

Savings and taxes of individuals in the Russian Arctic: an analysis of interference

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Abstract — Income tax, on the one hand, is key and revenue-generating for regional budgets, on the other - is social nature and affects the level of real incomes of the population. This article describes to assessing the impact of the existing tax burden of an individual on the level of his life and the ability to form savings. The main purpose of the research is to establish complementarity between tax burden of an individual and his savings level based on an equitable distribution of population incomes, taking into account the characteristics of the region. This assessment is particularly relevant in the regions of the Russian Arctic, where, due to the harsh climatic conditions of residence, compensation for the costs of livelihood of the population is significantly higher than in other regions of the Russian Federation. The incomes, savings, tax burden and the standard of living of the population in the Russian Arctic are analyzed. The trend dynamics has been identified and the interrelationships of the studied indicators have been determined. Based on the author's methodological approach, the maximum possible tax burden is determined, which reflects the maximum level of the tax rate in comparison with the personal income of an individual residing in the regions of the Arctic zone. A proposal to improve the system of taxation of individuals for the most equitable distribution of the tax burden in increased discomfort conditions of residence of people are formed. To address regional specifics, we suggest using the subsistence minimum, for example, as a non-taxable minimum for forming the tax base providing a socially fair redistribution of income between different segments of the population and leveling, thereby, the difference in living in certain territories.

Keywords — *taxes, savings, standard of living, subsistence minimum, arctic regions*

I. INTRODUCTION

Initially, the functional role of income taxes (fiscal, distributive) has a specific and relatively independent character, but in terms of the integration of these functions both in fiscal system and in system of regional socio-economic development, taxes of this type could be considered in two ways. On the one hand, tax is instrument for regional budget system's needs; on the other hand, it is a mechanism regulating the level of disposable incomes of the population and the structure of their use. In addition, the consistency of income taxes is the involvement in the mechanism of social

regulation of all its elements, which contributes to the achievement of equity in income distribution [1]. Due to the tough climatic conditions in the Arctic regions, the compensation of expenses of population livelihood is significantly higher than in other Russian regions [2-3]. Despite high average per capita incomes, the living standard of the population of the Arctic regions is approaching the living standard of the average Russian, although, it would seem, incomes should be higher than the average Russian level because northern allowances are included in population income of the Arctic regions. In addition, the regional income disparity and living standard of population in the regions has a significant impact on savings. In regions the population with high income savings most of the income than the population of with low income. Therefore, the determination of the fair tax burden of the population of the Russian Arctic will not only balance income with consumer price, but also increase the general income level and population savings.

Today, the issue of fair taxation is the subject of many research papers of foreign and Russian scientists. Such scientists as A.Bryzgalin, L.Lykova, S.Pepelyaev made a significant contribution to the development and research of taxation problems. The issues of tax burden assessment and the influence of different factors on its level (government support, non-tax payments and social instability) are set out in the scientific publications of D.Ryakhovsky, E.Ermakova, A.Kadushkina, E.Balatsky. The problems of population savings and ways of their using were studied by V.Gurtov, T.Zaslavskaya, A.Kalmykov, Y.Melekhin. The population savings as an investment resource for regional development were considered by such famous scientists N.Blank, Y.Kashin, O.Lavrushin, G.Kobylynskaya. However, despite there has been a large number scientific publications relating to separate income taxes and population savings, issues of the relationship and interaction of these indicators remain still low understood. Therefore, the purpose of the research is to establish complementarity between tax burden of an individual and his savings level based on an equitable distribution of population incomes, taking into account the characteristics of the region. To achieve this goal, the following tasks are identified: to determine the dynamics of trends in incomes and population

savings, the tax burden of the individual; to analyze the relationship between these indicators; to make recommendations on improving the taxation of individuals, taking into account regional specifics.

II. MATERIALS AND METHODS (MODEL)

To achieve this goal, the author's methodical approach, methods of statistical and correlation and regression analysis, synthesis and comparison are used. The methodological basis of the study was the papers of domestic and foreign scientists working in taxation and equitable distribution of income.

