

ASSESSMENT OF THE DYNAMICS IN THE INCOME OF RURAL HOUSEHOLDS IN BULGARIA

Abstract: One of the main objectives of the Common Agricultural Policy (CAP) in the two programming periods 2007-2017 and 2014-2020 is to improve the quality of life of rural households. An important and integral part of the standard of living is the level and structure of their income. The article presents the results of a scientific study of changes in the incomes of rural households in Bulgaria during the EU membership. The extent of income inequality between rural and urban households has been measured. The structural changes in the income level of the two types of households have been examined. Appropriate conclusions have been drawn regarding the comparative trends in development of the level and income structure between rural and urban households.

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1. Methodology and data

The survey used the following absolute and relative statistical indicators: total nominal income per household / person; monetary nominal income per household / person on average; the relative share of cash in total income; consumer price index; index of real income per household. The following research methods are applied: statistical grouping method, variational analysis, index analysis, integral coefficient of income inequality, summary measure of structural differences and changes in household incomes, comparative analysis, graphical method, etc. Data from officially published sources on household incomes, including by residence during 2004-2018 were used from NSI; household budgets in Bulgaria (annual editions of NSI); statistical yearbooks and etc.

1.1. Integral coefficient of income inequality in rural and urban households by decile groups

Using the integral coefficient, it examines the degree of disparity in household incomes between the different decile groups in the villages and towns. Theoretically absolute uniformity is achieved in a case where all decile groups have equal share. The approximation of the empirical structure of the decile groups to the theoretically possible structure, or also called the reference structure, shows the degree of income disparity between the different household groups.

The coefficient of irregularity is calculated by the following formula:

$$(1) \text{ Kr} = \sqrt{1 - \frac{2}{1+kx \sum V_i^2}}, \text{ where}$$

- k is the number of decile groups,
- V_i represents the relative share of households in the i decile group.

The value of the integral coefficient is normalized within the theoretical limits 0 to 1 (respectively to 100%), ie $0 \leq \mathbf{K}r \leq 1$. As empirical structure is more irregular, the coefficient $\mathbf{K}r$ is greater than 0 and tends to 1. Practically it does not reach this upper theoretical limit. Conversely, at low $\mathbf{K}r$ values almost to 0, there is a relatively even distribution of the households in the decile group of income.

1.2. A summary measure of differences in household income patterns

The Structural Difference Coefficient ($\mathbf{I}S$) used reflects not only the differences between the relative shares but also their size over the respective study periods. It is obtained by the following formula:

$$(2) \mathbf{I}S = \sqrt{(1 - 2 \sum v_0 * v_t) / (\sum v_0 * v_0 + \sum v_t * v_t)}, \text{ where :}$$

- v_0 and v_t are the relative shares of the separate parts of the different structures in two compared periods / o and t / or in two compared territories. When the income structures over the comparative periods are the same, ie when for all parts of the population In many cases, the income structures during the comparative periods are the same, ie when $v_0 = v_t$ then

$$\sum v_0 * v_t = \sum v_0 * v_0 = \sum v_t * v_t \text{ and therefore } \mathbf{I}S = 0.$$

The coefficient $\mathbf{I}S$ is equal to 1 or 100%, respectively, when the two structures are completely opposite.

1.3. Some methodological changes in the structural elements of income households in accordance with Eurostat requirements

Since 2008 revenues are coded according to the Revenue Classification. It is developed for the needs of household budget surveys and harmonized with Eurostat requirements for EU-SILC and COICOP-HBS respectively.

With these changes in the household income structure, there is no single source of household income, which was present until 2007. In the new structure, the valued income from the household is combined with the income from entrepreneurship in a new item "Self-employment income". Thus, it cannot be traced how the share of income only from the household has changed, which in the villages before 2008 holds a significant share (37.4% in 2004 and 21.3% in 2007).

Another problem is the measurement of the share of household income only from agriculture. In the group "Income from self-employment activity" since 2008 the income from entrepreneurship is included at the same time in all economic activities. In this way, it is impossible to separate the income from agriculture alone. The position "Wage income" is also not differentiated by economic activities.

