

CASCADING CONSEQUENCES OF UNEMPLOYMENT

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Abstract: *Combating poverty represents one of the challenges of the modern economy and Europe's geopolitical situation contributes to worsening this problem. Economic growth and employment rate are determinants of the level of poverty in a society. Unemployment and its consequences are widely approached both in economic literature and in sociology and psychology. In the first part of the paper, we carried out a conceptual presentation of the economic and social consequences of unemployment at the national, individual, and family level. In the second part, starting from Okun's law, we made an analysis of the relationship between the gross domestic product and unemployment rate for the period from 2005-2022 in Romania. In order to carry out the research, we used a series of statistical data regarding the unemployment rate available in the Monthly Bulletins of the National Bank of Romania (NBR) and data on GDP available on the website of the National Institute of Statistics of Romania (NIS). We worked with data regarding the situation in Romania from the first quarter of 2005 – fourth quarter of 2022. The conclusions of the paper converge towards the idea that unemployment is, nowadays, an increasingly complex phenomenon, being generated by a multitude of factors and which, in turn, determine multi-level direct and indirect consequences.*

Keywords: *unemployment, gross domestic product, statistical analysis*

JEL Classification: E24, A13, I24, I32

1. Introduction

One of the main consequences of unemployment is the fall of the standard of living and often poverty, a scourge that affects not only an increasing number of people and families, but also generates increasing inequalities.

Studies on the causes of poverty have taken a particular scale. Some authors consider that poverty is a vicious circle (Bauer, 1965) and breaking it is possible by changing the attitude and the competences, Ragnar Nurske states that the scourge of poverty cannot escape underdeveloped countries: “A country is poor, because it is poor.” or

“Because it is poor, the country does not develop; because it does not develop, it remains poor.” (Nurske, 1953, p.898). After studying the causes of poverty, several authors demonstrated that the level of economic development, the situation of the labour market, the employment rate and unemployment (Zamfir, 1998; Paraschiv, 2008; Ştefănescu and Pop, 2016) are factors that generate the reproduction of poverty.

The latest EUROSTAT data available on the incidence of risk of poverty for the population of the EU Member States highlight the seriousness of this problem among the Romanian population. Research shows that Romania has had every year, since 2014, over 30% of the population at risk of poverty or social exclusion and, in the last five years (Table no. 1), it occupies the leading places in this ranking competing for the first and second places with Bulgaria.

Table 1: Rate of people at risk of poverty or social exclusion in Romania and EU

Year	People at risk of poverty or social exclusion in Romania	People at risk of poverty or social exclusion in EU	Romania's position
2017	35.7%	22.4%	II.
2018	32.8%	21.7%	I.
2019	32.5%	21.1%	I.
2020	35.6%	21.9%	I.
2021	34.4%	21.7%	I.

Source: Prepared based on Eurostat data

The scourge of poverty haunts Romania although studies conducted by the European Commission (2022) show that the labour market has had good results, despite the COVID-19 pandemic. The data published by the National Institute of Statistics of Romania (NIS) show that the employment rate increased from 65.2% in 2020 to 67.1% in 2021, but in the fourth quarter of 2022, this rate was 62.8%, down from the previous periods, which led to an unemployment rate in the fourth quarter of 2022 of 5.8%, up by 0.4 percentage points compared to that recorded in the third quarter of 2022. Hence, unemployment is a phenomenon that requires an increased attention even at times when there are more favourable results.

Economic growth is reflected in the growth of the gross domestic product, but the factors that determine the GDP growth are very different. The studies conducted by Boldeanu and Constantinescu (2015) showed that natural resources, capital goods, human resources and technology are determinants of economic growth. Anghelache (2006) considers that there are four fundamental variables that can be used to measure the level of development of a country's economy: the growth rate of gross

domestic product, the unemployment rate, the inflation rate, and the current account balance of the balance of payments. Other authors (Simionescu, M. et al, 2017) showed that the growth rate of the gross domestic product is the main indicator used in assessing the performance of each economy.