The official data of the Federal State Statistics Service and reports of the Federal Tax Service are used in this study.

In the first phase of the study, the author's methodological approach was used to adjust the individual's actual tax burden in the context of the cost of living at his place of residence. [4]. To this end, the classical formula for determining the tax burden (the ratio between income tax and population income) was supplemented with an indicator of the subsistence minimum:

$$TB_{max} = I - SM, \quad (1)$$

where TB_{max} - maximum amount of monthly tax payments with minimum consumer expenses, rub.;
 I - monthly income, rub.;
 SM- monthly subsistence minimum, rub.

$$TB_{max'} = \frac{I - SM}{I} = 1 - \frac{SM}{I}, \quad (2)$$

where $TB_{max'}$ - maximum possible amount of the tax burden, with regional subsistence minimum.

In the second phase of the study, a regression analysis was used to identify the relationship between the cost of living and savings of the population. The application of this statistical method is due to the presence of a close relationship between the studied parameters. The determination coefficient (R^2) is more than 80%, suggesting that these parameters may be included in the regression model.

In the third phase, the authors on the basis of the presented methodological base prove that two seemingly unrelated indicators may be correlated with each other and find a certain interaction.

III. RESULTS AND DISCUSSION

A. Trends of income and savings of the population in the Arctic regions

The government has two main objectives in the formation of fiscal policy. The first is a fair distribution of tax burden between segments of the population to reduce inequality in the redistribution of their income. The second is attracting additional budgetary resources for regional development. This means that all aspects of state financial policy including tax and budgetary components should be focused not only on fiscal objectives, but also on solving social and economic problems [5, p. 164]. Is it really? To answer the posed

question, we will conduct an assessment of the main indicators of living standard of population and their structural characteristics. It should be noted that the standard of living can be assessed using different indicators, but the main and decisive indicator is the indicator of the population income. We will analyze the dynamics of the average per capita incomes of the population in the Arctic regions over the past eight years (fig.1).

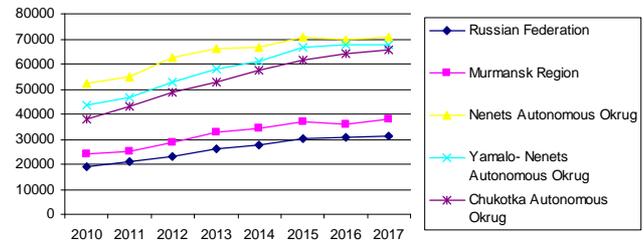


Fig. 1. Dynamics of average per capita population incomes in the Arctic regions, rub.[6]

In the Arctic regions population incomes in absolute terms have a tendency to grow and these incomes are higher Russian average. Considerable deviation income level is observed in the Nenets, Chukotka and Yamalo-Nenets Autonomous Okrugs (more than 2 times from Russian average). Since 2013, income growth is slowing both in Russia as a whole and in the Arctic regions. However, based on the tendency of growth of the population's income in absolute and relative values it cannot be argued about the satisfaction of the population with their welfare level.

In fact, the population assesses its standard of living not by the average rate of income growth, but by the growth in the possibilities of meeting their needs at the expense of the income received. To some extent, "purchasing power" of population incomes in a particular region can be determined by the ratio of average income and the minimum subsistence level [7].

If we compare population incomes in the Arctic region with the minimum subsistence level, then we will note that, despite incomes growth, the living standard of the population in the Arctic regions are approaching the Russian average. The negative point is the fact that the growth rate of the subsistence minimum, as a rule, is faster the growth of income (fig.2).

