

## INTERNATIONALIZATION OF SELECTED EUROPEAN LABOUR MARKETS AND ITS IMPACTS

<sup>a</sup>SYLVIE KOTÍKOVÁ, <sup>b</sup>RENATA ČUHLOVÁ

*Technical University of Liberec, Studentska 1402/2  
461 17 Liberec 1, Czech Republic  
email: <sup>a</sup>sylvie.kotikova@tul.cz, <sup>b</sup>renata.cuhlova@tul.cz*

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**Abstract:** This paper provides an analysis of the impacts of immigration from countries outside the European Union on domestic unemployment rates of Austria, Czech Republic, Germany and Poland based on gender and age of immigrants. Using Eurostat data from 1998 to 2014, data analysis and regression functions with constant coefficients for every analysed country were performed. The results of P-values and the T test indicate that the gender of immigrants is not a determination factor for the development of domestic employment in any examined country, contrary to their. With the increase of age of immigrants, the employment rate in Poland and the Czech Republic increases as well. Generally, the labor markets react to inflow of immigrants differently in Poland and the Czech Republic compared to Germany.

**Keywords:** Internationalization, migration, labour market, immigration, employment

### 1 Introduction

Migration has become a common phenomenon and one of the most important topics in Europe. The demographic, economic, social and fiscal consequences of immigrants' redistribution are of great concern to governments of both sending as well as of receiving countries. As Williams and Baláž (2008) point out, human capital is a key determinant of innovation which is nowadays recognized as a driver of national modern economies and competitiveness. The international migration might be seen as challenge for the policy makers but it may also generate economic opportunities in both home and host markets. Moreover, for economists, it represents the ability to increase the total world income and productivity (Clemens et al, 2009). For its implications, composition of immigration is an important policy question.

As United Nations reports, the majority of international migrants are of working age. In 2015, 177 million of them (72 %) were between ages 20-64 compared to 58 % of the total population (United Nations, 2015). As statistics show, migration from employment reasons is a current trend that results in various impacts on the host labour market and environment in which occur. Factors influencing the migrant flows usually are (Lee, 1966; Drbohlav and Uherek, 2007):

- an economic recession in the country of origin;
- employment opportunities;
- differences between in wages for equivalent jobs;
- differences in any kind of discrimination between the home and host country;
- an access to the benefit systems of host countries and to the state education, housing and health care of higher quality
- a small chance for personal as well professional development in the country of origin;
- catastrophes;
- a desire to travel, learn a new language, build new skills and qualifications and develop networks.

In many countries that are receiving the migrants, the arrival of large numbers of immigrants is naturally raising concerns and questions about their impact on the integration into society as well as economy and, in particular, the labour market in a host country. The academic research regarding to topic of migration is usually concentrated on the main four following issues: the effect of immigrant on natives; migration policy; the determinants of migration; and assimilation of migrants. This study focuses on the first of these topics.

When investigating the impacts of migration on host labour markets, usually the studies focus on wages and unemployment. Although the estimates of the effects of immigration on wages and employment in host markets are quantitatively small, they

vary widely. Majority of the research has been conducted with data of USA, especially to effects of migration on wages of in-habits compared to more rigid European market with studies investigated the topic related to unemployment rate. On the other hand, changes in wages and (un)employment are not the only reactions of an economy to immigration. As Dustmann et al (2008) suggest, immigration flows may change the composition of goods and services produced in the host economy and therefore the occupational and industrial structure of the labour market as well. Secondly, immigration may change the technology used for producing particular products or services. This is the case of skilled migrants that may bring know-how and encourage innovation.

In terms of European Union market, the most of studies are single country-oriented. The main reason of limited number of studies focusing on European labour market as whole is a high differentiation of international data and a lack or poor availability of quality data.

The aim of this paper is to analyse the impacts of immigration of third country nations on selected European labour markets, namely Austrian, Czech, German and Polish market as immigrant's host countries. In the first part of the paper we describe existing studies and findings concluding the impacts of migration on selected labour markets, in relation to the impacts on wages, (un)employment and productivity of the host markets. In accordance with the stated aim, studies on European Union market and territories of four Central European countries are presented. Moreover, findings of reports on OECD labour markets are included as well. In the next part of the paper, the impacts on unemployment rate of domestic labour force are statistically demonstrated based on country-level statistics of EU-ELFS covering the period 1998-2014. The results and conclusion of the findings on immigration effects on the analyzed countries and their labour markets are presented.

