of the population who represent the most vulnerable group in the transition from the absolute income criterion of poverty to the criterion of AROPE, as these people may fall out of the focus of social policy and lose eligibility for assistance. Thus, when planning the methodological transition in poverty estimation special social guarantees for this group should be developed to mitigate the impact of the transition.

The proportion of the poor in terms of absolute income, who are at risk of loss of social support due to changes in the definition of poverty varies considerably by age group (Table 4). Among pensioners who are poor according to official criteria, only 7.6% will lose their status (0.3% of all Russian pensioners). Among children and working-age citizens, about one in ten will lose the status of poor in the transition to the AROPE concept – 11.5% of poor children and 9.5% of poor working-age citizens will lose their status at transition to the AROPE methodology (3.1% of the total children's population of the Russian Federation and 1.2% of citizens of working age). Given the prevalence of absolute income poverty criterion in the age groups under consideration, it can be assumed that when the definition of poverty is changed, the most vulnerable category of citizens are children aged between 0 and 15 – for them the risk of losing the status of poverty will be maximal.

The level of risk of loss of social support when changing the concept of poverty also differs by federal districts of the Russian Federation (Table 4). When switching to the AROPE methodology, the status of poor will be lost by 0.1% – 0.2% of the population in the Southern Federal District, the Volga Federal District and the Siberian Federal District, 0.6% – 0.9% in the Central Federal District, the Northwestern Federal District and the North Caucasian Federal District, 1.2% in the Ural Federal District. Such a problem will mostly be expressed in the Far Eastern Federal District – there 5,4% of the total population (a third of the poor population) will lose the opportunity to receive social support, which was based on the absolute criterion of poverty. This feature of the Far Eastern Federal District is most likely determined by the socio-demographic structure of the population of the Far Eastern Federal District, as well as the specificity of income distribution in the district, and needs additional study.
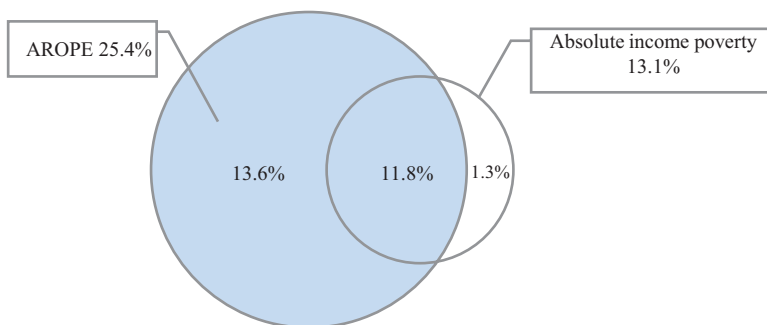

Figure 7. The poor according to the absolute income criterion and the poor according to the AROPE criterion in the Russian Federation – intersection of groups, 2016, percentage of population. **Source:** Estimation based on SIPP-2017 data.

Table 4. The poor according to the absolute income criterion and the poor according to the AROPE criterion in the Russian Federation and in its federal districts by age groups – intersection of groups, 2016, as a percentage of the population

Poverty criterion	RF	Central Federal District	North-western Federal District	Volga Federal District	Ural Federal District	Siberian Federal District	Far Eastern Federal District	South-ern Federal District	North Cau-casian Federal District
Total population									
Poor by both criteria	11.8%	6.7%	7.3%	12.3%	12.5%	17.6%	10.1%	16.2%	27.9%
Poor only by the absolute income criterion	1.3%	0.6%	0.6%	0.2%	1.2%	0.2%	5.4%	0.1%	0.9%
Poor only by the AROPE criteria	13.6%	21.7%	12.5%	39.9%	22.4%	28.4%	5.6%	32.2%	34.0%
Population under working age									
Poor by both criteria	23.9%	15.4%	15.7%	24.7%	24.4%	33.7%	18.9%	33.4%	43.2%
Poor only by the absolute income criterion	3.1%	1.3%	1.7%	0.4%	3.0%	0.4%	12.5%	0.3%	1.5%
Poor only by the AROPE criteria	10,6%	21,2%	8.6%	36.1%	17.9%	20,3%	2.6%	28.7%	29.4%
Population of working age									
Poor by both criteria	11.4%	6.5%	7.4%	12.3%	11.9%	17.2%	9.4%	15.7%	25.7%
Poor only by the absolute income criterion	1.2%	0.7%	0.5%	0.2%	1.0%	0.2%	4.7%	0.1%	0.8%
Poor only by the AROPE criteria	9.9%	17.2%	8.5%	33.1%	17.4%	22.3%	3.2%	26.6%	32.0%
Population over working age									
Poor by both criteria	3.6%	2.0%	1.9%	3.4%	3.6%	4.8%	4.0%	5.6%	13.2%
Poor only by the absolute income criterion	0.3%	0.2%	0.1%	0.1%	0.3%	0.0%	1.0%	0.1%	0.3%
Poor only by the AROPE criteria	24.3%	31.5%	23.8%	57.5%	39.1%	50.4%	14.9%	46.8%	47.0%

