

ANALYSIS OF LABOR MIGRATION IN ROMANIA

NECȘULESCU CONSUELA

ASSISTANT PROFESSOR, PHD, UNIVERSITY OF PITEȘTI

e-mail:necsulescuc@yahoo.com

SECARĂ CARMEN GABRIELA

ASSISTANT PROFESSOR, PHD, UNIVERSITY OF PITEȘTI

e-mail:carmen.secara@yahoo.com

Rezumat

Because of the increasingly precarious conditions in Romania, many people leave the country to obtain a job. Increasing of migration, both before the occurrence of the economic crisis in Romania and afterwards is the motivation of the study in this paper. The research conducted is subject to the analysis of labor migration in Romania, as well as determinants: wages, GDP, inflation rate and unemployment rate. In the first part of the paper are used statistical methods for the analysis of labor migration in Romania and in the second part are used regression econometric models to analyze the impact of wages and unemployment on migration. For the analysis of labor migration, we have taken into account a 12 year-period, from 2000 to 2011. Statistical and econometric processing are performed using the software program package called Eviews.

Key-words: *migration, labour, wages, employment*

Jel Classification: *J01, J08, O15*

1. Introduction

Economic and social development of Romania in the last twenty years, marked by a more and more decrease in the national economic potential and hence, in the income of a large part of the population, at the same time with the overall liberalization of the labor market global, made a large number of Romanians to focus on the employment in developed European countries. [2]

The concept of migration, etymologically speaking, implies a change of the permanent residence of a person within the same state or from one state to another. We may consider that migration has two main components:

- internal migration - change of residence within the borders of a country;
- international migration - relocation to another country or from another country in Romania.

After 1990, external migration has become a social phenomenon that has spread.

During this period, migration acquired many forms: starting with migration for family reunification, then as an ethnic migration (Romany people seeking refuge in various countries of Europe or Hungarians migrating in Hungary) or business migration (including small border traffic) and developing by increasing the student international mobility, emphasizing brain- drain (especially those in the IT field) and ending with labor migration. [1]

Labor migration has different effects. Demographic decline caused by migration covers two aspects:

- direct loss;
- temporal effects of age structure damage.

If the economic, social and cultural perspective of labor migration is predominantly positive, the same is not available for the demographic perspective of the phenomenon.

Demographic perspective takes more negative aspects and represents a price to be paid. [5]

The consequences of migration include:

- still low capacity of the economy and society to generate employment opportunities and adequate remuneration encourages the exodus of skilled and highly skilled labor;
- massive migration (especially the external and internal one) in less developed areas (rural areas, small towns, etc.) caused disequilibrium and even depopulation in territorial terms when it was not balanced by the birth rate;
- external migration, in its entire complexity is not quantified;
- since Romania has been a member state of the European Union, our country tends to become a country of

migration;

2. Research methodology

Determining the impact of key macroeconomic indicators (inflation rate, unemployment rate, GDP / capita and average net wage) on labor migration from Romania is performed using the regression analysis. The regression function developed for the analysis of the relation between the macroeconomic indicators and labor migration has the form of a double logarithmic unifactorial regression model expressed as:

$$\log(y_t) = a + b \cdot \log(x_t) + \varepsilon_t \quad (1)$$

where:

x_t is the model independent variable;

y_t is the model dependent variable;

ε_t it is the random (disturbing) variable.

We have also used a dynamic model to determine the trend of labor migration during the analyzed period.

$$y_t = a + b \cdot x + c \cdot x^2 \quad (2)$$

where:

x is the time variation and it is the independent variable of the model;

y_t is labor migration and the dependent variable of the model;

The parameters of the econometric model presented in equations (1) and (2) are estimated using the method of least squares.

A fundamental condition to be met before performing an estimation of a simple regression equation is verification of the stationary nature of time series. [6] Checking the series stationary nature is made using Augmented Dickey-Fuller test. $\alpha = 0.05$ The time series are stationary if $t_Statistic \geq t_Critical$ and the probability p is less than materiality $\alpha = 0,05$ [4]

Measuring the strength of connection between the indicators is performed by means of the correlation ratio (Multiple R) and, in order to measure the accuracy of which the dependent variable is explained by the variation of independent variable, the determinative coefficient is used. (R-squared). [3]

3. Evolution and forecast of labor migration from Romania in the European Union member states

A first analyzed element is the evolution of Romanian migration to the EU Member States in the last 12 years.