### 2 Literature Review

One of the earliest works focusing on European labour market comes from Gang et al (1999) by testing data from 1988 when 12 existing member states of European Union were included. Hypothesis testing showed very low degree of correlation between presence of immigrant on the labour market and unemployment of local labour force. However, more significant correlative relation was found out in case of less qualified domestic labour force. Another study of European Union market was carried out by Angrist and Kugler (2003). They collected the data from 1983 till 1999 and examined the impact of immigration on unemployment based on gender with regard to institutions that regulate labour market.

Findings of Angrist and Kugler (2003) demonstrated difficult absorption of immigrants due to limited flexibility of the labour markets. Moreover, immigration into European Union causes decrease of men's wages, contrary to women's wages where no significant impact was proved. Boeri and Brucker (2005) researched migration from Eastern Enlargement of European Union into Western Europe and focused on reasons why Western European countries protest their labour markets against new member states. The findings state that with migration of 3 % of inhabitants from Eastern Europe into Western countries, Gross Domestic Product (GDP) of European Union would totally increase by 0,5 %. Similarly, according to Huber et al (2010) and their study of 1995-2004, the immigration affects the European productivity of labour force in a positive way.

More recently, analysis of European Union market in terms of its fraction into NUTS-2 regions for the period 2000-2007 was conducted (Huber and Tondl, 2012). According to the findings, immigration growth of 1 % causes an increase of GDP per capita in immigration areas by 0,02 % and of productivity by 0,03 %.

Contrary, emigration decreases GDP per capita by 0,03 % and productivity by 0,02 % in emigration areas.

The study of brings another valuable results describing the impact of migration on Organisation for Economic Co-operation and Development (OECD) countries as another integration unit. To note, currently, the OECD has 35 members, including 22 of the 28 European Union member states. Docquier et al (2014) simulated the net immigration and emigration effects on labour markets for the years 1990 - 2000. According to their conclusions, immigration has a positive effect on the wages of local inhabitants of lower educational attainment. Moreover, it has also proved a positive or no effect on domestic employment rate. On the other hand, the effect on the wages of less educated domestic workers is negative. The same conclusions hold true even after consideration of immigration flows of 2000-2007. Jean and Jimenez (2007), also investigating the effects on OECD countries, reported that migration has only temporarily effects on unemployment. Significant growth of immigrant generates increase of unemployment within a period of 5 till 10 years (Jean and Jimenez, 2007).

European policy makers are particularly interested in research of immigrants related to the employment rate of natives. As it has been highlighted, the statistics of European labour market as whole are not sufficient which causes limitations to the researchers. This paper focuses on analysis of territory of four European countries and in this regard, previous studies oriented on these markets are presented.

In 2015, the United Nations (2015) conducted a study focusing on phenomena of migration. Since the report does not take the recent so-called European migrant crisis into account, the official Eurostat data on the number of successful asylum applicants for 2015 and 2016 were included too. According to these figures, most common country of origin of foreign-born population in analyzed countries is: Ukraine for Czech Republic and Poland, Poland for Germany and Germany for Austria.

Both Germany and Austria can be considered as two the most prosperous European Union countries. As D'Amuri et al (2010) calculated, Germany host the largest number of foreign work force within European Union. Since the late 1990's, immigrant labour force have represented more than 10% of the total German labor force. Due to domestic generous unemployment benefits and wage rigidities, the potential for negative employment consequences of immigration arises (Borjas, 2003).

In terms of German market, Bonin's analysis (2005) covering the period 1975-1997 indicated that 10 % increase of share of immigrants in domestic labour force decreases wages by less than 1 %. Especially after 1990 when immigrants' inflows grew, the local labour market adapted mainly via employment. Increase of immigration by 10 % caused decrease of employment rate of local inhabitants by 1,5 p.p.. Low-skilled labour was together with labour force of older age affected the most. D'Amuri et al (2010) conducted similar research focusing again on the changes after 1990 but for the time period of 1987-2001. The conclusion states that rigidity of German labour market limits possibility of labour market to absorb immigration inflows without significant consequences that were found out in relation to previous migrants.

