

ANALYSIS OF THE CORRELATION BETWEEN THE EMPLOYED POPULATION, UNEMPLOYMENT AND VACANCIES

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Abstract

The economic growth is based on the most efficient use of the resources available to the society. Taking into account the concept of production factors (the Cobb-Douglas production function), an essential element is labor resources. Starting from this point it is important to analyze the correlation between the employed population, the unemployment rate and the existence of vacancies. The employed population expresses the degree of involvement of persons with the capacity to work in economic and social activities at the level of a state. Unemployment shows the number or, if expressed under the unemployment rate, the percentage of the employed population who lost his job. Contrary to the number of unemployed, there are also vacancies. As a paradox, although the unemployment rate is high enough, vacancies offered do not work. It is precisely these aspects that are paid attention to by the authors, who carry out extensive analysis in the field of labor resources.

In the study, the authors use a series of quantitative models and methods to highlight the correlation between the three indicators. There will be graphical representations, correlation indexes will be calculated, based on the statistical data series published by the National Statistics Institute.

Keywords: *unemployment rate, economic growth, occupied population, correlation, data series.*

JEL Classification: *E24, J21, J63.*

1. Introduction

The three indicators or categories are important in analyzing how the labor factor is effectively used in a country. Of course, there is a close correlation between the busy population, the working population and the economic outcomes. If the active population is included in the workplace and is the labor factor, the question is whether the efficiency is the desired one. If the labor force goes into unemployment, the labor market is at the level of the national economy. This is also very clearly suggested by the fact that in the national economy most often there are discrepancies between unemployment and vacancies. For example, the article analyzes the fact that although unemployment is high when vacancies are offered, they are not occupied because job vacancies are simply not correlated with the demands of economic agents in terms of professions, etc. This reflects an inappropriate level of job redeployment. In this article, based on series of data and graphs, the correlations that should be established between the three categories, namely the occupied population, unemployment and vacancies, are analyzed in depth so that they do not contribute to macroeconomic disturbances. We know that observance of macroeconomic proportions and correlations have an effect on macrostability, and can negatively influence when these correlations disappear.

2. Literature review

Anghelache and Anghel (2017) conducted a study on the evolution of the unemployment rate and vacancies in the European Union. Anghelache (2017) conducted a complex analysis of Romania's economic and social outcomes in the post-decade and, most importantly, in the ten years since joining the European Union. Dube, Lester and Reich (2010) analyzed the implications of the minimum wage. Kroft and Notowidigdo (2016) studied how marginal welfare gains from rising unemployment benefits vary according to the economic cycle. Krueger and Mueller (2010) have built a model analyzing job search intensity as the time allocated to this activity. Moreno-Galbis and Tritah (2016) tried to identify the impact of immigrants on the occupancy rate of the host country population. Moscarini and Postei-Vinay (2012) studied the extent to which employers contribute to job creation according to the level of unemployment recorded at different times. Silva and Toledo (2009) addressed issues of vacancy volatility and unemployment.

3. Research methodology

The employed population is a macroeconomic indicator that expresses the extent to which the population within the age of work is included in the activity. The definition seems somewhat unclear, but this category is freely entered by professionals and, above all, by the rural population in their own household. From this statistical category we come to the active population, but also to the workforce, ie the persons employed on the basis of a labor contract. This indicator also correlates with the number of unemployed or more precisely with the unemployment rate.

For the correct analysis of the correlation between the three statistical indicators (employed population, unemployment and vacancies), we will briefly present some methodological aspects regarding unemployment.

Data provided by the National Institute of Statistics are analyzed monthly, quarterly or annually based on gross series and / or series of seasonally adjusted data.

The data source for calculating the unemployment rate is Quarterly Statistical Survey on Household Workforce (AMIGO).

