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Chronic Poverty and
Income Inequality
in Georgia

Economic - Statistical Research

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Table of Contents

1. Foreword

Poverty alleviation still remains one of the key challenges for Georgia, as for any sovereign country. According to our calculations, in 2016, every seventh family consumed less than the subsistence minimum. Further, following a significant decrease in 2012-2014, the poverty level did not substantially change in 2015-2016; which means that the mentioned decrease might be of episodic nature and in reality there is serious risk of an increase in the scale of poverty. In 2014-2016, the situation became even more complicated, since the trend of reduction in the difference between the income levels of the richest and the poorest people, observed before, almost came to a stop. This points to the need for further economic-statistical research into poverty and inequality, and the implementation of a more effective policy for poverty reduction.

The present report does not and cannot have the ambition of being a comprehensive review of this multi-dimensional problem. Instead, the main goals of our study are as follows:

1. Analyses of annual and quarterly time series of the poverty level against the official subsistence minimum;
2. Study of the dynamics of panel data of the poverty level against the official subsistence minimum;
3. Analyses of the dynamics of the chronic poverty level against the official subsistence minimum;
4. Calculation of the poverty index and the study of its changes;
5. Study of annual and quarterly time series of household incomes, in particular the total nominal inflowing resources, total incomes and cash incomes with and without public social payments and pension;
6. Analyses of the dynamics of panel data of household incomes with and without public social payments and pension;
7. Study of inequality of household incomes using decile coefficients;
8. Analyses of annual, quarterly and panel dynamics of the GINI index with and without public social payments and pension;
9. Detection of trends of interaction between the poverty level and inequality of incomes by means of annual and quarterly series and panel estimations;
10. Detection of trends of interaction between chronic poverty and inequality of incomes;
11. Analyses of several important factors of poverty, including chronic;
12. Elaboration of recommendations.

Before moving to the analyses of the above listed aspects of poverty and inequality, we shall seek to understand the essence of poverty by answering the question - what is poverty?

The answer to this question could be summarized in just one sentence - poverty is the lack of welfare. At first glance, the definition is very simple, but it is very difficult to explain what welfare and the lack thereof truly means. While looking at the welfare of an individual, it is clear that it reflects his/her needs, and possibilities for their satisfaction. Viewing welfare in the context of society is much more difficult. This requires us to answer the following questions:

- On which levels can welfare be analyzed?
- What elements make up welfare?
- Can these elements be measured?
- In which units should they be measured?
- What is the minimum welfare standard?

Structuring welfare is possible by geographic, ethnic and other characteristics. We can identify five different levels of welfare:

- Elementary level - individual welfare;
- Micro level - family welfare;
- Mezzo level - neighborhood welfare (on settlement level);
- Macro level - country level welfare;
- Mega level - international level welfare.

The assessment of welfare is difficult and the elements in its composition become more diverse proportionally with the increase of scale. The macro level is relatively more homogeneous in comparison;

however, it can also be non-homogeneous due to the size of the country. For example, Armenia, a mono-ethnic country with a small territory basically populated by people with more or less similar traditions, and the Russian Federation with a territory of 17.5 million square kilometers, populated by almost 200 different ethnic groups and with all climate belts - from arctic to subtropic, cannot be considered as similarly homogenous. Despite this, the macro level is considered as the most homogenous, which is preconditioned by two mutually complementary components: the first is the ethnic psychological component - the dominating group in any country, forming the living standard no matter how diverse the country is; the second is the political component, preconditioned by the desire of unity within the country, and all standards for the assessment of welfare serve to this goal respectively.

Thus, it could be said that welfare is the phenomenon of country scale, no matter that its elements differ on individual, family and settlement levels; however, the standardization of these differences can be ensured inside the country and allocated more or less on the same vector.

The elements comprising welfare by three main groups might be separated so:

- Material - living conditions, nutrition, different types of real-movable property and so on;
- Intellectual - knowledge, education, health, skills, connections and so on, i.e. human capital;
- Moral - circumstances associated with morality and law, attitudes and environment.

The components of these groups are changeable in accordance with countries, regions and individuals, thus, a general characterization of welfare is challenging, though not impossible. Additionally, it is hard to determine what is more important - justice or clothing, car or engineering education, food or access to healthcare.

True, different social groups have different priorities at different levels of development. It was mentioned above that the highest level of homogenous environment is the country, but inside each country society is never homogenous, with its social or economic status or intellectual capacities. Thus, while speaking about welfare, it is important to identify large groups of interests which are more homogenous in terms of perception of welfare, than of society in total.

This demonstrates clearly that poverty is a relative concept and contains certain measurable and non-measurable factors, together with fully precise social, economic and political threats:

1. Poverty and inequality substantially impede social development - part of society cannot participate in social life, is not able to implement its own capacities, and cannot invest in social capital, so substantially impeding the harmonious development of the social environment. The impact of chronic poverty is especially negative since social regress is an inevitable result of living in poverty for a long time;

2. Poverty and inequality substantially impede economic development - the purchasing power of the population is inversely proportional to the poverty level. The higher poverty and inequality is, the lower the purchasing power of the population, which means a low demand level - a significant factor impeding economic growth;

3. Poverty and inequality substantially impede political development - the higher the poverty and inequality, the more fragmented, polarized and alienated society is; the groups of interests are more chaotic and contradictory, which substantially complicates the possibilities for achieving political consensus;

4. Poverty and inequality increase contradiction inside society and convey the risk of social exposure-of course this does not mean that in conditions of an indicator of poverty, social exposure will by all means take place, but this develops productive grounds for conflict within society, which makes life easier for groups striving for internal social contradiction.

Even this incomplete list demonstrates how significant the impact and risks of poverty and inequality are, and consequently how important detailed analyses, review and prevention of this issue is.

The present report is dedicated to just one dimension - poverty against the official subsistence minimum, and we'll view single aspects of chronic and transient poverty against this line.

2. Theoretical and Methodological Background

2.1. The Evolution of Poverty

As we mentioned in the foreword, poverty is a relative concept and in general signifies a lack of welfare. Welfare means the quality of understanding and realization of the essence of life. How can poverty be revealed and what forms can it take? The answer to this fundamental question necessitates the identification of the following main groups of human interests and needs:

1. A human is a living organism and to exist, it at least requires food;
2. After existence it is important for a human to have food of a sufficient amount, desirably diverse. Further, a human needs clothing, shoes, essential household items and so on;
3. After minimal material provision, a human needs health, education, social and other immaterial but absolutely specific services, as well as access to them;
4. Upon being provided with items and services, a human needs a safe social, economic, ecologic and political environment, accessible infrastructure and so on;
5. Finally, a human by all means needs future prospects-landmarks to which s/he aspires. These landmarks can be material or immaterial, but their existence is a precondition for human welfare.

We were able to identify five key evolutionary steps in poverty:

- Physiological poverty - when food is the number one priority, so strong that other problems take a back seat;
- Income poverty - when the problem of receiving food energy is more or less solved and life quality improvement becomes an issue: receiving the required daily 2200 kcal of food energy is essential, but not enough. The composition of this 2200 kcal of energy becomes important; and it is crucial to know whether, besides food, an individual has access to essential non-food goods and services; otherwise, whether an individual has income sufficient for the desired nutrition and non-food expenditures;
- Deprivational (non-monetary) poverty - when the problem of food and minimal non-food goods and services is more or less solved, but new landmarks are identified, meaning access to education, healthcare and other services and commodities. Thus, deprivational poverty is poverty of a higher registry than the two previous steps;
- Structural poverty - poverty caused by lack of access to infrastructure and associated with insufficient legislation. Further, a significant component of structural poverty can be the issue of following and lagging behind technological progress. Thus, structural poverty can be viewed as an instrument for measuring the focus on development, and is poverty of a higher registry than the previous three steps:
- Mental poverty - represents a social behaviors model produced from the human consciousness which is based on his/her subjective feeling of being poor (however, according to consumption level and quality, she/he might not be poor at all) and in need of support (of state, relatives or friends).

The represented conceptual division is conditional. Obviously, no strict demarcation line exists between the mentioned steps of poverty evolution. Their interdependence is diffusional, since movement from one step to another is invisible, but the stratification of society in this way is an essential precondition for the elaboration of an effective policy for poverty reduction. The study of the simplest form of poverty and elaboration of assistance programs are not enough to solve the problem, which is clearly demonstrated in practice in Georgia.

The abovementioned vividly demonstrates the importance of adequate assessment, diagnostics and analyses of poverty for the development of any country. The format of the present report does not allow for detailed analyses of this issue. Instead, the study reviews poverty indicators against the subsistence minimum in force, which is more or less close to the income poverty step mentioned above.

2.2. How to Measure Poverty

Measuring poverty is a difficult and complex task. It should be mentioned, from the very beginning, that it contains many conditions and is the result of large scale consensus.

Based on the experience existing to date, there are two approaches to poverty assessment:
- The *welfarist approach*, when the poverty level is assessed by monetary and non-monetary indicators; the latter being as follows: accessibility (for example to education, healthcare and so on); pro-

vision of long-term supplies of durable goods; employment; achieved education level and so on. In short, the welfarist approach enables a comprehensive study of poverty;

- The *non-welfarist approach*, when non-monetary indicators are not used for the assessment of the poverty level, and the minimal welfare standard is too low and determined by a particular level of income and expenditure.

The welfarist approach to the assessment of poverty level is basically used in economically highly developed countries, while the non-welfarist approach is basically used by those countries having economies not distinguished by a high level of development. In international best practice, a purely welfarist or non-welfarist approach can almost never be met-in fact, in all cases the welfarist approach contains non-welfarist components, and vice versa.

The conceptual grounds presented above mean the use of both approaches for poverty assessment is necessary, but this is a task of a much broader format than the goal of our study and so the practice in force today in Georgia is used for the present report.

In Georgia, poverty is still assessed using the non-welfarist approach.[1] For the assessment of poverty using the non-welfarist approach, the following two criteria are used:

- Defining poverty by income- in this case, poverty is studied by comparing the income of the population with the level of welfare defined in advance;
- Defining poverty by consumption- in this case, poverty is studied by comparing consumer expenditure with the level of welfare defined in advance.

Each approach has advantages and disadvantages.

Poverty definition by income is preferable for those countries where the shadow economy level is low and incomes are registered precisely, as well as where the number of income sources is much lower than expenditure directions. As such, information regarding incomes is relatively complete. In previous years, this problem was substantial in Georgia-respondents with low enthusiasm provided imprecise information about their incomes. Of late, this is not so much an issue.

The advantage of assessing poverty by consumption is that the welfare of the population is studied. The welfare, in its essence, is the number of goods and services needed to ensure the decent life of an individual. Due to that, the concept of consumption in content is closer to welfare than the concept of income. Income does not yet mean consumption. Further, incomes are far less stable, especially in countries like Georgia, where almost half of total employment is self-employment on one's own farm. Such incomes are strongly affected by seasonality and are less stable as a result. However, there are also disadvantages to this approach, for example: consumer expenditures include expenses made for healthcare services, for which part of the population uses all possible inflowing resources and where acute disease often means extended poverty for the long-term.

In our opinion, of the two approaches, more acceptable is an assessment of poverty by consumption, the practice of which exists in Georgia. That said, there is one important specific: how to determine the poverty of a household and compare families of a different demographic composition; for example, taking four-member households of three different compositions:

1. Parents of working age and two underage children;
2. Parents of pension age and two children of working age;
3. Parents of working age and two children of working age.

All three households consist of four members, but by composition they are substantially different and the direct assessment and definition of poverty simply by per capita calculation will not be correct.

To compare households, we used the scale of equivalence respective to physiological demand for food energy developed by Geostat, which is used for the recalculation of the demographic composition of households on an equivalent male adult of working age. For this purpose, the following coefficients are used:

|		Coefficient
1	Child of preschool age	0.64
2	Adolescent	1.00
3	Man of working age	1.00
4	Woman of working age	0.84
5	Man of pension age	0.88
6	Woman of pension age	0.76

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[1] It is to be mentioned that in addressing social assistance, poverty diagnostics are made using the welfarist approach.

After recalculation by equivalent adult, it is important to estimate the scale effect. The need for an effective economy of scale is based on the circumstance that a consumer's household needs do not increase proportionally with their growth. Otherwise, the need of one household with two members is less than that of two households with one member. This is caused by the fact that there are items and supplies of common use in the household, the number of which does not increase with a greater number of family members. For example, one bulb gives light just as much to one as seven members of a household, five members can watch one TV and so on.

The coefficient of the effect economy of scale is empirical and defined based on the results of study. The data of the household survey demonstrate that consumption grows together with a change in the size of a household calculated per equivalent adult, but the interaction of the size of the household and total consumption is most precisely described by qualitative function and not by linear or exponential function. The grounds for this conclusion are provided by the R^2 indicator of the quality of compliance of different regressive models with actual data, which, for the linear regressive model, is 0.5022, and for exponential- 0.5113, while for the power model this indicator is 0.6728, which points to much higher compliance, in other words the interaction of the size of a household and total consumption is qualitative.

The results of regressive analyses of the size and total consumption of the household calculated per equivalent adult for all observations of 2009-2016 are provided on Chart #1, where the years are not demarcated. In that period, the coefficient of the economy of scale was 0.44, which reflects a very strong effect. However, the use of this indicator is not reasonable since it does not envisage the effect of inflation, which undoubtedly has an impact on the consumer expenditures of a household.

Chart #1: Interdependence between household size and consumer spending in 2009-2016
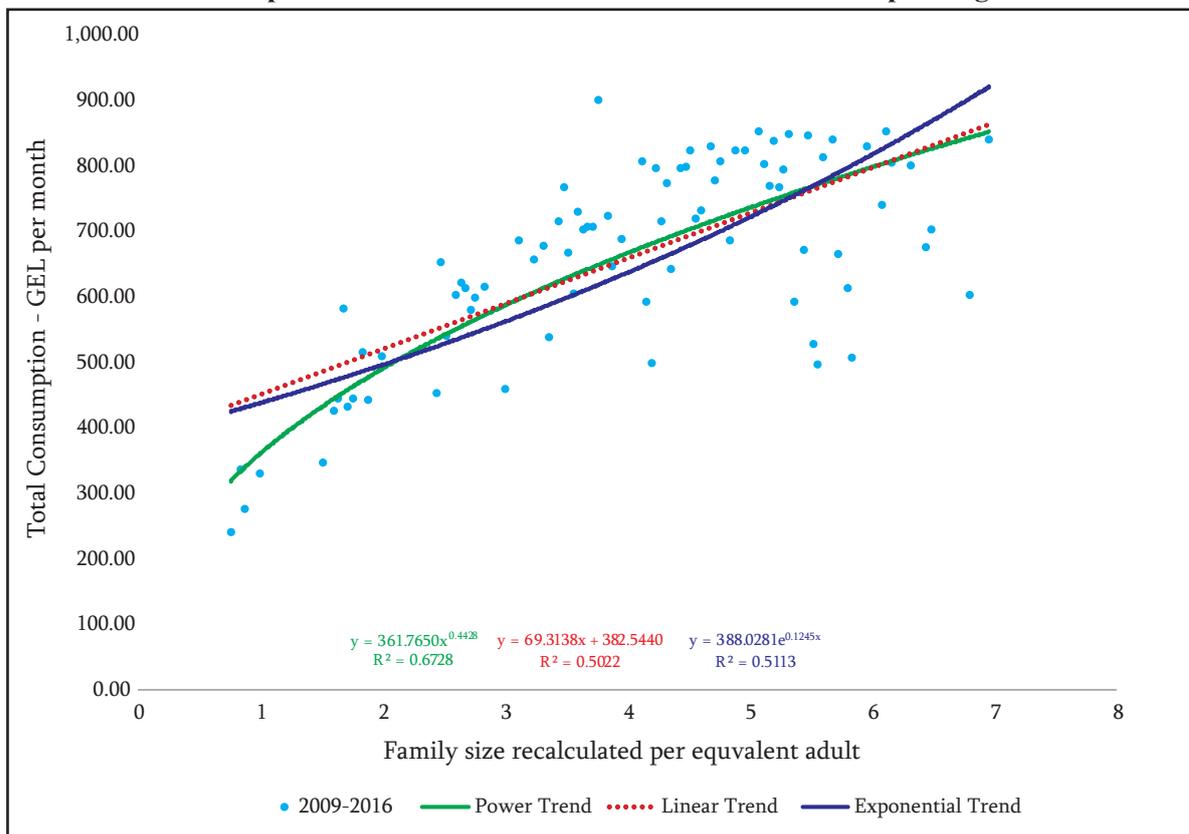
Source: The database of the Integrated Household Survey, processed by the group of authors.

Conducting the same analyses annually would be more reasonable. As the results of such analyses demonstrate, the qualitative attitude by year is even more compliant than in the total reporting period. The value of R^2 is around 0.80, which indicates quite high accuracy, while the scale effect coefficient is close to 0.6.

Chart #2: Interdependence between household size and consumer spending by year, 2009-2016
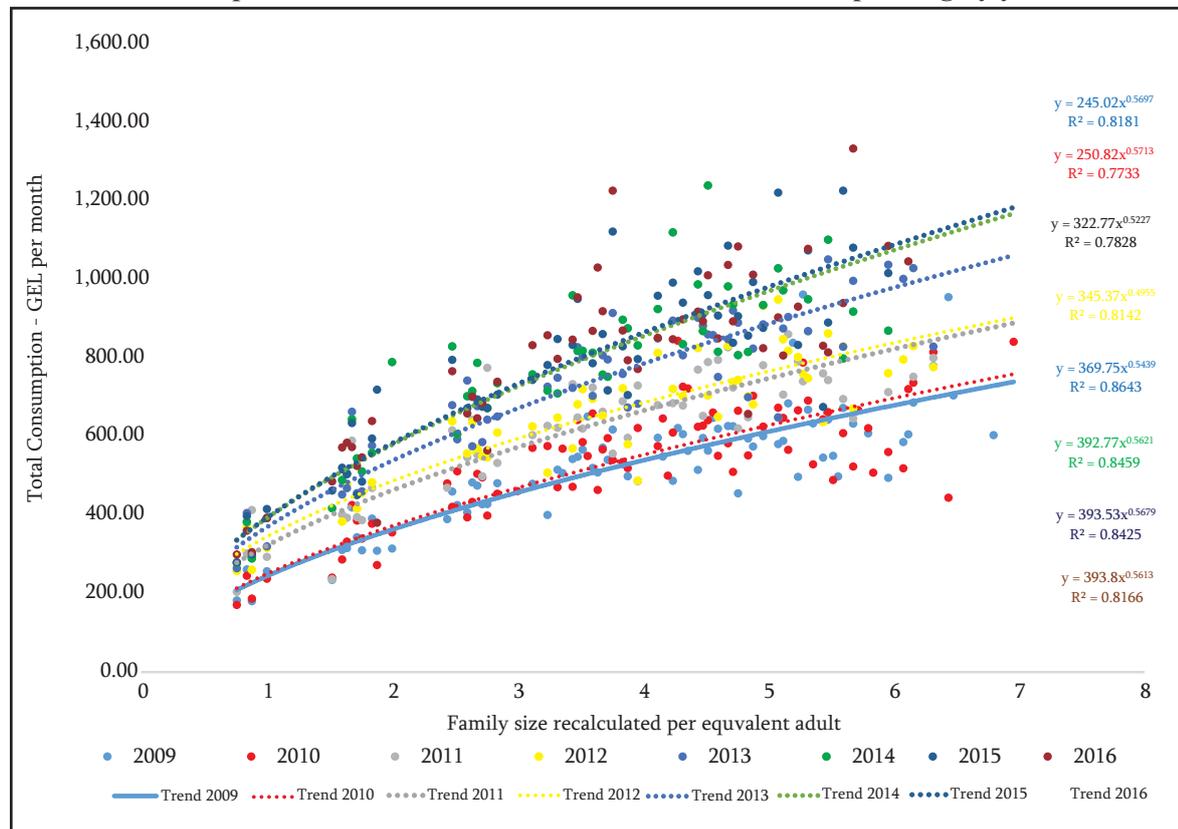
$y = 245.02x^{0.5697}$
$R^2 = 0.8181$

$y = 250.82x^{0.5713}$
$R^2 = 0.7733$

$y = 322.77x^{0.5227}$
$R^2 = 0.7828$

$y = 345.37x^{0.4955}$
$R^2 = 0.8142$

$y = 369.75x^{0.5439}$
$R^2 = 0.8643$

$y = 392.77x^{0.5621}$
$R^2 = 0.8459$

$y = 393.53x^{0.5679}$
$R^2 = 0.8425$

$y = 393.8x^{0.5613}$
$R^2 = 0.8166$

Total Consumption - GEL per month

Family size recalculated per equivalent adult

● 2009　● 2010　● 2011　● 2012　● 2013　● 2014　● 2015　● 2016

Trend 2009 ······Trend 2010 ·····Trend 2011 ·····Trend 2012 ·····Trend 2013 ·····Trend 2014 ·····Trend 2015　Trend 2016

Source: The database of the Integrated Household Survey, processed by the group of authors.

At present, Geostat uses 0.8 value of the effect of economy of scale coefficient, which is an indicator of quite a weak impact. Such an impact could be conditioned by a low share of payments for utility bills in the expenditures of households 10-15 years ago, which now is much higher. Namely, payment for utility bills is the type of expenditure which is highly impacted by the effect of the economy of scale.

In the present report:

1. The total consumption indicator is used for calculating poverty;
2. For comparison of households, the same scale of equivalency is used as that used by Geostat;
3. After calculation of total consumption per one equivalent adult, the coefficient effect economy of scale is 0.6 - a value, based on empirical observation.

2.3. Information Source

The databases of the Integrated Household Survey (IHS), placed on the website of Geostat, are the only information source for the research of poverty and inequality.

Geostat has been continuously conducting the IHS since 1996. The database of the addresses of the general population census is used as a sample base. The objects of observation are those households which live at the sampled addresses. For the study, about 3350 households are selected, from which about 2800 interviews are conducted.

The sampling is done through a two-stage stratified procedure. At the first stage, PPS (Probability Proportional to Size) is used, meaning that primary units (census precincts) are selected. The main data-base is developed based on the results of the last General Population Census of Georgia, providing data identification, number of people and their addresses. Based on the census data, the observation area is divided into 11000 census units.

For most spread incidences, the sample is also representative on a regional level. Consequently, the number of addresses to be sampled is distributed throughout the regions, proportionally to square root of the population size of that area. This method relatively increases the representation of small regions (for example, the Guria and Mtskheta-Mtianeti regions). In the regions, homogenous strata, almost of the same size, are identified separately for urban and rural settlements.

At the first stage of the sampling procedure, 336 observation areas are selected out of 11000 - located all over the country, while at the second stage, 3350 households are picked out of the selected precincts.

The selected precincts are equally divided into 12 rotation groups on the level of strata for all regions, in order to substitute every month the addresses of a respective rotation group with new ones. Thus, 8.3 percent of the sample is renewed on a monthly basis and the whole sample is renewed annually. Each household remains in the sample for one year, and provides quarterly information four times during this period.

At first glance, such a complex structure of sampling is preconditioned by the fact that the Integrated Household Survey is multi-functional: the sample design makes it possible to do the following simultaneously:

1. Formation of quarterly databases - the whole sample is interviewed during one quarter and this survey is equally spread over time (quarter months) and space (all over the country);
2. Formation of annual database - by integrating four quarterly databases;
3. Formation of panel databases - formation of the database of households, which has four quarterly interviews. The latter circumstance is crucial for the estimation of chronic and transient poverty. The development of the panel database requires at least 7 quarterly surveys, of which the most important is the "basic" quarter. This is the 4th of 7 composing the panel, the so-called "middle" quarter, in which all households participating in the panel are interviewed.

Panel databases are of three types:

3.1 Scatted panel - in which particular households are repeated and their key quarters simply follow one another in sequence;
3.2 Independent panel - in which households are not repeated, but the survey period is repeated and basic quarters of these panels are separated from each other by four quarters;
3.3 In time non-overlapping panel - where neither households nor survey period are repeated and the basic quarters of these panels are separated by 7 quarters.

The survey scheme is given below.

Standard scheme of the Integrated Household Survey

Year	Quarter	Month	Rotation Group											
			01	02	03	04	05	06	07	08	09	10	11	12
2009	I	01	4;In			3			2			1		
		02		4;In			3			2			1	
		03			4;In			3			2			1
	II	04	1			4;In			3			2		
		05		1			4;In			3			2	
		06			1			4;In			3			2
	III	07	2			1			4;In			3		
		08		2			1			4;In			3	
		09			2			1			4;In			3
	IV	10	3			2			1			4;In		
		11		3			2			1			4;In	
		12			3			2			1			4;In
2010	I	01	4;In			3			2			1		
		02		4;In			3			2			1	
		03			4;In			3			2			1
	II	04	1			4;In			3			2		
		05		1			4;In			3			2	
		06			1			4;In			3			2
	III	07	2			1			4;In			3		
		08		2			1			4;In			3	
		09			2			1			4;In			3
	IV	10	3			2			1			4;In		
		11		3			2			1			4;In	
		12			3			2			1			4;In

Panel Interview   Annual Assessment   Quarterly Assessment

In - Inception interview   1,2,3,4 - Number of Visits

Source: Geostat

According to the unique scheme of the survey, in 2009-2016, the period databases of which are placed on the website of Geostat, it is possible to:

1. Generate 32 quarterly estimations which is quite a long time series and provides for high estimation reliability;
2. Generate 8 annual estimations, which is quite a long time series and provides good material for trends analyses.

As for panel data analyses, based on the databases of 2009-2016, it is possible to:

3. Generate 26 scatted panel databases and estimations respectively;
4. Generate 7 independent panel databases and estimations respectively;
5. Generate 4 panel databases not intersecting in time.

The period covered by the panel data and distribution of panel types is given in Table #1.

Table #1:Distribution of panel databases in 2009-2016

Scatted panel	Period	Independent panel	Panels not intersecting in time
1	Q1-09/Q3-10	1	1
2	Q2-09/Q4-10		
3	Q3-09/Q1-11		
4	Q4-09/Q2-11		
5	Q1-10/Q3-11	2	
6	Q2-10/Q4-11		
7	Q3-10/Q1-12		
8	Q4-10/Q2-12		2
9	Q1-11/Q3-12	3	
10	Q2-11/Q4-12		
11	Q3-11/Q1-13		
12	Q4-11/Q2-13		
13	Q1-12/Q3-13	4	
14	Q2-12/Q4-13		
15	Q3-12/Q1-14		3
16	Q4-12/Q2-14		
17	Q1-13/Q3-14	5	
18	Q2-13/Q4-14		
19	Q3-13/Q1-15		
20	Q4-13/Q2-15		
21	Q1-14/Q3-15	6	
22	Q2-14/Q4-15		4
23	Q3-14/Q1-16		
24	Q4-14/Q2-16		
25	Q1-15/Q3-16	7	
26	Q2-15/Q4-16		

Source: The database of the Integrated Household Survey, processed by the group of authors.

2.4. Poverty Line

The first stage of the study of poverty is identification of the poverty line, a minimal standard of welfare. In the present report, the officially established subsistence minimum is used as the poverty line, as published by Geostat on a monthly basis.

Subsistence minimum is calculated for one equivalent adult, based on the value of the minimal food basket. The composition of the latter was determined in 2005 and includes 41 food products which were and probably still are the most widely used in the diet composition of middle decile groups (10 percent groups increasing by consumption, among which in the 1st group are households of the lowest consumption and in 10th-of the highest).

Assessment of the subsistence minimum is not the goal of the present report. Thus, we view the official level of subsistence minimum as a given condition.

