

# ECONOMIC CAUSES AND CONSEQUENCES OF INTERNATIONAL MIGRATION OF LABOUR

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## Abstract

Migration waves in Europe in the past century had diverse causes but currently prevailing purposes for migration are of economic origin. International labour migration is mainly promoted by economic interests. This paper puts together important facts regarding motivation to labour migration and provides explanations of their impacts on the macroeconomic level. Understanding of broader migration patterns and identification of key determinants of migration described in this paper may allow the evaluation of applied migration policies and the determination of macro- and microeconomic benefits and costs of international labour migration.

A partial objective of the practical part of the paper is to evaluate relationships between the rate of migration and the unemployment rate in countries of the Visegrad group using adequate quantitative methods. To determine parameters of a regression function were used methods of regression and correlation analysis including testing the statistical significance. Based on these results, the existence of correlation is evident between the crude rate of net migration and the unemployment rate in the Czech Republic and Hungary but calculated correlation indices in Poland and Slovakia were evaluated as statistically insignificant which can be attributed to higher structural problems of those two economies.

**Keywords:** international migration, labour market, European Union

**JEL Classification:** F22, J61, O15

## Introduction

Migration is an usual phenomenon worldwide. Within the European Union, mobility is encouraged by freedom of movement for every citizen, whereas there are restrictions in regard to persons who would like to immigrate from outside the European Union or who are seeking asylum. Migration, therefore, has a general relevance but there is also an historical, geographic, demographic and economic relevance of migration. After the World War II migration policies in Europe were very tolerant as labour shortages grew after achieving full employment in many West European countries. In Mediterranean countries (Italy, Portugal, Spain) economic emigration took place since the beginning of the 1960' particularly to the West European countries. Other emigration flows led from Malta to the United States and Canada after gaining its independency from Great Britain in 1970'.

As unemployment started to grow in 1970', the formerly very liberal approach to migration in Europe was becoming more and more restrictive. The development of Central and Eastern Europe differs much from the above in West Europe. Until the

beginning of the 1990' the countries of the former Eastern bloc applied restrictive journey policies and so the migration issues gained importance only after the collapse of the communist regime. There were several exceptions, e.g. a legally approved process of repatriation of the members of the German minority from Romania or uncontrolled emigration flows from Czech Republic during the "Prague Spring" a short period of political liberalization before 1968 which resulted in a Soviet occupation of the country until the collapse of the communist regime. After the definite fall of the "Iron Curtain" in Europe in early 1990' migration flows between the "East" and the "West", that were bundled for many decades, started to play an important role in European migration patterns.

### **Aim of the paper**

Although migration is one of the accompanying phenomena of a globalized society, economic analyses often don't pay enough attention to this highly topical issue which has significant impacts on individual economic subjects and also broad macroeconomic consequences. This paper puts together relevant facts regarding labour migration and provides explanations of their impacts on the macro- and microeconomic level.

A partial objective of the practical part of the paper is to evaluate relationships between the rate of migration and the unemployment rate in countries of the Visegrad group using adequate quantitative methods. To determine parameters of a regression function were used methods of regression and correlation analysis including testing the statistical significance.

Understanding of broader migration patterns and identification of key determinants of migration described in this paper allows the evaluation of migration policies and the determination of macro- and microeconomic benefits and costs of international labour migration. In my paper I primarily focus on legal migration rather than the illegal labour movement and trafficking of workers from one country to another despite these situations without doubt present another serious problem with considerable economic, social and personal consequences.

### **Methods and Data**

The data for following analysis come from the source of Statistical Office of the European Union (EUROSTAT). I focussed on four countries of the Visegrad group: Czech Republic, Poland, Hungary and Slovakia. All of them are post-communist countries but they had experienced significant differences in their economic development after the collapse of the communist bloc. At the time of the data collection there weren't available data for 2010 so the series ends in 2009. If some of the countries didn't publish the data for first one or two years of the reference period, the reference period might be shorter than. After obtaining information on the character of data a decision followed concerning the use of methods suitable for the evaluation of relationships between the crude rate of net migration and the

unemployment rate. Statistical methods have been used for the evaluation of data represented by the EUROSTAT.

