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ANALYSIS OF THE EVOLUTION OF INCOME INEQUALITY – CAUSES AND EFFECTS. COMPARATIVE ANALYSIS: ROMANIA-EU27

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Abstract

The study analyzes the evolution of income inequality, focusing on its causes and effects, with a comparative perspective between Romania and the EU-27. Using data from Eurostat, OECD, and national statistics, the research identifies key drivers of income disparity, including economic growth, employment structure, fiscal policies, and social transfers. The paper explores the implications of income inequality on economic stability, social cohesion, and sustainable development. By contrasting Romania's performance with EU-27 averages, the study highlights differences in policy effectiveness and provides recommendations for reducing inequality through targeted fiscal and social measures.

Keywords

Income inequality, Romania, EU-27, economic disparity, fiscal policy, social transfers, comparative analysis, economic growth, social cohesion.

JEL

-D31- Personal Income, Wealth, and Their Distributions

-H23 - Externalities; Redistributive Effects; Environmental Taxes and Subsidies

-I32 - Measurement and Analysis of Poverty

- O52 - Europe

Introduction

Income inequality is a highly relevant and topical topic that has attracted increasing interest in both policy and academia in recent decades. We observe an alarming trend of increasing income differences, especially in developed countries, and this trend is also reflected at the level of the European Union, where inequalities have seen an intensification, including within the richest member states.

The notion of income inequality is often associated with market mechanisms, which seem to reward success and sanction failure. Although it seems to be a natural consequence of the functioning of the market, inequality is not closely related to it, but is considered necessary to motivate the individual and encourage interest in professional development. It is well known that inequality plays an important role in maintaining a competitive environment, essential for the proper functioning of the market economy. However, an excessive level of inequality can generate a number of social and economic problems, such as diminishing incentives, increasing social injustice and restricting opportunities for social progress.

It is crucial to maintain a proper balance of income inequalities in a society so as to ensure social stability. Therefore, careful examination of the causes, effects and implications of income inequality on economic development is necessary. A comparative analysis between the situation in Romania and that of the EU-27 offers a broad perspective on the differences at the level of the member states of the European Union and on the existing trends, allowing the identification of good practices and the formulation of recommendations adapted to the specifics of Romania.

My motivation to investigate this complex topic reflects a desire to understand the depth of economic inequalities and contribute to the development of effective policies aimed at reducing social gaps and promoting economic development. Through careful research and analysis of this phenomenon, the paper aims to make a significant contribution to the understanding of inequality and to the identification of appropriate solutions to combat it.

The general objective of this paper is to investigate and highlight the discrepancies and inequities in the distribution of income in Romania compared to the other member states of the European Union, as well as to understand their causes and consequences.

The specific objective of this paper is to analyze the various factors that contribute to income inequality, such as differences in education, occupation, gender or ethnic origin. Through comparative analysis we can obtain a clearer view of this circumstance and contribute to the development of more effective policies.

In Chapter I I will analyze inequality and the types of inequality: payment inequality, wealth inequality and income inequality. I will also talk about measurement techniques such as: the Lorenz Curve, the Gini coefficient or the Theil index. I will continue with the next sub-chapter where I present the causes and effects of income inequality. Income inequality is divided into three categories based on the complexity of the factors that determine income inequality. These are: non-economic factors, macroeconomic factors and microeconomic factors. In the next chapter I will carry out the comparative analysis regarding income inequality.

Chapter 1: Conceptualizing Income Inequalities

1.1. Review of the specialized literature on income inequality: from definition to measurement techniques

Inequality occurs when there is a difference or disparity between some people, groups or entities in terms of rights, opportunities or access to resources.

Economic inequality refers to the unequal distribution of wealth and opportunities among people belonging to different groups, communities, or countries. The upward trend of inequality can be expressed by the cliché: "The rich are getting richer and the poor are getting poorer." In other words, inequality captures the widening gap between the accumulated wealth or income earned by various categories of the population. Both Rousseau (2016) and Rawls (1971) argue that inequality can be acceptable as long as it does not affect the freedom and well-being of citizens. For Rawls, inequality is only permissible if it respects the principles of social justice, and for Rousseau it is important not to limit people's happiness and interests. If these conditions are not met, inequality can be considered excessive and unfair in a just society.
Economic inequality is of three kinds:

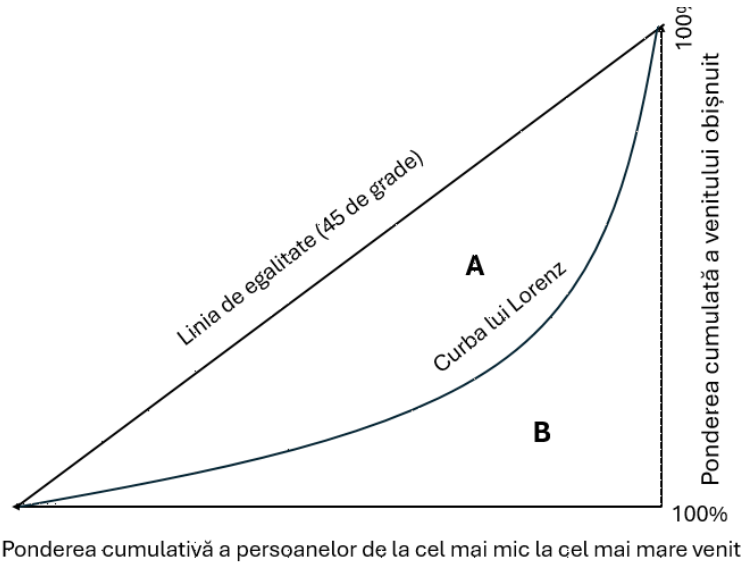
- Pay or earnings inequality is fairly easy to assess from available data sources; company payrolls are ubiquitous, and weekly or monthly earnings surveys are very common. Assessing income inequality is relatively easy in countries with reliable research and adequate financial reporting. But these are not many; The best income tax datasets are available for only 29 countries, most of which are English-speaking countries, so most of the income data comes from surveys.
- Assessing wealth inequality is more difficult and results vary depending on the definition of wealth used. Official means checks are only carried out in a few countries. Most people do not accumulate wealth from income earned through work, so not all people have the same financial assets.
- Income inequality represents a situation in which the distribution of income is unequal between people, with significant discrepancies between the amount of income acquired. This difference can be influenced by several factors, including sources of income, the number of people dependent on that income, and access to resources. In the field of economic development, income inequality is a topic of intense debate and analysis, being studied by scientists, economists and political leaders globally. Income plays an essential role in determining the quality of life, being an important factor in social stratification and having a significant impact on general well-being. At the level of specialized literature, there is a high interest in measuring and understanding the extent, causes and trends of income inequality, as well as in assessing the level of poverty faced by certain groups today. Conceptually, inequality represents an imbalance between two units of analysis or social groups. (Toma, C.A., Boboc, C., et al. 2021)

