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TWO-CRITERIA MODEL OF THE RUSSIAN SOCIETY STRATIFICATION BY INCOME AND HOUSING SECURITY

The article identifies the social structure of the Russian society by the level of material security. The research results proceed from the early authors' studies on the analysis of the inequality of population distribution according to certain components of material security (income and housing security). The subject matter of this study was to identify the scale of social groups in the two-criteria model of social structure by the level of cash income and housing security. We proceeded from the hypothesis that compared with the single-criteria model of social structure, representing the integral distribution by the level of material security, its two-criteria model reveals social groups that significantly vary by the scale. The article presents the updated criteria of material security. We used these criteria to form social structure models. To update the criteria, we used mathematical models and informative indicators, which allowed to clarify the quantitative requirements for the level of cash income and housing parameters. Moreover, we relied on the foreign and domestic experience of research and development on this issue. However, we present for the first time a two-criteria model of the social structure of the Russian society by the level of material security based on the updated standards. For assessments and forming this model of social structure, we used the official statistics and the Russia Longitudinal Monitoring Survey, RLMS—HSE. The results can be applied in the development of targeted social policy measures, as well as may be in demand for further theoretical and methodological substantiation and practical research on material security and identification of social structures.

Keywords: material security, monetary income, housing security, inequality of monetary income distribution, inequality of housing security distribution, social standards, criterion boundaries, social groups, social structure, informative indicators of distribution, lognormal distribution model, hybrid lognormal distribution model, Pareto distribution model

1. Introduction

The evaluation of the material security of the population has been carried out by the authors based on the analysis of monetary income [1, p. 971–984] and housing security [2, p. 8–23; 3, s. 1764–1773] with the identification of one-dimensional social structures by a relevant criterion.

The goal that the authors set in this publication was to identify the two-criteria social structure of the Russian society according to the level of material security, namely:

1) to offer up-to-date criterion boundaries of monetary incomes and housing security, obtained from the results of conducted studies, which allow identifying social groups that differ in these aspects of material security;

2) to present a two-criteria model of the social structure by the level of material security, determined by the joint distribution of the population according to the level of monetary income and housing security, based on the updated requirements for these criteria;

3) to assess the scale of social groups of the population, which differ in the level of material security (monetary income and housing security), and comment on the possibilities of a two-criteria social structure model for the implementation of a more reasonable social policy.

The relevance of the research consists in the need to develop theoretical and methodological foundations and mechanisms to enhance the targeting of social policy measures aimed at significant reduction of poverty, increase in the number of the middle classes and reduction of socio-economic differentiation in the Russian society.

The hypothesis of the study is that the two-criteria social structure determined by the level of material security, including the joint distribution of the population by per capita monetary income and housing security, significantly changes the configuration of social groups obtained within the framework of a one-dimensional distribution for each of its components. The two-dimensional distribution provides a more comprehensive and accurate assessment of the scale of social groups in the Russian society, differentiated in this context.

The scientific novelty of the research findings is that, for the first time, the results of the assessment of the joint population distribution in terms of monetary incomes and housing security according

to updated social standards, reflecting the capabilities of the Russian economy and the established distribution model of monetary incomes and housing security, are presented.

The methodological and educational contribution of the research consists in substantiating the updated social standards of monetary incomes and housing security with the use of mathematical methods for their quantitative assessment and combining the capabilities of the state statistical database with the database of the Russia Longitudinal Monitoring Survey — Higher School of Economics (RLMS-HSE)). [1]

The practical significance of the results obtained is that the two-criteria model of the social structure can be used to develop measures of social policy. It allows you to develop measures, differentiated by goals, methods, timeframes and resources for achieving these goals, with reference to specific social groups, taking into account the level of monetary income and (or) housing security achieved by them. Elements of this study have previously found application in the Voronezh Region, the Samara Region, the Republic of Sakha (Yakutia) and several other entities of Russia, as well as in monitoring incomes and the living standard of the population.[2]

2. Theoretical Background

Assessing the material security of the population in terms of its key components, such as monetary income and housing, and identifying on its basis the social structure of society or individual social groups are the issues that are being actively developed by Russian and foreign researchers. At the same time, the elaboration of criteria in terms of setting the boundaries for the identification of certain groups that differ in the level of monetary income or housing security is carried out in different ways. Therefore, during the research, the following approaches can be claimed:

1) an absolute approach, which establishes fixed values for the criterion boundaries of income, in which social groups are localized [4–7];

2) a relative approach, involving the establishment of boundaries for assignment to social groups, taking into account the position in the distribution [8–11], if there are incomes of at least their median values for the corresponding type of settlements [12–14];

3) a combined approach, in which one of the boundaries for identifying social groups is established taking into account the absolute approach, and the upper one — taking into account the relative approach [15]);

4) an approach linking identification boundaries with poverty lines [16–17].