Source: Estimation based on SIPP-2017 data.

Like on average in the Russian Federation, children aged between 0 and 15 will be the most vulnerable category of citizens in the transition to the multicriteria methodology of definition of poverty in all federal districts. In the Southern Federal District and in the Siberian Federal District only a small part of the children's population will lose the status of the poor – 0.3% – 0.4%. In the Central Federal District, Northwestern Federal District, North Caucasian Federal District this indicator is within 1.3% – 3.0%. In the Far Eastern Federal District, 12.5% of children aged between 0 and 15 (39.7% of children with incomes below the subsistence level) will lose the status of poor when transferring to the AROPE index.

In all federal districts, citizens above working age face the least risk of losing social support when changing the methodology for determining poverty. Thus, in the Siberian Federal District almost none of the poor according to the absolute income criterion of pensioners will lose the status of poor when switching to the AROPE criterion. In the Central Federal District, the Northwestern Federal District, the Volga Federal District, the Ural Federal District, the Southern Federal District and the North Caucasian Federal District, the status of poverty will be lost by 0.1% – 0.3% of all pensioners living in these districts. In the Far Eastern Federal Okrug, changing the concept of poverty will lead to the loss of the poverty status of 1% of the population older than the working age (20% of the poor will lose the status which they have according to the absolute income criterion).

In all federal districts, except the Far Eastern Federal District, among the working-age population, the status of poverty will be lost by between 0.1% and 1% of the total population of this age category when changing the methodology. In the Far Eastern Federal District, 4.7% of the population of this age group will be deprived of the status of poor (one third of the poor according to the absolute income criterion). Thus, when developing proposals for modernizing the official concept of poverty and making appropriate changes in social policy, it is necessary to take into account the specificities of the federal districts. Special attention should be paid to the situation in the Far East Federal District.

5. Conclusions

In this paper, by means of statistical comparisons, changes in the level and structure of poverty as a result of switching from the absolute income approach to the definition of poverty used in Russian statistics to the AROPE poverty criterion applied in official statistics of the EU countries were analyzed. The results of the study showed that using the multi-criteria AROPE index the proportion of poor population in the Russian Federation increases by almost twice – according to the current methodology of Rosstat one in eight Russians (13.1%) is recognized as poor, while according to the AROPE methodology one in four citizens of the Russian Federation is poor (25.4%) (as of 2016). This increase in poverty is mainly due to the shift from an absolute to a relative approach to measuring poverty. Poverty rate is increasing in almost all federal districts. As a result of the change in the methodology for determining poverty, the poverty rate increases most in the Volga Federal District and the Central Federal District, and to the smallest extent in the North Caucasian Federal District. In Far Eastern Federal District, the proportion of poor people is almost unchanged.

The response of the poverty level to a change in the measurement of poverty varies considerably for different age groups. For persons older than the working age, the AROPE poverty level is 7 times higher than the official poverty level. The poverty rate also increases among persons of working age and among children, as the methodology changes, but the

scale of the increase is much smaller (1.3 and 1.7 times respectively). It should be noted that on average in the Russian Federation children are the most vulnerable category of citizens regardless of the approach used to define poverty – the risk of poverty for children aged between 0 and 15 exceeds the same rate in other age groups. At the federal district level, the poverty rate when switched to the AROPE indicator, also increases for all age groups. All federal districts demonstrate proximity of poverty rates for children and pensioners. An exception are the Southern Federal District and North Caucasian Federal District, where the poverty rate among children is still much higher.