A distribution can be represented by a graph showing income, expenditure, pay or wealth on a horizontal line and the number of people at the same level of the variable x on a vertical line. Distribution starts from zero when it comes to income, expenses or payment.

1) The most widely used indicators for measuring income inequality are the Lorenz curve and the Gini index, but there are others such as the Theil and Atkinson indices.
2) The range is the simplest possible indicator of the distribution. The value measured in money is the distance between the highest and the lowest value in the sample for income.
3) A quartile is a statistical measure that divides a distribution into four equal parts. A quintile divides a distribution into five equal parts. A decile divides a distribution into ten equal parts. A percentage divides a distribution into one hundred equal parts. Quartiles measure the spread of values above and below the mean by dividing the distribution into four groups. Quartile divides the data into three points (lower quartile, median quartile, and upper quartile) to form four groups of data sets. The 4 quartiles are used to calculate the interquartile range, which is a measure of the dispersion around the mean. Just as the median divides the data in half so that 50% of the measurements are below the median and 50% above it, the quartile divides the data into quarters so that 25% of the measurements are less than the lower quartile, 50% are less than the median , and 75% are lower than the upper quartile. To avoid extreme values, the interquartile range examines only the middle part of the distribution – or the "middle 50% of observations". The interquartile range is calculated by sorting each observation in ascending order of income and then removing the lowest and highest 25% of the observations. The interquartile range is the rest of the range.
4) The Lorenz curve describes the cumulative income of the population by the value of the income (vertical axis) relative to the cumulative weight of the people who achieve these incomes (horizontal axis), and the distance between the Lorenz curve and the first bisector represents the case of income equality. The higher the income, the higher the level of inequality.
5) The Gini coefficient - invented by an Italian, Corrado Gini - is an indicator with values between 0 and 100 percent (a value close to 100 represents a high degree of inequality). If the Lorenz curve is represented by the function y = L(x), then the Gini index can be written as:
   $G=1-2\int_0^1 L(x)dx$

To better understand the Gini coefficient we can imagine the Lorenz curve, a simple graph that can be drawn for any distribution. To plot the Lorenz curve, first all members of a population or survey participants are sorted ascending by their income and divided into quintiles, deciles, or percentiles (the larger the split, the better). The quantiles are represented on the x-axis. On the y-axis, the portion of total income earned cumulatively in each quantile is represented. Thus, if the bottom ten percent earn two percent of total income, a point is drawn at (10.2), and so on. Connect the drawn points. The realized curve will be inclined below a line of 45 degrees, except in the case - not encountered in real applications - of total equality of income. It will start at point (0,0) and stop at point (100,100), since zero people inevitably earn zero income and all people inevitably earn all income. At each point on the curve, one can determine exactly what percentage of total income a person below that income level can claim. First, the area between the Lorenz curve and the 45-degree line is calculated - which, in the case of a 100-a-side graph, is the number 5000. The result is the Gini coefficient.

Figure 1. Lorenz curve



6) The Theil index is a measure of the entropy determined by the differences between incomes and is estimated as the average of the ratio between individual incomes and the average of incomes, weighted with the logarithm of the same ratio:

T=$\frac{1}{n}\sum_{i=1}^{n}\frac{x_i}{\bar{x}}\,ln\frac{x_i}{\bar{x}}$.

7) The Atkinson Inequality Index is an economic measure of income inequality developed by Anthony Barnes Atkinson. It is based on the per capita income that, if divided by the total population, would generate the same level of propserty that emerges from the observed income distribution. The class of Atkinson indices is assembled based on a welfare function, which involves the application of a normative parameter, ε ≥0, called the inequality aversion parameter. The indices are estimated based on the following two relations, depending on ε:

$$A_{\mathcal{E}} = 1 - \left[\frac{1}{n}\sum_{i=1}^{n}\left(\frac{x_i}{\bar{x}}\right)^{1-\mathcal{E}}\right]^{\frac{1}{1-\mathcal{E}}},$$

și

$$A_1 = 1 - \left[\prod_{i=1}^{n}\frac{x_i}{x}\right]^{\frac{1}{n}}, \text{ for } \mathcal{E} = 1$$

8) The Pietra index derived from the Lorenz curve is a less popular indicator – also known as the Robin Hood index. Although it has many names, in practice it is rare. Pietra index calculation formula:

$$H(x)=\frac{\sum\{i:x_i=>\overline{x}\}(x_i-\overline{x})}{\sum_{i=1}^{n}x_i}$$

9) The Palma coefficient, a recent invention of the economist Gabriel Palma, represents the ratio of the total volumes of cash incomes of the 10% of the population with the highest incomes and the 40% with the lowest incomes.

$$K_{palma} = \frac{d_{10}}{d_1 + d_2 + d_3 + d_4},$$

where: d_i – total cash income of decile i.

