

COMPARATIVE ANALYSIS OF THE ECONOMIC INEQUALITY LEVEL IN THE REPUBLIC OF MOLDOVA AND IN EU COUNTRIES

ANALIZA COMPARATIVĂ A NIVELULUI INEGALITĂȚII ECONOMICE ÎN REPUBLICA MOLDOVA ȘI ÎN ȚĂRILE UE¹

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Abstract

One of the economic consequences of the COVID-19 pandemic is the deepening of economic inequality between different population groups, existing in smaller proportions in the pre-pandemic period. The rise in inequality is rightly called the "second pandemic". To demonstrate this trend, a comparative research was conducted between the Republic of Moldova and EU countries. As a basic research method in the article was the comparative analysis of a series of indicators on economic inequalities of the population. Such inequality indicators such as the Gini Index and other indicators have been used for this purpose. The main data sources are the National Bureau of Statistics of the Republic of Moldova and Eurostat. The comparative analysis that was carried out highlighted the increase of economic inequalities among the population, more accentuated in the Republic of Moldova than in the European Union countries, which were deepened by the COVID-19 pandemic and the measures associated with it.

Key words: comparison, economy, EU, inequality, Gini Index, Republic of Moldova.

JEL: O57, D63, I31.

1. Introduction

In the period following independence, the Republic of Moldova faced multiple development challenges and risks with varying degree of success. Evolutions registered in the area of human development has been largely determined by an extended number of factors related to demographic, social, economic, climatic and governance issues.

The challenges and issues faced by the Republic of Moldova during the process of social-economic transformation, contributed to the increase of the disparities and poverty affecting large social groups. Although certain positive trends were registered in the reduction of the intensity and dimensions of the phenomena during the last decade, a turning point was not passed in case of none of the vulnerable groups.

On September 2015, the Republic of Moldova, along with other 192 members of the UN, committed to the implementation of the 2030 Agenda for Sustainable Development. The process requires combined efforts of key stakeholders to eliminate all forms of poverty,

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combat inequalities, tackle environmental and climate change, and ensuring that no one is left behind.

The country has a vast experience in developing national level strategic planning documents. Nevertheless, were registered difficulties in the achievement of the objectives targeting the improvement of people's lives. Among the weaknesses of the strategic planning documents developed can be mentioned in particular: (a) excessive focus on the phenomenon of economic growth; (b) arbitrary setting of the development priorities; (c) limited quality of data and indicators; (d) uncertain role in the national strategies in the policies framework and difficulties of integration in the core of the administrative processes; (e) lack of financial resources and professional administrative staff; (f) weakness of the monitoring and evaluation framework; (g) depreciation of the relevance of strategic planning in the context of political changes [Government Decision, 2018].

Consideration of the international practice and a comparative analysis of the evolutions registered in case of other relevant regions and countries represent a powerful tool for the identification of the best solutions for the improving of the social-economic policies for overcoming poverty and reduction of the disparities, and strengthening implementation capacities.

Measuring and analyzing of poverty, inequality and vulnerability are important for cognitive purposes - to understand the situation, for analytical purposes - to understand the factors, determining this situation, for the purposes of developing social-economic policies - to identify the most appropriate measures to solve these problems, and to monitor and evaluate - to assess the effectiveness of the measures taken and determine if the situation is changing.

There is a big diversity of indices which are used to measure inequality. Some of the most frequently used for the income inequality are: Atkinson index, Theil index, Gini index, ratio of percentiles, 20:20 ratio, Hoover index, Palma ratio, Galt score, variation coefficient, wage share. From all these indices Gini coefficient is used by the most national statistical organizations.

Gini coefficient is recognized as an efficient scalar measure of inequality, benefiting of the most extended application at the international level both, when we refer to the national level and at the level of the international organisations. From the applicative point of view, using of the Gini coefficient provides solid base for the elaboration of the analytical materials supportive for the national level social-economic policies cycles.

2. Literature review

A series of valuable scientific publications analyzing income equality behaviour of EU countries were published in 2021. One of these researches was elaborated by Mythili Kolluru from College of Banking and Financial Studies (Muscat, Oman) and Tetiana Semenenko from Sumy State University (Ukraine). The title of the paper is "*Income inequalities in EU countries: Gini indicator analysis*" [Kolluru & Semenenko, 2021]. This research is based on available data on the Gini coefficient of equivalized disposable income from 2005 to 2019 for the 27 European Union countries. The authors revealed that the indicator's value demonstrates a reasonably even distribution of income (not exceeding 40%) in all European Union countries, except for Bulgaria. They have used the FORECAST ETS function in Excel for

Microsoft 365, that is based on the AAA version of the Exponential Smoothing (ETS) algorithm to conduct analysis. They grouped the EU-27 countries to analyze income equality behaviour. According to the interval's median of the sample's standard deviation, authors selected Italy, Spain, Germany, Slovakia, Hungary, Bulgaria for further investigation. Authors' conclusion was the absence of general trends in the inequality of income distribution in society of European Union due to the financial crisis factors.

