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# PERMANENT UNEMPLOYMENT, A REFLECTION OF CHANGING THE BASIC STRUCTURE OF ECONOMIC ACTIVITIES

Empirical  
studies

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Job creation condition  
Potential gdp

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## JEL Classification

E24, J21, J23

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## Abstract

*The analysis of labour market in an economy emphasizes the linkage between the unemployment level and the economy structure with its organization and leading mode, and the context of its growth and development. Numerous empirical analyses of unemployment show that a significant part of its level cannot be explained by the oscillations of overall economic activity, on short term. The structural unemployment and that determined by the transparency level are causes of existence of a permanent unemployment. The paper analyzes the process of jobs creation simultaneously with job destruction and emphasizes how the structure of economic activities suffer positive or negative changes during economic cycle.*

## 1. Introduction

There is always a number of unemployed. Some of them look for a job according to their skills, abilities and experience they have, others are in the process of training / retraining to meet the changing needs of employers. During the economic crisis the number of unemployed increases, due to lower labor demand. During economic expansion, the number of jobs increases and unemployment decreases. This type of unemployment caused by cyclical fluctuations in economic activity overall is called *cyclical unemployment*. Cyclical fluctuations are not the only cause of unemployment. Some people are unemployed because qualifications and work experience they have have no relevance to the labor market. This type of unemployment is called *structural unemployment*. The third form of unemployment, *frictional unemployment* is due to labor market frictions that make hiring not occur as soon as jobs are created.

The level of full employment in the labor market occurs when cyclical unemployment is zero, the number of unemployed is determined solely by frictional and structural unemployment. When the labor market reaches full employment, unemployment rate corresponding to this level is called *the natural rate of unemployment*. The concept of the natural rate of unemployment was first used by Milton Friedman (1968) and Edmond Phelps (1968) as a way to make difference between cyclical fluctuation of unemployment, which can be influenced by monetary policy and the structural changes which can not be influenced in this manner. The terminology became standard, the word "natural" suggesting that this unemployment rate is a constant of an economy, which can not be affected, as noted Olivier Blanchard (2006), by institutions or government policies.

There are not much controversies about the existence of the natural rate of unemployment. There are different ways of interpreting this concept. According to Michael Parkin (2005), the natural rate of unemployment is the result of the existence of structural and frictional unemployment. Any fluctuations in the natural rate of unemployment are due to changes in the these two forms of unemployment. Under the neoclassical assumption of perfect flexibility of prices of goods and production factors, the natural rate of unemployment appears to be determined primarily by the characteristics of workers and the effectiveness of the labor market to facilitate the hiring process. These factors affect the rate at which jobs are created and destructed, and also the required time for unemployed to take the available jobs.

According to Gregory Mankiw (2009), the natural rate of unemployment is the mean unemployment rate around which the current rate of unemployment fluctuates. In recession, the

current rate of unemployment increases above the natural rate, while in expansion, the current unemployment rate falls below the natural rate. This way for interpretation of the natural rate of unemployment eases calculation of its size, considering that, on long-term, the labor market is in equilibrium if the unemployment rate remains constant. We believe that the interpretation of the natural rate of unemployment as an average of current unemployment rates does not start from the factors that determine it, respectively, the structural and frictional unemployment.

Lately, the interpretation of natural rate of unemployment by Christopher Pissarides (2000) gained ground. His model comprises two curves: the Beveridge Curve (BC), which captures the aggregated supply of labour and Jobs Creation Condition (JCC), which includes the aggregated demand for labour. In this model, labour market equilibrium is determined by the intersection of these two curves. Beveridge Curve is essentially a frontier of production possibilities for employment opportunities in the labor market. The rate at which job seekers are matching on vacancies depends primarily on the ratio of the rate of vacancies and unemployment rate. This shows the number of vacancies per worker unoccupied. The natural rate of unemployment is the unemployment rate corresponding to the point of intersection between the curve BC and the curve JCC. Equilibrium is a marginal one, depending on how many jobs are created in addition to the existent ones, namely the additional number of unemployed who compete for the existing jobs. The change of equilibrium rate, i.e. the natural rate of unemployment, occurs as a result of the displacement of the two curves.

