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EFFECTS OF LABOUR MIGRATION ON ECONOMIC DEVELOPMENT DURING ECONOMIC DOWNTURN AND RECOVERY

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Abstract

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International labour migration is mainly promoted by economic interests. This paper focuses on the period before and after the economic crisis and puts together important facts regarding motivation to labour migration and provides explanations of its causes and impacts on the macroeconomic level. The economic explanation why is migration 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, we may stress out the gradualist tendencies of migration and such migration restrictions can mitigate supply-side shocks that may negatively affect incomes or jobs of some specific groups. A partial objective of the practical part of the paper is to evaluate relationships between the rate of migration and selected economic indicators using adequate quantitative methods. While the correlation between the crude rate of net migration and the GDP per capita is very low, the existence of correlation between the crude rate of net migration and the unemployment rate is evident in the most of analysed countries. Statistical insignificance of correlation indices in some countries can be then attributed to structural problems of those economies.

international migration, labour market, GDP per capita, unemployment

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. 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. The global financial and economic crisis resulted in the deepest recession since the Great Depression in 1930's. Some of the effects of this crisis on migration are only temporary and after they fade away, migration flows will be influenced again by „traditional" structural determinants as for example labour market developments, demographical structure of the populations in receiving and sending countries and major trends of the global economy. But already the experience gained from the Great Depression and other crises in the past shows that some impacts and policies that were originally applied in a short term perspective can then persist for years even if the crisis is already over. Nowadays, the problems like for example the rising migration flows of migrants with low income and qualification or the rising unemployment among young migrants may have much longer and deeper consequences for the labour markets and the entire economies than many economists were estimating at the time when the crisis peaked and most European economies started to recover. The response of migration policies to these situations can help then to solve those problems resulting from the last global crisis but it can also worsen them. This paper deals with some of those risks and problems that were brought by the economic crisis and proposes plausible solutions to those problems.

This paper focuses on the period before and after the latest financial and economic crisis and puts together important facts regarding motivation to labour migration and provides explanations of their impacts on the macroeconomic level. The aim is to identify the causes and effects of international migration flows on labour markets based on modern theoretical postulates by means of advanced statistical tools including an economic verification and extending findings of migration theory. The empirical analyses are based on fundamental findings of theory of migration including the verification of the statistical significance of particular parameters and meeting conditions of the economic verification of the model. Based on prevailing migration and economic theory, I shall also provide the empirical evidence of migration coherence to particular macroeconomic indicators and assess impacts of high and low skilled migration on further economic development. A partial objective of the practical part of the paper is to evaluate relationships between the rate of migration and selected economic indicators in the European Union using adequate quantitative methods. In the selected sample of countries are Central European states: Czech Republic, Hungary, Poland, Slovakia and Slovenia. All of them are post-communist countries that had certain transition problems in common but they also had experienced significant differences in their economic development after the collapse of the communist bloc. To determine parameters of a regression function were used methods of regression and correlation analysis including testing the statistical significance. Hypotheses on conceivable correlations of the crude rate of net migration, GDP per capita and unemployment will be tested in this paper.

METHODS AND DATA

Adequate statistical and econometric methods will be used for empirical data processing. Theoretical concepts will be subjected to a critical analysis. The possible existence of relationships between migration and other macroeconomic characteristics will be assessed on the basis of the statistical significance of models used, including the consistency of particular parameters and meeting of conditions for economic verification of presented models. At first let me make a brief comment refers to available data. Representative data on international migration are scarce. The spatial aspect of international migration is fairly clear: international migration occurs if someone moves from a particular country to another country. The temporal aspect is much less obvious. Not everyone who crosses an international border is an international migrant (United Nations, 1998). The duration of sojourn of a person in another country could be a useful criterion to distinguish international migrants from other border crossers. However, this is no absolute criterion, as, for instance, some tourists stay longer in a country than some foreign seasonal workers or asylum seekers. Nevertheless, researchers and policymakers mostly use the criterion that someone who intends to stay longer than one year in another country can be considered as an international migrant. In this paper no definition of a migrant will be formulated as the data are provided by individual countries. These data may contain inconsistencies with respect to the definition of a migrant.