Stefano Filauro and Georg Fischer in their research with the title *"Income inequality in the EU: General trends and policy implications"* considered that inequality in the EU has traditionally been analyzed either at the individual country level or in terms of the average of country trends, but attention is now shifting to the analysis of inequality between all citizens across individual member states. Using income survey data, this analysis revealed that the inequality among EU citizens is significantly lower than among US citizens, but slightly higher than in countries with established welfare models such as Australia and Japan[Filauro&Fischer, 2021].

The most popular indicator in this area is Gini coefficient. The application of this special instrument has been discussed by scientists from many countries for many years. For instance, in 1984, two scientists, Robert Lerman and Shlomo Yitzhaki in their scientific work *"A note on the calculation and interpretation of the Gini index"* derived a convenient way to calculate the Gini coefficient, using the covariance. Their approach improves the accuracy since, unlike other approaches, it requires no aggregation. The authors also point out some intuitive ways of interpreting the Gini index[Lerman&Yitzhaki, 1984].

In 1985, Haim Shalit from Hebrew University of Jerusalem (Israel) in the scientific Journal Oxford Bulletin of Economics & Statistics published the article with the title *"Calculating the Gini Index of inequality for individual data"*. The main idea of this research is that since Gini's mean difference is the covariance between the random variable and its rank, the concentration index can be simply computed without resorting to graphical approximation when individual data points are available. Furthermore, the practitioner possesses now a simple measure of dispersion and concentration whose fields of application are not confined to income distribution. But, to obtain an unambiguous ranking of income distributions, the drawing of Lorenz curves is necessary to determine whether or not they intersect. For that purpose, precision is not relevant and grouped data can be used without losing efficiency[Shalit, 1985].

In February 2000, Tomson Ogwang - professor in the Economics Department at Brock University (Ontario, Canada) in his research *"A convenient method of computing the Gini Index and its standard error"* presented an alternative regression approach to the computation of the Gini index using ordinary least squares. The OLS interpretation of the Gini index is also exploited in the derivation of a simple algorithm for computing its jackknife standard error. The resulting estimates of the Gini index and corresponding jackknife standard errors are easy to compute using widely available OLS regression software packages provided that the incomes are first arranged in ascending order of magnitude[Ogwang, 2000].

In February 2004, David Giles from University of Victoria (British Columbia, Canada) in his work *"Calculating a Standard Error for the Gini Coefficient: some further results"* describes the situation when the several authors have suggested using the jackknife technique to approximate a standard error for the Gini coefficient. It has also been shown that

the Gini measure can be obtained simply from an artificial ordinary least square regression based on the data and their ranks. We show that obtaining an exact analytical expression for the standard error is actually a trivial matter. Further, by extending the regression framework to one involving seemingly unrelated regressions, several interesting hypotheses regarding the sensitivity of the Gini coefficient to changes in the data are readily tested in a formal manner [Giles, 2004].

In 2006, two authors, Reza Modarres and Joseph Gastwirth from George Washington University (USA) in the article *"A cautionary note on estimating the Standard Error of the Gini Index of Inequality"* showed that the regression approach to estimating the standard error of the Gini index can produce incorrect results as it does not account for the correlations introduced in the error terms once the data are ordered. To assess the effect of ignoring the correlation in the error terms the scientists examined two distributions and they show that regression method overestimates the standard error of the Gini index. The scientists recommend that the more mathematically complex or computationally intensive methods be used [Modarres & Gastwirth, 2006].

In 2016, the Russian researcher Konstantin Gluschenko in his article *"On the application of the Gini coefficient and other indicators of inequality"* discusses the problem raised by G.L. Gromyko and I.N. Matyukhin in the publication *"On the use of the Gini coefficient in economic and statistical research"* (In: Journal of Statistics, No. 9 for 2015), and expounds the point of view on the use of average, relative and some other values for calculating the Gini coefficient. As the author points out, the Gini coefficient is only one of the measures of inequality, and shows the Gini coefficient equally applies to the rest, similar in content, indicators - for example, the Theil, Atkinson, Herfindahl-Hirschman, Hoover, etc. The author argues that criticism of the use of the Gini coefficient on erroneous premises, primarily on an incorrect interpretation of the concept of distribution, is favorable to statistics: it is interpreted as a way of dividing something by objects: individuals, enterprises, regions, etc. However, in a statistical sense, distribution implies an empirical probability distribution. In addition, the Gini score is taken into consideration [Gluschenko, 2016].

In 2019, the researcher Alla Salmina from Institute for Social Analysis and Forecasting of the Russian Academy of National Economy and Public Administration under the President of the Russian Federation, in the article *"Comparative analysis of inequality indicators - their features and application"* shows the diversity of inequality indicators used by international research organizations and statistical services of individual countries, identifies their advantages and disadvantages. New methodological developments in this area are highlighted. The article also describes a number of relatively new indicators that can be useful for measuring the dynamics and structure of inequality [Salmina, 2019].

