THE EFFECTS OF CRISES ON THE LIVING STANDARDS IN ROMANIA AND HUNGARY IN THE 21ST CENTURY – SIMILARITIES AND DIFFERENCES

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Rezumat: *Cercetarea noastră se axează pe analiza efectelor crizelor din ultimii 20 de ani asupra dezvoltării nivelului de trai din România și Ungaria. În cadrul cercetării, ne concentrăm în primul rând pe criza economică din 2008 și pe șocul economic și social cauzat de pandemia COVID-19. Studiul cuprinde o prezentare generală a situației economice și sociale a României și Ungariei, prezentarea conceptului de criză, și a indicatorilor care descriu nivelul de trai (PIB pe cap de locuitor, coeficientul Gini, indicatori de sărăcie și excuziune socială și indicatori care descriu dezvoltarea pieței muncii). În analiza noastră, examinăm și comparăm evoluția indicatorilor care măsoară nivelul de trai în România și Ungaria în timpul crizelor.*

Cuvinte cheie: *crize, nivel de trai, sărăcie, inegalitatea veniturilor, curba Lorenz, rata șomajului, România, Ungaria*

Abstract: *Our research focuses on the analysis of the effects of the crises of the last 20 years on the development of the standard of living in Romania and Hungary. In the research, we focus primarily on the economic crisis of 2008 and the economic and social shock caused by the COVID-19 pandemic. The study includes an overview of the economic and social situation of Romania and Hungary, the presentation of the concept of crisis, and the indicators that describe the standard of living (GDP per capita, the Gini coefficient, indicators of poverty and social exclusion and indicators that describe the development of the labor market). In our analysis, we examine and compare the evolution of indicators measuring the standard of living in Romania and Hungary during the crises.*

Keywords: *crises, standard of living, poverty, income inequality, Lorenz curve, unemployment rate, Romania, Hungary*

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1   INTRODUCTION

1.1   Current context

For two decades we have experienced the most unstable times ever. Economic crises, world-wide health crises, political conflicts and confusions have disturbed our lives. These crises caused uncertainty, fear, social, economic, and health problems, which affected people's lives, and economic, and social situations. The various crises negatively and unevenly affected national economies as well as citizens. Those national economies or citizens that had less capacity and reacted slower or wrong to these events became more vulnerable and had to endure more negative effects.

The literature studies the effects of the crises, as well as the various measures taken by the authorities to overcome these crises, in order to handle similar situations.

In the last two decades, Europe, as well as the rest of the world, had to face the financial crisis in 2007-2009, the migration crisis in 2015 (especially Europe), and the health crisis that started in China in December 2019, with the effects of the war in Ukraine that broke out in 2022, and the Israel war currently taking place in the Middle East (2023).

Our article primarily focuses on the financial crisis of 2008 and the economic and social shock caused by the COVID-19 pandemic and analyzes its effects through the situation of two neighboring countries, namely Hungary and Romania.

1.2   Economic and social performance of Romania and Hungary (brief presentation of the two analysed countries)

Romania and Hungary, the two countries chosen for analysis and comparison, are geographically located in East Central Europe, being neighboring countries with many similar social-political-economic and cultural aspects. Both countries are members of the European Union (Hungary joined on May 1, 2004, and Romania on January 1, 2007). In both cases, regime change took place in 1989, and since the 1990s both of them have been trying to catch up with Western (more developed) countries economically, legally and in other regards. Table no 1 contains the most typical economic and social indicators of the two countries.

Table no. 1 - Statistical data for Romania and Hungary

Indicators	M.U.	Romania	Hungary
Gross Domestic Product (2022)	Mil. EURO	285,884.8	168,865
Gross Domestic Product per capita (2022)	Mil. EURO	15,010	17,440
Unemployment rate (2022)	(%)	5.5	3.6
Persons at risk of poverty or social exclusion (2022)	(%)	34.3	18.4
Population (2022)	Person	19,042,455	9,689,010
Population (2002)	Person	20,095,996	9,931,925
Area	Km^2	238,398	93,012
Population density	$Pers/Km^2$	81.6	106.4

Source: authors own compilation, based on data from Eurostat
(https://ec.europa.eu/eurostat/data/database)

As we can see from the indicators presented above, Romania far exceeds Hungary when taking into account its territory or population. Economically however, based on the gross

domestic product per inhabitant, there are no considerable differences between them. Both Romania and Hungary experiences population decline, which causes a relatively low level of unemployment in both cases. A major difference can be observed in the rate of people nt he verge of poverty and social exclusion, where Romania registers a percentage almost twice that of Hungary. The level of this indicator for Romania is one of the highest in Europe, which means that a large part of the Romanian population faces poverty and social exclusion.

2 THE EFFECT OF CRISES ON LIVING STANDARDS IN THE LITERATURE, APPLIED METHODOLOGY

2.1 Crises – definitions of crises

Literature offers several definitions and explanations about the notion of a crisis, but most authors define crises and associate them with the terms of an unpredictable situation with negative effects. A crisis is an unpredictable event that results in a negative impact on organizations, as well as on the population or national economies (Youngblood, S., 2010).