The data for an indicator of the crude rate of net migration plus adjustment comes from the source of EUROSTAT (2011) and is defined as the ratio of net migration plus adjustment during the year to the average population in that year, expressed per 1 000 inhabitants. The net migration is the difference between the total change and the natural change of the population. The values of the indicator of unemployment rate result also from the data of EUROSTAT. The use of statistical methods was described by Aczel (1989) or Mason, Lind (1990). The factual data processing comes from the methodology published by Hindls et al. (2003), Dirschedl, Osteermann (2001) and Palát (2010). Minařík (1996, p. 97) states, that the statistical dependence of two characteristics (numeric figures) can be expressed as their functional relation by a formula, table or graph. We recognize these types of statistical dependence: fix, functional alias deterministic dependence and free, statistic alias stochastic dependence. The stochastic dependence makes itself felt like more or less significant repeatable tendency, which realizes in different form on different place and in different time. It is characteristic for its variability of individual causes and makes itself felt under a row of noteless, variously reacting factors. The stochastic dependence is referred to as a correlation dependency. For this dependency, we distinguish from dependent and independent variable. The correlation analysis of two variables is called pair or simple analysis.

The main graphical data presentation tool for examining the dependence between two variables is a point diagram, where we mark particular cases as points in a reference frame with coordinates, which are the values of particular dependent and independent variables.

The equation for a linear model is:  $y' = b_0 + b_1x$

The equation for a quadratic model is:  $y' = b_0 + b_1x + b_2x^2$

The equation for a cubic model is:  $y' = b_0 + b_1x + b_2x^2 + b_3x^3$

The equations for a bisector or second-degree parabola are the same as trend determination in temporal series. In this paper, particular characteristics of tightness of the dependency of variables are calculated. Conjugate regression lines show the same values of the tightness dependency characteristics, the correlation coefficient  $r_{yx} = r_{xy}$ , determination coefficient  $r_{yx}^2 = r_{xy}^2$  (at the first place in this index is stated variable thought to be dependent). The correlation index  $I_{yx}$  is a dependency tightness characteristics for any type of regression function (for simple as well as multiple dependencies of variables). Its second power is determination index  $I_{yx}^2$ . Determination index multiplied by 100 presents the explanation percentage of the calculated regression function - how the changes of dependent variable Y are explained by the changes of independent variable(s). Statistical software Unistat 5.11 for Windows has been used for the calculation of following results.

## Basic migration patterns

Lacina, Rolný (2001) pointed out possible confusion in using of concepts of mobility and migration. They explain that the term “mobility” includes all types of movements of individuals (including temporarily movements) with a various periodicity, purposes, directions and distances. The term of “migration” is than to be defined as a much closer term that is rather to be put into connection with a permanent change in residence. And this is according to them the main difference to other types of movements which don't lead to permanent but only to temporarily change in residence. Migration waves in Europe in the past century had diverse causes but currently prevailing purposes for migration are of economic origin and are linked with the movements of the labour force. International labour migration is mainly promoted by economic interests (higher obtained real wage, higher standard of living) and therefore it is sometimes called as an “economic migration”.

Boeri and van Ours (2008) point out that economic theory suggests that migration increases efficiency by arbitraging away cross-country (and even cross regional when natives are immobile) differences in productivity and unemployment. Boeri and Brücker (2005) state, that international migration can significantly increase income per capita. They estimated that at the given wage and productivity gap between Western and Eastern Europe, migration of 3% of the Eastern population to the West could increase total EU GDP by up to 0.5%. They also stress out the fact that a desirable migration policy is to be coordinated at the European level.

Lacina, Rolný (2001) assume that statistical estimates of the migration potential linked with economic reasons are deduced from following presumptions: The 10 % difference in economic, living and income standards triggers off a propensity to emigrate by 0,05 to 0,15 % of the population in the country with lower level of these standards which is dealt in detail in one dimensional gravity models of migration. Together with a diminishing difference in income levels is the propensity to migrate declining progressively. According to them, achieving of 70-75 % of the standard of living in an advanced economy creates a boundary of the motivation to migrate (a so called “migration threshold”). After achieving that point, economic migration discontinues because lingering disparities in income levels are evening out by economic and psychological costs of migration. They also mention other substantial factors influencing migration, e.g. the extent and the structure of the demand for labour in the target country, the level and the structure of unemployment, the demographic development, the initial migration costs and the willingness of migrants to accept working positions not entirely corresponding with achieved qualification levels. It is also necessary to take into account other social and psychological factors. Such factors are not easy to be quantified but despite that they keep playing an important role in decisions regarding migration issues. Some of those factors are given by the necessity to adapt to other cultural environment, habitual practice, working hours, separation from family, relatives, friends etc.