1. Results and conclusions

The analysis of the results obtained includes the following three components: a study of the level of nominal income before and after 2007; analysis of the income structure in the period 2008-2018 and analysis of real incomes of rural households during the period 2008-2018.

2.1. Analysis of the level of nominal income households by place of residence before and after 2007

The necessary information on the dynamics of household income in rural and urban areas is presented in Table 1.

Table 1.

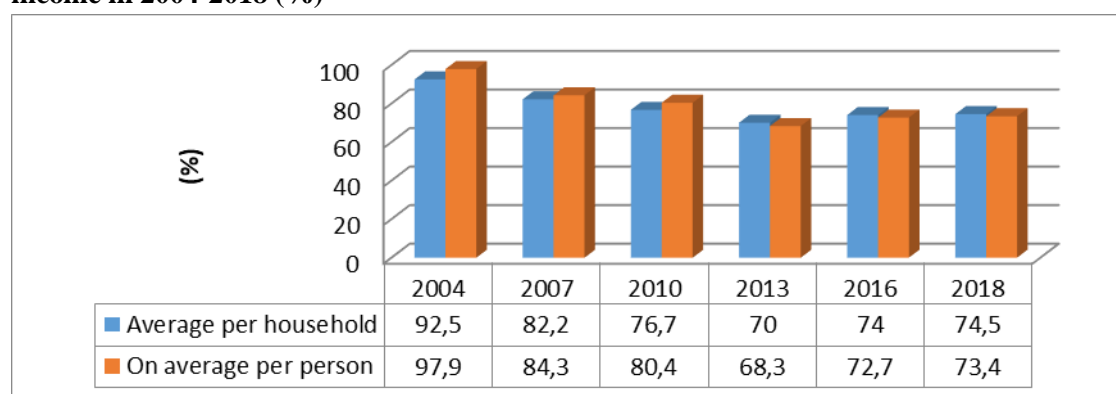
**Total income of households and persons residing in them
before and after 2007**

Indicators	2004		2007		2010		2013		2016		2018	
	Town	Village	Town	Village	Town	Village	Town	Village	Town	Village	Town	Village
Average per household-Euro	3338	3088	4573	3761	5174	3970	6673	4675	6958	5152	7823	5829
% village to town	100	92.5	100	82.2	100	76.7	100	70	100	74	100	74.5
Change index against 2004 (%)	100	100	37	22	55	28	100	51	108	67	134	89
Average per one person - Euro	1272	1246	1803	1519	2065	1661	2830	1934	2983	2168	3511	2578
% village to town	100	97.9	100	84.3	100	80.4	100	68.3	100	72.7	100	73.4
Change index against (%)	100	100	42	22	62	33	122	55	134	74	176	107

Source: NSI, Revenue, Expenditure and Consumption, 2004, 2018.

Trends in rural and urban household income development in the period 2004-2018 are similar. In both groups of households, there is an increase in the average income per household and the average per person. A comparative analysis between the towns and the villages shows that the growth of 89% of rural households' income in 2018 compared to 2004 behind the growth of incomes of urban households (134%), i.e it is 45% lower. The lag is also characteristic of the increase in the average income per person: 176% versus 107% in favor of a towns. The uneven increase in income between urban and rural households is projected to reduce the relative share of rural households' income in urban household income. If before 2007 it is in the range of 80-93%, then in 2018 rural household income makes up 74.5% of urban household income. Similar is the situation with the average share of one person. If in 2004, the share of the average income per person in the villages is almost 98% of that in the towns (i.e there is almost an equalization of the incomes of one person between the villages and the towns), then in 2018 there is a predominance of income in towns. Per capita income in rural areas being reduced to 73.4% of those in towns. These processes are illustrated in Figure 1.

Figure 1. Changes in the relative share of total rural income to total urban household income in 2004-2018 (%)



Source: Author's graphic with data from NSI

The analysis done so far shows that despite the increase in total incomes in both rural and urban areas in 2018 compared to 2004, the rate of this increase is lower in the villages. Accordingly to this trend decreases the share of rural households' incomes relative to urban households' incomes. During the period considered, the inequality between the city and the village in terms of income received has deepened (Table 2).