In other countries, the analysis of inequality in terms of material security components, the research into the issues of identifying social structures and their individual groups related to material security is mainly carried out within the framework of the monetary incomes criterion ([4–11, 15–18] and others), although the problems of housing security of the population are also tracked, in particular, by statistical agencies.[3]

When analyzing housing security, Russian researchers are considering its various aspects ([19–21], etc.), suggesting various parameters that allow identifying the following groups:

— the living space, the amount of living space (the ratio of the number of rooms and family members), various types of improvements [22, p. 42–44];

— the living space, lack of space, subjective assessment of housing conditions, other real estate [23, p. 133];

— relations in the housing sector, the interrelation of the owner-user of property rights [24, p. 24–27];

— functional features of various types of housing [25, p. 12];

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[1] The Russia Longitudinal Monitoring Survey — Higher School of Economics (RLMS-HSE), conducted by the National Research University "Higher School of Economics" and OOO Demoscop with the participation of the population Center of the University of North Carolina at Chapel Hill and the Institute of Sociology of the Federal Center of Theoretical and Applied Sociology of the Russian Academy of Sciences. (Survey sites Rlms-HSE: Http://www.cpc.unc.edu/projects/rlms and Http://www.hse.ru/rlms).

[2] Monitoring of incomes and living standards of the Russian population. The year 2017–2018. № 1 (1). S. 23–24, 39–40, 82–83.

[3] See examples: Housing suitability of private household // Statistics Canada. [E-resource]. URL: http://www23.statcan.gc.ca/imdb/p3Var.pl?Function=DEC&Id=100731 (access date: 08.06.2018); Housing Suitability // Australian Bureau of Statistics [E-resource]. URL: http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/2901.0Chapter36002016 (access date: 08.06.2018); Living space // OECD [E-resource]. URL: http://www.oecd.org/els/family/HC2–1-Living-space.pdf (date accessed: 08.06.2018); Income and living conditions // Eurostat [E-resource]. URL: http://ec.europa.eu/eurostat/web/income-and-living-conditions/data/database (date accessed: 17.08.2018).

— grouping in terms of belonging to the category of housing (social, municipal or private rent) [26] and others.

Joint analysis of monetary incomes and housing security for population groups according to the level of material security and determining the scale of relevant social groups is also carried out by researchers [22, 23], although it has not been covered extensively (unlike a single-criterion analysis) in papers (both foreign and Russian) due to the need of databases that would allow for appropriate assessment.

The possibilities of the Russian official statistics make it possible to analyze joint distribution of the population according to the criteria under consideration, in particular, by parameters such as the size of the total (useful) living space and the level of average per capita disposable resources (by decile groups), the number of occupied habitable rooms and the level of average per capita disposable resources (by decile groups)[4]. The Eurostat database allows for assessments, in particular, according to the following parameters: overcrowding (the ratio of the number of rooms and persons living in them considering different characteristics attributed to them (age, household composition)) and income level (by quintiles), number of rooms per person and income level (less 60 % of the median equivalent income, more than 60 % of the median equivalent income).[5] However, for a more accurate assessment of the material security level distribution on the basis of joint distribution of monetary income and housing security, in the authors' opinion, a more comprehensive consideration of the parameters accounting for the general level of housing security is required. A possible list of such parameters according to the results of studies and rationales is presented by the authors in this article.

The option of developing the social structure based on the criteria of monetary income and housing security, justified by the authors, is proposed by the authors in the context of Russia. Its quantitative identification is carried out on the basis of combining the databases of official Russian statistics and non-state monitoring surveys, which makes it possible to take into account the entire set of parameters used in the assessment.

Comparative cross-country analysis in terms of identifying social groups on the basis of a two-criteria assessment of material security at this stage is complicated by the need to work on these criteria for universalization of their requirements for these purposes as well as differences in statistical methodology. The solution to this problem can be one of the areas of further research by the authors.

When identifying the two-criteria social structure of society by the level of material security, the authors proceed from the need to define it using regulatory criteria based on social standards reflecting the requirements for the characteristics of various social groups representatives and corresponding to different models of quality and living standards of the population. In earlier studies, the authors substantiated the theoretical foundations of identifying the social structure separately by the criteria of monetary income and housing security [27, p. 191–220].