Thus, the reasons why people decide to migrate can be divided into two categories: financial and nonfinancial incentives. As regards to financial incentives, potential

migrants compare private costs and private benefits of moving to another country. If the expected increase in earnings exceeds all the cost of relocation, it creates incentives to migrate depending on the resulting difference. The higher is the difference in average wage level between original and potential host countries the more it presents a motivating factor for immigration. Existing economic inequalities boost the motivation to move to another country from financial reasons. At the same time, migrants have to take into account other economic differences, usually esp. higher cost of living in the target country. To establish the real income gains from work estimates of purchasing power parity can be used. Furthermore, financial incentives can also be influenced by the tax and welfare systems existing in particular countries. Just like international capital movements seeking the highest expected rate of return after taxation, so workers may be motivated to move because of diversity of welfare systems with a different grade of generosity and differences in the rates of income tax.

The nonfinancial incentives may include many other aspects that can be covered by generally better quality of life and better standard of living, not only in the purely economic sense but for instance also profiting from existing health care and pension system, advanced educational system with opportunities for migrants and their children, attractive geographical location, existence of a minority originating from the migrant's country in the target country, reuniting of family members or just an opportunity to live in a society tolerant to minorities and migrants. The extent of migration is also encouraged by current information society where all necessary information on potential host countries, receiving procedures, accommodation or vacancies can be found in the World Wide Web and also dense transport networks (especially air but also ground traffic with fast trains, highways etc.) allow fast migration movements even from more distant places.

### **Migration policies**

While barriers to international trade and capital mobility have been removed in a large extent in the past, international migration flows remain restricted in many regards, are still quite undiscovered and very uneasily predictable. Boeri and van Ours (2008) suggest that gains from liberalizing labour movements across countries are enormous (due to high income differences among countries) and might be larger than from liberalization in the areas of goods and capital. The reality is that European migration policies are getting stricter because Europe is attracting more and more migrants, recently even more than the United States (especially in proportion to the total population). It is essential to control not only the magnitude of migration but also to try to affect their composition according current needs of the labour market. But many member states of the European Union are finding it difficult to balance public hostility towards immigration against the need to attract high-skilled migrants (OADB, 2005). The economic explanation of Boeri and van Ours (2008) why migration is so severely restricted is that migration policies are essentially distributive tools, aiming at reducing negative effects of migration on wages and unemployment among natives and moreover, they stress out the gradualist tendencies of migration where such migration restrictions can mitigate

supply-side shocks that may negatively affect incomes or jobs of some specific groups. According to them, migration policies are also affected by minimal wage legislation, the strength of unions, family policies and unemployment benefits because wage compression and income floors affect the skill composition.

Restrictions of illegal migration applied across Europe aren't enforced quite efficiently in all cases and these results in a significant rise in illegal migration inflows. Boeri and van Ours (2008) state that up to 40 % of migration to Europe might be illegal, according to other estimates this number could be even higher. They also mention a number of restrictions on the movement of people that migration policies do include. The most common means of migration policies are quotas that provide only a limited number of work and residence permits for foreign migrants within a certain time period until its depletion. A more flexible system which is at present adopted by more and more countries presents a points system where certain explicitly given abilities (vocation, educational background, professional experience, language knowledge etc.) are assessed.

Other measures of migration policy apply to implementation of various administrative obstacles in admission procedures. Those bureaucratic barriers are less visible but still very effective. The maximum length of stay presents another possibility to restrain migration flows. A less restrictive attitude of a country toward international migration is characteristic by an easy application for citizenship after spending only a few years in the host country where the process can be reinforced with further assimilation policies. A part of international migration is not primarily provoked by economic reasons but is a result of non-economic, especially political turbulences in affected countries. Asylum seekers escaping from non democratic or war-torn countries have a different position compared to all other migrants as there are special rules applied towards them. Boeri and van Ours (2008) point out that it is important to include also asylum policies when analyzing the more or less restrictive stance of any given country because although asylum policies are largely inspired by non-economic considerations, in practice most asylum seekers respond to economic incentives, just like other migrants.

Castles (2004) distinguishes between three types of reasons for migration policy failure: factors arising from the social dynamics of the migratory process, factors linked to globalization and factors arising within political systems. He concludes that migration policies might be more successful if they were explicitly linked to long-term political agendas concerned with trade, development and conflict prevention. Reducing inequality is then the real key to effective migration management.

