

ISMGE 2020**II International Scientific and Practical conference "Individual and Society in the Modern Geopolitical Environment"****ESTIMATION OF RELATIVE POVERTY IN RUSSIAN REGIONS USING EQUIVALENCE SCALES**

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Abstract

Poverty estimation by traditional statistical methods has a number of limitations. It doesn't take into account economies of scale in estimating household consumption. Another limitation is connected with the absolute poverty line used by most countries in transition, including Russia. An alternative to avoiding these limitations is to use the concept of relative poverty and equivalence scales for estimating income per capita. The author used the relative concept of poverty for the exact definition of the poorest households that cannot get out of poverty on their own in Russian regions. All regions are distributed among three groups ("leading regions", "middle regions", "regions outsiders") due to the percentage of poor households and poor individuals besides the relative poverty line. Distribution of households according to relative poverty outlined the main differences of regions in poverty profile. In the leading regions, low poverty rates are combined with high employment of poor household members. Also, in these regions there are more poor households with disabled people and non-working elderly people compared to two other groups of regions. In the regions-outside the situation is the opposite then in leading regions. The results of high employment rates in poor households confirm the conclusions that one of the main causes of relative poverty in all regions is not only unemployment but also "bad" jobs, with insufficient wages and income concealment. It can help in the development of social programs targeting the most vulnerable groups of society.

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Keywords: Income, household, equivalence scale, region, relative poverty, Russia.

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1. Introduction

Poverty in Russia has acquired enormous proportions. More than 12% of the population has income below the subsistence minimum. Every fourth child lives in a poor family. The minimum wage and the subsistence minimum are only about 200 dollars. Real incomes fall for the sixth year since 2014. Sociological studies of recent years put poverty in the first place in the list of problems that concern citizens.

Russian government declared the goal of a two-fold reduction in poverty in the country by 2024, setting itself to reduce poverty to 6.6% (target calculated from 2017). According to the results of 2019, the number of Russians living on an income below the subsistence minimum amounted to 18.1 million people, or 12.3% of the population, follows from the data of the Federal State Statistics Service. At the end of 2018, 18.4 million people or 12.6% of the population, lived below the poverty line. Thus, the poverty level in Russia in annual terms decreased by 0.3 percentage points. However, according to the government's plan, in order to achieve the national goal from the presidential decree in May, the poverty level had to be reduced to 12%.

Poverty is unevenly distributed throughout Russia. In 15 regions (mostly high-income), the share of the poor is less than ten percent. The first ten regions are 2.5 times ahead of the last ten regions in terms of income, taking into account the level of prices in the regions. The top ten regions include the Yamalo-Nenets Autonomous Okrug, the Nenets Autonomous Okrug, the Chukotka Autonomous Okrug, Magadan Oblast, the Khanty-Mansi Autonomous Okrug - Yugra, Sakhalin Oblast, City Moscow, Moscow Oblast, City St. Petersburg and the Republic of Tatarstan. The last ten regions include Tyva, Altai Republic, Kalmykia, Karachay-Cherkessia, Ingushetia, the Jewish Autonomous Region, Kurgan Region, Chuvashia, Mari El and Crimea.

2. Problem Statement

Poverty estimation by traditional statistical methods has a number of limitations. It doesn't take into account economies of scale in estimating household consumption. Another limitation is connected with the absolute poverty line used by most countries in transition, including Russia. An alternative to avoiding these limitations is to use the concept of relative poverty and equivalence scales for estimating income per capita. This approach was used by author for measuring equivalent income (Sadyrtidinov et al., 2017) and chronic poor in Russia (Sadyrtidinov et al., 2019).

There is a set of papers studying relative poverty in Russia. Menchini and Redmond highlight the usefulness of relative poverty measures that effectively identify children at risk of exclusion in even the poorest countries in the countries of Eastern Europe (including Russia) and Central Asia. They also argue that household consumption is a good indicator of child poverty and deprivation in the region and that relative poverty measures should be more widely used in monitoring global targets for poverty reduction (Menchini & Redmond, 2009).