The social standards of monetary incomes and housing security, adjusted to the Russian economic environment and with the actual distribution of the population according to these components of the living standards, are presented below. In updating the requirements of these standards, the authors relied on the existing foreign and Russian experience in developing the relevant criteria and their parameters, both research and official statistical surveys.

Standards within the monetary income criterion[6]

The standard defining the first (the lowest) level of monetary income corresponds to the boundary of per capita monetary income, equal to 1 SL (subsistence level).[7] Population with monetary income below this standard is identified as the population with the lowest income.

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[4] Living conditions of households//federal State Statistics Service [E-resource]. URL: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/population/level/# (date accessed: 17.08.2018).

[5] Income and living conditions // Eurostat [E-resource]. URL: http://ec.europa.eu/eurostat/web/income-and-living-conditions/data/database (date accessed: 17.08.2018).

[6] The substantiation of the authors' corrections of the previously applied standards within the framework of the monetary income criterion (the third and fourth standards) is presented in detail in the publication [1, p. 971–984], the main results are given in this article.

[7] Another adjustment of the theoretical model has been carried out, and a boundary of incomes for the low-income population was changed from X_{fmod} = 1.3 SL, which would be an economically reasonable decision [1, p. 971–984], to the current SL. This is due to the fact that the SL in our country is determined not by economic, but by political factors.

The standard defining the second (low) level of monetary income corresponds to the boundary of per capita monetary income, equal to 2 SL.[8] It identifies the socially acceptable level of consumption that satisfies the basic minimum needs of the population, and compared to the previous standard, it identifies the consumption model, which implies, in particular, savings that can be directed to the needs of the family, such as a mortgage. A population with monetary income below this standard is identified as low-income population.

The standard defining the third (average) level of monetary income corresponds to the boundary of per capita cash income, which identifies the size of per capita cash income (X_{fc}) (3.1 SL in 2016).

Population with monetary income below this standard is identified as population provided below the average level.

This standard also represents the lower boundary of income corresponding to the living standard model of the middle-income population (the middle classes). This group includes: 1) a periphery, in which per capita monetary income exceeds the size of the average per capita monetary income (X_{fc}), but does not reach the median value ($X_{\varphi med}$) (4.2 SL in 2016); 2) the core, whose representatives have per capita monetary incomes range from the median value ($X_{\varphi med}$) to 11 SL.

The standard defining the fourth (high) level of monetary income corresponds to the boundary of the average per capita monetary income equal to 11 SL.[9] A population with monetary incomes above this standard is defined as the high-income population [27, p. 197–199].

Standards within the housing criterion[10]

The standard, which determines the first (lowest) level of housing security includes the following requirements for residential premises: the size of the living space on the residential premises is at least 6 m^2 per person and minimal amenities on the premises.[11] Non-compliance with the requirements of this standard makes it possible to identify the neediest (poor in housing security) population (with the worst housing conditions).

The standard, which determines the second (low) level of housing security includes the following requirements for residential premises: the total living space is at least 16 m^2 per person. (the modal value of the population distribution area by the size of the living space) and the main basic amenities. Non-compliance with the requirements of this standard makes it possible to identify low-income individuals (with poor housing conditions).

The standard, which determines the third (average) level of housing security includes the following requirements for residential premises: the total living space is at least 23 m^2 per person (the average area of housing security), at least 1 room per household member, the main basic types of amenities, as well as a bath (shower), floor plate (gas or electric), Internet access.

Non-compliance with the requirements of this standard allows identifying the population with below the average level (with housing conditions below the average).

Compliance with the requirements of the standard identifies the group of middle-income individuals (with average living conditions). This group, taking into account the available total living space, includes: 1) the periphery—from 23 m^2 per person (average area of housing security) up to 27 m^2 per person (division of the total housing stock in half), and 2) the core—from 27 m^2 to 40 m^2 per person.

The standard defining the fourth (high) level of housing security includes the following requirements for residential premises: the total living space is at least 40 m^2 per person, at least 1 room per household member and at least one additional room, amenities not lower than the third standard.

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[8] Another adjustment of the theoretical model has been carried out, and a boundary of incomes for the low-income population was changed from X_{fmed}, which is 2.3 SL [1, p. 971–984], to the nearest value, the lower on the scale of per capita incomes, namely 2 SL. Otherwise we would fall into the trap of poverty and low income. The two lower layers would always be half of the country's population.

[9] Another adjustment of the theoretical model has been carried out, and the income threshold for the high-income layer of the population was changed from 8 SL [1, p. 971–984], to 11 SL. The authors returned to the theoretical boundary justified in earlier works.