Crisis, as a concept, refers to some, usually negative, change in the economic, health, political or educational situation (Minati 2018; Karabag 2020). According to Seidmann et al (2007), the crisis can be characterized by confusion, dysfunctionality, disorder, and uncertainty. Veschi (2020) also characterizes crises with uncertainty and instability. Another approach to the crisis is the threat to the political, social, cultural and economic environment and system (Sutherland, 2017), which requires the introduction of immediate, urgent measures (Spector, 2020). Rosenthal & Kouzmin (1993) define crises as a "unique laboratory of social and political life", which makes necessary some "multidisciplinary and interdisciplinary efforts".

2.2 The effect of crises on living standards in the literature

No one doubts the effect of the crises on the deterioration of living standards. There are, however, differences in the dimension and the measure of the dimensions that experts focus on when analyzing the effects of the crises.

An important measure of standard of living is employment. When analyzing the effects of a crisis, one cannot ignore the situation of employment. Many research work analyze the labor market effect of the financial and economic crisis began in 2007 as well as of the crisis caused by COVID-19. By analyzing countries of the European Union in 2007 and 2011 and using several data sources including Eurostat and the distance P2 methodology, Somarriba Arechavala (2015) concluded that most of the European Union member states experienced a drop in employment. Motellón – López-Bazo (2015) analyze the labor market effect of the same crisis in Spain, with special regard to its labor market effect on immigrants and native workers separately. Using data from the Spanish Labor Force Survey for the years 2008, 2009 and 2012 and estimations by maximum likelihood using a probit with sample selection model, they conclude that dismissal rates increased in both groups of workers, and they were higher for immigrants. The negative labor market effect of the COVID-19 crisis is also inevitable. Egger et al. (2021), by analyzing nine low and medium income level countries using a sample of 30,000 respondents concluded that the COVID-19 pandemic resulted in a decline in employment.

Crises has an impact also on poverty. The decrease in living standards due to the crises is experienced most by the most vulnerable groups of the population (Papatheodorou 2015). Habib et al. (2010), using a microsimulation approach built on pre-crisis household data, found that the financial crisis increased both the level and the depth of aggregate poverty in some selected countries (Bangladesh, Mexico and the Philippines). Poverty increased not only in the developing countries, but also in the European Union. (Duiella – Turrini 2014). Duiella – Turrini (2014), using Eurostat data and correlation and regression analysis, revealed that across EU countries, it was severe material deprivation that rose the most as it is found to be correlated with economic cycle. Relative poverty, however, appears less dependent on economic cycle. Instead, it is strongly correlated with Gini coefficient. Petrakos et al., (2023) assessed the effects of the economic crisis of 2007-2009 and the health crisis of COVID-19 among the Greek population, using the study of income inequality and the poverty rate. The study pointed out that alternative indicators of inequality and relative poverty worsened during the crisis years. Indicators used by the authors: Gini coefficient, relative poverty, unemployment rate, GDP, etc.

Crises, especially those related to pandemics, have severe consequences also on health. This effect seems to be unequal, affecting more the already poor population. Exposure to infection affects the poor more because they usually have low paid, physical work that cannot be done from home. Moreover, because of the high level of pre-pandemic illnesses, poorer people are likely to be more vulnerable to severe diseases once infected (Whitehead et al. 2021).

2.3   Applied methodology

The comparison of Romania and Hungary regarding the effects of the crises on living standards is carried out with statistical data. The data are extracted from Eurostat, the Hungarian Central Statistical Office (HCSO), and the National Institute of Statistics of Romania (NISR). Most of the data are available at the NUTS 2 level but for GDP per capita, which is available at the NUTS 3 level. The 42 NUTS 3 regions in Romania and the 20 NUTS 3 regions in Hungary provides appropriate sample sizes to compare the economic performance during crises in the two countries with statistical tests. To make the comparisons, F and t tests are used with SPSS programs. F tests are used to compare variances and then t tests are used to compare the means and to reveal whether the differences in the economic performances between the countries are significant or not.

Data for the other dimensions of living standard (poverty, health, labor market conditions, education) are available at the NUTS 2 level. As Hungary has only 8 NUTS 2 regions, the sample size would be too small for statistical analysis. In the case of these dimensions, comparison of the two countries is carried out with descriptive statistics. Line charts and bar charts highlight any differences in the dimensions of the living standards during the crises.

3   THE EFFECT OF CRISES ON LIVING STANDARD – EMPIRICAL ANALYSIS

3.1   Economic performance during crises

Figure no. 1 highlights that both examined crises caused a remarkable economic recession (measured with percentage change in GDP per capita) in Romania and also in Hungary. The extent of the recession seems to be nearly the same in 2009 in spite of the fact that

the economic growth was much higher in Romania (around 25-30%) than in Hungary (around 5-10%) before. The financial crisis of 2008 resulted in an economic recession of more than 10% in 2009. Recovery after the recession took place in different ways in the two examined countries. In 2010, economic growth was higher in Hungary, implying that recovery started there a bit sooner. One year later, however, the Romanian economic performance was better than the Hungarian one. To test whether the differences between the two countries are significant or not, t tests were performed. The test values (Table no. 2) show that economic performance was significantly different in 2008. After the crisis (from 2009), the differences are not significant.

