

## Outward Labour Migration in the Czech Republic, Poland and Slovakia after the EU Enlargement in 2004

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**Abstract** This paper analyzes the outward labour migration from the Czech Republic, Poland and Slovakia to predominantly EU15 countries. It describes the incentives for emigration and evaluates the effect of the EU accession in 2004 for all three countries using the regional data. Our empirical estimation suggests that while outward labour migration from Poland was positively related to lagged emigration and negatively related to employment rate and average real wage, this relationship was less obvious and significant in the case of the Czech Republic and Slovakia. In addition, our results also imply that the EU accession had only indirect impact on emigration for three countries in question.

**Keywords** Labour migration, emigration, EU Enlargement, Czech Republic, Poland, Slovakia

**JEL classification** F02, F22, J61

### 1. Introduction

Labour migration undoubtedly represents a very interesting field of research that exhibits linkages to the society, culture, public environment and economy. Therefore, a lot of relevant research questions usually emerge when labour migration is concerned. Amongst these questions are such as: Is the labour migration economically beneficial? Or what is the motivation to move abroad? Yet answering some of these questions can be more difficult than it seems, and therefore a research of this phenomenon is necessary.

The main aim of this paper is to examine the international outward labour migration from the Czech Republic, Poland and Slovakia. More specifically, it focuses on its structure in terms of nations that contribute to the community of immigrants, recent trends and incentives to immigrate in case of all countries in question. In addition, it evaluates the impact of joining the European Union in 2004.

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Section 2 provides a brief literature review of theoretical and empirical research related to labour migration. Section 3 describes the current structure and trends in outward labour migration from the Czech Republic, Poland and Slovakia. Section 4 examines the trends in labour emigration over the period 1995–2010 and compares the trends for EC and non-EC members. Section 5 surveys the motivation for labour emigration, describes the utilized data and methodology and shows empirical estimates. Finally, the last part of the paper provides overall conclusions.

## **2. Literature review**

A substantial amount of academic literature has been written on the topic of labour migration. A lot of research is focused on the migration within a specific country. Todaro (1969) or Harris and Todaro (1970) provided first theoretical models, which describe the behavior of people in less developed countries, who migrate to urban areas. Katz and Stark (1986) deepen these findings and argue that migration to urban areas is perfectly rational even if it lowers individual's income, since it provides better opportunities to the future. Also, there are many papers, which focus on the empirical evidence of migration within a country. For example Zhao (1999) surveys the case of China and concludes that migrants have substantially higher wages than rural farm and non-farm workers, and that the amount of migration depends on the availability of rural non-farm jobs.

This paper is concerned with the international labour migration. Borjas (1989) provides a theoretical framework on the topic of international migration based on the neo-classical assumptions. He concludes that this theoretical insight roughly corresponds to the previous empirical studies. Furthermore, Massey et al. (1993) survey the main theoretical concepts and imply that even though they all have similar assumptions and propositions, the related policy implications are very different. Again, additional empirical papers supplement these theoretical concepts. Vogler and Rotte (1998) examine migration flows from developing countries to Germany. They describe and estimate determinants of migration and claim that the economic difference and the political situation are substantial incentives to emigrate. Moreover, Salt et al. (2004) show the trends of European labour migration, and they ascertain that the unemployment is significantly higher for immigrants. Thus, they suggest that prioritizing integration and anti-discrimination policies on the labour market might be beneficial.

The research literature dealing with the outward labour migration and its economic impact on sending countries remains scarce. Apart from some research conducted in the U.S.-Mexico context (see e.g. Aydemir and Borjas 2006; Mishra 2006; or Hanson 2006) which demonstrates a significant relationship between emigration and wage growth rates in sending countries, little research has been undertaken on this issue.

The scope and size of migrations strongly depend on the migration potential of population of a given country. It is more likely that in the countries with high migration potential worsening of the economic situation at home would push away more migrants (see for example Fidrmuc 2003; or Glazar and Strielkowski 2010). With regard to this, Strielkowski and Turnovec (2011) come with a concept of “indicator

of migration costs” which is country-specific and consists of tangible (e.g. cost of re-settling or adjustment in the new country) and intangible (e.g. psychological costs of migration—breaking the social ties, leaving family or friends, language barrier) components. It appears that if this indicator is greater than the difference between wages in the source and the target country of migration, there is no motivation for the labour force to move (in this case propensity to migration equals to zero). For the countries where the indicator of migration costs overpasses wages, migration potential remains low and the people might not promptly react to wage and unemployment incentives abroad.