### **The development of migration in the European Union and its wider determinants**

Labour markets of many European countries are particularly dependent on migrant workers. Let's start with the geographical relevance of migration. From the geographical point of view, Luxemburg can be used as an example. This small

country is situated in direct neighbourhood of France, Germany and Belgium which influences this country in many regards. It shows the highest share of foreign workers in the EU (2/3 of the labour force in total) and a general share of foreign nationals is also extremely high (around 40 %). A geographical issue, which raises considerable concerns of many affected countries, is the threat of illegal migration in Mediterranean countries and at the new Eastern external border of the European Union after its last “Big enlargement” in 2004 and 2007. Illegal immigration flows present first of all a logistic problem for the neighbouring countries in terms of registration, accommodation, general catering and other factors that are generally very expensive. Furthermore, Spain and Italy that are the main target countries for the entry thus have the task to grant social support to the immigrants according to the European social standards. And many questions raises also the security issue.

The declined birth rate and the increased life expectancy in European countries over the last decades led to negative changes in the demographic structure of the population that are not about to change in near future. The OADB source (2005) quotes that the EU's working age population will decline by some 20 million by 2030 and this prospect of a declining and ageing workforce has also prompted a greater focus on immigration. The preservation of the current European welfare model is than partly dependent also on future immigration flows. Some of the NMC (new member countries) of the European Union faced a significant emigration wave during a long and painful era of economic transition from the centrally planned economy to a fully functioning market economy of the Western type (Romania, Poland or Estonia). And the negative demographic development was intensified by very low birth rate during transition, e.g. in Estonia. Those three above mentioned countries reported negative immigration balances. This means that emigration rates were considerably higher than immigration rates. Reasons for this can be found in the prosperity gap between established and new member countries of the European Union.

Another part of the increase in migration in Europe reflects the effects of immigration flows (from NMC to West European countries) following the expansion of the European Union in 2004. On 1 May 2004, first countries (United Kingdom, Ireland and Sweden) opened its labour market for eight NMC. Many ex-ante economic studies claimed that fears of mass migration from Central and Eastern European countries seemed to be highly exaggerated and came to conclusions that with regard to the decline of the EU population and the ageing of the society, the expected East-West migration potentials will generate rather positive consequences, e. g. Straubhaar (2002). The impacts of EU enlargement on migration flows during the years preceding the Eastern enlargement were also dealt by IOM (1998), Bauer, Zimmermann (1999), Boeri, Brücker (2000), Fertig (2001), Dustman et al. (2003), Breitenfellner et al (2008).

Despite these findings other 12 established EU member countries decided to maintain restrictions. From NMC, only workers from Cyprus and Malta did not face restrictions. Than from 1 May 2006, Finland, Greece, Spain and Portugal opened

their markets for foreign workers from eight NMC. And 1 May 2011 became a final deadline to remove labour restrictions for all members.

Already in 2004, net migration to United Kingdom reached value around 300,000 and the very next year, it rose rapidly to around 470,000. Ever since Poland joined the European Union many Poles have become a distinct part of the British labour market and increased significantly the share of foreign workers on the UK labour force. A strong emigration flows were also observed from Poland to Germany, whereas immigrants from Romania preferred Italy and Spain (mainly from language reasons as they are part of the same language group of Romanic languages). Czech Republic, Estonia and other NMC had to face the loss of its economically active population, particularly in health services but also in other important sectors of the economy.

In terms of migration, the size of the economy presents another considerable factor. In relatively small countries of the European Union, such as Malta, Luxembourg or Estonia, high immigration rates may raise the question of the preservation of national identities as the fast growing share of foreigners may result in a higher share of persons with a foreign nationality than the share of native citizens. The controversy of the topic of migration is mentioned for instance by Boeri and van Ours (2008) when even the same individual may at the same time paradoxically support and oppose migration. As a manager of a firm he needs to fill up vacant positions, as a native-born individual he is afraid of higher competition at the labour market, lower wage, higher crime rates, higher pressure on social system or possible increase in social transfers abuse. But he is on the other side also aware of changing demographic structure of the society and the unsustainability of the current pension system. Therefore it is quite obvious that migration patterns will always present a very controversial topic.

