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The effect of emigration on unemployment rates: the case of EU emigrant countries

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ABSTRACT

This paper analyses the effects of emigration on emigrant countries' unemployment rates (short-term effect) in selected EU emigrant countries. The panel data analysis (fixed-effects model) covers the period from 2004 to 2015, and a total of nine EU countries: Bulgaria; Estonia; Greece; Croatia; Latvia; Lithuania; Poland; Portugal; and Romania. The obtained results show that emigration increases the unemployment rate in emigrant countries confirming that, besides generally expected positive effects in terms of a fall in unemployment, emigration could also have an adverse effect on emigrant countries' labour markets. Such results point to structural issues in the labour market caused by emigration, i.e., an increase in the labour supply and demand mismatch, which is discussed in the paper through the descriptive analysis of *Job Vacancy Rate* (JVR) data.

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1. Introduction

The relationship between migration and labour markets is a dominant topic in migration debates. However, most of the contemporary literature is focused on the effects migration has on the host country; less attention is directed towards the issue of migration effects on the emigrant countries, i.e., the countries from which migrants come. This area of research is especially interesting from the aspect of emigration and its effects on a wide range of labour-market indicators in the emigrant countries. As highlighted by Mishra (2006, p. 3), the shares of the labour force leaving many individual emigrant countries is much higher than the proportionate changes in the labour force in receiving countries due to immigration.

The main effects of emigration on the emigrant country labour market, when analysed from a time perspective, include the following: (1) in the short term emigration affects employment/unemployment; (2) in the medium term emigration leads to pressure on wages, within which structural characteristics of emigration have a crucial

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role; and (3) in the long term, emigration affects the structure of the economy (e.g., capital/labour ratio) (Kaczmarczyk, 2012, p. 180).

This paper is focused on the correlation between emigration and unemployment rates, thus analysing the short-term effects. The hypothesis that will be tested stems from the literature and states that 'by decreasing the labour pool in the sending country, emigration helps to alleviate unemployment ...' (Asch, 1994, p. 4).

The paper is structured as follows. Following the introduction, Section 2 presents the overview of theoretical and empirical backgrounds relevant for the research as well as a descriptive analysis of emigration and unemployment in selected EU countries. Section 3 proceeds with econometric analysis of the effects of emigration on the unemployment rate. The final section concludes.

2. Emigration and labour markets in selected EU emigrant countries

2.1. Theoretical and empirical background relevant for the research

Empirical studies in general tend to find a positive impact of migration on receiving countries, while the impact on emigrant countries is less clear-cut (IMF, 2016). Further, although the research on the emigration effects on emigrant countries is theoretical rather than empirical, emigration can have various economic effects in terms of changes in wages and the employment levels of non-migrants, as well as changes in productivity and economic growth (Asch, 1994, p. 1). Potential negative, positive and ambiguous effects of emigration from the aspect of labour-market outcomes are presented in Table 1.

Thus, emigration can have adverse economic effects due to externalities, which is in line with the endogenous growth theories that account for human capital externalities and low substitutability between skilled and unskilled workers. In this line of reasoning the productivity of those left behind may decline if there are externalities associated with emigration. In addition, the emigration of skilled and young workers could also have non-economic externalities resulting in the exit of those who could have been agents of change in improving the quality of institutions (IMF, 2016, p. 7).

The empirical literature on emigration effects on labour markets is diverse, encompassing various methodologies and data, and thus resulting in various conclusions. Moreover, the research is focused on exploring wage effects of emigration, while only a small number of papers try to analyse the unemployment effects of emigration on emigrant countries (e.g., Barrell, Fitzgerald, & Riley, 2010; Baas, Brücker, &

Table 1. Potential effects of emigration on labour-market outcomes.

Positive effects	Negative effects	Ambiguous effects
1. Higher wages for emigrant category of labour	1. Lower wages for complements of emigrant labour	1. Higher labour-force participation of emigrant families who stay behind
2. Higher wages for substitutes of emigrant labour	2. Higher unemployment among complements of emigrant labour	2. Lower labour-force participation of emigrant families who receive remittances
3. Lower unemployment among emigrant category of labour	3. Lower employment	3. Higher/lower employment/unemployment of substitutes of emigrant labour

Source: Asch, 1994, p. 9.