[10] The substantiation of the authors' corrections of the previously applied standards within the framework of the housing security criterion is presented in detail in the publication [2, p. 8–22], the main results are given in this article.

[11] According to the Housing Code of the Russian Federation, the specified size of the area is used in the provision of residential premises in hostels and residential accommodation of the temporary public housing. See: Housing Code of the Russian Federation (from 29.12.2004 № 188-FZ (ed. from 03.04.2018)). [E-resource]. URL: http://www.consultant.ru/document/cons_doc_LAW_51057/(date accessed: 06.06.2018).

Compliance with the requirements of the standard identifies a group of individuals with high-income (with good living conditions).

Assessment of compliance with the two criteria considered above allows us to obtain a model of the two-criteria social structure of the Russian society according to the level of material security.

3. Mathematical models

To clarify the criterion boundaries for monetary income, the authors used the following mathematical models: 1) a log-normal distribution of population density in terms of the average monthly average per capita monetary incomes; 2) log-normal distribution of the density of monetary incomes of the population by the level of average monthly average per capita monetary incomes.

The population distribution density by the size of the average monthly average per capita monetary income ($f(x)$) and the distribution density of the population's monetary income ($\phi(x)$) make it possible to determine objective informative indicators that were used by the authors to clarify the previously used boundaries of monetary income to identify social groups, namely:

1) for the lognormal distribution of the population according to the level of the average monthly average per capita monetary income (AAMI) — the modal value is X_{fmod}, the median value is X_{fmed}, and the average value is X_{fc};

2) for the distribution of the volume of population income (VPI) — the modal value is $X_{\varphi mod}$ (corresponds to the median value of income $f(x)$), the median value is $X_{\varphi med}$ and the average value is $X_{\varphi c}$.[12]

The approach used by the authors to clarify the criterion boundaries of monetary incomes is presented in more detail in the publication [1, p. 974–978].

To determine the size boundaries of the living space as part of updating the housing security criterion, the authors used a hybrid model consisting of a log-normal population distribution model and the Pareto distribution model — a population distribution density model by the total living space per person ($g(y)$) and the model for the density distribution of the total volume of living space by the size of the total living space per person ($h(y)$).

Informative statistical indicators[13] and the approach used by the authors to clarify the boundaries of the living space size within the framework of the housing security criterion are presented in more detail in the publication [2, p. 11–17].

4. Data and Methods

Table 1 presents the obtained values of informative indicators of monetary incomes and criterion boundaries for the localization of social groups determined on their basis.

The obtained values of informative indicators of the housing security size (living space) and the criterion boundaries for the localization of social groups by the level of housing security determined on their basis is presented in Table 2.

To test the updated criteria of monetary income and housing security and quantitative identification of the social structure — one-criterion and two-criteria models, the authors used data from the Federal State Statistics Service (Rosstat) and The Russia Longitudinal Monitoring Survey — Higher School of Economics (RLMS-HSE).

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[12] "The modal value of the AAMI (X_{fmod}) is the value of income in which the density of population distribution reaches its maximum value, that is, corresponding to the income of the largest group of population; The median value of the AAMI (X_{fmed}) is the value of income in which the population is divided in half; The average value of the AAMI (X_{fc}) is the ratio of the annual amount of monetary incomes of the population to the average annual population; The modal value of the AAMI ($X_{\varphi mod}$) is the value of income, in which the density of the distribution of the VPI reaches its maximum value, i.e. corresponding to the highest concentration of population incomes; The median value of the VPI ($X_{\varphi med}$) is the value of the income at which the VPI is divided in half; The average value of the VPI ($X_{\varphi c}$) is the transformed size of the average monetary income taking into account the inequality in monetary income distribution of the population "[1, p. 974].

[13] "Modal Value (Y_{gmod}) is the value of the total living space per person, where the density of population distribution by the total living space reaches its maximum value, i.e. the value of the living space, which corresponds to the largest population group; Median value (Y_{gmed}) is the value of the total living space per person, in which the population is divided in half; Average value (Y_{gc}) — the ratio of total volume of the total living space to the average annual population. Modal Value (Y_{hmod}) is the value of the total living space per person, in which the distribution density of the total volume of the living space reaches its maximum value, i.e. corresponding to the largest concentration of the space; Median value (Y_{hmed}) is the value of the total area of living space per person, in which the total volume of living space is divided in half; The average value (Y_{hc}) is the transformed size of the total living space per person taking into account the inequality of distribution of the total volume of living space of the population "[1, p. 974].