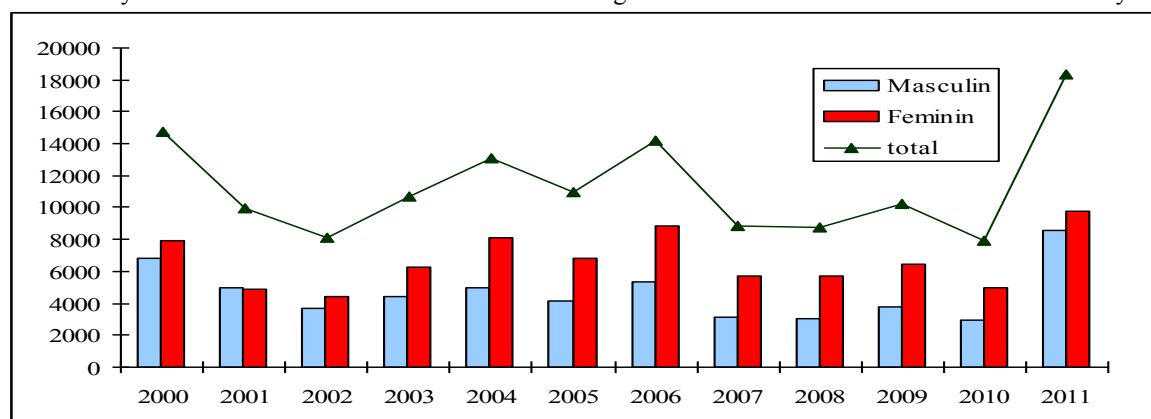


Figure no.1 – The evolution of labor migration from Romania to the European Union Member States
(Source: Processing of data published by the National Institute of Statistics)

During the analyzed period, 2000 - 2011, Romanian labor migration to the EU Member States have fluctuated. During this period, approximately 323 persons / year have left Romania for a job in another country. Between 2007 and 2010, amid the economic and financial crisis affecting Europe, labor migration from Romania is decreasing (in 2007 migration is 8830 people, with 5367 people less than in 2006 and in 2010 migration decreases by 6291 people as compared to 2006).

The study of labor migration by gender reveals that, from the total number of persons who left Romania to search for a job in another Member State of the European Union, women have a significantly higher ratio as compared to that of men. ($t_{statistic}=2,97 \geq t_{0,05;22}=1,18$ and $p=0,004 < \alpha=0,05$). Regarding the analysis of the influence of

gender on labor immigration in our country, it is proved that it is an important factor for influencing the migration. ($F_{\text{calculat}}=8,84 \geq F_{0,05;1;22}=4,30$ and $p=0,007 < \alpha=0,05$). This situation can be justified by the large number of unemployed and inactive women and the great diversity of jobs for them.

Romanian labor migration to the EU Member States recorded a maximum peak in 2011 (18307 persons which is 0.21% of the workforce in Romania), 2.31 times more than in 2010, the year where migration has the lowest level (7906 individuals representing 0.09% of the workforce in Romania). Migration of men in our country is about 3 times higher (from 2917 people to 8527 people), in 2011 as compared to 2010, much higher compared to that of women, which is only 96% (from 4989 people to 9780 persons).

The main countries with Romanian workers are: Italy, Spain, Germany and the UK. The most numerous immigrants to these countries belong to the age group 25-34 years. [7]

The stationary nature of the data series on labor migration from Romania to the European Union member states is verified if we accept a significance level of 1%. (see figure no. 2).

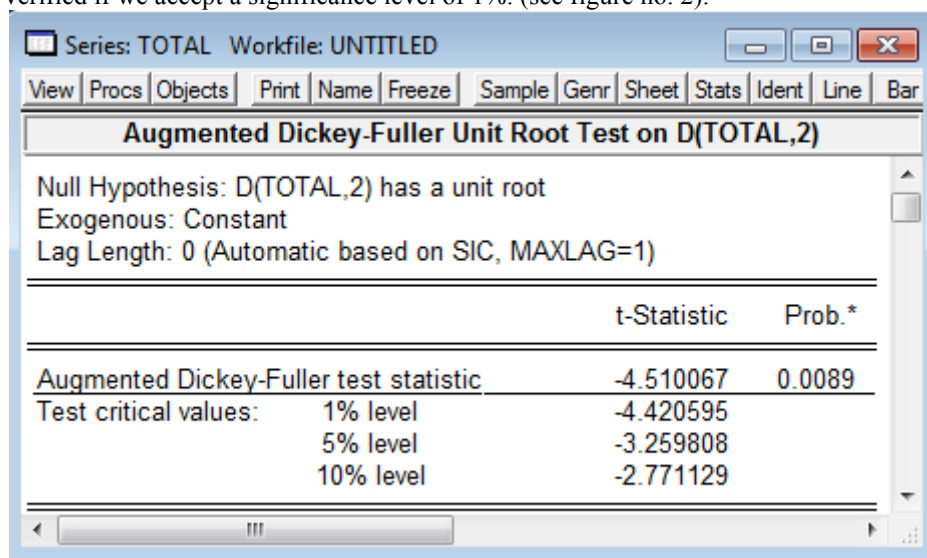


Figure no. 2 - Test results of the Augmented Dickey-Fuller

The forecast of labor migration from Romania is made based on the migration trend during 2000-2011. (see figure no. 3)