Hauptmann, 2010; Hazans & Philips, 2011; Pryymachenko, Fregert, & Andersson, 2013; Zaiceva, 2014). As a result, there is no general conclusion regarding the direction of effect of emigration on labour markets in emigrant countries. Kaczmarczyk (2012), analysing the effects of migration on the case of Poland, points out that there were no significant effects in the short run (employment/unemployment) nor in the medium run (wages). Another study, also for Poland (Dustmann, Frattini, & Rosso, 2015) analyses the effect of emigration around the time of EU accession on the Polish labour market. Focusing on the 1998–2007 period, authors show that emigration from Poland was highest for workers with intermediate-level skills and that it is wages for this skill group that increased the most. Also, they show that emigration led to a slight increase in wages overall, but that workers at the low end of the skill distribution made no gains and may actually have experienced slight wage decreases.

Hazans and Philips (2011, p. 3) show that migration has contributed to a decline in unemployment and real wage growth in general, as well as improvements in the labour-market position of ethnic minorities and the low-skilled in Baltic countries. The authors claim that through these channels and through remittances, migration improved living standards. However, on the other hand, migration-induced labour shortages in some sectors have been obstacles to growth. As an important obstacle, they highlight labour shortages that may develop in some segments of the labour market when the unemployed lack the skills required by employers and cannot replace the movers, and in such cases unemployment rates could increase.

Elsner (2013) found that over the five-year period, in Lithuania emigration increased the wages of young workers by 6%, while it had no effect on the wages of older workers; it was also found that there is no significant effect of emigration on wage distribution between high-skilled and low-skilled workers.

Further, the results of Pryymachenko, Fregert, and Andersson (2013) suggest that emigration has a strong negative effect on unemployment in emigrant countries where a 10% increase in the share of emigrants in the national labour force leads to a decrease in the unemployment rate by around 5%. In addition, Zaiceva (2014) highlights that emigration has reduced the excess supply of labour, lowered the unemployment rate and increased the wages of those who stayed in the Central and Eastern European member-states that joined the EU in 2004 and 2007.

Another study regarding the migration scenarios of New Member States' (NMS) emigrants between 2004 and 2007 found a 0.2% increase in aggregate GDP for the whole EU, but in the emigrant countries, GDP declined by 1.1% in the long term owing to the loss of labour (Baas, Brücker, & Hauptmann, 2010). More precisely, authors have analysed the migration impact on the labour markets of both old (EU15) and New Member States (EU8) from 2004 to 2007. They found small labour-market effects: in the short run, wages declined by about 0.1% in the EU15, and the unemployment rate increased by about 0.1 percentage points; in EU8, wages increased by 0.3% and the unemployment rate declined by 0.4 percentage points. However, in the long run, after the adjustment of capital stocks, the migration effect is neutral for wages and unemployment.

Finally, according to Eurostat and UN projections, continued net migration flows during 2015–2030 could reduce the level of real GDP as well as GDP per capita

across all net sending countries, while the cumulative output loss may be as large as close to 9%. In turn, GDP per capita could decline by about 4% in some countries (IMF, 2016, p. 28).

Based on the empirical literature overview, one can conclude that the effect of emigration on unemployment cannot be determined *a priori*, but is more of an empirical issue (see Rutkowski, 2007, p. 10). Therefore, in the following paragraphs, we proceed with an empirical assessment of emigration effects on unemployment in EU emigrant countries.

2.2. Descriptive evidence with a focus on EU emigrant countries

The issue of emigration in the CEE countries started to gain attention following the process of joining the EU during which emigration was mostly seen as a positive phenomenon for both the emigrant and the host country. Croatia, the newest EU member-state since 2013, is faced with the same trends, although for now, emigration is highlighted as a mostly negative phenomenon. Such migration flows could eventually hamper the labour-market structure in the longer term. This can be attributed to the fact that emigration results in the loss of capable and talented young people, the so-called *brain drain* process.