Table 1

Informative indicators of monetary incomes and the boundaries of social groups concentration (2016; generally across Russia)

Money income level	Lowest income	Low income	Below average income	Middle income (peripheral)	Middle income (core)	High income
Monetary income boundaries	from 0 to SL	from SL to 2 SL	from 2 SL to Xfc	from X_{fc} to $X_{\varphi med}$	from $X_{\varphi med}$ to 11 SL	above 11 SL
Monetary income level corresponding to the boundary (rub/month)	9828,0	19656	30738,4	41269,3	108108,0	above 108108,0
Monetary income level corresponding to the boundary (SL sets)	1 SL	2 SL	3,1 SL	4,2 SL	11 SL	above 11 SL
Share of population in group	0,132994	0,286036	0,229628	0,128730	0,201369	0,021243
Share of income volume in group	0,030345	0,136233	0,184764	0,148568	0,397122	0,102878

Authors' calculations based on Rosstat data. (Average, median and modal level of monetary incomes of the population generally across Russia and the territorial entities of the Russian Federation//Federal State Statistics Service . [E-resource]. URL: http://www.gks.ru/free_doc/new_site/population/bednost/tabl/tab-bed1–2-6.htm (date accessed: 27.06.17)).

Table 2

Informative indicators of the housing security size and concentration boundaries of social groups (2016; generally across Russia)

Housing security characteristic	The worst (from 0 to 6 м^2)	Poor (from 6 м^2 to 16 м^2)	Below average (from 16 м^2 to 23 м^2)	Average (peripheral) (from 23 м^2 to 27 м^2)	Average (core) (from 27 м^2 to 40 м^2)	Good (above 40 м^2)
Housing security boundaries (area)	from 0 to 6 м^2	from 6 м^2 to Y_{gmod}	from Y_{gmod} to Y_{gc}	from Y_{gc} to Y_{hmed}	from Y_{hmed} to 40 м^2	above 40 м^2
Share of population in group	0,00293	0,28255	0,25880	0,09738	0,19356	0,16478
Share of housing security volume in group	0,00073	0,16011	0,22446	0,10853	0,28230	0,22460

Authors' calculations based on Rosstat data (Distribution of households by the size of the total (usable) space occupied // Federal State Statistics Service [E-resource]. URL: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/population/level/# (date accessed: 08.06.2018)).

Rosstat data were used to assess the population's compliance with the criterion boundaries for monetary income and to identify the corresponding social structure quantitatively. The RLMS data, in contrast to the Rosstat data, allows grouping based on a set of necessary parameters to analyze housing conditions for compliance with the requirements of standards that identify different levels of housing security, as well as assessing material security on the basis of monetary income and housing security.

The RLMS data are representative for Russia as a whole. However, to align the distribution by monetary income obtained from the RLMS data with the distribution based on Rosstat data, the joint distribution by the two material security criteria was further adjusted to reflect the distribution of monetary income obtained from official statistics.

5. Results

The use of the monetary income and housing security standards updated by the authors revealed the following distribution of the Russian population according to the relevant criteria and a two-criteria model of the social structure of the Russian society determined by the level of material security (Tables 3, 4).

The assessment showed that in 2016, social groups with average per capita monetary incomes of less than 3.1 SL, that is, with incomes that did not reach the boundaries identifying the middle-income and high-income groups, prevailed in the Russian social structure as identified by the monetary income

Table 3

The social structure of Russian society developed based on the criteria of monetary income and housing security (2016; generally across Russia)

Social group	Share of group in general social structure by the average per capita monetary income, percent*	Share of group in general social structure by housing security, percent**	Difference (+/–) between the groups, in percentage points
The neediest	13,5	32,5	+19,0
Low-income individuals	28,6	29,0	+0,4
Individuals with below the average income	22,8	24,5	+1,7
Middle-income individuals	32,9	10,7	–22,2
periphery	12,9	4,5	–8,4
core	20,0	6,2	–13,8
High-income individuals	2,2	3,3	+1,1
Total	100,0	100,0	

* Authors' calculations based on Rosstat data (Average, median and modal level of money incomes of the population as a whole in Russia and territorial entities of the Russian Federation//Federal State Statistics Service [E-resource]. URL: http://www.gks.ru/free_doc/new_site/population/bednost/tabl/tab-bed1–2-6.htm (date accessed: 27.06.17)).