Expert studies (Townsend 1979, Zamfir 2001, Ștefănescu 2016, INS, Eurostat) show that employed people are more protected from the danger of poverty than those unemployed or inactive, but also within these two categories a variety of situations can be noted.

At national level, unemployment influences the dynamics of the GDP size, in the sense that, on one hand, the training, qualification and retraining of the unemployed people involve costs that will not be recovered in the situation of the long-term unemployment (Stana, Roșca, 2010), and the employed active population does not contribute to the GDP growth.

2. Consequences of unemployment

Unemployment is a concept with a high degree of interdisciplinarity and there is an extensive literature in economics, sociology and psychology that deals with the effects of job loss on individuals and on the entire society. Studies regarding the consequences of unemployment show that this malady of contemporary economies has generally negative effects on economic development, effects that can manifest directly and indirectly. Helliwell, J. F., & Huang (2014) based on two surveys conducted in the U.S.A. consider that the indirect effects of unemployment are substantially higher than its direct costs on the well-being of the population. They showed that an increase of one-percentage point in local unemployment has an effect on well-being (subjective well-being) close to that of a 4% drop in household income. Saunders, P. (2002) following a study conducted in collaboration with the Academy of the Social Sciences in Australia showed that unemployment has costs and effects at three distinct levels: at the level of the unemployed people, at the level of their families and at the level of the entire society facing mass unemployment.

The intensity of the unemployment effect depends on a number of variables: personal characteristics, the individual's ability to adapt, social support, education or ethnicity, as well as the predominant economic climate in which the unemployed people live.

2.1. Economic consequences of unemployment

Eardley, T. (2002) analysing the consequences of unemployment separated the economic and social costs.

The most important economic consequence of unemployment is the incomplete use of the labour force, meaning the costs on the growth, education and training of the labour force, which cannot be recovered in conditions of full employment. If we consider the structural unemployment, of inadequacy, another consequence is also represented by the malfunctions in the economic activity generated by the shortage of labour having a certain qualification, respectively the costs with the qualification of labour force.

At the governmental level, additional costs arise due to the expenses on supporting the unemployed people and their families, namely unemployment benefits, as well as significant losses of taxes and social security income.

Furthermore, at the macroeconomic level, a direct relationship between the unemployment rate and the gross domestic product is found.

2.1.1. Analysis of the GDP correlation and unemployment rate

Next, we want to make an analysis of the relationship between the GDP growth level and the unemployment rate, a relationship first studied in 1962 by the American scientist Arthur Melvin Okun, who demonstrated the existence of a reverse (negative) correlation between the economic growth and the unemployment rate. This correlation is known as Okun's Law (Savelieva, 2016) and shows that the annual GDP growth by 2.5-2.7% keeps the number of unemployed at a constant level, and each additional 2% growth of the GDP contributes to the reduction of the unemployment by 1%. Okun's researches refer to a certain period of time and a certain country (USA), and the researches of the mentioned legalities from other countries have proven that the possibility of using this law depends on the real social and economic conditions, the particularity of the mechanisms of market relations and the level of economic development.

The existence of the interdependence between GDP and unemployment rate was analysed by C. I. Turturean, using data on the Romanian economy in the period from 1992-2004. He concluded that “the approach to modelling reciprocal and unique two-way relationship between GDP’s growth rate and unemployment rates’ growth presented in the original form of Okun's Law (1962) does not work for the Romanian economy for the period 1992-2004.” (Turturean 2007, p.221).

In view of the above, we have decided to create a model in which we include indices of volume (%) of the gross domestic product compared to the corresponding quarter of the previous year, and the unemployment rate. The unemployment rate was analysed as both a dependent and an independent variable.

In order to carry out the research, we used a series of statistical data regarding the unemployment rate available in the Monthly Bulletins of the National Bank of

Romania and data on GDP available on the website of the National Institute of Statistics of Romania. We worked with data regarding the situation in Romania from the first quarter of 2005 – fourth quarter of 2022.

2.1.2. Descriptive indicators determined for the two variables

Before verifying the correlation between the unemployment rate and GDP, we performed an analysis on each indicator.