Chart #3: Subsistence minimum (value of minimal consumer basket) per equivalent adult, GEL per month
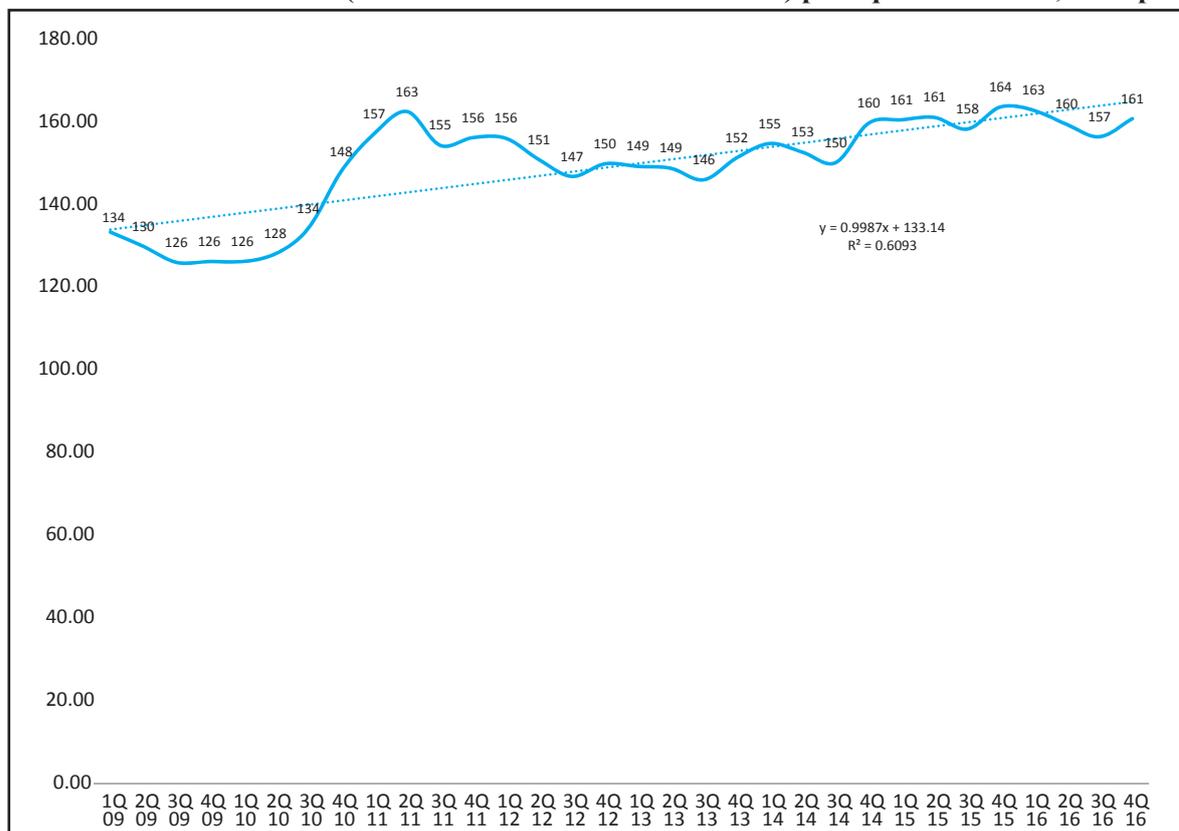
Source: The database of the Integrated Household Survey, processed by the group of authors.

The officially defined poverty line is not at all enough for complete diagnostics and analyses of poverty. This phenomenon requires comprehensive study; consequently, there is a need to use different lines of poverty, which could be given in monetary or non-monetary dimensions.

Each form of poverty evolution requires an elaboration of the independent level:

- Physiological poverty line: the calculation is made using the food energy method, based on a minimum food basket containing 2200 kcal. The composition of the basket is based on the existing structure of food product consumption. The calculations are made in weighted market prices;

- Income poverty line: this line represents the level of protection from physiological poverty. In contrast to physiological poverty, it is calculated using a more diverse composition of food basket, composed of more expensive calories. The income poverty line also envisages a non-food component, but, unlike the current practice, non-food goods and services are represented with particular names, for example, two bars of soap, 100 kilowatt energy bulbs, and so on. According to the current practice, the non-food part of the subsistence minimum is calculated according to social standards-30% is added to the value of the food basket as the share of non-food goods;

- Non-monetary poverty line: this line needs a broader approach: together with food and non-food components, a non-monetary element is also included, which means access to separate goods and services; for example, access to basic education, access to higher education, liquidity of received education, access to healthcare and other services and so on;

- Structural poverty line: the calculation of this line requires an even more complex approach. Besides food, non-food and non-monetary components, here is added mezzo (settlements) level characteristics: accessibility of infrastructure, independence and impartiality of court, human rights, basic freedoms and so on. The estimation of structural poverty has not been conducted in Georgia and such analyses are not done in any other country. However, practice demonstrates that the problem of structural poverty is substantial;

- Mental poverty line: probably, the one most difficult to identify. Besides a monetary component, the mental poverty line in significant doses includes a non-monetary component and a whole cascade of attitudes. Its identification requires fundamental research of consumer behavior, demands, attitudes and expectations.

The official subsistence minimum used as the poverty line in the present report is conceptually closer but not identical to the income poverty level.

According to the data provided on the Geostat website, the Relative Poverty Line - 60% of median consumption is used to calculate the poverty level indicators. In our opinion, the indicators calculated against this line would be less useful for estimating poverty and inequality dynamics. The reason for this is the content of the mentioned line. The median of distribution means that this is a middle point of distribution, i.e. 50% more and 50% less. In any country, in any case and in any distribution, 20-25% of the total number will be below 60% of consumption. Thus, the poverty level is not substantially changed against this line, notwithstanding the standard of living changes within the country, or total consumption changes of the poverty level, against 60% of the median in the abovementioned frames.

The poverty level indicators calculated using relative poverty lines could be informative in a given (fixed) moment, but would be useless for time - series analyses. Thus, an estimation of a changing condition is in fact impossible using this indicator. Official indicators[2] of poverty level against 60% of median confirm the opinion that they are less relevant for estimating change.

As for official indicators of Absolute Poverty, the value of 1kcal food energy in 2004, corrected by inflation rate, is used for the calculation of the poverty line. Such a line is useful for estimating the changes in poverty level. The respective indicators of Geostat in fact repeat the same trends, which we'll show below; however, in our case, the applied value of this level is low for the simple reason that the poverty line indicators are not provided on the Geostat website, while the published data are calculated on annual and country level alone.

There is one more important argument which makes questionable the applied value of this poverty level: the inflation indicator covers a wide spectrum of goods and services, among which are numerous goods and services which are not included in the consumer baskets of families and individuals in poverty or close to it, and respectively the change of prices on such goods and services has less impact on the life of the poor.

The same can also apply to the 1 kcal food energy price. The composition of 1 kcal food energy is also significant. For example, 1kcal food energy received from walnuts is 30-40 times more expensive than the same energy got from bread. Thus, in the price of 1kcal food energy, the structure of this kilocalorie is important. Here are two options:

1. If the price of 1kcal energy is calculated according to the total expenditure made on food, meaning on food energy used in total, the approach is clear and explainable. But using this indicator as the poverty line could represent a challenge. The total consumed energy includes expensive calories of the last decile group as well as cheap calories consumed by the poorest group. Thus, marginal groups always cause changes to assessments;

2. If the price of 1kcal food energy is calculated according to the total consumption of middle decile groups, then the problem described in the previous paragraph does not apply to this indicator and the challenge is related only to the inflation indicator.

In our case, we will not be able to use this poverty line, since the poverty line is not published on the website of Geostat, unlike the official subsistence minimum, the data of which are updated on a monthly basis and which are available on the Geostat website.[3]

2.5. Chronic and Transient Poverty

The concepts of chronic and transient poverty are related to the panel data analyses.

As mentioned above, the panel database includes those households which were under observation throughout a whole year and with which were conducted four quarterly interviews. Consequently, during the panel data analyses, we learn how many times the household was below the poverty line out of four observations. Consequently, the households which were under the poverty line during all four observations are viewed as chronically poor households, and the weight of such households in total number of households is considered as the chronic poverty level.

As for transient poverty, this applies to households which, in the observation period, were at least once below the poverty line and at least once above the poverty line. In the present report, we will observe that the weight of households migrating above the poverty line is quite high.

Thus, the information array used for our report (the databases of the Integrated Household Survey), includes all preconditions necessary for the estimation of chronic and transient poverty. These are as follows:

1. Uninterrupted time series developed by the same methodology and methods;

[2] See: http://geostat.ge/?action=page&p_id=187&lang=geo
[3] See: ttp://geostat.ge/?action=page&p_id=178&lang=geo

2. Observation conducted in an identical periodicity and reporting period;

3. Specifically identified observation objects (households), interviewed at the same frequency;

4. Subsistence minimum calculated by the same method, which precisely repeats the period of household interviews, and;

5. A long time series.

Besides estimation of the levels of chronic and transient poverty, in the present report we analyze another important indicator which quite clearly describes the condition of poverty and inequality. This is the Poverty Index. It indicates on average how many times the households appeared below the poverty line, or this is weighed as an average indicator of being below the poverty level. In our case, the value of the index of the indicator is changed from 0 to 4, where:

- 0 means that no household was at any time below the poverty level;

- 4 means that all households were permanently below the poverty level.

In general, with the purpose of universalization of the indicator, it is better if we calculate the relative value of the index, or what the percentage of the value of the poverty index is out of 100% total poverty.

2.6. Indicators of Income Inequality

In order to estimate income inequality, in the present report we used the widespread GINI index and the "Decile coefficient", or the ratio between the incomes of decile groups with the highest and lowest incomes.

The Decile coefficient is calculated for 5 percent groups, or each decile group is divided into two, which means that the distribution is divided into 20 groups. The decile coefficient is calculated by the proportion of average incomes of the first and last groups.

The GINI index is calculated with IHS data, based on which the income of a household is calculated using the following structure:

1. Cash income and transfers in total, including:

    1.1. Income from hired employment;

    1.2. Income from non-agricultural self-employment;

    1.3. Income from sales of agricultural products;

    1.4. Income from renting property;

    1.5. State transfers-pension, scholarship, addressed social assistance, IDP allowance and other public social payments;

    1.6. Remittances from abroad - including money or gifts sent by family members or friends living abroad;

    1.7. Private transfers - including money or gifts received from relatives or friends living in Georgia.

2. Non-cash income - consumption of agricultural products of own production, estimated in current prices, calculated from the survey data;

3. Total income - total of cash and non-cash incomes.

4. Other resources in total, including:

    4.1. Income from selling property, which in fact is not income, but change of the form of property, though this represents a source of cash flow;

    4.2. Borrowing or using savings, which is also not income, since this is an increase of liability or decrease of savings, however, this is also a source of cash flow.

5. Cash resources in total - total of cash income and other cash resources, which is the total disposable cash resources of the household.

6. Total cash and non-cash resources - total inflows, which is the sum of cash and non-cash income and represents the total disposable resources of the household.

In the present report, we use inequality indicators for three types of incomes:

1. Cash income and transfers in total - since this inequality is relatively high; according to the cash incomes of households, non-cash consumption hasa substantial equalization function, i.e. self-employment in agriculture (having a very low effect but providing at least some food and non-cash income);

2. Total income - the total income of households without borrowing money or using savings. Namely, this is real income, since selling property, borrowing money and using savings, which might have an important episodic role in improving the social and economic condition of the household, is still a decrease of assets and increase of liabilities, which is not income by nature;

3. Total cash and non-cash resources - total inflows of the household. In this respect, inequality also can be an important indicator.

In addition, we consider it necessary to estimate the impact of public social payments on poverty and inequality. Of these, the most important are pension and addressed social assistance.

The present report presents the indicators of poverty and income, as well as those of the GINI index, with and without public social payments.

The linear regressive analysis method is used for the study of the interaction between the poverty level and GINI index. In other words, the extent to which interaction between the GINI index and poverty level is linear is studied.

Linear regressive analysis is one of the most widespread standard methods of statistical modeling, showing which $y=ax+b$ equation corresponds to the interaction between the indicators. The linear regressive analyses method is selected because it is easier to perceive a statistical model calculated using this method than other more complicated regressive models. Since the present report is the first attempt at comparative analyses of poverty and income inequality, we will be limited by an easily understandable model. In the course of analyses, the following two key coefficients will be observed:

● B (β) coefficient of linear regression, which indicates how strong the linear impact of one indicator is on another; in our case - how strong the impact of a change in the GINI index is on the poverty level, or how the poverty level is changed in case of change of GINI index by one unit;

● Model compliance R^2, or determination coefficient, which shows how precisely the elaborated linear statistical model describes the interaction of real indicators. This is a very important coefficient for analyses, since the linear (like the non-linear) model could be built for any indicator; but the main thing is how valid this model is: to what extent the model complies with actual indicators. Namely, this compliance is shown by the R^2 coefficient, which is changed from 0 to 1. 0 value, meaning the model does not describe the empirical data at all, while 1 value means that the model very precisely describes the empirical data.

3. Poverty in Georgia

3.1. Time Series

In 2009-2016, the poverty level indicator showed a clear tendency of decrease, although its dynamics in the observation period were not homogenous. In 2009-2011, the poverty level increased, while from 2012 it started to decrease sharply, and remained irreversible until 2016, inclusively. The developed trend in general is quite linear, R²=0.8383, which means that the linear trend quite accurately describes the developed dynamics.

In the reporting period, the maximum level of poverty was registered in 2010, when its value in the country stood at 29%, and the minimum in 2016, at 13.8%. This means that the poverty level decreased two times and more. This trend of decrease was especially strong in 2012-2014.

Chart #4: Annual dynamics of the poverty level
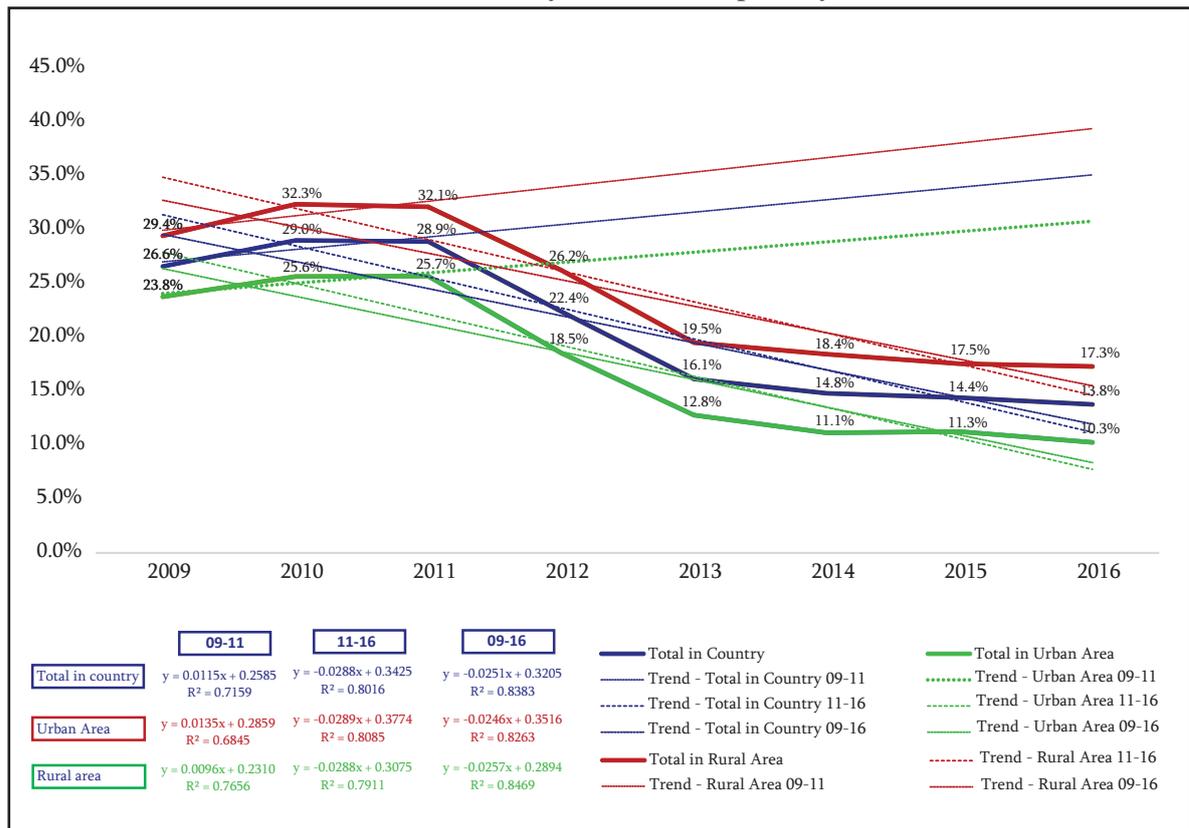
Source: The database of the Integrated Household Survey, processed by the group of authors.

As a rule, rural poverty is greater than urban. The data processing demonstrated that in the observation period, poverty was significantly reduced in both areas, however, despite the similarity of trends, the difference is still substantial: in urban areas, the poverty reduction trend was 1.3 times stronger than in rural areas.

At the end of the reporting period, in 2016, the poverty level in rural areas was 17.3%, which is two times lower than the maximum of this period (2010). In urban areas, the poverty indicator in 2016 was 2.5 times less than the maximum value of the observation period (2011).

The dynamics of the poverty level varies by aggregated regions: both the directions and indicators of trends are different:

- Tbilisi is the leader in terms of poverty reduction: the poverty level in the capital reduced three times and more in 2011-2016, further, the trend of decrease is irreversible;
- In Adjara and Guria, the poverty level reduced from 26.2% to 18.5%, though this trend was continued until 2015, and in 2016 substantially increased compared to the previous year;
- In Samegrelo, Imereti, Racha and Svaneti, the trend of reducing the poverty level has been irreversible and solid. In general, the poverty level here reduced almost 2.5 times in 2010-2016;
- In Qvemo Qartli and Samtskhe-Javakheti, the trend of reduction is obvious: in 2011-2016, the poverty level decreased 2.2 times and is irreversible here too;

- In Shida Qartli, Mtskheta-Mtianeti and Kakheti, the trend of poverty reduction is quite weak. In 2010-2016, this indicator decreased from 40.4% to 24.1%, although this decrease almost fully fell during the period of 2012-2013, after which the trend was maintained but weak.

Chart #5: Annual dynamics of the poverty level by aggregated regions
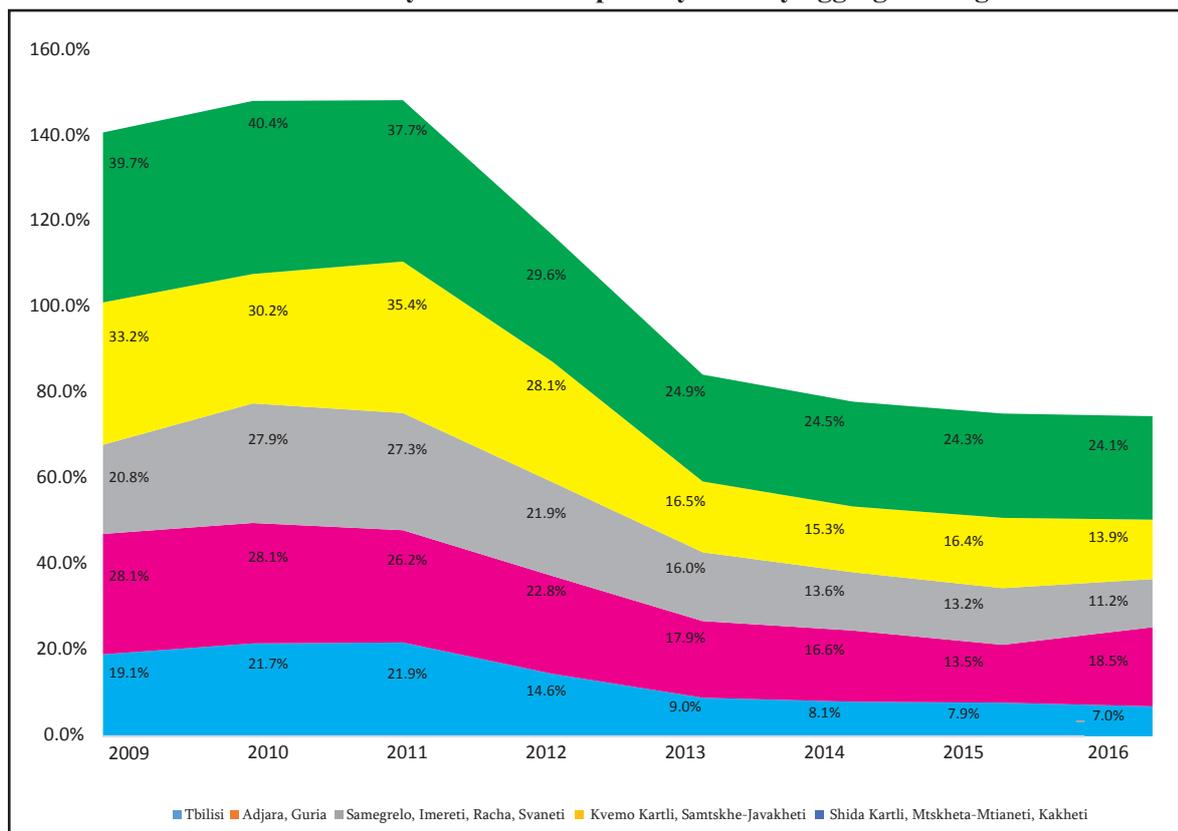
Source: The database of the Integrated Household Survey, processed by the group of authors.

The quarterly dynamics of the poverty level indicator, in general, fully repeat the trends of the annual dynamics, something to be considered natural. However, the quarterly dynamics time series clearly demonstrates that the impact of seasonal fluctuations is quite high. The curve of quarterly time indicators, cleared of seasonal fluctuations, is much easier to understand, explain and forecast from.

According to the quarterly dynamics, the poverty level is normally higher in rural areas than in urban. In separate quarters, the difference between poverty level indicators reduces as a result of seasonal fluctuation (not due to any systemic factor). The time series corrected by seasonal factor is almost parallel (see Chart #6).

The direction of impact of the seasonal effect is identical for urban and rural areas. In the 2nd and 3rd quarters, the seasonal effect is of a positive value, meaning that it raises in relation to season, while in the 1st and 4th quarters, the impact of the seasonal effect is negative, i.e. the poverty level goes down with the impact of the season.

There is high probability that such impact is connected to the agrarian season, with the 2nd and 3rd quarters covering the harvest period when consumer prices are higher. The 1st and 4th quarters are distinguished by relatively lower consumer food prices (see Chart #7).

Chart #6: Quarterly dynamics of the poverty level
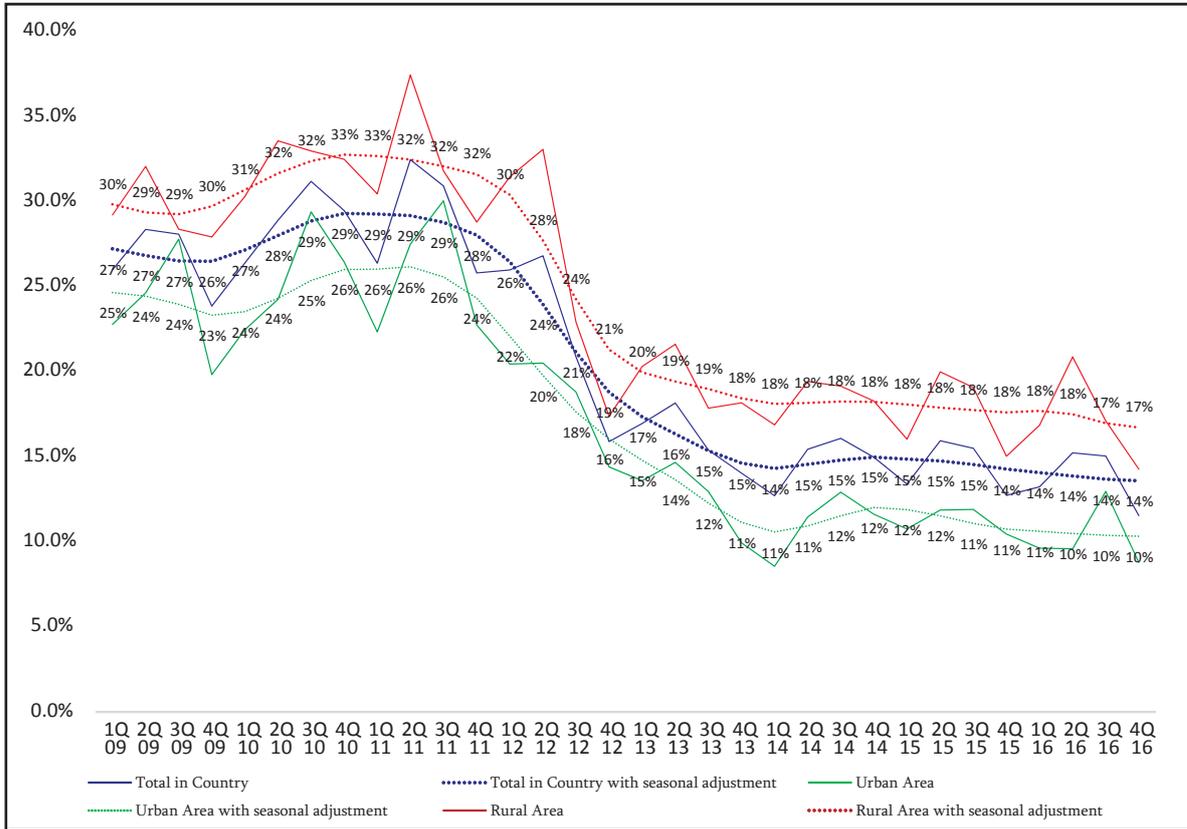
Source: The database of the Integrated Household Survey, processed by the group of authors.

Chart #7: Estimation of quarterly seasonal effect on the poverty level by urban /rural area
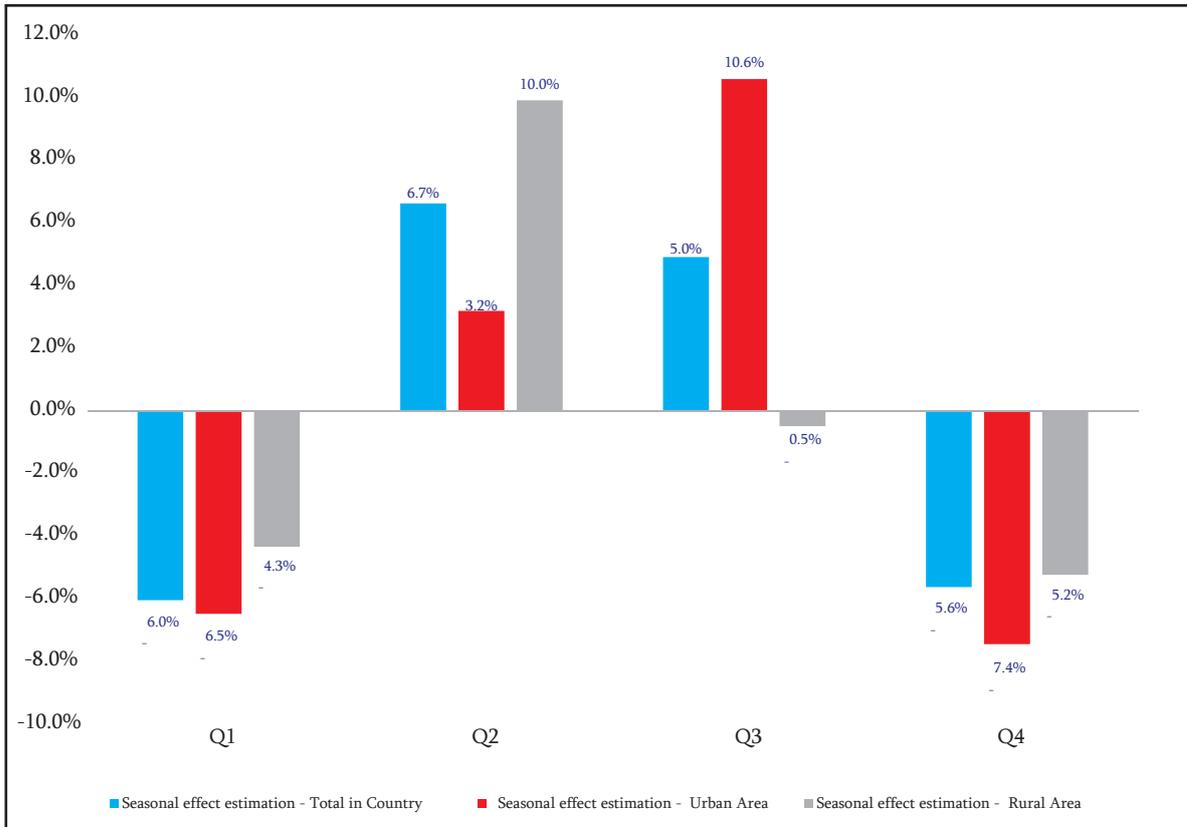
Source: The database of the Integrated Household Survey, processed by the group of authors.