Furthermore, Strielkowski and O’Donoghue (2006) analyze the impact of economic factors on the scale of migration and conclude that they are the main incentives to move abroad together with the deteriorating state of home economy. Thus, that is the reason why the EU enlargement in 2004 did not lead to massive inflow of workers to original member states (perhaps with the exception of Poland). Another paper by Strielkowski (2007) describes the pattern of Czechoslovak migration over the period 1993–2004 (after the split-up). He argues that even though the Czech Republic had better economic conditions, the migration between these countries was not highly influenced by them.

Therefore, the incentives for outward labour migration might not be only economic and the opening of the new incentives (higher wages and employment) elsewhere (e.g. on UK and Irish labour markets after the EU Eastern enlargement in 2004) might not lead to an increase in outward labour migration. The example of the Central and Eastern European countries, represented here by the Czech Republic, Slovakia and Poland, seems to be an interesting case for studying and further elaborating upon.

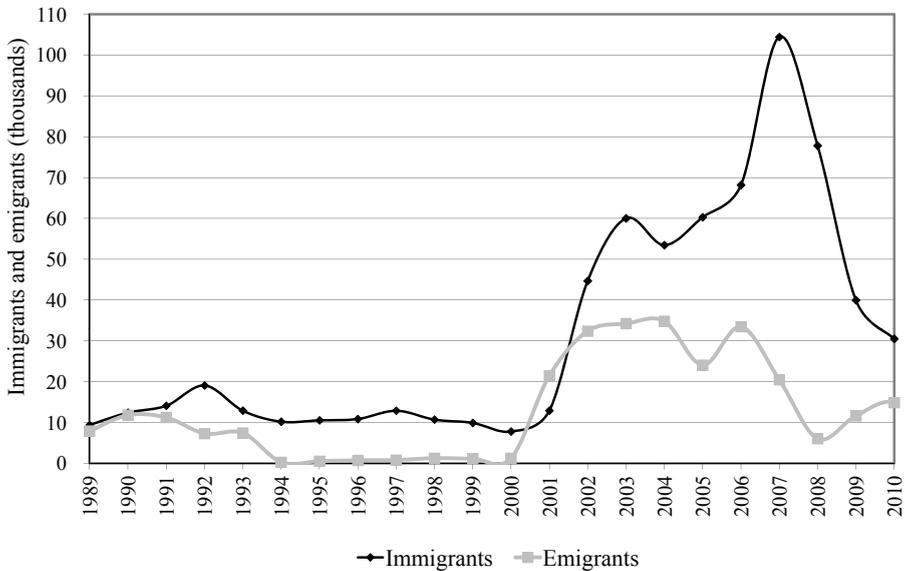
### **3. Labour migration in the Czech Republic, Poland and Slovakia**

#### **3.1 International labour migration in the Czech Republic**

According to many sources, the Czech Republic is a country with low labour mobility (see e.g. Arltová and Langhamrová 2010; or Stojanov et al. 2011). Figure 1 shows the structure of gross migration flows in the Czech Republic from 1989 until 2010. Prior to the EU accession in 2004, Czech outward migration flows were usually targeted for Germany and Austria as markets for its “surplus” labour. After the collapse of the Iron Curtain Czech citizens were employed in EU15 countries as seasonal works, workers employed on the basis of bilateral agreements, researchers and scientists or were engaged in so-called “pendling” (RILSA 2001). Pendling from the Czech Republic existed on a large-scale in the first half of the 1990s (12.000 workers annually), however by the end of the 1990s the number of Czech pendlers decreased by 60% (RILSA 2001).

Czech EU accession did not change much: there were no massive migration flows recorded from the Czech Republic to the EU-15 states that opened their labour market to the newcomers (e.g. UK or Ireland).