The scientist Moiseeva I.V. from National Research Mordovia State University (Saransk, Russian Federation), in 2019 published the article with the title: *"Methodological approaches to assessing economic inequality"*. The article presents an overview of monetary methods for measuring economic inequality, highlights the positive and negative aspects of their use. The analysis of several statistical indicators of economic inequality of the Russian population: income, assets ratio, the Gini coefficient. The author paid special attention to the consideration of non-monetary approaches to measuring poverty. It is noted that currently Rosstat has developed a number of non-monetary indices (multidimensional poverty index,

material deprivation index, social exclusion index), by measuring which by 2020 it is expected to provide a more objective and complete representation of the situation of economic inequality in Russia [Moiseeva, 2019].

The authors of this article have experience in this direction, including the calculation and analysis of the Ginicoefficient. The most recent work, the Monograph *"The living standard of the population of the Republic of Moldova"*, was published in 2021[Colesnicova et al, 2021].In this work authors analyzed the factors and tendencies of incomes and expenditures of population in the Republic of Moldova and also made a comparison analysis with EU countries.Also, analysis of important aspects of the living standard of the population of the Republic of Moldova, namely the dynamics of the level and structure of incomes and expenditures of the population, living conditions of the country's population: population access to housing (type of housing, living space, number of living rooms, etc.), evaluation of the comfort level of the housing stock, etc. were analyzed in that work. The main directions for improving the standard of living and living conditions for the country's population were proposed.

3. Methodology and data sources

Since Gini coefficient is the main and often the only indicator on inequality used in international statistics it will be used in this paper in order to analyze the economic inequality level in the Republic of Moldova and in EU countries. The Gini coefficient establishes the degree of deviation of the effective distribution of incomes / expenses according to equal groups of population from the line of the uniform distribution of incomes / expenses. The statistical size of the coefficient varies from 0 to 1, equaling 0 the total equality of incomes / expenses for all population groups and 1 - the total inequality, when all incomes / expenses belong to one person [Gini, 1924]. It is calculated by the formula shown in the **Figure 1**.

$$G = 1 + \frac{1}{n} - \frac{2 * (y_1 + 2 * y_2 + 3 * y_3 + \dots + n * y_n)}{n^2 * y_{avg}}$$

Figure 1. The Gini coefficient formula

Source: Metadata of [NBS, 2021]

Notes: n – number of persons in the analyzed period, $y_1, y_2, y_3, \dots, y_n$ – average income per person in this period, y_{avg} – average income of the collectivity in general.

Another way of assessment of inequality of incomes and expenses is the ratio between quantiles (usually between the first quantile and the last quantile, the ratio of which is the most indicative in showing the inequality) which is also used in Moldova and as well in European countries in Eurostat statistics. Applied in socioeconomic statistics in the distribution of incomes / expenses, quantiles are equal-sized divisions of population with different size of incomes / expenses from the population subgroup with the lowest level of incomes / expenses for the first quantile to the population subgroup with the highest level of incomes / expenses for the last quantile. One of the most frequently used types of quantiles for incomes / expenses are quintiles which are 5 values of 20% of the population each.

The data sources for the distribution of incomes / expenses by quantiles and for Gini indicator are the statistical database "Statbank" of the National Bureau of Statistics for the Republic of Moldova and Eurostat database for European countries [NBS, 2021] [Eurostat,

2021]. Here it should be noted that the data on inequality indicators for the Republic of Moldova from 2019 onwards are not comparable to the ones for the years until 2018, because of new HBS methodology from the 2019 year, the main changes in which are shown in the **Table 1**. Since the disposable data common for Moldova and European countries are from the year 2014 the analysis will cover the years from 2014 onwards. Therefore, the data for the years 2014-2018 and for 2019-2020 will be analyzed apart.

Table 1. Last main changes in the HBS (Household Budget Survey) methodology of Moldova

2006-2018	2019-present
1) The introduction of the new survey plan that involved: a) the creation of a common sampling framework for the HBS and the Labor Force Survey (LFS) (the creation of a single network of investigators and controllers, respectively 150 and 51); and b) the introduction of a new rotation scheme. 2) The changes made in the research questionnaires: a) the modification of the statistical instruments, including the Questionnaire and the Household Register; b) the change of the reference period for the incomes from the individual agricultural activity, remittances, the expenses for food products and some types of expenses for the communal services.	1) HBS carried out according to a new survey plan (a new sample of households and a new rotation scheme), built on the information of the 2014 Population and Housing Census; 2) A number of changes to the HBS questionnaires (Main Questionnaire and Household Registers), such as the change in the period for recording food procurement expenditure, the use of durable goods procurement expenditure and education expenditure in the last 12 months; 3) the results of the HBS extended to the number of the usual resident population, with the application of the international definition, recalculated based on the results of the 2014 Population and Housing Census and not the number of usual resident population, as was being used until 2018 inclusive.

Source: Compiled by authors on the basis of NBS metadata [NBS CGBC Metadata, 2021] [NBS CGBC 2006-2018 Metadata, 2021]

4. The analysis of the inequalities in Republic of Moldova and European countries

In **Figure 2** it can be seen that the Gini coefficient in the Republic of Moldova both in relation to consumption expenditures and in relation to disposable income had a general downward trend in the period 2014-2018. The Gini Index by disposable income for the whole country has reduced from 0.3257 to 0.3049 (-0.0208), more in rural areas - from 0.3275 to 0.2959 (-0.0316) than in urban areas – from 0.2994 to 0.2908 (-0.0086). The Gini Index by consumption expenditures for the whole country shows the same trend, but the change is smaller – a decrease from 0.2594 to 0.2493 (-0.0101), much less in urban areas – from 0.2435 to 0.2427 (-0.0008) than in rural areas – from 0.2513 to 0.2277 (-0.0236). All these data (for 2014-2018) are calculated based on the resident population which includes the ones that have a permanent residence in the country and also includes people that are absent temporarily.

