

IZA DP No. 8456

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European Union: Institutional Underpinnings of
Economic Adjustment**

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Discussion Paper No. 8456
September 2014

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ABSTRACT

The Free Movement of Workers in an Enlarged European Union: Institutional Underpinnings of Economic Adjustment

The eastern enlargements of the European Union (EU) and the extension of the free movement of workers to the new member states' citizens unleashed significant east-west migration flows in a labor market with more than half a billion people. Although many old member states applied transitional arrangements temporarily restricting the free movement of new member states' citizens, the need for adjustment became ever more important during the Great Recession, which affected EU member states unevenly. This chapter studies whether and how east-west migration flows in an enlarged EU responded to institutional and economic factors. We first develop a simple framework of adjustment through migration of workers between labor markets affected by asymmetric economic shocks. Using a new migration dataset and treating the EU enlargement and labor market openings towards the new EU members as a natural experiment allows us to estimate the effects of the EU accession and economic opportunities on migration. Applying the difference-in-differences and triple differences empirical modeling framework, we subsequently find that east-west migration flows in the EU responded positively to the EU entry and economic opportunities in receiving labor markets. However, this potential through which migration helped to ease the imbalances across EU labor markets was hampered by transitional arrangements, which negatively affected the flows of east-west migrants. We conclude that the free movement of workers is an asset that the EU needs to nurture as a means of adjusting to structural economic asymmetries as well as to short-run shocks across EU member states.

JEL Classification: F22, J61, J68

Keywords: EU eastern enlargement, free movement of workers, transitional arrangements, determinants of migration, Great Recession, natural experiment, difference-in-differences, migration policy

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1.1 Introduction

The eastern enlargements of the European Union (EU) in 2004, 2007 and 2013 created a labor market with more than half a billion people, third only to India and China in terms of population size and matched only by the United States in economic size. Along with the free movement of capital, goods and services, the *acquis communautaire*, basic legislation of the EU, also legally guarantee the free movement of people within the EU's vast internal market. Owing to these liberalizations, and despite temporary transitional arrangements applied by some old member states towards citizens from new member states (NMSs), the EU witnessed a substantial east-west movement of people in the years following the eastern enlargements. The number of citizens in the old member states from the member states that joined the EU in 2004 and 2007 grew from about two million in 2004 to almost five million in 2009, signifying an increase from less than 0.5% to 1.2% of the EU15 total population in just five years (Holland et al. 2011).

The enlarged EU's early experience with free mobility of workers tells a virtuous story of increased mobility as well as migration's overall neutral or positive effects on the EU economy (see Kahanec and Zimmermann, 2010, Constant, 2013, and the literature reviewed therein). Positive effects have been documented in terms of GDP per capita and the employment rate (Kahanec et al. 2013), moderation of inflationary pressures (Blanchflower and Shadforth 2009; Kahanec et al. 2013), and welfare sustainability (Dustmann et al. 2003). Aligned with the broader migration debate, studies about EU member states document a generally non-negative effect on wages and show that although local adjustment may occur, immigration does not increase the overall unemployment rate (Kahanec and Zimmermann 2010; Elsnér and Zimmermann 2014; del Boca and Venturini 2014; Rodríguez-Planas and Farré 2014). Existing studies have also found little grounds to support the welfare magnet hypothesis (Giulietti et al. 2013; Giulietti and Wahba 2013; Giulietti 2014). Elsnér (2013a; 2013b) documents that post-accession outmigration from Lithuania, one of the countries with the highest outmigration rates, has resulted in higher wages within the country. Zaiceva (2014) finds that outmigration reduced excess supply of labor, lowered unemployment, and increased wages in NMSs and led to additional positive effects through remittances and possibly brain gain.

On the other hand, Meardi (2012) proposes a number of social failures related to post-enlargement mobility in the EU, including the lack of full integration into host labor markets and social institutions, low bargaining power with respect to their employers and consequently the possible emergence of a new immigrant underclass. At the individual level, Anderson et al. (2006) document that post-enlargement migrants may become dissatisfied with their new situation. Safi (2010) indeed documents immigrant-native gaps in life satisfaction in Europe, but Frijters, Haisken-DeNew, and Shields (2004) find a positive effect of migration from eastern to western Germany (but not for those moving in the opposite direction) on movers' subjective well-being. Several studies document that these migrants

downskill into jobs below their qualification level, which, besides affecting the individual migrants, also results in decreased output per worker in the receiving labor markets (Dustmann et al. 2003; Kahanec et al. 2013). The risk of brain drain, skill shortages and imbalances, inflationary pressures and adverse demographic consequences of outmigration on sending countries have been discussed in the literature (Hazans and Philips 2010; Kaczmarczyk, Mioduszevska, and Zilic 2010; Kahanec and Zimmermann 2010; Zaiceva 2014).

The shining image of an enlarging and flourishing EU began to dull starting in 2008 when the Great Recession hit Europe, first as a crisis within its banking sector and later as a sovereign debt crisis, whereby both resulted in a drop in economic activity across the EU. There were varied effects of the economic shocks across EU labor markets: Whereas southern and Baltic countries, as well as Ireland, suffered from major recessions, some countries such as Germany and Slovakia saw a short-lived economic decline followed by a period of robust recovery. Poland, as the largest source country among the NMSs, did not experience even a single quarter of negative annual GDP growth rate during this period, although its economy markedly slowed as well. Such asymmetric economic shocks may lead to tensions within and across member states, undermining the EU and Euro Area in particular.

There are several channels through which EU member states may absorb adverse economic shocks without sustaining prolonged periods of unemployment. Countries outside the Euro Area¹ can apply their monetary policy tools to counter financial, demand or supply shocks. For example, when faced with a negative demand shock, they may allow their currency to depreciate; by doing so, they could restore competitiveness and absorb part of the economic shock. However, this is a non-existent strategy for countries that adopted the Euro and delegated their monetary policy to the European Central Bank. Internal depreciation, implying decreasing domestic prices, remains an option for these countries; nonetheless, this route is rather problematic due to the stickiness of wages and other prices to adjust downward, as well as the risk of a vicious deflationary spiral. Another option is fiscal stabilization; however, the EU lacks the mandate and capacity to act as a fiscal union that could counteract asymmetric economic shocks by systematically transferring funds from booming to depressed member states.² Unilateral fiscal responses led many member states into a trap of unsustainable public finances and a sovereign debt crisis, followed by severe austerity measures and further economic decline.

¹ As of 2014, the Euro Area includes Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain. Although Bulgaria is not a member of the Euro Area, it has adopted a policy of a currency board and pegged the Leva to the Euro. The Danish Krone and Lithuanian Litas are also pegged to the Euro within the ERM II mechanism.

² The EU's fiscal capacity is defined by its rather limited budget, which was just about 1 percent of the EU's gross national income during the 2007–2013 Multiannual Financial Framework (Begg et al. 2008) and its role in determining the level of value added tax and tariffs on external trade. The Euro Area coordinates the fiscal policies of its member states through the Stability and Growth Pact.

Under these circumstances, fiscal policy tools became practically unavailable, especially to those EU member states that were most severely hit by the Great Recession and accumulated excessive public debt. Moreover, many of those countries were unable to wield their monetary policy tools, having forfeited them to the European Monetary Union. Consequently, mobility of labor and other factors of production remained one of few alternatives to sluggish internal depreciation accompanied by unemployment and other resource slacks.

With enlargement and the phasing out of the transitional arrangements, the EU has unleashed a tremendous potential for enhanced labor mobility throughout its territory. This not only provided for an increased allocative efficiency at the micro level, but also enhanced the EU's potential to respond to macroeconomic shocks through reallocation of labor. Despite significant effort to harmonize labor market institutions across EU member states, national borders partition the EU into labor markets with different jurisdictions, regulatory frameworks and institutions, and welfare systems. Additionally, linguistic barriers, practical problems with qualification recognition, as well as problematic transferability of skills, social rights, health insurance, healthcare provisions, and consumer rights, all put sand in the wheels of EU mobility (Kahanec 2012; 2013). It is the interplay of these factors—some of which decrease while others increase migration costs—that determines the EU's capacity to cope with economic disturbances.

This chapter evaluates the effects of institutional factors on the mobility of workers and hence the capacity to absorb asymmetric economic shocks within an enlarged EU. We start by reviewing the institutional underpinnings of the free movement of workers. We then develop a stylized model in which we illustrate the key mechanisms through which mobility may help to absorb economic shocks. Thereafter, we study which patterns of mobility between new and old EU member states emerged after the EU's eastern enlargements and during the Great Recession and we empirically measure the effects of transitional arrangements on post-enlargement EU mobility. Hence, this chapter provides a foundation for this book's encompassing study of whether and how post-enlargement mobility has enabled the EU, and particularly the Euro Area, to better absorb asymmetric economic imbalances after enlargement and during the Great Recession.

1.2 The EU's Institutional and Legal Underpinnings and Free Labor Mobility

Over the past decade, the EU has increased its population by more than a quarter. Prior to 2004, it was comprised of the fifteen countries known as the EU15; in 2004 eight Central Eastern European countries plus Cyprus and Malta, known as the EU10, joined as new EU members—adding 74.1 million people to the total EU population. Three years later, Bulgaria

and Romania (EU2) also joined with their 29.5 million citizens. Most recently in 2013, Croatia was granted EU membership, bringing in another 4.3 million people.³

EU enlargement has paved the way towards a Single European Labor Market in which workers enjoy the right of free movement. Article 45 of the Treaty on the Functioning of the EU guarantees the right of free movement of workers in the EU. The Treaty on the European Union, Directive 2004/38/EC, and the Case Law of the European Court of Justice extend this right in that all EU citizens and their close family members are also allowed to reside and work in any other EU state, as long as they have health insurance and are able to prove sufficient resources to support themselves. Although social security systems are governed at the national level by member states, to guarantee the right of free movement, Regulations (EC) 883/2004 and 987/2009 provide for coordination of social security provisions by stipulating common rules and principles, including equal treatment of nationals and EU citizens. Among additional noteworthy regulations, Directives 2013/55/EU and 2005/36/EC stipulate rules for smooth recognition of professional qualifications within the EU.