** Authors' calculations based on RLMS data (25th wave).

Table 4

The two-criteria social structure of the Russian society in terms of material security (2016)

Group	Material security level	Level of monetary income and housing security	Share of this group in the general social structure* (%)	
			Subgroup's share	Group's share
The neediest	The lowest	1) API** below 1 SL and the worst housing conditions (poor in terms of income and housing)	8,9	37,1
		2) API above 1 SL and the worst housing conditions (poor in terms of housing)	23,6	
		3) API below 1 SL and poor, below average, average or good housing conditions (poor in terms of income)	4,6	
Low-income individuals	Low	1) API between 1 SL and 2 SL and poor housing conditions (below socially acceptable level)	8,6	26,2
		2) API above 2 SL (above socially acceptable level) and poor housing conditions (below socially acceptable level)	17,6	
Individuals with income below the average level	Below average	1) API between 1 SL and 2 SL (below socially acceptable level) and below average, average or good housing conditions	7,8	24,5
		2) API between 2 and 3.1 SL and housing conditions below average	7,1	
		3) API above 3.1 SL and housing conditions below average	9,6	
Individuals with middle-income	Average	1) API between 2 SL and 3.1 SL and average or good housing conditions; API between 3.1 SL and 4.2 SL (peripheral in terms of income) and average housing conditions (peripheral in terms of housing security)	4,5	9,5

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Group	Material security level	Level of monetary income and housing security	Share of this group in the general social structure* (%)	
			Subgroup's share	Group's share
		2) API between 4.2 SL and 11 SL (core in terms of income) and average housing conditions; API between 3.1 SL and 4.2 SL (peripheral in terms of income) and average housing conditions (core in terms of housing security)	4,7	
		3) API above 11 SL; average housing conditions	0,3	
Individuals with high-income	High	1) API between 3.1 SL and 11 SL and good housing conditions	2,1	2,7
		2) API above 11 SL and good housing conditions	0,6	
Total			100,0	

* Authors' calculations are based on RLMS (25 wave) and Rosstat data.

** API is the average per capita monetary income.

criterion. Thus, the neediest (poor in income), whose average per capita monetary income is less than 1 SL, accounted for 13.5 % in the social structure.

The low-income group accounted for almost two times more (28.6 %). The representatives of this group have the average per capita monetary incomes exceeding the limit corresponding to 1 SL, but they turned out to be at a less socially acceptable level (2 SL). The group provided below the average level, determined by the presence of the average per capita monetary incomes from 2 to 3.1 SL, that is less than the lower boundary that identifies the group of the middle-income individuals, reached 22.8 %.

Individuals with middle-income in the social structure, determined by the criterion of monetary income, amounted to 32.9 %. The periphery of this group, accounting for 12.9 %, covers those with average per capita monetary incomes ranging from 3.1SL to 4.2 SL. The group in which average per capita monetary incomes exceed 4.2 SL, but at the same time do not reach 11 SL (the lower income boundary identifying high-income individuals), is the core of the middle-income group. This group accounted for 20 % in the social structure.

The group of high-income individuals (the average per capita monetary incomes over 11 SL) demonstrated the smallest representation in the social structure of the Russian society, identified only by the criterion of monetary income, and accounted for 2.2 %.

Identification of the social structure by the criterion of housing security (Table 3) showed a different scale of social groups than when they were determined based on the criterion of monetary income. Those most in need of a social structure determined by the criterion of housing security (poor in terms of housing security), accounted for 32.5 % in 2016, which is 19 p.p. more than when identifying the social structure by the criterion of monetary incomes — 13.5 %. In this case, the group of the neediest is characterized by the worst housing conditions that do not meet the requirements of the standard determining the first (lowest) level of housing security.

Low-income individuals are characterized by poor housing conditions, i.e. conditions that do not meet the requirements of the standard defining the second (low, socially acceptable) level of housing security (but at the same time meet the requirements of the standard defining the first (lowest) level of housing security). In the social structure based on the criterion of housing security, they accounted for 29 %. When applying the monetary income criterion, this group showed a similar representation, having constituted 28.6 % in the corresponding model of social structure.

Individuals provided below the average level (24.5 %) when determining the social structure according to the criterion of housing security are characterized by housing conditions that do not meet the requirements of the standard determining the third (middle) level of housing security (while meeting the requirements of the standard determining the second (low, socially acceptable) the level

of housing security). This group, taking into account only the criterion of monetary income in the social structure, showed a smaller (by 1.7 p.p.) representation — 22.8 %.