At present, citizens of the EU, EEA, or EFTA countries form more than a half (54%) of all immigrants in the Czech Republic. Ukrainians workers represent another



Source: Czech Statistical Office (2012)

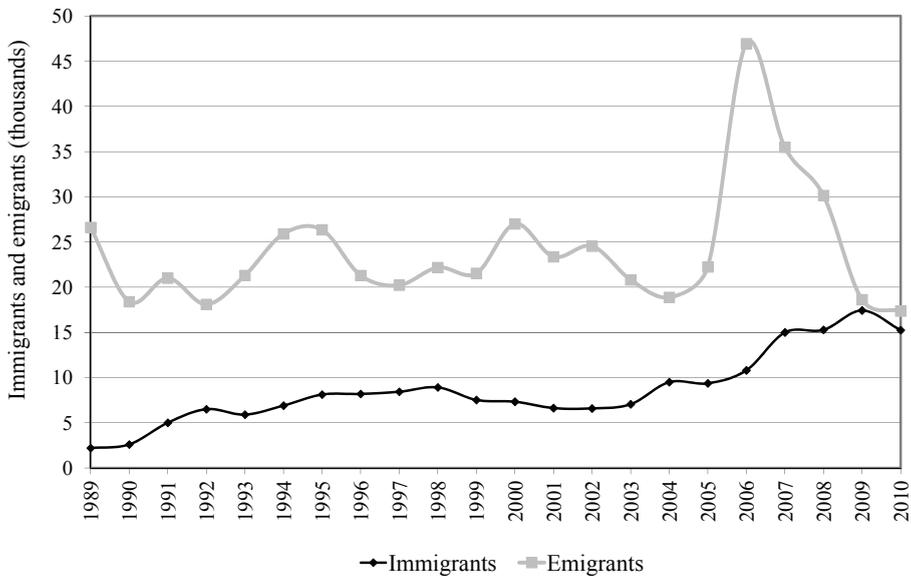
**Figure 1.** Gross migration flows: Czech Republic (1989–2010)

large group which forms almost a quarter (23%) of all labour migrants. Another significant group is the Vietnamese with a 12% share. The other groups of working migrants such as Moldavians, Russians and Mongolians have about 1–2% share and together with the rest of the world represent the total share of 12%.

The migration potential of the Czech Republic expressed in the regional migration turnover is very low in comparison with the “old” EU Member States (see e.g. Strielkowski and O’Donoghue 2006; Drbohlav et al. 2010; Arltová and Langhamrová 2010). One explanation to that might be the rigid housing market and some cultural specifics (e.g. sticking to the place of work and residence that is still quite often provided by the state).

### 3.2 International labour migration in Poland

International migration goes hand in hand with the Polish history. The unsuccessful uprisings of 1794 and 1863 ended up in many political opponents of Tsarist Russia having to flee the country. Okólski (2009) describes the “incomplete migration” that started in the late 1980s. Poles emigrated only temporarily (officially with the exit tourist visa) and headed towards Germany and Italy in order to undertake low-paid work. In regions of Easter and South-Easter Poland (i.e. Podlasie or Podhale provinces) about 70% of emigrants were represented by the incomplete migrants (Kaczmarczyk and Tyrowicz 2008).



Source: Polish Central Statistical Office (2012)

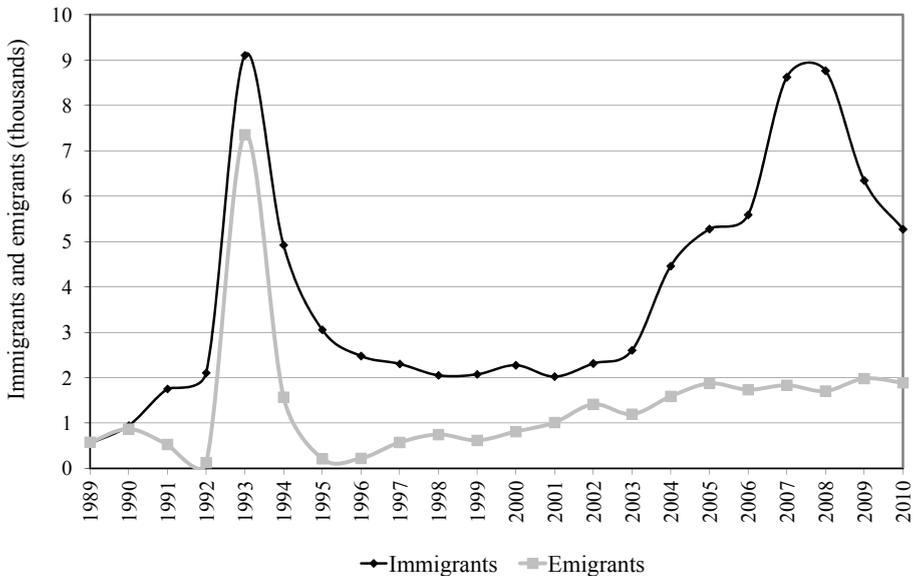
**Figure 2.** Gross migration flows: Poland (1989–2010)

Figure 2 above depicts gross migration flows in Poland from 1989 until 2010. The pattern shown by the graph is quite obvious: Poland is the only CEE country where emigration surpasses immigration (with even more migration remaining “incomplete” and therefore not registered by the official statistics).