However, primarily driven by the relatively large size of the 2004 and 2007 enlargements, limited experience with east-west migration, and labor market difficulties in the receiving countries, worries of excessive immigration from the new to old member states grew in old member states. The accession treaties therefore stipulated transitional arrangements that guaranteed the right to temporarily restrict free mobility of the citizens of newly accessed member states, except Cyprus and Malta.

Transitional arrangements permitted member states to postpone citizens from the NMSs from fully accessing the destination country's labor market. Two years after enlargement, transitional arrangements had to be reviewed. If continued, another review was due five years after enlargement. Only if a member state was able to prove that inflows of NMS workers would disrupt its labor market, the transitional arrangements could be applied for another two years, but had to be discontinued at the latest seven years after enlargement. While select countries entirely opened their labor markets on the first day after accession, others applied restrictions for some time and then decided to lift them, while others applied the restrictions for the entire seven-year period (for detailed restriction application and removal, see Table 1).

After transitional arrangements ended, the NMSs' citizens gained the full right to enter any other member state's territory and labor market, as well as seek and accept employment there. Additionally, they could then obtain social benefits associated with their job. Under the provisions on freedom of establishment and freedom to provide services, and beyond the

³ The EU8 is composed of the EU member states from Central Eastern Europe that joined the EU in 2004: the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia. EU10 denotes EU8 plus Cyprus and Malta, which also joined in 2004. EU8+2 denotes the combination of the EU8 plus the EU2, Bulgaria and Romania, which joined in 2007. The EU15 includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

scope of transitional arrangements, EU accession immediately liberalized the mobility of the self-employed.

1.3 The Economics of Migration as a Vehicle of Adjustment

A simple theoretical model of factor price equalization can elucidate the basic mechanism through which migration may enable economies to adjust to asymmetric economic shocks. Consider two economies, home and foreign, where the foreign economy can also be interpreted as the rest of the world and the variables pertaining to it are marked with an asterisk. The total labor force in these countries can be normalized to 1 whereas $L (=1 - L^*)$ denotes the share of the total labor force employed in the home country. We first consider a steady state in which both economies exhibit the same level of wages and thus there are no economic reasons to migrate between the two countries. This can be represented by point E_1 in Figure 1, where the labor force is allocated between the home and foreign country such that the marginal product of labor is equal in the two countries. Each economy is represented by a marginal product of labor (also labor demand) curve, denoted as MPL for the home country and MPL^* for the foreign country.

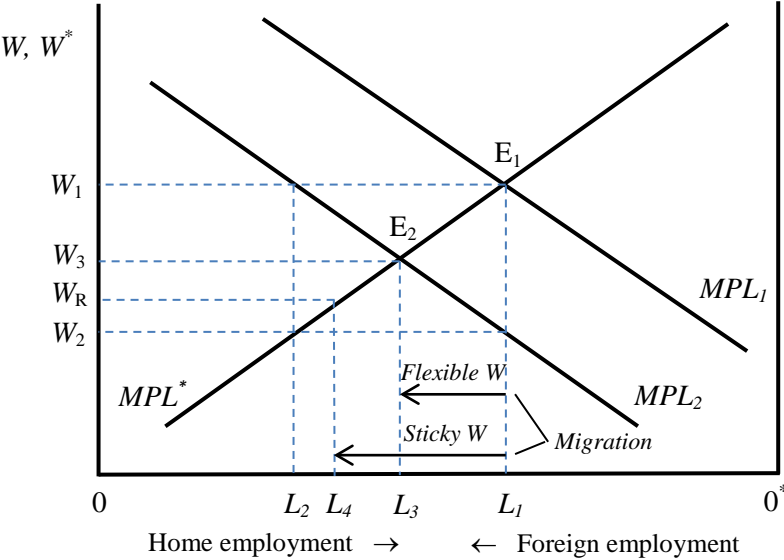
If these two economies are then exposed to an asymmetric economic shock that decreases aggregate demand and thus demand for labor changes from MPL_1 to MPL_2 in the home country, but does not affect the foreign country, several outcomes are possible. First, if wages are flexible but migration between the two countries is not permitted, the allocation of labor remains at L_1 and wage stays at W_1 in the foreign country, but decreases to W_2 in the home country. Second, if wages in the home labor market are sticky downwards (under the no-mobility scenario), unemployment may result. In the extreme case where the home country's wage remains at W_1 , unemployment of size L_1L_2 will result.

The third possibility is that the labor force reallocates between the foreign and home country. After the home country is affected by a negative economic shock, there are incentives to move, due to either new lower wages (under flexible wages) or unemployment (under sticky wages) in the home labor market. Under flexible wages, such incentives would result in reallocation of L_1L_3 workers from the home to foreign country until wages in both countries equalize at W_3 . If wages in the home country were sticky at W_1 and the reservation wage of home workers was W_R (possibly determined by the level of unemployment benefits), L_1L_4 workers would move to the foreign country, thereafter depressing the foreign wage to W_R ; meanwhile unemployment in the home country would decrease to L_2L_4 . If $W_R \leq W_2$, all unemployed workers would emigrate from the home country, thus decreasing the foreign country's wage to W_2 .

This theoretical model provides us with a straightforward message. Under flexible wages, worker mobility absorbs economic shocks by equalizing wages across countries. When a negative economic shock hits a country with non-flexible wages, mobility absorbs the

shock by enabling unemployed workers to find gainful employment in (less-affected) foreign countries. The lower the reservation wage of unemployed workers, the greater fraction of these workers moves abroad. These arguments can be extended to situations with positive demand shocks, where labor mobility enables the country to limit wage growth and thus remain competitive, as well as expand its production.

Fig. 1 Migration and adjustment to asymmetric shocks



It is intuitively appealing to believe that countries attract guest workers during a boom, before these workers subsequently have incentives to return home during a recession. However, in the analysis above we assumed perfect substitutability of home and foreign workers. Whereas this could hold true in some cases, migrant workers often complement rather than substitute domestic ones. Immigrants then do not decrease but increase the wages of complementary domestic workers. It has been empirically documented that, on aggregate, migrants do not take natives' jobs nor decrease their wages (Card 1990; Roy 1997; Kahanec and Zimmermann 2010; Peri 2014; Constant 2014; also see the meta-analysis by Longhi, Nijkamp, and Poot 2005). On the other hand, some studies have found moderate negative effects of immigration (Borjas 2003). Additionally, it appears that migrants are substitutes for low-skilled natives or other immigrants in certain low-skilled sectors (Roy 1997).

Migration may also entail pecuniary and non-pecuniary costs that complicate the aforementioned model. These include all kinds of barriers to migration, such as transitional arrangements, moving costs, time-consuming and costly administrative procedures, legal barriers or non-trivial psychological and social costs. Furthermore, even if migrants moved seamlessly, their adjustment in host economies may be sluggish (Kahanec and Zimmermann 2009). Finally, Figure 1 fails to capture more complex institutional and legal frameworks that may govern labor markets in receiving and sending countries. It is then an empirical question

concerning whether and how labor mobility was able to absorb asymmetric economic shocks that the Great Recession inflicted on the enlarged EU's member states.

1.4 East-West Mobility Patterns in an Enlarged EU

Extending the right of free movement allowed potential migrants from the NMSs to respond to changing conditions by choosing to move between various eastern and western EU countries. This section explores the mobility of NMS citizens to other European destinations.

1.4.1 The Data

This analysis is based on data incorporating immigration flows and foreigner stocks collected by all countries worldwide for 42 destination countries for 1980–2010.⁴ The dataset was collected by Mariola Pytliková, who gathered detailed information from the national statistical offices of 27 OECD countries concerning immigration flows and foreign population stocks by source country in the respective OECD country. The data for the remaining 15 destinations come from the OECD International Migration Database and Eurostat.⁵ For the purpose of this chapter, we chose to use only a subsample of destinations and Central and Eastern European (CEE) source countries for years 1995–2010. The Appendix provides a detailed overview of definitions and data sources regarding immigration flows (see Table A1) and foreign population stocks (Table A2). The dataset is unbalanced due to incomplete information on migration flows and stocks for some countries and years. For an overview of comprehensiveness of observations of flows and stocks from our subsample of CEE source countries over time, see Appendix Tables A3 and A4, respectively. One may observe that missing observations become less of a problem over more recent years. In addition to flows and stocks of migrants, our dataset contains a number of other time-series variables that could potentially explain migratory flows between countries, obtained from sources including the OECD and World Bank. Definitions, sources of specific variables and summary statistics can be found in Appendix Table A5.

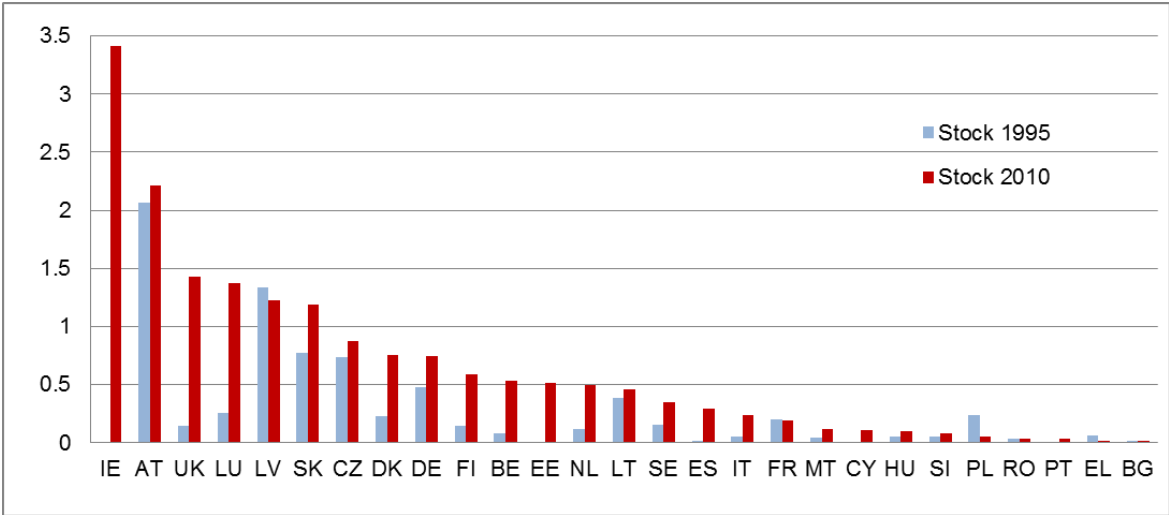
⁴ The first version of the migration dataset was constructed for the study by Pedersen, Pytliková, and Smith (2008), covering 22 OECD destinations and 129 source countries from 1989–2000 (see the study for a description of the dataset). The second version of the dataset was extended to include 30 OECD countries and all world source countries, and the covered time period was lengthened to 1980–2010. This version has been used by Adsera and Pytliková (2014), which also provides a detailed description of the data.