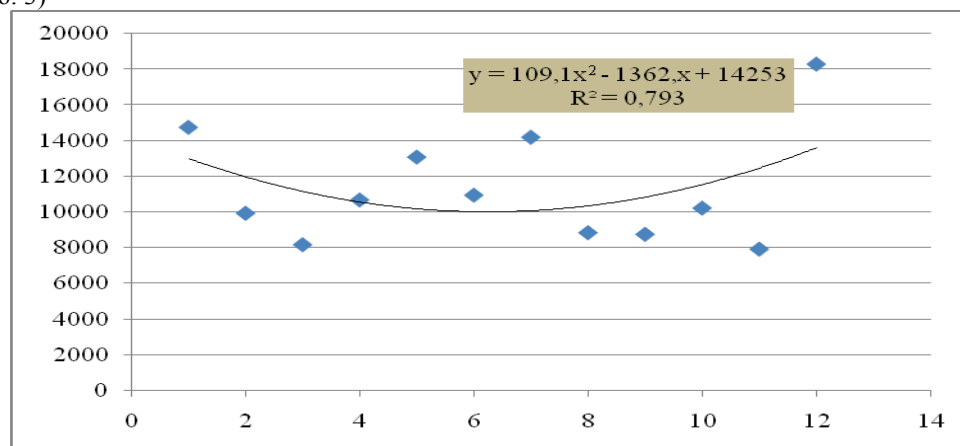


Figure no. 3- Trend of labor migration from Romania to the European Union Member States

The trend of labor migration in our country is described by the analytical function:

$$\text{migration}_t = 109,1x^2 - 1362,x + 14253 \quad (3)$$

(where x is time variation). During 2000-2011, the annual average of people settling in another country is 14253 people, with an average annual regression of 1362 people.

Analysis of the model forecasting capacity on the evolution of labor migration from Romania during 2012 - 2014 is done using statistical indicators proposed by H. Theil.

Table no. 1 Results of model forecasting test on the evolution of labor migration

Name of indicator	
-------------------	--

Theil coefficient	0,121217
Share deviation	0
Dispersion share	0,443765
Covariance share	0,556235

Following the analysis of data, it comes out that the model chosen has a good forecasting capacity, due to lower values recorded in case of Theil statistical indicators, therefore, it might be accepted in order to achieve a forecast.

Table no. 2 Forecast for labor migration during 2012-2014

Years	Labor migration - persons
2012	14984
2013	16568
2014	18370

4. Impact of main macroeconomic indicators on labor migration from Romania

Emigration of citizens in our country to the EU Member States is influenced by many factors, such as economic needs (low wages, high unemployment and inflation rates), but also the desire to improve the standard of living.

In order to analyze the influence of the inflation rate, unemployment rate, GDP per capita and wages on labor migration to the EU Member States, I have developed and tested specific models, using data for the period 2000-2011.

Stationary nature of the data series: unemployment rate, inflation rate, GDP per capita and average net nominal wage is checked using *Augmented Dickey-Fuller* test. Analyzing the data contained in Table No. 1, we can say that the series are stationary if we accept a significance level of 1% for the inflation rate, 5% for the unemployment rate, GDP / capita of 5% and 1% for the average net wage.

