# Issues of Development of Methodologies to Measure Inequality and Poverty in Transition to New Sources of Information

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*Abstract*—**The paper provides grounds for different methodological approaches to measure inequality and poverty of the Russian population. The assessment of poverty level was carried out using direct data of the survey of household budgets and the specific analytical model. The authors have proved the need to expand the system of poverty assessment indicators. The key achievement of this study lies in the introduction of non-monetary poverty indices into statistical practice. It has been proven that the use of new methods of measuring poverty contributes to obtaining accurate incomes data for analysis and estimating its level of poverty, which, in its turn, will enable us to assess how the objectives for the eradication of poverty in all its manifestations are being fulfilled.**

*Keywords*—*Analytical Model, Poverty, Monetary Income, Inequality, Household Income and Expenditure Study.*

## I. INTRODUCTION

### A. A Subsection Sample

The paper deals with the key features of the Russian statistical system and new opportunities that the population income study program offers for measuring and analyzing poverty. The authors provide comparative statistical data obtained on the basis of expanding the range of analyzed indicators for measuring poverty and ways of ensuring data comparability during the transition to new sources of information. The study examines formation methods of a harmonized set of indices for the deprivation index assessment which takes into account Russian interregional differences and conditions, way of life and living standard of population. We present the results of alternative definitions and new approbation methods of statistical assessment of non-monetary poverty indicators.

How important for the state and the society is the issue of measuring inequality and poverty? This question is relevant nowadays not only for Russian but global economy and has been studied by Eliseeva I., Kirut A., Laikam K., Nivorozhkina L., Surinov A., Sokolin V, Deininger K., Kolk A., Nadvi K., Squire L., et al.

Researchers share the view that despite economic success, stable increase in real incomes of population in some countries, poverty in its current scale remains an acute problem that must be addressed on a priority basis.[1;2;3;4;5;6;7;8;9;10;11]

Russian statistical indicators of the population monetary incomes and the official poverty line data are assessed at both national and regional levels. In this study, we differentiated the poverty assessment taking into account economic development of the regions. Thus, we revealed the range of differences across the country and determined the contribution of each constituent entity of the Russian Federation to the overall picture of poverty.[12; 13;14]

Differences between the estimation methodologies using direct data from the Household Budget Survey (HBS) and the analytical model give rise to several pressing problems. One of the most important is the lack of consistency in estimation of the poverty level data for the whole population and for its separate demographic, social and economic groups.

## II. MATERIALS AND METHODS

The Government of the Russian Federation approved the plan for the development and publication of statistical information which includes several stages of the data preparation process. Firstly, using model methodology, it evaluates the poverty level of the whole population. Secondly, based on direct data from household surveys, it estimates in details the profile (structure) of the poor Russian population. This approach is primarily selected to address the need for urgent state support measures in some regions. In this way, Federal State Statistics Service solves the task of providing time-sensitive operational data on the level of poverty among the entire Russian population at both national and regional levels.[15]

The next step is aimed at providing social support to the most vulnerable groups of population. In order to do so, the Federal State Statistics Service analyses information and localizes poverty in certain demographic and socioeconomic groups of households. The obtained direct data on households` income and expenditure surveys is the ground for providing target support to the vulnerable groups.

The methodological component of the tasks assigned to the Federal State Statistics Service is ensured by:

- empirical data of the household budgets selective survey (HBS) conducted quarterly by the Federal State Statistics Service;

- analytical model based on the results of the survey of household budgets conducted quarterly by the Federal State Statistics Service and the macroeconomic indicator of the per Russian population capita cash income. The latter is formed monthly at the national and regional levels on the basis of reports issued by companies and tax authorities on payments, wages, pensions and benefits received by the population from business income or from property and reveals income generated in the informal sector of the economy.[16]

The issue of obtaining adequate information from the quarterly household survey budgets conducted by the Federal State Statistics Service is the main factor complicating the process of data coordination. The practice of conducting of this type of surveys is often complicated, primarily, when respondents underestimate or not fully communicate information about their incomes. Besides, there are difficulties reaching households at the highest end of the income distribution that affect the sample structure.

Besides, the main objective of the program of the household budgets survey conducted quarterly by the Federal State Statistics Service is to provide information on the costs and consumption of households. Therefore, it does not contain the full set of variables to identify all the components of personal income. The income level of households defined by respondents using interval scale is applied to meet the methodological objectives. Due to the approximate character of the estimates, we observe a considerable gap between its outcomes and the macroeconomic indicators of the population monetary income. As a consequence, the poverty rate calculated by the survey of household budgets conducted quarterly by the Federal State Statistics Service was 24.7% in 2015, which is twice as high as the estimate of the proportion of poor people living in families receiving social benefits, obtained on the basis of administrative interdepartmental data.[17]

There is discrepancy between the poverty level data collected quarterly by the survey of household budgets with alternative estimates from other sources of information. The incoherence is caused by initial limitations of analytical capacity of the quarterly survey of household budgets as it comprises the grading system based on the limited number of indicators and excludes a broader set of indicators reflecting real poverty line.