There are many inconsistencies between data of receiving and sending countries concerning the same migration flow (Willekens, 1994). The definition problem mentioned above may play a part here. However, inconsistencies also often exist between two countries, which use comparable definitions of migrants. Kupiszewski and Kupiszewska (1999) have formulated two simple rules in the decision to use the data of the receiving or sending country in an analysis or description of international migration flows: only use data of receiving countries, or use data of countries which have reported the highest figures. In most cases, both rules lead to the same result, because migration figures of the receiving country are generally higher as migrants have no reason to report their departure to the authorities of the sending country. Contrary to most Western European countries, where population is used to compute net migration, Eastern European countries compute population with registered net migration figures since the 1990s. Hence, net migration figures for Eastern European countries in the 1990s are registered net migration figures. A problem with these registered net migration figures in Eastern Europe is the considerable under-registration of emigrants. Mašková and Stašová (2000), for instance, estimated that on an annual basis some 4 000–5 000 emigrants yearly were not registered in the Czech Republic in the period 1993–1997.

The data for following analysis come from the source of Statistical Office of the European Union (EUROSTAT). I focussed on five countries: Czech Republic, Poland, Hungary, Slovakia and Slovenia. All of them are post-communist countries but they had experienced significant differences in their economic development after the collapse of the communist bloc. 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, Ostermann (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.

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 $r^2_{yx} = r^2_{xy}$ (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^2_{yx}. 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. Results of all analyses using quantitative methods will be than economical interpreted in the spirit of knowledge of contemporary economic theory.

International migration and global financial and economic crisis

The global financial and economic crisis resulted in the deepest recession since the Great Depression. Some of the effects of this crisis on migration are only temporary and after they fade away, migration flows will be influenced again by „traditional" structural determinants as for example labour market developments, demographical structure of the populations in receiving and sending countries and major trends of the global economy. But already the experience gained from the Great Depression and other crises in the past shows that some impacts and policies that were originally applied in a short term perspective can then persist for years even if the crisis is already over.

Migration policies during current economic downturn and recovery

The labour demand is decreasing during the economic downturn and this can lead to policies that suggest reducing new immigration to country. So far it is all right. But the rising unemployment raises anti-immigration moods in the society and this may lead to populist solutions and injudicious restrictions of migration which have nothing common with a coherent economic policy regarding immigration and can harm the capability of the country to achieve a permanently sustainable growth in the long-term.

Moreover, the efforts to lay off migrant workers or to persuade them to return to their country of origin in order to make room for native workers is not necessarily a cost-effective procedure. An attempt in this direction has been made by in the Czech Republic during spring 2009. The Czech government offered to foreign workers who lost their job due to the declining demand during the crisis free air tickets and a contribution of 500 euro in cash. This created an incentive especially for nationals coming from very poor countries as e.g. Mongolia, Vietnam etc. who being short of money could end up in illegal networks and become a target of exploitation. So this policy surely has its social aspects but it didn't solve the problem of human mobility on a longer term basis. There are several questions that should be asked before applying such policies. Is there an adequate supply on the side of native born workers that can provide the same skills as migrant workers that were returned back home? There is a commonly believed cliché in the society that migrants are uneducated but the reality is that migrants bring human capital. The overwhelming majority of them bring skills, high educational level, and human capital and contribute to great deal to the economies they enter. In many countries, migrant workers have higher qualification profile than local-born ones. And when many migrants are actually much better qualified than the receiving population and Europe desperately needs skills which it brings in from developed countries but also from developing countries, the durable solution cannot be found in persuading migrants to return to their country of origin.