The histograms of the evolution of the two indicators are presented in Charts 1 and 2.

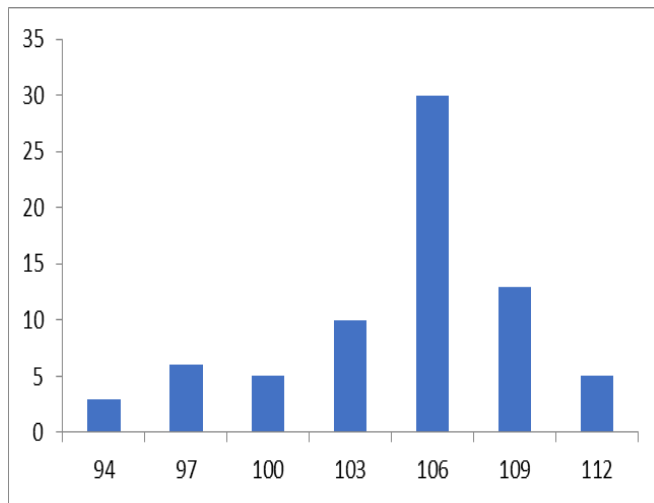


Chart 1: Histogram of the evolution of the Gross Domestic Product in the period from 2005-2022
Source: Prepared by the authors based on the data from the NIS

<i>GDP</i>	
<i>2005 - 2022</i>	
Mean	103.47
Standard Error	0.52
Median	104.06
Mode	#N/A
Standard Deviation	4.45
Sample Variance	19.78
Kurtosis	0.10
Skewness	-0.63
Range	19.41
Minimum	92.06
Maximum	111.47
Sum	7449.74
Count	72

In the table next to the histogram, related to GDP, we can read the following results:

- during the analysed period, GDP varies between the minimum value of 92.06% and the maximum value of 111.47% and the mean is 103.47%.
- given that for the mode value we have not achieved any results, in the table above, the GDP values are not repeated
- the median, which divides the ranges of variation into two parts, has the value of 103.91%
- the standard deviation, measure of the scattering of the values of the variable from the mean value, is 4.45, so we could say that the scattering of values is quite large
- the coefficient of variation is 4%. The value of the variation coefficient being less than 40%, we say that the population is homogeneous, and the mean is representative of the population.

- the coefficient of asymmetry (Skewness) has a negative and subunit value, so the series shows a negative asymmetry or to the right
- the value of the vaulting coefficient (Kurtosis) is less than 3, the series is platykurtic

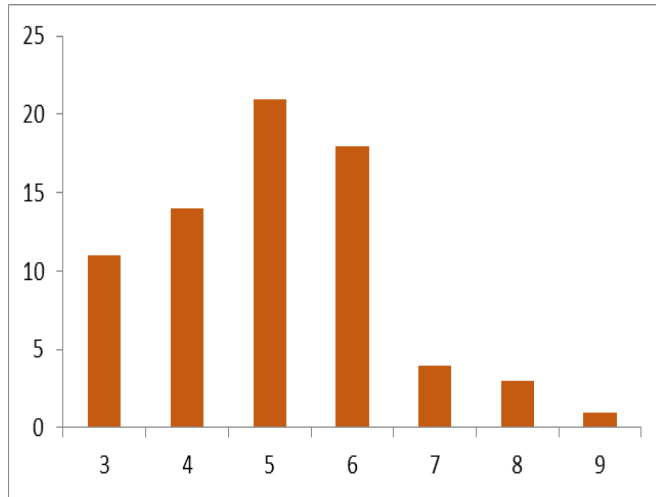


Chart 2: Histogram of the evolution of the unemployment rate in the period from 2005-2022

Source: Prepared by the authors based on the NBR data

<i>Employment rate</i> 2005 - 2022	
Mean	4.66
Standard Error	0.15
Median	4.80
Mode	3
Standard Deviation	1.30
Sample Variance	1.69
Kurtosis	0.17
Skewness	0.57
Range	5.70
Minimum	2.70
Maximum	8.40
Sum	335.29
Count	72