Since 2011, a system of additional social and demographic sample surveys has been applied in the Russian statistical practice. Along with traditional methodologies such as the survey of household budgets conducted quarterly, sample survey of the labor force and other traditional indicators, additional sample surveys were introduced. They are intended to reflect virtually the entire spectrum of contemporary issues comprising household income, living conditions, access to social support and social services, diet, time, budget, etc. An integral part of the new system of federal statistical observations is the selective monitoring of population incomes and participation in social programs (hereinafter referred to as SMPI).

The monitoring introduces 858 primary variables and on their basis 929 newly calculated variables are formed which aggregates information on 200 components of monetary payments and income received in cash and in kind by Russian population. The procedure for the formation of aggregates for the monetary incomes components is very similar to the methodology of the European Union Statistics on Income and Living Conditions (EU-SILC) and is consistent with the main provisions of the International Labour Organization given in the Resolution on Household Income and Expenditure (2013).[18]

## III. RESULTS AND DISCUSSION

The introduction of a specialized survey of the incomes of the population into the statistical practice made it possible to answer a number of important questions related to the reliability of poverty estimates calculated applying the current methodology using the analytical model.

Estimates of absolute poverty obtained from the results of the selective monitoring of the incomes of the population and participation in social programs, are consistent with official estimates of poverty for the population as a whole, formed by the analytical model and generally confirm the reliability of these estimates for a long dynamic series. Taking into account the received results, while maintaining the established annual frequency of the income survey, Federal State Statistics Service intends to switch to a poverty assessment system based entirely on the results of the selective monitoring of the incomes of the population and participation in social programs in the short term. The analytical model will be used as a tool to obtain preliminary short-term estimates.

Along with the indicators of absolute poverty, indicators of relative poverty in long-term dynamics have been developed experimentally on the basis of the results of the selective monitoring of the incomes of the population and participation in social programs (SMIP) and the Household Budget Survey (HBS).

In the course of experimental calculations, one of the tasks was to provide a consistent dynamic series of indicators of relative poverty. For this purpose, HBS data for the totality of households surveyed throughout all quarterly survey periods for each calendar year were used. The reconciliation of HBS data to the annual accounting period made it possible to level out the unevenness of income during the year, which leads to significant displacements in the poverty estimates compared to the SMPI, where the annual accounting period is initially used, and thereby create a platform for combining estimates of relative poverty by two surveys.[15, 21]

In order to continue work in this direction, the Federal State Statistics Service needs to determine more accurately the composition and methods of calculating relative poverty indicators in relation to new sources of information, as well as to provide a user-friendly and coherent integration of a new evaluation system into the existing complex of published information.

The analytical capacity of the SMPI program gave impetus to the development of poverty statistics in all its areas. The following results obtained on the basis of the study allowed: to expand the set of income aggregates for the analysis of mone-

tary poverty indicators; create opportunities for disaggregating poverty indicators by social and demographic groups of population within the Investigations Management Center monitoring framework; to form an empirical basis and to test the methods for calculating a series of indices of non-monetary poverty.[18]

A wider range of profit aggregates which assess the level of absolute poverty, allowed us to estimate the contribution to the overall level of household wealth value in kind incomes in the form of own products used for personal consumption, social transfers and transfers from other sources entering the household in real terms, as well as, in the experimental order, the monetary equivalent of net imputed rent. The addition of these components allowed to go beyond the strictly monetary category of income and to estimate the differences in the share of natural income in the income of various groups of households.

The need to expand the system of assessing poverty indicators sets the task of introducing a wider system of indicators.[19;20] The key goal of this study is the establishment of non-monetary poverty indices in statistical practice. The development of methods for investigating non-monetary poverty should be based on a well-founded definition of a set of indicators and weights that determine the contribution of each indicator to the value of the index. The definition and approbation of methods of statistical estimation of indicators and indices of non-monetary poverty is divided into three consecutive directions. A set of indicators for evaluation of deprivations (limitations) was established it was prepared for data validation through mass household surveys. We obtained empirical data on the established list of deprivations. The algorithms of non-monetary poverty indices calculation was tested and approved.

Metadata that contribute to a correct analytical interpretation of non-monetary poverty indices are developed along with absolute and relative poverty in publications of official statistical information.

## IV. CONCLUSION

For further successful poverty measurement, the most important task is to provide a statistical basis for monitoring the System of Global Indicators for the achievement of the goals and objectives of the Sustainable Development Agenda for the period up to 2030 (hereinafter, SDG). Comparability of poverty estimates in a long-term dynamics is an important factor in assessing the actual situation in order to eradicate poverty in all its manifestations.

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