EMILIE JAŠOVÁ

University of Finance and Administration, Czech Republic

ANALYSIS OF IMMIGRATION IMPACT ON LABOUR MARKET, POPULATION AND FAMILY INDICATORS BY AGE, SEX AND CITIZENSHIP

Abstract:

The aim of the paper is to verify and further expand the knowledge about the existence and nature of the impact of selected immigration indicators on the labour market, population and family using empirical analysis. In terms of age across the world economies, there is an apparent negative impact of immigrant women aged 34 and especially 44 years old arriving in Croatia, Slovakia, Spain and Poland on the indicator of the number of households of one adult with two children under the age of six. On the other hand, the effect of immigrant women aged 50 years (arrivals in Luxembourg and the Netherlands) on the LMP expenditure by type of action indicator is positive. In the Czech Republic, no statistically significant positive and negative values of the regression coefficient have been mapped. In terms of citizenship, there is a clear negative impact of immigrants from Africa (mainly to Slovakia and, to a lesser extent, to Belgium) on the indicator of the number of households with no working adult and two children under six years of age. In the Czech Republic, immigrant men with citizenship in America and immigrant women with citizenship in America and Europe were a reason for the favourable development of the NAIRU indicator of men with a basic occupation.

Keywords:

Immigration, LMP expenditure by type of action, Inactive population, NEET, NAIRU, Minimum wage, Job tenure by sex, age, professional status and occupation.

JEL Classification: J24, J32, J38

1.   Introduction

Hunt (2004) reports that layoffs push young people (18–29 years) to return home; other movements have a negligible effect. However, layoffs have a negligible effect on return movements for first-born children. The impact of layoffs on older people is stronger for east-west migration. At the same time, younger migrants are more influenced by wages than older migrants. Hamilton and Savinar (2015) confirm that entire migrant households have a unique sociodemographic profile. More than half are women compared to one third of all migrants and half are children under 15 compared to one quarter of all migrants. Adult migrants from the entire household are more likely to be married.

Analysis by Lattof, Coast, Leone and Nyarko (2018) shows that migration is balanced between men and women (47% – 53%). Girls and women migrate at every age. Working-age migration is a key feature of migration for both sexes. Being a migrant is significantly associated with living in an urban area and working for wages, profit or family gain. These findings suggest that economic opportunity is an important driver of women's migration. Piper (2008) points to the feminisation of interregional migration flows in Asia. In order to improve their and their families' livelihoods in the face of rising male unemployment or underemployment, a growing number of women are seeking work abroad in various types of occupations. Migration sometimes reflects changing labour market structures "at home" and "abroad". Restrictive migration policies and the prevalence of temporary work contracts, combined with the undervaluing of the economic and social contributions of migrant women and their work, pose serious constraints on migrant women's chances for personal socio-economic empowerment.

Lundborg (1991) discusses differences in migration behaviour, focusing on immigration to Sweden, as this country is a net recipient of migrants from Finland, Denmark and Norway. Differences in migration elasticities are found but are not systematically higher for the Finnish population than for the Danish and Norwegian populations. Thus, it seems that the differences in actual wages between Sweden and Finland are driving the dominance of Finnish migration to Sweden. Piper (2008) attributes increasing importance to the growing number of international marriages among Asians, with the typical scenario being a woman from a low-income country such as Vietnam or the Philippines marrying a man from a higher-income country in East Asia (Japan, Korea, Taiwan) and also Singapore.

Green (2005) analysed the politics of dual nationality in Germany. The rejection of dual nationality has proven to be a relatively new element of citizenship policy. The author also showed that the 1999 citizenship reform led to a significant increase in the proportion of naturalisations that tolerate dual nationality. Faist, Gerdes, and Rieple (2004) confirm that global dual nationalities have increased rapidly over the past few decades. Yet a few decades ago, citizenship and political loyalty to the national political community were considered inseparable. However, the degree with which dual nationalities are tolerated varies. Jones-Correa (2001) argues that dual nationality has a relatively small but positive effect on the naturalisation of immigrants as U.S. citizens.

Engbersen and Snel (2013) the influx of new categories of migrants has led to greater variability in residence status. Some migrants became nationals of the country of arrival or they were already nationals when arriving from former colonial areas. In most of the old EU Member States, citizens from Romania and Bulgaria, which only joined the EU in January 2007, do not have free access to the labour market. There is a growing category of migrants who do not

have citizenship or recognised nationality. These are migrants with temporary or other restrictions on their residence permit and irregular migrants.

Prieto-Rosas, Recaño and Quintero-Lesmes (2018) confirm the continued decline in interregional migration during the recession. They found a double decline among the Latin American population: first a sharp decline in 2009–2010 and then a more modest decline in 2011–2013. One of the most significant findings was that the level of intergenerational migration of the population with Spanish citizenship, regardless of place of birth, has decreased in response to economic difficulties. Furlanetto and Robstad (2017) argue that an exogenous positive immigration shock will reduce unemployment in Norway. Immigration also significantly affects potential output. Nickell (2004) reports that the effects of unskilled immigration on the relative employment and wages of the native unskilled population are minimal. Aubry and Burzynski (2015) find that intra-OECD labour mobility is characterised by brain drain, which reduces market size and productivity. Countries should focus on shaping immigration and emigration policies. Hofmannová and Čaněk (2018) state that the basic rights of Ukrainian workers are not guaranteed by the Labour Inspectorate.