Restrictions on immigrant inflows from particular countries may then trigger some retaliation measures from the sending countries which might affect not only the flow of labour but possibly also trade in goods or investments and such protectionism measures could cause even more damage than the immigration restrictions itself. And the question is not only whether native workers are able to do the jobs but also whether they are willing to take on such jobs and under what payment conditions because migrants may be paid less than native workers. Some explanations to these questions can be found in the

dual labour market theory which states that people at developed societies face motivational problems to enter the bottom level jobs because there is no status in society and very few channels for upward mobility. Such job vacancy creates then demand for foreign workers who do not have these motivational problems. Injudicious restrictions of immigration or the attempts to persuade the migrant worker to return to their country of origin in order to make room for native workers isn't necessarily related to better labour market prospects for local workers.

Skilled immigrant workers, innovation and growth

The political restrictions of inflow of skilled workers or even the reduction of the existing pool of such skills might be very dangerous for the entire economy. Firms are aware that those particular skills are scarce in relation to unskilled workers and even in the times of economic recession try to delay their dismissal as long as possible. The costs arising from new recruitment and training, when the period of dismissals during the crisis is over, are also taken into account. The problem arises when the recession is long and future prospects are unclear. This was the case of the last financial and economic crisis where the downturn was so unexpectedly immense and the prospects were so unclear that companies were forced to introduce large layoffs that hit also highly skilled staff. The last global economic crisis was very deep and hit European economies quite unexpectedly after a period of several years of economic boom that was characteristic by increasing GDP growth rates, sharply declining unemployment rates, rising demand for labour and increased migration flows. But even in such situations those highly skilled workers may help the companies in introducing new methods to overcome the crisis period and get a better starting position compared to its possible competitors when the recession is over.

Economic benefits of international migration and growth in receiving countries

Hamilton and Whaley (1984), Rodrik (2003) and many other studies confirm that the economic benefits of international migration are immense because the free movement of workers leads to a re-allocation of labour which becomes more efficient and this contributes then to the increase in total welfare. But they usually don't consider all economic and social costs that are relevant to those labour movements. According to the study of the UK Department of Communities and Local Government (2009) an estimated fall in the migrant stock by around 360 000 by 2015 would lead to a consequent reduction in the labour force by 200 000 and would result in a 0.1–0.125 per cent decline in the economic growth. This is in agreement with the results of a study of Dustman (2004). He calculated that the contributions of immigrants from the new member countries from Central and Eastern Europe to the UK tax and benefit system were significantly higher than the expenses from this system. And Gott and Johnston (2002) estimated the net fiscal contribution of migrants in 1999–2000 to 28.8 billion GBP. Immigrants who do not have their families with them are reducing the economy's social burden. But it is important to notice that immigration doesn't provide a durable solution to the fiscal expenses of population ageing. The explanation is in adaptation to the local familial conventions and this causes that the birth rate of immigrants turns down to the birth rate of the local population.

Correlation between the development of net migration, GDP growth and unemployment

The indicator of the crude rate of net migration plus adjustment 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 GDP indicator that was chosen for this analysis is real GDP per capita which is calculated as a percentage change on previous period. Both indicators are published by the European Statistical Office (EUROSTAT). For the purpose of a more profound analysis, this data available from EUROSTAT are used. A time period 1996–2010 has been set as the reference period. I shall try to prove statistically the existence of correlation between the crude rate of net migration and real GDP per capita. 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 for this analysis in the given reference period are presented in Tab. I.

All calculated correlation indices at the European level and also in particular countries presented in Tab. I are very low and none of them is statistically significant. Those results may then lead to an assumption that migration decisions are not strongly dependent on actual GDP per capita in the receiving country. In the next step I shall try to prove statistically the existence of correlation between the crude rate of net migration and unemployment rate where the dependence is expected to be higher because unemployment and lack of job opportunities present some of the push factors that may drive migration decisions according to the economic theory. Due to availability of data on EUROSTAT a time period 2000–2010 has been set as the reference period. Parameters of linear, quadratic and cubic regression functions for this analysis in the given reference period are presented in Tab. II.