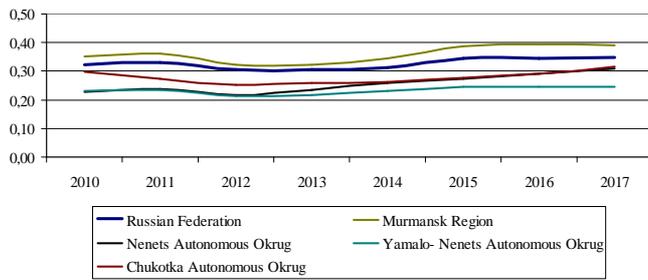


Fig. 2. The ratio of average per capita cash income of the population and subsistence minimum in the Arctic regions

It should be noted that during the period under review, the share of subsistence minimum in population incomes is increased, which gives ground to conclude that living standard and welfare of the population are declined (tabl.1). From this it follows that the potential opportunities of the population to saving is reduced.

TABLE I. THE RATIO OF SUBSISTENCE MINIMUM AND THE POPULATION INCOMES

Arctic region	2010	2011	2012	2013	2014	2015	2016
Russian Federation	0.32	0.33	0.30	0.30	0.31	0.34	0.34
Murmansk Region	0.35	0.36	0.32	0.32	0.35	0.39	0.39
Nenets Autonomous Okrug	0.23	0.24	0.22	0.24	0.26	0.27	0.29
Yamalo- Nenets Autonomous Okrug	0.23	0.23	0.21	0.22	0.23	0.25	0.24
Chukotka Autonomous Okrug	0.30	0.27	0.25	0.26	0.26	0.28	0.29

^a. calculated by the authors according to the Rosstat [6]

There is growing interest in population savings as an internal reserve for the economic development of regions in light of recent political events taking place in the world community. This is due, firstly, to the integration of Russia into the world economy through the export of natural resources, and, accordingly, its dependence on the cyclical nature of world commodity markets, as well as geopolitical tensions that arose in March 2014 and caused economic sanctions. Secondly, it is caused by the volatility of oil prices, which determined deterioration in foreign trade conditions for Russia [8].

The presence of a high level of income is not a sufficient basis for asserting that the population of the region has advantages in terms of opportunities to form savings.

According to the data presented in Table 2, since 2010 it is possible to observe a general tendency to reduce the share of population savings in the structure of disposable income in Russia as a whole and in two Arctic regions (Murmansk Region, Nenets Autonomous Okrug). There are fluctuations in the volume of savings in Chukotka and Yamalo-Nenets Autonomous Okrugs, which may be caused, firstly, by the uncertainty of the population in the constancy of expected income, and secondly, by differences in perceptions of welfare

level. In the Arctic regions, an overestimated level of tax burden is the additional deterrent to savings.

TABLE II. SAVING^b AND INCOMES GROWTH OF POPULATION, %.

Indicators	2010	2011	2012	2013	2014	2015	2016
<i>Russian Federation</i>							
Incomes growth	112.4	109.6	111.7	111.7	107.1	109.7	100.9
Saving	20.7	16.2	14.7	14.7	12.9	18.1	15.7
<i>Murmansk Region</i>							
Incomes growth	113.7	105.2	114.3	113.8	103.8	107.9	98.0
Saving	22.5	18.4	18.6	18.9	14.7	18.7	15.2
<i>Chukotka Autonomous Okrug</i>							
Incomes growth	108.7	112.9	112.7	108.6	108.8	107.6	103.7
Saving	41.8	44.3	47.4	50.0	54.0	54.4	52.7
<i>Yamalo- Nenets Autonomous Okrug</i>							
Incomes growth	109.7	107.9	112.4	110.4	105.5	109.0	101.1
Saving	35.,3	35.7	34.6	36.2	36.7	40.8	41.7
<i>Nenets Autonomous Okrug</i>							
Incomes growth	107.2	104.5	114.1	106.3	100.3	106.6	98.7
Saving	60.2	57.5	57.4	56.5	51.4	51.9	50.6

^b. Savings are calculated in the income structure

^c. calculated by the authors according to the Rosstat [6]

However, despite fluctuations in savings volume, savings occur every year of the analyzed period, which provides a basis for evaluating this resource as a source for regional development.

B. Trend of tax burden in arctic regions

In Russia, the taxation of individuals is represented by three taxes: income tax, property tax and transport tax. For the purposes of this study, the focus will be shifted towards income-type taxes, namely, personal income tax. This is primarily due to the key role of this tax in the formation of regional budget revenues.