Table 2.
Structure of households by place of residence and decile income groups in the period 2004-2017 (%)

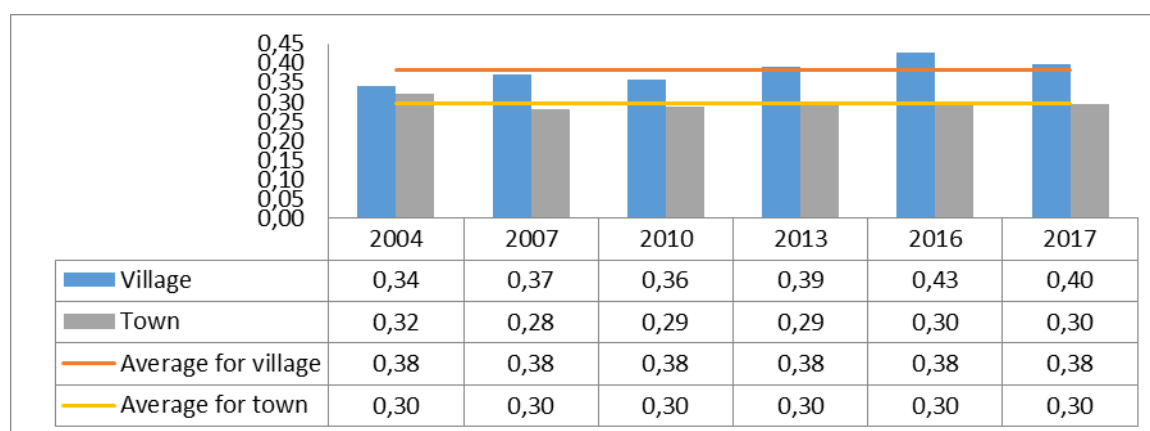
Decile groups	2004		2007		2010		2013		2016		2017	
	Town	Village	Town	Village	Town	Village	Town	Village	Town	Village	Town	Village
I	4.6	7.4	7.4	14.3	4.9	9.0	4.6	10.3	3.4	9.2	3.4	9.8
II	9.3	11.7	13.0	16.8	7.2	10.9	7.3	12.1	7.2	11.5	7.6	12.5
III	16.2	17.8	16.5	18.8	14.1	19.5	14.1	19.9	13.1	22.2	13.9	21.2
IV	17.5	16.8	15.0	14.6	17.3	18.9	15.4	18.8	18.1	20.7	14.5	19.5
V	13.8	13.2	11.3	9.9	14.9	13.4	13.2	15.1	14.2	13.5	12.6	13.1
VI	10.5	8.7	9.3	6.4	11.4	9.1	9.9	8.3	10.7	8.4	11.8	7.0
VIII	6.5	5.2	6.5	4.3	8.1	5.7	8.7	5.0	8.1	5.0	8.3	5.2
VIII	4.9	3.8	4.9	3.0	6.4	4.5	5.8	3.2	6.4	3.4	6.6	4.1
THEM	3.4	2.2	3.6	2.2	4.3	3.2	4.6	2.4	4.7	2.1	4.8	2.4
X	13.3	13.2	12.5	9.7	11.5	5.8	16.5	4.8	14.0	4.2	16.5	5.1

Source: Statistical Yearbook, NSI, 2005, 2018

The analysis of the data in Table 2 shows the trends in inequality between the rich (the highest decile group -X) and the poor (the lowest decile group -I). The coverage of the poorest people in rural areas in 2004 amounted to 7.4% and it increased to 9.8% in 2017. In towns this percentage decreased from 4.6% in 2004. at 3.4% in 2017. In accordance with the marked change in the poorest sections of the population, the share of the richest people in the villages decreased from 13.2% in 2004 to 5.1% in 2017 (more than twice). In the urban population there is an increase in the coverage of the richest from 13.3% to 16.5%.