The Policy for the Integration of Foreign Nationals in 2005 and its further development (Ministry of Labour and Social Affairs – MoLSA, 2005) shows that immigration is a permanent phenomenon in most developed countries. Potužáková (2009) believes that in the long term the number of foreign workers will be increasing due to the convergence of the Czech economy towards the EU-15. The Report on the Situation in the Area of Migration and Integration of Foreign Nationals in the Territory of the Czech Republic in 2017 (Ministry of the Interior, 2018) states that the Czech Republic must take into account the specific needs and possibilities of the State, but also the situation at the EU level. The Prague City Policy for Integration of Foreigners (Prague City Council, 2014) highlights the experience of Western European metropolises with the need to focus on the local level.

The aim of this paper is to assess the presence and nature of the immigration impacts in terms of age, sex and citizenship on the labour market, population and families across world economies, and to estimate the intensity of their impact on different segments of the selected areas. The paper is divided as follows. The second part provides an overview of the results of international theoretical and empirical analyses and the Czech expert community concerning the confirmation or refutation of the impact of immigration on selected indicators. The third part characterises the data sources and the analysis method. In the fourth part, empirical testing of the impact of immigration in terms of age, sex and citizenship on selected sub-indicators was carried out in a detailed breakdown. The last part summarises the conclusions of the analysis.

2. Overview of international research results, conclusions of domestic experts and strategic documents

Conclusions of foreign research on immigration issues

Chojkicki (2012) shows that the difference in the age distribution of the immigrant population compared to the native population leads to a higher average net immigrant contribution to the public budget than that of the native population. In the US context, Edo and Rapoport (2017) find that high minimum wages protect employed native workers against competition from immigrants. This may be at the cost of making it more difficult for foreigners to access employment, with the same effect on unemployed natives and new immigrants. Chassamboulli and Palivos (2013) show that the impact of inexperienced immigrants on skilled native workers is positive in terms of employment and wages in Greece. Constant (2014), based on an

analysis of OECD data, does not support policy intervention to "protect" native labour. Any short-term negative impacts on domestic employment are small and insignificant. Blanchflower, Saleheen, and Shadforth (2007) argue that the empirical literature from around the world suggests little or no evidence that immigrants have had a significant impact on labour market outcomes such as wages and unemployment. The European Commission (2006) found that labour migration from Eastern Europe to Greece has improved both the quality and quantity of labour on offer in Greece, particularly in areas where the population is ageing and/or migrating to large cities. Us (2017) shows that the NAIRU for Turkey is more volatile than actual unemployment. This suggests that the estimated NAIRU is more responsive to crisis episodes than actual unemployment, which is more stable in nature. Refugee inflows, which have led to a higher NAIRU, may have a dampening effect on inflation.

Conclusions of domestic research on immigration issues

Potužáková (2009) confirms that after the Czech Republic joined the EU, the dynamics of labour movement increased, especially from Slovakia and Poland. Foreign labour is directed to the secondary sector, especially to the "Mining, Manufacturing, Energy" sector (30%) and to a much lesser extent to the service sector. The largest share of the workforce coming from Slovakia and Poland is made up of workers with secondary education, followed by workers with primary education. Kubíčková's (2017) estimation of linear regression confirmed the assumption of an insignificant effect of rising immigration on the unemployment rate and thus the hypothesis of an insignificant effect of immigration on the economically active population as a whole. The results of the VAR model did not confirm a significant effect of lagged gross migration on the unemployment rate at time t. For the 15–19 age category, there was no positive effect of increasing immigration on the unemployment rate. The linear regression confirmed that as migration increases, economic growth occurs in the destination country. Pěnková (2015) argues that age plays an important role in the integration of Burmese refugees, as older people find it more difficult to adapt. The opposite is true for younger children, who are in school in the Czech Republic and are almost fully involved in the everyday life of society. The biggest obstacle to adaptation is language. Leontiyeva and Pokorná (2014) report that current immigration to the Czech Republic is predominantly economic in nature. The disparity between migrants' skills and their positions on the labour market in the destination country is a key factor. In the Czech Republic, as many as a quarter of immigrants from third countries are employed in jobs requiring significantly less education than that which migrants possess.

Conclusions of foreign and domestic strategic materials for immigration policy in the Czech Republic

Materials directly related to the issue of migration include, for example, the ***Analysis of the Status of Foreigners Living Long-term in the Czech Republic and Proposal for Optimisation*** (Gabal, 2004), which was commissioned by the MoLSA in 2004. The main objective of the study is to propose changes in the status of foreigners in the Czech Republic to remove barriers preventing trouble-free working and private life. The Czech economy and society rely on the skills and experience of foreigners in overcoming structural and performance underdevelopment. The conclusions of this analysis were transformed into the ***Policy for the Integration of Foreign Nationals in 2005 and its further development*** (MoLSA, 2005). Compared to the majority society, non-integrated immigrants are more likely to be unemployed, to have lower education, qualifications and income, to be dependent on social security benefits and to be unable to raise their children to live in an integrated society. ***The Council Decision on guidelines for the employment policies of the Member States*** (European Commission, 2010) stresses that Member States should increase labour force participation through policies that promote active ageing, gender equality, including equal pay, and the integration of young