The middle-income individuals whose housing conditions meet the requirements of the standard defining the third (middle) level of housing security but do not reach the standard requirements defining the fourth (high) level of housing security in the social structure made up only 10.7 %, when identifying the social structure by monetary income criterion — 39.2 %. The core and periphery of this group, identified during the assessment of housing security (6.2 % and 4.5 %), respectively, showed smaller (by 13.8 and 8.4 pp) scales than on the basis of the monetary income criterion (20 % and 12.9 %).

Individuals with high-income with good housing conditions (meet the requirements of the standard defining the fourth (high) level of housing security) amounted to 3.3 % in the social structure, while using the monetary income criterion, this group showed even smaller scales, reaching only 2.2 %.

The combination of these criteria for obtaining data on the distribution of the population according to the level of material security allowed us to develop a two-criteria model of the Russian social structure, in which social groups are represented as integrated by the level of material security, taking into account compliance with the criterion boundaries of monetaryincome and housing security (Table 4).

The group of the neediest population with the lowest level of material security (37.1 % in 2016) covers subgroups in which average per capita monetary income or housing security, or monetary income and housing security do not meet the requirements of the standards that determine the lowest level of material security Thus, this group includes the poor in income and housing security (8.9 %), the poor in housing security (23.6 %), and the poor in income (4.6 %).

The group of low-income individuals with a low level of material security (26.2 % in 2016) is also heterogeneous. It includes a subgroup in which the level of material security by two criteria does not reach the socially acceptable level: the average per capita monetary income is low (1–2 SL) with poor housing conditions (8.6 %). The subgroup with poor housing conditions, but with average per capita monetary incomes above the socially acceptable level (more than 2 SL) (17.6 %), is also assigned to the group with a low level of material security.

The group of individuals with below the average level (with the level of material security below the average) (24.5 % in 2016) includes three subgroups. In one of them, the average per capita monetary incomes do not reach a socially acceptable level, ranging from 1 SL to 2 SL, and housing conditions vary from below average to good. In 2016, this subgroup accounted for 7.8 % in the two-criteria social structure in terms of material security. The other two subgroups have below-average housing conditions, while in one of them the average per capita monetary incomes range from 2 SL to 3.1 SL (7.1 %), and in the other one — more than 3.1 SL (the lower boundary identifying the group of middle-income individuals) (9.6 %).

The group of middle-income individuals with an average level of material security (9.5 % in 2016), is also divided into three subgroups, taking into account the level of monetary income and housing security. The lower subgroup (4.5 %) is heterogeneous and consists of average per capita monetary incomes from 2 SL to 3.1 SL with average/ good housing conditions, as well as those with the average per capita monetary incomes and living conditions that meet the standards that identify the periphery of the middle-income individuals. Representatives of the middle subgroup (4.7 %) are characterized by the average per capita monetary incomes and/or housing conditions that meet the requirements of standards that identify the core of the middle-income individuals. The upper subgroup is distinguished by the average per capita monetary incomes over 11 SL (the lower boundary identifying highly high-income individuals) and average housing conditions. In 2016, this subgroup accounted for only 0.3 % in the two-criteria social structure by the level of material security.

The group of high-income individuals (with a high level of material security) (2.7 % in 2016) is characterized by good living conditions, but in terms of monetary income it is divided into two subgroups. In one of them, the average per capita monetary income is over 11 SL (0.6 % in the two-criteria social structure in terms of material security), while in the other subgroup the average per capita monetary income corresponded to the level identifying the middle-income individuals (from 3.1 SL to 11 SL) (2.1 %).

Reasonable theoretical and methodological approaches can be applied to identify two-criteria social structures by the level of material security in the Russian regions. To do this, one needs to be

guided by regional values of average per capita subsistence levels (SL reg) and informative statistically identified points obtained from the regional population distribution series by the average monthly average per capita monetary income (f (x)reg) and density distribution of monetary income of the population (ϕ (x) reg), as well as regional models of population distribution density by the total living space per person (g (y) reg) and density distribution models for the total living space by the size of the total living space per person (h (y) reg). This will make it possible to use sound methods and data obtained on their basis on the joint distribution of the population in Russian regions according to the criteria of income and housing security for the development of regional strategies and programs for socio-economic development.

6. Conclusion

The authors identified models of the Russian social structure, determined by the level of monetary incomes and housing security, as well as the two-criteria model of the Russian social structure by the level of material security, determined through the assessment of the joint distribution of the population by monetary incomes and housing security.

Identification of the social structure model developed according to one of the material security criteria — monetary income — revealed the following scales of social groups: the neediest — 13.5 %, low-income individuals — 28.6 %, individuals provided below the average level — 22.8 %, middle-income individuals 32.9 %, high-income individuals — 2.2 %.