The transition to poverty measurement according to the AROPE methodology also significantly changes the age structure of the poor. Among the poor there is a significant increase in the proportion of persons older than the working age. By contrast, the proportion of children among the poor is declining. Moreover, both at the level of the Russian Federation as a whole and at the level of most federal districts, the proportion of pensioners among the poor is higher than or comparable to that of children. An exception is the North Caucasian Federal District – there, when using the AROPE index, the number of poor children still exceeds the number of poor pensioners.

The shift to the alternative definition of poverty poses the question of changing the status of poverty for persons who have been defined as poor under the absolute income criterion. This question is acute, as it is about the possible loss of the right to receive social support (in case of the change of status). The study showed that, at the national level, the vast majority of the poor would not change their status when moving to a multidimensional poverty index. Only 1.3% of the population will be at risk. However, it should be emphasized that this figure varies considerably by age group and by federal districts. The greatest risk of losing the status of poverty in shifting to the AROPE indicator is in the group of children aged between 0 and 15: 3.1% of children will lose the status of poor. Among the federal districts, the methodological transition will most affect the residents of the Far Eastern Federal District: there the risk group will include 5.4% of the population of the federal district.

Thus, when moving from the absolute income criterion of poverty, which is based on the subsistence minimum, traditional for Russian statistics, to the multi-criteria AROPE index, which aggregates relative income and deprivation poverty, the poverty level and age structure of the poor population significantly change. At the same time, the changes have significant territorial specificity.

It should be noted that at present the feasibility of changing the criterion of social support from the absolute income poverty indicator to the multi-criteria AROPE poverty indicator causes many questions (from the need to establish an appropriate system of accounting for the deprivations experienced by citizens to the introduction of appropriate changes in the scope and measures of social policy). In the contemporary literature, the most promising approach to change the main official indicator of poverty in the Russian Federation, which is the basis of social policy, is considered to change the approach to definition of the poverty line within the frames of the existing absolute income concept of poverty measurement. For example, in the paper of Bobkov et al. (2019) it is proposed to replace the existing subsistence minimum concept of with the concept of a socially acceptable consumer basket defined by the regulatory method for the extended list of population groups. Rzhanitsina in her study (2019) proposes to replace subsistence minimum for the working-age population with a standard of economic sustainability, the size of which varies depending on the demographic composition of the household. Thus, at this stage, the introduction of multidimensional indicators of poverty in the official statistics of the Russian Federation should

go not on the way of abandoning the previous indicators of poverty and replacing them with multi-criteria indexes, but rather by extending the system of poverty monitoring indicators by including multidimensional indices. Multidimensional poverty indicators can provide policymakers with valuable information on the scale and depth of various types of deprivation among Russian citizens. The use of multi-criteria approaches to the definition of poverty will help to shape more effective targeted social policy measures. Also, the use of multidimensional indicators of poverty (in particular the AROPE index) in the official statistics of the Russian Federation will allow to draw cross-country comparisons. It should be emphasized that in improving the poverty monitoring system, it is critical to maintain indicators of absolute income poverty based on subsistence minimum criterion. This will allow monitoring of dynamic changes in poverty indicators and monitoring of current social support measures implemented.

It should also be noted that when planning any methodological changes in the definition of poverty, it is necessary to take into account that the changes introduced could result in following changes in coverage and focus of social policy. Such changes should be additionally analyzed when developing the methodological modifications which can lead to the changes in criteria for receiving social support. Particular attention should be paid to those groups who would lose the right to receive social support when moving from one concept of poverty to another. Special support measures should be developed for them to mitigate the effects of transition.

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Information about the author:

■ Kartseva Marina Anatolyevna, Senior Researcher at the Institute for Social Analysis and Forecasting of the Russian Presidential Academy of National Economy and Public Administration. E-mail: mkartseva@mail.ru