Indices of correlation were calculated for particular types of a regression function. While calculated correlation indices for correlation between unemployment and migration at the European level are very low, there are significant

I: *Parameters of a regression function for the crude rate of net migration with respect to the real GDP per capita in the EU27 and selected member countries*

	Model	Model parameters				I_{yt}
		b_0	b_1	b_2	b_3	
EU27	1	2.5242	–0.0331	-	-	0.0527
	2	3.2757	–0.1405	–0.2352	-	0.4235
	3	3.3741	–0.2389	–0.0966	0.0065	0.4248
Czech Republic	1	1.6939	0.1730	-	-	0.1808
	2	1.0088	–0.0519	0.0863	-	0.3852
	3	1.6805	–0.4006	0.0342	0.0167	0.4260
Hungary	1	1.5485	–0.0153	-	-	0.1092
	2	1.5010	–0.0139	0.0027	-	0.1325
	3	1.5817	–0.0790	0.0039	0.0020	0.1513
Poland	1	–1.0164	–0.0068	-	-	0.0048
	2	1.5912	–1.6469	0.2029	-	0.2607
	3	3.2993	–3.4680	0.7030	–0.0398	0.2667
Slovakia	1	–0.1799	0.1036	-	-	0.3046
	2	–0.3368	–0.0124	0.0212	-	0.4537
	3	–1.3212	0.1061	0.0759	–0.0063	0.5980
Slovenia	1	1.2570	0.1033	-	-	0.1448
	2	–0.1272	0.2206	0.0419	-	0.2726
	3	–1.1100	0.7442	0.0336	–0.0097	0.3577

Note: Correlation index: I_{yx} Significance level: + α = 0.05; ++ α = 0.01
Source: own calculations

II: *Parameters of a regression function for the crude rate of net migration with respect to the unemployment rate in the EU27 and selected member countries*

	Model	Model parameters				I_{yt}
		b_0	b_1	b_2	b_3	
EU27	1	5.0785	–0.2536	-	-	0.1810
	2	3.0490	0.2433	–0.0301	-	0.1818
	3	–773.6932	–893.1516	–33.0519	–4.1726	0.4558
Czech Republic	1	14.4938	–1.6874	-	-	0.7105+
	2	26.2908	–5.3932	0.2789	-	0.7271+
	3	–31.0706	22.0588	–3.9566	0.2120	0.7380+
Hungary	1	1.0009	0.0660	-	-	0.2639
	2	–4.9557	1.5872	–0.0929	-	0.6541+
	3	–13.4111	4.8050	–0.4899	0.0159	0.6718+
Poland	1	0.2210	–0.0954	-	-	0.1584
	2	11.2337	–1.8623	0.0636	-	0.3596
	3	–32.9476	9.0850	–0.7881	0.0209	0.5265
Slovakia	1	3.4872	–0.2139	-	-	0.5194
	2	–0.9134	0.4122	–0.0212	-	0.5354
	3	23.2265	–4.9087	0.3584	–0.0088	0.5560
Slovenia	1	22.2041	–3.1053	-	-	0.7899++
	2	41.9337	–9.8905	0.5697	-	0.8021++
	3	–88.4439	57.7745	–10.9123	0.6389	0.8085++

Note: Correlation index: I_{yx} Significance level: + α = 0.05; ++ α = 0.01
Source: own calculations

differences between particular countries under examination. This is obvious from the results in Tab. II. 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 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 or third degree means already achieving statistically significant results comparable to those in the Czech Republic. The highest correlation indices were achieved in Slovenia. In this country, already the use of a polynomial of the first degree means achieving statistically highly significant results. While all above mentioned countries achieve highly significant results for correlation indices for unemployment and migration, 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.

Pitfalls and future challenges in migration patterns

We may argue firstly that human mobility is something that has always existed in human history but its increasing because it's a part of the cross border flows that make up globalization. And that means we need to think through rational policies for economic management for integration when people stay on for security because of course mobility of people can become a security issue and we must also think of the needs and interest of sending societies and make sure that migration doesn't actually lead to underdevelopment as it often does but contributes to the development.