The usual resident population (the data for which is for 2019-2020) includes the persons that have lived continuously for most of the last 12 months, not including temporary absences (for purposes of recreation, holidays, visits to friends and relatives, business, medical treatment or religious pilgrimage etc.). The gap between these numbers of population contributes to the creation of the statistical effect in the data which show inequality reduction when using former definition. The change of HBS methodology on the basis of usual resident

population show a different picture in the evolution of income / expenditure inequality. Reductions are only in the Gini index by consumption expenditures on the whole country in the years 2019-2020, from 0.2762 to 0.2699 (-0.0063). This reduction is due to the decrease of the Gini index by consumption expenditures in rural areas, from 0.2474 to 0.2296 (-0.0178), while there is a increase of the indicator in the urban areas, from 0.2772 to 0.2833 (+0.0061).

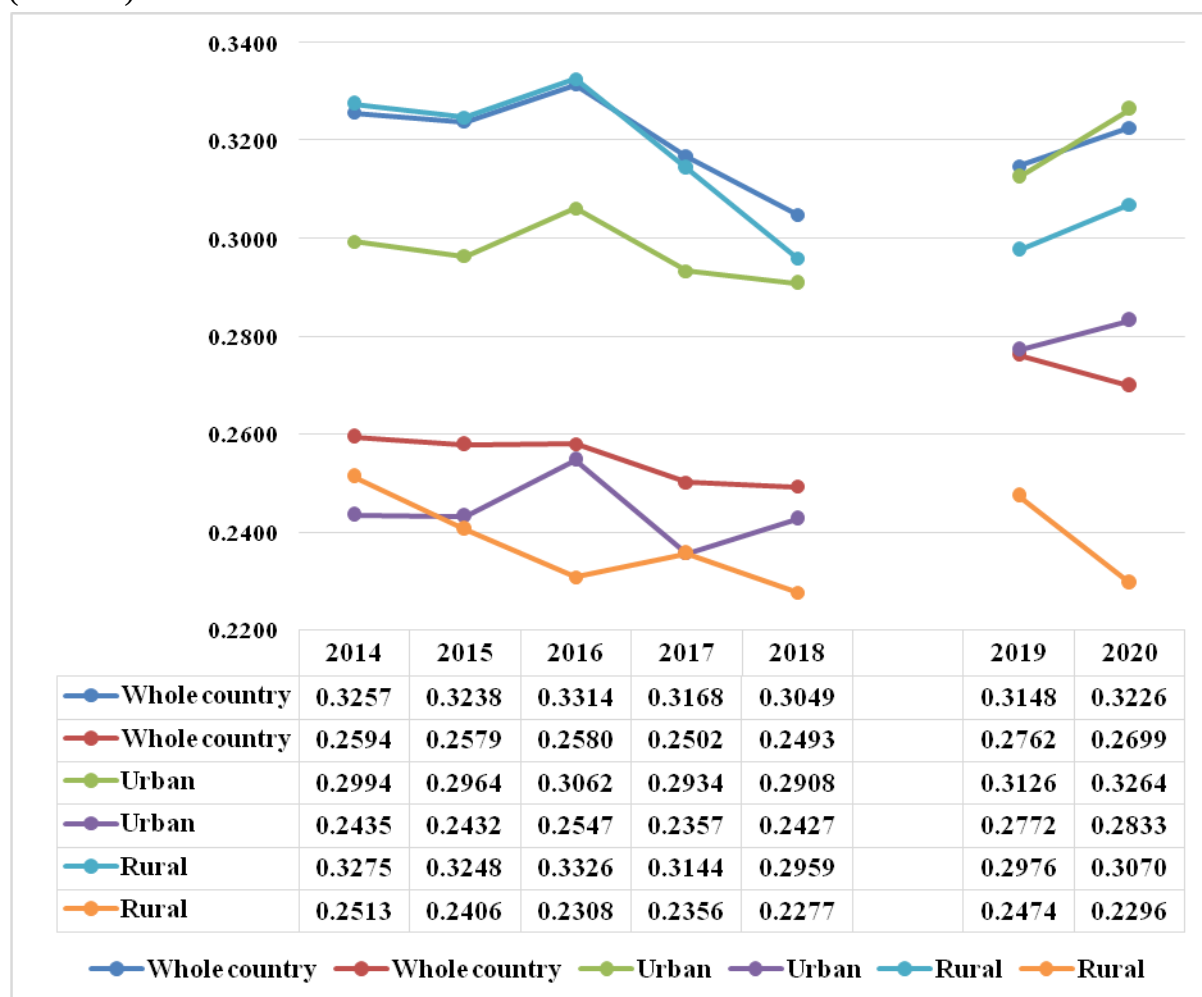


Figure 2. Gini coefficient by disposable income and by consumption expenditures in Republic of Moldova on the whole country and by areas of residence from 2014 to 2020

Source: Elaborated by the authors based on the NBS data [NBS, 2021]

Notes: Based on the estimation of the indicators was used the number of population with usual residence for 2019-2020 and resident population for 2014-2018. Place of usual residence is defined as the place at which the person has lived continuously for most of the last 12 months, not including temporary absences (for purposes of recreation, holidays, visits to friends and relatives, business, medical treatment or religious pilgrimage etc.).