Based on estimations resulting from the analyses of the 2009-2016 time series, we can conclude the following:

- In 2009-2016, the poverty level indicator has a clear trend of reduction. The decrease rate was strongest in 2013-2014;
- The poverty level reduction rate was 1.3 times stronger in urban areas than in rural;

19

- The poverty level reduction rate is strongest in Tbilisi. After that comes Samegrelo, Imereti, Racha and Svaneti regions. The reduction rate is weakest in Shida Qartli, Mtskheta-Mtianeti and Kakheti, while in Adjara and Guria regions even an increase in poverty level was registered in 2016.
- Among the regions, the poverty level is lowest in Tbilisi - 7%, and the highest in Shida Qartli, Mtskheta-Mtianeti and Kakheti - 24%.

3.2. Panel Estimations

The estimations made on the basis of panel database analyses are somewhat different from the quarterly and annual estimation, since the panel database consists of households participating in the survey throughout the year and being the respondents of four quarterly interviews.

The analyses of panel databases also demonstrate that the poverty level has a clear trend of reduction. This trend is as strong for scatted panels as for independent ones not intersecting in time. As we mentioned in the foreword, panel households are distributed in seven quarters. Further, panel households are less mobile, remaining at the same address during all four interviews.

Independent panels are marked on the chart below. The chart clearly demonstrates that the trend is identical also according to independent panels and demonstrates a solid reduction in poverty level.

The panel poverty level for urban and rural areas shows the same trend as in the time series. The only difference is that in the case of panel estimations, the seasonal effect is level, since each household was under observation throughout one year and so during a full spectrum of seasons. The poverty level in rural areas is usually lower compared with urban areas, while the reduction trend is nearly parallel.

Chart #8: Panel dynamics of the poverty level by urban/rural area
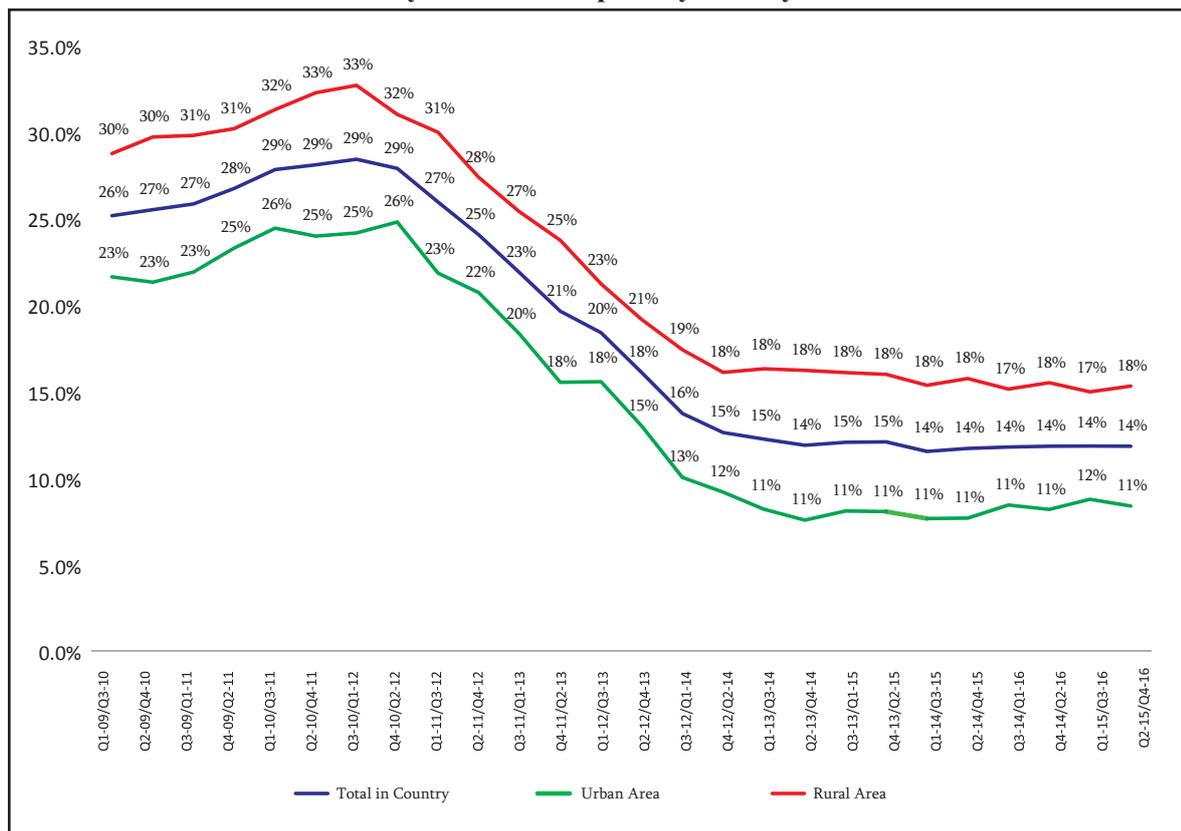
Source: The database of the Integrated Household Survey, processed by the group of authors.

According to aggregated regions, the dynamics of the panel poverty level differs from the trends developed in the annual time series. For last two panels, an insufficient but still particular increase is observed in Tbilisi, as well as in Adjara and Guria. In this area, a particular increase in poverty level was observed in the quarterly and annual time series. At this stage it is difficult to say to what extent this increase is of a systemic nature, since it does not go beyond the frames of statistical error. In total, the panel estimations of 2009-2016 demonstrate a sharp and irreversible reduction in the poverty level.
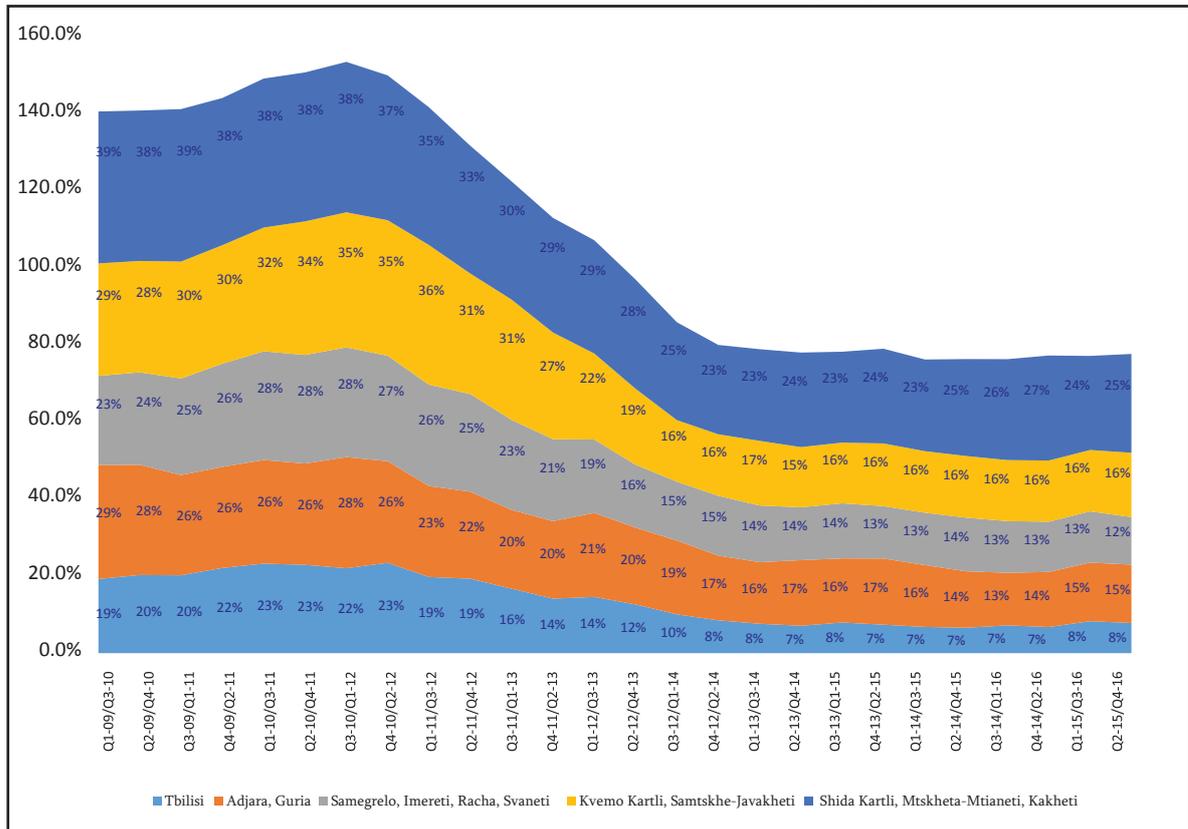
Source: The database of the Integrated Household Survey, processed by the group of authors.

As a general conclusion, it could be said that:

- The panel poverty level, as an annual and quarterly time series of poverty level, demonstrates a sharply expressed tendency of reduction, 14% according to the last panel;
- The mentioned indicator precisely matches the poverty level according to the data of 2016; thus, 14% against the subsistence minimum is a solidly developed indicator.

3.3. Chronic Poverty

Estimation of chronic poverty is possible only based on the results of analyses of panel databases.

As we mentioned in the foreword, chronic poverty means those cases where households were below poverty level at all four quarterly observations.

According to the results of the analyses of panel data, the last panel showed that the level of chronic poverty in 2015-2016 was 4%, i.e. the total consumption per equivalent adult of 4% of the households, taking into consideration the effect economy of scale was less than the official subsistence minimum of the respective quarter. The mentioned level of chronic poverty is not high, but still deserves attention and requires a detailed review of the poverty profile.

The chronic poverty level is stable at 4% in the panels of the recent period, and in general the trend demonstrates a decrease. The reduction rate is especially strong in the panels of 2012-2014. In the observation period, the level of chronic poverty was highest in 2009-2011, when 10-11% of households were permanently below the poverty line. It could be said that this scale of chronic poverty is alarming.

It is noteworthy that the number of households which, in the observation period, were not once below the poverty line increased substantially from 52% to 72%. This is a very important trend, since coming out of chronic poverty might mean a transition to transient poverty. That said, the sign of irreversible improvement is the increase in the number of such households.

Chart #10: Distribution of panel households against the official subsistence minimum by frequency of falling into poverty
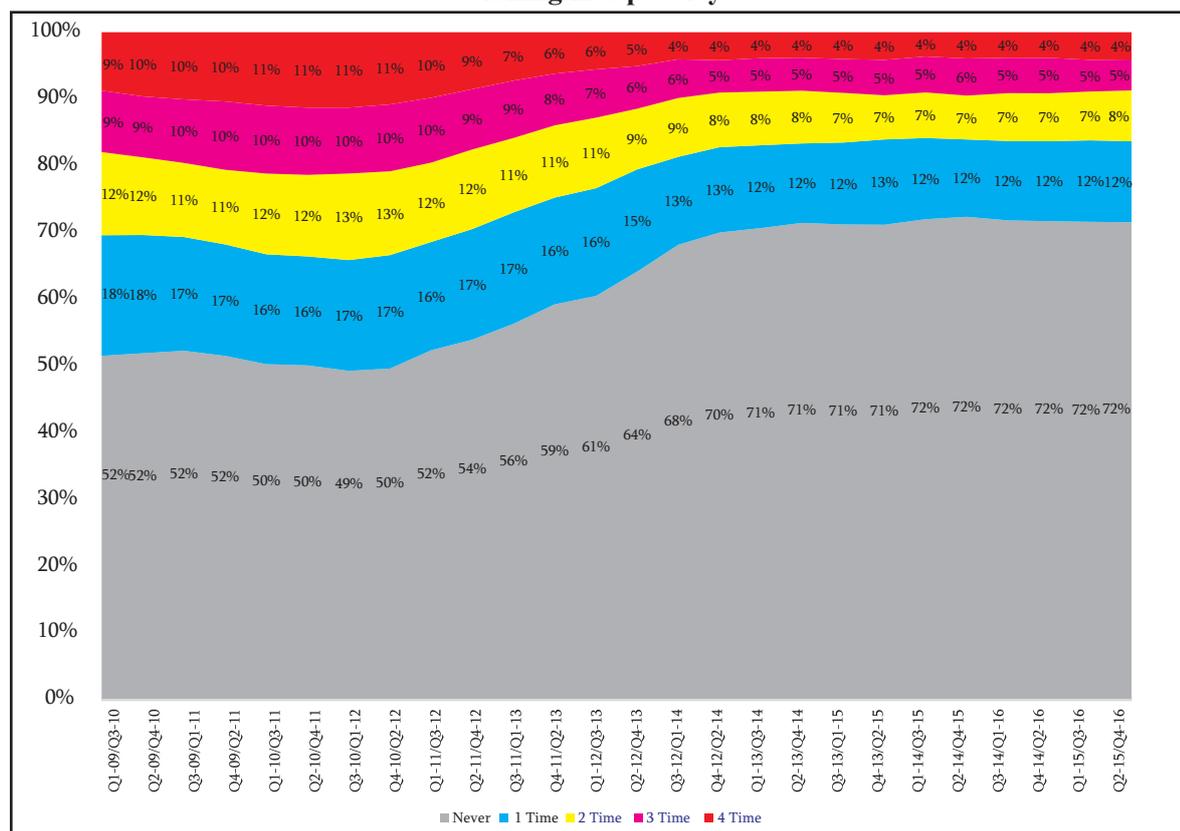
Source: The database of the Integrated Household Survey, processed by the group of authors.

According to the data of the last panel, the level of chronic poverty in urban and rural areas differs by 1 percentage point: in urban areas chronic poverty is at 3.6% and in rural 4.6%.

In the observation period, the values of the chronic poverty level in urban and rural areas were increasing, according to the panel data of 2009-2011, while in the 2011 panels it reached an alarmingly high level - 10-12%. In this period, the difference between the chronic poverty levels of urban and rural areas was 2-2.5 percentage points, which is relatively high. In the panels of 2012-2014, the chronic poverty level sharply reduced in both urban and rural areas. In this period, the chronic poverty level was in fact identical in urban and rural areas.

After 2014, the chronic poverty level continued reducing in urban areas, however, the rate of reduction was not as sharp as in 2012-2013. In the same period, the chronic poverty level in rural areas remained at the same level.

In the last two panels, in which the households interviewed in 2016 also participated, the chronic poverty level started to increase in urban areas and to decrease in rural.

To summarize, according to the panel data of 2009-2016, the chronic poverty level for urban and rural areas is in fact parallel. Rural areas still maintain as a relatively high chronic poverty risk zone and this trend is maintained throughout the period.

In contrast to ordinary poverty, the dynamics of chronic poverty from the point of view of urban and rural areas is relatively more changeable (see Chart #11).

According to aggregated region, the chronic poverty level shows almost the same trend as the indicators of ordinary poverty.

- In Tbilisi, chronic poverty has been at the lowest, almost insignificant level - 1%, in recent years. In other equal conditions, a 1% incidence could be appropriated to statistical error, but when the incidence refers to the event, repeated four times, then that 1% event should be taken into consideration. According to the data of two last panels, in Tbilisi, the chronic poverty level increased by 1 percentage point;

- According to the last panels, in Adjara and Guria, the chronic poverty level is 3-4%, which is not low for chronic poverty indicators, but is also not so high. The highest level of chronic poverty in Adjara and Guria (11%) was registered in 2009-2011;

Chart #11: Chronic poverty level by urban/rural area
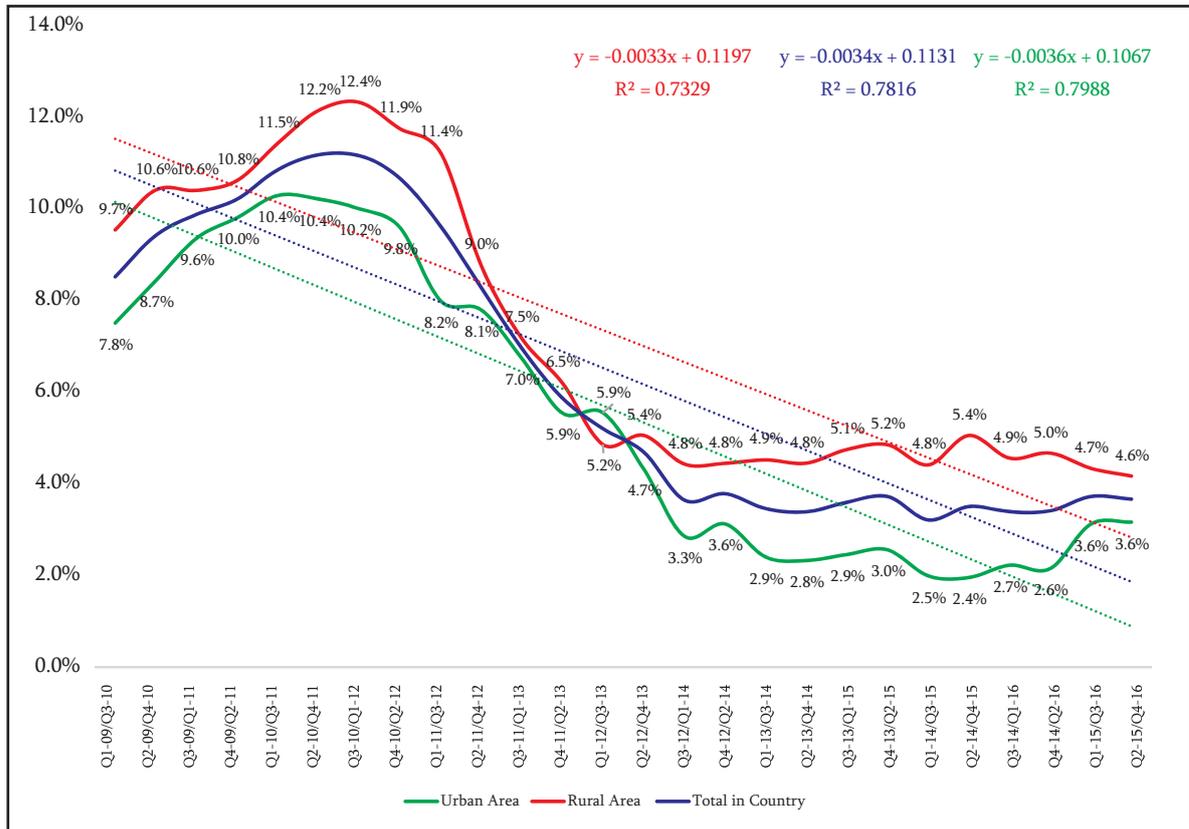
$y = -0.0033x + 0.1197$ $y = -0.0034x + 0.1131$ $y = -0.0036x + 0.1067$
$R^2 = 0.7329$ $R^2 = 0.7816$ $R^2 = 0.7988$

Legend: —— Urban Area   —— Rural Area   —— Total in Country

Source: The database of the Integrated Household Survey, processed by the group of authors.

- In Samgrelo, Imereti, Racha and Svaneti, the chronic poverty level is 2-3%, which points to quite a low level of chronic poverty; however, previously in this area, the chronic poverty reached even 9%, which, according to the definition of chronic poverty, is quite a high indicator;

- In Qvemo Qartli and Samtskhe-Javakheti, the chronic poverty level is 4%, which is not so high. However, in this area, chronic poverty was once 14-15%, which is quite a high indicator;

- In Kakheti, Shida Qartli and Mtskheta-Mtianeti, the chronic poverty indicator is the highest at 9-10%, which, according to the definition of chronic poverty, could be considered as alarmingly high. Note that since the sharp decrease of 2013-2014, this indicator has not been decreasing. Despite a dramatically high level of chronic poverty in 2009-2011 (16-17%), reduction resources are not fully exhausted and there is a need for effective measures (see Chart #12).

According to the last panel data, the poverty index calculated by the frequency of being below the poverty line stands at 0.576 by recalculation on a 4-point scale. In 2009-2016, the poverty index manifests substantial improvement. However, according to the last panel data, the condition is stable, or the reduction trend is terminated. Naturally, there is low probability that this indicator will ever have zero value, but the linear trend developed according to the last panels still deserves attention (see Chart #13).

Chart #12: Chronic poverty level by aggregated regions
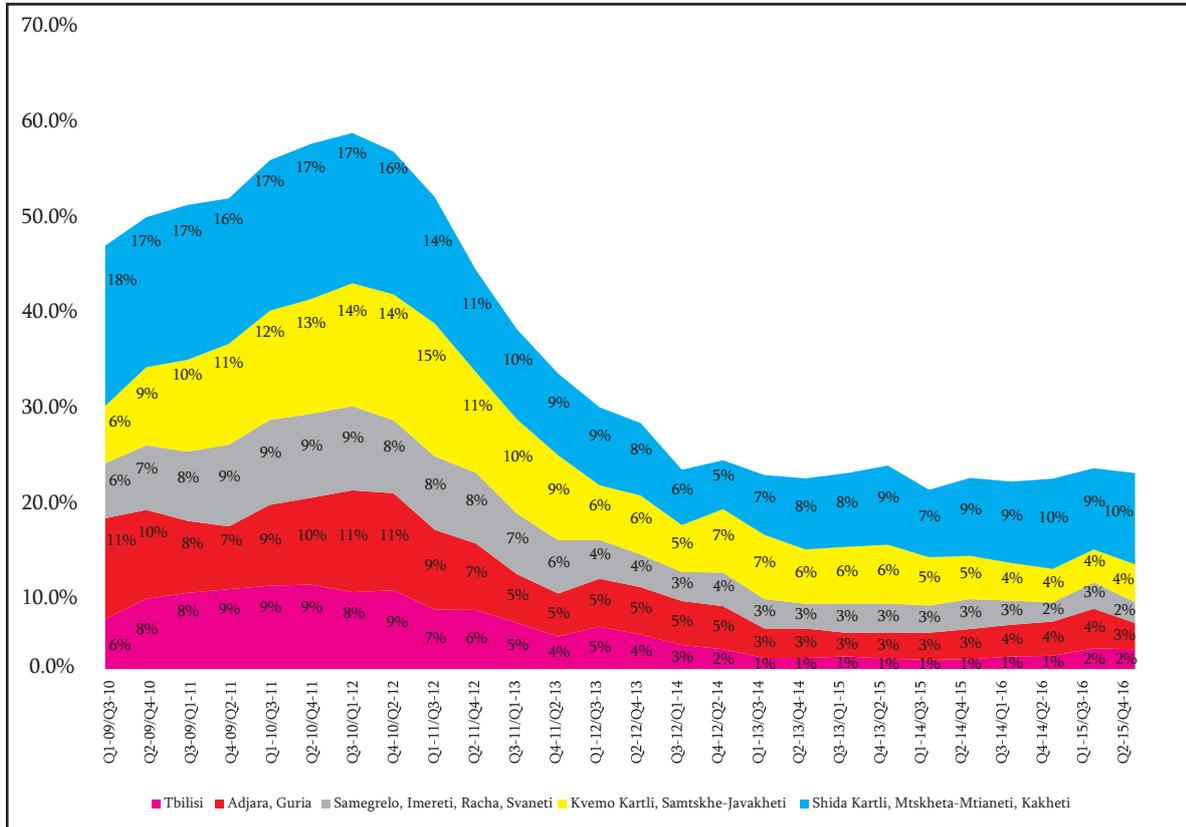
Source: The database of the Integrated Household Survey, processed by the group of authors.

Chart #13: The Poverty Index
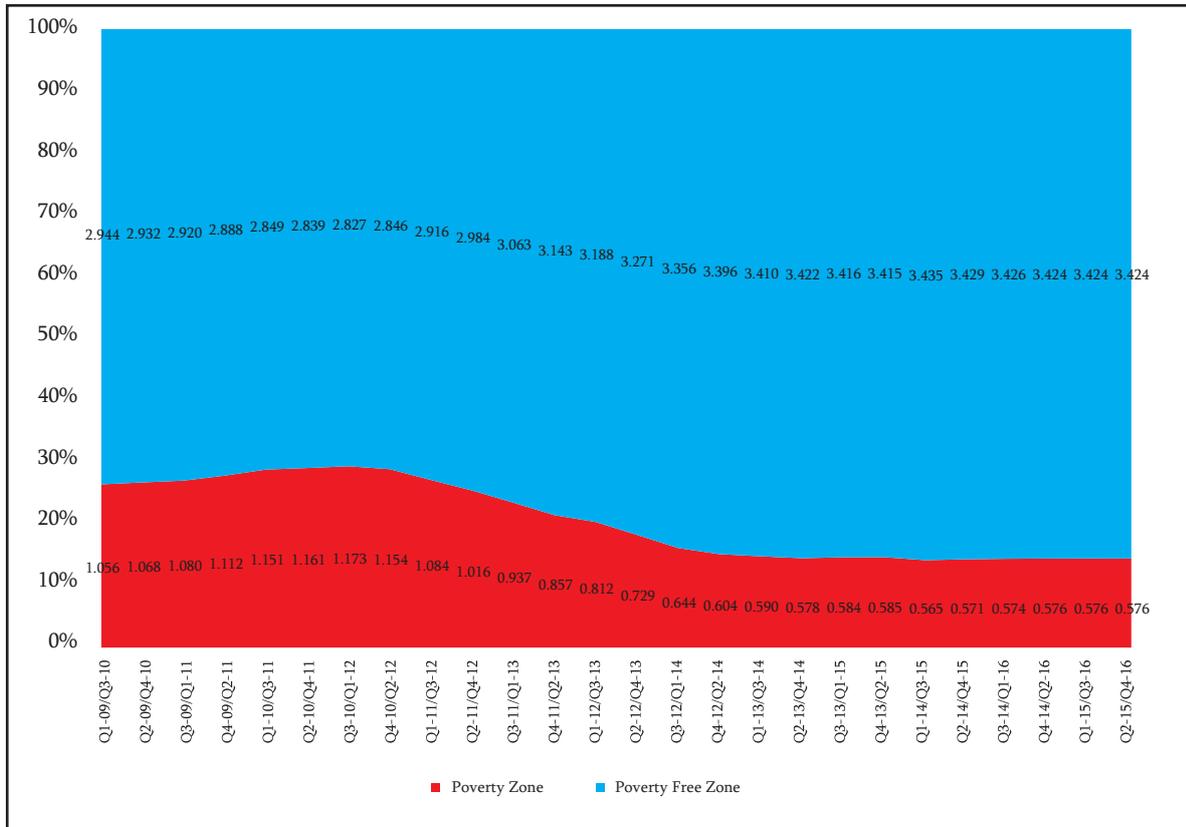
Source: The database of the Integrated Household Survey, processed by the group of authors.

Based on the analyses of the panel data series, the following general conclusions can be made in regard to estimating chronic poverty:

- According to the data of the last panels, the chronic poverty level is stable at 4%;
- The chronic poverty level is substantially reduced compared with 2009-2011, when this indicator was 10-11%, which, according to the definition of chronic poverty, is too high. It is important to note that, according to the panel data of 2014-2016, the chronic poverty level is unchanged;
- The chronic poverty level is higher in rural areas compared to urban, however, this difference is not as substantial as the indicators of ordinary poverty. The trends of chronic poverty of 2009-2016 are parallel for both urban and rural areas;
- The chronic poverty level is especially high in Kakheti, Shida Qartli and Mtskheta-Mtianeti. Although this indicator is not as high as it was in 2009-2016, the existing 9-10% level is still alarming.

4. Incomes in Georgia

4.1. Time Series

As mentioned in the foreword, for analyses of the structure of the income of households, we view three types of incomes:

Total resources (total cash and non-cash resources): in 2016 this indicator was per capita on average 329 GEL, total income-297 GEL per capita, and cash income - 267 GEL. In 2009-2016, the three data demonstrated a clear trend of increase.

The trend of the mentioned change is, in fact, linear: for all three data, $R^2 \approx 0.98$. The trends of change of cash income and total income are almost parallel, which means that non-cash income is almost unchanged and is constant in the incomes of households.

The dynamic of total resources shows a rate of increase which exceeds the rate of increase of total income and cash income, which means that borrowing money, use of savings and income gained by selling property, which is the only marker of total income and total inflowing resources, is distinguished by increasing value in the structure of household income. Note, the main constituent of this component is borrowing money. Selling property and use of savings are relatively modestly represented.

