

Population and employment in Europe

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Abstract: *The paper presents an analysis of the evolution of two characteristics, total employment and total population in Romania and in the European Union. The chosen period for analysis is 2010-2015. The purpose was, also, to determine if there is any relationship between the two above mentioned characteristics. The analysis showed that the population at European Union level increases almost every year, whereas in Romania it keeps decreasing. Pearson's correlation coefficient level points out that there is a strong link between the two characteristics, this meaning that the total number of people influences the total number of employees, both in Romania and in the European Union. There was also presented a prediction, made by EUROSTAT, regarding the future evolution of the total population which shows a dramatic decrease in Romania.*

Key-words: *population, employment, correlation coefficient*

1. Introduction

The employee /worker is the person who, in exchange for remuneration, offers his labour force.

The number of employees in a country, as well as in a region, in correlation with the total population from that area, is very important because, in almost all situations, the persons ensure all their needs from that remuneration.

When the unemployment takes high proportions, serious economic problems appear in that particular region or in that country, consisting in an increase of social expenses with supporting the unemployed, increasing the poverty rate and criminality.

2. Objectives

The main objective of this research consists in an analysis of the two characteristics taken into consideration: the total population and the employment level.

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The two characteristics were analyzed in evolution for a period of six years, between 2010 and 2015, in the European Union's 28 countries, as well as in Romania, in order to be able to compare the evolution tendency.

Another objective was to apply a linear model of correlation, using the Pearson correlation coefficient, in order to demonstrate whether there is any determining relationship between the two indicators, labour force and total population.

3. Materials and methodology

This paper is based on official statistical information about unemployment in the European Union and in Romania. There were used statistical methods of analysis, tables and figures, time series, correlation coefficients

4. Results and discussions

Taking into consideration the importance of work places in a country or in a region, there was determined the rate of employment of total population, both for Romania and for the European Union.

At the European Union level in 2010 the rate of employment was of 68,6%. It started to decrease in the following years reaching 68,4% in 2013. In the next two years considered it started to increase, reaching 70,1% in 2015.

The highest percentages (i.e. employment rates) in Europe are in Iceland - 86,5%, Switzerland-82,8%, Sweden - 80,5% and in Germany - 78%.

The lowest levels are in Greece - 54,9% , Croatia and Italy - 60,5%.

In Romania the rate of employment in total population oscillated during the analysed period, but it has started to improve lately, reaching, in 2015, the level of 66%.

A survey made by EUROSTAT shows that in the European Union the main prediction is that the population will grow to reaching 512,47 million people in 2020, 518,5 million people in 2040, 523,55 million people in 2040 and 525,53 million in 2050.

In Romania the situation will be quite the opposite, meaning a decrease of total population, reaching 19,69 million people in 2020, 19,0 million in 2030, 18,46 million in 2040 and 17,97 million people in 2050.

4.1. Total population in Europe

The population analysis refers to all the persons registered by 1st of January of each year.

In the analyzed period, 2010-2015, in the European Union (28 countries), the evolution of the total population is presented in Figure.1 (EUROSTAT):

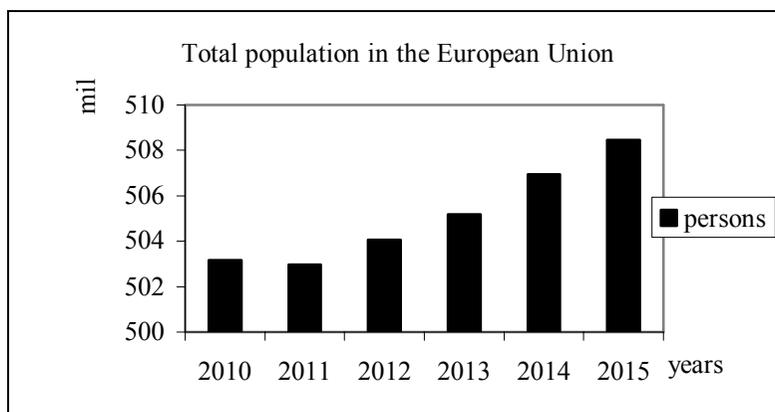


Fig. 1. *The total population evolution in European Union*

At the European Union (28 countries) level the evolution of total population had an increasing tendency in the analyzed period, 2010-2015, with only one exception in 2011 as compared to the previous year, when this indicator registered a decrease by 210 thousand people, which represents a decrease of 0.04% .

In comparison with the year 2010, from 2012 the total population has increased yearly, so in 2015 there are 5,28 million people more, meaning an increase by 1,05%.

If we analyze the total population evolution year by year the situation is almost the same.

The highest increase was in 2014 in comparison with the previous year, 2013, when the population was higher with 1,77 million, which represents an increase by 0,35%.

On average, every year in the European Union there were 505,125 million persons. On average, every year, the population has increased by 1,056%, that meaning 0,21%.

On average, in Romania, every year there were 20,072 million people. On average, every year, the total population has decreased with 84 thousand people, which means a decrease by 0,42% every year.

Romania's population evolution during the analyzed period, 2010 – 2015, is presented in Figure 2 (EUROSTAT):

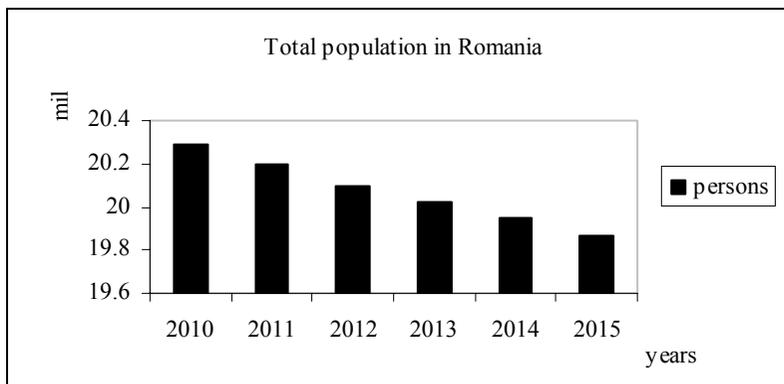


Fig. 2. *The total population evolution in Romania*

Analyzing the evolution of the total population in Romania, we are shown that there is a different situation as compared to the one in the European Union.