In the table next to the histogram, related to the unemployment rate, we read the following results:

- during the analysed period, the unemployment rate had a variation between the minimum value of 2.7% and the maximum value of 8.4% and the mean value is 4.66%.
- the mode value is 3, so the level of 3% is reached most times during the analysed period
- the median, which divides the ranges of variation into two parts, has the value of 4.80%
- the standard deviation is 1.30, so the scattering of the values related to the unemployment rate is lower compared to the values of GDP
- the coefficient of variation is 28%. As in the case of GDP, the value of the coefficient of variation being less than 40%, we say that the population is homogeneous and the mean is representative of the population.
- the asymmetry coefficient has a positive and subunit value, the series shows a positive asymmetry or to the left
- the Kurtosis value being less than 3, the series is platykurtic

Based on the collected data, the interdependence of the two indicators is presented in Chart 1. It can be noted that GDP in the last 17 years had a fluctuating evolution, but generally positive, with a fluctuation in the period from 2008-2009 when the economic and financial crisis manifested, fact that repeats itself, because 2020 represents an inflection point in the evolution of GDP, the trend changing for the next period due to the effects of the pandemic crisis and the economic and financial crisis. Furthermore, we note that the unemployment rate was falling except during the crisis period of 2008-2010. Although GDP has had a drastic drop during the pandemic period, it has not intensely influenced the unemployment rate, with only a small increase observed after 2020.

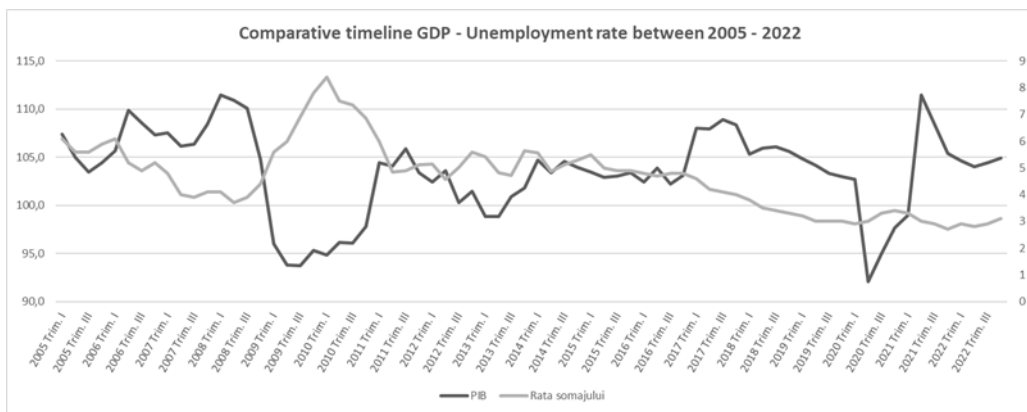


Chart 3: Gross domestic product and unemployment between 2005-2022

Source: Prepared by the authors based on the NBR and the NIS

In order to be able to follow and interpret the correlation between the gross domestic product and the unemployment rate, we have drawn up Chart 4.

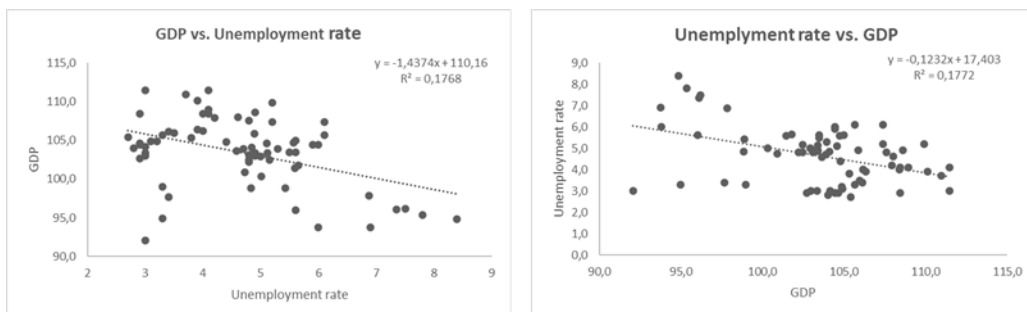


Chart 4: The correlation between gross domestic product and unemployment rate

Source: Prepared by the authors

In Chart 4 we can see that the cloud of points corresponding to the values recorded by the two macroeconomic indicators studied is quite grouped, so we can say that

there is a connection between the two variables. In the case of the two indicators, we can speak of a stochastic connection, because both the unemployment rate and GDP also depend on other factors that we do not take into account in this analysis.