This trend points to interesting circumstances whereby the rate of increase of loans and financial liabilities is obviously ahead of the increase of real, disposable household income. It is difficult to say to what extent is this trend is "promising" in the context of social - economic development; but the fact is that households are trying to solve their problems in this way. This issue requires more detailed study. The social result of such trends is a 300 thousand - strong credit "black list," which obviously highlights the hard social consequences of this situation - statistically expressed very simply in the mismatch of trends. Unfortunately, in-depth analyses of this problem are not possible in the present report.

The real income indicator is much weaker than the nominal, but still demonstrates a clear increasing trend. Total inflowing resources, calculated in the prices of 1996, were about 112 GEL per capita, total income - 99 GEL per capita, and cash income - 90. The rate of real income increase is about 3-3.5 times lower compared to the nominal, which is natural. The fact that real income shows a linear increase is doubtfully positive. Total real resources and total income increased 1.5 times compared with 2009, and cash income by 1.7.


Chart #14: Dynamics of average income per capita, GEL per month
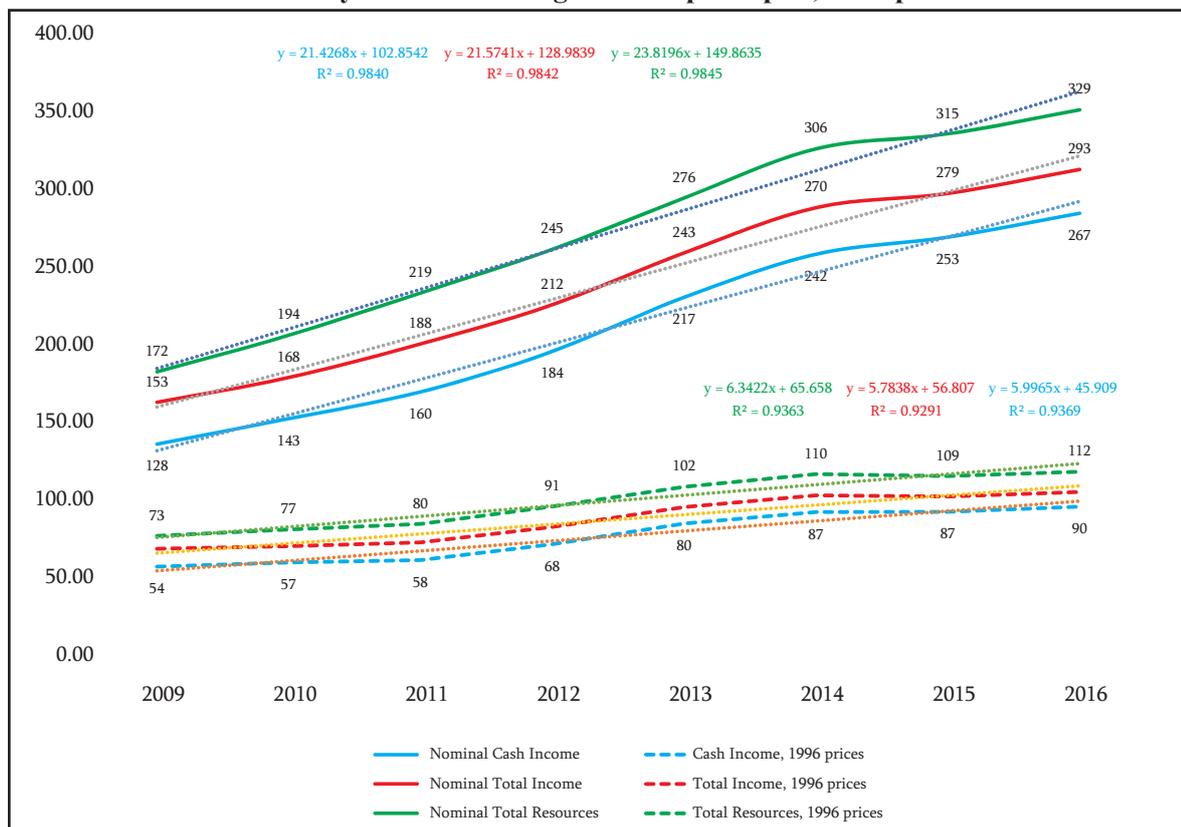
Source: The database of integrated household survey, processed by the group of authors.

Likewise, the trends for quarterly incomes, with just the time series being more detailed, sees the number of observations higher and a visible impact from seasonality.

Chart #15: Quarterly dynamics of income per capita, GEL per month
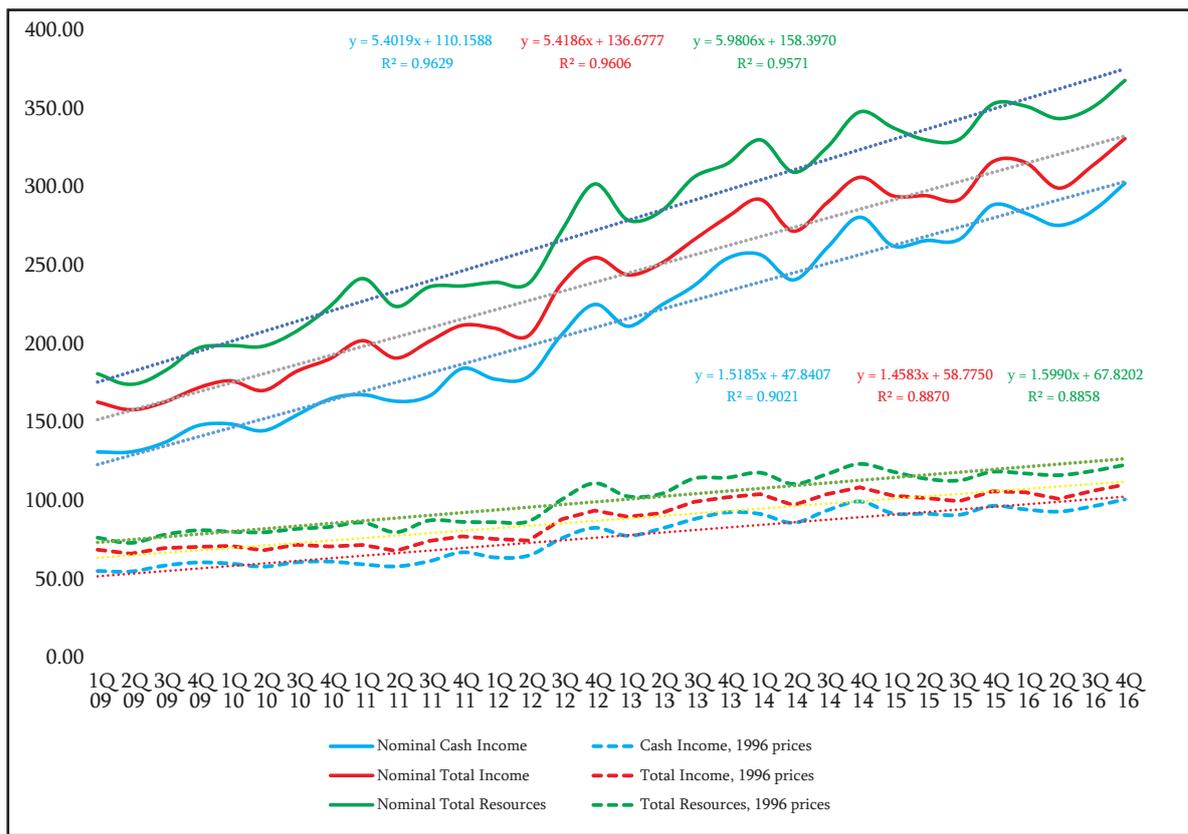
Source: The database of the Integrated Household Survey, processed by the group of authors

As the data of 2009-2016 demonstrate, the share of addressed social assistance in the nominal dimension is quite modest in total income. Of the average income, 293 GEL per capita, just 5 GEL is addressed to social assistance (1.7%). However, it ensures almost a 4% reduction in the panel poverty level, which has a big impact.

Total income and income without addressed social assistance show a parallel trend. This means that, nominally, the income from this source is unchangeable, but if we take into consideration its increasing effect on the poverty level, the only justified conclusion is that there has been more precise addressing of social assistance in recent years.

In pensions, the trend of increase of total income is stronger than the increasing trend of total income without pension, which means that total income is increasing more slowly relatively for the population than pension, and that the role of pension is ever-increasing. Besides the nominal increase in pension, we might deal with one more important circumstance related to the significant fact of an aging population and increase in the weight of the population of pension age (see Chart #16).

The per capita nominal income in urban areas is normally higher than in rural areas. In urban areas, the total nominal income per capita was 331 GEL, while in rural areas 237 GEL. Thus, in urban areas per capita, total income exceeds by 30% the similar indicator in rural areas. Obviously, the difference is substantial.

The trends developed in 2009-2016 are significant, indicating that in urban areas, the rate of increase of nominal income 1.4 times exceeded the rate of increase of income in rural areas. This means that social differences are to worsen unless effective measures are implemented. The most important reason for this conclusion is the linear nature of these trends. As in urban so in rural areas, we observe the linear trend: $R^2 \approx 0.98$, which in other equal conditions means irreversibility of the mentioned process. The increase of income in both urban and rural areas is undoubtedly a positive trend, but it is also noteworthy that the rate of increase of income in rural areas is much lower than in urban (see Chart #17).

Chart #16: Annual dynamics of average total income per capita without public social payments, GEL per month
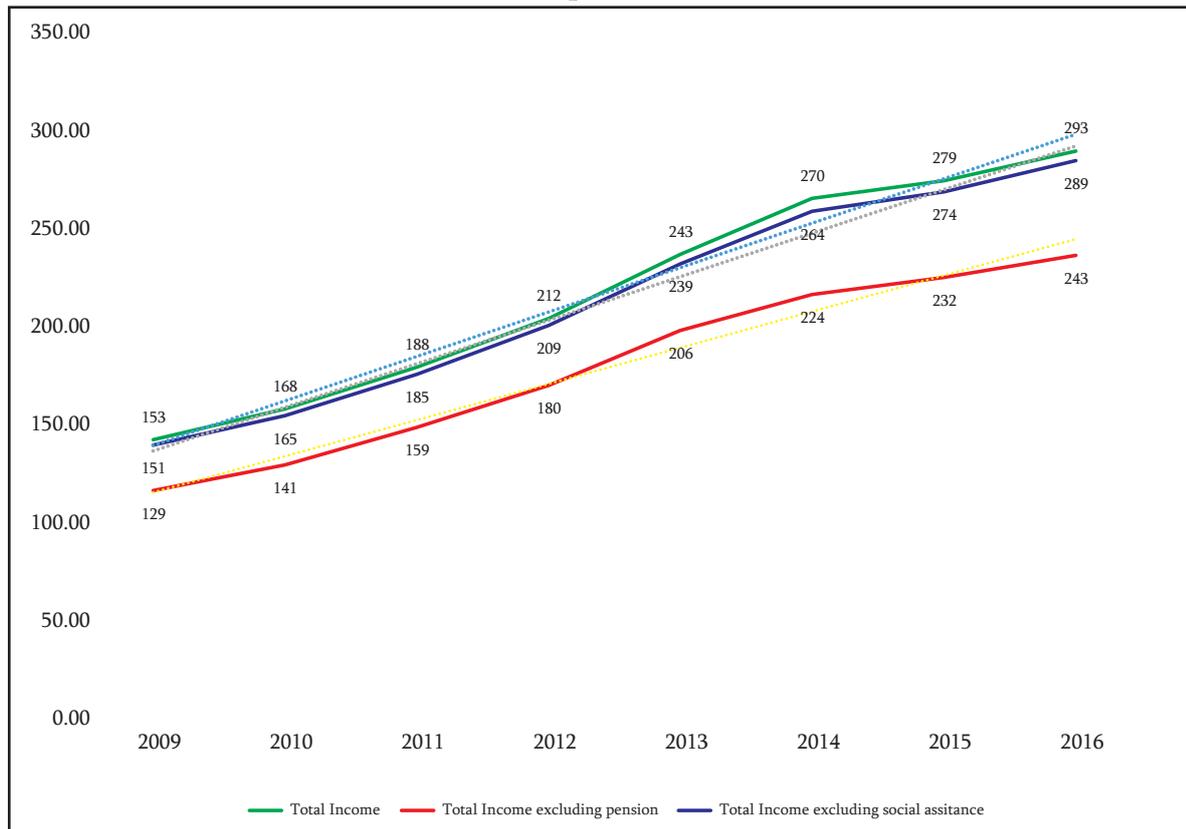
Source: The database of the Integrated Household Survey, processed by the group of authors.

**Chart #17: Annual dynamics of nominal total income per capita by urban/rural area, GEL per month**
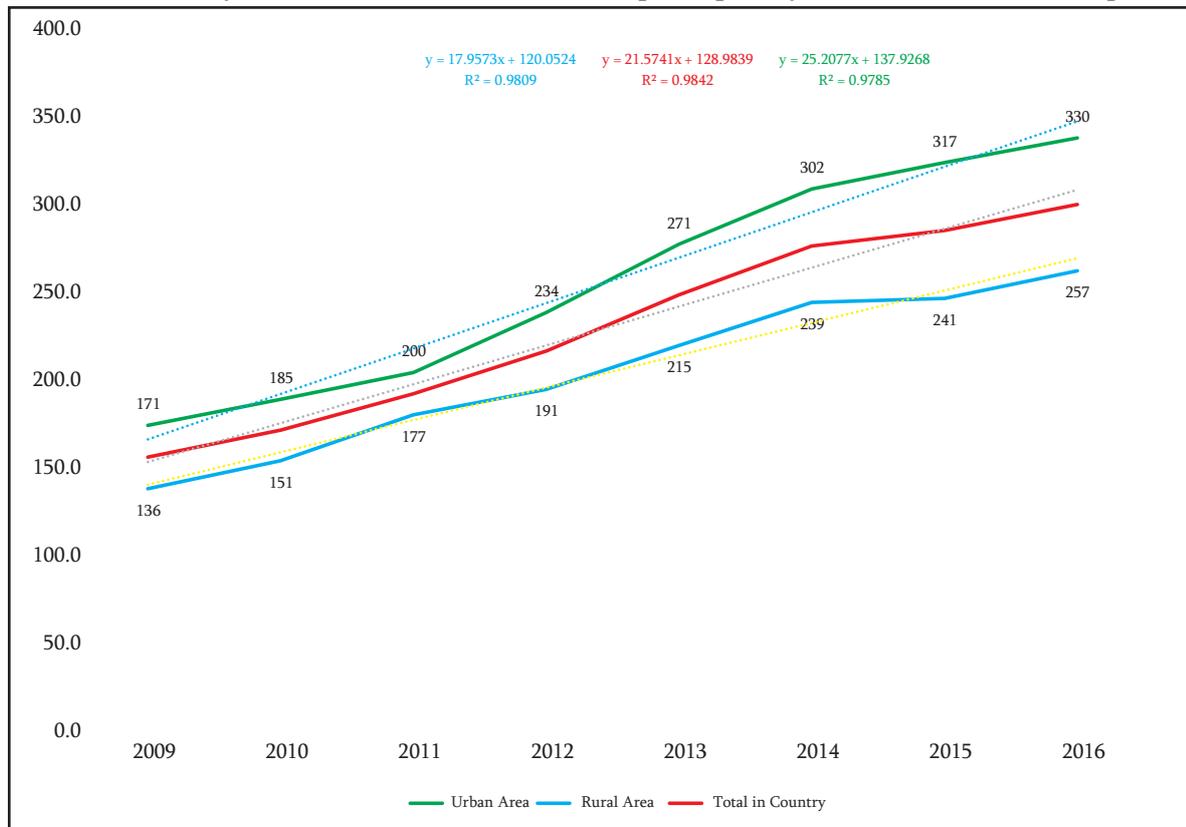
Source: The database of the Integrated Household Survey, processed by the group of authors.

The dynamics of per capita income are different by aggregated region. Both incomes and trends of change are different:

- The level of income, by region, is highest in Tbilisi: according to the data of 2016, 379 GEL per capita per month. Compared with 2009, this indicator is almost double and the rate of increase is linear and irreversible;

- In Adjara and Guria, the total income per capita was about 271 GEL. The dynamics of the indicators show an increase; however, the rate of increase is low compared to Tbilisi;
- In Samegrelo, Imereti, Racha and Svaneti, according to the conditions of 2016, the per capita income was 298 GEL. In 2009-2016, this indicator was distinguished by a sharp increase;
- In 2016, the total per capita income in Qvemo Qartli and Samtskhe-Javakheti was 225 GEL. The rate of increase of income here is substantially low compared with Tbilisi, while in 2016 it was slightly but still decreased compared with 2015;
- In Shida Qartli, Kakheti and Mtskheta-Mtianeti, in 2016 the nominal total per capita income was 251 GEL. In 2009-2016, this saw an increasing trend, although the increase rate is substantially lower than in Tbilisi, Samegrelo, Imereti, Racha and Svaneti.

Chart #18: Annual dynamics of nominal total income per capita by aggregated regions, GEL per month
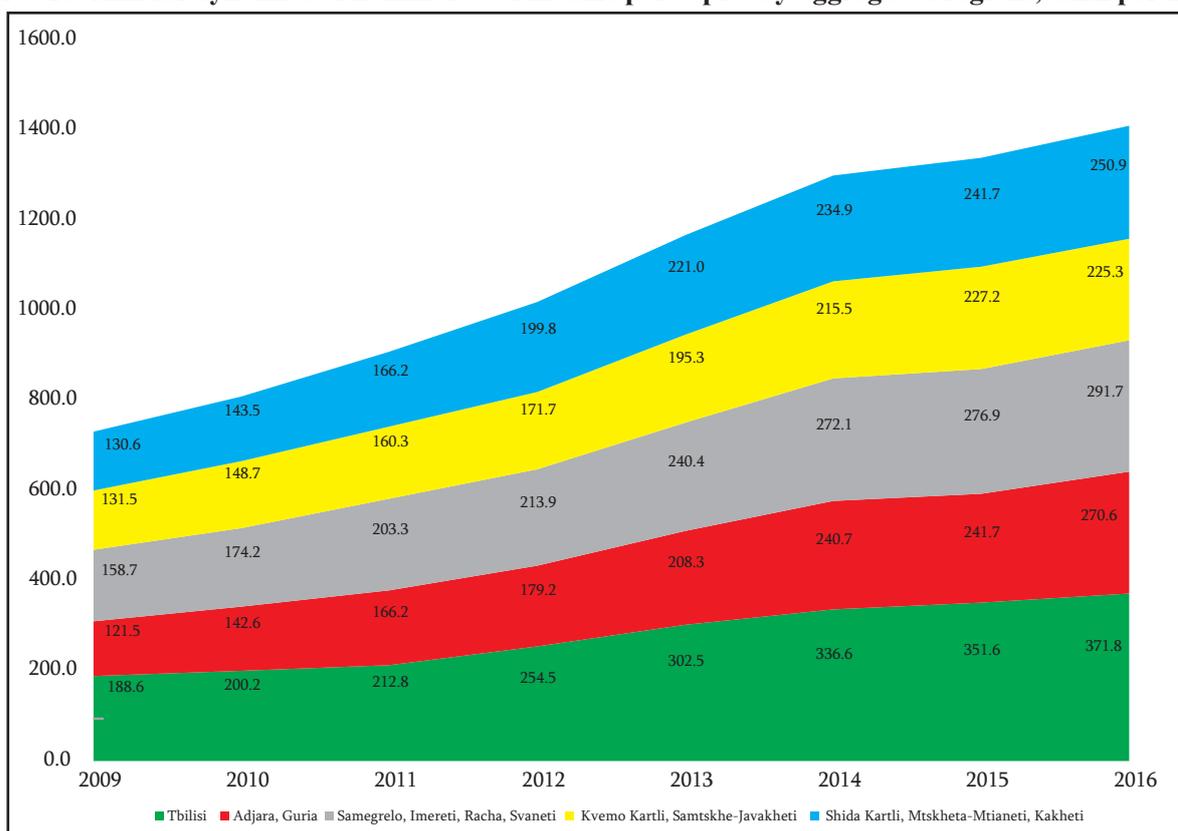
Source: The database of the Integrated Household Survey, processed by the group of authors.

Based on the analyses of the time series, the following could be concluded regarding estimation of income:

- All three indicators - total income of households, calculated per capita, cash income per capita and total inflows per capita, including loans, are characterized by a clear increasing trend. The rate of increase of total inflowing resources somehow exceeds the rate of the increase of total income, which points to the increasing value of loans in disposable resources;
- Total income, recalculated without inflation or in comparable prices (1996), is 99 GEL per month; total inflowing resources are 112 GEL, and cash income is 90 GEL;
- Income, recalculated in comparable prices, demonstrates a weak but still obviously increasing trend;
- The rate of increasing income in rural areas is 1.4 times higher than in rural areas;
- The level of income is substantially different by region, and the trends also differ.

4.2. Panel Estimations

Based on the panel data, the total income of one household calculated per month per capita according to the last panel, is 283 GEL. This data is not comparable with the data of 2016, since the panel database is split into 7 quarterly interviews. The last panel data covers 2016 and 2015 quarterly interview data. Thus, we shall view the panel data independently; it is not reasonable to compare them with the standard quarterly and annual time series.

Without addressed social assistance, total income calculated per capita is 278 GEL per month. As we see, the difference between having social assistance and not it, in the case of panel data, is also 5 GEL. As we mentioned during time series analyses, the impact of this small nominal amount on poverty level is quite high.

Based on the panel data, nominal income according to quarterly as well as annual data demonstrates a clearly increasing trend.

The rate of increase of total income, including pension, at 23% exceeds the rate of increase of total income. Panel data demonstrate the same as the ordinary time series, which means that this dependence exists objectively and the role of pension in the structure of income has increasing value.

The trend of increase in total income is in fact linear: $R^2 \approx 0.97$, which is irreversible and is a sign of maximum approximation with the line.

Chart #19: Panel dynamics of average nominal total income per capita, GEL
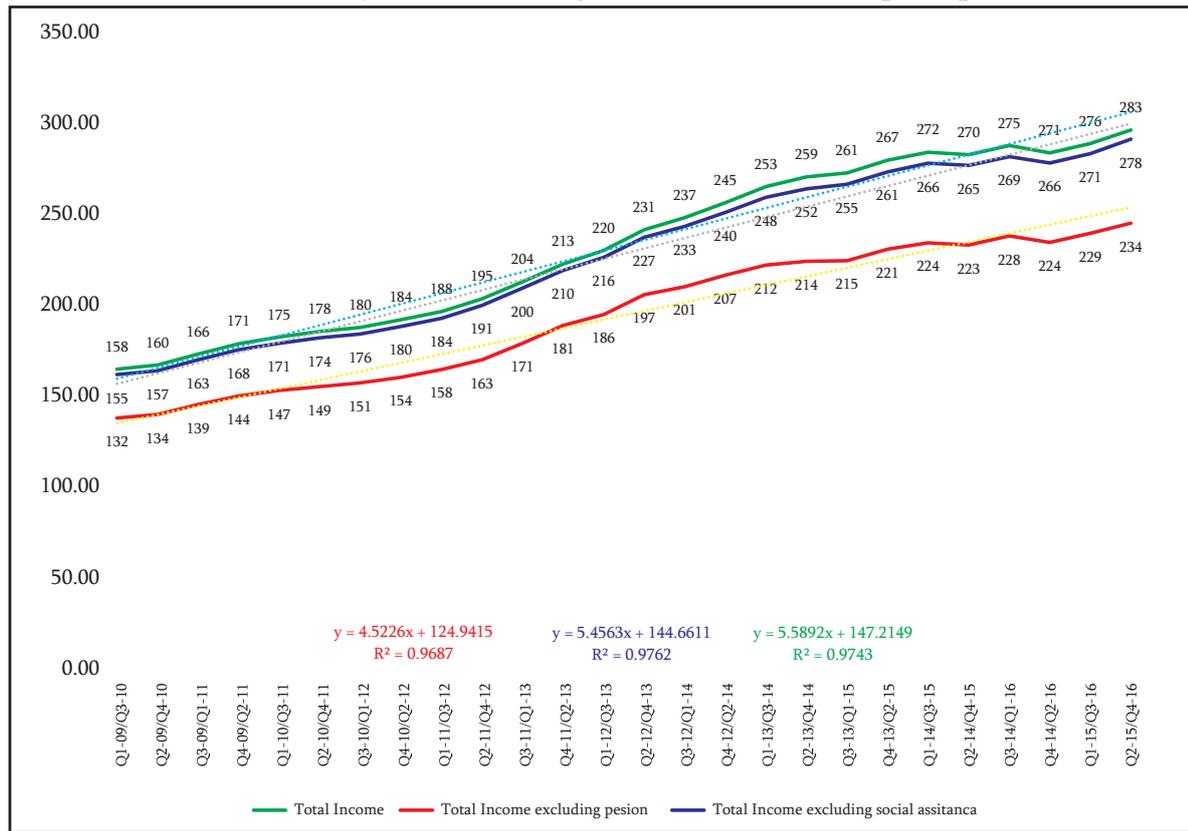
Source: The database of the Integrated Household Survey, processed by the group of authors.

According to the panel data, household income is increasing in both urban and rural areas. It is noteworthy that the difference between the increased rates is somehow different for time series and panel data. The increase rate of incomes by panel data is 1.5 times higher in urban areas that in rural, more than 1.4 times the characteristic for the annual dynamics. This is not easy to explain. We can assume that the income of households stably residing in rural areas increased 1.5 times less than of those residing stably in urban areas, since the panel data covered households participating in all four quarterly interviews, or residing in one place and being less mobile (see Chart #20).

In general, the trend of increase of income per capita was registered in all aggregated regions. However, the volume and trends of income are different:

- In Tbilisi, the amount of income, calculated per capita and increase rate is the highest. According to the data of the last panel, in Tbilisi the income per month per capita was 368 GEL;
- According to the same data, in Adjara and Guria the income was 264 GEL, and the rate of increase lower than of Tbilisi;
- According to the last panel data, in Samegrelo, Imereti, Racha and Svaneti, the level of income is lower than in Tbilisi at 281 GEL per month, and the rate of increase is behind that of Tbilisi;
- In Georgia, the lowest level of per capita income (211 GEL), is seen in Qvemo Qartli and Samtskhe-Javakheti. This, in combination with other factors, is preconditioned by the larger households in these regions compared with other parts of Georgia. The rate of increase of income is too low in this

area and even a decrease is demonstrated by the data of the last panel;

According to the data of the last panel, income calculated per capita is 238 GEL in Shida Qartli, Mtskheta-Mtianeti and Kakheti, higher than the indicators of Qvemo Qartli and Samtskhe-Javakheti, and one of the lowest by rate of increase (see Chart #21).