There are of course many challenges in migration patterns. Migration policies often fail or have unintended consequences because of:

- lack of knowledge of likely future trends
- short term focus of policy and research
- poor understanding of the forces driving international migration.

I argue that one reason why policies are so often unsuccessful or lead to unexpected consequences is that these policies are based on the lack of knowledge on of fact what drives the migration. And also because government policies on migration are often very short term. The policy perspective tends to be to the next elections three or four years rather than looking at the very long term nature of these factors. So altogether I think that policymakers have a quite poor understanding of the factors that drive global migration and the way how these factors interact with each other. And that's what I what to contribute a little bit. This is just one example, one could give very many. If we look at the statements of European policy makers there seems to be an assumption that there is an almost infinite pool of labour that can be bought in from poor countries. If however you take a 20 or 30 year time perspective and look at the real demographic trends in sending regions you find that is not necessarily the case. The demographical transition from high mortality and high fertility to low mortality and low fertility which took place in the United Kingdom in the 19th century in taking place though out the world and even in Africa fertility rates are falling sharply. So we may doubt whether there will be a big reserve of people available to do low skilled jobs in Europe twenty years from now. So it is not a question of solidarity only but a question of our own welfare system survival. We need to start planning for that. So I raise this question: If we build our economies on migration is that really a viable long-term strategy or do we need to think of alternatives? I also think we need to take much more account of mutual interests that sending and receiving countries need to talk to each other much more than they do.

CONCLUSIONS

Although observed migration patterns in Europe in this period seem to show endless diversity, a number of common causes and motives can be distinguished and are dealt in the paper. This paper focuses on the period before and after the latest financial and economic crisis and puts together facts regarding motivation to labour migration and provides explanations of its causes and impacts on the macroeconomic level. Based on prevailing migration and economic theory, I also provided an empirical evidence of migration coherence to particular macroeconomic indicators and assessed impacts of both high and low skilled migrations on further economic development.

The global financial and economic crisis resulted in the deepest recession since the Great Depression. Some of the effects of this crisis on migration are only temporary and after they fade away, migration flows will be influenced again by „traditional" structural determinants as for example labour market developments, demographical structure of the populations in receiving and sending countries and major trends of the global economy. But already the experience gained from the Great Depression and other crises in the past shows that some impacts

and policies that were originally applied in a short term perspective can then persist for years even if the crisis is already over. The labour demand is decreasing during the economic downturn and this can lead to policies that suggest reducing new immigration to country. So far it is all right. But the rising unemployment raises anti-immigration moods in the society and this may lead to populist solutions and injudicious restrictions of migration which have nothing common with a coherent economic policy regarding immigration and can harm the capability of the country to achieve a permanently sustainable growth in the long-term. Moreover, the efforts to lay off migrant workers or to persuade them to return to their country of origin in order to make room for native workers is not necessarily a cost-effective procedure. There are several questions that should be asked before applying such policies. Is there an adequate supply on the side of native born workers that can provide the same skills as migrant workers that were returned back home? There is a commonly believed cliché in the society that migrants are uneducated but the reality is that migrants bring human capital. The overwhelming majority of them brings skills, high educational level, and human capital and contribute to great deal to the economies they enter. In many countries, migrant workers have higher qualification profile than local-born ones. And when many migrants are actually much better qualified than the receiving population and Europe desperately needs skills which it brings in from developed countries but also from developing countries, the durable solution cannot be found in persuading migrants to return to their country of origin.

Restrictions on immigrant inflows from particular countries may then trigger some retaliation measures from the sending countries which might affect not only the flow of labour but possibly also trade in goods or investments and such protectionism measures could cause even more damage than the immigration restrictions itself. And the question is not only whether native workers are able to do the jobs but also whether they are willing to take on such jobs and under what payment conditions because migrants may be paid less than native workers. Some explanations to these questions can be found in the dual labour market theory which states that people at developed societies face motivational problems to enter the bottom level jobs because there is no status in society and very few channels for upward mobility. Such job vacancy creates then demand for foreign workers who do not have these motivational problems. Injudicious restrictions of immigration or the attempts to persuade the migrant worker to return to their country of origin in order to make room for native workers isn't necessarily related to better labour market prospects for local workers.