The increase in emigration that followed EU accession was in previous research usually seen 'as a natural experiment that helps to identify the effect of emigration on unemployment, where unemployment can cause emigration, but emigration may also reduce unemployment whereby it is statistically difficult to separate between these two effects' (Prymachenko, Fregert, & Andersson, 2013, p. 4). However, accession to the EU in 2004 and 2007 'coincided with a time of economic growth and rising demand', so it is not so striking that the unemployment rate decreased (Zaiceva, 2014, p. 3). Thus, unemployment was determined predominantly by business-cycle-related factors. The situation with Croatia was much different as the country was entering the EU in 2013 when the consequences of global economic crisis were still profound and emigration was triggered by both *push* and *pull* factors.

In order to contribute to the existing, and scarce, literature, the goal of this paper is to empirically examine the effects of migration outflows on the labour-market outcomes, that is, the unemployment rate for the sample of EU *emigrant* countries. The novelty in the research is in the selected sample of countries used for the analysis, where we take into consideration emigrant countries, within which some are in the group of NMS, but within which some are also in the group of old EU members which are faced with the problem of emigration. As an *emigrant country* we define those EU member-states that have negative net migration, i.e., net out-migration (those for which emigration is in the 2004–2015 period on average higher than immigration).¹ The obtained sample encompasses a total of nine member-states, including Croatia. They are the following: Bulgaria; Estonia; Greece; Croatia; Latvia; Lithuania; Poland; Portugal; and Romania.

Figure 1 shows the average values of net out-migration for selected countries in the period 2004–2015.

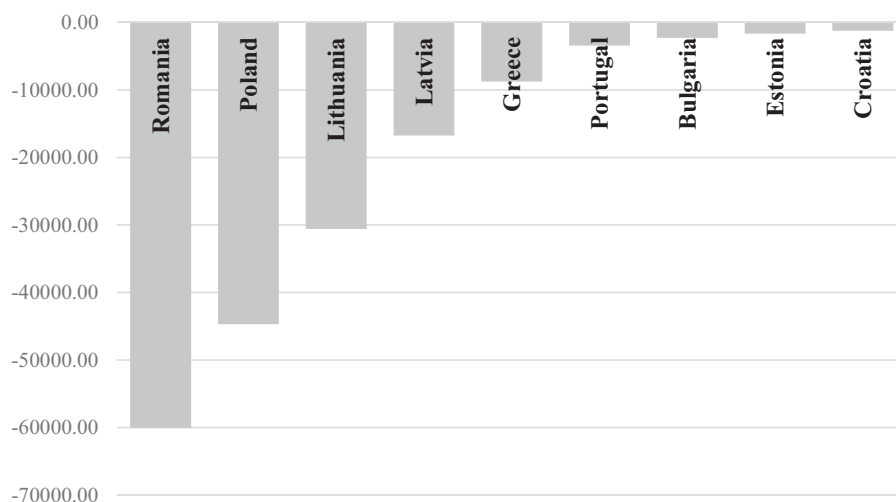


Figure 1. Net out-migration (average for the 2004–2015 period).

Source: Authors' calculations based on Eurostat data.

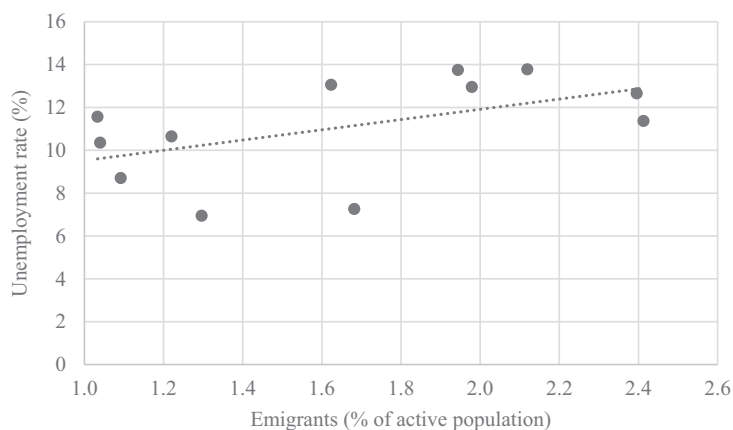


Figure 2. Unemployment rate and emigrants, as a share of active population (2004–2015 average values).