The causes and effects of income inequality

Many factors influence income inequality, but understanding these factors allows us to regulate national income more effectively and to develop and implement economic policies specifically designed to distribute and redistribute income. Acemoglu and Robinson (2012) distinguish between extractive institutions and inclusive institutions, emphasizing that their quality influences the level of poverty and inequality in a society. Inclusive institutions promote the exploitation of resources for the benefit of the entire population and create equal opportunities, while extractive institutions favor the concentration of wealth and power in the hands of a small elite.

Income inequality is divided into three categories depending on the complexity of the factors that determine income inequality:

1) Non-economic factors - which vary depending on the personality of each person, such as:

- The unique capabilities of each individual. People's intellectual and physical capacities vary. While some people get high-paying jobs because of their exceptional intellectual abilities, others get high-paying professional sports jobs, and another category of people, called "regulars," get lower-paying jobs. Most people have abilities, capabilities and aptitudes in the average range. Since skills alone are often not capable of generating substantial returns, training and education must enhance natural skills;
- In addition, discrimination based on sex, age, nationality or social status can lead to income inequality in the workplace. The fight against discrimination in the labor market, which includes the elimination of wage disparities between men and women, has led to the reduction of labor income inequality;
- Level of education and training. Depending on the level of education and professional training, the level of income obtained varies significantly. Differences can be caused by current circumstances and a person's choice to go to high school or university. Furthermore, there are income differences due to differences in people's continued education;
- Productivity level and workload. The output and intensity of work are influenced by various factors, including the level of complexity of work, the difference between skilled and unskilled work, and the number of hours worked. All these aspects have an impact on the amount of money earned;
- Income growth is significantly influenced by luck and profitable relationships. Luck, the opportunity to "be in the right place at the right time" and political influence are important factors in obtaining high incomes. Conversely, a family's economic situation is affected by natural disasters, loss of breadwinner, unemployment, chronic diseases and accidents;
- Household incomes vary with demographic factors such as family size, employee-to-maintenance ratio, health status, location, and climate.
- Propensity to engage in risks. The ability to take risks is individual. Most people want a job that is safe, quiet, and offers secure, but not very high, earnings. In contrast, some people, such as entrepreneurs, are willing to take risks to run a business.

2) Macroeconomic factors - describe the state and efficiency of the national economy and include elements such as:

- Advances in technology People believe that new IT technologies will increase work productivity and general well-being. However, these technologies can lead to a disproportionate increase in the demand for capital and skilled labor, leading to an increase in wage income inequality as a result of the automation of production processes;

- Setting the economy's minimum wage: A high minimum wage increases the wages of those at the bottom of the income distribution, thereby reducing income inequality. However, too high a minimum wage can negatively affect the employment of young people and low-skilled workers, thus reducing disparities;
- Globalization has become a driving force of economic growth and competitiveness in many countries. However, trade openness can have contradictory effects on levels of income inequality because, on the one hand, inequality increases when trade flows increase, which means that the wages of skilled workers increase; on the other hand, an increase in trade flows can also lead to a decrease in inequality, because the demand for low-skilled labor increases and real wages rise due to the influx of cheaper imported products;
- Educational policies can have a significant impact on reducing income inequality, because education influences the choice of professions, access to jobs and salary level;
- Income redistribution policy by introducing a system of progressive income taxation and social transfers;
- The increase in labor income inequality is caused by underemployment and ineffective government policy on labor protection, resulting in jobs with wages lower than the economic average.

3) Microeconomic factors refer to the organization in which a person works (industry, position on the labor market, organizational and legal form, development strategy, share of wages in the cost structure, etc.) and factors such as: household type, size, socio-economic status, etc.. Wage differences arise mainly from varied competition in various market sectors.

Income inequality can have economic, social, political and other consequences. According to A. M. Zernaeva, the increase in income inequality prevents the formation of a domestic middle class, which would ensure a significant share of the effective demand on the domestic market. Modern economic theory supports the idea that income inequality has a negative impact on economic development, causes market failures and increases economic imbalances between demand and supply or between production and consumption.

Increasing income inequality shortens the period of economic growth and even slows economic growth through its impact on human capital. This is caused by the fact that low incomes limit people's access to quality education (including labor market integration) and consumer goods. Income inequality has a negative impact on personal consumption, causing a decrease in aggregate demand and economic growth.

As for the political consequences of income inequality, they are related to the fact that general social discontent, if this imbalance is manifested on a large scale, can facilitate the emergence of political instability. According to Malkina, this is especially true for developing countries.

First, the social consequences of income inequality are related to the strengthening of social stratification. Second, the level of inequality has an impact on the mood of society. Inequality can reduce the sense of justice, which can lead to low morale and ultimately low worker productivity.