Migration inflows may satisfy needs for both low and high level workers on labour markets of receiving countries. A part of the migration inflows helps to satisfy the need for low level workers in agricultural, gastronomic or building sectors as domestic workers are not interested in some of those professions. Native workers attain than higher positions, since lower positions are taken over by immigrants. Emigration countries on the other side suffer from a shortage of manpower and the immigration of third state nationals may be needed to satisfy their domestic needs. Romania and Poland start to seek workers for particular industrial sectors that are no longer attractive for native workers due to the poor wage compared to the other EU member states. This way the prosperity gap is shifting bit by bit from the centre to the periphery. Another part of migration flows satisfies the need for highly trained workers in the destination country. While the receiving country can profit from the qualified labour force from abroad without bearing any of the costs of educational system and vocational training, the countries where the workers come from suffer from lack of highly qualified labour force which is often described as a “brain drain”. Many highly developed countries that support a smooth immigration of high qualified workers, have at the same time a legislation that creates barriers for immigration of low qualified workers and as a result of this uneven situation the

difference gap in the human capital level between advanced and developing countries is widening ever more.

### **Migration and labour market**

The rising scale of labour migration over recent years makes the discussion about the economic and social costs and benefits of migration of labour a highly topical issue among economists and policy-makers. An increase in the rate of net migration can have significant effects on the labour markets of both receiving countries and countries of origin and further macroeconomic effects on variables such as economic growth, unemployment etc. Immigration brings economic benefits for the receiving country as immigrants are usually more economically active than the local population, are willing to take undesirable jobs, work for lower wage or under worse working conditions. This might provide a valuable contribution to raising productivity, entrepreneurship and economic growth. The actual economic effects of immigration depend not only on economic situation in the receiving country and its current needs for labour force but also on the legal frame of immigration and also cultural and personal characteristics of the immigrants themselves and their ability and willingness to work and live in the host country and integrate themselves to the majority society.

### **Macro- and microeconomic benefits of labour migration**

Let's have a look at macroeconomic benefits of international migration of labour. The influx of foreign workers into the economy increases the labour supply in the receiving country. Firms have wider options in the selection process of new employees, they can choose from a wider range of workers available. Occupations and sectors of the national economy that evince shortages (possibly agriculture, construction, IT services etc.) attract skilled migrants who contribute to alleviation of these shortages. An increase in labour supply from migration will also restrain inflationary tendencies of wages or a lead to a decline in wages as the expanding labour market supply side is easily able to satisfy the needs of firms in terms of labour demand. Another reason for a reduced pressure on wages is the fact that migrants usually come from less developed countries and are prepared to accept lower wages than the most of the domestic workers. Those moderate wage pressures and low price inflationary tendencies in general present a suitable economic environment for low interest rate policies of the central banks that promote investment and growth. This all presents positive cost changes for firms in a short-term period. But self-evidently not only for firms. As lower wages result in lower production costs and in effect this may lead to lower retail prices of goods and services for final consumers.

Possible impacts of migration on social exclusion patterns were dealt by Fevre (1998). He argues that there are many reasons why freedom of movement is desirable, but one of the most persuasive arguments in its favor lies in its potential to combat social exclusion by bringing supplies of labour into the places where a demand for labour exists. But then he adds, that in fact, there is very little empirical

evidence that the dismantling of internal obstacles to migration within the European Union has created the sort of migration flows which would suggest that free movement is working in this way. Anyway some role of migration in amelioration in social exclusion patterns is not inconceivable.

From a demographic point of view it is obvious that the migration influx increases the total population which may result in an immediately increased aggregate demand in the host country. Thus, an increase of population from migration can add to economic growth in the short run and economic benefits from migration can be still visible also in the long-term growth. Higher economic growth boosts government tax revenues and allows a smooth implementation of economic policies, incl. migration policy.

The most migrants are younger people that are generally more flexible and able to adapt to new conditions than older workers that have already their established career and private life that most of them is not willing to endanger. And language skills, that are generally better in the new generation, also play an important role in the decision for migration. From these reasons, the growing number of (mainly young) migrants increases the working age population and markets become more flexible. Admitting of talented, highly skilled migrants (working for instance in finance, IT or research) contribute to the economic and technological advancement of the receiving country and may create new job opportunities for natives. Moreover, young people are also less risk feared which may come out in higher entrepreneurial activity and to present another potential gain for the supply-side of the economy. For some of young workers the migration may be regarded a temporary episode (e.g. to increase qualification, learn foreign language, get some experience). When admitting workers that prefer to stay in the long-term we have to take into account that their extended families join them as well and as to corresponding policies this may increase the requirements on the system in terms of education, health care, social issues, housing etc.