Information is presented without population from the left side of the river Nistru and municipality Bender. Starting with 2019, the data are not comparable to the previous period, as the HBS methodology was modified.

The Gini index by disposable income on the whole country in the 2019-2020 years has increased, from 0.3148 to 0.3226 (+0.0078), the same direction of change was in rural areas, from 0.2976 to 0.3070 (+0.0094) and also in urban areas, from 0.3126 to 0.3264 (+0.0138).

It must be noted that Gini index is smaller in rural areas than in urban areas, be it by disposable income or by consumption expenditures. In addition to this, Gini index by consumption expenditures is smaller than the one by disposable income.

In the **Figure 3** is shown the ratio between the incomes (and expenditures) of the population from quintile I and quintile V in the Republic of Moldova. Obviously, the trends visible in this figure are largely similar to those in the previous figure (with Gini coefficient). The ratio between the incomes of the population from quintile I and quintile V in total in the country had a general downward trend between 2014 and 2018 - from 5.7 times to 5.1 times, due to a higher decrease in rural areas (from 5.5 to 4.8 times) and a smaller one in urban areas (from 4.9 to 4.4 times).

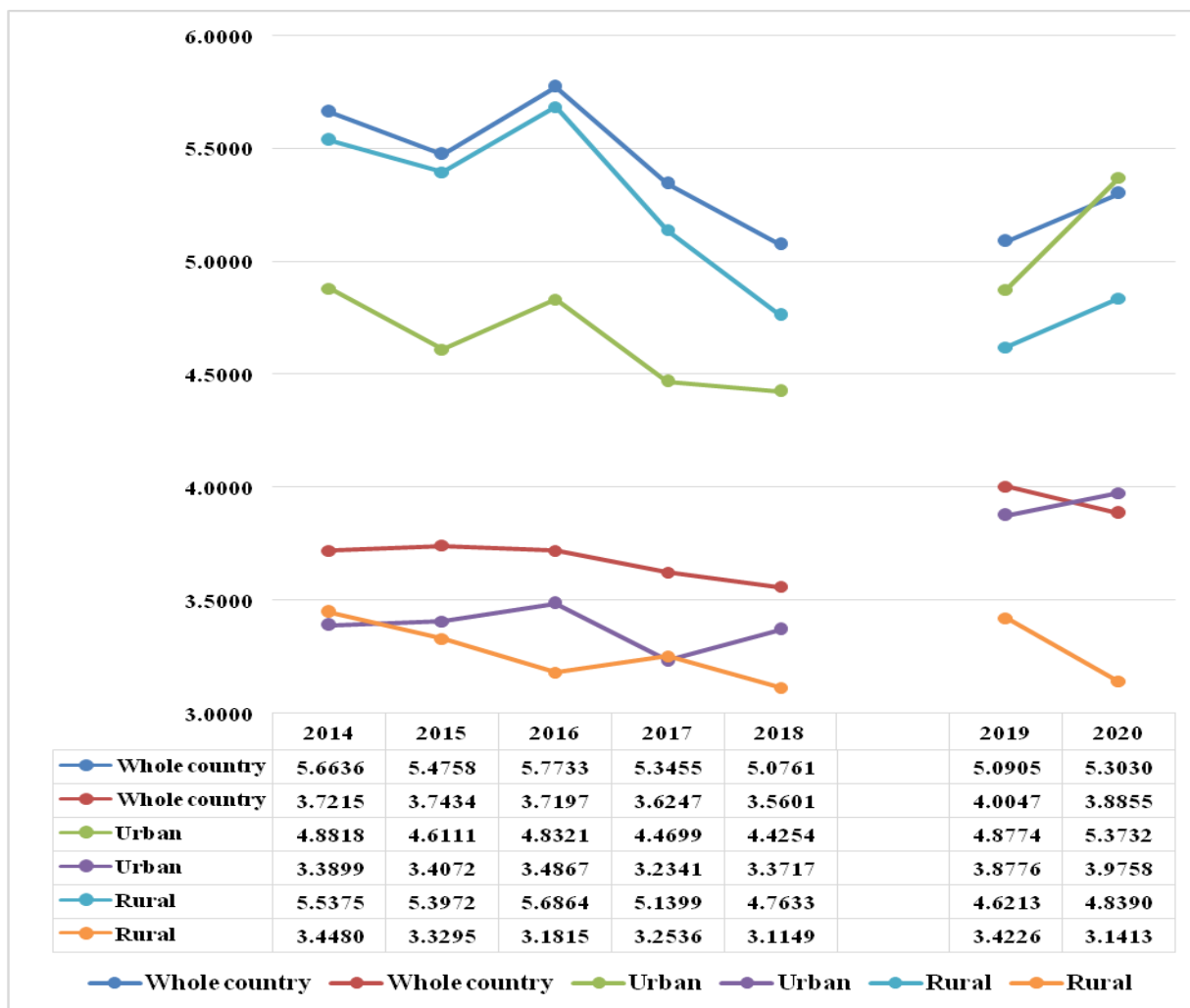


Figure 3. Ratio between income (expenditures) of population from quintile I and V in Republic of Moldova on the whole country and by areas of residence from 2014 to 2020, times