Modern economies are characterized by large flows, both of workers who engage or leave their jobs, and also of the jobs created or those to which the firms give up. The flow of workers between employment, unemployment or inactivity and the scale of these phenomena behind them is a characteristic of all labour markets in the European Union space. According to Abel Andrew et al. (2011), although these flows are in theory compatible with the recovery of a fixed number of jobs, the reallocation of workers in various activities is associated with a substantial flow of jobs created and disposal in the companies. Even in the absence of a significant change in the unemployment rate, simultaneous creation and eliminating of jobs by companies, gives a particularly dynamism to the labor market. A small change in the unemployment rate can be compatible with a large number of people who lose their jobs or who match a vacant one. Increasing the number of unemployed and persistence of a high unemployment rate, even under equilibrium conditions, can be understood, giving importance regarding these flows. On the other hand, it must

consider also the changes that have occurred in the intensity with which the unemployed are looking for a job. It is known the effect of increasing social benefits, received by the unemployed on their determination to engage.

This paper examines some aspects of the natural rate of unemployment in Romania and how, changing it is a reflection of the change in the overall economic activity.

## 2. Research methods

The theoretical model commonly used to describe the equilibrium of the labor market is that developed by Dale Mortensen and Christopher Pissarides (1994). The main element of this model is the combining function (matching function). It expresses the number of places created at any point of time ( $M = m \cdot L$ ) as a function of the total number of workers seeking employment ( $U = u \cdot L$ ) and the number of vacancies held by companies ( $V = v \cdot L$ ):

$$M = m(U, V) \quad m \cdot L = m(u \cdot L, v \cdot L)$$

where  $m$  is the combining rate, ie the number of jobs filled per unit of time;  $u$  is the unemployment rate, i.e. the number of unemployed as a fraction of the labour force;  $v$  is the vacant jobs rate, i.e. the number of vacancies as a fraction of the labour force;  $L$  is labour force.

The combining function describes the efficiency of employment process of jobs, stressing the importance of two measures: the number of vacancies and the number of unemployed.

The rate at which vacancies are matching is:

$$q(\cdot) = \frac{m(uL, vL)}{vL} = m\left(\frac{u}{v}, 1\right)$$

where  $\theta = v/u$  represents the number of vacant jobs per unemployed worker.  $\theta$  is a measure of the tight character of labor market. During a small time interval,  $t$ , a vacant job is matched to an unemployed worker with probability  $q(\cdot) \cdot t$ . The probability for an unemployed to find a job and be hired depends on  $\theta$ , which is a measure of labour market frictions. An increase of  $\theta$  makes job search more difficult, and a decrease facilitates job search.

Employment,  $n$ , evolves over time in accordance to inflows (filled vacancies, unemployment workers finding a job) and outflows (existing jobs destroyed with exogenous rate  $r$ ).

The matching function is assumed to be upwards, concave in both arguments and homogeneous of first degree. Choosing a Cobb-Douglas function, the combining function is:

$$m = u^r \cdot v^{1-r}$$

where  $0 < r < 1$  is the elasticity of the combining function with respect to unemployment rate.

A basic tool for analyzing the labour market is the Beveridge Curve (BC). It describes the inverse relationship between unemployment rate and vacancies rates. This relationship can be obtained by looking how the unemployment rate changes over time:

$$\dot{u} = (1-u) \cdot u - u \cdot \theta^{1-r}$$

where  $(1-u) \cdot u$  represents the flow to unemployment, ie the number of job losses at the rate  $r$ . In balance (steady-state) unemployment is constant over time ( $\dot{u} = 0$ ), giving the expression known as the Beveridge Curve (BC):

$$u = \frac{u}{u + \theta^{1-r}}$$

Creating jobs depends on hourly wage,  $w$ , the cost of employment,  $z$ , the cost of opening a vacancy,  $c$ , and the level of productivity,  $y$ . The expression of job creation function (JCC) is:

$$c \cdot \theta^r = \frac{y - w}{r + u}$$

where  $r$  is the interest rate.