Polish EU accession in 2004 triggered off the mass outflow of Poles. According to the British Office for National Statistics (2011), in 2011 there were 550 thousand Poles in the UK and they represented the second-largest group of foreign-born immigrants preceded by the Indians (693 thousand) and followed by the Pakistani (433 thousand). Unlike the Czech Republic or Slovakia and in addition to the high proximity to migrate, it might be high unemployment rate (according to the World Bank it was 19% in Poland, 9.1% in the Czech Republic and 9.1% on average in the EU) and relatively low wages that make Poles to emigrate.

### 3.3 International labour migration in Slovakia

Although the trends of international labour migration in the Slovak Republic (or Slovakia) is very similar to those in the Czech Republic, one has to realize that Slovakia is a country with a lower incomes and higher unemployment rate than its former partner in a common Federation. When economic problems come, it is quite common for many Slovaks to move to the Czech Republic (either temporarily or permanently) in order to improve economic well-being, rather than to any EU country. For Slovaks, the



Source: Slovak Statistical Office (2012)

**Figure 3.** Gross migration flows: Slovakia (1989–2010)

labour migration transactional costs to the Czech Republic were marginal: before both countries entered the EU in 2004, there were no residence permit or working visas, language and cultural barriers are irrelevant due to the common cultural background of Czechoslovakia and social ties between the two countries are much more stronger than with any other European country. The case of the Slovak Republic is of special interest, as far as it is easier for the Slovak workers to move to the Czech Republic in order to improve their economic position than anywhere else in the EU.

Before the Velvet Revolution of 1989 the majority of the Slovak labour migrations to the Czech Republic were temporary and not properly recorded. It was common for the citizens of one federal state to live and work in the other state for a number of years and then to return back home. Moreover, given the formal status of Czech or Slovak citizenship in the Czechoslovak Federation these internal migrations cannot be traced. Obviously, some periphery-centre migrations (from rural areas to urban hubs and especially the capital city of Prague) were taking place as it often happens in every country.

In the beginning of 1994 there were 17 thousand Slovak citizens in the Czech Republic (16% of all foreigners residing in the country). By the 1997 their number increased to 52 thousand (Czech Statistical Office 2007). Migration over the Czech-Slovak border became a considerable source of mitigation for the Slovak unemployment. For example, 2.8% of the Slovak labour force was employed in the Czech Republic in the 1996 (Tang et al. 2000).

Figure 3 shows gross migration flows in Slovakia from 1989 until 2010. It is obvious that both immigration and emigration remained very low, although the trend was similar to the one in the Czech Republic, with immigration surpassing outward migration.

In 2010, the total number of foreign migrants in Slovakia was 5272. Moreover, 82.63% of all immigrants are originally from one of the EU member states. The proportion of Ukrainians was much lower (2.26%) in Slovakia in comparison to the Czech Republic despite a common border. The share of Russians is comparable with Czech Republic (1.23%). The share of immigrants from Vietnam and Moldova is less than one percent.

The Czechs represent the biggest group of immigrants in the country (22%), followed by Hungarians (13.43%), Germans (6.73%) and Poles (5.42%). The character of working migration to Slovakia is different from the migration to Czech Republic. In comparison to Slovak, Czech economy is generating much more low and medium skilled jobs mostly in construction and industry. As a result, the total number of foreign migrants to Slovakia is lower, but there are also reasons to believe that there are differences in the structure of immigrants in terms of occupation and skill level.

#### **4. Data and methodology**

This section of the paper presents the empirical analysis of possible causes of international labour migration in the three economies in question. In order to find interesting relationships, econometric models employing OLS and stepwise regressions are used. The dependent variable is defined as the number of emigrants in each country and the independent variables are represented by the various labour market characteristics of the Czech Republic, Poland and Slovakia.

The proxy for the level of international outward labour emigration in the Czech Republic, Poland and Slovakia is a number of officially registered migrants. The potential determinants of labour migration that are considered in our empirical analysis are the variables describing the condition of the local economy, especially the local labour market as they might play the role of push or pull factors. In order to describe local economies we introduced the real GDP growth (in accordance with the World Bank's definition), GDP per capita, annual increase of average real wage, unemployment, employment and participation rates. In order to control our model for possible time effects, we also included the lagged observation of dependent variable and the EU dummy (the number of years when the countries in question were the members of the EU). The data were collected through the local statistical offices in the three countries on the NUTS-2 level for the period of 2002–2011. Our selection of the regional data is justified by the fact that we aimed at increasing the number of observations for each model and therefore raising the significance of the econometric analysis.