Source: Elaborated by the authors based on the NBS data [NBS, 2021]

Notes: Based on the estimation of the indicators was used the number of population with usual residence for 2019-2020 and resident population for 2014-2018. Place of usual residence is defined as the place at which the person has lived continuously for most of the last 12 months, not including temporary absences (for purposes of recreation, holidays, visits to friends and relatives, business, medical treatment or religious pilgrimage etc.).

Information is presented without population from the left side of the river Nistru and municipality Bender. Starting with 2019, the data are not comparable to the previous period, as the HBS methodology was modified.

The ratio between the expenditures of the population from quintile I and quintile V in 2014-2018 has reduced much less – from 3.7 to 3.6 times, lesser in urban areas (from 3.39 to 3.37 times) than in rural areas (from 3.5 to 3.1 times).

The years 2019-2020 were characterized by a sharp increase in this ratio, which reached 5.3 times from 5.1 times in 2019. This increase was due to the growths in this ratio in both urban and rural areas (bigger in urban areas – from 4.9 to 5.4 times in 2019-2020 and

smaller in rural areas - from 4.6 to 4.8 times in the same period). The ratio between the expenditures of the population from quintile I and quintile V in 2019-2020 has shown a small reduction – from 4.0 to 3.9 times. This is due to a high decrease of this indicator in the rural areas – from 3.4 to 3.1 times, which was compensated by a small increase in the urban areas – from 3.9 to 4.0 times.

From 2014 to 2018, the Gini indicator for total disposable income on the whole country decreased by 6.8% against the background of increasing total disposable income by country in the same period by 34.8% (from 1735.2 MDL to 2357.1 MDL), and between 2019 and 2020 against the background of the increase of disposable income by 7.5% (from 2880.6 MDL to 3096.6 MDL) the Gini coefficient increased by 2.5% between the same years. As previously mentioned, the data between 2014-2018 and 2019-2020 are not comparable due to changes in the methodology of the Household Budget Survey.

In [Colesnicova et al., 2021] it was shown that the income growth was due in great part to the increase in the remittances and social benefits, especially this being a characteristic of the rural areas. It also was shown that the shares of the directions of expenditures have diversified. Thus, in rural areas the recent increase in income inequality may come from the growth of the share of the remittances in the sources of the income which may determine the gap between the households receiving a higher share of income from remittances and those that have the higher share of income from sources that are inside the country. At the same time, in these conditions the small diversity of goods and services in rural areas can determine a reduction in inequality of consumption expenditures between households, but the high income sources and a wider diversity of goods and services in urban areas in such conditions determine a growth in the inequality by income and also by expenditure.

In the **Table 2** is shown the evolution of Gini coefficient by disposable income in European countries from 2014 to 2020, in which for a better comparison also is included Republic of Moldova. Overall, from the European countries in the entire period the lowest Gini index is found in Iceland, while the highest – in Bulgaria (if not counting Turkey). The data from 2020, which only a small number of European countries have provided so far, show that the Gini index for Moldova is higher than for Greece, Estonia, Croatia, Hungary, Austria, Netherlands, Scandinavian countries and Belgium, but is lower than for Romania and Bulgaria. In 2019 a higher Gini index than Moldova had such countries as: Portugal, Luxembourg, Italy, Spain, Serbia, Montenegro, Albania, Romania, Latvia, Lithuania, Bulgaria, Turkey and a lower one - countries as: Cyprus, Greece, North Macedonia, Switzerland, Estonia, Germany, Croatia, France, Poland, Ireland, Malta, Hungary, Austria, Scandinavian countries, Netherlands, Belgium, Czechia, Slovenia and Slovakia. The Gini indices in average per EU and also in Euro Area are also lower than in Moldova. Some European countries have shown significant reductions of Gini index in the entire period 2014-2019: Slovakia (-19.9%), Cyprus (-16.4%), Estonia (-14.0%), Poland (-9.7%), North Macedonia (-9.4%) while other countries have shown major increases, like Bulgaria (+11.9%), Luxembourg (+9.1%). Other countries had lower decreases (from the highest decrease to the lowest decrease: Serbia, Portugal, Ireland, Slovenia, Greece, Montenegro, Czechia, Spain, Austria, France, Croatia, Belgium) or lower increases (from the lowest increase to the highest increase: Latvia, Romania, Hungary, Denmark, Sweden, Switzerland, Finland, Germany, Italy, Malta, Turkey, Netherlands, Lithuania, Norway).