people, persons with disabilities, legal migrant workers and other vulnerable groups into the labour market. ***The National Reform Programme of the Czech Republic 2016*** (Office of the Government of the Czech Republic, 2016) recalls the contribution of a skilled workforce to competitiveness for an open Czech economy and the need for migration policy measures that take into account the economic needs of the country. ***The Social Inclusion Strategy 2014–2020*** (MoLSA, 2014) identified the following population groups that may become more involved on the labour market in the future: women, young people under 30 years of age, older people, migrants, and persons with health, cultural or social disadvantages on the labour market. ***The updated "Policy for the Integration of Foreign Nationals – Mutual Respect" and the Procedure for the Implementation of the Updated Policy for the Integration of Foreign Nationals in 2016*** (Ministry of the Interior, 2015) reveals a steady increase in the number of foreigners from third countries; the dominance of persons in the productive age group of 15–64 years; a non-negligible number of minors, especially children with compulsory school attendance and children of pre-school age; the trend of increase in the number of economically active EU citizens in the territory of the Czech Republic and decrease in the number of economically active foreigners from third countries; half of foreign workers require only minimal qualifications; minimal share of foreigners in the drawdown of social benefits in terms of foreigners from third countries but with an increasing trend in the number of social benefits paid and the volume of money paid.

3. Description of the data sources and analysis methods

The explanatory variables in examining the impact of immigration on selected areas of the real economy, its nature and intensity across world economies were time series of immigration, which are expressed in numbers of persons (**Eurostat, 2018a**[1]). Specifically, the breakdown is as follows: ***Immigration by age and sex*** – ***Immigration by age group, sex and citizenship***.

The **explained or explanatory (numerical) variables** include the following main labour market, population and family indicators published by Eurostat (**Eurostat, 2018b**[2]): ***Monthly minimum wages*** - %, expressed as purchasing power parity; ***Tax rate*** - %; ***Inactive population by sex, age and educational attainment level*** - %; ***Long working hours in main job by sex, age, professional status and occupation*** - %; ***Job tenure by sex, age, professional status and occupation*** - %; ***Young people aged 15-24 neither in employment nor in education and training by sex*** - % (NEET); ***Number of private households by household composition, number of children and age of youngest child*** - %; ***Percentage of employed adults working at home by sex, age groups, number of children and age of youngest child*** - %; ***LMP expenditure by type of action*** - %.

The following additional **explained and explanatory variables** were obtained from Eurostat data: the unemployment rate by occupation was calculated[3] from ***Previous occupations of the unemployed, by sex*** – in 1000 persons and ***Employment by sex, occupation and educational attainment level*** - in 1000 persons. The following labour market indicators have also been taken over in full from Eurostat: ***Unemployment rates by sex, age and NUTS 2 regions*** - % and ***Unemployment rates by sex, age and educational attainment level*** - %.

---

[1] The data were downloaded in September 2018.

[2] The data were downloaded in April 2018.

[3] The formula has the following format: $u = \dfrac{U}{E+U}.100.$ The variable u represents the unemployment rate in %, U represents the previous occupations of the unemployed, i.e. the number of unemployed persons and E represents the number of employed persons.

The Non-Accelerating Inflation Rate of Unemployment (NAIRU)[4] values were calculated from the unemployment rates by region and by sex, age and educational attainment using the HP filter[5]. We apply the NAIRU to the analysis because this concept shows the potential of the labour market in the long term. In addition to these numerical variables, time series of categorical variables were constructed: time, age, sex, citizenship and country.

The analysis assessed the following countries: Belgium (BE), Bulgaria (BU), Czech Republic (CZR), Germany (GE), Spain (SP), France (FR), Croatia (CR), Latvia (LA), Lithuania (LI), Luxembourg (LU), Hungary (HU), Netherlands (NE), Poland (PO), Portugal (POR) and Slovakia (Slova).

The time series used cover the period from 2006 to 2016. In some cases, annual % changes were calculated before analysis from the original time series of numerical variables. Specifically, the indicators were the minimum wage, the inactive population and the workers in a household.

All the time series used were tested with the ADF test (**EViews, 2013**), which confirmed their stationarity. We use linear regression to assess the intensity and nature of the impact of immigration on selected labour market, population and family indicators. We then extract the impact of immigration by age and citizenship on selected parts of the main indicators (sub-indicators) of the labour market, population and family by defining **categorical variables** in interaction with these explanatory variables. This allows us to determine specifically the impact of immigration, for example, by age or citizenship, together with sex and the destination countries of immigrants.

The adjusted R^2 is applied to select the best fitting model to approximate the analysed data. The Jarque–Bera test is used to test the normality of the residuals (**EViews, 2013**). The Breusch-Godfrey test is applied to test the autocorrelation of residuals (**EViews, 2013**). The Wald test is used to test for heteroskedasticity of residuals (**EViews, 2013**). The analysis uses the Variable Inflation Factor to measure the severity of multicollinearity (**EViews, 2013**). The failure of tests of normality of residuals due to fluctuations in the evolution of some segments of the explained variable and the year-on-year changes calculated from them in the case of a large number of observations allows us to assume the validity of the central limit theorem, which states that *t* tests are asymptotically valid.

The impact of immigration on selected labour market, population and family sub-indicators is examined using the Least Squares Method. The observed value of the regression coefficient then indicates the intensity of the effect of immigration on the selected indicators and the sign indicates its nature. The text then refers to a positive influence in the case of a positive sign and a negative influence in the case of a negative sign. In the case that a categorical variable interacted with the immigration indicator is not statistically significant in the model, we are talking about not proving its influence on the selected sub-indicator of the labour market, population and family.