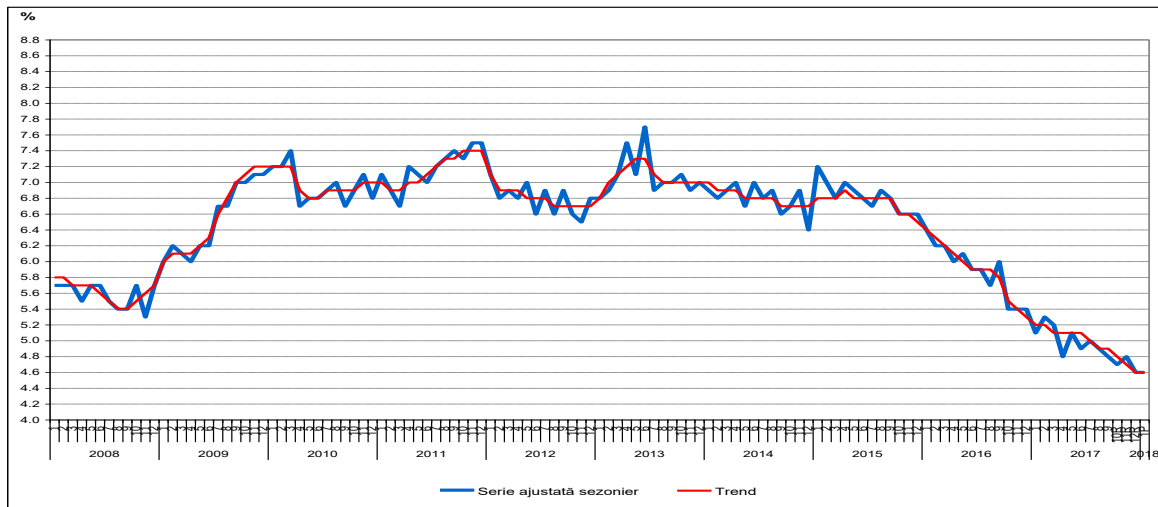
The concept of the unemployed, according to the international definition (ILO), refers to people aged 15-74 who simultaneously fulfill the following three conditions: they do not have a job; are available to start work in the next two weeks; have been actively seeking a job at any time during the last four weeks. The unemployment rate indicator is the share of the unemployed in the active population, which from an economic point of view includes all persons supplying labor available for the production of goods and services during the reference period, including employed and unemployed people. Registered unemployed persons are the persons registered in the National Employment Agency (ANOFM), which benefit from the legislation on the social protection of the unemployed. The two sets of statistical indicators (monthly unemployment according to international definition and registered unemployment) are not comparable because data sources, measurement methods, concepts, definitions and scope are different. Data analysis in both series provides a complete and real picture of the Romanian labor market.

Estimation is based on econometric methods that exponentially level the linear trend data series. The projected values are derived from the data provided by household labor force statistical survey, based on smoothing coefficients, which corrects the gross unadjusted form and trend of the series. Smoothing coefficients are determined by minimizing predictive errors.

Data is presented in seasonally adjusted form, thus eliminating the effect of seasonal variations. Due to the small number of observation cases, the reliability of the estimates for the indicators corresponding to the category of young people (age group 15-24 years) is extremely low, the series obtained with a high degree of volatility.

In the context of the above, the unemployment rate in December 2017 was 4.6%. The male unemployment rate was 0.9 percentage points higher than in women. In figure no. 1. The dynamics of the unemployment rate in Romania during 2008 - January 2018 is presented.

Figure no. 1. Evolution of the unemployment rate in the period 2008 - January 2018