As far as our dependent variable has a log-normal distribution in all regressions, we also employed the natural logarithms of independent variables (except for the EU dummy). The analysis was performed in two steps. First, we estimated the separate impacts of all exogenous variables on migration level. Thus, we run a set of equations

in a general form:

$$\log M = \alpha_i + \beta_i \log x_i + \varepsilon_i, \quad (1)$$

where  $M$  is the number of migrants in a given year and NUTS-2 region and  $x_i$  are dependent variables described above. This approach allows us to test preliminary the correlations between dependent and all independent variables. It also provides us with the general overview of factors that influence migration flows in either direct or indirect way.

The next step was to estimate the complete model containing all the explanatory variables using the backward stepwise regression. Backward stepwise regression is typically used in those cases when there is a need for explaining and defending the use of candidate variables in regression models. It represents a regression models in which the choice of predictive variables is carried out by an automatic procedure (see e.g. Hocking 1976; or Draper and Smith 1981). The procedure is run with the use of a sequence of  $F$ -test,  $t$ -tests, adjusted  $R^2$ , Bayesian information criterion, Mallows's Cp or false discovery rate, just to name a few.

There are three main approaches to the stepwise regression: (i) forward selection (starting with no variables in the model and adding them one by one); (ii) backward selection (starting with all candidate variables in the model and testing them for significance); (iii) combination of the previous two.

In spite of the fact that stepwise regression methods are considered to be controversial by a number of critics (see for example Rencher and Pun 1980; or Copas 1983), they are extensively used in data mining, or extracting of implicit, previously unknown, and useful information from data sets and databases (see e.g. Hand et al. 1998).

For the purposes of this paper, the backward stepwise regression was employed in order to determine the "best" set of independent variables to use in the fit. Backward step regression used here starts with the initial model that contains all the independent variables. Then one variable is deleted at each stage (at first the variable that causes the smallest drop in adjusted  $R^2$  is dropped) until the best model is reached (see e.g. Yuan and Lin 2005).

By the successive elimination of insignificant ones we will finally get the form of the model that describes best the researched phenomenon for each economy. The equation that will be estimated in that step has the general form:

$$\log M = \gamma + \delta_1 \log x_1 + \delta_n \log x_n + \nu, \quad (2)$$

where  $M$  represents the number of migrants in a given year and NUTS-2 region and  $x_1$  and  $x_n$  are the variables with the best fit selected by the method described above.

In order to estimate equations presented in (1) and (2) OLS techniques are used. The use of backwards stepwise regression created solid grounds for elaborating on the outcomes of regression models; the results obtained throughout the regression analysis provide reasonable illustrations and grounds for our reasoning.

## 5. Empirical results

We present the results for all three economies in question together. The analysis was originally developed on Czech data with models optimally designed for Czech Republic and additionally applied on Polish and Slovak data to bring some comparisons.

All dependent variables selected for the final model proved to be significant and the final version of the chosen model appears to be methodologically correct. Additionally, we run the heteroskedasticity and collinearity tests, as well as the test for the normality of residuals. Furthermore, we also run the Ramsey reset test and determined that the variables in our model are well fitted to the data model structure.

The  $R^2$  and adjusted  $R^2$  in all three models are quite plausible ranging from 0.59 in the case of the Czech Republic to 0.39 in the case of Poland.

Table 1 reports the main findings from our empirical estimations. The results of all countries are shown side by side in order to enable comparison.

**Table 1.** Determinants of outward labour migrations: Czech Republic, Poland and Slovakia (2002–2011)

	Czech Republic	Poland	Slovakia
Lagged emigration	1.3447 (0.7754)	0.11648* (0.0651)	0.99404*** (0.00021)
Unemployment	-0.01453 (0.00228)	-2.107381*** (0.26525)	-0.00014 (0.00015)
Employment	0.5434** (0.4724)	-11.64412*** (1.36636)	0.19928*** (0.00058)
Increase in real wage	-0.7448*** (0.1652)	-0.714378* (0.36343)	-0.000167** (7.3E-05)
Constant	-579.146 (256.944)	49.6048*** (5.8267)	0.013386* (0.00697)
$R^2$	0.59	0.39	0.48
Adjusted $R^2$	0.57	0.37	0.46
No. of observations	140	150	80

Notes: \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%; standard errors in parentheses.