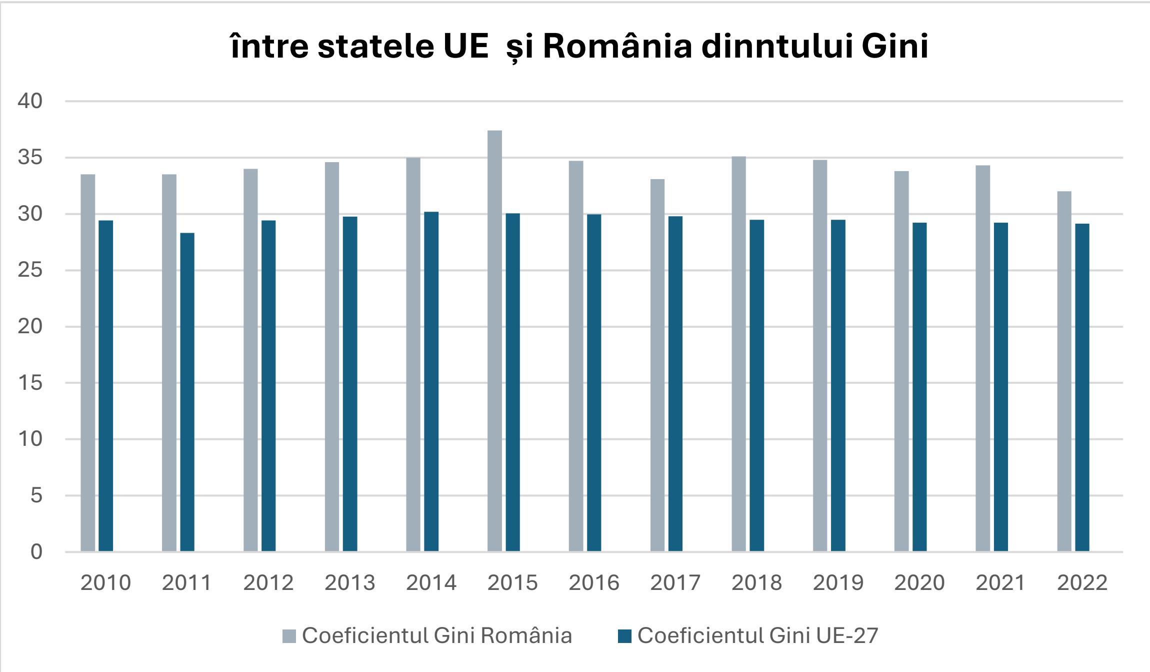
Inequalities in health are caused by income inequality. Chronic disease and disability disproportionately affect the poor. Inequality in education is caused by income disparities. People with higher incomes are more likely to receive a high-quality education and acquire the skills needed to obtain high-paying jobs and maintain their wealth. Consequently, significant disparities in life opportunities are caused by income inequality. This is true in both rich and poor countries, and affects both rich and poor people.

Chapter 2: Comparative analysis of income inequality. Case study RO vs EU-27

2.1. The dynamics of income inequality in Romania from a European perspective

In figure 1 we presented the evolution of income inequality between the EU states and Romania from the perspective of the Gini coefficient. We can observe that in 2022, the Gini coefficient was higher by 2.87 points in Romania than in the EU, which reflects a greater inequality between incomes at the level of Romania than that specific to other EU member states. The graph also shows the persistence of inequality over the last 13 years, the Gini coefficient, reducing by only 0.3 points at the EU-27 level, while in the case of Romania it decreased by 1.5 points during this period.

Figure II.



Source: author's processing using Eurostat data

Figure II shows the percentage of income obtained by the poorest 40% of the population, where we can see that in 2015 Romania had the lowest percentage of 16.8 compared to the EU, which in the same year had a percentage of 20.6, resulting in Romania having a high income inequality in 2015.