Figure no. 1 Change in per capita GDP in Romania and Hungary, 2001-2021
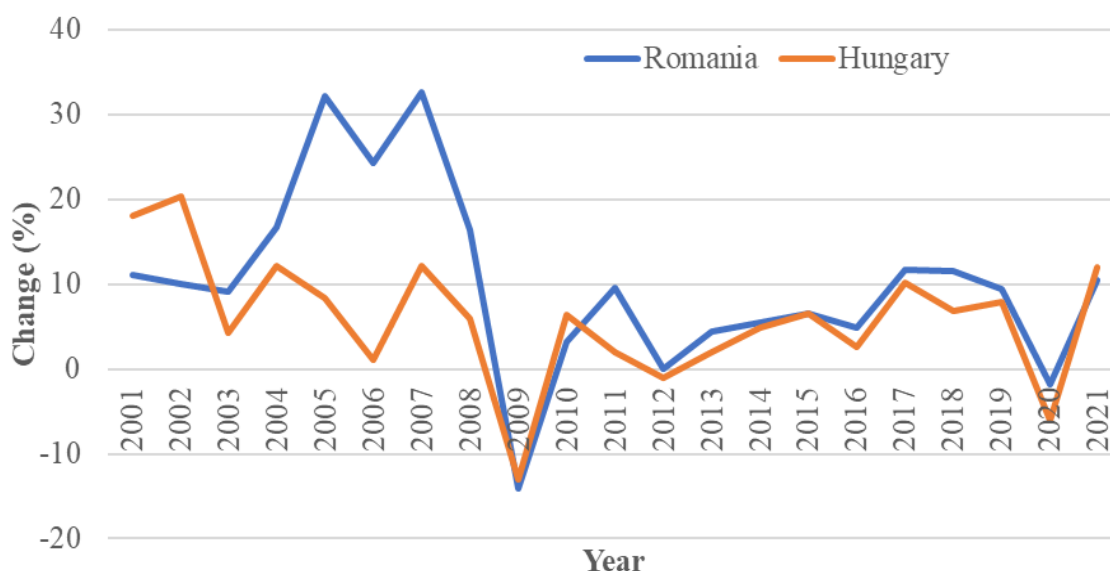
Source: authors own compilation based on Eurostat data

The analysis of the effect of the COVID-19 shock is possible only with GDP per capita data for 2020 as more recent data are not yet available. Figure no. 1 shows a decrease for both countries and t test values indicate that the difference between the two countries was significant. Economic decline was significantly higher in Hungary than in Romania.

Table no. 2 – Comparison of the effect of the examines crises on per capita GDP with t test in Romania and in Hungary

	The effect of the 2008 financial crises				The effect of COVID-19
	2008	**2009**	**2010**	**2011**	**2020**
t value	-5.91	-0.437	2.837	-1.168	-3.731
t sig	0.00	0.664	0.006	0.248	0.000
Mean for Hungary	5.51	-14.17	6.84	3.39	-5.44
Mean for Romania	13.73	-13.65	2.22	5.79	-0.78

Source: authors own compilation

3.2 The impact of the crisis on poverty and exclusion

In order to examine poverty and exclusion, in the case of Romania and Hungary, we used the internationally accepted indicators AROPE and GINI.

The subjects of the AROPE indicator are people who are in one of the following situations: they have an income below the poverty line, they are in severe financial and social deprivation, they live in a household with a very low work intensity. Taking these into account, and based on the data provided by the Romanian and Hungarian statistical offices, poverty and exclusion in Romania and Hungary evolved according to Figure no. 2 in the 2015-2021 period (both statistical offices and Eurostat data go back with recalculated values to only 2015, using the new calculation method). As data for AROPE are available from 2015, its evolution during the 2008 financial crisis cannot be examined.

**Figure no. 2 Evolution of the AROPE indicator in Romania and Hungary, 2015-2021**
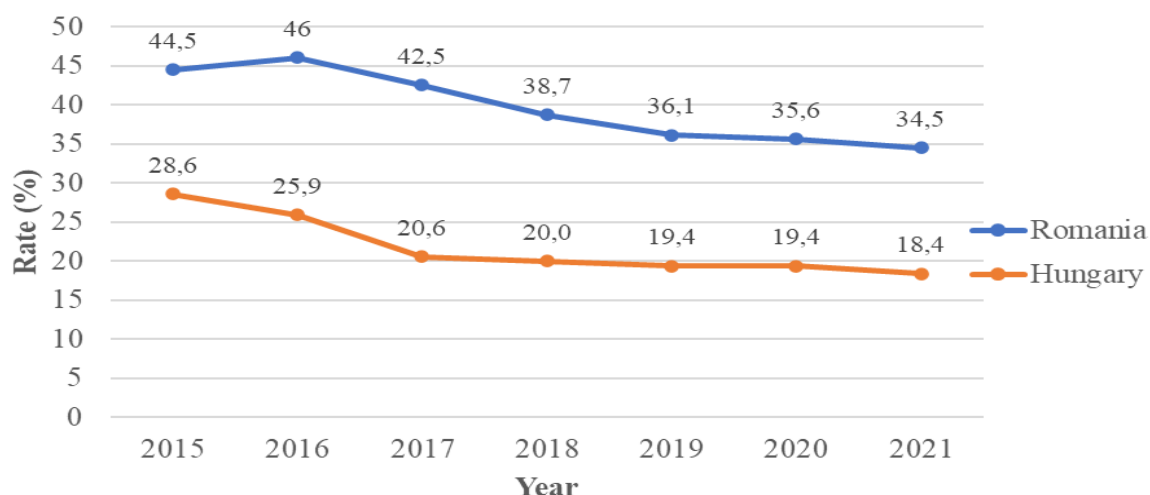
Source: authors own compilation

As Figure no. 2 highlights, the two analyzed countries show a continuous decrease trend in the AROPE value. Romania registers a very high level of poverty, although from 44.5% in

2015, it manages to decrease even by 10%, reaching 34.5% in 2021. Surprisingly, the COVID-19 pandemic did not increase AROPE neither in Romania, not in Hungary.