Chart #20: Panel dynamics of nominal total income per capita by urban/rural area, GEL
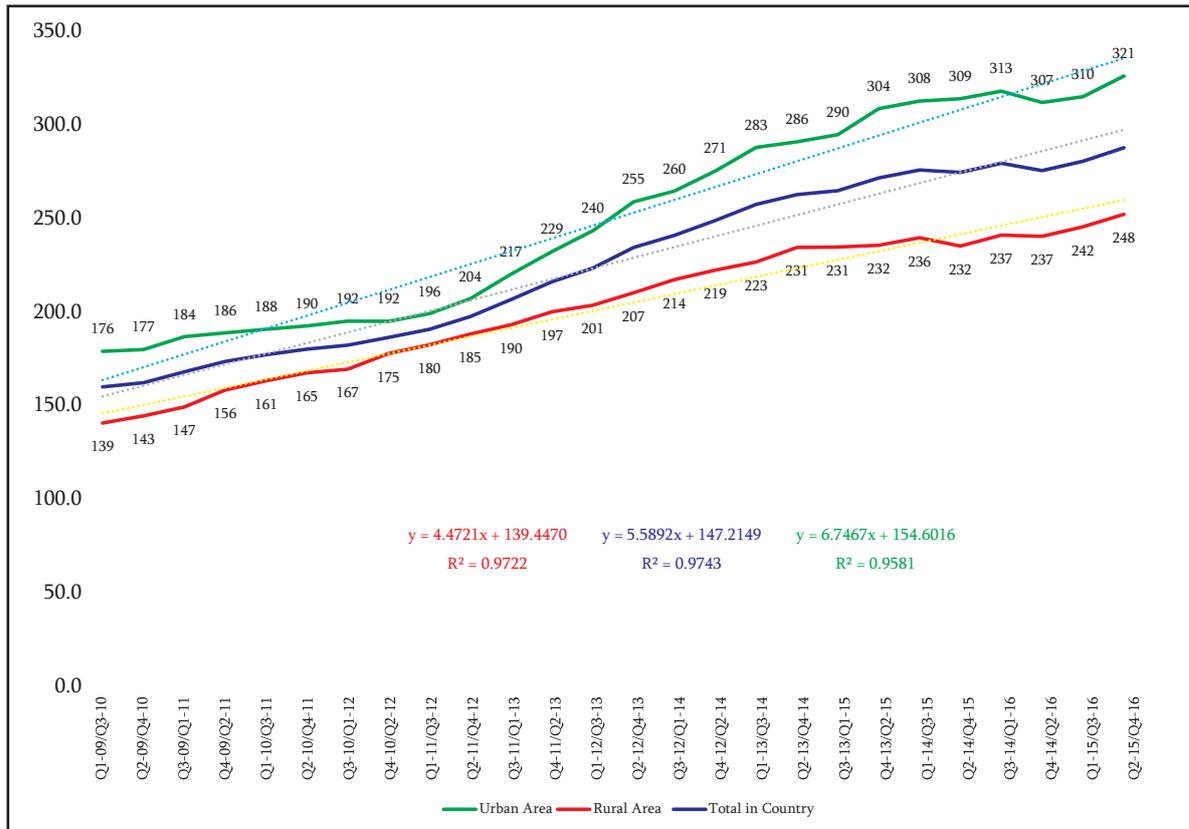
Source: The database of the Integrated Household S processed by the group of authors.

Chart #21: Panel dynamics of average nominal income per capita by aggregated regions, GEL
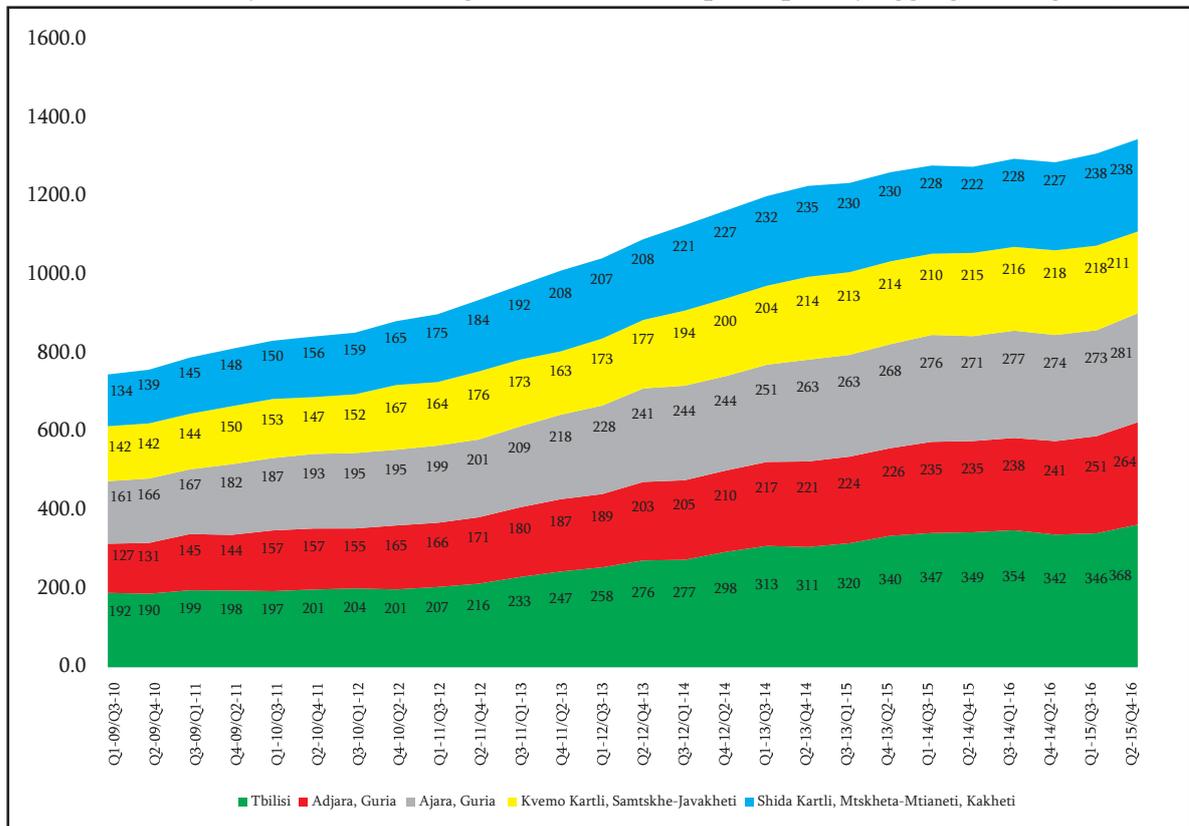
Source: The database of the Integrated Household Survey, processed by the group of authors.

In general, based on the data of panel dynamics of incomes, the following can be concluded:

- Nominal income shows an increasing trend according to the panel data;
- The rate of increase of total income, including pension, at 23% exceeds the rate of increase of total income excluding pension;
- The rate of increase of income is 1.5 times higher in urban areas than in rural, which is higher than 1.4 times the difference, characteristic for annual dynamics;
- According to the panel data, income per capita is highest in Tbilisi and lowest in Qvemo Qartli and Samtskhe-Javakheti;
- The rate of increase of income is still highest in Tbilisi and lowest in Shida Qartli, Mtskheta-Mtianeti and Kakheti.

4.3. Income Inequality

The decile coefficient for total income on average per household, was 27 in 2016; and for distribution on average per capita: 25.

In other words, the total income per household in the 20th subgroup of 5% groups with the highest income, 27 times exceeded the same indicator of the 1st group with lowest income.

In groups with the highest income, the average per capita income 25 times exceeds the same indicator of the group with the lowest income. This means that the size of household is not a significant equalizing factor for distribution of incomes of this type.

The decile coefficient of income per household in 2009-2016 demonstrated a clearly decreasing trend. The decreasing trend is of a rather exponential nature; however, it could also be said that a linear trend also describes the dynamics.

The decile coefficient of per capita income, in general, also demonstrates a reduction trend. The reduction rate is almost equal.

The mentioned trends are undoubtedly positive, since the decile coefficient, which is quite a good indicator of social polarization, is characterized by reduction.

Chart #22: Decile coefficient per household and per capita for 5-percent groups of total income
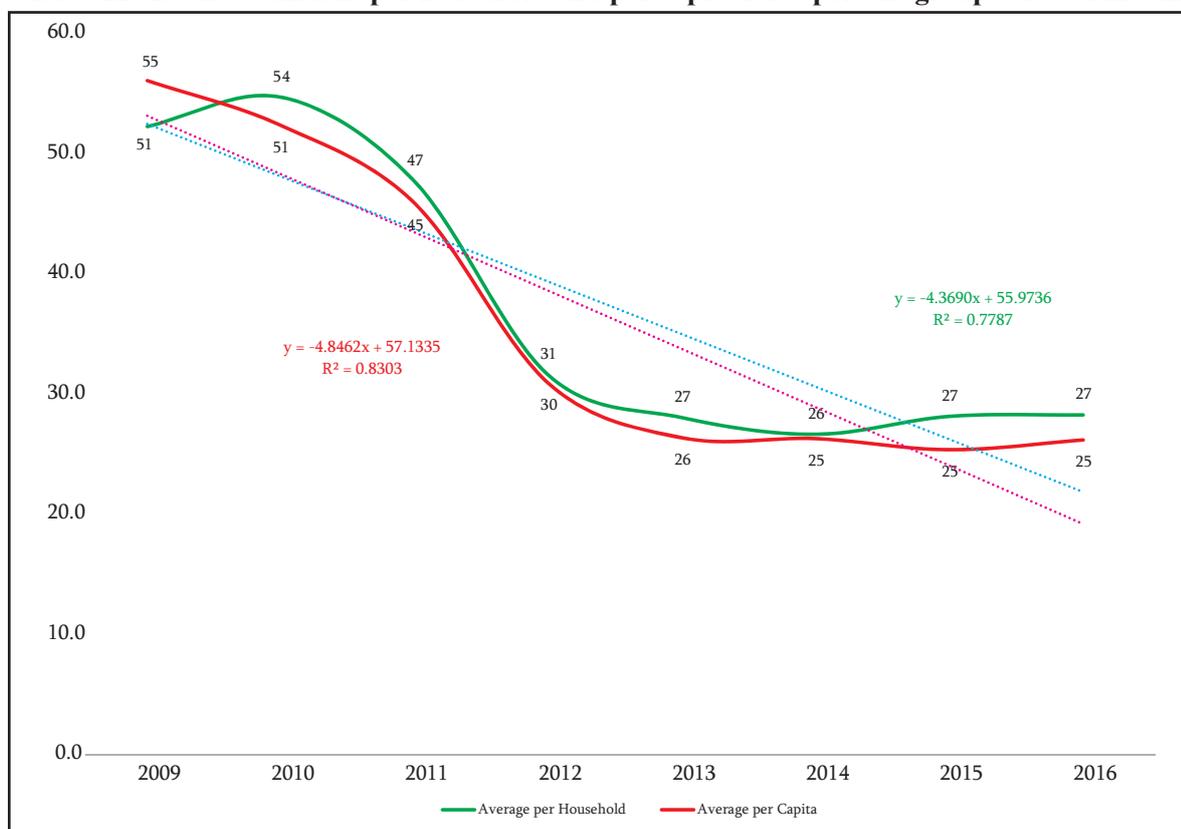
$y = -4.3690x + 55.9736$
$R^2 = 0.7787$

$y = -4.8462x + 57.1335$
$R^2 = 0.8303$

Source: The database of the Integrated Household Survey, processed by the group of authors.

The absolute level of polarization of cash income distribution is much higher than the polarization of distribution of total income. On average, for distribution per household, the decile coefficient for 2016 was 37, which substantially exceeds the value of coefficient of the distribution by the same feature-27. According to per capita distribution, the decile coefficient is equal to the decile coefficient of total income per capita (25).

The decile coefficients of distribution of income per household and per capita are not substantially different, as it was in the case of total income distribution. In other words, the size of household is not a key factor for the quality of polarization by cash income and total income.

The trend of distribution of cash income developed in 2009-2016 clearly demonstrates a reduction, that is rather exponential than linear, since the R^2 for exponential trend is 0.9055 and for linear 0.7793.

Further, in 2009, the value of the decile coefficient for cash income per capita distribution was 190 and 183 respectively, which exceeds the respective coefficients of total income distribution 51 and 25. This means that the quality of polarization by cash income was too high and has reduced significantly in recent years.

Additionally, the comparison of the decile coefficients of income distribution demonstrates that non-cash income, characteristic for self-employment, holds an important equalizing function.

Chart #23: Decile coefficient per household and per capita for 5-percent groups of cash income
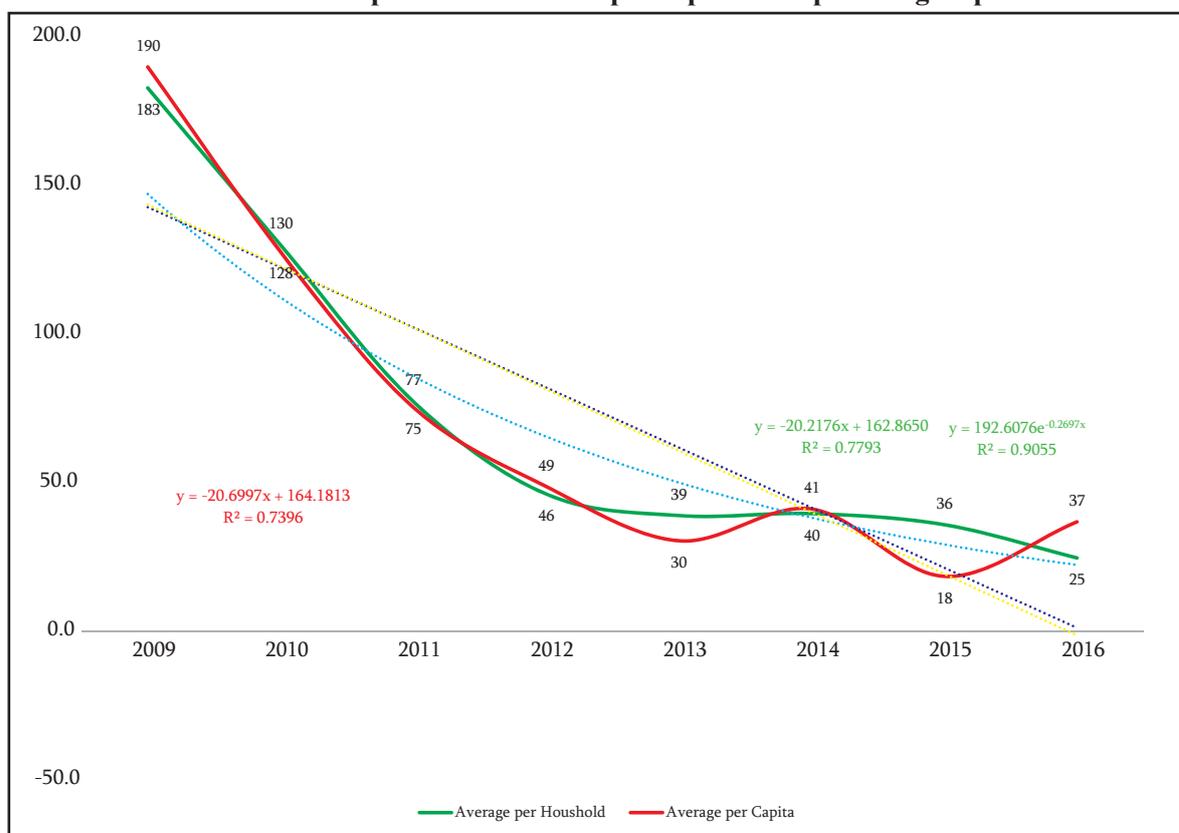
The decile coefficient of distribution of total inflowing resources per household as well as per capita are nearly in the same area, which means that the size of a household is not a decisive factor for distribution. The decile coefficient of distribution of total inflowing resources per capita, as a rule, is lower than the decile coefficient of distribution per household, but the trends are obviously parallel. Polarization for total inflow is nearly the same as for total income.

The change of decile coefficient for distribution of total inflowing resources shows an obvious reduction; however, like cash income, it is of a rather exponential nature than linear.

Chart #24: Decile coefficient per household and per capita for 5-percent groups of total inflowing resources
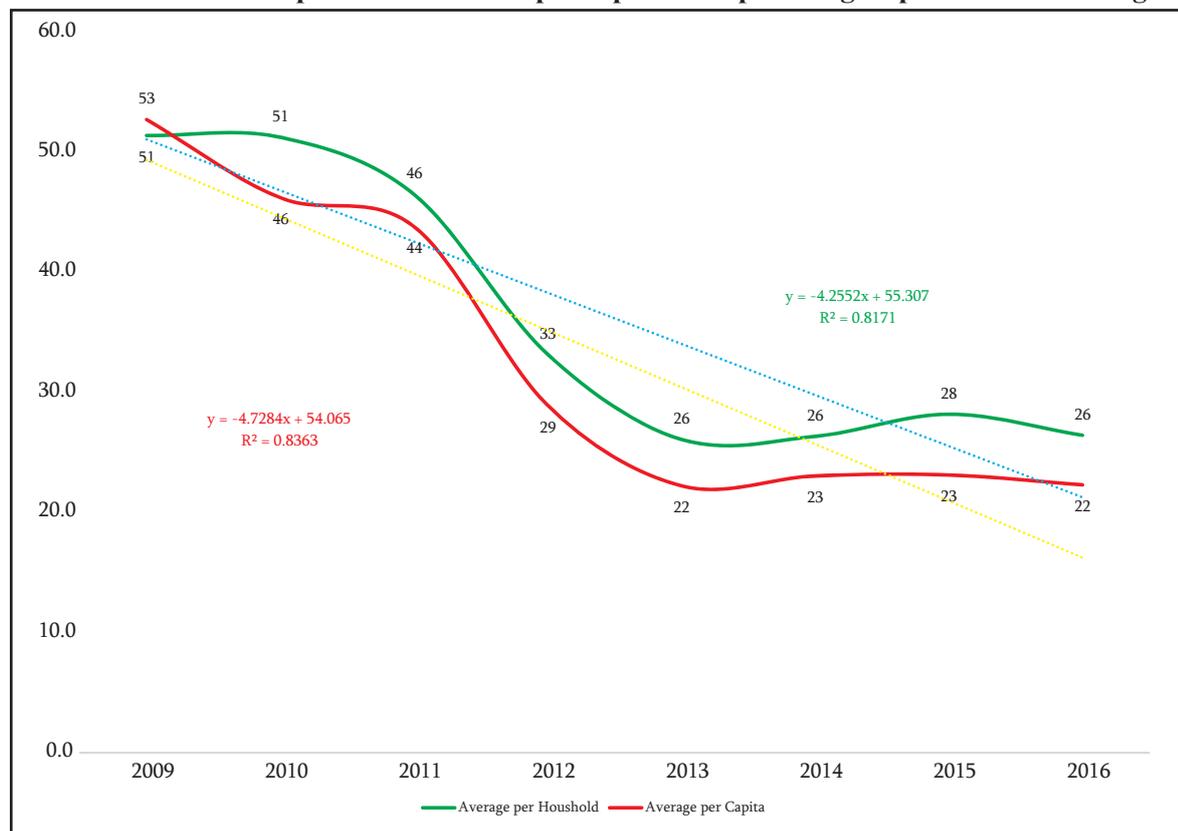
Source: The database of the Integrated Household Survey, processed by the group of authors.

In total, based on the data of decile coefficients, the following can be concluded:

- The size of a household is not a significant equalizing factor with regard to polarization of all analysed types of income;
- Polarization of cash income was much higher than that of total inflowing resources and total income; however, at present, the cash income polarization quality has the same rank as the distribution of total inflowing resources and total income;
- Decile coefficients demonstrate a clear trend of reduction in all three types of income, which of course is positive and means that the polarization quality has been reducing through recent years;
- Reduction is exponential rather than linear, or the rate of reduction became substantially slower in the last 2-3 years.

According to 2016 data, the GINI index of total income per capita distribution was 0.3996, while the GINI index of cash income distribution was 0.4279. This difference means that non-cash income is a significant equalizing factor. The GINI index of the distribution of total inflowing resources equals 0.4080, which is less than the inequality of cash income distribution, but exceeds the inequality of total income distribution. This means that loaning is a very important factor in the increase of inequality.

As for the trends, the inequality of cash income of 2009-2016, as a rule, exceeds the inequality of total inflowing income and total income. The inequality of all three distributions demonstrates a trend of reduction. The reduction is mostly of an exponential nature with a relatively high rate for cash income data.

According to the 2009-2016 data, public social payments, in particular pension and addressed social assistance, had a significant equalizing function.

The GINI index without addressed social assistance for 2016 instead of 0.3996 would be 0.4131. The difference is quite serious. In the course of the research period, the impact of the addressed social assistance on the GINI index is unchangeable and reduces inequality of income distribution by around 0.010-0.015.

As for pension, its impact on inequality is stronger than that of addressed social assistance. The increasing nature of this impact is even more significant. For example, where in 2009-2011 the GINI index without pension increased by 0.06-0.08, in 2015-2016 this difference is almost 0.09, which is substantial (see Chart #26).

Chart #25: Annual dynamics of GINI index for average total income per capita
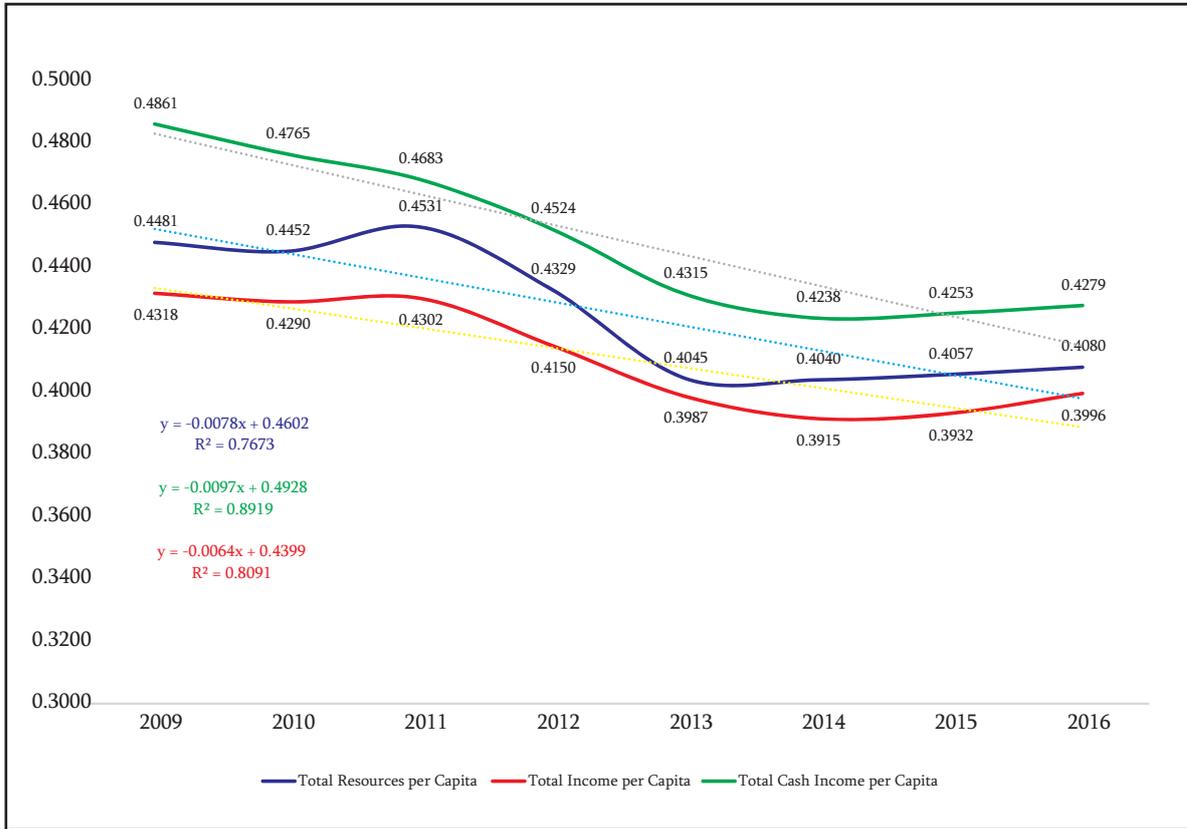
Source: The database of the Integrated Household Survey, processed by the group of authors.

It also noteworthy that the joint impact of both payments is even bigger, which means that pension and addressed social impact do not crosscut in terms of impact on inequality, but complete each other and have a kind of resonance effect.

Chart #26: Panel dynamics of impact of public social payments on GINI index of distribution of total income
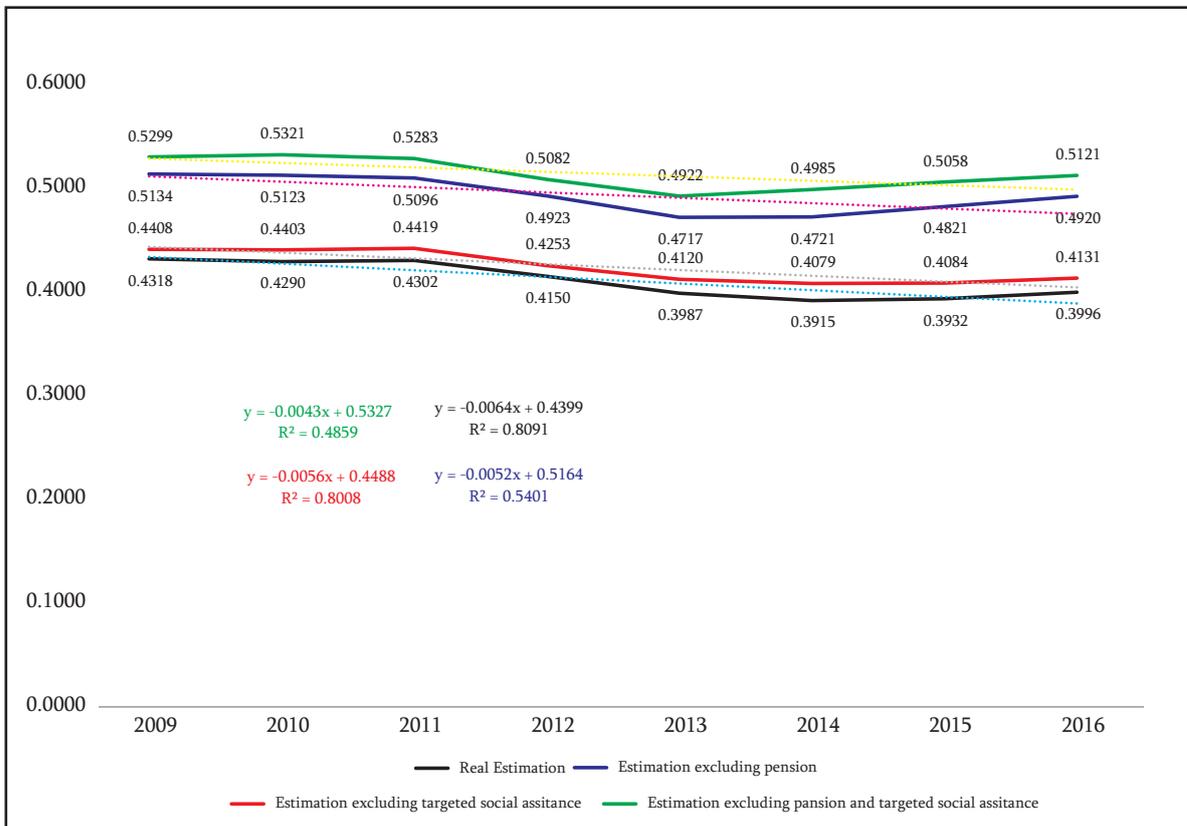
Source: The database of the Integrated Household Survey, processed by the group of authors

The indicator of inequality of income distribution per capita is normally lower in rural areas than in urban. Yet, as we saw from the dynamics of nominal income, as a rule, income in rural areas is substantially lower than in urban. Thus, lower inequality in rural areas is caused not by poor people becoming wealthier, which would be nice, but by wealthy people becoming poorer, which is a significant obstacle for development.

In 2009-2016, the dynamics of the GINI index in urban areas was clearly characterized by a trend of reduction, although in 2016 this trend changed, increasing in urban areas, a significant circumstance.

As for inequality of income in rural areas, in the period of 2009-2016, three more or less homogenous sections were identified:

- 2009-2011 - the GINI index increased;
- 2012-2014 - the GINI index plummeted;
- 2015-2016 - the GINI index renewed its increase.

Another important circumstance was seen in 2009-2016 when the GINI index was higher all over the country than in urban and rural areas. This could signify a decrease in homogeneity. The GINI index is an index and so it is not necessary for an inequality of distribution in the country to be in the middle of inequality of urban and rural areas, taken separately.