⁵ The OECD International Migration Database provides data for six OECD countries (Chile, Israel, Korea, Mexico, the Russian Federation, and Turkey), whereas they are from Eurostat for nine other destinations (Bulgaria, Croatia, Cyprus, Estonia, Latvia, Lithuania, Malta, Romania, and Slovenia).

1.4.2 CEE Migrants in Europe: A Recent History

Under the socialist regime, migration from the CEE countries was tightly restricted, with political refugees accounting for most emigrants from these countries. The fall of the Iron Curtain in 1989 changed this, hence allowing CEE citizens to be relatively unrestricted to emigrate but also, importantly, return home if desired. Consequently, the CEE region became a new emigration source. CEE outmigration further increased in connection to the EU enlargements towards the east and due to gaining employment rights under the free movement of workers. Given historical developments, the number of foreigners from the new EU member states increased in almost all EU countries, as documented in Figures 2 and 3. We also observe relatively large populations of EU8 immigrants in countries that shared statehood, and thus provided unified labor markets, within Czechoslovakia or the Soviet Union until recently, including the Czech Republic, Slovakia and the Baltic states.

Fig. 2 Foreign population stocks from EU8 member states residing in EU countries, given as a percentage of host country population, in 1995 and 2010



Notes: Due to data availability, the figure shows information on: 2000 instead of 1995 for Austria, 1998 instead of 1995 for Belgium and Great Britain, 2009 instead of 2010 for Belgium, Bulgaria, Spain, and Romania; 2001 instead of 1995 for Bulgaria; 1996 instead of 1995 for the Czech Republic; 1997 instead of 1995 for Italy and Portugal; 2002 instead of 1995 for Romania; 2000 instead of 1995 for Luxembourg; 1999 instead of 1995 for France; 2005 instead of 2010 for Greece; 2008 instead of 2010 for France and Malta; 2000 and 2002 instead of 2010 for Estonia and Cyprus.

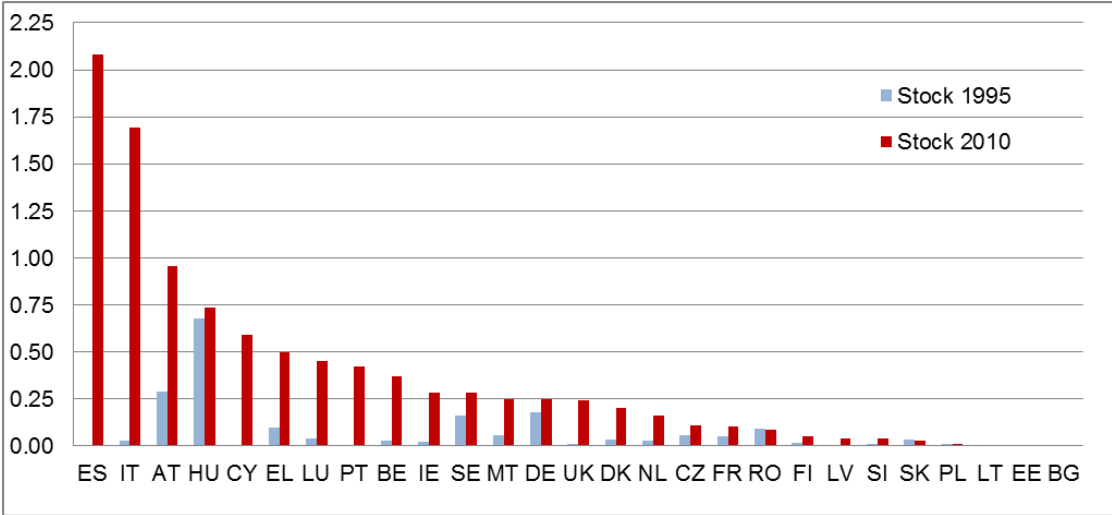
Source: National statistical offices; own calculations.

According to Figure 2, the highest percentage of immigrants originating from the new EU8 countries relative to the host country population in 2010 is found in Ireland, reaching 3.4% of the total Irish population, followed by Austria and the UK with 2.2% and 1.4%, respectively. However, Ireland and the UK experienced the largest increase in migration stocks from those new EU8 countries, from almost none in 1995 (0.01% and 0.15%, respectively) to 3.4% and 1.4% in 2010. Austria has long been a traditional destination for

people from CEECs due to historical reasons; for instance, the Czech Republic accounts for the largest number of CEE foreigners in Austria, totaling 54,000. However, these immigrants are not recent arrivals, with most (90%) having arrived soon after the Second World War (Lebhart 2003). Luxembourg, Denmark and Finland have also experienced relatively large increases of migrants stemming from the new EU member states (in percentages of the population). Having been a popular destination country for political refugees from former socialistic countries, a significant outflow of citizens returned to their home countries from Sweden after 1989. As shown in Figure 2, this return migration, combined with both a growing overall Swedish population during the 1990s as well as relatively moderate migration inflows, contributed to a relatively small increase in proportion of new EU member immigrants from 1995 to 2010. A similar pattern is also observed in Switzerland and France.

Below, Figure 3 focuses on the changes in the foreign population stocks from the EU2, comprised of Bulgaria and Romania. Unsurprisingly, the Southern European countries experienced the largest increases from Bulgarian and Romanian citizens. In particular, the share in Spain increased from practically nil (0.003%) in 1995 to 2.08% in 2010. Consequently as of August 2011, Spain has reintroduced restrictions on the free movement of Romanian workers, particularly due to the harsh unemployment conditions during the recent crisis years.

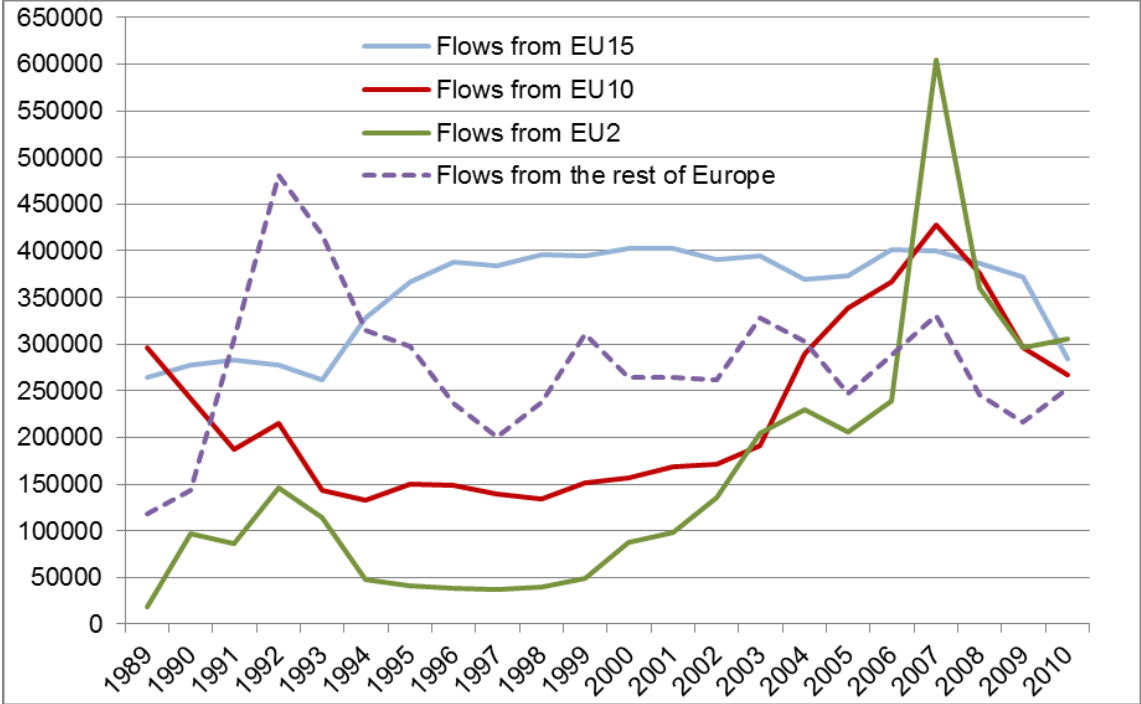
Fig. 3 Foreign population stocks from the EU2 residing in EU countries, given as a percentage of the host country population, in 1995 and 2010



Notes: Due to data availability, the figure shows information on: 2000 instead of 1995 for Austria, 1998 instead of 1995 for Belgium and Great Britain, 2009 instead of 2010 for Belgium, Bulgaria, Spain, and Romania; 2001 instead of 1995 for Bulgaria; 1996 instead of 1995 for the Czech Republic; 1997 instead of 1995 for Italy and Portugal; 2002 instead of 1995 for Romania; 2000 instead of 1995 for Luxembourg; 1999 instead of 1995 for France; 2005 instead of 2010 for Greece; 2008 instead of 2010 for France and Malta; 2000 and 2002 instead of 2010 for Estonia and Cyprus.