I'd like to mention also a few comments on very important patters of skills, innovation and growth. The political restrictions of inflow of skilled workers or even the reduction of the existing pool of such skills might be very dangerous for the entire economy. Firms are aware that those particular skills are scarce in relation to unskilled workers and even in the times of economic recession try to delay their dismissal as long as possible. The costs arising from new recruitment and training, when the period of dismissals during the crisis is over, are also taken into account. The problem arises when the recession is long and future prospects are unclear. This was the case of the last financial and economic crisis where the downturn was so unexpectedly immense and the prospects were so unclear that companies were forced to introduce large layoffs that hit also highly skilled staff. The last global economic crisis was very deep and hit European economies quite unexpectedly after a period of several years of economic boom that was characteristic by increasing GDP growth rates, sharply declining unemployment rates, rising demand for labour and increased migration flows. But even in such situations those highly skilled workers may help the companies in introducing new methods to overcome the crisis period and get a better starting position compared to its possible competitors when the recession is over.

A partial objective of the practical part of the paper was to evaluate relationships between the rate of migration, GDP per capita and unemployment rate using adequate quantitative methods. In the selected sample of countries are Central European states: Czech Republic, Hungary, Poland, Slovakia and Slovenia. All of them are post-communist countries that had certain transition problems in common but they also had experienced significant differences in their economic development after the collapse of the communist bloc. To determine parameters of a regression function were used methods of regression and correlation analysis including testing the statistical significance. All calculated correlation indices for dependency of the crude rate on net migration and real GDP per capita at the European level and also in particular countries were very low and none of them is statistically significant. Those results may lead to an assumption that migration decisions are not as strongly dependent on actual GDP per capita in the receiving countries as it was supposed.

In the next step I tried to prove statistically the existence of correlation between the crude rate of net migration and unemployment rate where the empirical dependence was expected to be higher because unemployment and lack of job opportunities both present some of the push factors that may drive migration decisions according to the economic theory. From the results it is obvious that while calculated correlation indices for correlation between unemployment and migration at the European level were very low, there are significant differences between particular countries under examination. 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 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 or third degree means already achieving statistically significant results comparable to those in the Czech Republic. The highest correlation indices were achieved in Slovenia. In this country, already the use of a polynomial of the first degree means achieving statistically highly significant results.

While all above mentioned countries achieve highly significant results for correlation indices for unemployment and migration, 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. The analysis of the crude rate of net migration, GDP per capita and unemployment rate presented in this paper can be further used and developed when other variables might be added to the model.

As regards to economic benefits of international migration and growth in receiving countries a vast number of studies confirm that the economic benefits of international migration are immense because the free movement of workers leads to a re-allocation of labour which becomes more efficient and this contributes then to the increase in total welfare. The problem of them is that they usually don't consider all economic and social costs that are relevant to those labour movements and this is of course very a very difficult task and a challenge for future research that needs to be multidisciplinary and complex. So understanding of broader migration patterns and identification of key determinants and consequences of migration described in this paper may then allow an appropriate evaluation of migration policies and a determination of substantial theoretically and empirically based macro- and microeconomic benefits and costs of international labour migration.

SUMMARY

Already the experience gained from the Great Depression and other crises in the past shows that some impacts and policies that were originally applied in a short term perspective can then persist for years even if the crisis is already over. Nowadays, the problems like for example the rising migration flows of migrants with low income and qualification or the rising unemployment among young migrants may have much longer and deeper consequences for the labour markets and the entire economies than many economists were estimating at the time when the crisis peaked and most European economies started to recover. The response of migration policies to these situations can help then to solve those problems resulting from the last global crisis but it can also worsen them. This paper deals with some of those risks and problems that were brought by the economic crisis, puts together relevant facts regarding labour migration, provides explanations of their impacts on the macro- and microeconomic level and proposes plausible solutions to emerging problems. The empirical analyses are based on fundamental findings of theory of migration including the verification of the statistical significance of particular parameters and meeting conditions of the economic verification of the model. Based on prevailing migration and economic theory, I also provided an empirical evidence of migration coherence to particular macroeconomic indicators. An increase in the rate of net migration 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.