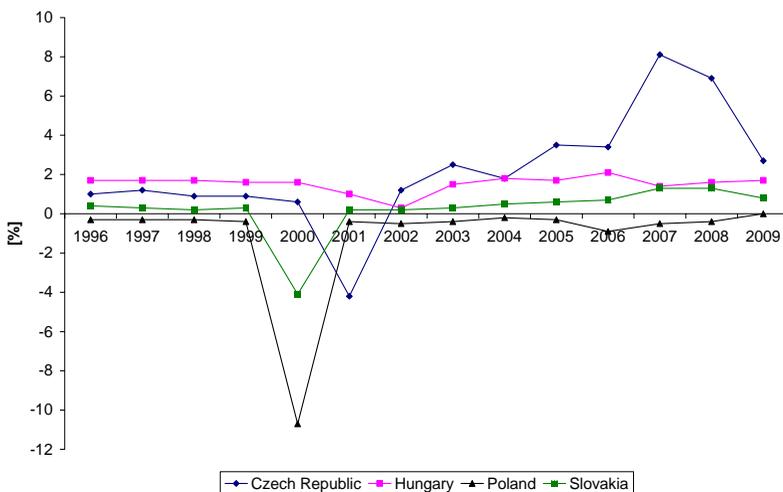
### **The costs of international labour migration**

Growing influx of workers raises a legitimate question about the costs of international migration for a receiving country. Among many explanations rational reasons mix with more or less substantiated subjective assumptions rising from concerns of the native population. Critics of labour migration assume that an inflow of low skilled migrant workers that will increase labour supply in the low skill segment of the labour market will also (in an excessive extent) cut back the equilibrium wage of local low-skilled workers. Other concerns are about the risk of higher unemployment among migrants when the qualifications of migrants don't match current demand of firms on the labour market. Low-skilled migrants are also more likely to be unemployed or economically inactive which may evoke doubts about actual productivity effects. These situations may produce increased pressures on the welfare state with a higher level of government spending on necessary infrastructure providing unemployment and other social benefits, bearing increased costs for education, health care etc.

To reduce some of those risks many countries applied selective immigration policies ensuring that the migrant's skills profile meets the requirements of the labour market. Foreign workers usually migrate in a larger extent to some specific areas of the country (esp. big cities) and the increased migration influx may have an influence on housing market in these areas. The increase of the demand for housing pushes up the living costs which results in higher wage requirements of the employees and an increase in wage inflation potentially. This last example shows that the consequences of mass immigration are much wider and cannot be reduced only on growth and productivity issues but have to be considered in wider economic and socio-cultural context. The long term benefits of migration are therefore very uneasy to quantify. They depend also on the stage of assimilation (or better integration) of immigrants into the majority society, on their ability to deal with different economic, cultural and social conventions or habits in the target country.

### Correlation between migration and unemployment

First, it is possible to meet the development of an indicator of the crude rate of net migration plus adjustment in the reference period 1996–2009 which is defined as the ratio of net migration plus adjustment during the year to the average population in that year, expressed per 1 000 inhabitants. The net migration is the difference between the total change and the natural change of the population.



**Figure 1.** The development of the crude rate of net migration in countries of the Visegrad group in the period 1996–2009. Source: own calculations.

The Development of the crude rate of net migration in the selected sample of countries is evident from Figure 1. While Hungary evinces a relatively stable crude rate of net migration, the Czech Republic shows a significant increasing trend in it

during 2002–2007 which was the period of fast economic growth preceding to the last global financial and economic crisis. Thus trends in Czech Republic refer to developmental tendencies characterized from the midst of the reference period by increasing the crude rate of net migration significantly and then follow-up dramatic decline towards the balance. From the same figure a completely different development in Slovakia and Poland can be observed. The values of the crude rate of net migration in those two countries fluctuated around zero permanently (with an exception of the deep decline in 2000 as a result of an economic stagnation).

It is obvious that the average values for examined countries fluctuated in the interval of +2 to –0,5 per cent during the most of the reference period which is also evident from Fig. 1 but there are significant differences in particular countries. According to the available data one of the highest positive values of the crude rate of net migration were observed in 2007 and 2008 in the Czech Republic, the lowest values occurred in Poland and Slovakia in 2000. But while in Slovakia this decline was only temporary, Poland has been achieving negative values steadily during the whole reference period.