Source: National statistical offices; own calculations.

Fig. 4 Migration flows to EU15 destination countries from Europe, by European regions of origin, 1989–2010



Source: National statistical offices; own calculations

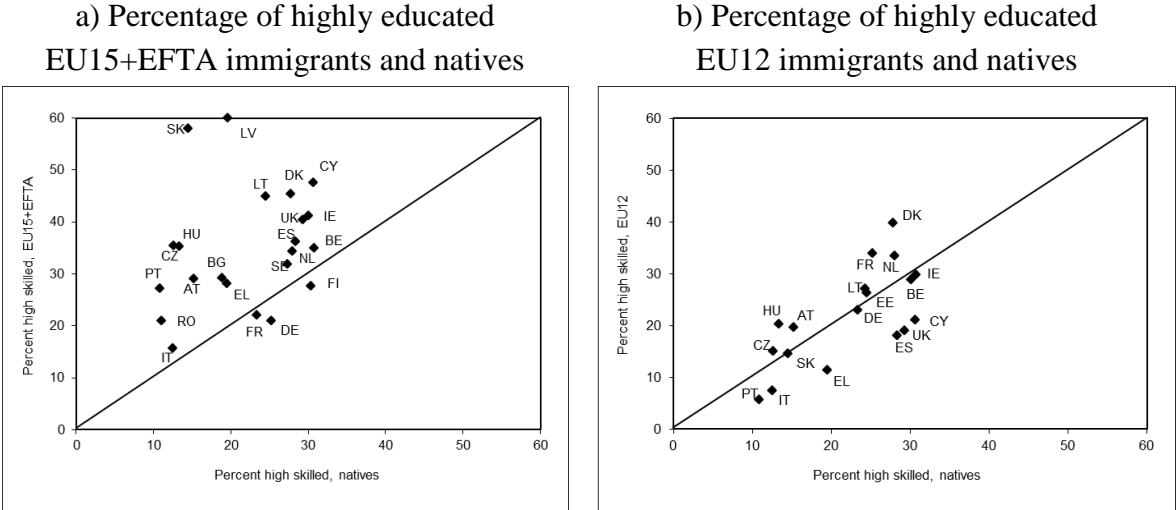
Figure 4 depicts the development of migration flows over time by European regions of birth, as well as illustrates how historical events affected these flows in Europe. First, we can observe increased flows from CEE regions in the years following the collapse of Communism in this area. The 1992 peak of migration “from the rest of Europe” corresponds to migratory changes around the fall of the Soviet Union. Furthermore, there is a gradual yet considerable increase in migration flows for the EU10 countries after the EU enlargement in 2004. Similarly, migration from Bulgaria and Romania increased sharply after the 2007 EU enlargement. In contrast, the flows from EU15 member states are relatively stable over time. The decline in migration after 2008 from all European source countries after 2008 coincides with the effects of the financial crisis that hit Europe at that time.

1.4.3 Migrants’ Labor Market Status in the EU

To better understand how EU enlargement has changed the migration landscape in the EU, we study migrants from the new and old member states and compare them with the native population, in terms of education and skill levels, as well as unemployment and participation rates. Figure 5 begins this discussion by relating the share of highly educated people among EU12 and EU15+EFTA immigrant groups to the share of high-educated people among natives in 2010. The diagonal line represents parity, i.e. equal rates, between immigrants and natives. In graph a), we see that immigrants from the EU15 and European Free Trade Association (EFTA) are overall more educated than natives in almost all member states, excepting those below the diagonal line—Finland, France, and Germany. Graph b) conveys

the fact that Denmark attracts the most highly educated EU12 immigrants, followed by France and the Netherlands whereas Italy, Greece and Portugal receive mostly lower-educated EU12 migrants. Compared to their natives, Cyprus, Spain and the United Kingdom also attract relatively lower-educated EU12 migrants.

Fig. 5 Educational attainment of EU natives and immigrants



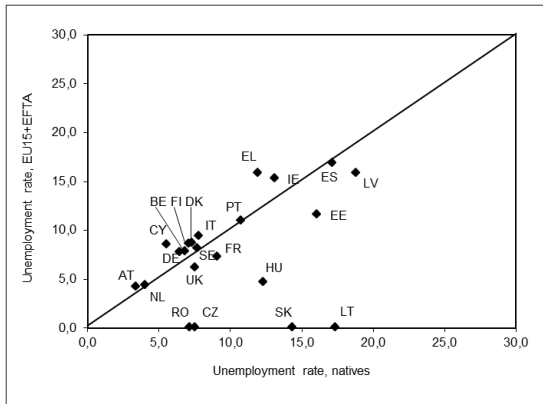
Notes: Population includes those 15–64 years of age. Country codes are as follows: AT: Austria, BE: Belgium, BG: Bulgaria, CY: Cyprus, CZ: Czech Republic, DK: Denmark, DE: Germany, EE: Estonia, EL: Greece, ES: Spain, FI: Finland, FR: France, HU: Hungary, IE: Ireland, IT: Italy, LT: Lithuania, LU: Luxembourg, LV: Latvia, MT: Malta, NL: the Netherlands, PL: Poland, PT: Portugal, RO: Romania, SE: Sweden, SI: Slovenia, SK: Slovakia, UK: the United Kingdom. “Immigrants” are people who were not born in the country in which they live. “Natives” are those born to mothers residing in the respective country. Germany defines immigrants based on nationality. A high level of education includes levels 5 and 6 from the International Standard Classification of Education (ISCED). ISCED 5 denotes first-stage tertiary programs with an educational content more advanced than those offered by secondary levels; they do not lead to the award of an advanced research qualification and must have a cumulative duration of at least two years. ISCED 6 denotes second-stage tertiary education leading to an advanced research qualification and requiring an original research contribution in the form of a thesis or dissertation. For further details, see UNESCO (1997).

Source: Own calculations in Kahanec (2012).

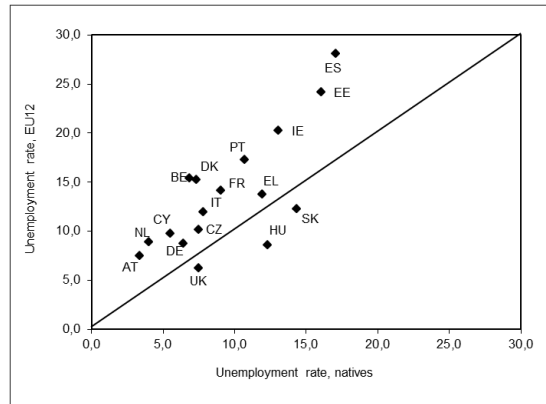
Due to imperfect skill transferability and barriers to successfully applying previous experience and education in the new labor market, migrants may face additional barriers to employment. To evaluate the prevalence of this, we now compare unemployment rates of immigrants and natives. In Figure 6, we see that there is a positive correlation between native and immigrant rates for both EU15+EFTA and EU12 migrant groups. Graph a) shows that EU15 migrants, being close to the line of parity, show similar unemployment rates to natives in the EU15; however, probably because there are many professional and managerial-level workers moving along with flows of foreign direct investment from the EU15 to the EU12, EU15 immigrants exhibit lower unemployment rates than natives in the EU12. On the other hand, as seen in graph b), EU12 immigrants have similar unemployment rate as natives in EU12 countries, but considerably higher unemployment rates in the EU15.

Fig. 6 Unemployment rates of EU natives and immigrants

a) Percentage unemployed EU15+EFTA immigrants and natives



b) Percentage unemployed EU12 immigrants and natives



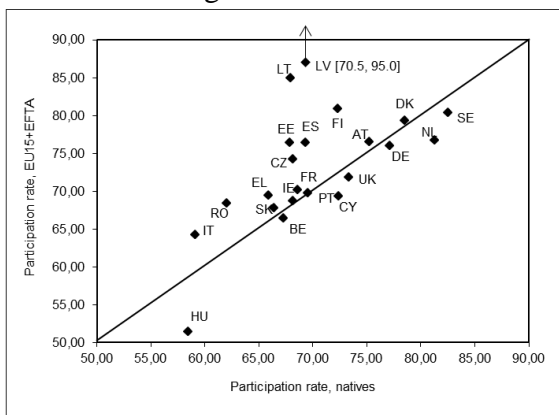
Notes: See Figure 5.

Source: Own calculations in Kahanec (2012).

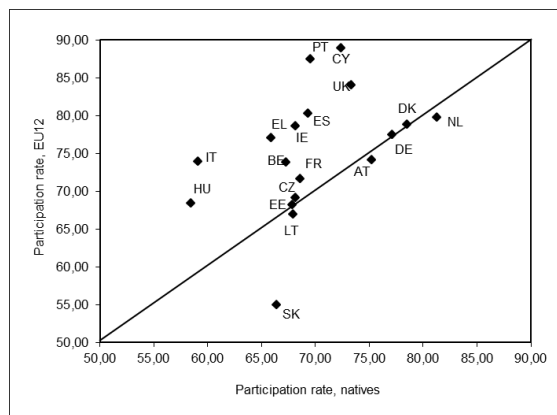
The participation rate complements the unemployment rate in the sense that the former elucidates the degree to which the immigrant and native working age populations seek employment. In Figure 7, we see that EU15+EFTA and EU12 migrants alike have similar, and in many countries considerably higher, participation rates than natives. We see one exception in Hungary, where EU15+EFTA immigrants show a much lower rate than the already low native rate, and a similar result is observed for Slovakia regarding EU12 immigrants.

Fig. 7 Participation rates of EU natives and immigrants

a) Percentage of active EU15+EFTA immigrants and natives



b) Percentage of active EU12 immigrants and natives



Notes: See Figure 5.