Comparing with the average level of the AROPE value for the Union European (EU) of 21.6% in 2022 (Figure no. 3), Romania unfortunately presents the worst situation, lagging even behind Bulgaria and Greece in this regard. On the other hand, Hungary is in a fairly good position, having a value of 18.4% of the AROPE indicator in 2022, being next to countries like Austria or Sweden.

Figure no. 3 Persons at risk of poverty or social exclusion in EU (2022)
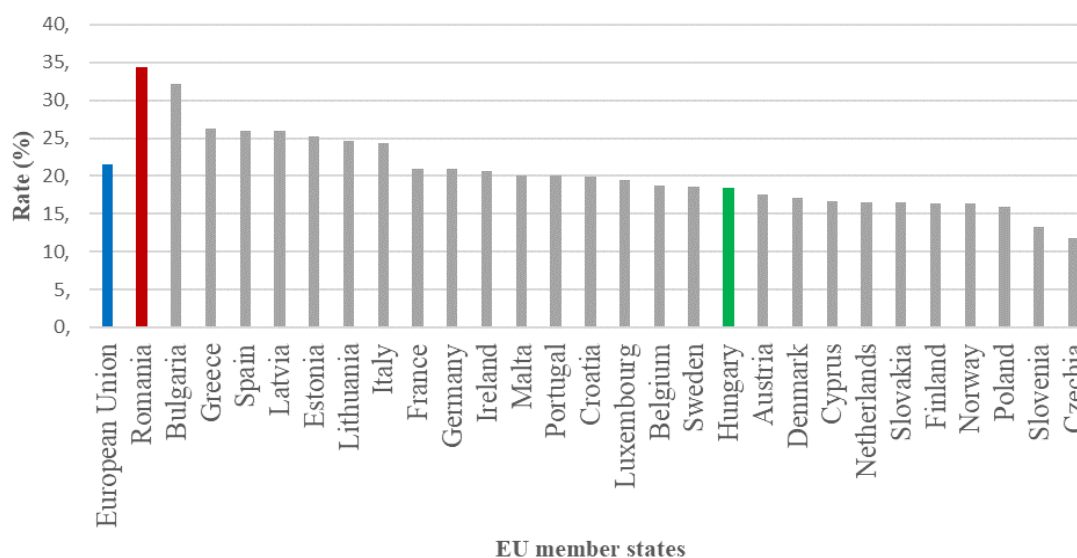

*Source: Eurostat database (*https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Living_conditions_in_Europe_-_poverty_and_social_exclusion*)*

In order to get to know the situation of poverty and social exclusion better, Gini index can also be used . It measures the distribution of income and wealth inequality. This is also an important index in characterizing the standard of living. When two countries are compared, the one with the higher Gini index is considered more unequal. Its extreme values are zero as complete equality and one as complete inequality.

Figure no. 4 shows the evolution of the GINI index in Romania and Hungary, in the period 2007-2021. In this case, Romania presents more worrying values than Hungary, indicating an unequal distribution of income close to 35%, Hungary having values below this rate, meaning a more equal distribution of income. Although in the almost 15 analyzed years, a decrease in the value of the coefficient can be observed in Romania, there is a very high level in 2015. An explanation would be the fact that income values increased for all social categories, the increase in inequality being the result of the increase at a lower rate of low incomes compared to high incomes (www.bnr.ro). The 2008 financial crisis increased inequalities in Hungary from 2010. The increase from 2009 to 2010 is considerable. After the beginning of the COVID-19 pandemic, however, no rise in inequalities can be seen in the examined countries. It might be due