Source: Own calculations.

It becomes apparent that in the case of the Czech Republic, neither lagged migration, not unemployment represents any significant drivers of outward labour migration. On the other hand, employment is positively related to emigration which contradicts the common expectations. The sign of the variable denoting the annual increase in real wage is negative, meaning that the increase in wages would inevitably lead to the increase of outward migration. To sum it up, none of the selected drivers of outward

international migration in the Czech Republic has any significant impact on its volume and scope. This might be explained that the outward migration from the Czech Republic is not predetermined by the economic push factors.

On the contrary, the results for Poland show that, in accordance with our expectations, lagged emigration has positive impact on emigration. The unemployment rate growth causes decrease in the number of emigrants (a result that can be regarded as counter intuitive). The sign of the employment rate variable is negative meaning that the employment rate growth causes decrease in the number of emigrants which can be regarded as the well-reasoned result. Moreover, the outcome of the real wage impact yields an expected result that an increase in wages would lead to the decrease in the number of emigrants. The results for Poland signify that the Poles are more inclined to link their migration decisions to the economic situation on the Polish labour market. It appears that the impact of economic variables and incentives at home might represent significant drivers of outward labour migration from Poland. Therefore, catching up with the leading EU economies and increasing the economic well-being and the quality of life in Poland might reverse the outgoing Polish migration to the United Kingdom, Ireland, Sweden and (most recently) Switzerland.

When it comes to Slovakia, the obtained results make it clear that as far as the determinants of the outward labour migration are concerned, the country stands somewhere “in between” the Czech Republic (low migration country) and Poland (high migration country). A notable result is the significance of the lagged migration that might represent the importance of the migratory networks and social ties. However, the results for unemployment, employment and the increase in real wage copy those obtained in the case of the Czech Republic, with some minor differences in the value of the coefficients and their significance. This can be explained that although (as shown above), Slovakia cannot be regarded as the highly migratory country (as in the case of Poland), outward migration from Slovakia might still be importantly influenced by the economic push factors (worsening economic conditions at home), as well as by the proximity of the Czech Republic which, alongside with some EU15 countries such as the United Kingdom or Ireland, absorbs most of the Slovak migratory labour force.

Our results are consistent with the similar papers by Strielkowski and O’Donoghue (2006) and Strielkowski (2007) that the population of countries with lower “proximity to migrate” would have a higher threshold for choosing labour migration over worsening economic conditions at home or due to the favorable economic incentives abroad.

## **6. Conclusions and discussions**

This paper provided an analysis of determinants of outward labour migration from the Czech Republic, Poland and Slovakia. We demonstrated that while the incoming migration in all three countries in questions consists mainly of EC citizens (53% from which 81% come from Slovakia and Poland for the Czech Republic), followed in the Czech Republic by the Ukrainians (23%) and the Vietnamese (12%), it is only citizens of Poland who engage in large-scale outward labour migration driven by the economic “push” factors represented by the worsening economic conditions at home.

Although the analysis of motivation for inward migration to the CEECs shows that the level of migration is significantly influenced by the amount of GDP per capita, by the membership in the EU and the wage level, the outward migration from the three Central and Eastern European countries in question reveals some interdependencies of this kind in the case of Poland and (partly) in the case of Slovakia. In the case of the Czech Republic, the economic incentives at home do not seem to enhance outward labour migration.

The effect of joining the EU (the EU dummy) that might for example result in fewer restrictions for the EU citizens, seemed to be negligible. Nevertheless we can conclude that it might have an indirect impact by influencing GDP per capita or the level of average wages.

In addition, our analysis shows that migration potential of population of the three analyzed countries varies considerably. Our findings suggest that the variation will be in favour of countries with more “mobile” population such as Poland, and medium-mobile population, such as Slovakia. A more “mobile” population measured in immigration responsiveness to the changing economic conditions at home might mean that economic incentives abroad as well as opening of new foreign labour markets will very likely lead to larger migration of labour searching for higher wages and employment opportunities. Surely, there is also a wide scale of factors of non-economic nature that can affect migrations (e.g. social and cultural factors such as habits and language, housing stock and demographic characteristics and many more) that can be considered by the researchers in this type of analysis.

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