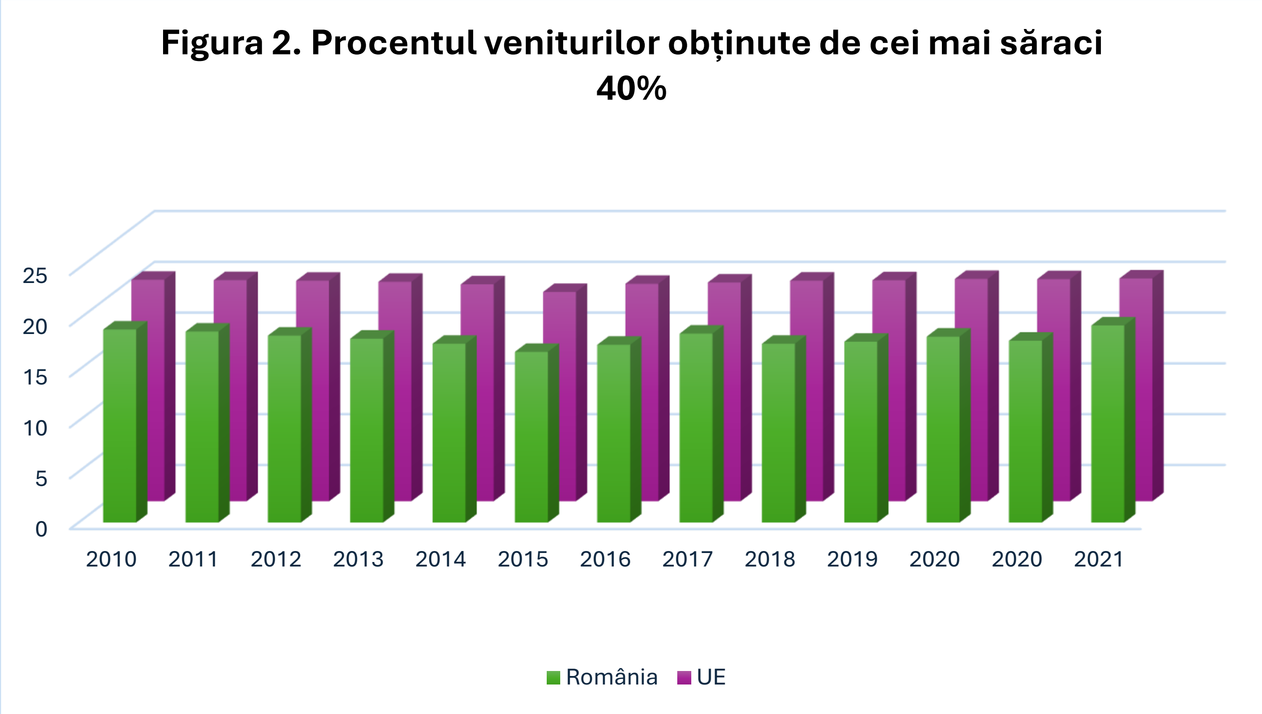


Figure III. Source: author's processing using Eurostat data

According to figure III, it is observed that Bulgaria has the highest Gini coefficient after social transfers, i.e. increased inequality in all years, and the lowest coefficient is observed in Slovakia. Social transfers are well implemented by European states through complex systems that include pensions, unemployment benefits, social benefits and other types of financial assistance for disadvantaged groups. There are several sources of funding for these transfers, such as taxes and social contributions. In addition, European states help to reduce poverty and social inclusion through vocational training programs, access to health services and social housing. At the same time, European states are adopting policies to promote participation