to the measures of the authorities or tot he fact that effects on social indicators of a crisis can usually be experienced with a time lag. timp.
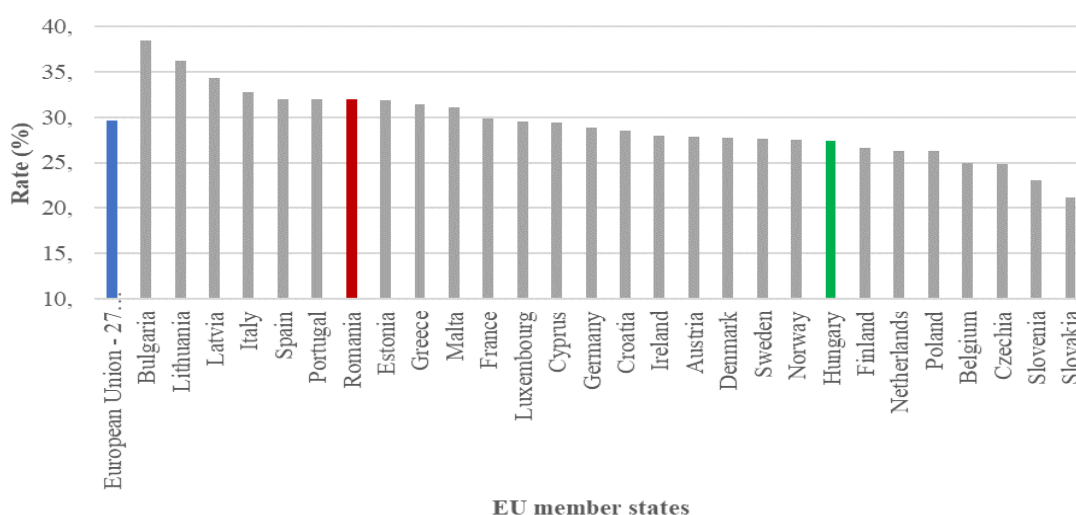
Figure no. 4 Evolution of the GINI rate in Romania and Hungary, 2007-2021
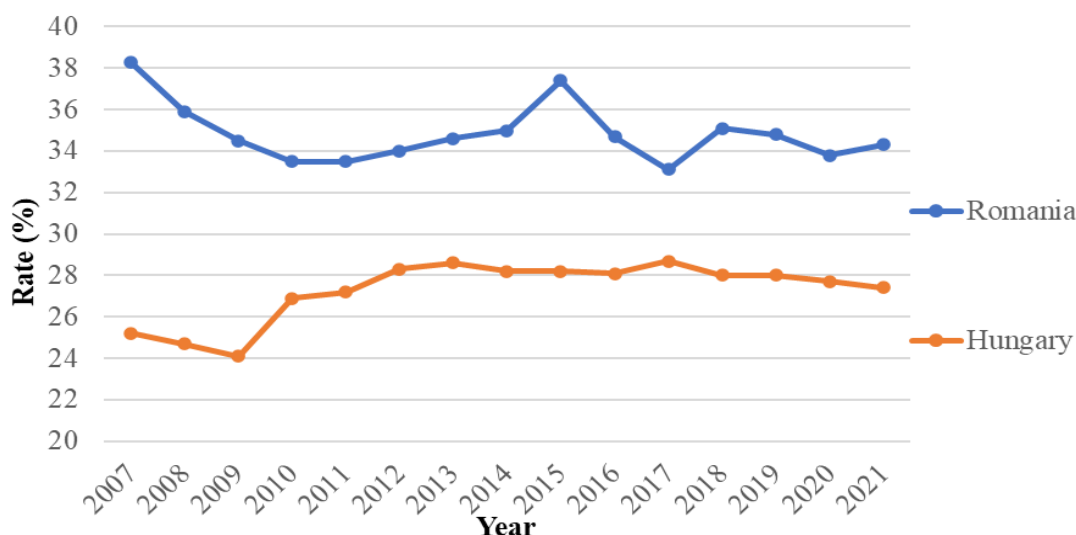
Source: authors own compilation

In order to have a clearer picture of the income inequality situation in the EU, respectively, where the two studied countries fall, Figure 5 presents the GINI values of the EU member states for the year 2022.

Figure no. 5 Level of the GINI index in EU countries, 2022

Source: authors own compilation, based on Eurostat database
(https://ec.europa.eu/eurostat/databrowser/view/ilc_di12/default/table?lang=en)

The European average of the GINI index is below 30%, which Romania exceeds, but Hungary is below this level.

Regarding income inequalities in the population, a discrepancy, a greater inequality is observed in Romania. Table no. 3 (Romania) and Table no. 4 (Hungary) include average incomes per person in 2022, by deciles (Romania) and quartiles (Hungary).

Table no. 3 Average income per person in Romania by deciles, in 2022

Romania	Average income per person (lei)	Ratio to D1
D1	789.4	1.00
D2	1,339.8	1.70
D3	1,612.6	2.04
D4	1,859.6	2.36
D5	2,080.4	2.64
D6	2,396.6	3.04
D7	2,822.4	3.58
D8	3,366.6	4.26
D9	4,178.5	5.29
D10	6,622.8	8.39

Source: coordinates of the standard of living in Romania
(https://insse.ro/cms/sites/default/files/field/publicatii/coordonate_ale_nivelului_de_trai_in_romania_2022.pdf)

Between the average incomes per person in the first and last decile there is a ratio of 1:8.39, which means that people in the last decile have an income eight times higher than people in the first decile.

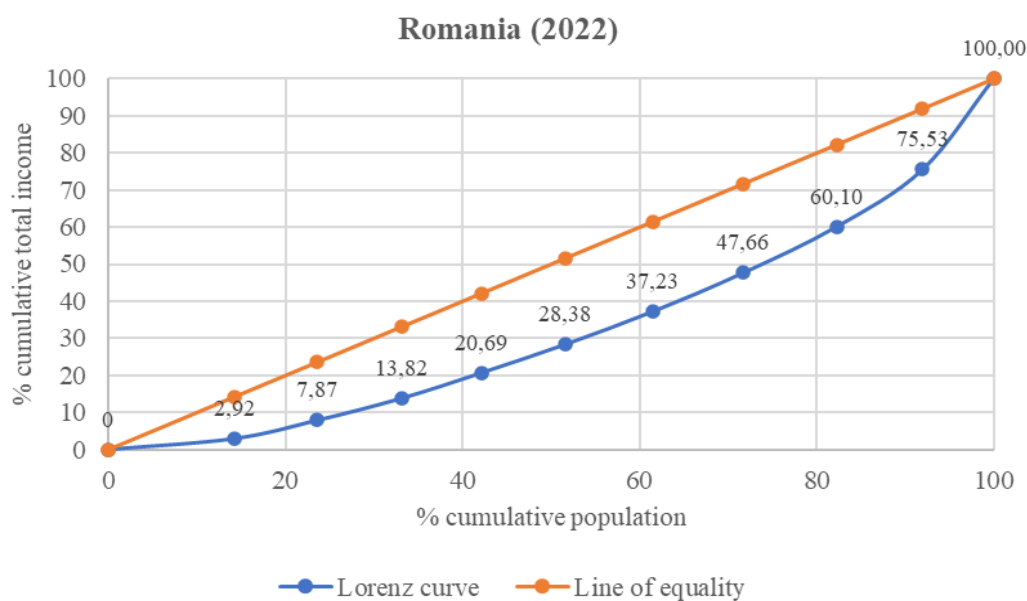**Table no. 4 Average income per person in Hungary, by quartiles, in 2022**