A positive value of the regression coefficient means that the selected indicator of the labour market, population and family grows as immigration increases. A negative value of the regression coefficient means that the selected indicator decreases as immigration increases. The regression coefficients in the interval from 0.000001 to 0.49 in our analysis indicate very

---

[4] According to Tobin (1997), the non-accelerating inflation rate of unemployment is the unemployment rate at which the effects of rising inflation from demand-dominated markets offset the effects of falling inflation from supply-dominated markets.

[5] Fabiani and Mestre (2000) base trend and cycle identification on filtering methods such as the Hodrick-Prescott filter. According to the authors, univariate tools are easy to implement.

weak sensitivy of the selected labour market, population and family indicator to immigration; weak sensitivity in the interval from 0.50 to 0.99; medium sensitivity in the interval from 1.00 to 1.49; strong sensitivity in the interval from 1.50 to 1.99; and very strong sensitivity in the interval from 2.00 to 2.50. Regression coefficient values exceeding 2.50 indicate extremely strong sensitivity.

4. Summary of results from empirical testing of the impact of immigration indicators by age and sex on the labour market, population and family across world economies and the Czech Republic

In this part we analyse the nature and intensity of the impact of immigration in terms of age, sex and citizenship on labour market, population and family sub-indicators. Specifically, we present the evolution of the average values of the adjusted regression coefficient of the statistically confirmed interactions (positive and negative values) across world economies, including the average value for all countries combined and in CZR (see Charts 1 to 3). The statistically insignificant effect of immigration in terms of age, sex and citizenship on selected areas of the labour market, population and family was not confirmed.

4.1 Evolution of the impact of immigration by age and sex on labour market, population and family indicators

In terms of immigration by age and sex, the best models were the ones with the following sub-indicators: Inactive women aged 15 to 24 with less education (the main indicator of the inactive population in Part 2) – in Chart 1 Neaktiv_Z_15_24_Nizsi; number of households of one adult with two children aged less than six years (the main indicator of household composition) – in Chart 1 Domac_Mene6_2_Jeden; LMP expenditure by type of action (the main indicator of LMP expenditures) – in Chart 1 LMP_Poskyt_sluzeb.

Chart 1

Evolution of the impact of immigration by age and sex on the sub-indicators inactive women aged 15 to 24 with lower education, number of households of one adult with two children aged less than six years, LMP expenditure by type of action
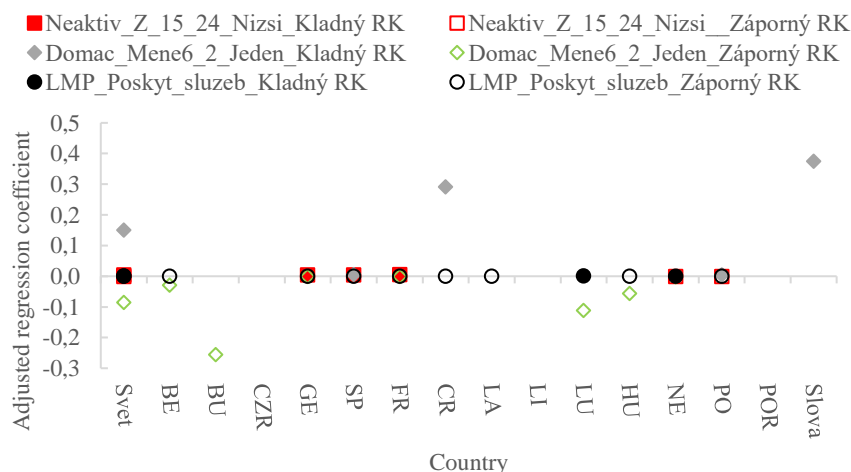
Source: Own calculation based on Eurostat data.

A. The largest statistically significant positive values of the regression coefficient, which indicate a positive sensitivity of the selected labour market, population and family indicator to changes in immigration by age, will first be found for the *sub-indicator of inactive women aged 15 to 24 with lower education* (see Chart 1). Within the world economies, the effect of