Recent study of Horvath (2012) looked at the Austrian market during 1994-2005. Austria together with Germany The impact of immigration on wages was proved negative but negligible for unskilled workforce with low wage and secondly positive for unskilled workers with high wage. In terms of qualified labour force, the effects are usually positive no matter the level of their wages.

Turning to Czech Republic and Poland, the international migration has undergone an historic evolution since 1989. Although these post-communist countries have been known for sending migrants to the West, they have become attractive destination for foreign population flows, including third country

nations trying to get into European market. Specifically to Poland, it has been known for massive emigration flows for the last century however as Wallace and Stola (2001) state, the present status stands for both, receiving and sending country. Nevertheless, research related to Poland still mainly focuses on emigration. Compared to Poland, the Czech Republic has more quickly become an immigration and transit country. According to Drbohlav (2003), findings of foreign labour force analysis report very similar migratory characteristics in the Czech Republic to features of Western developed democracies. As for Poland and Czech Republic, the studies on impacts of immigration represent significant gap.

Based on the findings of previously mentioned studies, several conclusions may be formulated. Firstly, the overall impacts of immigration from the third countries on local labour force are not significant. More detail look suggests that if immigration has measurable negative implications, it usually affects less qualified labour force and immigrants that have come to the analysed area earlier. Another conclusion appeared in the studies claims that probability of unemployment growth as a consequence of immigration is low in a short term and negligible, almost zero in a long term period.

### 3 Methodology

Regression analysis is an econometric method, which can be used both at the micro level (when analysing companies, employees, etc.) and at the macro level (in terms of evaluation of the labour market, macroeconomic indicators, regional development etc.) (Novák, 2007). It is often used in research different areas of economic policy – for example unemployment, inflation, poverty and the environment.

Advantages of regression analysis consist of for example low-collinearity between the observed data. Time series analysis is often a high multi-collinearity (interdependence explanatory variables) (Hisiao, 2003). On the other hand, a major disadvantage of this method is its time-consumation and it requires a complex data collection.

Based on the empirical model, this paper investigates the impacts of immigration from third countries on unemployment rate of local labour force in Austria, Czech Republic, Germany and Poland. The empirical model that is tested in this paper is based on regression analysis of data and proceeds from approach used by Borjas (2003) and Bonin (2005).

In order to investigate the impact of immigration, the labour force is divided into groups differentiated by gender and age as a determinant of length of work experiences. Let suppose the group of local workers that has in given year and given country certain work experiences. The share of immigrants with the same characteristics is possible to express by total immigration rate that is calculated as follows in the formula (1):

$$m = \frac{M}{(M+D)} \quad (1)$$

where:

$M$  – a number of immigrants of certain age and gender;  
 $D$  – a number of local workers of certain age and gender.

Let it to be supposed that  $y$  is mean value of unemployment rate of local workers in certain year and country. The unemployment rate of local workers is computed according to the formula (2):

$$y = \frac{N}{(Z+N)} \quad (2)$$

where:

$Z$  – a number of employed local workers of certain age and gender;  
 $N$  – a number of unemployed local workers of certain age and gender.

Analysis of the data set was performed by using the computer program MS Excel and the program Gretl for econometric calculations. Each of the countries has been studied in a total of six units of variables of cross-sectional equidistant time series of length of 17 (tracing the development between years 1998-2014).

Consequently, the total number of data collected for each country had value 102. Totally, 408 data was collected number for all analysed countries and the data base was complete. For every analysed country, regression function with constant coefficients was an object of investigation. The regression model, inspired by Borjas (2003) had a following structure:

$$U = \alpha + \beta m + \pi + s + \varepsilon \quad (3)$$

where:

$U$  – is an employment rate of examined country

$\alpha$  – an absolute coefficient of a regression function

$\beta$  – a coefficient of migration rate variable

$\pi$  – is a vector of fixed effects indicating working experiences (age) of a group;

$s$  – a vector that determines a gender of a group

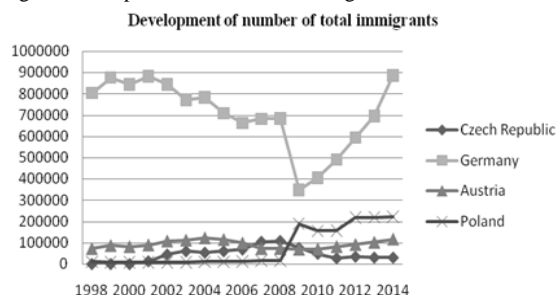
$\varepsilon$  – a vector of fixed effects that determines.