Hungary	Average income per person (HUF)	Ratio to C1
C1	925.667	1,00
C2	1.475.880	1,59
C3	2.015.348	2,18
C4	2.507.107	2,71
C5	4.298.100	4,64

Source: authors own compilation, based on https://www.ksh.hu/stadat_files/jov/hu/jov0055.html

Compared to Romania, there is a much smaller gap between the first and the last quartiles in Hungary , of 1:4.64, which means that the people in the last quartile have an income approximately 5 times higher than the people from the first quartile (compared to Romania, where the ratio was 1:8.49).
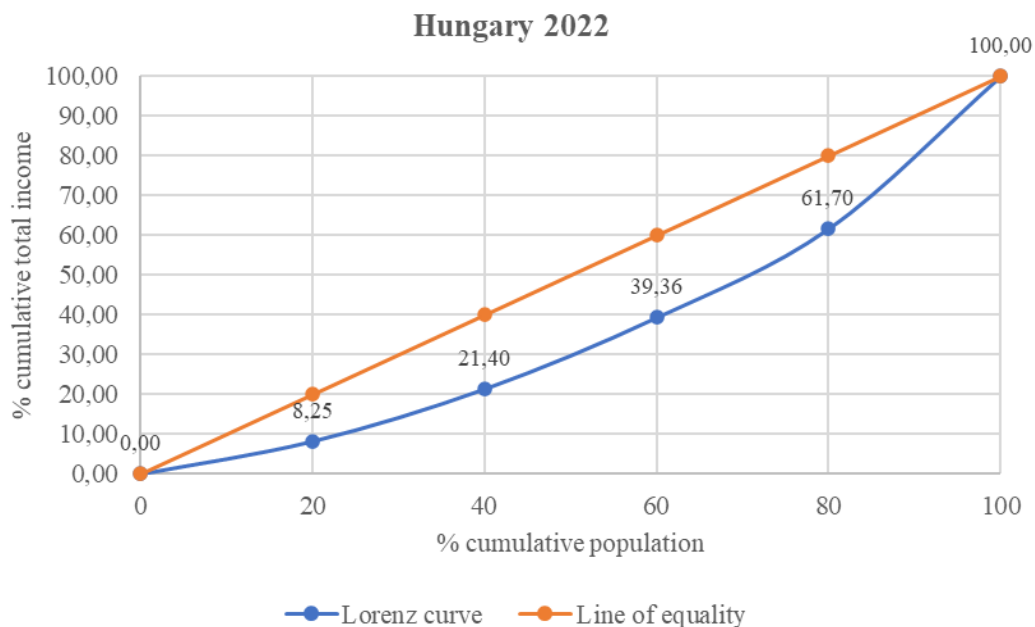
Income inequalities can be represented and analyzed very well with the help of the Lorenz curve (Figure no. 6 and Figure no. 7), which on the one hand (horizontal axis) reflects the population starting from the poorest to the richest, respectively on the other hand (vertical axis) the cumulative income of the population (both expressed as cumulative percentages).

Figure no. 6 Lorenz curve of income distribution in Romania, 2022

Source: authors own compilation based on data from NIS from Romania
(https://insse.ro/cms/ro/content/coordonate-ale-nivelului-de-trai-%C3%AEn-rom%C3%A2nia-veniturile-%C5%9Fi-consumul-popula%C5%A3iei-%C3%AEn-anul-2022)

**Figure no. 7 Lorenz curve of income distribution in Hungary, 2022**

Source: authors own compilation based on data from NIS in Hungary
(https://www.ksh.hu/stadat_files/jov/hu/jov0052.html)

The closer the Lorenz curve is to the diagonal, the more equality is achieved in society. Based on the figures, the inequality of income distribution is higher in Romania than in Hungary: the area between the diagonal and the Lorenz curve is larger, the Romanian curve moves further away from the diagonal. The biggest difference is observed in the poorest population: in Romania the poorest 20% of the population owns 6.68% of total income, while in Hungary the first 20% of people own 8.25% of total income (or 60 % of the population owns 36.32% of total revenues in Romania, while in Hungary this percentage is 39.36%).

3.3   The impact of the crisis on the labor market

Crises also have a direct impact on the labor market. One of the most important indicators in this regard is the unemployment rate. As it can be seen in Figure no. 8, the evolution of unemployment rate in Romania and Hungary was very fluctuating during the past 20 years.