A vast number of studies confirm that the economic benefits of international migration are immense because the free movement of workers leads to a re-allocation of labour which becomes more efficient and this contributes then to the increase in total welfare. The problem of them is that they usually don't consider all economic and social costs that are relevant to those labour movements and this is of course very a very difficult task and a challenge for future research that needs to be multidisciplinary and complex. So understanding of broader migration patterns and identification of key determinants and consequences of migration described in this paper may then allow an appropriate evaluation of migration policies and a determination of substantial theoretically and empirically based macro- and microeconomic benefits and costs of international labour migration.

REFERENCES

ACZEL, A., 1989: Complete Business Statistics. Boston: Irwin.

DIRSCHEDL, P., OSTERMANN, R., 2001: Computational Statistics. Heidelberg: Physica-Verlag.

DUSTMAN et al., 2004: The impact of EU enlargement on migration flows [online]. Available from: <http://eprints.ucl.ac.uk/14332/1/14332.pdf>.

EUROSTAT, 2011: European Statistics [online]. [cit. 2011-01-25]. Available from:
<http://epp.eurostat.ec.europa.eu>.

FEVRE, R., 1998: Labour migration and freedom of movement in the European Union: Social exclusion and economic development. International Planning Studies. Abingdon. Vol. 3, Iss. 1; 18 pp. ISSN 13563475. Also available from: <http://proquest.umi.com/pqdweb?did=28215908&sid=6&Fmt=4&clientId=78586&RQT=309&VName=PQD>.

GOTT, C., JOHNSTON, K., 2002: The migrant population in the UK: fiscal effects. RDS occasional paper no. 77. Home Office. Also available from: <http://www.mediapart.fr/files/occ77migrant.pdf>.

HAMILTON, B., WHALEY J., 1984: Efficiency and Distributional Implications of Global Restrictions on Labour Mobility. Journal of Development Economics 14: 61–75.

HINDLS, R. et al., 2003: Statistika pro ekonomy. Praha: Professional publishing.

KUPISZEWSKI, M., KUPISZEWSKA, D., 1999: Projections of Central and East European populations: The model, the data and preliminary results, Paper presented at the 'Joint ECE-Eurostat Work Session on Demographic Projections', Perugia, May 3–7.

MASON, R., LIND, D., 1990: Statistical Techniques in Business and Economics. Boston: Irwin.

MAŠKOVÁ, M., STAŠOVÁ, L., 2000: Population development in the Czech Republic in the 1990s. In: Kučera, T., Kučerová, O. V., Opara, O. B., Schaich, E. (eds.), New demographic faces of Europe, Heidelberg: Springer-Verlag, pp. 79–102.

MINAŘÍK, B., 1996: Statistics III (Statistika III). Brno: Mendelova zemědělská a lesnická univerzita v Brně, 154 pp.

PALÁT, M., 2010: Evaluation of relation between investments and savings in Central European countries. Acta Universitatis agriculturae et silviculturae Mendelianae Brunensis, sv. LVIII, č. 3, pp. 175–182.

RODRIK, D., 2003: In Search of Prosperity: Analytic Narratives on Economic Growth. Oxford: Princeton University Press, 520 pp.

UK DEPARTMENT OF COMMUNITIES AND LOCAL GOVERNMENT, 2009: Local Government Finance [online]. [cit. 2011-01-25]. Available from: <http://www.communities.gov.uk/localgovernment/localregional/localgovernmentfinance/214>.

UNITED NATIONS, 1998: World population monitoring 1997: International migration and development, New York: United Nations.

WILLEKENS, F. W., 1994: Monitoring international migration flows in Europe. Towards a statistical data base combining data from different sources. In: European Journal of Population, 10(1), pp. 1–42.

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