Table no. 1 Test results of the Augmented Dickey-Fuller

	t-Statistic	Prob
Inflation rate		
Augmented Dickey-Fuller test statistic	8.224596	0,0000
Test critical values:		
1% level	4.200056	
5% level	3.175352	
10% level	2.728985	
Unemployment rate		
Augmented Dickey-Fuller test statistic	4.542002	0.0304
Test critical values:		
1% level	5.521860	
5% level	4.107833	
10% level	3.515047	
PIB/capita		
Augmented Dickey-Fuller test statistic	4.036583	0.0169
Test critical values:		
1% level	4.420595	
5% level	3.259808	
10% level	2.771129	
Average net wage		
Augmented Dickey-Fuller test statistic	3.464382	0.0033
Test critical values:		
1% level	2.847250	
5% level	1.988198	
10% level	1.600140	

(Source: Processing of data published by the National Institute of Statistics)

Regression model describing the relationship between the inflation rate (RI), the independent variable of the model and labor migration (EFM), the dependent variable is as follows:

$$\log(\text{EFM}_t) = 4.02 + 0.02 \cdot \log(\text{RI}_t) + \varepsilon_t \quad (4)$$

Increasing the inflation rate by one percentage point causes the increase of the emigration annual average by 0.02 percentage points, so the price increase has a negative impact on livelihood and determine labor migration to other states. The impact of inflation rate on labor migration is mild and describes a direct relationship between the two variables (Multiple R = 0.719). Approximately 52% of the labor migration variation is justified by the inflation rate variation and the difference of 48% is the influence of other disturbing factors.

The relationship between unemployment rate (RS), the independent variable and labor migration, the dependent variable is described by the doubly logarithmic regression model:

$$\log(\text{EFM}_t) = 4.03 + 0.012 \cdot \log(\text{RS}_t) + \varepsilon_t \quad (5)$$

The annual increase in the unemployment rate by one percentage point leads to the increase of migration average annual growth by 0.012 percentage points. Unemployment is an important factor for emigration influence ($F_c = 34.0019$ and the probability associated to statistical test is 0.00006793), so, between the two variables there is a medium intensity connection (Multiple R = 0.684). Job loss, especially after the start of financial and economic crisis in our country leads to the departure of labor to other more developed countries. Labor migration variation is explained in a share of 47% by the variation in unemployment.

Unifactorial regression model describing the relationship between GDP / capita, the independent variable of the model and labor migration, the dependent variable is:

$$\log(\text{EFM}_t) = 4.19 - 0.04 \cdot \log(\text{PIB}_t) + \varepsilon_t \quad (6)$$

GDP / capita has a medium and negative influence on the labor migration (Multiple R = 0.695), thus increasing GDP / capita by one percentage point reduces labor migration on average by 0.04 percentage points / year. Improving living standards, highlighted by the GDP / capita is one of the important causes for the reduction of labor migration in our country.

The regression model between the average net wage (SN), the independent variable of the model and labor migration, the dependent variable of the model is:

$$\log(\text{EFM}_t) = 4.15 - 0.03 \cdot \log(\text{SN}_t) + \varepsilon_t \quad (7)$$

Wage increases that occurred in our country have led to the reduction of labor migration to other countries on average by 0.03 percentage points annually. Influence of average net wage on labor migration is mild and negative (Multiple R = 0.694).

5. Conclusions

Following the study conducted, it is found out, based on the economic crisis affecting Europe, the situation which leads to job cuts, labor migration in our country is declining. For the whole analyzed period, labor migration to the EU Member States reached the peak level in 2011 due to improving the economies of those countries. The main countries to which most Romanians emigrate in search of a job are Italy, Spain, Germany and the UK. The study of labor migration by gender reveals that, from the total number of persons who left Romania in search for a job in another Member State of the European Union, women have a significantly higher share compared to that of men due to the large number of jobs offered to them.

Job loss as evidenced by unemployment rate, price increase highlighted by the inflation rate causes the increase in the labor emigration from our country to the European Union Member States. On the other hand, improvement of living standards highlighted by GDP / capita and average net wage leads to the reduction of labor migration to other EU Member States.

Bibliography

- [1] **Bleahu A.** – ”Fenomenul migrației externe în rândul tinerilor din România”, ”Calitatea vieții”, Bucharest, XV, no. 3 – 4, 2004;
- [2] **Cruceru A.** – ”Analiza statistică a fenomenului migrației românilor”, ”Revista română de statistică”, no. 1/2010;
- [3] **Necșulescu C. , Șerbănescu L.** – ”The Development of Earnings in Romania Before and After the Economic Crisis”, ”Analele Universității Ovidius Constanța, Sria Științe Economice”, vol. XIII, no. 2/2013;
- [4] **Șerbănescu, L., Necșulescu, C.** – ”Analyzing and forecasting key profitability indicators of banking system in Romania”, ”Lucrări Științifice. Management Agricol”, Editura Agroprint, Timișoara, 2013;
- [5] **ANOFM** – ”Populația României – efectele emigrației în scop de muncă / Munca în străinătate”;
- [6] <http://www.ase.ro/upcpr/profesori/752/Testarea%20UIP.pdf>;
- [7] http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=migr_emi3nxt&lang=en.