an increase in the immigration indicator (immigrant age at 5, 15 and 19 years) in GE, SP and FR was found to be of very weak intensity (+0.004 in all countries). The average positive value of the regression coefficient for all countries indicated only a very weak effect (+0.004). ***The sub-indicator number of households of one adult with two children aged less than six years*** was very weakly affected by immigrants aged 24, 34 and 44, especially in Slova (+0.37) and CR (+0.29). The average positive impact for all countries was +0.15. The sensitivity of the ***sub-indicator of LMP expenditure by type of action*** on immigrants aged 50, 58 and 65 was strongest in LU (+0.001), followed only by NE (+0.0001). The average value of the positive regression coefficient was 0.0003. No statistically significant **positive values** of the regression coefficient were mapped **in CZR**.
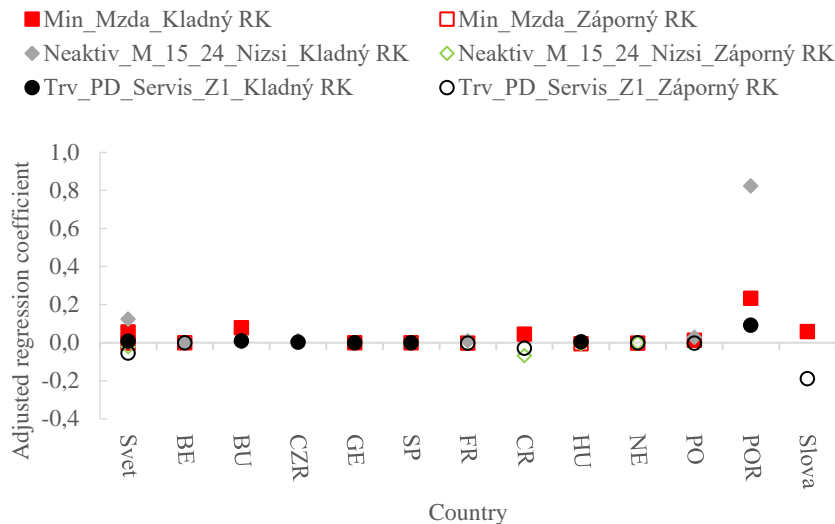
B. The highest statistically significant negative values of the regression coefficient, which indicate a negative sensitivity of the selected labour market, population and family indicator to changes in immigration by age, are also first mapped for the ***sub-indicator of inactive women aged 15 to 24 with lower education*** (see Chart 1). Specifically, the effect of increased immigration at ages 5, 15 and 19 on this indicator in NE and PO was found to be very weak (-0.001). Thus, the average positive effect for all countries studied was -0.001. In the case of the ***sub-indicator number of households of one adult with two children aged less than six years***, the largest negative impact of immigrants aged 24, 34 and 44 years was mapped in BU and LU (-0.26 and -0.11, respectively). The average value of the negative regression coefficient was 0.09. For the ***sub-indicator of LMP expenditure by type of action***, the largest effect of immigrants aged 50, 58, and 65 also had a very low intensity. Specifically, it was in LA (-0.001). The average negative value of the regression coefficient was 0.0002. No statistically significant **negative values** of the regression coefficient were mapped **in CZR**.

4.2 Evolution of the impact of immigration by citizenship on labour market, population and family indicators

In terms of immigration by citizenship, the best models were the ones with the following sub-indicators: Monthly minimum wage – in Chart 2 Min_mzda (the main indicator of the minimum wage in part 2); inactive men aged 15 to 24 with lower education (the main indicator of the inactive population) – in Chart 2 Neaktiv_M_15_24_Nizsi; job tenure of women (aged 25 and over) employed for less than 1 year as a service and sales worker (main indicator of duration of employment) – in Chart 2 Trv_PD_Servis_Z1; NEET men (main indicator of NEET) – in Chart 3 NEET_M; number of households in which no adult works with two children under six years of age (main indicator of household composition) – in Chart 3 VseNeprac_2_mene6; NAIRU of men with basic occupation (main indicator of NAIRU by occupation) – in Chart 3 NAIRU_M_zakl_povol; NAIRU sub-indicator of women (45 to 49 years) with higher secondary and post-secondary non-tertiary education (main NAIRU indicator of educational attainment) – in Chart 3 NAIRU_Z_vyssi_45_49.

Chart 2

Evolution of the effect of immigration by citizenship on the sub-indicators monthly minimum wage, inactive men aged 15 to 24 with lower education, job tenure of women (aged 25 and over) employed less than 1 year as a service and sales worker

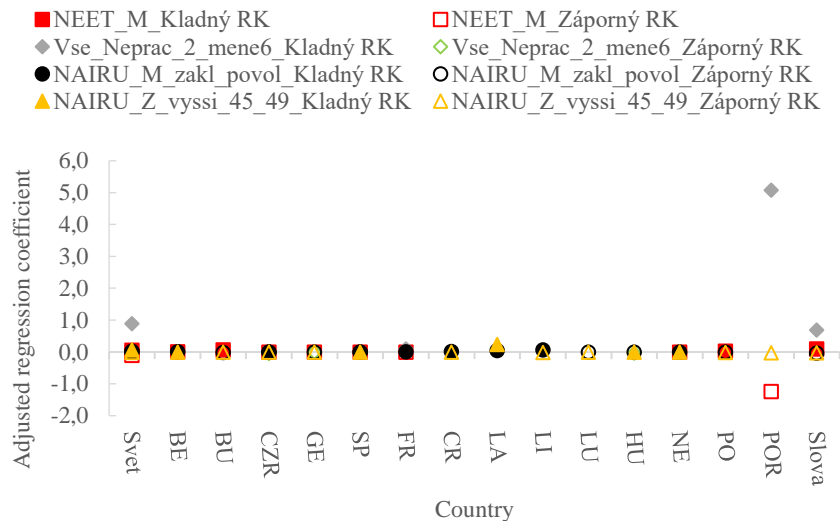
Source: Own calculation based on Eurostat data.

A. The largest statistically significant positive values of the regression coefficient across world economies are first observed for the effect of immigration with citizenship in Europe, Africa, America and Asia on the *sub-indicator of monthly minimum wage* (see Chart 2). The very weak intensity of influence was +0.23 in POR and +0.08 in BU. The average for all statistically significant countries was 0.06. In the case of the *sub-indicator of inactive men aged 15 to 24 with lower education*, the effect was highest in POR with a weak sensitivity of +0.82 and in PO with a very weak sensitivity of +0.03. The average for all countries analysed was 0.12. For the *sub-indicator of job tenure of women (aged 25 and over) employed for less than 1 year as a service and sales worker*, the highest effect intensity was found in POR (+0.09) and BU (+0.01). The average for the countries surveyed was 0.01.