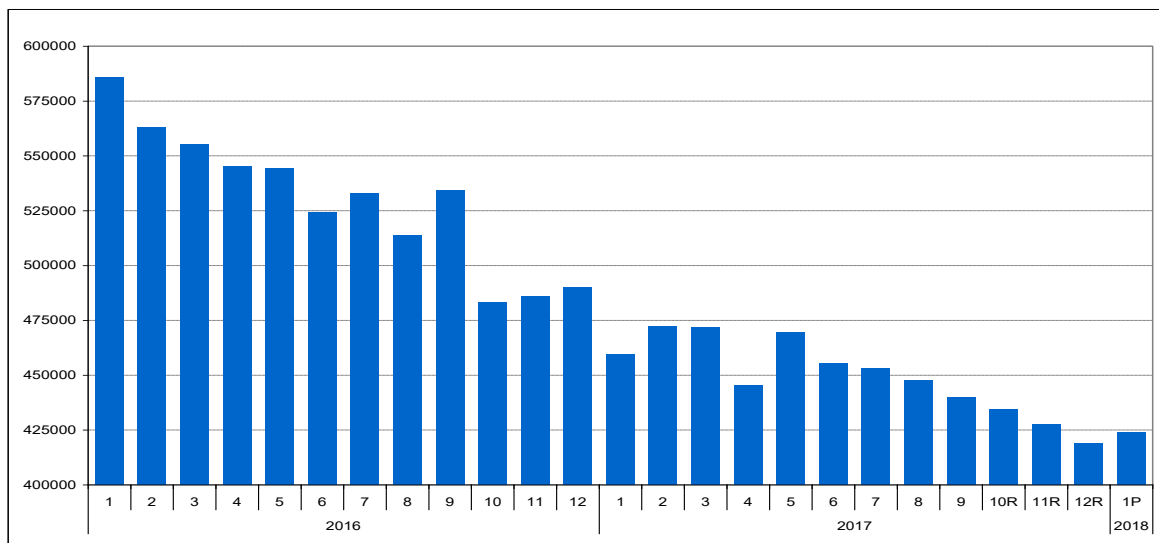


Source: National Institute of Statistics, Press release no. 49/1 March 2018

We find that the highest unemployment rates registered between 2009 and 2015, with two peaks in 2013 and 2015. In 2017, the unemployment rate fell below 5%. The number of unemployed (aged 15-74 years) estimated for January 2018 was 424,000 persons, up from the previous month (419,000 persons) but decreasing compared to the same month of the previous year (460000 persons).

A two-year analysis, January 2016 to January 2018, reveals a permanent decline, with the exception of July and August of 2016, when more pronounced increases were recorded. From May 2017 to December 2017, decreases are significant, with relative figures of 4.6% of the active population. The data are presented in figure no. 2.

Figure no. 2. Evolution of the number of unemployed persons in January 2016 - January 2018



Gender analysis of the unemployment rate reveals that in men it exceeded that of women by 0.9 percentage points, the values being 5.0% for males and 4.1% for sex female. The data are summarized in table no. 1.

Table no. 1. Unemployment rate by sex (%)

Category	2017												2018
	Ian.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Ian. ^P
Total													
15-74 years	5,1	5,3	5,2	4,8	5,1	4,9	5,0	4,9	4,8	4,7 ^R	4,8 ^R	4,6 ^R	4,6
15-24 years	19,1	19,1	19,1	17,3	17,3	17,3	17,8	17,8	17,8	20,0	20,0	20,0	..
25-74 years	4,1	4,2	4,2	3,8	4,2	4,0	4,0	4,0	3,9	3,6 ^R	3,6 ^R	3,5 ^R	3,5
Male													
15-74 years	5,8	5,9	5,9	5,5	5,9	5,7	5,6	5,5	5,5	5,3 ^R	5,3 ^R	5,1 ^R	5,0
15-24 years	19,4	19,4	19,4	17,2	17,2	17,2	16,8	16,8	16,8	19,2	19,2	19,2	..
25-74 years	4,8	4,8	4,8	4,6	5,1	4,9	4,7	4,6	4,6	4,2 ^R	4,2 ^R	4,0 ^R	3,9
Female													
15-74 years	4,2	4,4	4,3	3,8	4,0	3,8	4,1	4,1	4,0	4,0 ^R	4,0 ^R	4,0 ^R	4,1
15-24 years	18,5	18,5	18,5	17,4	17,4	17,4	19,0	19,0	19,0	20,5	20,5	20,5	..
25-74 years	3,2	3,4	3,3	2,9	3,0	2,8	3,1	3,1	2,9	2,9 ^R	2,8 ^R	2,8 ^R	2,9