A negative factor causing a decline in the standard of living of the population is an increase in the tax burden of the individual, this pattern is particularly evident in the regions of the Russian Arctic (fig.3). As objects for comparison, regions of the Southern Federal District were selected. The choice of this federal district is due primarily to the low standard of living of its population. According to Roskomstat data in the regions of the Southern Federal District (with the exception of the Krasnodar Territory), one fifth of the population living in this District has incomes below the subsistence minimum.

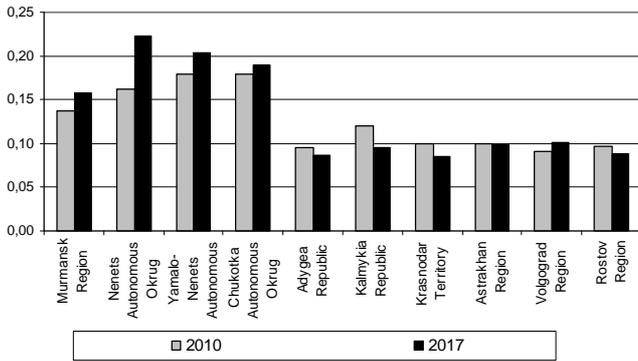


Fig. 3. The actual level of tax burden,% [9]

The total amount of income received by the taxpayer is the basis for determining the tax base for income tax. Moreover, the amount of tax are directly proportional to the tax base. If you do not take into account the structure of income when calculating the tax, then it may happen that the tax amount of an individual will significantly exceed his personal income. In this case, for a person the decision to stop work seems reasonable. In the Arctic, due to the high cost of living, the likelihood of a situation arising when the amount of tax exceeds the income remaining after the exclusion of the subsistence minimum is higher. Therefore, in order to reduce the emerging regional imbalances in the distribution of income, it is especially important to determine the maximum tax rate in comparison with the personal income of an individual living in a certain territory. Based on the methodological author's approach presented above, we will correct the actual tax burden of the individual in the context of the cost of living at his place of residence (fig.4).

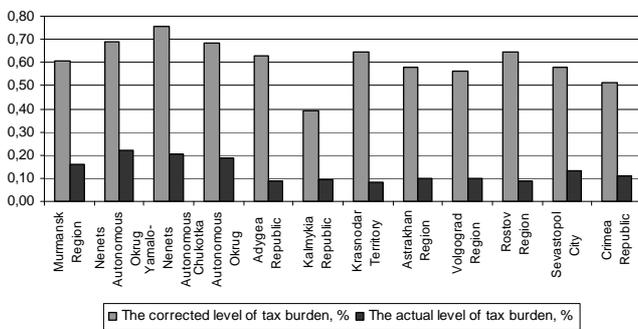


Fig. 4. The actual tax burden and tax burden, taking into account the cost of living (the corrected level) in the regions of the Arctic and the Southern Federal District, 2017

In the analyzed regions, the variation of the maximum possible (corrected) burden is significant, the amplitude is 39-75 percent, with a dispersion equal to 10 percent. At the same time, the fluctuations of the actual tax burden are much more smoothed: the amplitude is 10 percent, the variance is 4 percent. This indicates a high level unevenness of tax to income individual of residents of different regions. For

example, the actual tax burden (under the current legislation) on residents of the Kalmykia Republic is about 10 percent, and on average in the Arctic regions 18 percent (the difference is only 8 percent). At the same time, the difference in incomes of the population is colossal (more than 4 times). In case of correcting the tax base for personal income tax, taking into account the costs of living in the Kalmykia Republic, the tax burden (corrected) will be about 39 percent, which on average is already 25 percent lower than in the Arctic regions.

Thus, the correction of the tax burden level is required because it allows leveling interregional disparities caused by different levels of the cost of living of an individual in a particular region.

C. Analysis reciprocal influence between of population savings and income tax

The relationship between income tax and the minimum subsistence is not obvious, but it does exist, which was indirectly proved by the author's methodological approach in the previous section of this study.