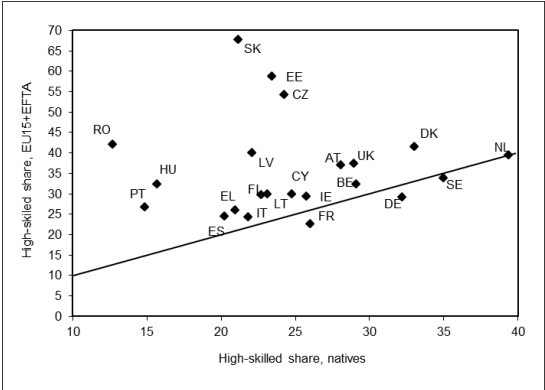
Source: Own calculations in Kahanec (2012).

Finally, Figure 8 compares the occupational skill level of natives and immigrant groups. We use the top three one-digit categories, i.e. managers, professionals, technicians,

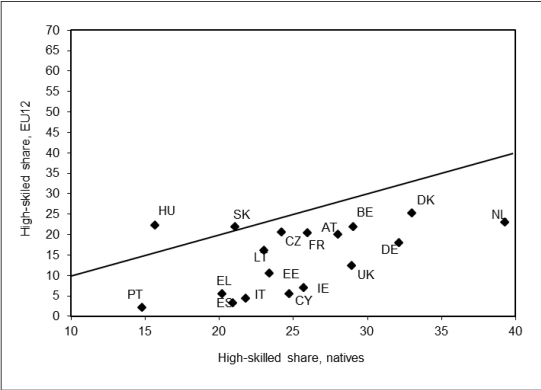
and associate professionals, from the International Standard Classification of Occupations (ISCO) to define high-skilled laborers. We see that immigrants from the EU15+EFTA have the highest occupational attainment, generally equal to or higher than natives, whereas the EU12 immigrants work in less skilled occupations than natives, except Hungary and Slovakia. It is critical to highlight that skills are measured here through occupational attainment thus the EU12 migrant results indicate their downskilling, or in other words, accepting jobs in the destination that are below their qualifications. This is starkly manifested if we compare their educational attainment in Figure 5 with their occupational status in Figure 8. Country chapters provide further insights into the qualitative and quantitative nature of post-enlargement migration, including these difficulties in skill transferability between labor markets.

Fig. 8 Occupational attainment of EU natives and immigrants

a) Percentage of EU15+EFTA immigrants and natives in high-skilled occupations



b) Percentage of EU12 immigrants and natives in high-skilled occupations



Notes: See Figure 5. High-skilled occupations are defined as those in the top three one-digit International Standard Classification of Occupations (ISCO) codes (managers, professionals, technicians, and associate professionals).

Source: Own calculations in Kahanec (2012).

1.5 Measuring the Enlarged EU’s East-West Mobility Determinants

We now provide empirical analyses of migratory flows, shaped by EU enlargements and transitional arrangements, from Central and Eastern Europe to the older member states. We base our econometric analysis on the “human capital investment” theoretical framework (Sjastaad 1962),⁶ which assumes that emigration rates are driven by the difference in expected earnings between the origin and destination country, adjusted for the costs of migration. Similar to existing studies, we proxy wages in the source and destination countries by GDP per capita. As outlined by Adsera and Pytliková (2014), the effect of GDP per capita in the source country on migration flows may be nonlinear, given that poverty constrains the ability

⁶ See applications of the theoretical model in Adsera and Pytliková (2014), Ortega and Peri (2009) and Grogger and Hanson (2011).

to cover the costs of migration. Indeed, previous studies (such as Chiquiar and Hanson 2005; Hatton and Williamson 2005; Clark, Hatton, and Williamson 2007; Pedersen et al. 2008) have shown that a source country's GDP per capita has an inverted U-shape effect on migration.⁷

Migration costs are determined by a variety of factors. First off, the larger the physical distance between two countries, typically the higher the direct migration costs associated with transportation. However, changes and improvements in communication technologies, the internet, continued economic globalization and declining transportation costs all lead to lower direct migration costs over time. Second, we expect that larger language barriers create higher migration costs for an individual, since there would be a lower chance of transferring one's existing skills and knowledge into the destination's labor market (Chiswick and Miller 2012; Adsera and Pytliková 2014). Furthermore, migration "networks" (family members, friends and people of the same origin who already live in the host country) play an important role in lowering the direct and psychological migration costs (Massey et al. 1993; Munshi 2003). These networks can provide potential migrants necessary information to facilitate the move and help newcomers to adapt to the environment. Finally, we expect immigrants' access to the labor market to affect migration. In particular, we posit that granting employment and residential rights to immigrants lower the costs of migration; these would incorporate the costs associated with the time and effort necessary to apply for working and residence permits, waiting for the proper documents, being treated as third-country citizens during the job search and general costs potential migrants face throughout a move. Thus, we expect that the migration costs associated with moving from country i to country j are higher with larger physical and linguistic distance between countries, but fall with the existence of migration networks and with granting the same employment and residential rights to immigrants as natives have.

1.5.1 Labor Market Opening Policy Variable

Regarding immigrants' access to the labor market and their employment rights, we exploit the EU eastern enlargements and the fact that some EU member countries opened their labor markets to workers from the new EU entrants, whereas others chose to apply transitional restrictions. Specifically, we analyze changes in migration rates that followed the lifting of labor market restrictions.

If the hypothesis that granting the right of free movement to workers has a positive effect on migration is true, then we would expect migration rates from the NMSs to increase after destination states eliminated labor market restrictions. More specifically, we would expect the rates to increase more (or at least decrease less) in these states than in those that did

⁷ At income levels beyond dire poverty, migration increases, but when GDP reaches a certain level, migration may again decrease since the economic incentives for outmigration decline (Adsera and Pytliková 2014).

not lift restrictions. Furthermore, we would expect this increase to be higher for NMS migrants than for migrants who had not been subject to the free movement of labor in the first place.

Table 1 Overview of policy changes with respect to lifting restrictions on access to the labor market for workers from the new 2004 EU8 and 2007 EU2 member states

EEA/EFTA countries	Lifting restrictions on the free movement of workers	
	2004 EU enlargement: EU8	2007 EU enlargement: EU2
Austria	May 2011	January 2014
Belgium	May 2009	January 2014
Denmark	May 2009	May 2009
Finland	May 2006	January 2007
France	July 2008	January 2014
Germany	May 2011	January 2014
Greece	May 2006	January 2009
Iceland	May 2006	January 2012
Ireland	May 2004	January 2014
Italy	July 2006	January 2012
Luxembourg	November 2007	January 2014
Netherlands	May 2007	January 2014
Norway	May 2009	January 2014
Portugal	May 2006	January 2009
Spain	May 2006	January 2009 (restrictions for Romania August 2011)
Sweden	May 2004	January 2007
Switzerland	May 2011	January 2014
UK	May 2004	January 2014

Table 1 provides an overview of policy changes regarding lifting restrictions on accessing the host country's labor market for workers from the EU8 and EU2. Based upon each country's decisions regarding the free movement of workers from the EU8 and EU2 countries, we can specify a labor market opening policy variable, $OPEN_{ij}$, to be equal to 1 if a free movement of workers exists between a particular destination and source country, and 0 otherwise. The pre- and post-treatment period hence varies according to when the restrictions were eliminated within a given destination-origin pair.

Among destination countries, we include the EU15 plus Iceland and Norway, with these latter countries included because the European Economic Area (EEA) to which they all belong is based upon the same "four freedoms" as the EU: the free movement of goods, persons, services and capital within the EEA. To better gauge the effects of enlargement and labor market opening in our analysis, we also include other major destinations for CEE

migrants including Australia, Canada, New Zealand, Switzerland and the US as a control group.⁸

1.5.2 The Empirical Model

From a methodological perspective, the transitional arrangements restricting the free movement of labor can be seen as a “natural experiment.” Thus to test our hypothesis we employ a difference-in-differences (DD) and triple differences estimator (DDD). Specifically, we use the DD econometric model in the following form:

$$\begin{aligned} \ln m_{ijt} = & \gamma_0 + \delta_j + \delta_i + \theta_t + \gamma_2 OPEN_{ij} + \gamma_3 \ln(GDP_j)_{t-1} + \gamma_4 \ln(GDP_i)_{t-1} + \gamma_5 \ln(GDP_i)_{t-1}^2 + \\ & + \gamma_6 \ln s_{ijt-1} + \gamma_7 lingprox_{ij} + \gamma_8 \ln dist_{ij} + \gamma_9 neighbour + \varepsilon_{ijt} \end{aligned} \quad (1)$$

where $\ln m_{ijt}$ denotes the flows of migrants from country i to country j , divided by the population of the country of origin i at time t . This model has a full set of year dummies, θ_t , to control for the time-series changes in migration flows common to all countries, as well as a full set of destination and country of origin effects, δ_j and δ_i , respectively, to control for the time-invariant characteristics of particular treatment and control countries. As indicated above, the model also controls for economic factors such as wages and poverty constraints, proxied by GDP per capita in origins and destinations and a linear squared term of the origin country's GDP per capita, respectively. We use the number of foreign population from country i living in country j per population of the source country i , s_{ijt} , to control for migrant networks. To control for direct migration costs, we include the physical distance in kilometers between capital cities, $dist_{ij}$. Moreover, to control for linguistic distances between countries we include the linguistic proximity index, $lingprox_{ij}$, based on information regarding families of languages from Ethnologue using the country's official languages spoken by the majority population (constructed by Adsera and Pytliková 2014).

Additionally, we run the econometric model (2) with fixed effects for pairs of countries (FE), δ_{ij} , in order to capture (unobserved) traditions, historical, and cultural ties between a particular pair of destination and origin countries. Accordingly, the econometric model has the following form:

$$\begin{aligned} \ln m_{ijt} = & \gamma_0 + \delta_{ij} + \theta_t + \gamma_2 OPEN_{ij} + \gamma_3 \ln(GDP_j)_{t-1} + \gamma_4 \ln(GDP_i)_{t-1} + \gamma_5 \ln(GDP_i)_{t-1}^2 + \\ & + \gamma_6 \ln s_{ijt-1} + \gamma_7 lingprox_{ij} + \gamma_8 \ln dist_{ij} + \gamma_9 neighbour + \varepsilon_{ijt} \end{aligned} \quad (2)$$

⁸ The analyses were also made for the sample of EEA destination countries only (i.e. excluding Australia, Canada, New Zealand, Switzerland, and the US), and the results are quantitatively very similar.