Table 2. Evolution of Gini coefficient by disposable income in European countries from 2014 to 2020

	2014	2015	2016	2017	2018	2019	2020
Slovakia	0.2610	0.2370	0.2430	0.2320	0.2090	0.2280	n/d
Iceland	0.2270	0.2470	0.2410	0.2520	0.2320	n/d	n/d

Slovenia	0.2500	0.2450	0.2440	0.2370	0.2340	0.2390	0.2350
Czechia	0.2510	0.2500	0.2510	0.2450	0.2400	0.2400	n/d
Belgium	0.2590	0.2620	0.2630	0.2610	0.2570	0.2510(b)	0.2540(b)
Norway	0.2350	0.2390	0.2500	0.2610	0.2480	0.2540	n/d
Finland	0.2560	0.2520	0.2540	0.2530	0.2590	0.2620	0.2650
Netherlands	0.2620	0.2670	0.2690(b)	0.2710	0.2740	0.2680	0.2750(p)
Denmark	0.2770	0.2740	0.2770	0.2760	0.2780	0.2750	0.2730(b)
Austria	0.2760	0.2720	0.2720	0.2790	0.2680	0.2750	0.2700
Sweden	0.2690	0.2670	0.2760	0.2800	0.2700	0.2760	0.2690
Hungary	0.2860	0.2820	0.2820	0.2810	0.2870	0.2800	0.2830
Malta	0.2770	0.2810	0.2860	0.2820	0.2870	0.2800	n/d
Ireland	0.3100	0.2970	0.2960	0.3060	0.2890	0.2830	n/d
Poland	0.3080	0.3060	0.2980	0.2920	0.2780	0.2850	n/d
France	0.2920	0.2920	0.2930	0.2880	0.2850	0.2920	n/d
Croatia	0.3020	0.3040	0.2980	0.2990	0.2970	0.2920	0.2830(p)
Germany (until 1990 former territory of the FRG)	0.3070	0.3010	0.2950	0.2910	0.3110	0.2970	n/d
European Union - 27 countries (from 2020)	0.3090(e)	0.3080(e)	0.3060(e)	0.3030(e)	0.3040(e)	0.3020(e)	n/d
Euro area - 19 countries (from 2015)	0.3100	0.3070	0.3070	0.3040	0.3060	0.3020	n/d
Euro area - 18 countries (2014)	0.3090	0.3070	0.3070	0.3030	0.3060	0.3020	n/d
Estonia	0.3560(b)	0.3480	0.3270	0.3160	0.3060	0.3050	0.3050
Switzerland	0.2950(b)	0.2960	0.2940	0.3010	0.2970	0.3060	n/d
European Union - 28 countries (2013-2020)	0.3100	0.3100	0.3080	0.3060	0.3080	0.3070(e)	n/d
North Macedonia	0.3520	0.3370	0.3360	0.3240	0.3190	0.3070	n/d
Greece	0.3450	0.3420	0.3430	0.3340	0.3230	0.3100	0.3110
Cyprus	0.3480	0.3360	0.3210	0.3080	0.2910	0.3110	n/d
Republic of Moldova*	0.3257	0.3238	0.3314	0.3168	0.3049	0.3148(b)	0.3226
Portugal	0.3450	0.3400	0.3390	0.3350	0.3210	0.3190	n/d
Luxembourg	0.2870	0.2850	0.2960(b)	0.2920	0.3130	0.3230	n/d
Italy	0.3240	0.3240	0.3310	0.3270	0.3340	0.3280	n/d
Spain	0.3470	0.3460	0.3450	0.3410	0.3320	0.3300	n/d
United Kingdom	0.3160	0.3240	0.3150	0.3310(b)	0.3350	n/d	n/d
Serbia	0.3830	0.4000	0.3980	0.3780	0.3560	0.3330	n/d
Montenegro	0.3650	0.3650	0.3650	0.3670	0.3470	0.3410	n/d
Albania	n/d	n/d	n/d	0.3680	0.3540	0.3430	n/d
Romania	0.3500	0.3740	0.3470	0.3310	0.3510	0.3480	0.3380
Latvia	0.3550	0.3540	0.3450	0.3450	0.3560	0.3520	n/d

Lithuania	0.3500	0.3790	0.3700	0.3760	0.3690	0.3540	n/d
Bulgaria	0.3540	0.3700	0.3770 (b)	0.4020	0.3960	0.4080	0.4000
Turkey	0.4120	0.4190	0.4260	0.4300	0.4300	0.4170	n/d
Kosovo (under United Nations Security Council Resolution 1244/99)	n/d	n/d	n/d	n/d	0.4420	n/d	n/d

Source: Calculated and elaborated by authors on the basis of Eurostat data, ilc_di12 [Eurostat, 2021] [NBS, 2021]

Notes: **n/d** – no data; **b** – break in time series; **p** – provisional; **e** – estimated.

The **Table 3** shows the evolution of income quintile share ratio (S80/S20) in European countries from 2014 to 2020. This indicator is the same as the ratio between income of population from quintile I and V used in Moldova. The name shown in the table title is the one from Eurostat. The table shows that the income quintile share ratio is the smallest in Iceland from European countries, but highest in Bulgaria. A higher ratio than Moldova is in such countries as: Greece, Luxembourg, North Macedonia, Spain, Italy, Albania, Lithuania, Latvia, Montenegro, Bulgaria.