The picture of the income inequality of the population is complemented by the calculated values of the integral coefficient of income inequality of rural and urban households by decile groups (Figure 2).

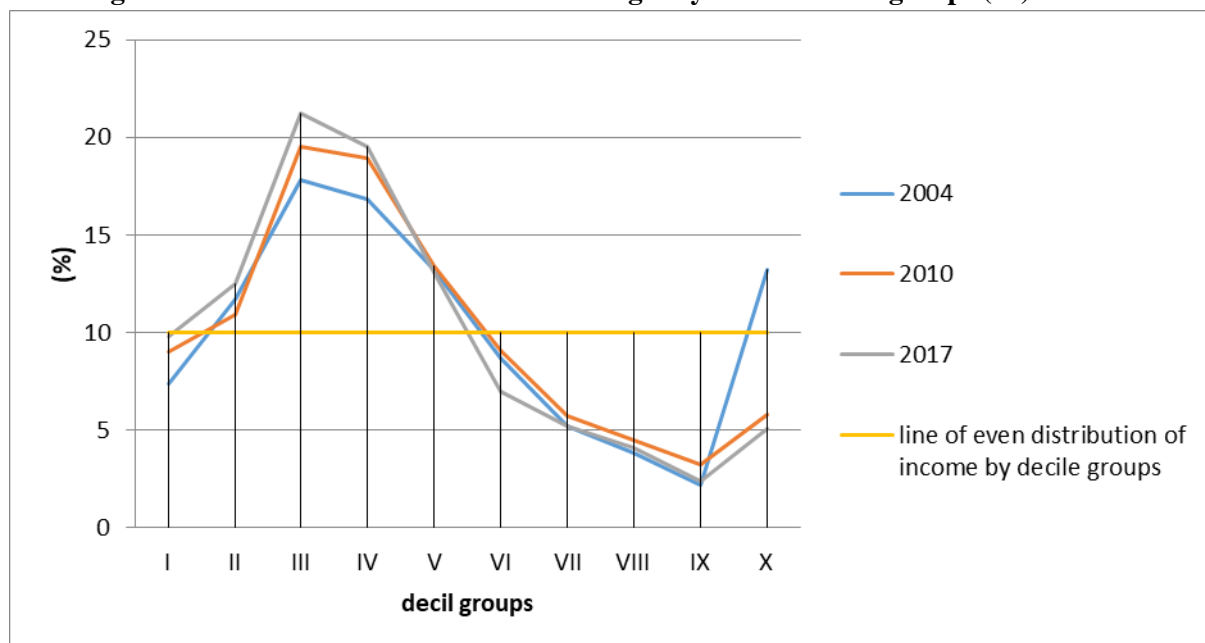
Figure 2. Coefficient of unequal incomes in rural and urban households during 2004-2017 (Kr)



Source: Own calculations with statistical yearbook data, NSI.

The figure above shows a worsening of income inequality in rural households. From an initial value of 0.34 in 2004, Kr increased to 0.4 in 2017. The average value of Kr in the villages was 0.38 and in urban it is 0.3. Among the urban population, although only 2 points observed trend of reducing income inequality. Marked differences in the dynamics of the inequality of income between rural and urban households are related to the degree of their concentration around the lower-income decile groups (Figure 3 and Figure 4).

Figure 3. Distribution of households in villages by decile income groups (%)



Source: Author's graphic with data from Statistical Yearbooks, NSI.

Figure 4. Distribution of households in towns by decile income groups (%)



Source: Author's graphic with data from Statistical Yearbooks, NSI.

Comparing the two graphs at first look, they appear to be similar in shape. What is common between them is that the coverage of both rural and urban households in the middle income group is relatively low. The deeper reading shows the disparate differences between urban and rural households, which are expressed in the following. Rural households are concentrated over the years in second, third, fourth and fifth groups, i.e in lower income groups. Households in towns are concentrated mainly in the groups from third to sixth and in the last tenth group with the highest income.