All variables except dummy variables and the linguistic proximity index are defined in natural logarithms and thus their coefficient estimates represent impact elasticities. Standard errors are robust clustered on the level of country pairs.

Citizens of the new EU countries could freely reside in any of the older EEA member states after entering the EU: Similar to citizens of the existing EU countries, newcomers could reside there without any restrictions for a period up to three months, and for longer if they were able to prove sufficient resources to support themselves and held valid health insurance in the destination country.⁹ Therefore, one would expect that CEE workers would migrate after the EU enlargement, despite restricted access to the labor market. In order to separate the labor market openings effect from the EU enlargement effect, we introduce the EU enlargement policy dummy, $EUenl_{ij}$, equal to 1 for pairs of destination and source countries belonging to the EU, and 0 otherwise.

The DD econometric model specification with both the labor market openings and the EU enlargement effects has the following form:¹⁰

$$\ln m_{ijt} = \gamma_0 + \delta_j + \delta_i + \theta_t + \gamma_1 EUenl_{ij} + \gamma_2 OPEN_{ij} + \gamma_3 \ln(GDP_j)_{t-1} + \gamma_4 \ln(GDP_i)_{t-1} + \gamma_5 \ln(GDP_i)_{t-1}^2 + \gamma_6 \ln s_{ijt-1} + \gamma_7 lingprox_{ij} + \gamma_8 \ln dist_{ij} + \gamma_9 neighbour + \varepsilon_{ijt} \quad (3)$$

1.5.3 Results

Table 2 contains estimates of migration difference-in-differences models, which examine the effect of labor market openings on migration into 22 destination countries. These include 17 EEA destinations and five non-EU countries (Australia, Canada, New Zealand, Switzerland and the United States). The first four columns contain estimates of migration from the NMSs that entered the EU in 2004 and 2007, whereas the next results are presented separately for the EU8 and the EU2 source countries. The first four columns show different model specifications: In column (1) the most parsimonious model contains only the policy variable, which captures the effect of labor market opening; the next model specification in column (2) adds economic pull and push factors and a distance variable; the full specification based on the model from Eq. 1 also captures the effect of migrants' diaspora; finally the fourth column shows results with the country pairs' fixed effects as outlined in Eq. 2.

⁹ Furthermore, some destinations eased the working permit conditions for citizens from the new EU member states (despite maintaining the transitional employment restrictions of those workers), which could have also influenced migration from the new EU countries. Finally, some imperfect information could have existed regarding the specific rights and transitional measures of the free movement of workers.

¹⁰ The key assumption underlying the validity of our DD estimate is that differences in emigration rates between treated and not-treated groups would have remained constant in the absence of treatment. To test this assumption, we performed a graphical test and examined trends in log emigration rates across time for each destination, with a line for each source country. We could observe that migration trends into treated countries are similar to those into non-treated countries. The figures are available from the authors upon request.

As seen in Table 2, the coefficient on the DD policy variable $OPEN_{ij}$, which is of key interest, is significant and positive across all model specifications. In the most complete model specification in column (4), the overall labor market openings effect for EU8 and EU2 source countries taken together is 36%. Thus lifting restrictions on the free movement of labor caused on average 36% higher emigration rates compared to the flows to destination countries that kept the transitional arrangements.

In columns (5) and (6), we reproduce the model specifications reported in columns (3) and (4) for the EU8 countries, which we do for the EU2 countries in columns (7) and (8). One can observe that the effects of labor market opening vary between the EU8 and EU2 source country groups; the former have a labor market opening effect of about 37% whereas for Bulgaria and Romania it is much higher at around 52% (see columns (6) and (8) in Table 2). That the effect of labor market opening is greater for the EU2 than EU8 sources may reflect several factors. First, in the time span of our data for the EU8 countries we capture both the initial post-opening migration surge as well as the decline in the flows that ensued some years later. In addition, for the EU8 the effect of the labor market opening variable is identified by a larger set of destination countries that opened up during the period, which led to a greater dispersion of the post-liberalization flows. On the other hand, only a few countries (Denmark, Finland, Greece, Portugal, Spain, and Sweden) had relatively recently opened up their labor markets to EU2 citizens, which mean that our estimates of the effect of the labor market opening variable are primarily driven by the initial migration upsurge following the liberalization. Moreover, this effect was concentrated in only a few countries, including some of those receiving the bulk of the EU2 immigrants: mainly Spain, but also Greece and Portugal.

Table 2 Difference-in-Differences analyses of labor market openings on migration from the new EU10 member states from 1995–2010

Source Countries:	EU8+EU2				EU8		EU2	
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Labor Market Opening	0.680*** (0.132)	0.827*** (0.119)	0.387*** (0.100)	0.363*** (0.099)	0.317*** (0.102)	0.366*** (0.101)	0.528*** (0.181)	0.516* (0.296)
Ln Stock of Migrants_t-1	-		0.572*** (0.036)	0.524*** (0.052)	0.525*** (0.038)	0.427*** (0.048)	0.748*** (0.049)	0.797*** (0.074)
Ln Destination	-	1.326 (0.805)	1.258* (0.714)	1.113 (0.702)	1.613** (0.788)	1.470* (0.758)	0.173 (1.068)	0.212 (1.483)
GDPperCapPPPj_t-1	-	22.896*** (5.651)	18.739*** (4.358)	19.630*** (4.623)	22.225*** (6.185)	25.659*** (6.599)	6.385 (78.366)	-4.019 (120.607)
Ln Origin	-	-1.271*** (0.315)	-1.084*** (0.241)	-1.136*** (0.256)	-1.274*** (0.345)	-1.461*** (0.367)	-0.397 (4.405)	0.183 (6.795)
GDPperCapPPPi_t-1	-	-1.256*** (0.106)	-0.436*** (0.092)	-	-0.379*** (0.095)	-	-0.997 (1.113)	-
Ln Distance in km	-	0.152 (0.274)	0.005 (0.197)	-	0.179 (0.187)	-	0.078 (0.593)	-
Neighboring Dummy	-	4.988*** (0.832)	2.578*** (0.568)	-	1.941* (1.149)	-	1.936*** (0.632)	-
Linguistic Proximity Index	YES	YES	YES	YES	YES	YES	YES	YES
Year dummies	YES	YES	YES	-	YES	-	YES	-
Destination & Origin FE	-	-	-	YES	-	YES	-	YES
Pair of country FE	-	-	-	-	-	-	-	YES
Constant	-5.133*** (0.214)	109.688** (26.137)	-93.309*** (20.412)	-98.861*** (21.749)	113.524** (28.884)	130.479*** (31.242)	-21.308 (348.942)	16.412 (534.195)
Observations	3,078	3,078	2,444	2,444	1,930	1,930	514	514
Adjusted R-squared	0.688	0.782	0.860	0.597	0.867	0.593	0.896	0.639

Notes: We consider 22 destination countries. OLS estimates with destination and origin country fixed effects and year dummies, and pair of country fixed effects estimates. The sample of destinations consists of the “old” 17 EEA countries and five non-EU countries: Australia, Canada, New Zealand, Switzerland, and the United States. The dependent variable is Ln(Emigration Rate). Robust standard errors clustered at the country-pair level in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Concerning the model's control variables, the coefficients of foreign population stocks from the previous year are always positive and highly significant, indicating that network effects play an important role in driving subsequent migration. This is in line with other studies (such as Bauer, Epstein, and Gang 2005; Clark et al. 2007; Pedersen et al. 2008; McKenzie and Rapoport 2010; Beine, Docquier, and Özden 2011; Adsera and Pytliková 2014). Results of the models in Table 3 indicate that a 10% increase in the stock of migrants from a certain country is associated with an increase of around 52% in the emigration rate from this country, *ceteris paribus*. The destination country GDP effect is rather unclear; in fact, all of the coefficients to the host countries' GDP in Table 2 turn out to be statistically insignificant. Regarding the relationship between the source country's GDP per capita and its emigration rates, the results show a strong nonlinear relationship indicating some poverty constraint effects.

In line with our expectations, a shorter distance in kilometers between countries and linguistic proximity are significantly associated with stronger emigration flows. Furthermore, one can observe that the effect of language on migration is strong: The coefficient to the linguistic proximity index is 2.5 (see column (3) in Table 2). This implies that migrant flows to countries that share the same language, compared to flows to a country with the most distant language, should be around 258% higher, *ceteris paribus*. This supports findings by Adsera and Pytliková (2014). Being a neighboring country seems to increase outmigration but coefficients fail to attain significance in most of the model specifications.

However, as discussed in the methodology section above, migration from the new EU member states could have been affected by EU entry, given that the newcomers could freely reside for more than three months if they proved capable to provide for themselves. Therefore, in the next step, we run regressions based on the models from Eq. 3 (columns (1), (3), and (5)) and Eq. 2 in which we include the EU entry policy variable (columns (2), (4) and (6)). In this way, we are able to separate the two distinguished effects of EU enlargement versus labor market opening.

The results shown in Table 3 demonstrate that the labor market opening effect remains positive and statistically significant even when we control for the EU entry effect; however, the coefficients are much lower than in the main analyses shown in Table 2. Specifically, the labor market opening policy variable coefficients imply that the emigration rate to a country without employment rights restrictions (as opposed to a country restricting labor market access) should be around 28% higher, *ceteris paribus*. Importantly, the EU entry effect is positive and significant, about 33%, which is even larger than the labor market opening effect. Again, those effects differ between the EU8 and EU2 groups. Explicitly, the labor market opening effect is slightly lower for the former group of source countries than for Bulgaria and Romania, whereas the EU entry effect is much higher for the EU2 (see columns (3) to (6) in Table 3).