Chart #27: Annual dynamics of GINI index of average per capita total income by urban/rural area
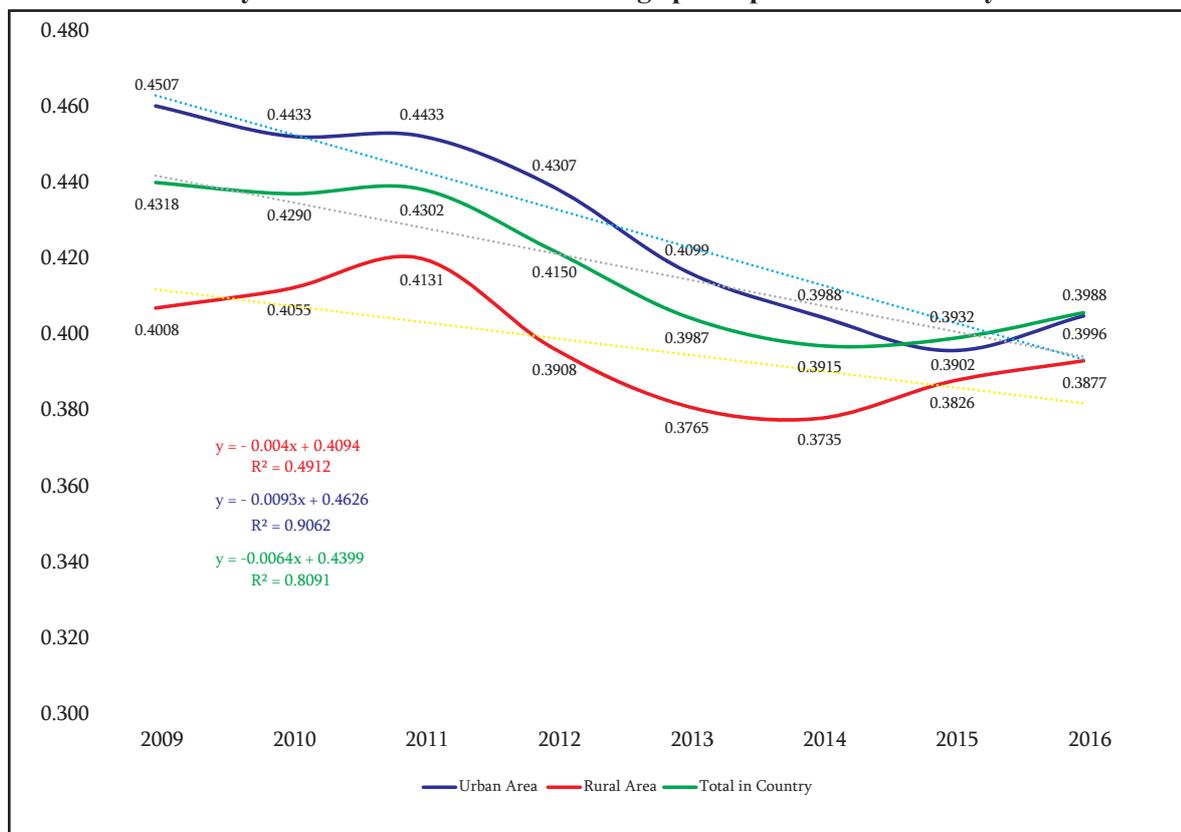

Source: The database of the Integrated Household Survey, processed by the group of authors.

Inequality of income distribution also varies according to region:

- According to the data of 2016, in Tbilisi the GINI index of total income per capita distribution was 0.3964. Inequality had slightly increased compared to 2015, but was substantially decreased compared with 2009-2011. The indicator of income inequality was at its maximum in 2009 - 0.4576, which indicates quite a deep inequality;
- In 2016, the GINI index for per capita income was 0.4093 in Adjara and Guria. This indicator had significantly increased compared with 2015, but inequality had noticeably decreased compared with 2009-2011. The income inequality indicator was at a maximum in 2011, 0.4832, which is quite high;
- In Samegrelo, Imereti, Racha and Svaneti, the GINI index for total income per capita was 0.3674, the lowest indicator among the regions. Inequality was slightly increased compared with 2015, but was markedly reduced compared with 2009-2011. The indicator of income inequality was at a maximum in 2011 - 0.3950, which does not indicate too big an inequality, but is nonetheless higher than the indicator of 2016;

- In 2016, the GINI index was 0.2754 in Qvemo Qartli and Samtskhe-Javakheti. Inequality significantly reduced in this area compared with 2015. In the study period, the highest indicator of inequality was identified in 2010 - 0.4243, which is quite high;
- In Shida Qartli, Mtskheta-Mtianeti and Kakheti, the GINI index was 0.4013 in 2016, relatively reduced compared with 2015. The maximum of the study period was seen in 2010 - 0.4208, which is not much different from the level of 2016.

Chart #28: Annual dynamics of GINI index of average per capita total income by aggregated regions
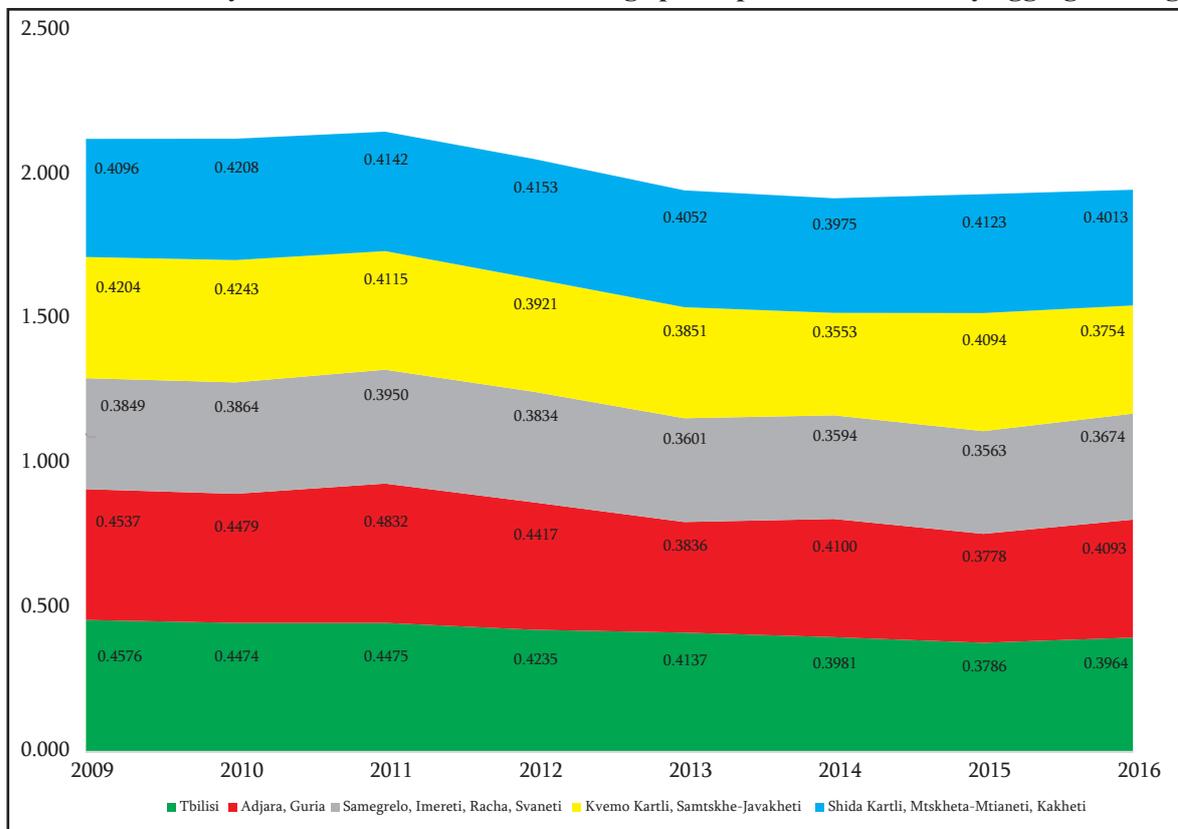

Source: The database of the Integrated Household Survey, processed by the group of authors

For panel income, the dynamics of the GINI index are nearly the same as for the annual data, but within these are a number of circumstances worth highlighting:

1. Of the reviewed three types of income, cash income is distinguished with the highest inequality, characterized by a trend of reduction in the panels generated throughout the study period. Yet, during the last four panels, a sharp increase is noticeable;

2. The GINI index, according to total inflowing resources per capita, as a rule is more unequally distributed than total income per capita and more equally than cash income per capita. An exception was found in just three panels of 2012-2014, when inequality in the distribution of total income was nearly the same as inequality in the distribution of total income. A sharp increase in the GINI index in 2015-2016 also merits attention.

Of the reviewed three types, the most equal is the distribution of total income per capita. The GINI index of this distribution demonstrated a decreasing trend throughout the study period, but, according to the data of the last three panels, the trend then rocketed.

Chart #29: Panel dynamics of GINI index of average per capita income
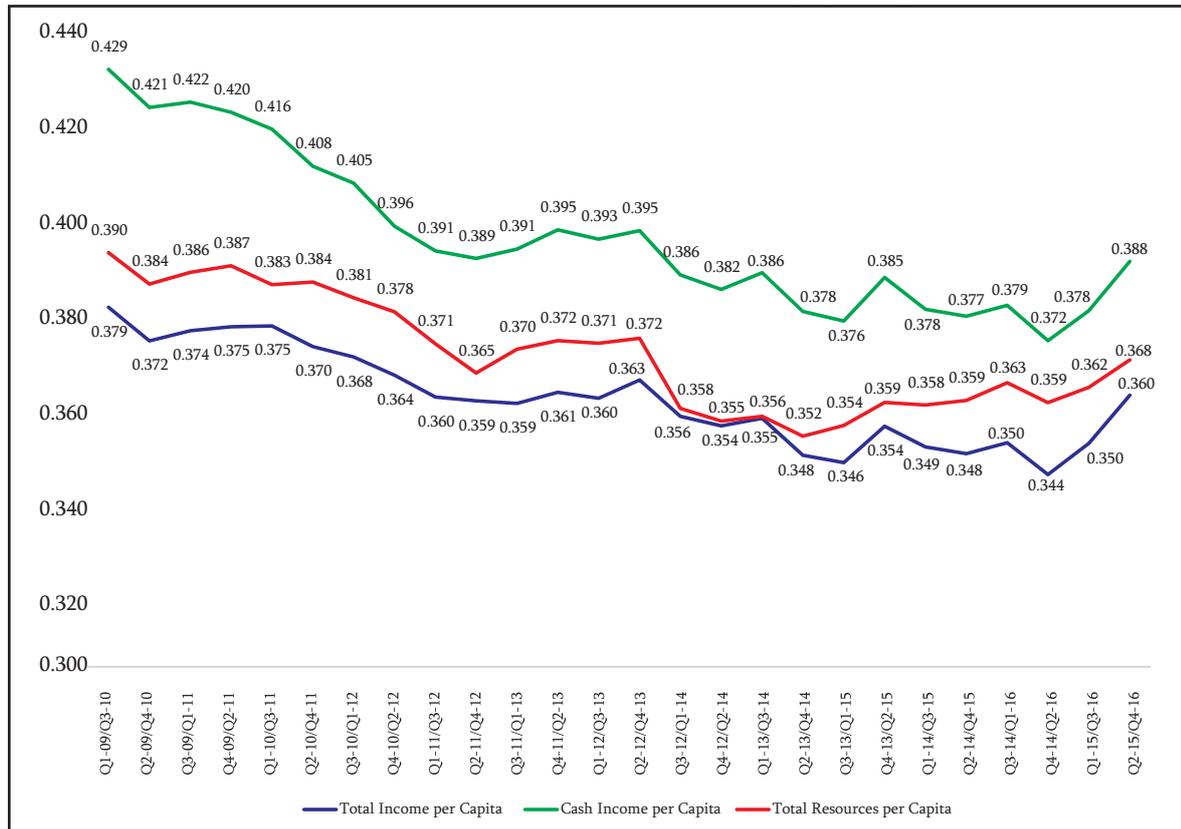
Source: The database of the Integrated Household Survey, processed by the group of authors.

In general, we can conclude the following:

- The decile coefficients for total income per capita, total inflowing resources and cash income, were quite high in 2015-2016, but compared with previous years had reduced significantly. The decrease is especially substantial in the case of decile coefficients for cash income per capita, when the reduction is on rank level;

- Of the distribution of per capita income, most unequal is distribution of cash income. The distribution of total income is more equal, which means that non-cash income received from agricultural self-employment plays a significant equalizing role, despite the low productivity of agricultural self-employment;

- Inequality of total inflowing resources per capita was relatively higher than total income distribution, due to low income families having less access to loans;

- In 2016, the value of the GINI index increased compared with 2015, which deserves attention;

- In general, income inequality in Georgia is not low but it is also not so high. Any value in the GINI index higher than 0.5 is alarming, while the value - 0.6-0.7, like that of Latin America and Africa, would be disastrous. Georgia is far from such value, though not ever so far: at the end of the 1990s, the GINI index of the distribution of cash incomes was quite close to 0.6 in value.

5. Poverty and Inequality of Incomes

5.1. Time Series

Poverty level and income inequality are connected; however, this relationship is indirect for two main reasons:

1. Poverty is calculated according to consumption, while income does not yet mean consumption, and;
2. The GINI index shows inequality of income distribution in total population and this income includes the revenues of all households above and below the poverty line.

In order to compare poverty and inequality, the series of indicators were compared to one another by linear regressive analyses, since this is easier to understand.

Annual data of 2009-2016 demonstrate that poverty level and the GINI index are quite closely related. The B coefficient of linear regression is 3.7639 for the whole country, which means that a change in the GINI index of one unit is reflected 3.7639 times in the poverty level. In urban areas, this indicator stands at 2.7477, and in rural areas 4.2504, meaning that the impact of inequality is 1.5 times stronger in rural areas.

Linear regression quite precisely describes this relationship. The value of R^2 is 0.9487 throughout the country, while in urban areas it is 0.9283. In other words, linear regression describes the interrelations between these indicators by 95% and 93% respectively. The value of R^2 is different in rural areas: R^2 = 0.8170, which is high, but substantially behind estimations of the country in total and in urban areas. In other words, income inequality in rural areas less precisely describes the poverty level.

Chart #30: Interaction of GINI index of distribution of total income per capita and annual indicators of poverty level by urban/rural area
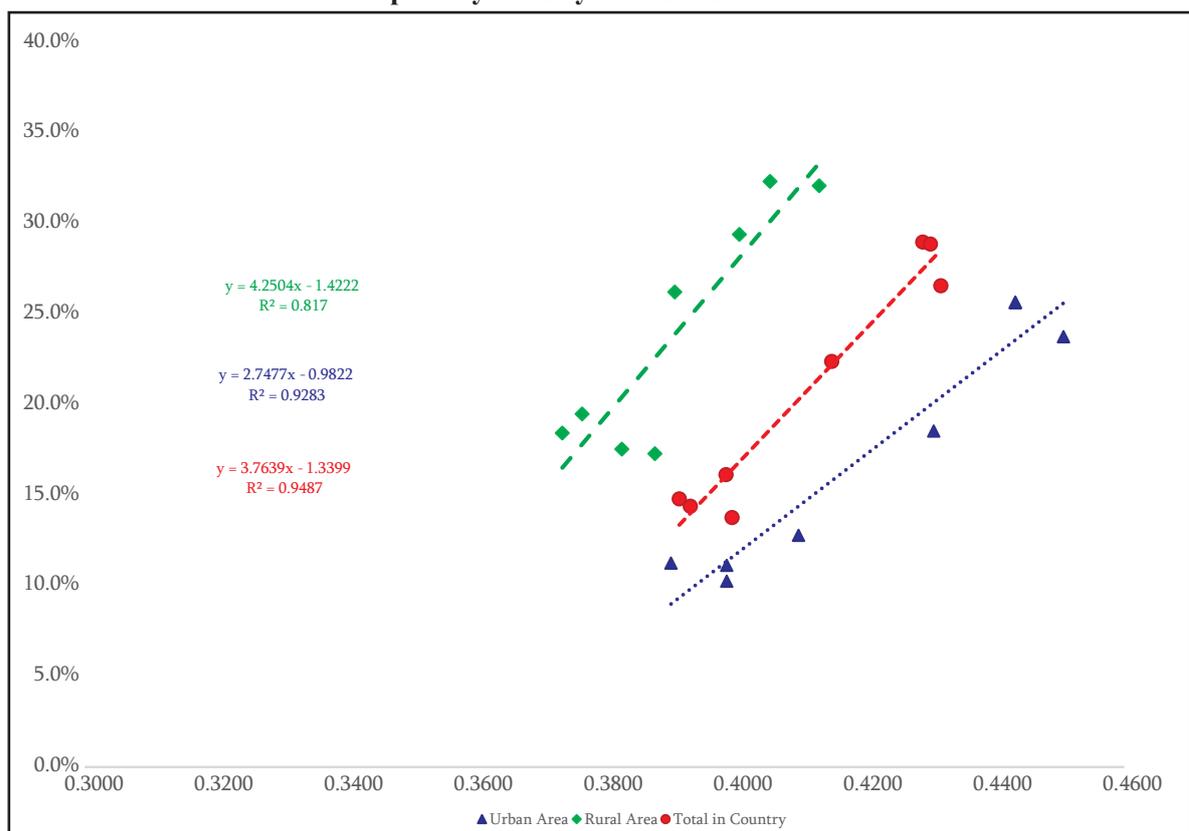
Source: The database of the Integrated Household Survey, processed by the group of authors.

According to extended regions, the interaction of the GINI index and poverty level indicators is different:

- In Tbilisi, the B coefficient of linear regression is 2.1038, which indicates a doubly weaker impact than a similar indicator for the country: the R^2 value of regression is 0.8624, which is quite high and means that linear regression quite precisely (86%) describes the interaction of these two indicators;
- In Adjara and Guria, the B coefficient of linear regression is 1.3658, which shows a three times

weaker impact than a similar indicator for the country. The value of regression R² is 0.7928, which is quite high and means that linear regression quite precisely (almost 80%) describes this relationship;

- In Samegrelo, Imereti, Racha and Svaneti, the B coefficient of linear regression is3.8697, which is similar to the impact on the country. The value of regression R² is 0.8018, which is quite high and means that linear regression quite accurately (almost 80%) describes this interaction;

- In Qvemo Qartli and Samtskhe-Javakheti B coefficient of linear regression stands at 2.7385, which is almost 30% weaker than the impact of the GINI index on a similar indicator at the country level. The value of regression R² is 0.5398, which is quite low and means that linear regression cannot describe this interaction with high precision;

- In Shida Qartli, Kakheti and the Mtskheta-Mtianeti region, the B coefficient of linear regression is 6.4704, which demonstrates a 1.7 times stronger impact than the similar indicator for the country. The value of regression R² is 0.4650, which is quite low and means that linear regression does not describe this interaction with high precision.

Chart #31: Interaction of GINI index of distribution of total income per capita and annual indicators of poverty level by aggregated regions
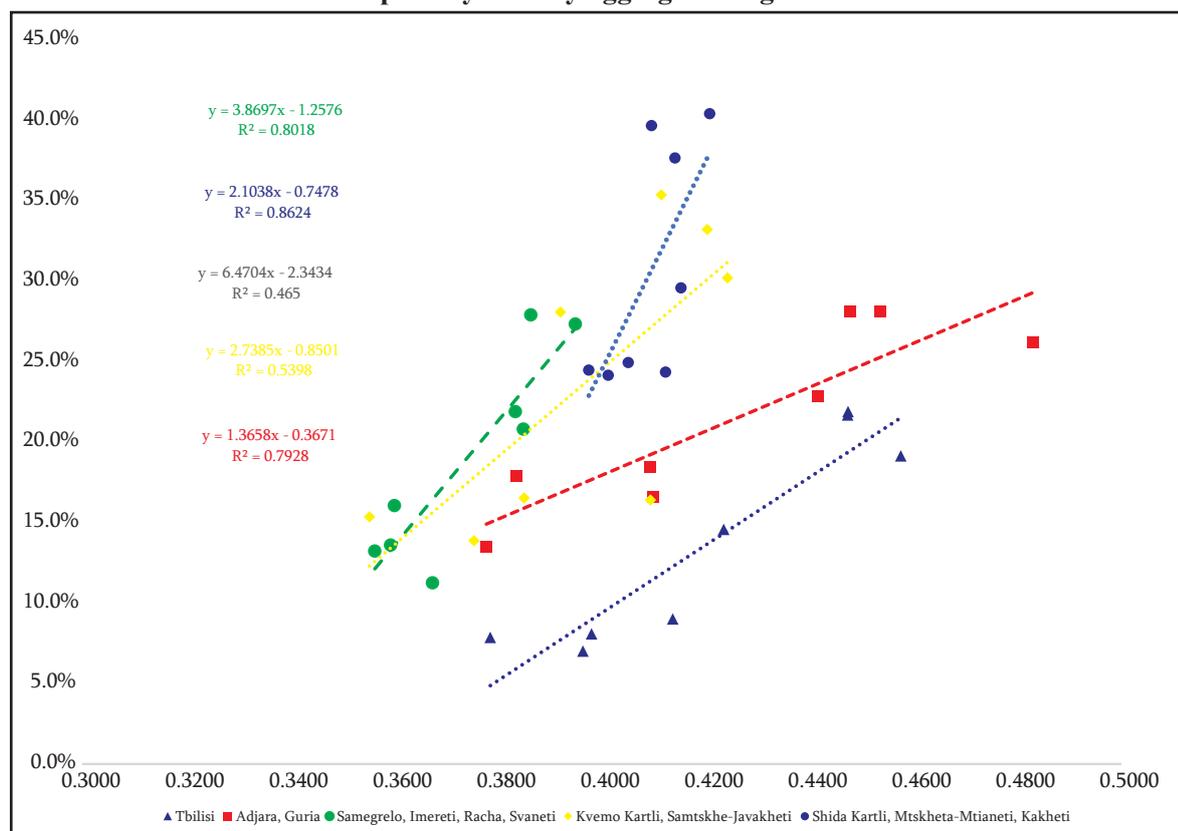

Source: The database of the Integrated Household Survey, processed by the group of authors.

For comparison of annual indicators, the time series covers just 8 observations, which is not enough to make conclusions from, due to scarcity of statistics. More reliable conclusions can be made by means of regressive analyses of the quarterly data, since the number of quarterly observations in the study period is 32, which enables much more precise conclusions to be made.

The B coefficient of linear regression of the quarterly data of 2009-2016 is 3.3566 for the whole country, which means that a change in the GINI index by one unit is reflected 3.3566 times in the poverty level. In urban areas, this figure equals 2.4918, and in rural areas 2.5119. The impact of inequality on poverty in rural areas is nearly the same as in urban. Note that in the annual picture, the B coefficient of linear regression in rural areas substantially differed from those in the quarterly, where the indicator is lower.

Linear regression more or less precisely describes this interaction. The value of R² is 0.7485 throughout the country, while in urban areas it is 0.7623. In other words, linear regression describes the interaction between these indicators by 75% and 76% respectively. The value of R² is totaly different in rural areas, where R² = 0.3778, which is a very low value. In other words, inequality of income in fact does not describe the poverty level.

Chart #32: Interaction of GINI index of distribution of total income per capita and quarterly indicators of poverty level by urban/rural area
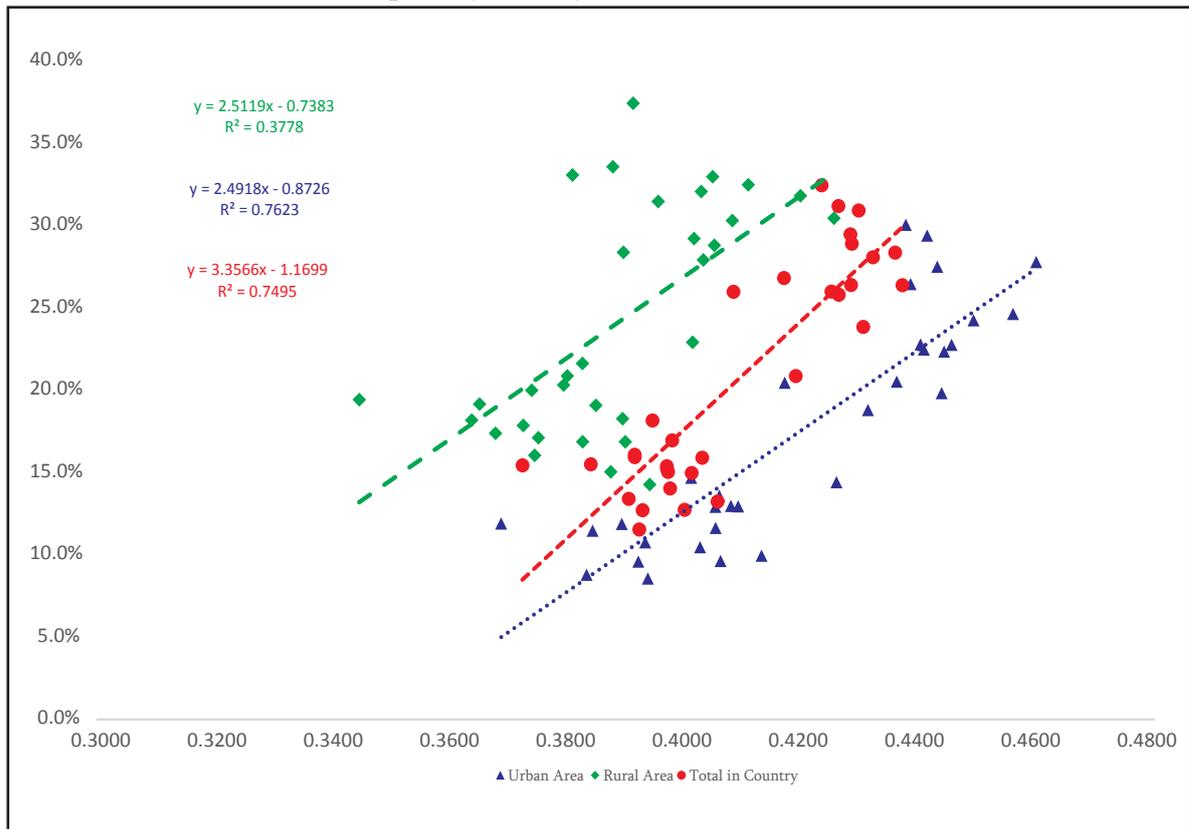

Source: The database of the Integrated Household Survey, processed by the group of authors.

According to aggregated regions, the interaction of the GINI index and quarterly indicators of poverty level are different:

- In Tbilisi, the B coefficient of linear regression is 1.7085, which describes a doubly weaker impact than a similar indicator for the country. The value of regression R² is 0.6012. This is not high and means that linear regression describes with low preciseness (60%) the interaction of these two indicators;

- In Adjara and Guria, the B coefficient of linear regression is 1.2388, which expresses a 3 times weaker impact than the total country indicator. The value of regression R² is 0.6014, meaning that linear regression describes this interaction with very low precision (60%).

- In Samegrelo, Imereti, Racha and Svaneti, the B coefficient of linear regression is 2.1563, which is almost 40% lower than the indicator for the whole country. The value of regression R² equals 0.30, and so linear regression most likely cannot describe this interaction;

- In Qvemo Qartli and Samtskhe-Javakheti, the B coefficient of linear regression is 2.1599, which describes an almost 40% weaker impact than the indicator for the whole country. The value of regression R² is 0.4046, meaning that linear regression describes this interaction with low precision;

- In Shida Qartli, Mtskheta-Mtianeti and Kakheti, the B coefficient of linear regression is 0.8330, which demonstrates a 5 times stronger impact than the indicator for the whole country. The value of regression R² is 0.0761, which in fact means that linear regression does not describe this interaction at all.