Compared with the structure developed according to the monetary income criterion, its identification based on the other criterion of material security revealed that the scale of poverty in our country by the level of housing security is significantly higher (+19 pp) than by monetary income. In this social structure model, low-income individuals (+0.4 pp), those provided below the average level (+1.7 pp) and those with high-income (+1.1 pp) are also represented on a bigger scale, while the middle-income individuals (–22.2 pp), on the contrary, received a smaller representation in the social sphere, developed by the criterion of housing security.

The hypothesis of the study was confirmed. The two-criteria model of social structure revealed a different (compared to identification by one of the criteria) scale of social groups, which are determined holistically by the level of material security. Thus, the group with the lowest level of material security, identified taking into account the joint assessment of the monetary income level and housing conditions, was represented by 37.1 % in the two-criteria model of the social structure in 2016, which is a significantly greater figure than that obtained only using the criterion of monetary incomes (+23.6 p.p.), and greater than that obtained using the criterion of housing security (+4.6 p.p.).

The group with a low level of material security in the two-criteria social structure amounted to 26.2 % (in the structures, according to the criteria of monetary income and housing security, its share was bigger, respectively, by 2.4 p.p. and 2.8 p.p.).

The group with the material security level below the average was represented by 24.5 % of the population, whereas with the single-criterion model in terms of monetary income, it showed smaller scales (by 1.7 p.p.), and by the level of housing security — a similar share (24.5 %).

In general, the joint application of the criteria of monetary incomes and housing security showed that in the two-criteria social structure of the Russian society in 2016, the total share of groups with the level of material security below the average level (87.8 %) exceeded their total share in the social structure received only by the criterion of monetary income (64.9 %) and by the criterion of housing security (86 %).

The group with an average level of material security amounted to 9.5 % in the social structure determined by the two criteria, which was less than when it was identified by the criterion of monetary income (by 23.4 p.p.) and housing security (by 1.2 p.p.)

Individuals with high-income when applying the two criteria under consideration accounted for 2.7 % in the social structure, with their lower representation in the social structure obtained by the criterion of monetary income (by 0.5 pp), and more massive representation by the criterion of housing security (by 0 , 6 p. P.).

The dynamics of the quantitative representation of social groups in the transition from single-criterion models of social structure to its two-criteria version is determined by differences in their representation in identifying monetary and housing security criteria, in general, by a large aggregate share of groups with a level below the average by the criterion of monetary income (64.9 %) and

their even greater share by the criterion of housing security (86 %). The combination of these two criteria leads to certain differences in the representation of social groups in the integral model of social structure in terms of material security. For example, the group of the neediest population in the two-criteria model of social structure is more massively represented than when using just one criterion—either housing or income (+4.6 / 23.6 p.p.). The group of middle-income individuals, on the contrary, shows smaller scales than by the criterion of monetary income (–23.4 p.p.) and housing security (–1.2 p.p.).

The two-criteria model of social structure proposed by the authors, presented in an expanded form and integrating social groups, distinguished both in terms of monetary income and housing conditions, allows developing social policy measures targeted at specific groups and addressing tasks to improve the social structure of Russian society.

For example, when developing measures to reduce poverty, it seems appropriate to prioritize attention to the lower subgroup (8.9 %) within the group with the lowest level of material security. Representatives of this subgroup, who are poor in both monetary income and housing security, are more disadvantaged than representatives of the two other subgroups that are also poor either in monetary income (4.6 %) or housing security (23.6 %).

To increase the size of the group with an average level of material security, it is also necessary to develop measures taking into account the achieved level of monetary income and housing security in the group with a lower level of material security, which presents a potential for its increase. For example, the elaboration of measures in the field of housing policy targeted at a group with monetary incomes above 3.1 SL, but with living conditions below the average (9.6 %), will bring the share of the group with an average level of material security from 9.5 % to 19.1 %.

The substantive work with the 13 social layers, that are more specifically represented in the two-criteria structure by 5 social groups in the Russian society with different levels of material security , makes it possible to specify social policy measures according to goals, methods, timeframes and resources for achieving these goals.

The two-criteria model of social structure by the level of material security proposed by the authors may also be used for cross-country comparisons, taking into account further research and rationale in terms of updating the requirements of monetary income and housing standards. Further update of the criteria can be associated with the universalization of their requirements, which would allow them to be used for comparative analysis in a cross-country context, taking into account the development of the existing capabilities of Russian and foreign databases.

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