The relationship between the standard of living and savings of the population was established using correlation and regression analysis. As regression parameters, the savings and the cost of living in the respective regions were chosen. The result for the Arctic regions is presented in fig.5, and for the regions of the Southern Federal District in fig.6.

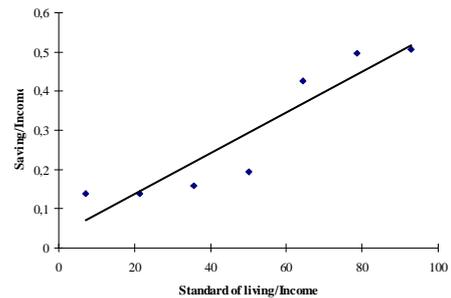


Fig. 5. Regression dependence between the standard of living and savings of the population of the Arctic [6]

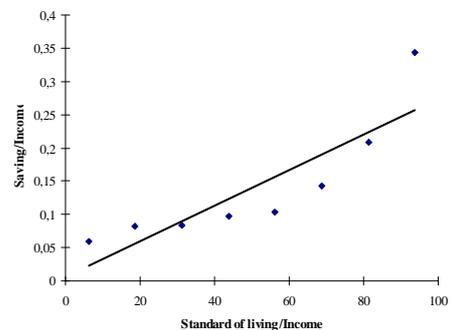


Fig. 6. Regression dependence between the standard of living and savings of the population of Southern Federal District [6]

Each point on the graphical interpretation of the results of the regression analysis shows the relationship between the standard of living and savings of the population of the regions of the Arctic and the Southern Federal District.

In the Arctic regions the regression is $Y = -1.94593X_1 + 1.009$ and shows the inversely proportional dependence of the variable on the resulting factor, that is with the increase in the share of the subsistence minimum in total income, population savings will decrease.

In the regions of the Southern Federal District the regression is $Y = 0.9667X_1 - 0.27365$. A positive sign in front of the variable X_1 shows a direct relationship between savings and subsistence minimum.

The revealed dependences allow us to conclude that the share of the subsistence minimum in income significantly influence population savings. The higher its share in the structure of monetary incomes of the population, the lower the standard of living and accordingly the level of formed savings is reduced.

The interrelations between the three parameters analyzed (income tax, savings and the subsistence minimum) established in the study need to be included when a set of government regulatory measures is developed. Therefore, before talking about the correctness and fairness of actions taken by the state in reforming income taxation, it is necessary to consider these important factors and interrelations that allow, on the one hand, taking into account the specifics of the region, and on the other, to increase the population's possibility to form the saving.

IV. CONCLUSION

Based on the results obtained in this study, the following conclusions were made:

1. Income tax should be considered not only as instrument for regional budget system's needs, but also as a mechanism regulating the level of disposable incomes of the population and the structure of their use.

2. It was identified that the population savings may be considered as an additional reserve for the investment development of the regions, including the Arctic, even despite the abrupt changes in their volumes in the structure of using the population's income.

3. Today, the issue of income tax reform continues to be a divisive one. In the authors' opinion, the transformations necessary for improving the system of taxation of personal income should be carried out taking into account regional specificities.

4. To address regional specifics, we suggest using the subsistence minimum, for example, as a non-taxable minimum for forming the tax base. Thereby it ensures a socially equitable redistribution of income between different segments of the population and leveling the difference in living of population in certain territories. Especially this proposal is

relevant for the population living in the Russian Arctic. As stated by Russian President V. Putin at a meeting on November 9, 2018 with the Head of the Federation of Independent Trade Unions, M. Shmakov, when discussing taxation issues: "We need to analyze what is happening by industry and in the region, to understand what is happening there. Not on paper, but in real life..." [10].

5. In the future, the authors are planning to develop an algorithm for the implementation of tax measures of the variability of tax rates, taking into account their impact on the level of income and population savings of the Russian Arctic regions, which allows to identify the socio-economic effects of tax innovations for both the state and taxpayers. It is expected that the algorithm may be used as a tool for management decisions.

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