In CZR, the positive value of the regression coefficient was statistically significant for the *sub-indicator of inactive men aged 15 to 24 with lower education* (+0.01) and for the *sub-indicator of job tenure of women (aged 25 and over) employed for less than 1 year as a service and sales worker* (+0.003).

B. The highest statistically significant negative values of the regression coefficient for the effect of immigration by citizenship are first mapped for the *sub-indicator of monthly minimum wage* (see Chart 2), where very weak intensities are found especially in HU (-0.005) and FR (-0.002). The average value of the negative regression coefficient was 0.001. Similarly, in the case of the *sub-indicator of inactive men aged 15 to 24 with lower education*, the largest effects were concentrated in CR (-0.07) and HU (-0.005). The average for all statistically significant countries was -0.02. The effect for the *sub-indicator of job tenure of women (aged 25 and over) employed for less than 1 year as a service and sales worker* was also very weak. This was mainly the case of Slova (-0.19) and then CR (-0.03). The average regression coefficient was 0.05. No statistically significant **negative values** of the regression coefficient were mapped **in CZR**.

Chart 3

Evolution of the effect of immigration by citizenship on the sub-indicators NEET men, number of households with no working adult, with two children under six years of age, NAIRU men with basic occupation, NAIRU women (45 to 49 years) with higher secondary and post-secondary non-tertiary education

Source: Own calculation based on Eurostat data.

A. The largest statistically significant positive values of the regression coefficient were found first in the case of the effect of immigration on the **sub-indicator of NEET men** (see Chart 3) in Slova (+0.09) and BU (+0.07). The average for statistically significant countries was 0.06. In the case of the **sub-indicator of number of households where no adult works, with two children under six years of age**, the effect was found to be extremely strong in POR (+5.08) and weak in Slova (+0.69). The average regression coefficient of +0.89 indicated weak sensitivity. For the sub-indicator of **NAIRU men with a basic occupation**, the largest very weak effect was found in LI and LA (+0.07 and +0.05, respectively). The average across all statistically sufficiently robust regression coefficients was +0.02. In the case of the **sub-indicator of NAIRU women (45 to 49 years) with higher secondary and post-secondary non-tertiary education**, the highest value was 0.24, and the average for all statistically confirmed observations was 0.06.

In CZR, the only statistically significant observation was found for the sub-indicator of **NAIRU men with a basic occupation (+0.00003).**

B. The highest statistically significant negative values of the regression coefficient for the effect of immigration with citizenship are likely to be found for the **sub-indicator of NEET men** (see Chart 3), where it had a medium intensity (-1.25) in POR. The average value of the regression coefficient was -0.11. In the case of the **sub-indicator of number of households with two children under six years of age in which no adult works**, the largest effect besides CZR (see below) was concentrated on HU (-0.03). The average for all countries analysed was -0.01. The effect of immigration by citizenship on the **sub-indicator of NAIRU men with a basic occupation** was most intense in Slova (-0.03) and then also in BU (-0.01). The average value of the regression coefficient was -0.01. For the **sub-indicator of NAIRU women (45 to 49 years) with higher secondary and post-secondary non-tertiary education**, this was mainly apparent in Slova (-0.03) and POR (-0.02). The average negative value for all countries assessed was -0.01.

In CZR, statistically significant observations of a negative effect were found this time for all four sub-indicators. For the ***sub-indicator NEET men,*** there was a very weak intensity indicated by a regression coefficient value of -0.01. For the ***sub-indicator of the number of households with no working adult and two children under six years of age***, the intensity of the effect was the highest among all countries analysed (-0.05). In the case of the ***sub-indicator of NAIRU men with a basic occupation***, the regression coefficient was -0.0003, corresponding to the countries with the lowest sensitivity to immigration. The sub-indicator of ***NAIRU women (45-49 years) with higher secondary and post-secondary non-tertiary education*** was also only very slightly affected (-0.0001) in the case of CZR.

Conclusions

In this paper, we have tried to confirm the impact (its nature and intensity) of changes in immigration indicators by age, sex and citizenship on selected sub-indicators of the labour market, population and family using regression analysis.

Key findings of our analysis on the impact of immigration by age and sex on the labour market, residents and families include the following:

The overall conclusion of the empirical analysis of the **impact of immigration by age and sex** on selected labour market, population and family sub-indicators **across world economies** first highlights the prevalence of a **statistically significant average positive regression coefficient** value for the impact of **immigrants aged 24, 34 and 44** on the ***sub-indicator of number of households of one adult with two children aged under six*** (very weak intensity of 0.15) over the **average negative value** (very weak effect of 0.09). In the case of the ***sub-indicator of inactive women aged 15 to 24 with lower education***, the average positive value of the regression coefficient was already 0.004 and the negative value only 0.001. In terms of sex, this unfavourable trend was due to the influence of immigrant women aged 5 and 15 who came to SP and GE. On the contrary, **we mapped the prevalence of a statistically significant average negative value over** a positive one only in the case of a very weak effect of immigrants aged 50 on the ***sub-indicator of LMP expenditure by type of action*** (-0.000180 and +0.000177, respectively). In terms of sex, this positive development was due to the impact of immigrant women who came to LU and NE.