Figure no. 8 Evolution of unemployment rate in Romania and Hungary, 2002-2022
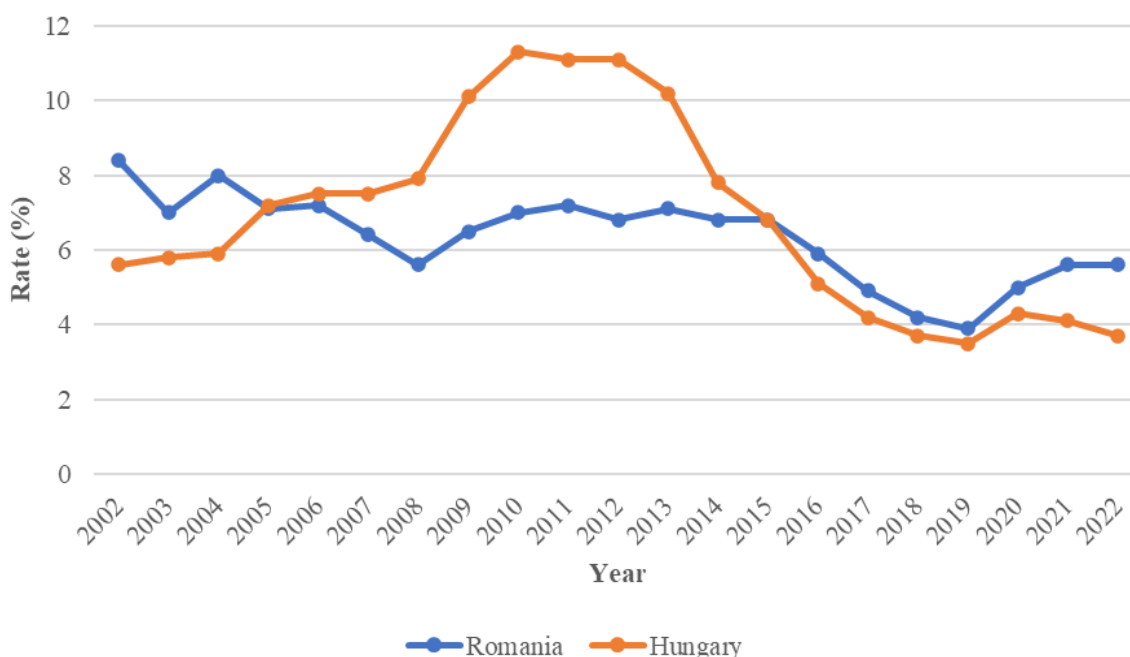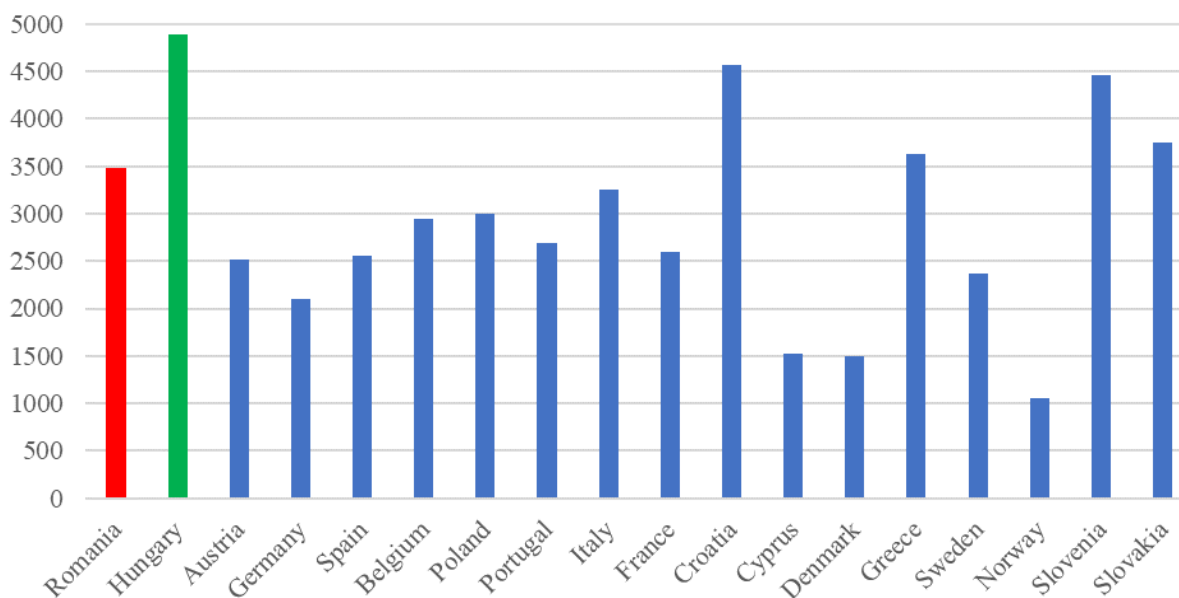

Source: authors own compilation, based on national statistical institutions database from Romania and Hungary

The figure above clearly shows the effects of the crises: in the period 2009-2011 the unemployment rate increased in the two countries, respectively a similar effect is also observed during the COVID-19 pandemic (years 2020-2021). More significant fluctuations are observed in the case of Hungary, which recorded a much higher level of the unemployment rate in the period after the financial crisis of 2008, than Romania, until 2015, after which the situation improved a lot, reaching a level of unemployment lower than Romania.