Regression analysis will be looking for a relationship between the unemployment rate of local inhabitants and total immigration rate. The calculations will be separated for various age groups as an indicator of working experiences and also in terms of a gender of immigrants.

Calculations and analysis is based on data set of county-level variables from EU-ELFS (European Labour Force Survey) Eurostat database (2017) for the period 1998-2014. For the purposes of the paper, we segment data into three age group categories (15-24 / 25-54 / 55-64) that include economically active population; and two gender categories (males / females). Totally, the examined workforce is divided into  $3 \times 2 = 6$  analyzed groups. For each group, unemployment rate of local workers and total migration rate are quantified according to formula (1) and (2). This applies to every analysed country (4 countries are included in the present research), for the examined period of 17 years.

Graphs that follow below aim to describe the immigration situation in examined countries and also to display the statistics that were used for other calculations as well as regression analysis in this paper. As it is clearly evident in the figure below (Fig. nr. 1) during single examined years, the inflow of immigrants shows a huge difference, multiple of hundreds, for immigration to Germany compared to other countries. This data again proves the position of the country as very popular immigration destination in Europe. We can also observe that the latest data from 2014 show similar values of maximal numbers of immigrants in Germany as in 1999-2001. For the purpose of comparison, it is necessary to point out that statistics of migration are for the Czech Republic available from the year 2001.

Fig. 1: Development of number of immigrants

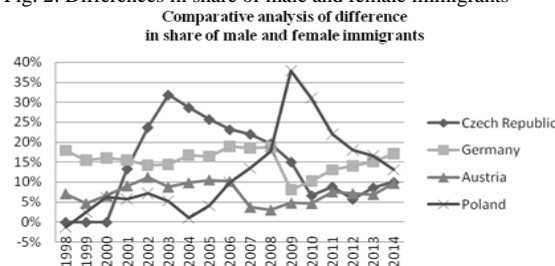


Source: own processing the basis of the Eurostat data (2017)

Referring to German statistics, the gap between years 2008 and 2009 might be explained by the new immigration policy that came into practice and economic recession in the world. To compare Poland and the Czech Republic, the number immigrants into the Czech market was higher in period 2002-2008. However the year 2009 again proves the socio-economic changes in the world affecting not only the German market but demonstrating the opposite impact of flows of immigrant from third countries into Poland. Austria does not show any larger changes but rather stable trend.

Another interesting look is offered by the next graph (graph nr. 2) illustrating the situation of immigrants in terms of gender. Gender can be considered as an important variable in terms of migrations because it affects not only labour opportunities at destination but also reasons for migrating into another country, the social networks that migrants create and use, and integration process. Following figure displays the differences in shares of male and female immigrants in analysed period.

Fig. 2: Differences in share of male and female immigrants



Source: own processing the basis of the Eurostat data (2017)

Gender can be considered as an important variable in terms of migrations because it affects not only labour opportunities at destination but also reasons for migrating into another country, the social networks that migrants create and use, and integration process. As the figure nr. 2 illustrates, the distribution of immigrations in terms of gender is very variable over years and except of the superiority of male migrants, no particular trend can be observed in any analyzed country. We can note that only for the first examined year 1998, the value of differences in shares of male and female immigrants is negative (-1,3 %) and so the number of female immigrants exceeded male immigrants. In all other cases, male migrants count larger numbers (up to difference in share of 37,85 % in Poland in 2009).

More detailed examination of this situation and its background and causes could be a valuable topic for future research. Special attention should be paid to the research of labour market experiences of female migrants in the host countries.

#### 4 Results and discussions

The analysis examining a relationship between the unemployment rate of local inhabitants and total immigration rate described above found regression functions for individual countries in the following form:

Czech Republic:

$$U = 0,774 + 0,335 m + 0,061 + 0,015 + \varepsilon$$

Poland:

$$U = 0,582 + 2,958 m + 0,117 + 0,011 + \varepsilon$$

Germany:

$$U = 0,963 - 0,961 m - 0,017 - 0,005 + \varepsilon$$

Austria:

$$U = 0,902 + 0,022 - 0,003 + \varepsilon$$

The above-mentioned functions assuming unchanging coefficients in time are then the interpolation on what employment rate in the country can be expected with known rate of immigration into the examined country provided certain groups of immigrant distribution by age and gender.