Table 3 Difference-in-Differences analyses of labor market openings on migration flows from the new EU member states

Source Countries:	22 Destinations (17 EEA+5 Non-EU Destinations)					
	EU8+EU2		EU8		EU2	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	FE	OLS	FE	OLS	FE
Labor Market Opening Effect	0.299*** (0.098)	0.277*** (0.095)	0.268*** (0.098)	0.300*** (0.099)	0.356* (0.183)	0.345 (0.296)
EU Enlargement Effect	0.304*** (0.091)	0.332*** (0.089)	0.166 (0.119)	0.246** (0.115)	0.792*** (0.196)	0.809*** (0.185)
Constant	-95.255*** (20.648)	-102.159*** (21.959)	-114.320*** (28.818)	-132.546*** (31.185)	-62.931 (343.523)	-23.015 (514.216)
Destination & Origin FE	YES	-	YES	-	YES	-
Pair of country FE	-	YES	-	YES	-	YES
Observations	2,444	2,444	1,930	1,930	514	514
Adjusted R-squared	0.861	0.603	0.867	0.595	0.899	0.651

Notes: There are controls for the EU enlargement in order to separate the labor market opening effects from the EU enlargement effects. OLS estimates with destination and origin country fixed effects and year dummies. Dependent Variable: Ln(Emigration Rate). Full model specification controls for migrant networks, economic factors and distance variables. Robust standard errors clustered at the country-pair level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

1.5.4 A Robustness Check: Analyses Using a Triple Differences Estimator

In the next step, we perform analyses using a triple differences estimator of labor market opening and the EU enlargement to validate our previous analyses. Specifically, we add a non-treated group of source countries belonging to a post-communist bloc of countries: Albania, Croatia, Russia, and Ukraine (CEE4), as an experimental group into our DDD model setting. This exercise helps us to test whether the effect of enlargement and labor market opening was specific to the treated source countries, or whether other CEE countries that were not members of the EU or its single market during the studied period experienced similar effects.

Table 4 Triple differences analyses of labor market openings and EU enlargements from 1995–2010

Source Countries:	22 Destinations (17 EEA+5 Non-EU Destinations)					
	EU8+EU2+CEE4		EU8+CEE4		EU2+CEE4	
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Labor Market Opening Effect	0.213** (0.088)	0.326*** (0.090)	0.214** (0.091)	0.382*** (0.093)	-0.078 (0.249)	0.371 (0.241)
EU Enlargement Effect	0.629*** (0.091)	0.657*** (0.088)	0.595*** (0.112)	0.612*** (0.108)	1.175*** (0.170)	1.268*** (0.162)
Destination & Origin FE	YES	-	YES	-	YES	-
Pair of country FE		YES		YES		YES
Constant	-19.686 (13.617)	-32.123** (13.983)	-10.333 (14.328)	-26.895* (14.427)	-20.630 (21.489)	-34.084 (20.662)
Observations	3,344	3,344	2,830	2,830	1,414	1,414
Adjusted R-squared	0.865	0.530	0.868	0.509	0.894	0.511

Notes: The experimental group of source countries includes Albania, Croatia, Russia, and Ukraine. The dependent variable is Ln(Emigration Rate). Included controls are: networks, economic and distance variables, and time dummies. Robust standard errors clustered on country pairs level, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

As seen from Table 4, both labor market opening and EU enlargement policy variables have significantly positive coefficients. Compared to the DD analyses, the DDD analyses show a much larger EU entry effect. Specifically, the EU entry effect is around 66%, whereas the labor market opening is of similar magnitude as in Tables 2 and 3—around 33%. This finding shows that the treated group of countries (EU8 and EU2) experienced significantly different, positive effects of labor market opening and EU accession, compared to the non-treated countries (CEE4). Again, both EU entry and labor market opening effects differ between the EU8 and EU2 groups of source countries. Based on both the difference-in-differences and triple differences indicator, it seems that the EU entry effect is much stronger than the labor market opening effect for Romania and Bulgaria, whereas the coefficients are about the same for the EU8 countries (see columns (3) to (6) in Tables 3 and 4).¹¹

1.5.5 The Responsiveness of Migration Flows to Economic Shocks

We now turn our attention to the question whether post-enlargement migrants responded to diverse macroeconomic shocks that the Great Recession inflicted on European labor markets. For this purpose, we introduce a set of variables that measure the economic conditions in

¹¹ As an additional robustness check, we performed “placebo” analyses, in which we restricted the time period to years 1995–2003, prior the first EU eastern enlargement. For the labor market openings, we “moved” the time, meaning we set the year 1997 instead of year 2004 and year 2000 instead of year 2007, and so on. The idea being that if there was a placebo “effect” from labor market opening or EU entry, there would be reason to be suspicious of the main estimates. The results validated our analyses presented above since none of the placebo estimates were statistically significant. The placebo analyses result tables are available from the authors upon request.

sending and receiving countries, such as GDP growth rates and unemployment rates in source and destination countries. In the analysis, all these variables are in logarithms and lagged by one year, to capture that if they affect migration flows they do so with a lag. In addition, lagging these variables reduces the problem of endogeneity, whereby these three variables might be affected by migration flows.

Using the same models as in Table 3, Table 5 reports the results for these variables as follows: (i) the first two columns show models with unemployment rates only, (ii) columns (3) and (4) with GDP growth in the destination and source country only, and (iii) the two last columns with both unemployment rates and GDP growth jointly. As our main results regarding the effects of other explanatory variables did not change after including macroeconomic variables, we only report the results for these variables as well as the coefficients of the labor market opening policy variable and the EU entry variable.

Table 5 Difference-in-difference analysis of labor market openings and EU enlargements and analyses of the economic cycle's effects on migration from 1995–2010

Source Countries:	22 Destinations (17 EEA+5 Non-EU Destinations)					
	EU8+EU2		EU8+EU2		EU8+EU2	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	FE	OLS	FE	OLS	FE
Labor Market Opening Effect	0.290*** (0.097)	0.268*** (0.094)	0.288*** (0.109)	0.310*** (0.107)	0.284*** (0.109)	0.309*** (0.108)
EU Enlargement Effect	0.308*** (0.088)	0.334*** (0.084)	0.350*** (0.084)	0.328*** (0.083)	0.364*** (0.081)	0.337*** (0.079)
Log (Unemployment rate destination) t-1	-0.404*** (0.123)	-0.406*** (0.120)			-0.327*** (0.124)	-0.282** (0.121)
Log (Unemployment rate origin) t-1	0.033 (0.102)	0.043 (0.104)			0.018 (0.124)	0.073 (0.126)
Log(GDP growth destination) t-1			0.112*** (0.026)	0.093*** (0.025)	0.114*** (0.026)	0.095*** (0.025)
Log(GDP growth source) t-1			-0.047* (0.025)	-0.046* (0.024)	-0.043 (0.026)	-0.039 (0.025)
Constant	-90.909*** (22.109)	-96.769*** (23.321)	-93.190*** (22.308)	-95.861*** (23.140)	-89.287*** (22.997)	-92.936*** (23.808)
Destination & Origin FE	YES	-	YES	-	YES	-
Pair of country FE	-	YES	-	YES	-	YES
Observations	2,424	2,424	2,007	2,007	1,998	1,998
Adjusted R-squared	0.862	0.9065	0.861	0.590	0.861	0.590

Notes: Dependent Variable: Ln(Emigration Rate). All models control for migrant networks, economic factors and distance variables. Robust standard errors clustered at the country-pair level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The coefficients of the unemployment rate at the destination are significantly negative across most model and sample specifications. This implies that employment opportunities in destinations are indeed important for the predominantly labor-related migration of workers from the new EU countries. Regarding the source country unemployment rates, the coefficients are statistically insignificant. A clear picture also emerges in terms of the effects of GDP growth on migration flows, namely that a dynamic receiving economy attracts more

workers whereas a strong source labor market retains its laborers, i.e. sends fewer migrants. When the two measures (unemployment rates and GDP growth) enter the same regressions, the effect of origin country GDP growth becomes statistically insignificant (see columns (5) and (6) of Table 5). This signals that post-enlargement migration was responding mainly to the economic conditions in the receiving rather than sending member states. We do not report the results from a triple differences estimator, as they are essentially the same as in the difference-in-difference analysis.

1.6 Conclusions

The European Union's eastern enlargements in 2004 and 2007 created a natural experiment: Citizens of the new EU member states were given the right to travel and reside in any of the old EU or EFTA member states in the short term with few restrictions; their employment, in contrast, was subject to potentially significant restrictions that each of the old member states had the option of imposing for up to seven years. Some of the old members imposed no restrictions, whereas others imposed select constraints but later lifted them, while other members continued to maintain restrictions for seven years after the respective enlargement.

This chapter examined the relationship between these varying labor market policies, economic shocks, and the responses of migrants from the NMSs. Based upon a difference-in-differences and triple differences estimator, the results show that the estimated effect of opening home labor markets to NMS migrants is significantly positive. These results hold even when we control for the overall effect of "EU entry" on migration, in which we compare migration flows from CEE countries during the EU eastern enlargements in both 2004 and 2007 to migration flows to non-EU destination countries. In fact, the estimated "EU entry" effect is positive and significant in all difference-in-differences as well as triple differences model specifications, and is larger than the "labor market opening" effect. Driven by the migration surge shortly after EU accession and labor market opening and with flows concentrated into a smaller number of destination countries that liberalized their labor market access, the effects of these two variables are stronger for the EU2 countries. Thus granting immigrants the same employment and residential rights that natives have constitutes an important determinant of international migration. Furthermore, the impact on migration flows from income, as well as from linguistic and physical distance, aligns with theoretical predictions.