For the purpose of a more profound analysis, data available from EUROSTAT in monitored countries are repeatedly used. Due to availability of data on EUROSTAT a time period 1996–2009 has been set as the reference period in Hungary, a time period 1997–2009 presents a reference period in Poland and a time period 1998–2009 is a reference period in the Czech Republic and Slovakia. I shall try to prove statistically the existence of correlation between the crude rate of net migration and the unemployment rate in all analyzed countries. To determine parameters of a regression function were used methods of regression and correlation analysis (including testing the statistical significance) described in the part Methods. Parameters of linear, quadratic and cubic regression functions in the given reference period are presented in Tab. 1.

Indices of correlation were calculated for particular countries and types of a regression function. Based on these results, the existence of correlation is evident between the crude rate of net migration and the unemployment rate in the Czech Republic where correlation indices achieve highly statistically significant results already using a polynomial of the first degree. The use of a polynomial of a higher degree doesn't improve correlation indices very distinctively. In Hungary, the use of a polynomial of the first degree doesn't mean achieving statistically significant results. But the use of a polynomial of a higher degree improves Hungarian correlation index results significantly when the use of a polynomial of the second degree means already achieving statistically significant results and the use of a polynomial of the third degree means then achieving highly significant results comparable to those in the Czech Republic. While these two above mentioned countries achieve highly significant results, in Poland and Slovakia not even the change of a polynomial to a higher degree doesn't show a sign of statistical significance. The explanation can be found in a comparative assessment of total rates of unemployment among countries under examination and based on these data we can argue that despite the sharp decline in unemployment in Poland and Slovakia

during the last years preceding the global financial and economic crisis the rates of unemployment kept remaining at a relatively high level. Thus, the examined relation between net migration and unemployment is much weaker than in countries with relatively lower rates of unemployment.

**Table 1.** Parameters of a regression function for the crude rate of net migration with respect to the unemployment rate in countries of the Visegrad group

Country	Model	Model parameters				$I_{yt}$
		$b_0$	$b_1$	$b_2$	$b_3$	
Hungary	1	0,455	0,144	-	-	0,4800
	2	-5,400	1,710	-0,101	-	0,6367 <sup>+</sup>
	3	-36,015	14,014	-1,717	0,069	0,6963 <sup>++</sup>
Slovakia	1	3,448	-0,212	-	-	0,5166
	2	-0,917	0,4128	-0,021	-	0,5307
	3	23,188	-4,906	0,358	-0,008	0,5516
Czech Republic	1	14,501	-1,682	-	-	0,7101 <sup>++</sup>
	2	26,009	-5,302	0,272	-	0,7252 <sup>++</sup>
	3	-31,820	22,445	-4,020	0,215	0,7361 <sup>++</sup>
Poland	1	0,024	-0,084	-	-	0,1364
	2	11,079	-1,861	0,064	-	0,3539
	3	-33,721	9,291	-0,804	0,021	0,5197

Note: Correlation index:  $I_{yt}$       Significance level: +  $\alpha = 0.05$ ; ++  $\alpha = 0.01$

Source: own calculations.

## Conclusions

The rising scale of labour migration over recent years makes the discussion about the economic and social costs and benefits of migration of labour a highly topical issue among economists and policy-makers. This paper puts together relevant facts regarding labour migration and provides explanations of their impacts on the macro and microeconomic level. An increase in the rate of net migration can have significant effects on the labour markets of both receiving countries and countries of origin and further macroeconomic effects on variables such as economic growth, unemployment etc. Immigration brings economic benefits for the receiving country as immigrants are usually more economically active than the local population, are willing to take undesirable jobs, work for lower wage or under worse working conditions. This might provide a valuable contribution to raising productivity, entrepreneurship and economic growth in the short period.

The influx of foreign workers into the economy increases the labour supply in the host country and may evince shortages appearing in some occupations and sectors of the national economy. An increase in labour supply from migration will also restrain inflationary tendencies of wages or even lead to a decline in wages as the expanding labour market supply side is easily able to satisfy the needs of firms in terms of labour demand. Those moderate wage pressures and low price inflationary tendencies in general present a suitable economic environment for low interest rate policies of the central banks that promote investment and growth.