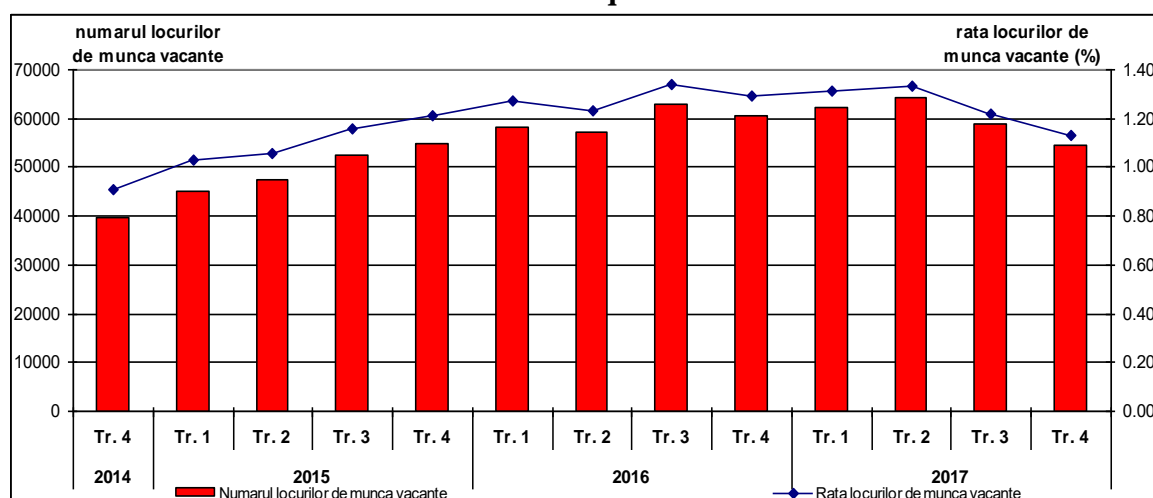
Source: National Institute of Statistics, Press release no. 49/1 March 2018

The age structure shows that in January 2018 in the adult population (25-74 years) the unemployment rate was estimated at 3.5% (3.9% for men and 2.9% for women) . The number of unemployed aged 25-74 represented 69.9% of the total number of unemployed estimated for January 2018.

Analyzing the evolution of the unemployment rate as compared to vacancies, we find that during the fourth quarter of 2014 - the fourth quarter of 2017, there was a rise in the number of jobs. Thus, in the fourth quarter of 2017, the vacancy rate (job vacancy rate is the ratio between the number of vacancies and the total number of vacancies (occupied and vacant, excluding those reserved or only for promotion within the enterprise or institution) expressed as a percentage) was 1.13%, decreasing by 0.09 percentage points as compared to the previous quarter. In absolute figures, the number of job vacancies was 54700, down by 4200 vacancies compared to the third quarter. Comparing these rates with the same quarter of 2016, the vacancy rate fell by 0.16 percentage points and the number of vacancies dropped by 6.0 thousand.

In figure no. 3 graphically represent the rate and the number of vacancies..

Figure no. 3. Evolution of the rate and number of vacancies during the fourth quarter 2014 - IV quarter 2017



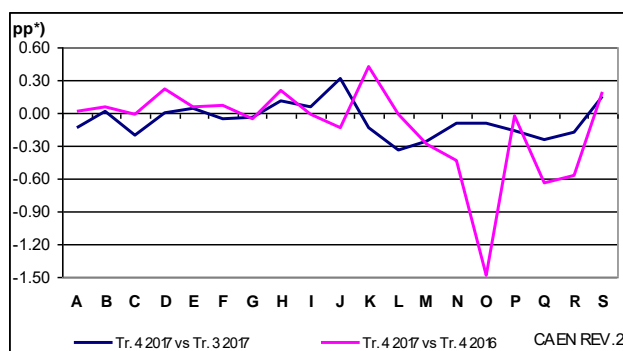
The rate and number of vacancies per activity of the national economy evolved differently.

In the fourth quarter of 2017, the highest vacancies were registered in public administration and other service activities (2.52%), followed by health and social assistance (2.40%). In the manufacturing industry, more than one fourth of the total number of vacancies (14.6 thousand vacancies) concentrated and the rate was 1.23%. In the budgetary sector there were about 31% of the total number of vacancies. Thus, 8000 vacancies were in health and social assistance, 6800 vacant positions in the public administration, respectively 2400 vacant places in education. The smallest values of the rate and the number of vacancies were in the extractive industry with 0.16% and 0.1 thousand vacancies respectively).

Compared to the previous quarter, the most relevant decreases in the vacancy rate were recorded in real estate transactions (-0.34 percentage points) and professional, scientific and technical activities (-0.26 percentage points).

More relevant decreases were recorded in manufacturing (-2.4 thousand vacancies), as well as in health and social care (-0.8 thousand vacancies). Increases in the rate and number of vacancies were recorded in information and communication activities (+0.31 percentage points and +0.5 thousand vacancies respectively). Evolution is presented in figure no. 4.