Slobodenyuk and Anikin demonstrate that the relative approach to poverty is applicable in Russia. They found out that the relative poverty thresholds set at 0.5 and 0.75 medians per capita family income identify quite different groups of the poor. The threshold of 0.5 median income identifies the poverty of

the unemployed workforce, the threshold of 0.75 median income - the poverty of the elderly who are not considered poor by the absolute approach. This study indicates "bad" jobs as the main cause of the relative deep poverty of the working population (Slobodenyuk & Anikin, 2018).

Kolosnitsyna and Philippova estimate the benefits' impact on the poverty of families with children using the concepts of absolute, relative and subjective poverty. The results show that the system of child benefits all in all reduce the risk of the absolute and relative poverty of the households. However, the study confirms the low effectiveness of the child benefits system in Russia and indicates a need for improving its targeting (Kolosnitsyna & Philippova, 2017).

Mareeva and Tikhonova in their paper explore the changes in public perceptions of poverty and inequality in Russia. The study reveals that changes in public perceptions of poverty and inequality in Russia largely mirror the actual trends pertaining to these phenomena. Although decreasing poverty, and its changing causes, has made the problem itself of lesser concern to Russians, the diminishing concern about poverty has been replaced by growing concern regarding increasing inequalities (Mareeva & Tikhonova, 2016).

In another study cause of poverty in Russia is identified as a problem of excessively high inequality. Its scope can't be radically reduced in the short term without a rapid reduction of inequality. The author concludes that it is essential to formulate pro-poor policies along with growth-enhancing policies in order to alleviate both absolute and relative poverty in Russia (Rudenko, 2017).

Malkina developed the multifactor econometric models estimating interrelationships of normal and excessive inequalities with a number of variables, including real income per capita. She revealed that in regions with a higher level of normal inequality and a lower level of excessive inequality there are on average better the following indicators: 1) the quality of human capital (the state of health and education); 2) the standard of living (some indicators of population dynamics, the structure of consumer spending, the state of the legal environment, culture, recreation and tourism); 3) the welfare of the population (housing, durable goods, pure real savings and free time) (Malkina, 2017).

Therefore, the scientific problem to be solved in this paper is using the relative concept of poverty for the exact definition of the poorest households that cannot get out of poverty on their own in Russian regions. Distribution of households according to relative poverty may outline the main differences of regions in poverty profile. It can help in the development of social programs targeting the most vulnerable groups of society.

3. Research Questions

In this paper author studies the distribution of households according to the relative poverty line and identifying main differences between Russian regions in poverty profile. Research questions to be answered are as follows.

1. What is the relationship between the employment of household members and the probability of belonging to poor in Russian regions?
2. Do Russian regions differ in terms of relative poverty?

4. Purpose of the Study

Working on the problem of poverty different authors study the causes, the extent of poverty in Russian regions, as well as the methods of its assessment. Ravallion and Lokshin study the determinants of peoples' perceptions of their economic welfare. While income is a highly significant predictor, subjective economic welfare is influenced by many other factors including health, education, employment, assets, relative income in the area of residence and expectations about future welfare. Insights are obtained into how objective data should be weighted in assessing economic welfare (Ravallion & Lokshin, 2002).

Kislitsyna studied whether the differences in health figures are caused by absolute material or relative deprivation. She found out that socio-economic health differences are due to absolute material deprivation for women, while men, on the contrary, were more connected factors relating to relative deprivation. These results once again confirm the conclusion that in order to overcome negative health trends in Russia it is not only necessary to reduce absolute poverty but also to lower socio-economic inequalities (Kislitsyna, 2015).