Equilibrium values of  $\theta$  and  $w$  are determined by the intersection curves Job Creation Condition (JCC) and Wage Setting (WS). Expression of so-called Wage Setting Function (WS) is:

$$w = (1-\beta) \cdot b + \beta \cdot y + \gamma \cdot c$$

with  $\partial w / \partial q > 0$ , since an increase of  $\theta$ , increases the probability that an unemployed person to find a job. Using the equilibrium values of  $\theta$  and  $w$ , as defined, it is possible to obtain the equilibrium values of  $u$  and  $v$ .

This paper uses the theoretical concepts of the model Mortensen – Pissarides to estimate the natural rate of unemployment in Romania. Particular attention is given to the Beveridge Curve, which describes the inverse relationship between vacancy rate and unemployment rate. Empirical data used include the period from 2006Q1 to 2014Q2. The data source is the National Institute of Statistics and Economic Studies (INSSE) and Eurostat.

## 3. Empirical evidence

Romania has been strongly affected by the economic and financial crisis that began in 2008. Figure 1 presents the evolution of GDP during the period 2006 - 2013. It can be seen that in 2008, GDP grew by 7.3% compared with previous year, but in 2009 GDP fell by 6.6% compared to 2008. The decline continued in 2010. The economic recovery began in 2011, when GDP grew by 2.2%.

GDP growth rates have changed significantly since 2008. If before the crisis, Romania recorded growth rates of 6-7%, after the crisis, they have not exceeded 3.5%. The severity and persistence of the

recession associated with the financial crisis led to significant changes in the behavior of economic agents, due to the increased uncertainty of the volume of global demand, aggregate demand of labour reduced.

Economic recovery did not mean fully recovery of lost jobs. In many cases, companies have delayed the hirings, succeding the increasing of production by increasing productivity. The labor market has experienced significant fluctuations. The evolution of the unemployment rate is shown in Figure 2. It may be noticed the major leap recorded by unemployment rate, from mid-2008, when it was below 4%, until mid-2010, when it exceeded 8%. During the expansion years 2006 - 2008, the unemployment rate fell from about 6% to under 4%. Even in the period when the firms have experienced a shortage of workers, when labour demand has exceeded the supply, the unemployment rate hasn't dropped below 3.4%.

After the recession, the unemployment rate fluctuated around the level of 5%. The moderated economic growth, as mentioned above, resulted in a relatively stable unemployment rate. Note that, in this period, there were no significant changes in the national economy of the structure of activities, branches, domains, geographic areas, etc.

Also, there were no significant changes in the search behavior of unemployed job. We consider that the structural and frictional unemployment remained relatively constant. The cyclical unemployment caused the fluctuation in 2008-2010, after that the economy has returned to the working conditions which characterized it. Cyclical component was reduced after 2010, even though the economic growth relaunched.

In Romania, the ratio of the unemployment rate and the vacancies rate has undergone significant changes during the economic and financial crisis. These changes are highlighted by Beveridge curve movement. The movements of this curve have been reflected in particular by the empirical data of the U.S. economy, they have been the subject of many studies, such as Ben Bernanke in 2010, David Benson 2011 and others. These studies reveal that during the economic crisis Beveridge curve moves to the right.

Empirical data on the Romanian economy reveal that during the crisis which began in 2008, the Beveridge curve has undergone a shift to the left. This can be seen in Figure 3. Unexpected movement to left of Beveridge curve can be explained by the peculiarities of the Romanian economy. The crisis did not cause structural changes of essence of economic activity. Share of main branches to create GDP remained almost unchanged. Because most activities depend on foreign capital, and its effectiveness relies mainly on the low cost of labor, labour productivity growth was reduced. The crisis led to a significant

reduction of speculation activities.

Before the crisis, unemployment rate and vacancies rate had, simultaneously, elevated levels. These vacancies are mainly explained by the high level of structural unemployment. Employers' requirements were not consistent with the structure of the professions, activities, age, gender of labour supply.

The expansion from the years 2007-2008 has reduced unemployment, but the rate of vacancies remained at a high level. The expansion coincided with Romania's entry into the European Union (1 January 2007). Changes caused by this event led to better employment, through qualification programs / retraining courses which have been implemented, but also by creating an important number of jobs through foreign investment.

After expansion, the economic activity has become relatively stable, with high unemployment rates which are maintaining over time, but with much lower levels of vacancies rate compared to the situation before the crisis. The structural problems in the labor market were not removed, resulting in a relatively high level of the natural rate of unemployment.