in the labor market and supporting families, such as subsidies for childcare and care for the elderly or disabled. Therefore, European states aim to ensure a minimum standard of living and reduce social inequalities by combining social transfers with measures to support and stimulate employment.

Figure 4 shows the GDP per capita in euros at the level of the European Union. In 2010 Luxembourg has a GDP of 83,650, followed by Denmark with 43,840 and the Netherlands (38,470). At the pole of the lowest GDP 2010 is Bulgaria with 5,080 and Romania (6,340) and Latvia (8,550). In 2022, a GDP of 118,710 is registered by Luxembourg, in second place is Ireland (98,990), and the lowest GDP is in Bulgaria (13,270), with Romania not far behind with a GDP of 14,920.

2022

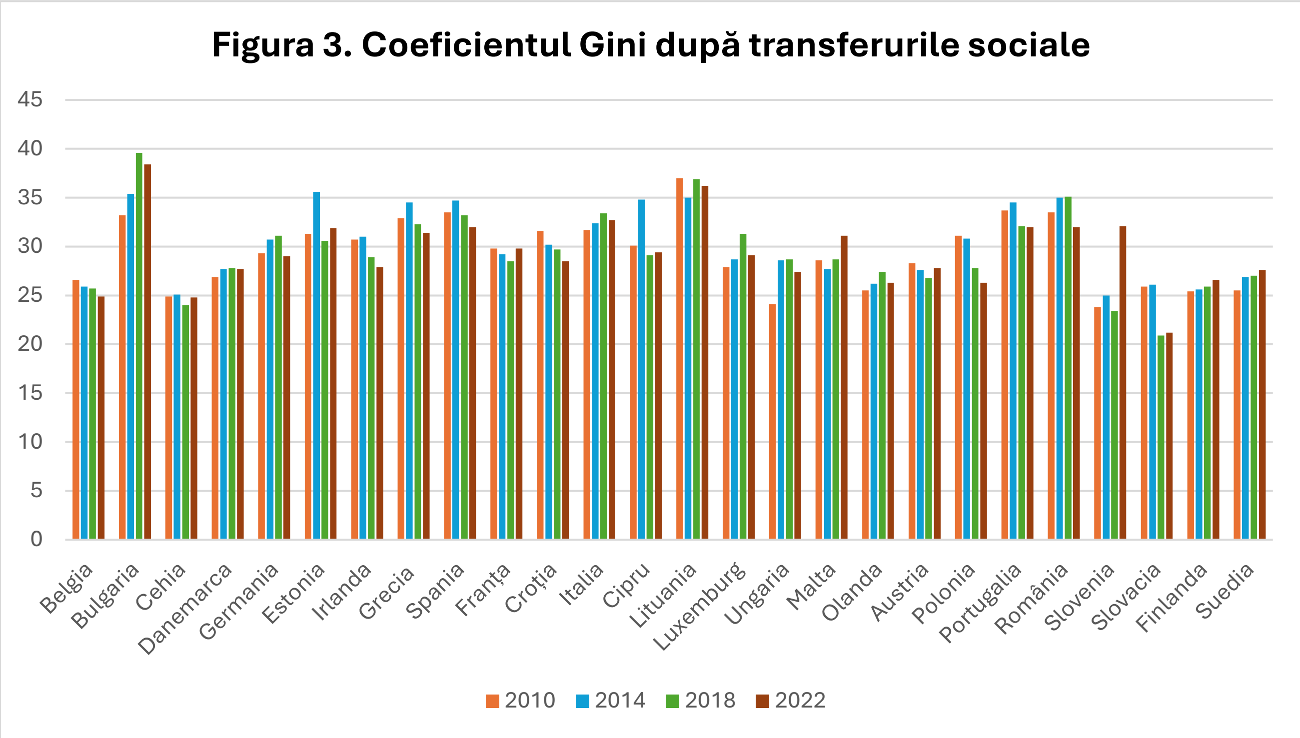
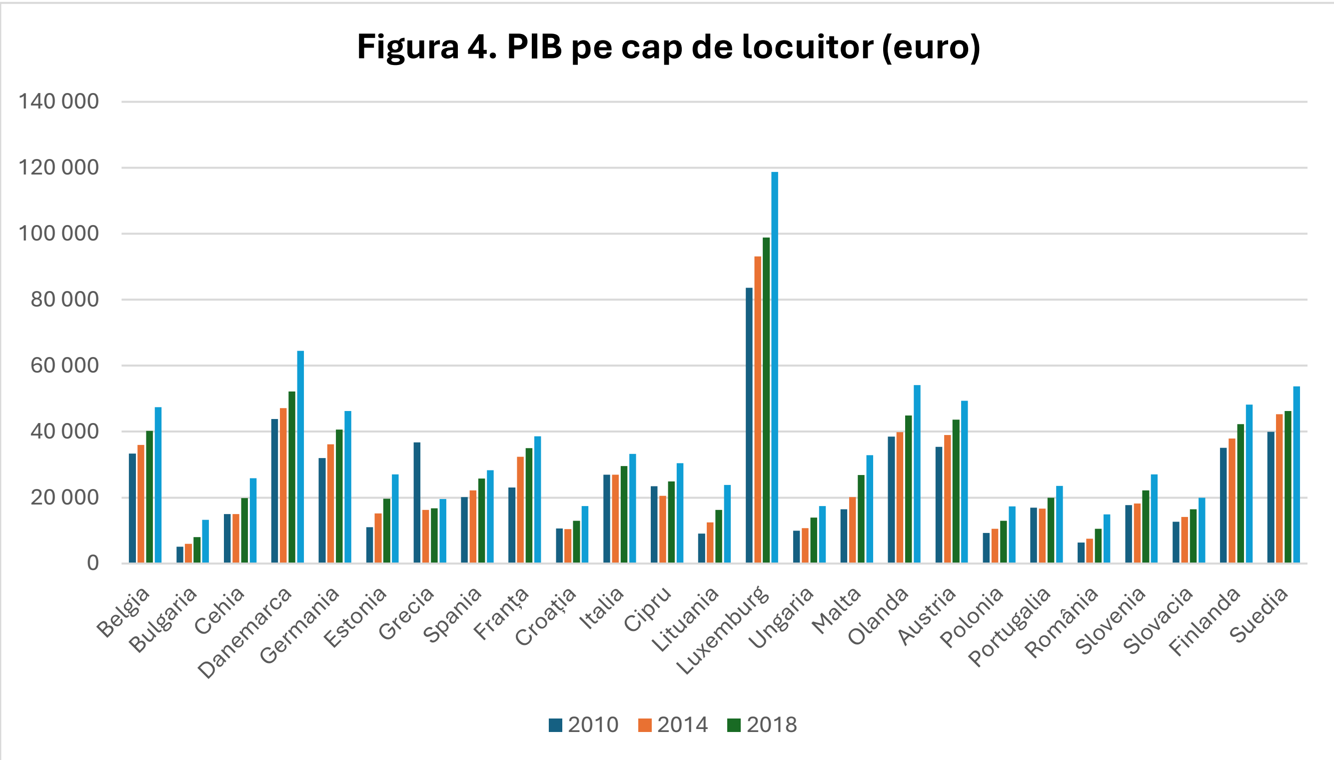