Lokshin et al. investigate the role that household living arrangements play in single-mother family income dynamics and the major factors that affect the income status of mother-only families in Russia. Enhanced earning power of the single parent, as well as a higher level of child benefits, increases the likelihood that the single parent family lives separately from other relatives. Increasingly single mothers are choosing to co-reside with other relatives or adults in times of economic stress (Lokshin, Harris & Popkin, 2000).

Buckley and Gurenko show that housing allocation had a progressive effect on the distribution of income in Russia. In addition, when the imputed value of housing is added to household income, the increase in income inequality that occurred in recent years is significantly reduced. The analysis concludes with a discussion of how housing policy could be used to address poverty concerns, an important aspect of the transition process (Buckley & Gurenko, 1997).

Zubarevich studies the level and dynamics of the poverty level in the regions of Russia for 2000–2017. She argues that moving to measure poverty in Russia by a relative criterion (50% of the median income), will change significantly the regional picture due to the demographic profile of this indicator. Besides the troubled republics, where the poverty level will decrease slightly, a new problem zone will appear - the most aged regions of Center, North-West and Volga territories of Russia. Rural poverty will especially increase on these territories.

That is why within the framework of the fundamental scientific problem outlined above, this study aims to estimate relative poverty in Russian regions using equivalent income with the prospect of its practical application in order to optimize the system of government support measures for more targeted assistance to the poorest households in Russian regions. It is further proposed to conduct a comparative analysis of the poorest households in all Russian regions in order to find out the main differences in the poverty profile.

5. Research Methods

Household welfare data adjusted for the economies of scale are revaluated using equivalence scales. To calculate equivalence scales the Engel law (Engel, 1895) is used. According to it if different households spend on food equal share per capita expenditures, their level of well-being is the same. The most optimal explaining of this law is the common shape of Working-Leser form (Leser, 1963). In this case, the regression equation is as follows:

$$w = a + b * \ln \frac{C}{n} + \lambda * n_{ad} + \beta * n_{ch} \quad (1)$$

where w is the share of food expenditure on household spending,

C - household spending,

n – household size,

a – constant,

n_{ad}, n_{ch} - the number of household members in the age group of adults and children respectively

b, λ, β - the regression coefficients for estimation.

Equivalence scale (s) is calculated using the following formula (Eq. 2):

$$s = \exp\left\{\frac{1}{b} * [\lambda * (1 - n_{ad}) - \beta * n_{ch}]\right\} \quad (2)$$

Then equivalent income per capita is estimated for all households in a sample. It is calculated as the ratio of total household income to the equivalence scale. All households in a region are distributed along the poverty line, which is equal to 60% of the median income in this region. The national median income is not used because there is big differentiation in cost of living and income per capita in Russian regions. All regions are divided into three groups: leading regions (less than 10% of poor households and less than 15% of poor individuals), outsider regions (more than 20% of poor households and more than 30% of poor individuals) and middle regions (between 10-20% of poor households and between 15-30% of poor individuals).

Data from the Budget Survey of Households in the Russian Federation is used for the equivalent income estimation. The survey is carried out by state statistics bodies on a regular basis and covers the entire territory of the Russian Federation. Households sample is regionally representative. For the 2017 year data on 46840 households is taken, because it includes needed for the research parameters in the questionnaire.

6. Findings

As it can be seen in Table 1, all regions are distributed among three groups (“leading regions”, “middle regions”, “regions outsiders”) due to the percentage of poor households and poor individuals besides the relative poverty line.