The main findings of our analysis in comparison with the conclusions of foreign and domestic research and strategic materials of the Czech Republic in the area of the impact of immigration by citizenship on the labour market, population and families include the following:

The overall conclusion of the empirical analysis of the effect of **immigration by citizenship** points to the largest prevalence of a **statistically significant average positive value over the negative value for the *sub-indicator of the number of households with no working adult and two children under six years of age***, where the positive value was 0.89 and the negative value was only 0.01. In terms of sex, this adverse development was due to the influence of immigrants with citizenship in Africa who came mainly to Slova and, with a distantly weaker effect, also to BE.

Statistically significant average negative value of the regression coefficient exceeding the **positive value** was ***also observed for the sub-indicator of job tenure of women (aged 25 and over) employed for less than 1 year as a service and sales worker*** (-0.05). The average positive value was only 0.01. In terms of sex, this favourable trend was due to the influence of immigrant women with citizenship in Asia (to Slova, BE and NE), Africa (to CR, Slova and NE) and also Europe (Slova, FR, PO and CR).

In CZR, a statistically significant excess of the average negative value of the regression coefficient over the **average positive value** could be mapped only for the ***sub-indicator of NAIRU men with a basic occupation*** (-0.0003 and +0.00003, respectively). In other cases, one or even both variants (the sub-indicator of monthly minimum wage) were not supported by econometric testing. In terms of sex, this favourable trend was due to the influence of immigrants with citizenship in America and migrant women with citizenship in America and Europe.

Acknowledgment

References

Aubry, A.; Burzynski, M. 2015. The Welfare Impact of Global Migration in the OECD Countries. IRES Discussion Paper 2013-35. ISSN 1379-244X D/2013/3082/35. Strana 24-25.

Blanchflower, G. D.; Saleheen, J.; Shadforth, Ch.2007. The Impact of the Recent Migration from Eastern Europe on the UK Economy. IZA DP No. 2615. Strana 31-32.

Constant, F. A. 2014. Do migrants take the jobs of native workers? IZA World of Labor 2014: 10. Strana 9. doi: 10.15185/izawol.10 | Amelie F. Constant © | May 2014 | wol.iza.org

Edo, A.; Rapoport, H. 2017. Minimum Wages and the Labor Market Effects of Immigration, Working Paper, CEPII. Strana 50-52.

Engbersen, G.; Snel, E. 2013. Liquid migration Dynamic and fluid patterns of post-accession migrationflows. Migration Patterns after EU Enlargement. Birgit Glorius, Izabela Grabowska-Lusinska, Aimee Kuvik. Amsterdam University Press. (2013), pp. 1-23.

Eurostat. 2018a. European Commission, Eurostat, Data, Database. http://ec.europa.eu/eurostat/data/database

Eurostat. 2018b. European Commission, Eurostat, Data, Database. http://ec.europa.eu/eurostat/data/database

EViews. 2013. EViews Version 7 Help Topics

Evropská komise. 2010. Rozhodnutí rady o hlavních zásadách politiky zaměstnanosti členských států. Část II integrovaných hlavních směrů strategie Evropa 2020. V Bruselu 27. 4. 2010, KOM(2010) 193 v konečném znění. 2010/0115 (NLE), SEK(2010) 488 v konečném znění. Strana 8-10. https://www.mpo.cz/dokument73454.html

Evropská komise. 2006. Study on the Impact of Working time: Country reports (VT/2005/052). A report prepared for European Commission Employment Social Affairs and Equal Opportunities DG Employment and ESF Policy Co-ordination, Employment Strategy. Strany

Fabiani, S.; Mestre, R. 2000. Alternative measures of the NAIRU in the euro area: estimates and assessment. ECB WP.

Faist, T.; Gerdes, J.; Rieple, B. 2004. Dual Citizenship as a Path-Dependent Process. The International Migration Review, Vol. 38, No. 3, Conceptual and MethodologicalDevelopments in the Study of International Migration (Fall, 2004), pp. 913-944.

Furlanetto, F; Robstad, R. 2017. Immigration and the Macroeconomy: Some New Empirical Evidence. EUI - Economics Department - Villa La Fonte Macroeconomics Research Workshop - 08 September 2017. Strana 23-24.

Gabal, I. 2004. Analýza postavení cizinců dlouhodobě žijících v ČR a návrh optimalizačních kroků říjen 2004. Ivan Gabal Analysis&Consulting. Strana 2-25.

http://docplayer.cz/7993334-Analyza-postaveni-cizincu-dlouhodobe-zijicich-v-cr-a-navrh-optimalizacnich-kroku-rijen-2004.html

Green, S. 2005. Between Ideology and Pragmatism: The Politics of Dual Nationality in Germany. The International Migration Review, Vol. 39, No. 4 (Winter, 2005), pp. 921-952

Hamilton, R.E.; Savinar, R. 2015. Two Sources of Error in Data on Migration From Mexico to the United States in MexicanHousehold-Based Surveys. Demography, Vol. 52, No. 4 (August 2015), pp. 1345-1355.

Hofmannová, Z.; Čaněk, M. 2018. Czech Republic, Enhancing Economic Democracy for Posted Workers: The Case of Czech Republic. Multikulturní centrum Praha. Strana 7.