If we take into consideration the comparison with the first year, 2010, we can notice that the number of persons registered a continuous decrease. The highest decrease was in 2015, of 420 thousand persons, representing a total decrease of 0,4% .

If we analyze the indicator (?) each year the situation is the same, the number of persons decreased every year. The highest decrease was in 2011, in comparison with 2010, of 90 thousand persons (0,44%).

4.2. Employment in Europe

The evolution of the total number of employees in the European Union during 2010-2015 is presented in Figure 3 (EUROSTAT):

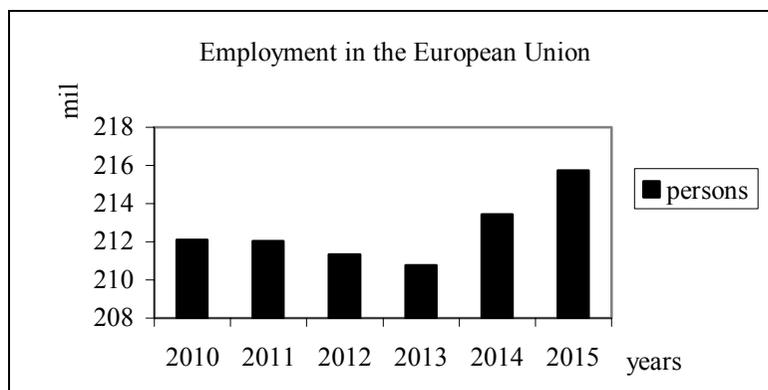


Fig. 3. *The total employment in the European Union*

In the European Union, compared to the first year, 2010, the number of employees registered a decrease in the first analysed years, namely 60 thousand people (0,03%) in 2011, 740 thousand people (0,35%) in 2012, and 1310 thousand people (0,62%) in 2013.

In the following years, the number of employees started to increase, to 1330 thousand (0,63%) in 2014 and to 3640 thousand (1,72%) in 2015, as compared to 2010.

The same situation can be noticed if we analyse the evolution of the total number of employees, yearly, meaning a decrease in 2010 of 0,03%, of 0,32% in 2012 in comparison with 2011 and of 0,27% in 2013 in comparison with 2012. In the following years there can be seen an increase of 1,25% in 2014 and of 1,08% in 2015.

On average, every year there were 212,57 million employees.

In Romania, in the same period, the total number of employees' evolution is presented in Figure 4 (EUROSTAT):

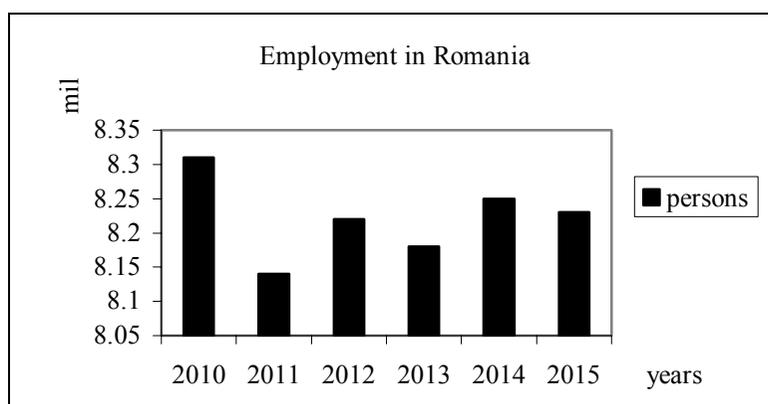


Fig. 4. *The total employment in Romania*

In Romania, the situation is not the same as in the European Union. The highest number of employees was in 2010 when, in Romania, there were 8,31 million hired persons. In the following years the number began to decrease year after year.

The lowest level was in 2011 when, because of the economic crises, there was registered a decrease of 170 thousand people (2,05%).

If we compare the employment each year to the previous one, we can notice that we don't have a clear tendency.

The number of employees in the following years oscillates year after year with increases and decreases, yet, not reaching the level of 2010.

On average, over the entire period of 2010-2015, each year there were 8,22 million employees. On average, every year, the total number of employees decreased by 16 thousand, that meaning by 0,2% every year.

5. Correlation and prediction

After analyzing the evolution of the two characteristics, total population and total employment, both in Romania and in the European Union, we conducted a research in order to demonstrate if there is any link between the two indicators.

Using the official statistical information from EUROSTAT, there was applied a linear model of analysis and, using the Pearson correlation coefficient, we tried to determine whether there is a link between the two. As the independent variable was chosen the total population, and as independent variable the total number of employees. We want to determine if the total population influences in any way the total number of employees.

After calculating the coefficient we have determined that there is a direct correlation between the two variables, and a very strong one almost a determinant link. The Pearson correlation coefficient has a value of 0,99 both for Romania and for the European Union, which demonstrates the strong link.

6. Conclusions

As we can notice, the study shows that total population at European level is in increase, while in Romania the situation shows quite the opposite tendency, decreasing constantly. The employment in Europe is improving, starting to increase in the past two years. In Romania, the employment has an oscillating tendency. The correlation coefficient shows that there is a direct relationship between the two characteristics, namely a very strong, almost determinist one

7. References

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