Figure no. 4. **Evolution of the rate and number of vacancies by activity**



Source: National Institute of Statistics, Press release no. 45/19 February 2018

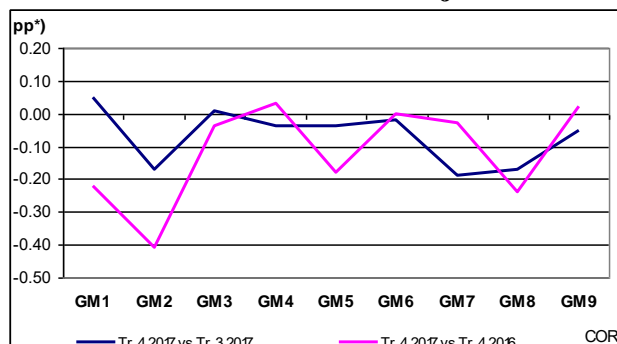
The comparison with the same quarter of the previous year shows a higher decrease in the rate and number of vacancies registered in the public administration (-1.49 percentage points, respectively -3700 vacant places), due to the application of the legal provisions in force, respectively in health and social care (-0.64 percentage points, respectively -1800 vacancies). Relevant increases in the vacancy rates were financial intermediation and insurance (+0.42 percentage points), electricity and heating, gas, hot water and air conditioning (+0.22 percentage points), respectively transport and storage (+0.21 percentage points). More important increases in vacancies were recorded in transport and storage (+0.7 thousand vacancies), financial intermediation and insurance (+0.4 thousand vacancies) and construction (+0.3 thousand vacancies). The highest demand for employed labor expressed by employers by the rate and number of vacancies was for occupations of specialists in various fields of activity (1.46% and 15.3 thousand vacancies respectively). The lowest values were for occupations of skilled workers in agriculture, forestry and fishing (0.60% and 0.1 thousand vacancies respectively).

Analyzing the data compared with the previous quarter, the most relevant decreases were recorded in the occupations of skilled and assimilated workers (-0.19 percentage points), specialists in various fields of activity and plant and machine operators; machine and equipment assemblers (-0.17 percentage points).

Concerning the number of job vacancies, the most important reductions were in the same groups of occupations, namely: specialists in various fields of activity (-1.5 thousand vacancies), skilled workers and assimilated (-1.3 thousand vacancies) and plant and machine operators; machine and equipment assemblers (-0.9 thousand vacancies).

Increases in the two indicators were recorded for the members of the legislative body, the executive, senior heads of public administration, senior officials and officials (+0.05 percentage points, +0.2 thousand vacancies respectively) and technicians and other specialists from technical field (+0.01 percentage points, +0.03 thousand vacancies). The analysis of this indicator for the period 2016-2017 is presented in figure no. 5.

Figure no. 5. Evolution of the rate and number of job vacancies per occupation



Compared to the same quarter of the previous year, the most relevant decreases in the rate and number of vacancies were recorded in the occupations of specialists in various fields of activity (-0.41 percentage points, respectively -3.6 thousand vacancies), plant and machine operators; machine and equipment assemblers (-0.24 percentage points, respectively -1.2 thousand vacancies). Increases in the vacancy rates were among administrative officials (+0.03 percentage points) and unskilled workers (+0.02 percentage points).

4. Conclusion

From the study it is concluded that among the employed population (labor force), unemployment and vacancies there are inconsistencies that need to be adjusted so that the labor force factor is better used in the national economy. It also follows that in the Romanian economy the conversion of the labor force is badly realized, if it is not really realized. Another conclusion is that although the number of unemployed people is low in Romania, this is a fetish because if we take into account the number of about three million Romanians working in other EU countries on the basis of the directives on the free movement of persons, the situation would be worse. Another necessary conclusion is that the level of unemployment must be reduced by absorption into the workforce. This can be done through additional investments, attracting foreign direct investment, the use of community funds, but also of professional reconversion, which can lead to the unemployed being oriented towards professions and activities where the national economy still has possibilities. From the employment offered regularly there are large deviations, so that under these circumstances the inappropriate application of labor conversion is an essential element in reorienting the structure of labor force on professions and qualifications.

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