Function found for Austria is a constant function due to constant immigration rates in the reporting period (the rate of immigration has been reported with a value of zero throughout the whole period) and thus, it is actually the interpolate (projection) of Austrian employment rate over time.

From the total values of the coefficient of determination we can state that founded functions describe the behavior of the labor market in the Czech Republic - the rate of coefficient of determination is more than 73.5 %, and then in terms of Poland – the rate of coefficient of determination has value of more than 70 %. The function is not a suitable model for Germany in which case the rate of determination at nearly 9 % indicates only a small explanatory power to describe data variability. Next, Austria is due to the above described state of the migration irrelevant to evaluate. The overview of coefficients of determination for each feature is summarized (table nr. 1).

Table 1: Coefficients of determination of founded regression functions

Country	Coefficients of determination
Czech Republic	0.735477621349911
Poland	0.707753672508288
Germany	0.0866311530126691
Austria	0.543594126656185

Source: own processing on the basis of the calculations from Eurostat data (2017)

From the shape of the functions it can be also observed that the absolute coefficient ( $\alpha$ ) is decisive for the level of employment in all surveyed countries. Moreover, the significance of this factor for all functions has been clearly confirmed by founded P-value which was moving into the limit of zero in every performed measurement. This signifies completely anticipated argument that domestic factors (eg. GDP, wage developments, development of payroll taxes, legislative changes etc.) have a major impact on employment in the surveyed countries.

Examined factors, including the level of immigration, pay a marginal role compared to other domestic factors in all countries. Furthermore, the examined factors, although marginally, have larger impact on the labour market (employability) in Poland and in the Czech Republic than in two analyzed developed countries - Germany and Austria.

The level of significance and influence of single factors on employment rate was investigated by the significance test of parameters on the P-value. Results organized by a variable of country are transparently demonstrated below (table nr. 2).

Table 2: The importance of individual factors

Country	Factors		
	Coefficient of the immigration rate	Coefficient of the age	Coefficient of the gender
<b>Czech Republic</b>			
Value of coefficient	0.3352785685838	0.06067758203047	0.01517894213537
T test	1.300044581076	15.52512900653	2.570125882859
P-value	0.1966350688816	0.000000	0.011671507088
<b>Poland</b>			
Value of coefficient	2.958493228954	0.1173124506371	0.01105078453425
T test	3.551803040250	15.35642027222	0.9155702179479
P-value	0.000590041063696	0.000000	0.3621397773828
<b>Germany</b>			
Value of coefficient	-0.9605403716130	0.0173799749896	0.0050190102070784
T test	-2.906879088518	2.510834727517	-0.889513128468
P-value	0.004514434207449	0.01368073499666	0.3759057061520
<b>Austria</b>			
Value of coefficient	-	0.022283897324	-0.00317014947300
T test	-	10.81776552947	-0.9424141297565
P-value	-	0.000000	0.3482747372377

Source: own processing on the basis of the calculations from Eurostat data (2017)

The table of P-values and the values of the test criteria (T test) of tested coefficients indicate that the gender of immigrants cannot be considered as a factor of determination for the development of domestic employment in any country. (An exception applies to the Czech Republic where this factor could be considered as significant while increased level of significance of about 2 %).

In contrast, the age of immigrants, or to what age group immigrants lie, is a determinant of domestic employment. It means that the age of coming migrants into the country is appropriate to monitor in terms of domestic employment of the country. The actual immigration rate is the only determining factor on the significance level of 0.005. In the Czech Republic, the factor of immigration is even completely insignificant.

If there is abstracted away from significance level and thus the real impact of single analyzed factors on domestic employment in research countries, based on the findings of performed data analysis – and especially according to the value and direction of dependency of single factors, we can claim following:

- In both Poland and the Czech Republic, the labor market reacts to inflows of migrants differently than in the case of Germany that represents a Western economics. Increased proportion of migrants increases employment in the Czech Republic and Poland. In Germany, the situation is the opposite. In the Czech Republic, this factor is not statistically significant, however, in Poland and Germany, significant (significance level of 0.5%).
- As it has been mentioned, the age of immigrants is according to the values of P-value an significant factor (in terms of Germany only on significance level till 2 %). However it is possible to observe the opposite trends in selected post-communist countries and in EU-15 member states. Specifically, we can state that with increase of age (higher age-group) of immigrants, the employment rate in Poland and the Czech Republic increases as well. This can be considered as positive in the context of migrants' integration into the society. We can suppose that immigrant of higher age-group are always utilized for particular job positions that is compatible with the host labour market.