The analysis of the data shows that the share of lower income rural households has increased since 2007 and the scope of those with the highest incomes is decreasing accordingly. For urban households, the observed changes are in the opposite direction: a decline in the share of low-income population and an extension of the highest-income households. Rural households are characterized by increasing levels of income inequality, with a peak in 2016. In urban households in 2017 there is little overcoming of income inequality compared to 2004.

In rural households, monetary income up to 2007 occupy about 60 -75% of their total income, while in urban households they ranged from 80.3% to 85.2%. After 2007. there is a sharp increase in the share of monetary in the total income of rural households, reaching 90.5% in 2018. and it is almost equals to that of urban households. The significant leap in the scope of monetary income in rural areas during our EU membership period is due to changes in household income methodologies in terms of their structure . Lack of household income as a self-contained structural element in household income after 2007 practically does not take into account the contribution of household monetary income in villages. To a large extent , lower monetary income for rural population offset the subsistence income of the household, which largely provides for their food needs. They are valued and included in the amount of total income, but the part of the net sales of household output in the amount of monetary income is not taken into account. This is the reason for the value of the monetary income of the households in the villages after 2007. almost approaching that of their total income.

The income structure proves the dependence of rural people on the domestic economy, social transfers (mainly pensions) and paid employment until 2007. (Table 3) .

Table 3.

**Structure of total income by source of income
average per household before 2008 (%)**

Sources of income	2004		2005		2006		2007	
	Town	Village	Town	Village	Town	Village	Town	Village
Total income	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1.Salary	48.4	21.7	52.0	25.1	52.7	29.5	53.5	32.1
2.Outside salary	4.4	2.9	4.6	3.0	4.5	3.0	5.0	3.7
3 From entrepreneurship	4.3	3.1	4.6	4.4	4.8	5.0	5.3	5.8
4.From property	0.9	0.3	0.9	0.5	0.9	0.2	1.2	0.4
5.Social payments incl.	23.8	27.1	23.8	28.4	24.1	29.2	23.7	29.8
- benefits for the unemployed	0.5	0.4	0.4	0.3	0.3	0.4	0.3	0.4
-pensions	20.9	24.9	20.7	25.5	21.1	26.4	20.5	26.1
- family allowances for children	0.7	0.6	0.7	0.8	0.6	0.7	0.5	0.7
- other social assistance	1.7	1.2	2.0	1.8	2.1	1.7	2.4	2.6
6.From domestic farm	6.8	37.4	5.0	32.1	3.9	25.3	3.1	21.3
7.From sale on the property	0.5	0.4	0.7	0.4	1.5	1.9	1.7	1.3
8.Other income	10.9	7.1	8.4	6.1	7.6	5.9	6.5	5.6

Source: Own calculations with data from the Household Budget, NSI

Analysis of the data shows that the share of wages in total household income in urban areas in the pre-accession period is significantly higher than the same in villages (more than double in 2004.) Then established trend of reducing the difference up to 1.7 times in 2007. At the same time, household income in villages exceeded the same in the towns many times - 5.5 in 2004 respectively and 6.8 times in 2007. This is predetermined by the natural character of production in rural households, which is aimed at self-sufficiency in food. The dominance of the domestic economy in the villages is an obstacle to raising the standard of living. Natural producers ensure their survival but cannot generate other opportunities for rural development.

For a complete measurement of the changes in household income structures in 2018. compared to 2008, the integral coefficient of structural changes **Is** is calculated. Greater overall structural differences are observed in rural households **Is** = 15.6 versus **Is** = 6.9 in urban households.

The following conclusions are drawn from the analysis:

The degree of income inequality between rural and urban households is increasing. Both total and monetary income saw an overall increase in its levels in 2008. compared to 2004.

Nevertheless, the increase in cash item income during the period can not compensate for the backwardness of its level in the villages to the level of household income in urban areas.

The rural population continues to have more unenviable incomes than the urban population. The role of the household is significant in the structure of the total income of rural households in the period before Bulgaria's EU membership.

However, household income until 2008 gradually decreased so at the expense of increasing importance of social sources, mainly pensions due to the accelerated continuing aging of the rural population.

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