Figure IV. Source: author's processing using Eurostat data



The percentage of gross domestic product (GDP) per capita is an indicator that, if evaluated in comparison with the EU-specific value, indicates convergence with the European Union in terms of economic development. In figure 5 it can be seen that Luxembourg has the highest GDP in 2014 (349%) followed by Denmark (177.2) and Sweden (176.9) compared to Bulgaria which in the same year has the lowest GDP (22.4%). At the same time, Romania is not far from Bulgaria with a percentage of (28.4%).

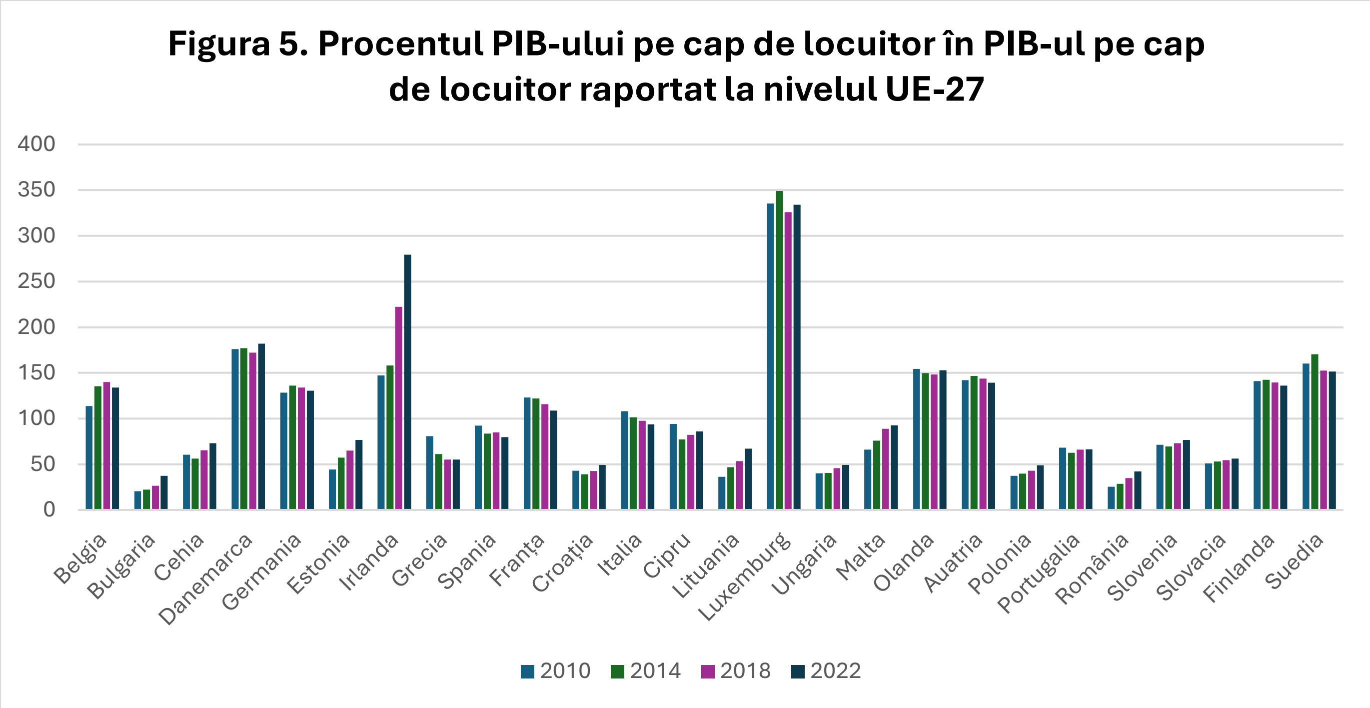
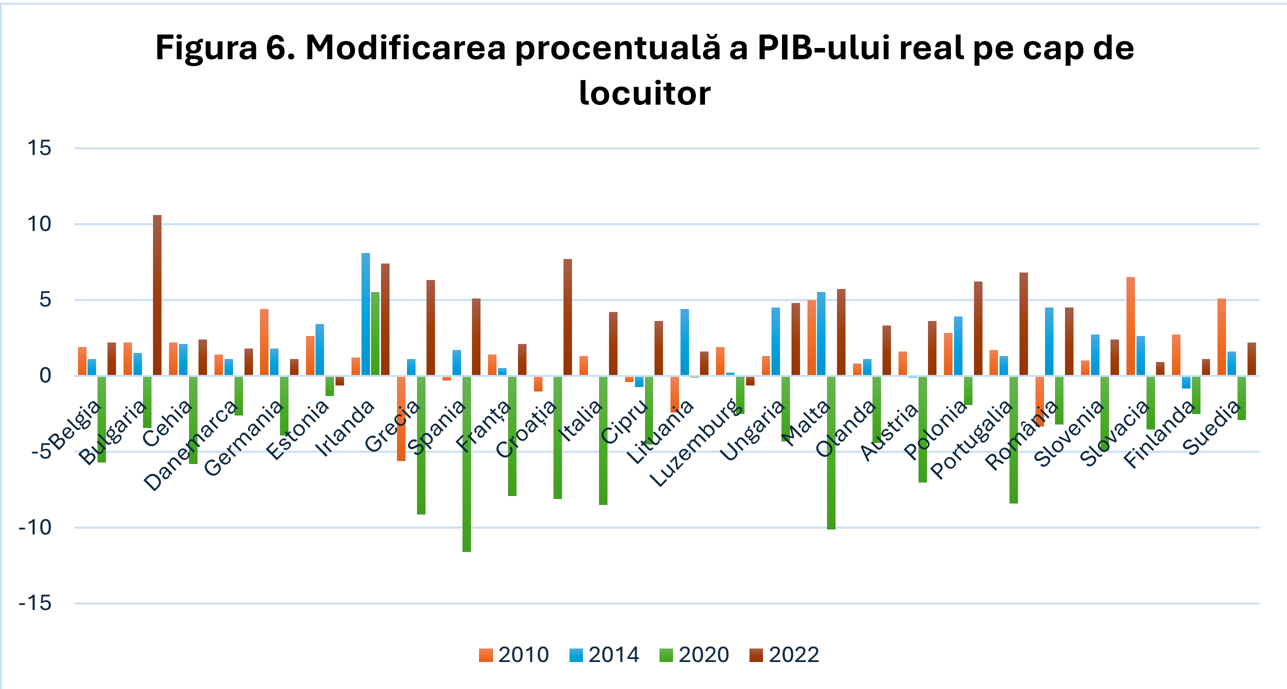


Figure V.Source: author's processing using Eurostat data

Figure 6 shows the percentage change in real GDP per capita in the European Union, where we can see that the year 2020 includes negative values, except for Ireland with a

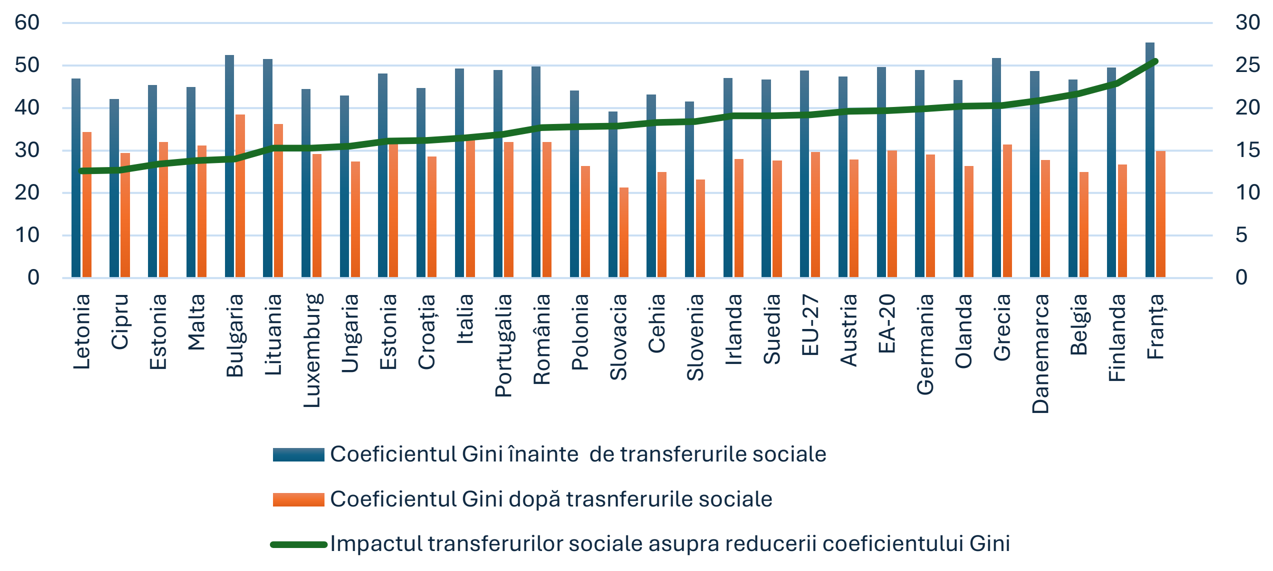


percentage of 5.5%. The rest of the states have a negative percentage as a result of the pandemic that had a great impact on the countries, affecting the world economy.