For more detailed conclusions, deeper analysis of educational attainment of this group of immigrants would be needed. Contrary situation occurs in Germany where with higher age of immigrants, the employment in the country decreases.

Due to the unavailability of data sources in terms of educational structure of migrants, it is really very difficult to make this step. Procházková Illinitchi's research (2014) deals with an educational structure of migrants and their impact on the labor market in selected countries of the EU. However, due to the lack of comprehensive data on the educational structure, the author decided to use estimates, respectively percentage shares of groups based on qualifications of total migrants applied to different age groups of employed migrants. This view represents a very simplistic assumption entering subsequent analyzes. We claim that it is not possible to assume that with increasing educational attainment of migrant population remains the track of employed/unemployed migrants in the qualifying group fixed.

It is logical to assume that with increased education increases employment in the group of migrants, and vice versa. For this reason, the present work in this paper dropped from watching the criteria of qualification and migration was observed only in terms of age and gender.

- Even if the gender of migrants does not play in any country an important role in the impact on the labor market in the host country (according to the result P-value), the positive impact on domestic immigration employability was recorded by the value of gender coefficient for immigration of men at Poland and the Czech Republic. In Germany, the findings are again different. In the reporting period, the labor market seemed rather positive due to immigration of women into the country.

Observation of migration trends and especially their impacts on source as well as host markets offer interesting findings since the differences between the economics are significant. The impact of immigration on employment is more significant in less developed countries – such as Czech Republic and Poland, contrary to German-speaking countries.

#### 4 Conclusion

Cross-border migration of people from one country to another has increasingly become an important feature of the globalising world and it represents an important driver of economic growth across international boundaries. The exchange of capital, processes and people between countries happens under certain conditions and within a particular economic, social, demographic and political context. The phenomenon of immigration itself with its growing tendency is considered as a controversial and complicated issue, especially nowadays and within the European context.

European societies have changed under the influences of immigration and migrant settlement. There are permanent debates on the effect of immigration on the labour markets since the immigrant inflows increase the labour supply and as Card et al (2012) point out, there is often a widespread belief that immigrants take jobs away from domestic inhabitants and bring down their wages.

The relationship between immigrants and the labour markets in the host countries is often linked to factors such as gender, age and educational attainment. As the report from the European Migration Network (2006) claims, the significance of these factors changes over time due to the economic situations in the countries of origin and settlement.

The aim of the paper was to analyze impacts of immigration from the third country nations on employment rate in selected labour markets in Europe. This paper provides an overview on existing findings focused on selected European labour markets and contributes to the existing knowledge with own analysis of comparison of four European countries; Austria, Czech Republic, Germany and Poland.

The markets of analyzed countries are various and we can especially compare Austria and Germany contrary to Czech Republic and Poland. In both Poland and the Czech Republic, the labor market reacts to inflow of migration differently than in the case of Germany. Moreover, we can claim that more developed countries are better prepared for increase of labour supply from outside and they can easier and faster absorb the immigration inflows.

The results of computations found the age of immigrants as a significant factor in terms of the impacts on employment. The opposite trends on labour markets occur in selected post-communist countries and in EU-15 member states. Specifically, we can state that with increase of age (higher age-group) of immigrants, the employment rate in Poland and the Czech Republic increases as well. The investigated results of P-values and the values of the T test of coefficients indicate that the gender of immigrants should not be considered as a factor of determination for the development of domestic employment in any examined country. However, the positive impact on domestic immigration employability was recorded by the value of gender coefficient for immigration of men at Poland and the Czech Republic. The findings also suggest that it is not necessary to observe the structure of immigrant groups.

Although growing number of studies focuses on the economic integration of immigrants into the host economy, the immigrants' integration process differentiated by skills, gender and cultural-ethnic networks and its effects on the host labour market and society still remains under-researched and offers possibilities of further research. Unfortunately, availability of data of a good quality and its comparability across single

countries remain an issue for the research work with need of migrant statistics.

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**Primary Paper Section:** A

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