Source: Authors' compilation based on Eurostat and OECD data.

Regarding the age structure of emigrants, Eurostat data² show that on average, the largest share of emigrants belongs to the 15–64 age group (around 64%), with a share of those aged between 25 and 29 amounting to around 18%. Such a structure of emigrants could hamper a country's labour force. Therefore, Figure 2 shows more detailed data on unemployment and emigrants in selected countries (both expressed as a share of active population), expressed as an average for the period 2004–2015.

Based on this initial descriptive analysis using average values of data, we could conclude that there could be a positive correlation between the two variables. However, since this insight is only intuitive, it is further econometrically analysed using panel data and taking into consideration some other factors as control variables in the next section (e.g., GDP per capita, labour-market policies etc.).³

3. Econometric analysis of emigration effects on unemployment in EU emigrant countries

In this part of the paper, we examine the impact of emigration on unemployment in emigrant countries using the panel data analysis. The analysis is performed for nine European Union countries⁴ which are defined as emigrant countries in the period 2004–2015.

The panel data analysis is used for the estimation of the model:

$$unemp_{it} = \beta_1 X_{it} + \alpha_i + u_{it} \quad (1)$$

where the dependent variable is unemployment rate (*unemp*) and X_{it} is a set of independent variables included in the model (emigr, Labour Market Policies [LMP] and GDP per capita). A potential econometric concern is reverse causality from unemployment to emigration. If higher unemployment leads to increased emigration, the negative effect of emigration on unemployment would then be underestimated. Therefore we use lagged emigration as an instrument for current emigration (see e.g., Mishra, 2007; Pryymachenko, Fregert, & Andersson, 2013). This is justified by the fact that social networks between previous and current migrants are known to be important determinants of migration, and therefore there is a strong correlation between past and current migration. That is, past emigration could directly affect the current unemployment due to lags in labour-market responses to economic shocks (Pryymachenko, Fregert, & Andersson, 2013, p. 2695). Finally, all the variables are transformed in logarithms. Table 2 offers a detailed description of data and variables used, as well as data sources.

Emigration is particularly difficult to measure. Since it is harder to count people leaving a country than those arriving, and as an analysis comparing 2016 immigration and emigration data from the EU member-states confirmed that this was true in many countries (Eurostat, 2018), we calculate the proxy variable for emigration that we derive from the OECD migration database, which uses flows derived from population registers, residence and work permits, as well as specific surveys (i.e., we use the mirror statistics approach). To be precise, we use data on the inflow of foreign population by nationality, filtering the nationalities (and place of birth) of countries from our sample. Although this approach is limited only to OECD members as countries recording the emigrants from countries in our sample, we prefer using this data since Eurostat data underestimate the real number of emigrants.

The variables have been tested for non-stationarity using the Levin–Lin–Chu unit root test, and based on the test results, we conclude that the series are stationary (Table 3).

Table 2. Description of data.

Variable	Variable description	Data source
<i>unemp</i>	Unemployment rate (annual average, % of active population)	Eurostat
<i>emigr</i>	Inflow of foreign population by nationality; this number is then used as the number of emigrants for the countries in the sample (expressed as a share of active population)	OECD
<i>GDP pc</i>	Gross Domestic Product per head of population (in EUR)	Eurostat
<i>LMP</i>	Proxy for labour-market policies (LMP expenditure by all types of labour market actions, as % of GDP)	Eurostat

Source: Compiled by authors

Table 3. Panel unit root test results: Levin–Lin–Chu unit root test.

Null hypothesis	Alternative hypothesis	p-values		
		Emigration	GDP pc	Unemployment
Panels contain unit roots	Panels are stationary	0.002	0.000	0.000

Source: Calculation of the authors

Table 4. Results of the panel data analysis.