3.4   The impact of the COVID-19 crisis on the population

The COVID-19 pandemic that engulfed the entire world has had a major impact on the health of the population, has led to a very large number of deaths worldwide, affecting the heath, mental, and economic situation of the population. The ordinary life of people was turned upside down and changed from several points of view (social relations, way of life, the transition of several activities online, etc.), but also the economic activity, the economic-financial performance of economic agents suffered significant damages. Of all the effects, the loss of human life was the worst effect of the pandemic. According to Our Word Data (https://ourworldindata.org/covid-deaths), the total number of deaths (caused by the COVID-29 virus) registered in European countries, per one million people, is presented in Figure 9. The data have been collected since January 2020 (up to today, November 2023).

Figure no. 9 The total number of deaths (per million persons) registered in European countries in the period 01.2020 – 10.2023
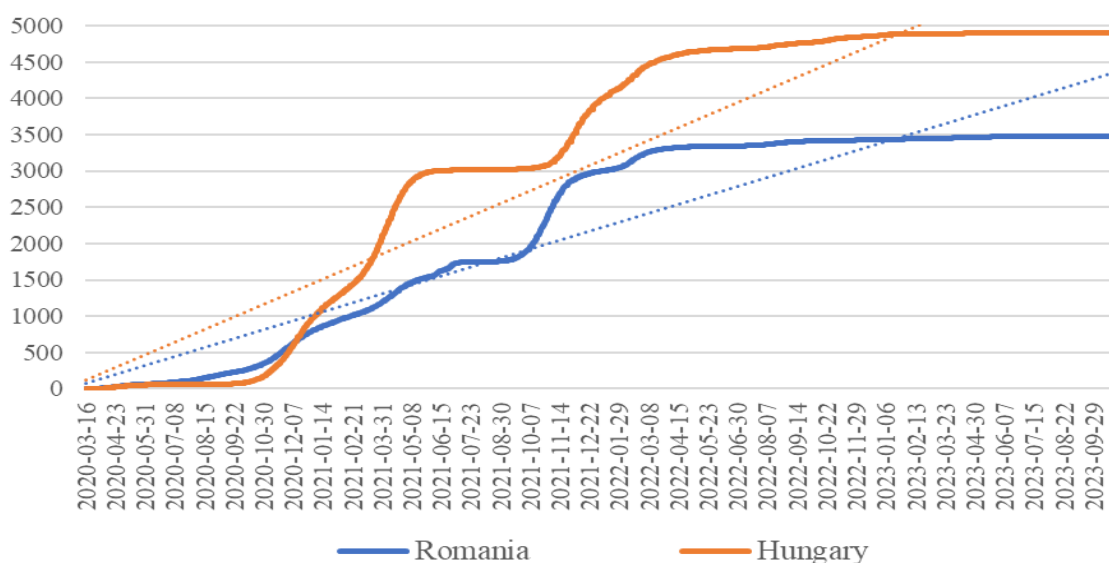

Source: authors own compilation based on https://ourworldindata.org/covid-deaths

Figure no. 9 shows that the number of cases differs from one country to another, but unfortunately the high number of deaths was recorded in Hungary (4,897 people compared to one million people) stands out. A similar number of deaths are also recorded in Croatia and Slovenia. Romania has a total number of deaths of 3,482 people, being a number slightly above the EU average. The fewest deaths were reported in Cyprus, Denmark and Norway. Among the factors that influenced both directly and indirectly the number of deaths are the measures introduced by the authorities, the number of vaccinated people, the population density, the level of education of the population in terms of personal hygiene, the age structure of the population, the level of health of the population before the pandemic, the national health system, the level of poverty, etc.

Referring to the number of deaths per one million people (Figure no. 10), as can be seen also in Figure no. 9, Hungary registers a very high number of deaths, compared to Romania, but also compared to other European countries. Since the beginning of the pandemic, but especially since January 2021, the number of deaths in Hungary has exceeded the number of deaths in Romania, reaching close to 5,000 deaths/one million people.

Figure no. 10 Evolution of the number of deaths reported per one million people in Romania and Hungary in the period 2020-2023

Source: authors own compilation, based on https://ourworldindata.org/covid-deaths

Hungary, between October 2020 and April 2021, shows an exponential evolution of deaths, much more drastic than in Romania. A somewhat similar situation (in both countries) is observed in the fall of 2021 - the winter of 2022, more pronounced increases, after which the situation improved.

4 CONCLUSION

Our paper compared the effects of two crises in Romania and in Hungary: the 2008 financial crisis and the COVID-2019 pandemic.

The comparison of Romania and Hungary highlighted that Romania has to face with higher unemployment, poverty, exclusion, and inequalities.

Both of the two examined crises had considerable effect on the living standards in Romania and in Hungary. The comparison between the two countries highlighted that after the financial crisis of 2008, a similar economic decline could be seen in both countries. During the COVID-19 pandemic, however, economic recession was significantly more severe in Hungary than in Romania.

The two examined crisis on the social indicators affected Hungary more than Romania. Both Gini coefficient and the unemployment rate increased to a higher extent than in Romania.

When more recent data are available, the analysis should be extended to examine the changes in the living standard in 2021 and 2022 as well to reveal the consequences of the COVID-19 pandemic. An interesting question would be to reveal the economic and social effects of the war in Ukraine that will be possible with data from 2022 or 2023.

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