Table 01. Distribution of Russian regions using relative poverty line

Type of region	Name of region	Poor households, %	Poor individuals, %	Average % of working members in poor households	Average % of poor households with disabled members	Average % of poor households of non-working pensioners
Leading regions	Moscow, Moskovskaya oblast, St. Petersburg, Leningradskaya oblast, Kalugskaya oblast, Ivanovskaya oblast, Vladimirskaya oblast, Tverskaya oblast, Tulsckaya oblast, Ryazanskaya oblast, Kostromskaya oblast, Orlovskaya oblast, Vologdskaya oblast, Murmanskaya oblast, Chechnya, Ingushetia, Adygea, Chuvashia, North Ossetia, Crimea, Sevastopol, Amurskaya oblast, Rostovskaya oblast, Udmurtia, Samarskaya oblast, Kirovskaya oblast, Volgogradskaya oblast, Chelyabinskaya oblast	3.2-10.3	2.8-14.5	64.5	15.1	30.1
Middle regions	Karelia, Permskiy krai, Arhangelskaya oblast, Yaroslavsckaya oblast, Belgorodskaya oblast, Ulyanovskaya oblast, Pskovskaya oblast, Sakha (Yakutia), Khabarovskiy krai, Sverdlovskaya oblast, Kemerovskaya oblast, Tyumenskaya oblast, Kurskaya oblast, Kurganskaya oblast, Zabaykalsky krai, Novgorodskaya oblast, Penzenskaya oblast, Kaliningradskaya oblast, Mordovia, Saratovskaya oblast, Tuva, Krasnodarskiy krai, Altai, Nizhegorodskaya oblast, Tambovskaya oblast, Stavropolskiy krai, Primorsky krai, Lipetskaya oblast, Khakassia, Tomskaya oblast, Karachay-Cherkessia, Buryatia, Mari El, Kamchatskiy	10.5-19	14.9-28.5	57.6	13.8	18.3

Type of region	Name of region	Poor households, %	Poor individuals, %	Average % of working members in poor households	Average % of poor households with disabled members	Average % of poor households of non-working pensioners
	krai, Chukotskiy autonomus okrug, Orenburgskaya oblast, Kalmykia					
Regions outside	Komi, Novosibirskaya oblast, Tatarstan, Sakhalinskaya oblast, Krasnoyarskiy krai, Omskaya oblast, Astrakhanskaya oblast, Irkutskaya oblast, Evreiskaya autonomus oblast, Dagestan, Altaiskiy krai, Bryanskaya oblast, Magadanskaya oblast, Bashkortostan, Voronezhskaya oblast, Smolenskaya oblast, Kabardino-Balkaria	19-83,7	29.2-93.6	54.8	10	10.9

The presence in the same group of economically developed and backward regions is explained by the use of regional median incomes to calculate the relative poverty line, not national median income. In the leading regions, low poverty rates (less than 10% of poor households and less than 15% of poor individuals) are combined with high employment of poor household members. On average, about 65 % of members in poor households have jobs. Also, in these regions there are more poor households with disabled people and non-working elderly people compared to two other groups of regions.

In the regions-outside, where there are more than 20% of poor households and more than 30% of poor individuals, the situation is the opposite then in leading regions. Poverty rates are high, but at the same time, there are fewer poor households with disabled and non-working elderly people. The employment rate in poor households is also less, but, on average, it is still more than 54% of household members. The results of high employment rates in poor households confirm the conclusions that one of the main causes of relative poverty in all regions is not only unemployment but also “bad” jobs, with insufficient wages and income concealment. The presence of dependents only exacerbates household poverty.

7. Conclusion

The author used the relative concept of poverty for the exact definition of the poorest households that cannot get out of poverty on their own in Russian regions. All regions are distributed among three groups (“leading regions”, “middle regions”, “regions outsiders”) due to the percentage of poor households and poor individuals besides the relative poverty line.

Distribution of households according to relative poverty outlined the main differences of regions in poverty profile. In the leading regions, low poverty rates are combined with high employment of poor household members. Also, in these regions there are more poor households with disabled people and non-working elderly people compared to two other groups of regions.

In the regions-outsiders the situation is the opposite then in leading regions. The results of high employment rates in poor households confirm the conclusions that one of the main causes of relative poverty in all regions is not only unemployment but also “bad” jobs, with insufficient wages and income concealment. It can help in the development of social programs targeting the most vulnerable groups of society.

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