Table 3. Evolution of income quintile share ratio (S80/S20) in European countries from 2014 to 2020

	2014	2015	2016	2017	2018	2019	2020
Iceland	3.12	3.43	3.33	3.59	3.21	n/d	n/d
Czechia	3.50	3.51	3.50	3.40	3.32	3.34	n/d
Belgium	3.81	3.83	3.85	3.84	3.79	3.61(b)	3.65(b)
Finland	3.62	3.56	3.58	3.54	3.65	3.69	3.72
Norway	3.41	3.50	3.69	3.90	3.71	3.81	n/d
Netherlands	3.83	3.82	3.93(b)	3.99	4.05	3.94	4.04(p)
Ireland	4.90	4.50	4.45	4.63	4.23	4.03	n/d
Denmark	4.12	4.08	4.06	4.08	4.11	4.09	4.00 (b)
Austria	4.13	4.05	4.09	4.29	4.04	4.17	4.11
Malta	4.05	4.15	4.22	4.21	4.28	4.18	n/d
Hungary	4.33	4.30	4.26	4.27	4.35	4.23	4.30
France	4.27	4.29	4.32	4.31	4.23	4.27	n/d
Cyprus	5.37	5.20	4.88	4.56	4.29	4.58	n/d
Switzerland	4.42(b)	4.48	4.42	4.63	4.50	4.75	n/d
Croatia	5.12	5.16	5.00	5.03	5.00	4.76	4.61 (p)
Germany (until 1990 former territory of the FRG)	5.12	4.80	4.62	4.49	5.07	4.89	n/d
Euro area - 18 countries (2014)	5.22	5.14	5.14	5.03	5.05	4.97	n/d
Euro area - 19 countries (from 2015)	5.23	5.16	5.15	5.05	5.07	4.98	n/d
European Union - 27 countries (from 2020)	5.22 (e)	5.22 (e)	5.16 (e)	5.03 (e)	5.05 (e)	4.99 (e)	n/d
Estonia	6.48(b)	6.21	5.56	5.42	5.07	5.08	5.03
European Union - 28 countries (2013-2020)	5.20	5.22	5.16	5.08	5.12	5.09(e)	n/d
Republic of Moldova	5.66	5.48	5.77	5.35	5.08	5.09(b)	5.30
Greece	6.46	6.51	6.55	6.11	5.51	5.11	5.15
Luxembourg	4.42	4.26	4.62(b)	4.56	5.18	5.34	n/d
North Macedonia	7.22	6.62	6.63	6.38	6.16	5.56	n/d
Spain	6.81	6.87	6.60	6.59	6.03	5.94	n/d

Italy	5.78	5.84	6.27	5.92	6.09	6.01	n/d
Albania	n/d	n/d	n/d	7.47	6.98	6.38	n/d
Lithuania	6.10	7.46	7.06	7.28	7.09	6.44	n/d
Latvia	6.48	6.51	6.20	6.30	6.78	6.54	n/d
Montenegro	7.27	7.48	7.38	7.57	7.37	6.72	n/d
Bulgaria	6.81	7.11	7.69 (b)	8.23	7.66	8.10	8.01

Source: Elaborated by authors on the basis of Eurostat data, tessi180 [Eurostat, 2021] [NBS, 2021]

Notes: **n/d** – no data; **b** – break in time series; **p** - provisional; **e** - estimated.

At the same time, Moldova has a higher ratio than most European countries: Estonia, Germany, Croatia, Switzerland, Cyprus, France, Hungary, Malta, Austria, Denmark, Ireland, Netherlands, Norway, Finland, Belgium, Czechia and Iceland. Also, the ratio overall average per EU countries is lesser than for Moldova. Luxembourg, Lithuania and Bulgaria had the greatest increases of this ratio over the years (by 12-20%); Italy, Latvia, Montenegro, Malta, Netherlands, Norway, Finland and Iceland had increases of a smaller size; Ireland, Estonia, Cyprus, Greece, Croatia, North Macedonia, Spain had decreases of 10-23%, while smaller decreases had such countries as: Czechia, Belgium, Austria, France, Germany.

5. Conclusions

The Gini index has shown a reduction of income inequality and of expense inequality in the Republic of Moldova in the period 2014-2018. The use of usual resident population number in the calculation of Gini index changed inequality trends. Thus, in the period 2019-2020 in Moldova overall income inequality increased, while expense inequality has reduced, but only in rural areas, in urban areas it increased. In comparison with the majority of European countries Moldova has a higher income inequality and only a few European countries have a higher one than in Moldova, like Romania, Bulgaria, Albania, Lithuania and others.

The income growth and the subsequent diversification of expenditures in great part due to the increase in the remittances and social benefits, mainly in rural areas contributed to the recent increase in income inequality, the deepening of the gap between the households receiving a higher share of income from remittances and those that have the higher share of income from sources that are inside the country. At the same time, in such circumstances the small diversity of goods and services in rural areas can determine a reduction in inequality of consumption expenditures between households, but the sources of high income and a wider diversity of goods and services in urban areas in such conditions contribute to the growth in the inequality by income and also by expenditure.

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