Chart #33: Interaction of GINI index of distribution of total income per capita and quarterly indicators of poverty level by aggregated regions
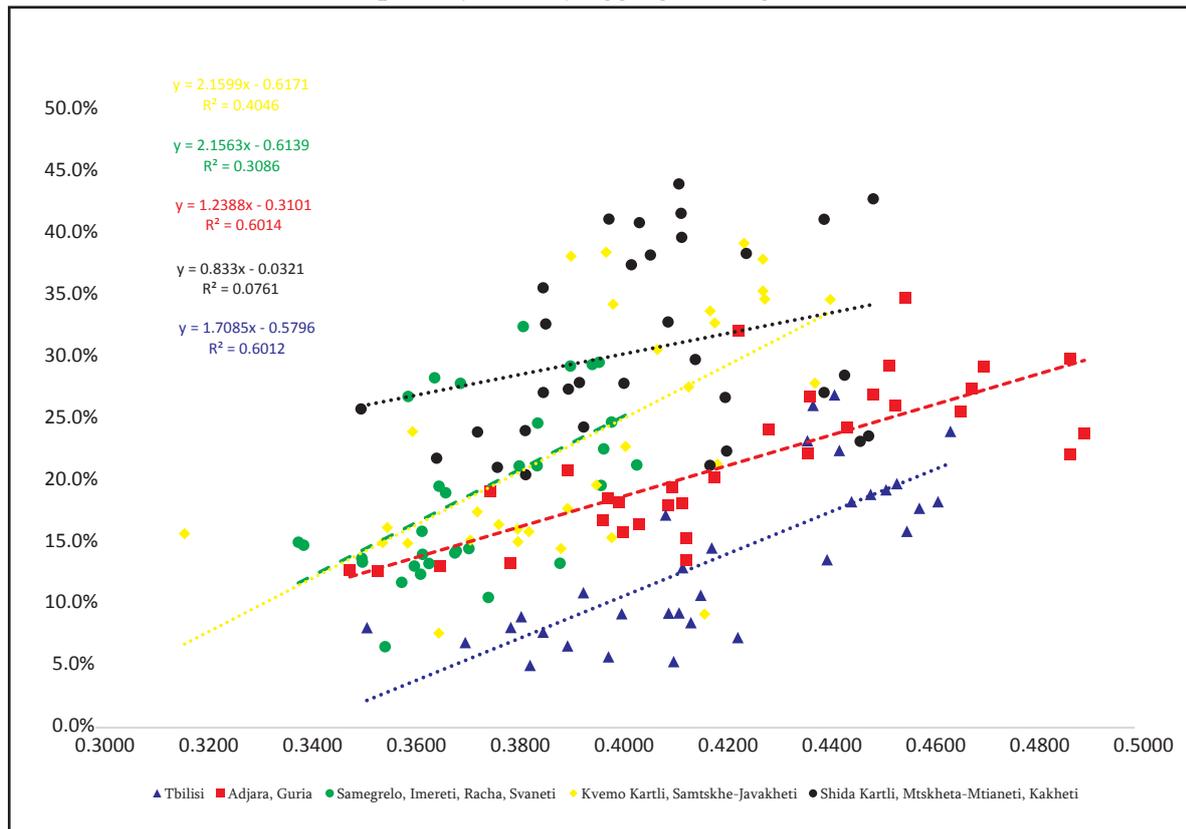
Source: The database of the Integrated Household Survey, processed by the group of authors.

In general, the following can be concluded:

- The GINI index and poverty level are closely connected;
- Estimations are relevant on a country level and in urban and rural areas. The connection of the GINI index and poverty level is not measurable for more disaggregated data;
- The impact of the inequality indicator on poverty is almost the same in urban and rural areas.

5.2. Panel Estimations

Reliable conclusions can also be made by means of regressive analyses, since the number of panel observations was 26 in the study period.

The B coefficient of the panel data of 2009-2016 is 4.9215 for the indicators of the whole country, which means that the change in the GINI index of one point is reflected 4.9215 times in the poverty level. Further, in urban areas, this indicator is 2.5315, and in rural 3.2367, which means that according to the panel data, the impact of inequality on poverty is stronger in rural areas than in urban (see Chart #34).

Linear regression, with more or less precision, describes this interaction. The value of R² equals 0.6904 in the whole country, and 0.7265 in urban areas. This means that linear regression describes the interaction between these indicators by 69% and 72%, respectively. The value of R² is totally different in rural areas at R²=0.4593, which is too low and means that the inequality of income in rural areas in fact does not describe the poverty level (see Chart #35).

Chart #34: Interaction of GINI index of distribution of total income per capita and panel indicators of poverty level by urban/rural area

y = 3.2367x - 0.9349
R² = 0.4593

y = 2.5315x - 0.8456
R² = 0.7265

y = 4.9215x - 1.5626
R² = 0.6904

▲ Urban Area ◆ Rural Area ● Total in Country
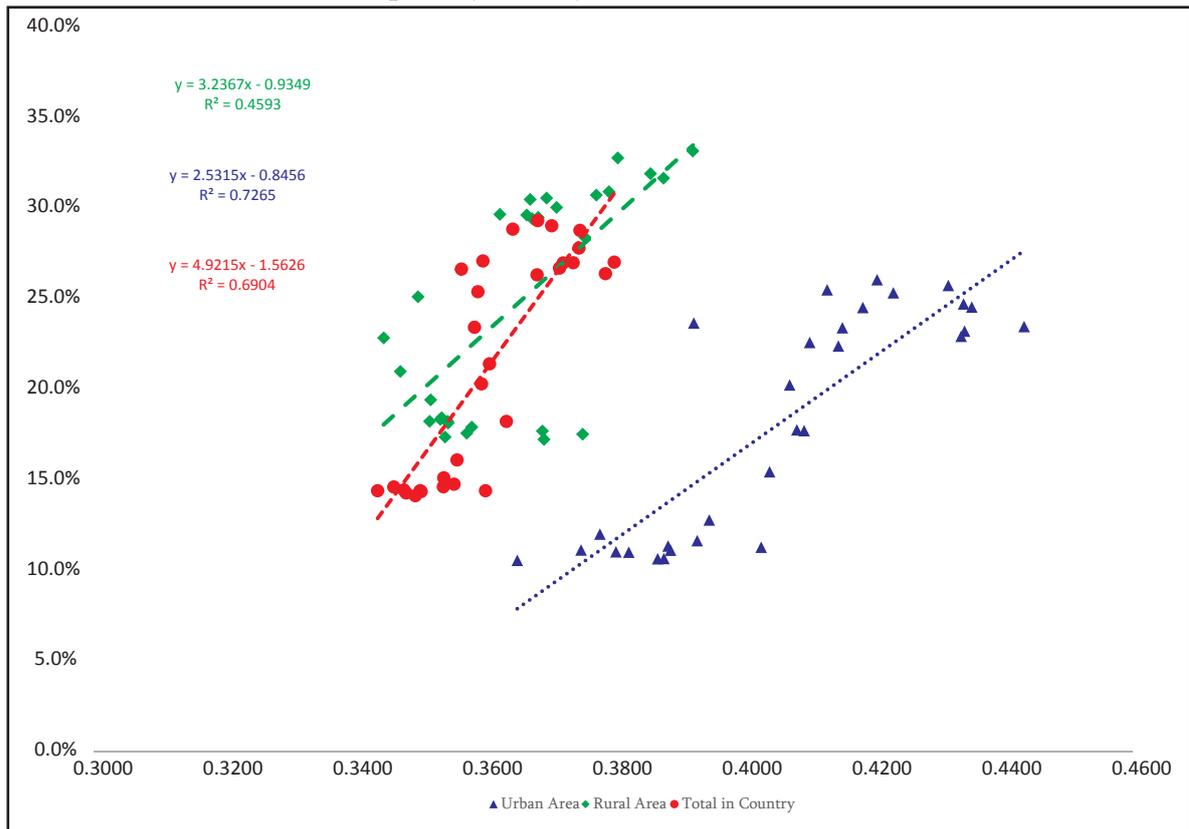
Source: The database of the Integrated Household Survey, processed by the group of authors.

Chart #35: Interaction of GINI index of distribution of total income per capita and panel indicators of poverty level by aggregated regions

y = 3.2332x - 0.9597
R² = 0.7838

y = 1.421x - 0.3111
R² = 0.4875

y = 2.7247x - 0.7567
R² = 0.3798

y = -0.9084x + 0.6806
R² = 0.0483

y = 2.0317x - 0.6822
R² = 0.7458

▲ Tbilisi ■ Adjara, Guria ● Samegrelo, Imereti, Racha, Svaneti ◆ Kvemo Kartli, Samtskhe-Javakheti ● Shida Kartli, Mtskheta-Mtianeti, Kakheti
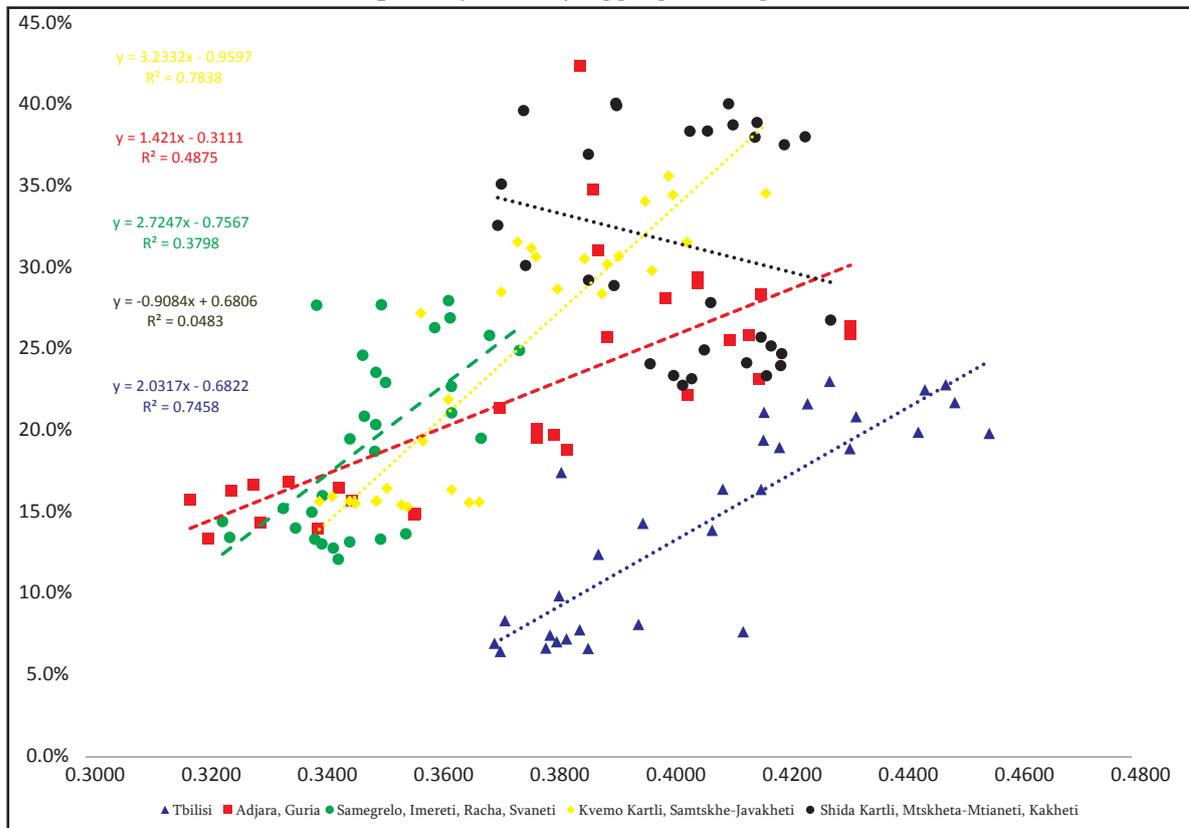
Source: The database of the Integrated Household Survey, processed by the group of authors.

According to aggregated regions, the interaction between the GINI index and the panel data of poverty level is different (see the chart above):

- In Tbilisi, the B coefficient of linear regression is 2.0317, which reflects a doubly weaker impact than the same indicator for the whole country. The value of regression $R^2$is 0.7458. This means that linear regression quite precisely (75%) describes the interaction of these two indicators;

- In Adjara and Guria, the B coefficient of linear regression is 1.1421, which shows a 3 times weaker impact than the same indicator for the whole country. The value of regression R^2 is 0.4875, which is very low and means that linear regression describes this interaction with very low (49%) precision;

- In Samegrelo, Imereti, Racha and Svaneti, the B coefficient of linear regression is 2.7247, which is almost 30% lower than the indicator for the whole country. The value of regression R^2 is 0.3798, which is very low and means that linear regression weakly describes this interaction;

- In Qvemo Qartli and Samtskhe-Javakheti, the B coefficient of linear regression is 3.2332, which indicates a 20% weaker impact than the indicator for the whole country. The value of regression R^2 is 0.7838; it is quite high and means that linear regression describes this interaction with quite high precision (78%);

- In Shida Qartli, Mtskheta-Mtianeti and Kakheti, the B coefficient of linear regression is 0.9084, which reflects a 5 times stronger impact than the indicator for the whole country. The value of regression R^2 is 0.0483, which equals almost zero and means that linear regression does not reflect this interaction at all.

6. Interaction between Chronic Poverty and Income Inequality

One of the main subjects of the present report is the review of the interaction between income inequality and chronic poverty. This can be done only by comparing panel data.

The B coefficient of linear regression of comparison of the GINI index and chronic poverty level, for the whole country, is 2.5730, which means that a change in the GINI index by one unit is reflected 2.5730 times in the poverty level. This impact is almost doubly weaker than the impact of the GINI index on the panel data of the poverty level in general. The comparison is correct for panel estimations, since these are absolutely identical series. In urban areas, this indicator is 1.1631 and in rural areas 1.2022; meaning that in rural areas, the impact of inequality on chronic poverty is stronger than in urban areas.

Linear regression more or less precisely describes this interaction. The value of R^2 throughout the country is 0.7456, and in urban areas 0.6838. This means that linear regression describes the interaction of income inequality and chronic poverty by 75% and 68%, respectively. The value of R^2 is totally different in rural areas at $R^2=0.2899$, which is an extremely low value. In other words, income inequality in rural areas in fact does not describe the level of chronic poverty.

Chart #36: Interaction of GINI index of distribution of total income per capita and chronic poverty level by urban/rural area
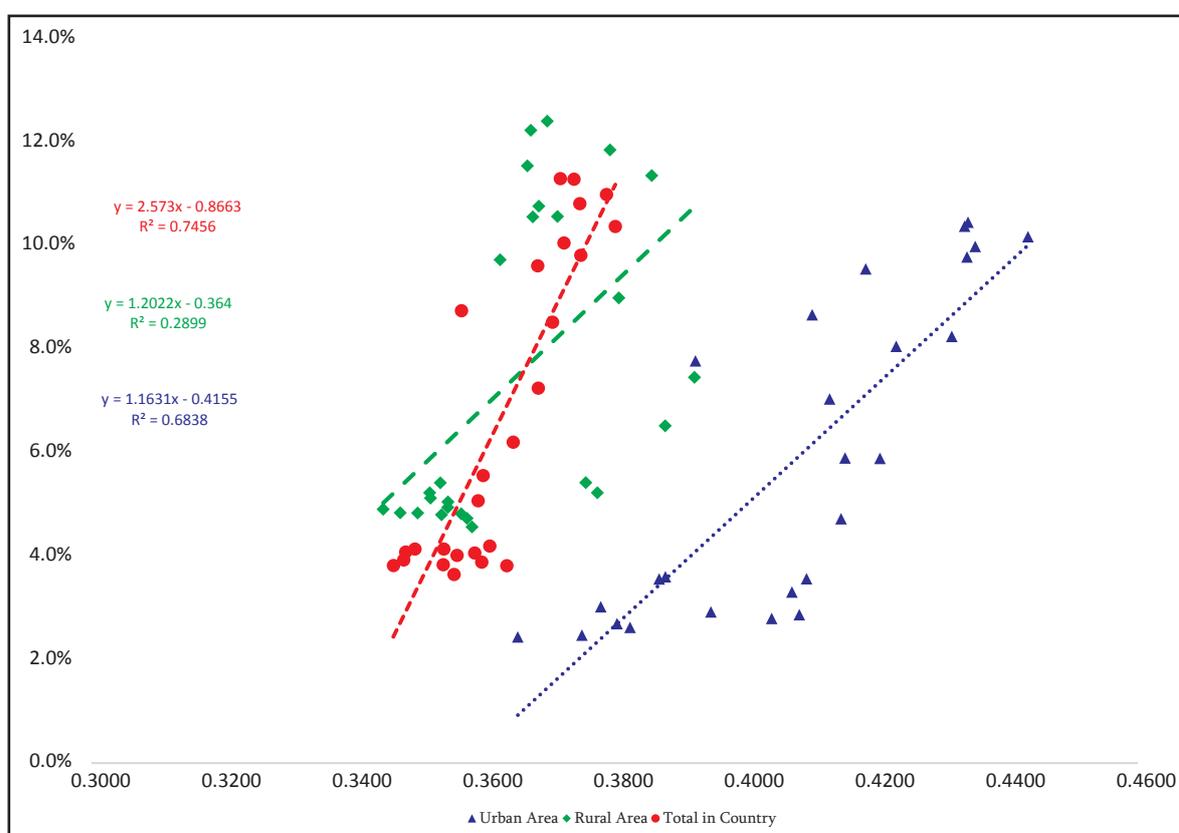
Source: The database of the Integrated Household Survey, processed by the group of authors.

The interaction of the GINI index and panel data of poverty level are different by aggregated region:

- In Tbilisi, the B coefficient of linear regression is 0.9157, which reflects almost a 3 times weaker regression than the indicator for the whole country. The value of regression R^2 is 0.6768. This is quite a high indicator and means that linear regression describes the interaction of these two indicators with high precision (68%);

- In Adjara and Guria, the B coefficient of linear regression is 0.4714, which is the indicator of a 5 times weaker impact than that for the whole country. The value of regression R^2 is 0.3128, which is too low and means that linear regression cannot describe this interaction;

- In Samegrelo, Imereti, Racha and Svaneti, the B coefficient of linear regression is 0.7875, which is almost 3 times lower than the indicator for the whole country. The value of regression R^2 is 0.1624. This is a very low indicator and means that linear regression can not describe this interaction;

- In Qvemo Qartli and Samtskhe-Javakheti, the B coefficient of linear regression is 1.1174, which reflects a doubly weaker impact than the indicator for the whole country. The value of regression R^2

is 0.5233, which is quite low and means that linear regression describes this interaction with quite low precision (52%);

- In Shida Qartli, Mtskheta-Mtianeti and Kakheti, the B coefficient of linear regression is 0.6704, which indicates a 5 times stronger impact than the same indicator for the whole country. The value of regression R^2 is 0.0676, which means that linear regression does not describe this interaction at all.

Chart #37: Interaction of GINI index of distribution of total income per capita and chronic poverty level by aggregated regions
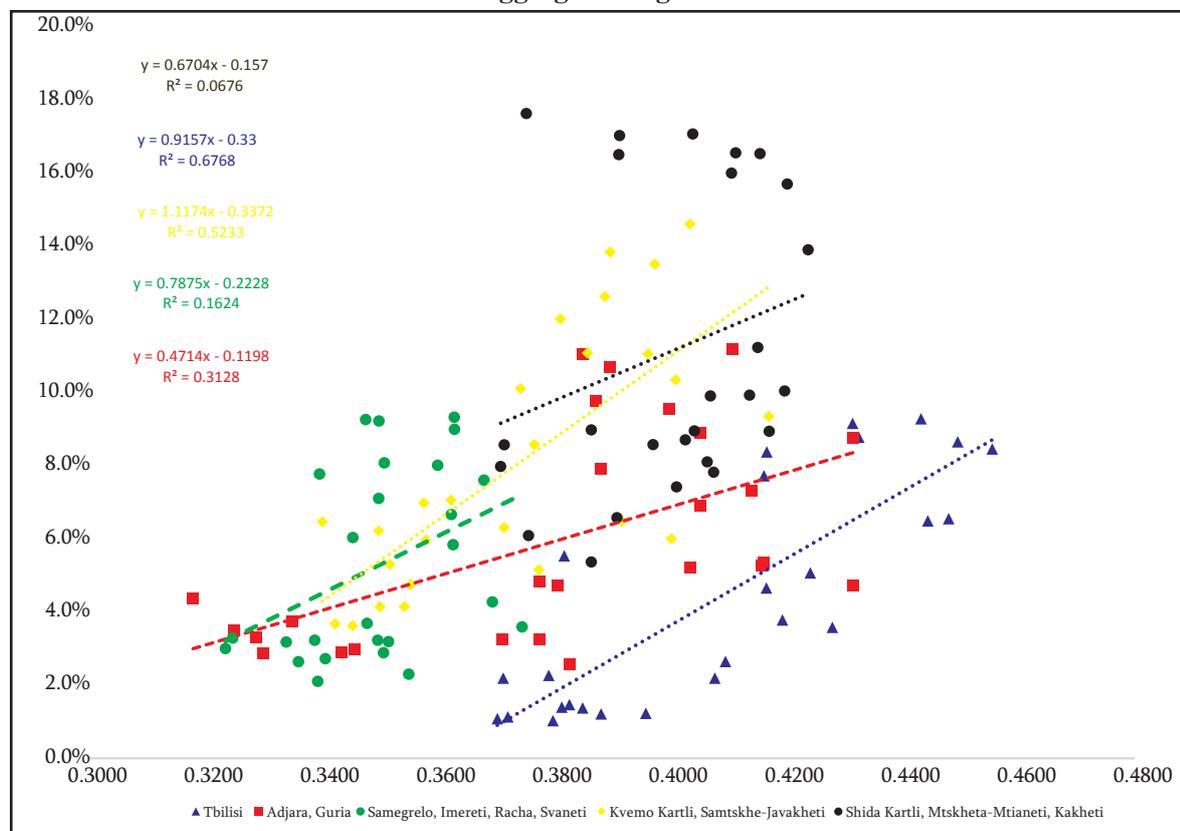
Source: The database of the Integrated Household Survey, processed by the group of authors.

In general, regarding the interaction of panel data, the GINI index and chronic poverty level indicators could be understood in the following way:

- The GINI index and indicators of chronic poverty level have close interaction on a countrywide level as well as urban and rural areas; while this connection is weaker on a more detailed level;
- In rural areas, the connection between the panel poverty level and chronic poverty level with the GINI index is weak and the latter in fact does not determine panel poverty and chronic poverty level in rural areas.

7. Factors

As mentioned above, factorial analysis of poverty first of all necessitates a comprehensive study of poverty. In the present report, we review the four strongest and most important factors, from an economic and social point of view, which have an impact on poverty; divided into two groups:

Quantitative factors:

- Addressed social assistance - its impact on poverty level is crucial, since the direct goal of social assistance of this type is poverty reduction. Thus, it is interesting how the project, "Addressed Social Assistance" deals with this difficult task;
- Pension - in context, it does not represent public social payment, but in fact in Georgia has more of a social meaning than economic. A civilized, accumulative pension system does not operate in the country. Thus, the pension also can be viewed as public social payment.

For the purpose of estimating the poverty level, we reduced the total consumer expenditure of households to an amount equivalent to the pension and addressed social assistance received by the same household and, based on these estimations, calculated the poverty level. Thus, the assumption is that if, hypothetically, the household does not have addressed social assistance or income from pension, its total consumption would be less in the same volume.

This assumption could be supported by the circumstance that neither pension nor addressed social assistance belong to the income source used for saving. The income received from this source is immediately converted into consumer expenditures of different types. Thus, such assumption is not unfounded.

Qualitative factors:

- Unemployment - in the present report, we are limited to empirical analyses of the impact of unemployment on poverty, or to comparing the poverty level in households with and without at least one unemployed member, according to ILO criteria;
- Employment - here, we are limited only to simplified analyses of the impact of employment on poverty, or to comparing poverty level in households with or without at least one employed member, according to ILO criteria.

If there is no addressed social assistance, in 2016, the poverty level would be 17% instead of 14%. In other words, addressed social assistance reduces poverty by three percentage points, which means a poverty reduction of almost 21%. Thus, it could be noted that addressed social assistance is quite an effective instrument against poverty.

Note that the dynamics of the relative impact of this source of income increased during the study period. Where, in 2009-2010, the poverty level without addressed social assistance was 6-10% higher compared with the existing one, in 2014-2015 the impact of this source reduced poverty level by 20-25%. In total, the relative impact of this source of income demonstrates an increase in the importance of this source in the reduction of the real level of poverty. Addressed social assistance reduces poverty stably by 2-3 percentage points and the weight of these 2-3 percentage points is irreversibly increased with the reduction of the real level of poverty.

The pension is a more important source than addressed social assistance. In 2016, poverty would have been 34%, instead of 14% without pension. In 2016, the poverty level is 20 percentage points lower due to pension; this is a reduction of 2.5 times, which indicates to the crucial social importance of the pension (see Chart #38).

In contrast to addressed social assistance, the impact of pension on the poverty level obviously increases in both the absolute and the relative dimension. The increase in the relative dimension occurs for the same reason as in case of addressed social assistance, or the decrease of denominator increases relative impact. The absolute impact of the pension on the poverty level in 2009-2011 was 12-14%, while in 2014-2016, 18-20%. Such a change in absolute impact can be explained by two reasons:

- Households become more and more dependent on pension, which is not a favorable trend, and;
- The number of people depending on pension as an income source is relatively the same, but an increase in the volume of pension increases its impact.

Proving any of these reasons requires separate detailed analyses and goes beyond the format of the present report.

Chart #38: Annual dynamics of the level of impact of public social payments on poverty
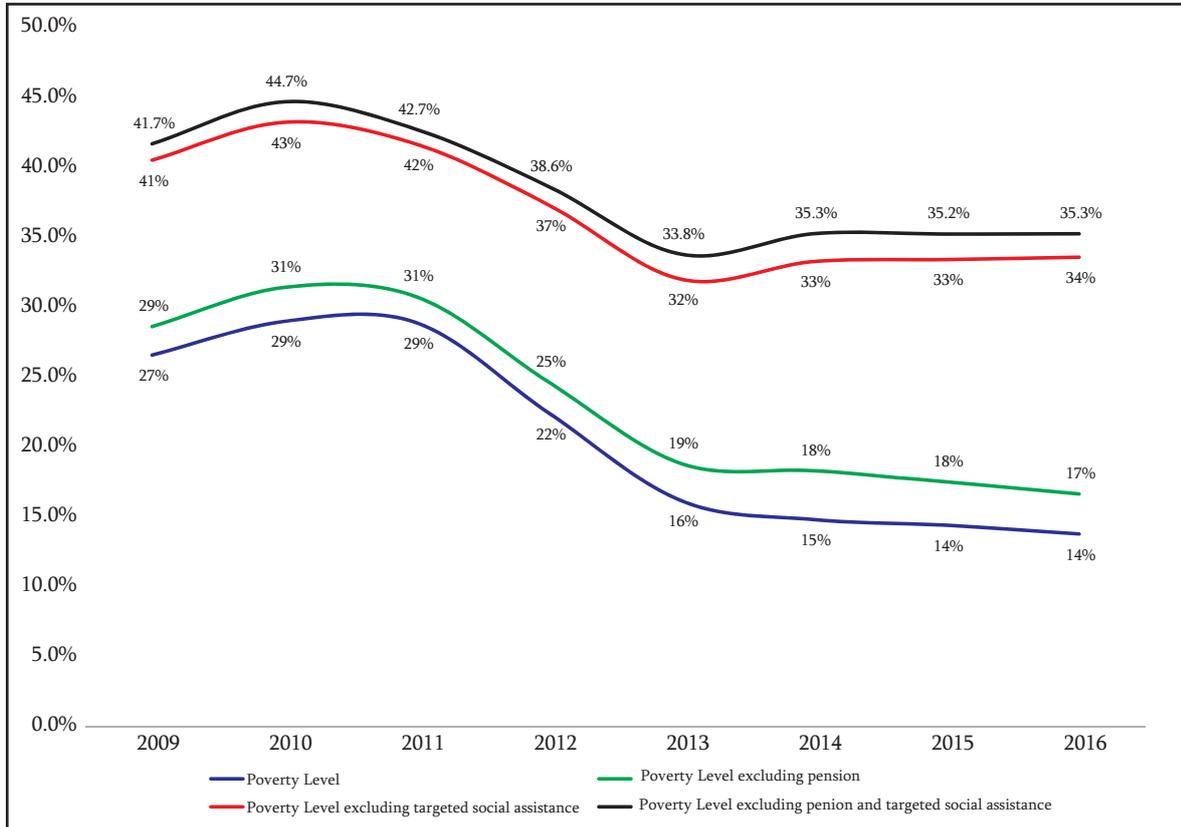
Source: The database of the Integrated Household Survey, processed by the group of authors.