#### 4. Natural rate of unemployment

Moving to the left of the Beveridge curve did not determine the change to the same extent of natural rate of unemployment. The natural rate of unemployment is determined at the intersection of the Beveridge Curve and the curve of Job Creation Condition. Figure 4 shows how to determine the natural rate of unemployment, before and after the economic and financial crisis. JCC slope depends on  $\theta$ , ie on the number of vacancies per worker in search of a job.

The higher  $\theta$  is, the easier it is for those looking for a job, to find a place and commit. As can be seen in Figure 4, the empirical data reveal that, before the crisis, the economy stood at point A, to which corresponds a level of the natural rate of unemployment around 6.9%.

After the crisis, the economy is in the point B, which corresponds to a level of natural unemployment rate of about 7.1%. Increasing natural rate of unemployment in Romania, due to the economic crisis is explained by reducing investments and increasing the duration of a job search.

#### 5. Potential GDP

Productive capacity of an economy is highlighted by potential GDP. According to Michael Parkin (2005), this indicator corresponds to the equilibrium value in the long run of the final output, recorded over one year within the country, value that can be achieved if labour resources are fully employed. Full use of human resources (full employment) occurs while the cyclical

unemployment is zero, existent unemployment is determined only by existing structural unemployment and frictional unemployment, ie when the unemployment rate equals the natural rate of unemployment.

In acceptance of Olivier Blanchard (2006), potential GDP can be also defined as the level of output corresponding to the equilibrium state of the economy (steady-state), characterized by stable inflation, consistent with an unemployment rate that do not lead to an acceleration of inflation (NAIRU, the Non Accelerating Inflation Rate of Unemployment).

As mentioned by Monica Dobrescu et al. (2011), NAIRU hypothesis is based on a model of imperfect competition, both in the labour market and in the goods market. Some imperfections, such as trade unions and the presence of oligopolistic firms are causing the imperfect competition. On labour market, through the collective bargaining process, the demand is determined by the negotiated level of real wage, while on goods market, firms offer their goods at an administered price, which allows a higher profit than the normal one.

Potential GDP and the difference between real GDP and potential GDP (output gap) were research subjects a long time, starting with Arthur Okun (1962), who first pointed out the importance of these variables in predicting the cyclical position of the economy. Nowadays, potential GDP is widely used in macroeconomic models, economic policy analysis, budget balance and the sustainability of fiscal policies.

Potential GDP reflects the best offer of an economy and facilitates an estimation of the growth rate that will not generate an inflationary imbalance. A positive output gap is associated with an excess of demand, which can lead to an inflation pressure. In the short term, this inflationary gap determines a lower unemployment rate than the natural rate of unemployment, which corresponds to a real GDP greater than the potential GDP. On long run, the economy returns to potential GDP due to changes occurring in the cost structure and in expectations of the people and business agents.

The changes in potential GDP are given by changing of technology and of the amount of capital used in economy, as well by amending the amount of balance in the labour market.

Because potential GDP is not a directly observable variable, it is necessary to use theoretical models to filter the observed data and retain their essence, respectively the level of potential GDP. The parameter values of these models are determined using various statistical and econometric methods.

One of the easiest ways to calculate potential GDP is to consider that it is equal with the average of current GDP. This method of calculation

deviates from the widely accepted meaning of potential GDP, the fact that it is equal to the size of the output when the labour market is in equilibrium, ie the level of employment is equal to the level of full employment, and the unemployment rate equals the natural rate of unemployment.

Our analysis, based on labour market research shows that there were no significant changes in the productive potential of the Romanian economy during the analyzed period, as the natural rate of unemployment has changed very little.

## 6. Conclusions

The natural rate of unemployment reflects structural problems of the economy, its ability to effectively use labour resources. Potential GDP depends on the natural rate of unemployment. When the current unemployment rate is higher than the natural rate of unemployment, expression of cyclical unemployment, there is a gap of recession between real GDP and potential GDP. This gap is known as the output gap. The stable relationship between unemployment rate and output gaps over a long period of time is known as Okun's Law, so named in honor of Arthur Okun (1962). Under this law, to each percentage of unemployment rate exceeding the natural rate of unemployment level, it corresponds a decrease of two percents of real GDP, face to potential GDP.