Figure VI. Source: author's processing using Eurostat data

Also, in 2022, most of the states managed to recover from an economic point of view, Bulgaria registering a real GDP growth rate per capita of 10.6%, followed by Croatia with 7.7% . On the other hand, in the case of Estonia (-0.6%) and Luxembourg (-0.6%) there were

Figura 7. Eficiența transferurilor sociale asupra reducerii inegalității veniturilor în statele membre ale Uniunii Europene



decreases in real GDP per capita.

Source: author's processing using Eurostat data

As can be seen in figure 7, Latvia, Cyprus and Estonia had the lowest level of efficiency in terms of social transfers. The Gini coefficient decreased by 12.6 points, 12.7 points and 13.4 points as a result of social transfers, while in Romania, it decreased by 17.7 points. In contrast, Belgium, Finland and France managed to reduce the Gini coefficient by 21.7 points, 22.9 points and 25.5 points as a result of social transfers.

2.2. Analysis of the relationship between income inequality and economic development

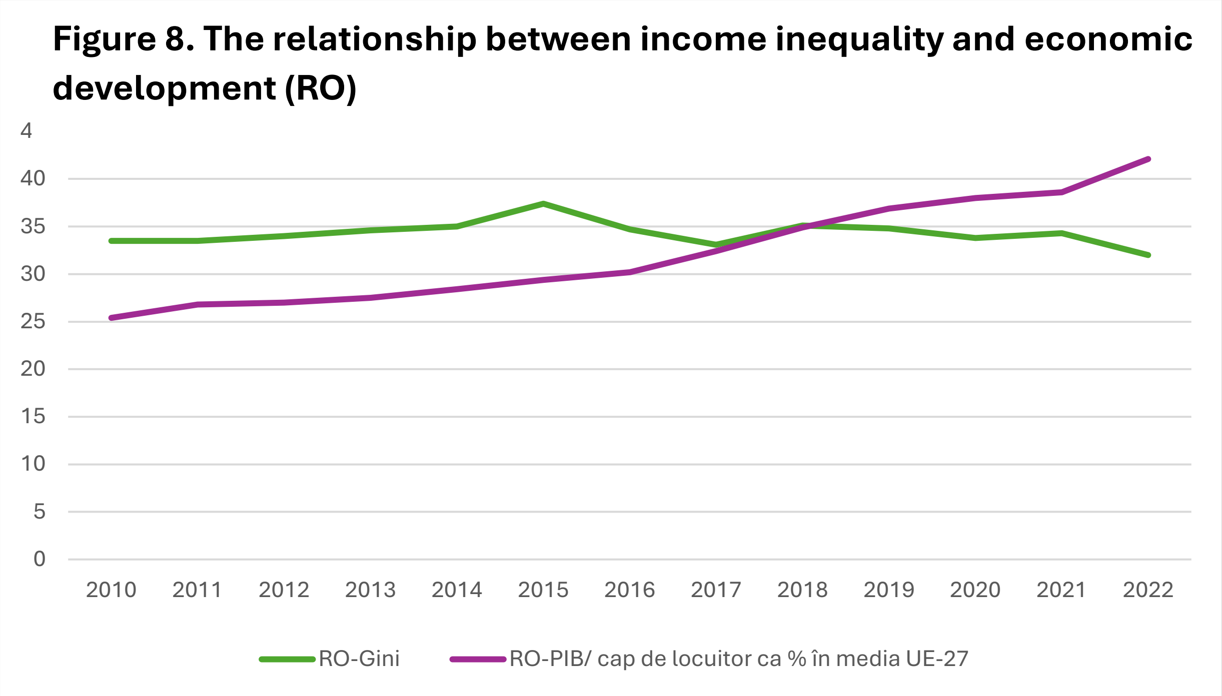


Figure VIII. Source: author's processing using Eurostat data

According to figure 8, we can observe the inverse relationship between the level of income inequality and economic development, observed in the case of Romania. The graph suggests that a decrease in income inequality causes an increase in the share of GDP per capita recorded in Romania in that of the EU, which highlights the fact that reducing income inequality can increase economic convergence between Romania and the EU.

Conclusions

Income inequality is a hot topic in contemporary economic, social and political discussions. It develops as a result of a variety of factors, including disparities in wages, labor productivity, the position occupied in the economic market, and the demographic and social characteristics of individuals. Moreover, inequality can be influenced by other variables, such as the effectiveness of income redistribution policies, the level of employment or unemployment, and the interconnections of national economies with the demands of the global economy. This discrepancy in income can slow down the overall rate of economic growth and development, having the potential to affect the social and economic balance of a society. Therefore, the priority objective of many countries is to reduce this inequality and strengthen social and economic cohesion. In this sense, the implementation of social and economic policies aimed at reducing and maintaining inequality at reasonable levels requires a deep understanding of the causes and factors that determine it, as well as its relationship with economic and social growth processes. Research on income inequality can be improved by using more accurate methods of data collection and analysis, including current data and diverse sources. It is also important to properly assess the impact of different socio-economic policies on inequality. Transparent communication of results and involvement of stakeholders improves understanding and addressing issues.

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