VARIABLES	(1)	(2)
	FE	FE – GDP pc excluded
LMP	0.453*** (0.0689)	0.498*** (0.0729)
L.I emigr	0.389*** (0.0669)	0.266*** (0.0622)
GDP pc	–0.593*** (0.162)	...
Constant	7.831*** (1.473)	2.436*** (0.0472)
Observations	90	90
R-squared	0.562	0.487
Number of A	9	9

Standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Authors' calculations

We used a fixed-effects model, since it allows that α_i are permitted to be correlated with the regressors X_{it} , allowing a limited form of endogeneity (Cameron & Trivedi, 2009).

The obtained results are presented in Table 4. The results show that the main variable of interest, *emigr (one-period lagged)*, is statistically significant and it has a positive sign, implying that as the share of emigrants increases, the unemployment rate also increases. The result is in line with the theoretical assumptions according to which the expected effect of emigration on unemployment can be both positive and negative depending on the degree of unemployment. If emigrants are unemployed prior to emigration, then unemployment will fall. But, on the other hand, if emigrants are employed before emigration, the effect will depend on the replaceability of emigrant labour (Asch & Reichman, 1994).

If the existing unemployed are complements to emigrant labour, unemployment is expected to grow and if they are substitutes, employers could substitute unemployed workers for emigrants (a decrease in unemployment); but they could also cut employment along with cutting the output as a response to higher costs. Control variables (LMP and GDP pc) are also both statistically significant. However, while expenditure on labour-market policies increases (LMP), unemployment also increases. Such a result sheds light on the issue of efficiency of LMPs that are targeted towards a decline of unemployment in individual countries. Variable GDP pc (used as an indicator of the general economic situation in countries) has an expected negative sign, i.e., with an increase in GDP pc, the unemployment rate falls. The second column in Table 4 shows the results when GDP pc is excluded from the analysis.

To conclude, the obtained results for the sample of emigrant countries show that emigration increases unemployment in emigrant countries. These results are in line with some of the previous discussions. One of these is the fact that differences in skills between migrants and stayers matter: it is important whether migrants' skills substitute for or complement those of workers who stay. Generally, production

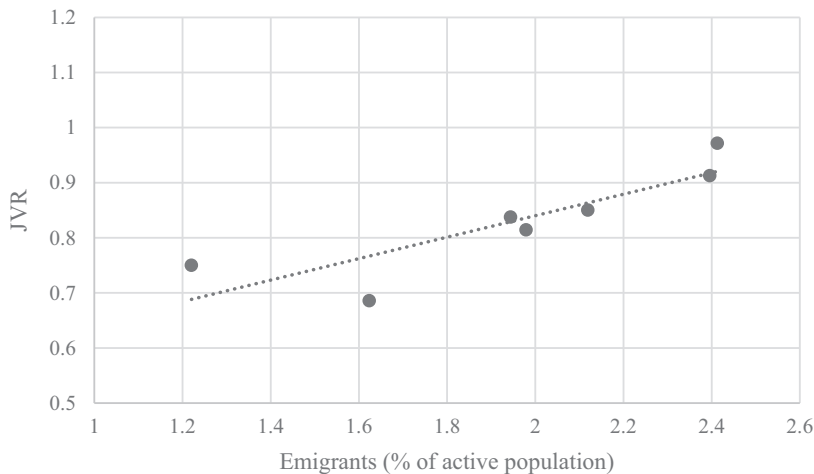


Figure 3. Job vacancy rate (JVR) vs. emigrants' share (2009–2015).

Source: Authors' compilation based on Eurostat and OECD data.

factors in receiving countries which are net complements to migrant labour tend to win, while those which are net substitutes tend to lose (Baas, Brücker, & Hauptmann, 2010, p. 48). If the migrants are mainly those who were employed (or who were likely to be employed), migration could increase, not lower, the unemployment rate (see Rutkowski, 2007, p. 10).