Our analysis suggests that, after the crisis, the unemployment rate was very close to its natural level showing a remarkable stability. As a result, real GDP was close to potential GDP.

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### Figures

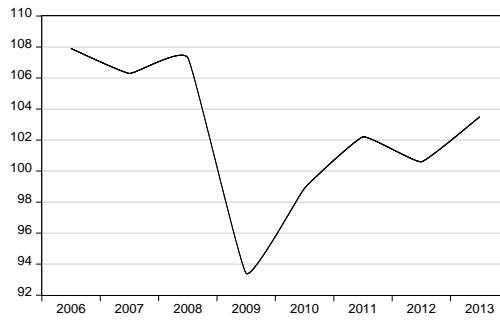


Figure 1. GDP Growth Annual Indices (%)

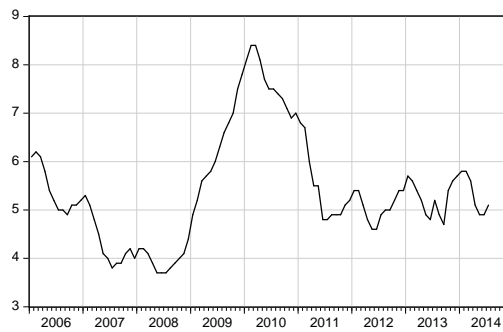


Figure 2. Unemployment Rate (%)

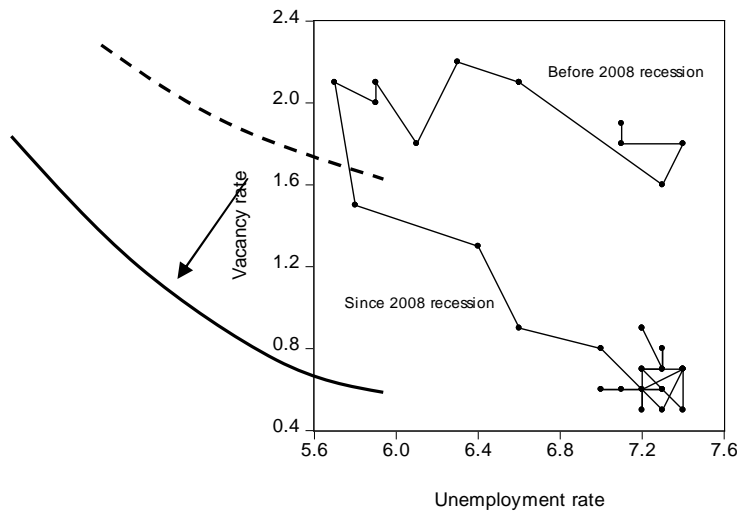


Figure 3. Beveridge Curve 2006Q1 – 2014Q2

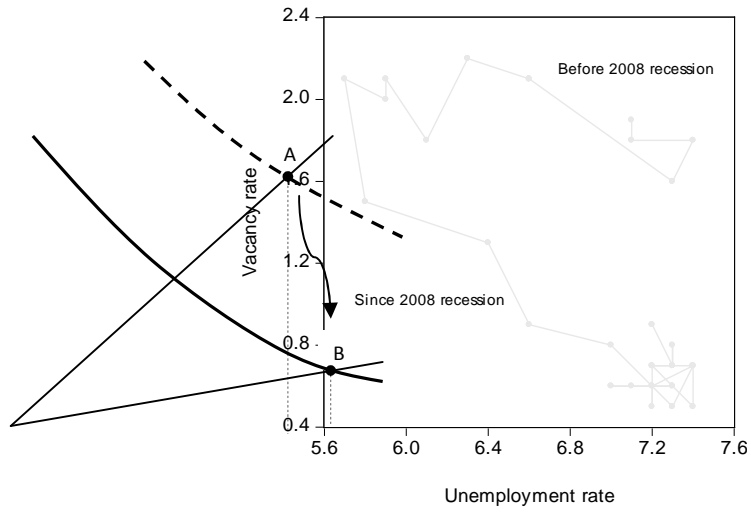


Figure 4. The natural rate of unemployment