Chart #39: Panel dynamics of the level of impact of public social payments on poverty
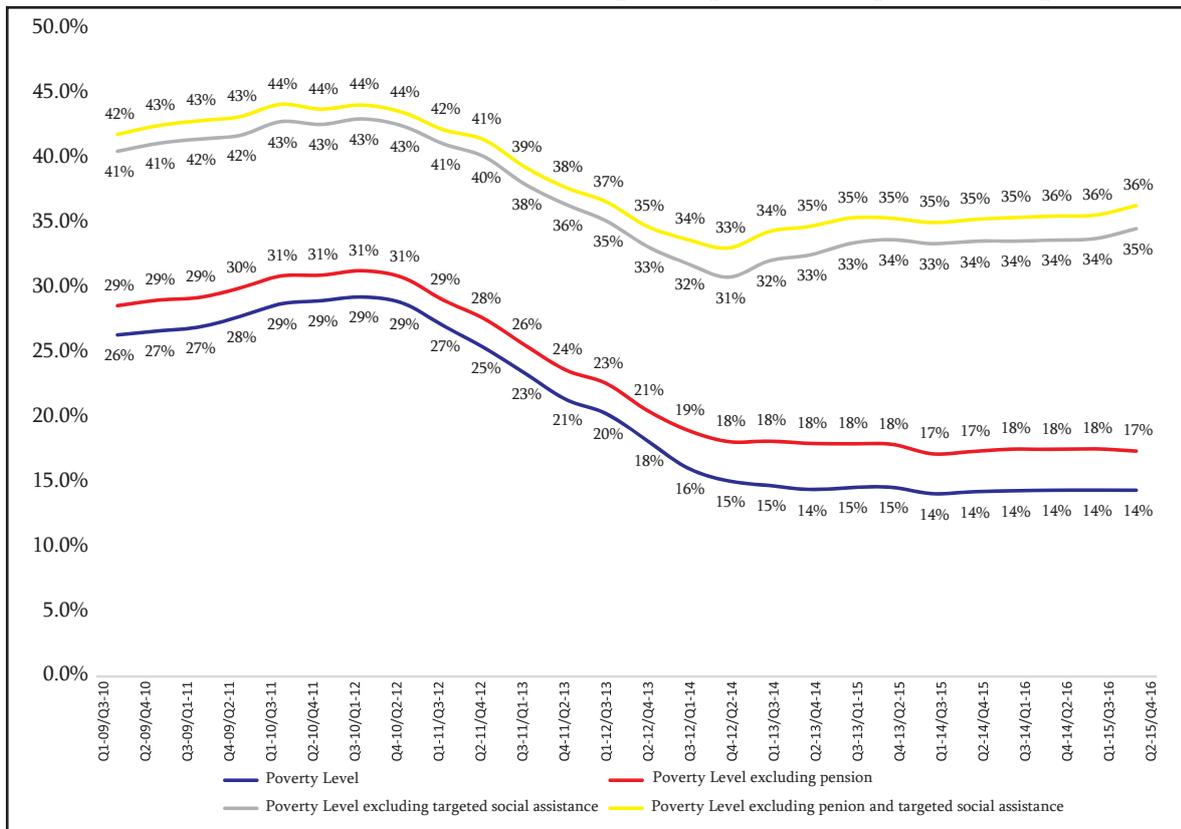
Source: The database of the Integrated Household Survey, processed by the group of authors.

According to the panel data, the impact of addressed social assistance is higher compared with the ordinary time series. Where, according to annual and quarterly data, without addressed social assistance the poverty level is higher by 2-3 percentage points than the existing poverty level, according to panel estimations, this difference is a stable 4 percentage points. This difference at first glance is not dramatic, but in the relative dimension it is substantial.

The impact of addressed social assistance on the poverty level increased by 4 percentage points in the last panels. In the panel data of 2009-2012, this difference was 2-3 percentage points as it was in the quarterly and annual estimation. This allows us to assume that the precision of targeting addressed social assistance increased during the last 4-5 years.

As for the impact of pension on poverty, according to the data of the last panel of 2015-2016, in the absolute dimension, poverty without pension would be 35% instead of 14%. The difference is dramatic as much in absolute as in the relative dimension. It is also noteworthy that this difference has obviously been increasing for the panels since 2013 (see Chart #39).

In households where there is no unemployment according to ILO criterion, the poverty level is normally 1-2 percentage points lower than the average poverty level. In households where at least one member is unemployed, according to ILO criteria, the poverty level is 4-5 percentage points higher than the average poverty level. The "negative" impact of unemployment is increasing. According to 2016 data, the poverty level in such families is 7 percentage points higher than average. In general, this trend can be viewed in a positive light as much as negative:

- We can view the increase of "negative" impacts on poverty in a positive context, as an additional factor stimulating employment. In other words, unemployment significantly increases the risk of a household falling into poverty, which motivates active job seeking and the prospective for depending only on social assistance is uncertain;

- The negative context is that the systemic changes necessary for the generation of jobs requires time, during which people unemployed according to ILO criterion will have to be in poverty.

Study of the impact of unemployment on poverty necessitates taking into consideration underemployment, hidden unemployment and structural unemployment, but for first observation we will be limited only to a dichotomic assessment of the unemployment factor.

Chart #40: Impact of at least one unemployed household member, according to ILO criterion, on the poverty level
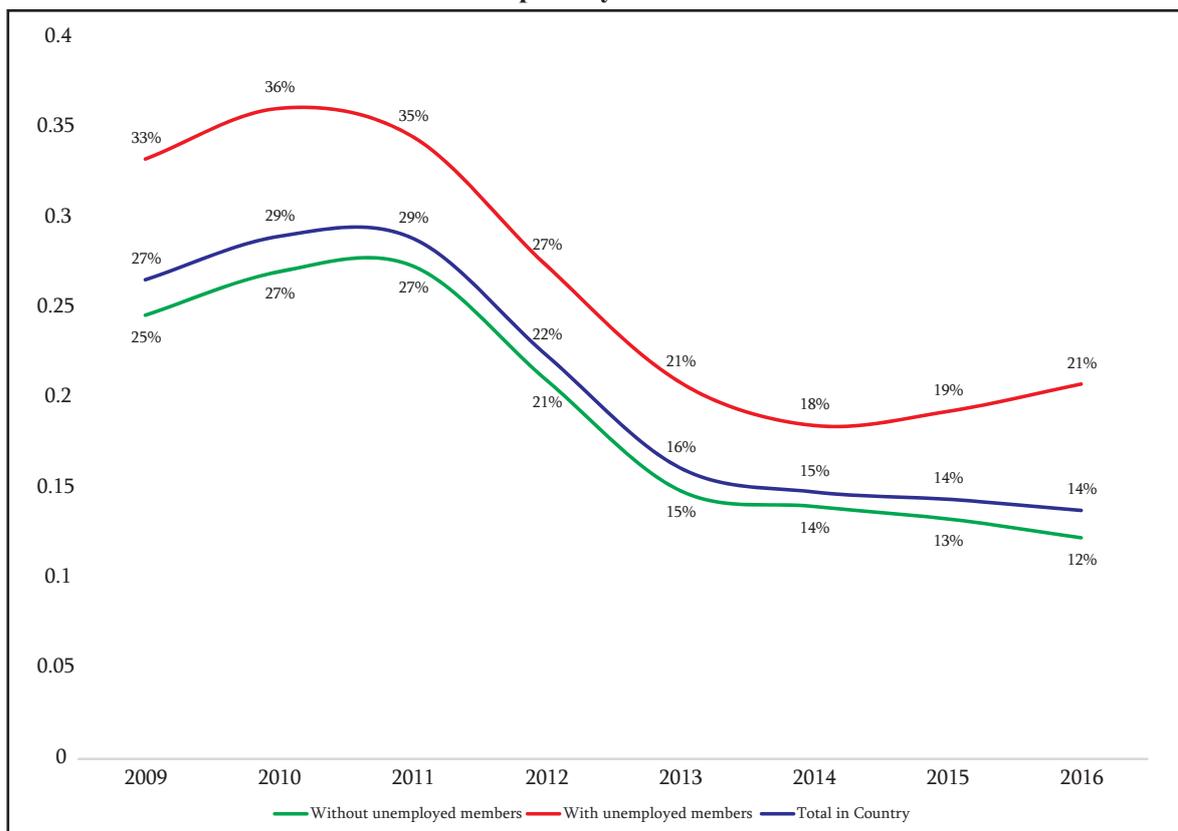

Source: The database of the Integrated Household Survey, processed by the group of authors.

In households where at least one member is employed according to ILO criterion, the poverty level is 2-3 percentage points lower than average. In the absolute dimension, this difference might not seem decisive, but, relatively, it is highly significant and its relative value increases with the reduction of total poverty level. Being employed, according to ILO criterion, covers all types of employment, including rural self-employment, the productivity of which is very low. In households where there is no employed member, the poverty level is higher than average by 10-11 percentage points.

The simplified impact of employment on the poverty level in the absolute dimension reduced to just 6 percentage units in 2016, although in relative expression this is quite a large difference. According to comparison of the series, we can say that this has a systemic nature: the data of recent years indicate that in households where no member is employed according to ILO criterion, the poverty level is 6-7 percentage units higher than the average indicator for the country. The indicator of 2015, different by 11 percentage points, looks to have been extracted from this context.

Of course, this does not mean that, based on this one detail, a final conclusion can be made regarding the impact of employment on poverty; however, for illustration, even this fragment is enough for the format of the present study.

Chart #41: Impact of at least one employed household member, according to ILO criterion, on the poverty level
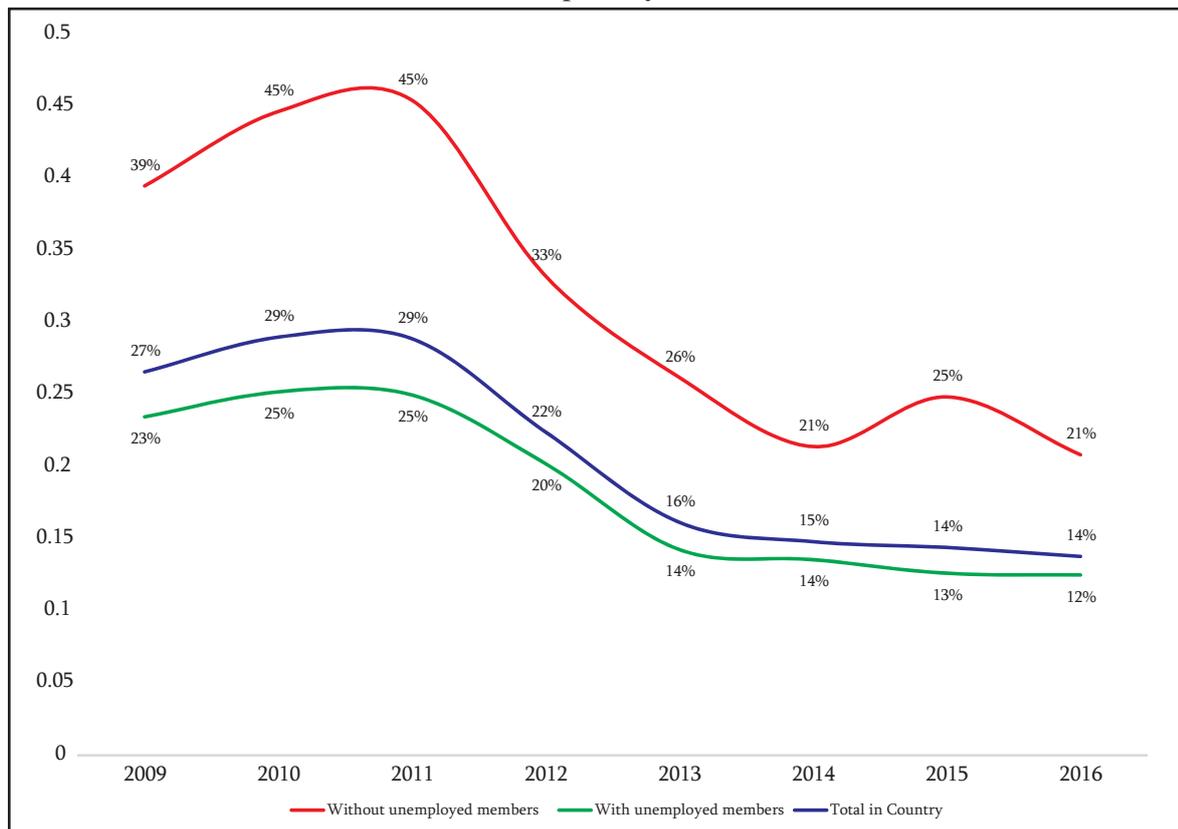
Source: The database of the Integrated Household Survey, processed by the group of authors.

It is important to study the impact of unemployment, even in simplified form, on chronic poverty.

In households where no member is unemployed according to ILO criterion, the chronic poverty level is normally lower than the medium level of chronic poverty. According to the data of the last panels, this difference is 1 percentage point, but, relatively, this 1 percentage point is very important, due to the definition of chronic poverty.

Despite the very low "positive" influence of unemployment in the absolute dimension, we should take into consideration that the ILO criterion are strict and the lack of an unemployed member, according to ILO criterion, in the household does not mean the presence of a member employed in a highly productive or high income field.

As for the "negative" impact of unemployment on poverty, it is substantial: in the panels of 2009-2011 the "negative" impact is 6-7 percentage points, which, compared with the basic 10-11 percent of chronic poverty, indicates to a very important "negative" impact. A sharp increase in the "negative" impact on unemployment in the last two panels is important, since it is 3 percentage points higher than the 4 percent estimated level of chronic poverty.

Chart #42: Impact of at least one unemployed household member, according to ILO criterion, on the chronic poverty level
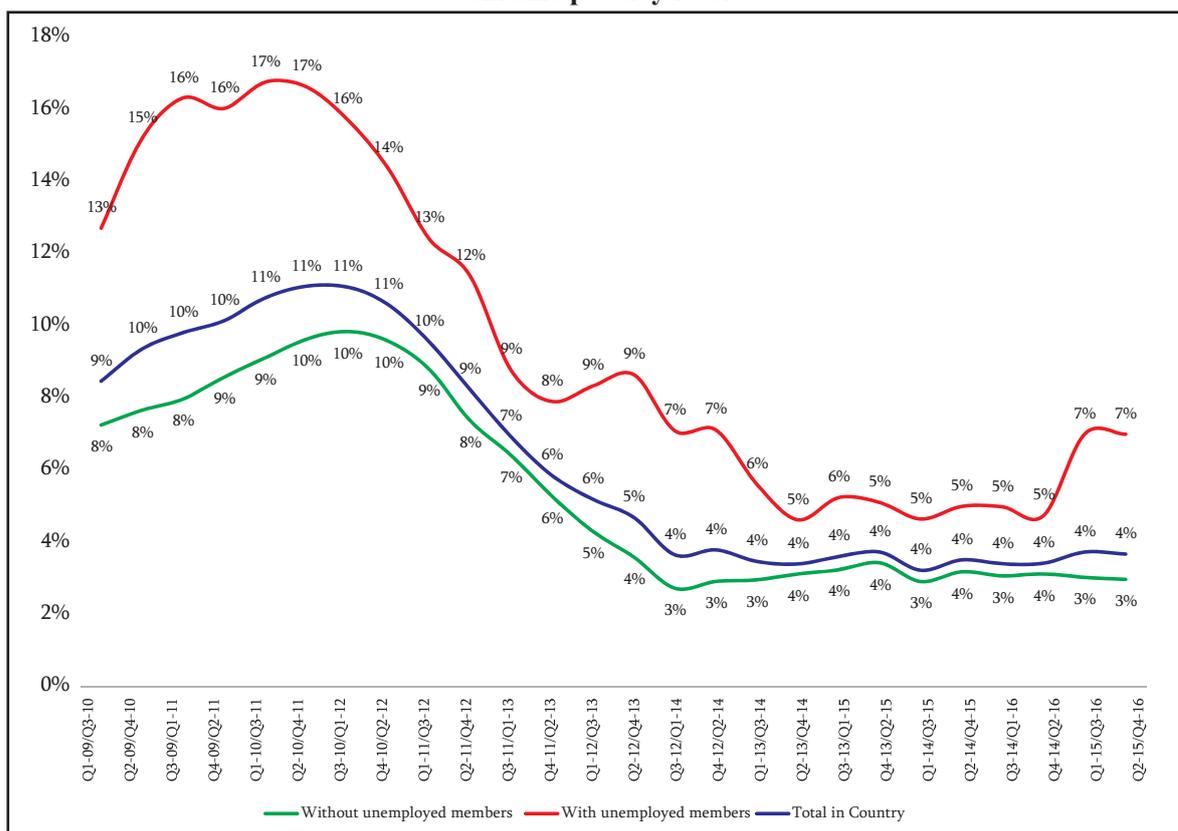
Source: The database of the Integrated Household Survey, processed by the group of authors.

Chart #43: Impact of at least one employed household member, according to ILO criterion, on the chronic poverty level
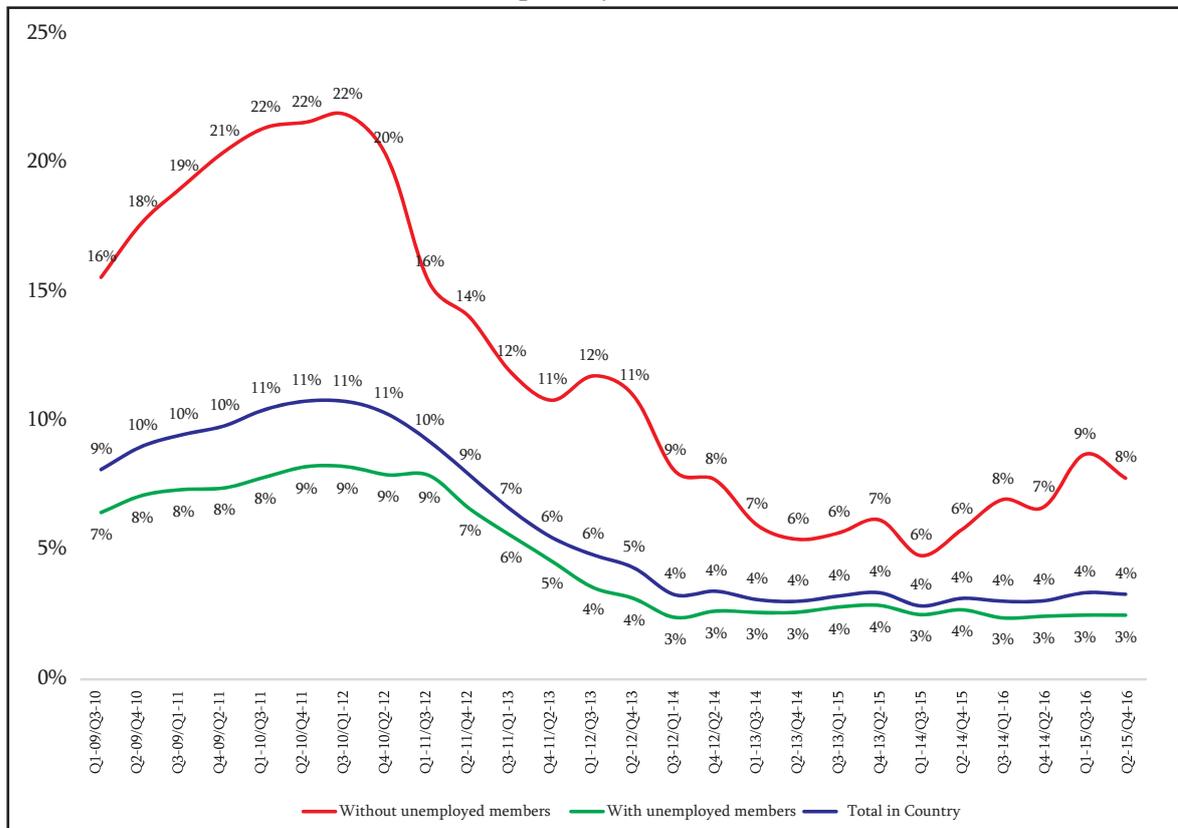
Source: The database of the Integrated Household Survey, processed by the group of authors.

The impact of employment, according to ILO criterion, has a much greater impact on chronic poverty. Among households with at least one employed member, the chronic poverty level is at least 1 percentage point lower according to the data of the last panels.

According to the data of the 2009-2011 panels, the absolute difference was around 2 percentage points, but, relatively, this positive difference is low against the 10-11 percent of chronic poverty, than the absolute difference of 1 percentage point compared with the basic level of 4 percent of chronic poverty.

As for the negative impact of employment, according to the data of the last panels, the chronic poverty level of households without a member employed, according to ILO criterion, is 4-5 percentage points, or 2 times, higher than the average indicator of chronic poverty level.

Employment, according to ILO criterion, covers all kinds of activities, but it must be noted that the poverty line is not of a very high standard. Thus, low standard criterion employment has a substantial impact on low standard chronic poverty level (see Chart #43).

Regarding estimation of the impact of the reviewed factors on the chronic poverty, the following can be concluded:

- The presence of a member employed, according to ILO criterion, in the household, increases the household's risk of being below poverty level by about 50%;
- The availability of a member unemployed, according to ILO criterion, also substantially increases the household's risk of being in chronic poverty. According to the data of the last panel, this risk is 75% more than normal;
- The lack of members employed, according to ILO criterion, about doubly increases the household's risk of being below the poverty line;
- The lack of members employed, according to ILO criterion, doubly or more increases the household's risk of being in chronic poverty;
- Addressed social assistance reduces poverty level on average by 2-3 percentage points and with the poverty reduction the weight of this 2-3% increases gradually;
- Development of the poverty level indicator is greatly influenced by the pension: without it, the poverty level would be 2.5 times higher;
- According to the panel data, the absolute impact of addressed social assistance on the poverty level substantially exceeds the absolute impact estimated by the time series. This means that the efficiency of this anti-poverty instrument is quite high;
- According to the panel data of the last 4 years, the absolute impact of addressed social assistance on the poverty level has increased substantially, which could be due to improved targeting.

8. Conclusions

1. In 2009-2016, the poverty level indicator demonstrated a sharp decreasing trend against the official subsistence minimum. The rate of decrease was especially high in 2013-2014. The poverty level decrease rate was 1.3 times stronger in urban areas than in rural;

2. The poverty level decrease rate is highest in Tbilisi, followed by Samegrelo, Imereti, Racha and Svaneti regions. The decrease rate is lowest in Shida Qartli, Mtskheta-Mtianeti and Kakheti;

3. According to recent panel data, the chronic poverty level in Georgia is stable at 4%, which is 6-7 percentage points less compared with the level of 2009-2011;

4. The chronic poverty level is higher in rural areas than in urban; however, this difference is not as substantial as in the case of aggregated poverty indicators. In 2009-2016, the trends of chronic poverty are parallel in urban and rural areas;

5. The chronic poverty level is especially high in Shida Qartli, Mtskheta-Mtianeti and Kakheti. Although this indicator is not as high as in 2009-2016, the existing 9-10% level is still alarming;

6. The total per capita income of households, cash income and total cash flows, including loans, are characterized by a sharp increasing trend;

7. The increase rate of total inflowing resources relatively exceeds the rate of the increase of total income, which highlights the increasing importance of loans in disposable resources;

8. Incomes calculated without inflation, or in comparative prices (in 1996 prices), are characterized by a relatively weak, but still clear, trend of increase;

9. The income increase rate is 1.4 times higher in urban areas than in rural. The income level is substantially different by region; the trends also vary;

10. According to the panel data, the rate of increase of income is 1.5 times higher in urban than in rural areas;

11. Decile coefficients per capita for total income, total inflowing resources and cash incomes are quite high in 2015-2016, but significantly decreased compared with previous years. The decrease is especially vivid in the case of decile coefficients of per capita for cash incomes, when the decrease is on a range level;

12. The distribution of cash incomes is most unequal among per capita distribution of incomes. Total income distribution is equal, which means that non-cash income from self-employment in agriculture has a significant equalizing role, despite the average low productivity of self-employment;

13. The inequality of per capita distribution of total inflowing resources is relatively higher than per capita distribution of total income, which is basically preconditioned by lack of access of low income families to loans;

14. In total, the inequality of income distribution in Georgia is not low, but nor is it dramatically high: the GINI index is no higher than 0.5;

15. According to the annual data of 2009-2016, the change in the GINI index by unit is 3.7639 fold reflected in the poverty level. In urban areas, this indicator is2.7477, while in rural areas 4.2504; which means that the impact of inequality on poverty is 1.5 times stronger in rural areas;

16. The GINI index of distribution of total income per capita and poverty level are quite closely interconnected. The assessments are relevant on an urban-rural level throughout the country. A relationship between the GINI index and the poverty level for more disaggregated data could not be measured.

17. Based on the panel data of 2009-2016, the change in the GINI index by unit according to linear regression is 4.9215 fold reflected in the poverty level. Further, in rural areas, this figure is 2.5315, while in rural areas 3.2367. However, inequality of income in rural areas in fact does not describe the poverty level;

18. While comparing the GINI index and chronic poverty by linear regression, the change in the GINI index by unit is 2.5730 fold reflected in the poverty level. In urban areas, this figure is 1.1631, and in rural areas 1.2022. In rural areas, inequality of income in fact does not describe the chronic poverty level;

19. The number of household members unemployed, according to ILO criterion, increases the risk of that household being below the poverty line by about 50%. According to the data of the last two panels, in this case the risk of being in chronic poverty is 75% higher;

20. The lack of household members employed, according to ILO criterion, almost doubles the risk of that household being below the poverty line and increases doubly or more the risk of their being in chronic poverty;

21. Addressed social assistance decreases the poverty level by about 2-3 percentage points and the weight of this 2-3 percent is ever-increasing;

22. Pension has a great impact on the poverty level indicator, since without it the poverty level would be 2.5 times higher;

23. According to the panel data, the absolute impact of addressed social assistance on the poverty level is substantially higher that the absolute impact assessed by the ordinary time series, which highlights the high effectivity of this anti-poverty instrument;

24. According to the panel data of the last 4 years, the absolute impact of addressed social assistance on the poverty level has significantly increased, which could be the result of the accuracy of targeting.

9. Recommendations

Based on the present analyses, the recommendations can be grouped as follows:

1. **Methodological direction**

   1.1. We recommend the methodology for calculating poverty indicators be published on the website of Geostat, otherwise the poverty indicators themselves raise many questions;

   1.2. It is essential to present the official indicators of the poverty level and inequality in more detail, say by geographic, demographic, social and economic character;

   1.3. It is expedient to maintain the Integrated Household Survey in an unchangeable format; in particular, to maintain the rotation scheme of sampling to ensure the development of annual, quarterly and panel databases.

2. **Research direction**

   2.1. It is essential to develop a maximally detailed poverty profile, involving as many information arrays as possible, in order to make an in-depth study of the poverty evolution on the micro, mezzo and macro levels;

   2.2. We recommend there be a study and diagnosis of the full spectrum of direct and indirect factors causing poverty and having an impact on it; based on which effective instruments to influence these factors can be determined;

   2.3. Multi-scenario modelling of the impact of elaborated instruments, and forecasting the potential impact of tactic measures is essential.

3. **Institutional direction**

   3.1. The major challenge of poverty alleviation puts in the agenda the need for development of a respective institutional framework, the main unit of which should be a coordination commission established under the auspices of the government, led by the Prime Minister;

   3.2. Within the composition of the coordination commission, members of the government and heads of governmental organizations (the ministers of labor, health and social affairs; economy and sustainable development; finances; regional and infrastructure development and executive director of Geostat), should be included, as well as representatives of the academic sector and non-governmental and international organizations working on social issues;

   3.3. Taking into consideration the fact that improvement of public well-being should take place at residential addresses (in households themselves), we recommend the promotion of active participation from representatives of local authorities and analysts working in the regions in the operation of the commission;

   3.4. In parallel with the coordination commission, the establishment of a special parliamentary group for poverty reduction is recommended, which will ensure the monitoring of operation of the executive government in this respect and promotion of the legislative initiatives related to its operation;

   3.5. Provision of the active participation of local initiative groups of citizens is essential, since there exist peculiarities characteristic to particular settlements, neighborhoods or cities which are unmeasurable though very effective.

4. **Practical direction**

   4.1. The practical implementation of an elaborated strategy for poverty reduction is possible: we should not be limited by scenarios prepared on the macro level. The strategy should be disaggregated into short term tactical stages and each stage should then be divided into episodic measures;

   4.2. Such detailing should then ensure the implementation of a comprehensive monitoring and evaluation system and the uninterrupted movement of information upwards and downwards, as an effective and transparent communication tool;

   4.3. The most important phase of the practical direction should be the collection and support of initiatives: the first step of improving any component of welfare may come from the top, but the quality of execution if carried out through unclear steps will most likely be low, or, in the worst-case scenario, will not happen at all for the sake of ineffective communication.

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