Hunt, J. 2004. Are Migrants More Skilled than Non-Migrants? Repeat, Return, and Same-Employer Migrants. The Canadian Journal of Economics / Revue canadienne d'Economique, Vol. 37, No.4 (Nov., 2004), pp. 830-849.

Chassamboulli, A.; Palivos, T. 2013. The impact of immigration on the employment and wages of native workers. Working Paper. Bamk of Greece, Economic Research Department – Special Studies Division. Strana 28-29.

Chojkicki, X. 2012. The fiscal impact of immigration in France: a generational accounting approach. CEPII, WP No 2012-11.　Strana 32-33.

Jones-Correa, M. 2001. Under Two Flags: Dual Nationality in Latin America and Its Consequences forNaturalization in the United States. The International Migration Review, Vol. 35, No. 4 (Winter, 2001), pp. 997-1029.

Kubíčková, P. 2017. Analýza vlivu imigrace na nezaměstnanost v české republice. Diplomová práce. Vysoká škola ekonomická v Praze, Národohospodářská fakulta, hlavní specializace Ekonomická analýza. Strana 87-91.

Lattof, R. S.; Coast, E.; Leone, T.; Nyarko, P. 2018. Contemporary female migration in Ghana Analyses of the 2000 and 2010 Censuses. Demographic Research, Vol. 39 (JULY - DECEMBER 2018), pp. 1181-1226.

Leontiyeva, Y.; Pokorná, A. 2014. Faktory bránící využití kvalifikace imigrantů na trhu práce v ČR. Výzkumná zpráva, 2014. Multikulturní centrum Praha. Strana 36.

Lundborg, P. 1991. Determinants of Migration in the Nordic Labor Market. The Scandinavian Journal of Economics, Vol. 93, No. 3 (Sep., 1991), pp. 363-375.

Magistrát hl. m. Prahy. 2014. Koncepce hl. m. Prahy pro oblast integrace cizinců, „Praha – metropole všech". Příloha č. 1 k usnesení Zastupitelstva HMP č. 40/17 ze dne 19. 6. 2014. Strana 7-14. https://www.databaze-strategie.cz/cz/pha/strategie/koncepce-hl-m-prahy-pro-oblast-integrace-cizincu

MPSV. 2014. Strategie sociálního začleňování 2014 – 2020. MPSV. Praha, leden 2014. Strana 15- 61. https://www.mpsv.cz/cs/17081

MPSV. 2005. Koncepce integrace cizinců v roce 2005 a její další rozvoj. Aktualizovaná Koncepce integrace cizinců. Odbor migrace a integrace cizinců. MPSV. Strana 3-29

https://docplayer.cz/2311481-Koncepce-integrace-cizincu-v-roce-2005-a-jeji-dalsi-rozvoj-obsah.html

Ministerstvo vnitra. 2018. Zpráva o situaci v oblasti migrace a integrace cizinců na území České republiky v roce 2017. Praha 2018. Strana 210-212. http://www.mvcr.cz/clanek/zpravy-o-situaci-v-oblasti-migrace-a-integrace-cizincu-v-ceske-republice-za-roky-2001-2016.aspx

Ministerstvo vnitra. 2015. Aktualizovaná „Koncepce integrace cizinců - Ve vzájemném respektu" a Postup při realizaci aktualizované Koncepce integrace cizinců v roce 2016. Pro schůzi vlády, Čj.:

MV- 165 768-15/OAM-2015, předkladatel Milan Chovanec ministr vnitra. Strana 7-13. https://www.mpsv.cz/files/clanky/25571/Priloha_c._2_Aktualizovana_Koncepce_integrace_cizin cu___ve_vzajemnem_respektu_a_Postup_pri_realizaci_aktualizovane_Koncepce_integrace_ci zincu_v_roce_2016.pdf

Nickell, S. 2004. Immigration: trends and macroeconomic implications. BIS Papers No 50. Strana 61-62.

Pěnková, M. 2015. Adaptace barmských imigrantů na českou kulturu. Diplomová práce. Mendelova univerzita v Brně, Fakulta regionálního rozvoje a mezinárodních studií. Brno. Strana 91-93.

Piper, N. 2008. Feminisation of Migration and the Social Dimensions of Development: The Asian Case. Third World Quarterly, Vol. 29, No. 7, Globalisation and Migration: New Issues,New Politics? (2008), pp. 1287-1303.

Potužáková, Z. 2009. Aktuální vývoj a struktura ekonomické imigrace do ČR ze zemí V4. Současná Evropa 01/2009. Strana 32-33.

Prieto-Rosas,V.; Recaňo, J; Quintero-Lesmes, C.D. 2018. Migration responses of immigrants in Spain during the Great Recession. Demographic Research, Vol. 38 (JANUARY - JUNE 2018), pp. 1885-1932.

Tobin, J. 1997. Supply Constraints on Employment and Output: NAIRU versus Natural Rate. Cowles Foundation Paper 1150. Yale University, New Haven.

Úřad vlády ČR. 2016. Národní program reforem České republiky 2016. Úřad vlády České republiky. Strana 15 - 19. https://www.databaze-strategie.cz/cz/urad-vlady/strategie/narodni-program-reforem-ceske-republiky-2016?typ=o

Us, V. 2017. Measurement of NAIRU: What is new and what is next for the Turkish economy? METU Studies in Development, 44 (August), 2017, 223-256. Strana 243-245.