Further, we could interpret the obtained results in light of the factors that lead to the emigration. In this line of reasoning, emigration is not necessarily caused solely by the lack of vacancies at home. There could be other factors that need to be taken into consideration, such as low incomes, the quality of jobs and so on. On the other hand, the emigration of highly educated and talented people could affect vacancies in an emigrant country leading to a larger labour supply and demand mismatch. Figure 3 shows the available data on the job vacancy rate (JVR) which measures the proportion of total posts that are vacant (expressed as a $JVR = \frac{\text{number of job vacancies}}{\text{number of occupied posts} + \text{number of job vacancies}} * 100$) in correlation with the share of emigrants in the period 2009–2015 (data for Greece are not available). The job vacancy rate reflects the unmet demand for labour, as well as potential mismatches between the skills and availability of those who are unemployed and those sought by employers.⁵ The data shown in Figure 3 also imply that higher emigration leads to an upward trend in JVR contributing to a growing mismatch between labour supply and demand in the source country labour market.

If emigrants were unemployed before leaving, or if those who stayed took the jobs previously held by employed emigrants, emigration could have efficiently relieved emigrant countries of excess labour, and contributed to lowering unemployment and enhancing wage growth. However, if emigrants possessed relevant skills, labour shortages might have been amplified. It is difficult to disentangle the net effect of emigration (Zaiceva, 2014, p. 3). In our case, taking into consideration results obtained by performing the analysis and the trends in JVR presented in Figure 3, this other scenario is more probable.

4. Conclusion

In this paper, the short-term effects of emigration on the emigrant countries' labour markets is analysed. The analysis encompassed nine EU countries that were defined as emigrant, contributing to the existing literature that is mainly focused on the member-states that joined the EU in 2004 and 2007. With this approach, and expanding a period covered by the analysis from 2004 to 2015, we do not attribute emigration effects solely to the *events* of becoming a EU member. We find that emigration results in an increase in unemployment. This result could have wider implications for policy-making since it points to a growing mismatch between labour supply and demand on the emigrant country labour market.

However, it should be noted that the analysis of emigration effects in general has certain limitations. The largest is reflected in the reverse causality issue between unemployment and emigration which is accounted for in the model through the use of a lagged emigration variable. Second, there is great difficulty in obtaining reliable data on emigrants, since in European countries a large number of emigrants were and still are uncovered (Baas, Brücker, & Hauptmann, 2010). Data that were used in this paper stem from the OECD statistics on the inflow of immigrants from the sample of countries used in this paper in OECD countries. This number is then used as the number of emigrants for the countries in the sample (i.e., mirror statistics).

Although these data do not offer special characteristics in terms of educational attainment that would reflect the skills of those who emigrate, taking into consideration the described age structure of emigrants, the results obtained in the paper are relevant from the aspect of labour markets and open up an interesting venue for further research into emigration effects, from two perspectives. The first is on a more specific sectorial level, since labour migration not only affects wages and unemployment at the aggregate levels of the economies involved, but also their sectors in different ways (see Baas, Brücker, & Hauptmann, 2010, pp. 62–65). Second, an analysis of potential long-term impacts is crucial if such emigration trends prevail, since they could result in the profound change of demographic and economic structures which would further require enhancing labour-supply incentives and reforming educational policies. To be precise, in emigrant countries, besides educational policies, ALM policies could help mitigate the negative impact of emigration, especially the skills mismatch.

Notes

1. Migration Policy Institute tabulation of data from the United Nations, Department of Economic and Social Affairs (2015), Trends in International Migrant Stock: Migrants by Destination and Origin (United Nations database, POP/DB/MIG/Stock/Rev.2015). Retrieved from: <http://www.un.org/en/development/desa/population/migration/data/estimates2/estimates15.shtml>
2. Emigration by age and sex, Retrieved from http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=migr_emi2&lang=en.
3. Calculated coefficient of correlation of 0.52 also calls on the need for more in-depth econometric panel data analysis.
4. Greece, Portugal, Slovakia, Poland, Lithuania, Latvia, Croatia, Bulgaria and Estonia.

5. Description available on http://ec.europa.eu/eurostat/statistics-explained/index.php/Job_vacancy_statistics. Although this indicator has some limitations, it can be used for an illustration of labour demand. For example, using only registered vacancies may reflect only a small and not representative percentage of all vacancies.

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