From a demographic point of view, an increase of population from migration can add to economic growth in the short run and economic benefits from migration can be still visible in the long-term growth too. Higher economic growth boosts government tax revenues and allows a smooth implementation of economic policies, incl. migration policy. But despite this, mass immigration, cannot be regarded as a unique solution to all labour market problems arising from population ageing. Several examples from the past, such as German migration policies of the 1970', show that it is not always providing effective and durable solutions to these issues. Migration certainly has its economic benefits that were described above but increasing shortages at the labour market must be primarily tackled within the existing society. The effective mobilizing of the population presents than a long-term challenge for responsible policy makers.

Growing influx of workers also raises a legitimate question about the costs of international migration for a receiving country. Critics of labour migration assume that an inflow of low skilled migrant workers that will increase labour supply in the low skill segment of the labour market will also (in an excessive extent) cut back the equilibrium wage of local low-skilled workers. Other concerns are about the risk of higher unemployment among migrants when the qualifications of migrants don't match current demand of firms on the labour market. Low-skilled migrants are also more likely to be unemployed or economically inactive which may evoke doubts about actual productivity effects. These situations may produce increased pressures on the welfare state with a higher level of government spending on necessary infrastructure providing unemployment and other social benefits, bearing increased costs for education, health care etc. To reduce some of those risks the governments should apply selective immigration policies ensuring that the migrant's skills profile meets the requirements of the labour market.

Foreign workers usually migrate in a larger extent to some specific areas of the country and the increased migration influx may have an influence on housing market in these areas. The increase of the demand for housing pushes up the living costs which results in higher wage requirements of the employees and an increase in wage inflation potentially. This last example shows that the consequences of mass immigration are much wider and cannot be reduced only on growth and productivity issues but have to be considered in wider economic and socio-cultural context.

As regards to a practical part of the paper a partial objective was to evaluate relationships between the rate of migration and the unemployment rate in countries

of the Visegrad group using adequate quantitative methods. To determine parameters of a regression function were used methods of regression and correlation analysis including testing the statistical significance. As first, it is possible to get acquainted with the development of an indicator of the crude rate of net migration in the reference period 1996–2009. Based on values of this indicator, it is evident that Hungary evinces a relatively stable crude rate of net migration; trends in Czech Republic refer to developmental tendencies characterized from the midst of the reference period by increasing the crude rate of net migration significantly and then follow-up dramatic decline towards the balance.

The development of this indicator in Slovakia and Poland differ significantly from the above mentioned countries. The values of the crude rate of net migration in those two countries fluctuated around zero permanently (with an exception of the deep decline in 2000 as a result of an economic stagnation). It is obvious that the average values for examined countries fluctuated in the interval of +2 to -0,5 per cent during the most of the reference period but there are significant differences in particular countries.

To determine parameters of a regression function were used methods of regression and correlation analysis (including testing the statistical significance) and parameters of linear, quadratic and cubic regression functions in the given reference period were calculated. Based on these results, the existence of correlation is evident between the crude rate of net migration and the unemployment rate in the Czech Republic where correlation indices achieve highly statistically significant results already using a polynomial of the first degree. The use of a polynomial of a higher degree doesn't improve correlation indices very distinctively. In Hungary, the use of a polynomial of the first degree doesn't mean achieving statistically significant results. But the use of a polynomial of a higher degree improves Hungarian correlation index results significantly when the use of a polynomial of the second degree means already achieving statistically significant results and the use of a polynomial of the third degree means then achieving highly significant results comparable to those in the Czech Republic.

While these two above mentioned countries achieve highly significant results, in Poland and Slovakia not even the change of a polynomial to a higher degree doesn't show a sign of statistical significance. The explanation can be found in a comparative assessment of total rates of unemployment among countries under examination and based on these data we can argue that despite the sharp decline in unemployment in Poland and Slovakia during the last years preceding the global financial and economic crisis the rates of unemployment kept remaining at a relatively high level. Thus, the examined relation between net migration and unemployment is much weaker than in countries with relatively lower rates of unemployment. Understanding of broader migration patterns and identification of key determinants of migration described in this paper allows the evaluation of migration policies and the determination of macro- and microeconomic benefits and costs of international labour migration.

## Acknowledgement

The paper was prepared thanks to the support from MSM 6215648904 “Česká ekonomika v procesech integrace a globalizace a vývoje agrárního sektoru a sektoru služeb v nových podmínkách evropského integrovaného trhu“.

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