In order to generalize the obtained result, for the correlation coefficient, at the level of the total population, we used the Fisher Test. After carrying out the test, we can say that the linear model of interdependence between the unemployment rate and GDP is valid for the entire population of values, the connection is found, even mutual, between the two variables at the level of a whole population of values of the two variables and not only for the chosen samples.

Thus, the function of dependence of the unemployment rate on the increase or decrease of GDP can be mathematically written as follows:

$$RS = -0,123188658 \cdot PIB + 17,40296864 + \varepsilon \quad (1)$$

By performing the mutual analysis, that is, of the dependence of the gross domestic product on the changes in the unemployment rate, we obtain an almost similar relationship of dependence:

$$PIB = -1,43742341 \cdot RS + 110,16129086 + \varepsilon \quad (2)$$

In order to test the significance of the regression equation parameters, we used the Student Test in order to ensure that the regression equation parameters do not take values very close to zero, at the level of the entire population of values. The probability that the value of the correlation parameter will be zero is 0.00023, a value obtained both for the dependence of the unemployment rate on GDP and in the mutual case of dependence of GDP on the unemployment rate. Therefore, we can firmly state that there is an interdependence between the two parameters.

It can be stated that similar to the period between 1992-2004 analysed by C.I Turturean (2007), Okun's law does not work for the Romanian economy including the period from 2005-2022.

2.1. Social consequences of unemployment

Studies carried out on the effects of unemployment have brought together a variety of empirical evidence on the social costs of unemployment, including its impact on the health and psychological state of those affected: the unemployed themselves, their families and the entire community facing the problem of the lack of employment. The most common consequences are (Eardley, P., 2002, p.47):

- social exclusion
- loss of skills
- psychological harm and distress
- ill health and reduced life expectancy
- criminal behaviour
- the undermining of human relation and family life
- housing stress and homelessness
- racial and gender inequality
- loss of social values and responsibility

Other authors have pointed out that long-term unemployment, especially among young people, can even generate acts of violence, delinquency, can accentuate crime, with impact on the whole of society. It has been shown that there is a connection between unemployment and population's poor health, increasing the risk of suicide or mental disorders (Dooley, D, Fielding, J., Levi, L., 1996).

A recent study conducted in Greece, one of the most affected EU countries in terms of unemployment, showed that parental unemployment was associated with a decrease in school performance of the family's children. Teenagers' school performance has worsened especially in the case of those from families who have experienced maternal unemployment and the family had a more precarious financial situation (Drydakís, N.,2023). In Sweden, a similar request was performed among students (Mörk, E., Sjögren, A., & Svaleryd, H., 2020) and the results showed that paternal unemployment did not, but maternal unemployment negatively affected students' grades.

Unemployment negatively affects morale and health, making the prospect of re-employment less probable, while at the same time leading to attitudes that reinforce isolation from the world of work that shapes people's lives (Sounders, P 2002).

3. Conclusion

Nowadays, unemployment is an increasingly complex phenomenon affecting in cascade the unemployed people, their families, the communities in which they live and their country through the relationship between unemployment and gross domestic product. A vicious circle often arises, which can be surpassed through carefully targeted policies according to the types of unemployment, through continuous education and training and by making the educational offer compatible with the requirements of the labour market.

A special attention must be paid to long-term unemployment and also to maternal unemployment, which has a negative impact on children, often leading to a perpetuation of poverty over several generations.

Our study demonstrates the existence of an interdependence between the unemployment rate and the evolution of gross domestic product, which can be a starting point for more refined statistical analyses that possibly include other variables.

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