An important result is that the destination country's business cycle matters and migration responds to it—stronger GDP growth and lower unemployment lead to additional immigration from NMSs. The economic shocks at origin as measured by GDP growth and unemployment rates seem not to have a significant effect on migration from the new EU member states. This result may signal that a stratum of mobile workers, who sought job opportunities abroad for reasons beyond the current shock to the home economy, responding rather to the current economic conditions in competing destinations, emerged in the sending countries. However, it does not imply that the conditions in the domestic labor market did not

matter. Adverse initial economic conditions after the fall of the Iron Curtain, lengthy catching up with western peers, as well as feeble welfare systems and labor market institutions are probably the key reasons behind this emergent group of east-west migrants; they sought employment opportunities abroad, and by doing so helped Europe to adjust to east-west asymmetries, as well as short-run shocks across EU member states.

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Appendix

Table A1 Foreign Population Inflows: Definitions and Sources

Migration flows to:	Definition of “foreigner” based on:	Source
Australia	Country of birth	Permanent and long-term arrivals, Government of Australia, DIMA, Dept. of Immigration and Multicultural Affairs http://www.immi.gov.au/media/statistics/index.htm
Austria	Citizenship	Population Register, <i>Statistik Austria</i> (1997–2002), <i>Wanderungsstatistik</i> 1996–2001, Vienna
Belgium	Citizenship	Population Register, <i>Institut National de Statistique</i>
Bulgaria	Citizenship	Eurostat
Canada	Country of birth	Issues of permanent residence permit, Statistics Canada—Citizenship and Immigration Statistics; <i>flow is defined as a sum of foreign students, foreign workers and permanent residents</i> http://www.cic.gc.ca/english/resources/statistics/facts2009/glossary.asp
Cyprus	Citizenship	Eurostat
Czech Republic	Citizenship	Permanent residence permit and long-term visa, Population Register, Czech Statistical Office
Denmark	Citizenship	Population Register, <i>Danmarks Statistik</i>
Estonia	Citizenship	Eurostat
Finland	Citizenship	Population Register, Finish central statistical office
France	Citizenship	Statistics on long-term migration produced by the <i>Institut national d'études démographiques</i> (INED) on the base on residence permit data (validity at least 1 year) transmitted by the Ministry of Interior
Germany	Citizenship	Population Register, <i>Statistisches Bundesamt</i>
Greece	Citizenship	Laborur force survey, National Statistical Service of Greece; 2006–2007 Eurostat
Hungary	Citizenship	Residence permits, National Hungary statistical office
Iceland	Citizenship	Population Register, Hagstofa Islands national statistical office
Ireland	Country of birth	Laborur Force Survey, Central Statistical Office; very aggregate, only very few individual origins
Italy	Citizenship	Residence Permits, ISTAT
Latvia	Citizenship	Eurostat
Lithuania	Citizenship	Eurostat
Luxembourg	Citizenship	Population Register, Statistical Office Luxembourg
Malta	Citizenship	Eurostat
Netherlands	Country of birth	Population Register, CBS
New Zealand	Last Permanent Residence	Permanent and Long-term ARRIVALS (Annual–Dec); Census, Statistics New Zealand
Norway	1979-1984 Country of origin 1985-2009 Citizenship	Population Register, Statistics Norway
Poland	Country of origin	Administrative systems (PESEL, POBYT), statistical surveys (LFS, EU-SILC, Population censuses), Central Statistical Office of Poland
Portugal	Citizenship	Residence Permit, Ministry of Interior
Romania	Citizenship	Eurostat
Russian Federation	Citizenship	OECD Source International Migration data
Slovakia	Country of origin	Permanent residence permit and long-term visa, Slovak Statistical Office
Slovenia	Citizenship	Data for 1996–1997 taken from UN migration data; 1998–2009 Eurostat
Spain	Country of origin	Residence Permit, Ministry of Interior
Sweden	Citizenship	Population Register, Statistics Sweden
Switzerland	Citizenship	Register of Foreigners, Federal Foreign Office of Switzerland
United Kingdom	Citizenship	Residence permits for at least 12 months; IPS—office for national statistics, and EUROSTAT
United States	Country of birth	US Census Bureau Current Population Survey (CPS); U.S. Department of Homeland Security: <i>Yearbook of Immigration Statistics</i> ; persons obtaining Legal Permanent Resident Status by Region and Country of birth www.dhs.gov/ximgrn/statistics/publications/LPR06.shtm

Source: Adsera and Pytliková (2014)

Table A2 Foreign Population Stocks: Definitions and Sources

Foreign population stock in:	Definition of “foreigner” based on:	Source
Australia	Country of birth	Census of Population and Housing, Australian Bureau of Statistics
Austria	Country of birth	Statistics Austria, Population Census 2001 and Population Register 2001–2009; for census year 1981 and 1991 definition by citizenship
Belgium	Citizenship	Population Register, <i>Institut National de Statistique</i>
Bulgaria	Citizenship	Eurostat
Canada	Country of birth	Census of Canada, Statistics Canada, www.statcan.ca/
Cyprus	Country of birth	Eurostat
Czech Republic	Citizenship	Permanent residence permit and long-term visa, Population Register, Czech Statistical Office and Directorate of Alien and Border Police
Denmark	Country of origin	Population Register, <i>Danmarks Statistik</i>
Estonia	Country of birth	Eurostat
Finland	Country of birth	Population Register, Finish central statistical office
France	Country of birth	Census, Residence permit, <i>Office des migrations internationales</i>
Germany	Citizenship	Population Register, <i>Statistisches Bundesamt</i>
Greece	Citizenship	Labour force survey, National Statistical Service of Greece
Hungary	Citizenship	National Hungary statistical office
Iceland	Country of birth	Population Register, Hagstofa Islands
Ireland	Country of birth	Censuses, Statistical office, Ireland
Israel	Country of birth	OECD Source International Migration data
Italy	Citizenship	Residence Permits, ISTAT
Latvia	Country of birth	Eurostat
Lithuania	Country of birth	Eurostat
Luxembourg	Citizenship	Population Register, Statistical office Luxembourg
Malta	Citizenship	Eurostat
Netherlands	Citizenship	Population register, CBS
New Zealand	Country of birth	Census, Statistics New Zealand
Norway	Country background	Population register, Statistics Norway Country background is the person's own, their mother's or possibly their father's country of birth; in cases where the parents have different countries of birth, the mother's country of birth is chosen
Poland	Country of birth	2002 Census, rest permits, Statistics Poland
Portugal	Citizenship	Residence Permit, Ministry of Interior, www.ine.pt
Romania	Country of birth	Eurostat
Russian Federation	Country of birth	OECD Source International Migration data
Slovakia	Country of origin	Permanent residence permit and long-term visa, Slovak Statistical Office
Slovenia	Country of birth	Eurostat
Spain	1985-1995 Citizenship 1996-2009 Country of birth	Residence Permit, Ministry of Interior
Sweden	Country of birth	Population Register, Statistics Sweden
Switzerland	Citizenship	Register of Foreigners, Federal Foreign Office
United Kingdom	Country of birth	LFS, UK statistical office
United States	Country of birth	US Census Bureau: 1990 and 2000 US census, the rest Current Population Survey (CPS) December, Data Ferret Years 1980–1989, 1991–2004 from extrapolations by Tim Hatton (RESTAT)

Source: Adsera and Pytliková (2014)

Table A3 Migration Flows from 10 CEECs

Columns: Destination countries

Rows: Year

Cell: Numbers of source countries for which we have some observations on the number of immigrants from 10 CEECs for each particular year

	AT	BE	CY	CZ	DK	EE	FI	FR	DE	EL	HU	IS	IE	IT	LV	LT	LU	MT	NL	NO	PL	PT	SK	SI	ES	SE	CH	UK
1995	.	2	.	.	8	.	8	8	8	8	7	8	.	1	.	.	8	.	8	8	1	7	.	.	1	8	8	2
1996	8	2	.	7	8	.	8	8	8	8	7	8	.	8	.	.	8	.	8	8	1	7	7	3	4	8	8	1
1997	8	2	.	7	8	.	8	8	8	8	7	8	.	8	.	.	7	.	8	8	1	7	7	3	1	8	8	2
1998	8	8	8	6	8	7	8	8	8	8	7	8	.	8	7	7	8	8	8	8	1	7	7	7	4	8	8	5
1999	8	8	.	7	8	7	8	8	8	.	7	8	.	8	7	7	8	8	8	8	7	7	7	7	4	8	8	6
2000	8	8	8	6	8	.	8	8	5	.	7	8	.	8	7	7	8	8	8	8	7	8	7	7	4	8	8	6
2001	8	8	8	7	8	.	8	8	5	.	7	8	.	8	7	7	8	8	8	8	7	8	7	7	5	8	8	5
2002	8	8	8	7	8	.	8	8	8	.	7	8	.	8	7	7	8	.	8	8	7	8	7	7	5	8	8	2
2003	8	8	8	7	8	.	8	8	8	.	7	8	.	8	7	7	8	.	8	8	7	7	7	7	5	8	8	6
2004	8	8	8	7	8	7	8	8	8	.	4	8	.	8	7	7	8	.	8	8	7	8	7	7	5	8	8	7
2005	8	8	8	7	8	7	8	7	8	.	7	8	.	8	7	7	8	.	8	8	7	8	7	7	8	8	8	7
2006	8	8	8	7	8	7	8	8	8	8	7	8	.	8	7	7	8	.	8	8	7	8	7	7	8	8	8	2
2007	8	8	8	7	8	7	8	8	8	8	7	8	.	8	7	7	8	8	8	8	7	8	7	7	8	8	8	1
2008	8	8	8	7	8	7	8	8	8	.	7	8	8	8	7	7	8	.	8	8	7	8	7	7	8	8	8	1
2009	8	8	.	7	8	7	8	.	8	.	7	8	8	8	7	7	8	.	8	8	7	8	7	7	8	8	8	1
2010	8	.	.	7	8	8	8	.	8	.	7	8	8	8	.	7	8	.	8	8	7	8	7	7	8	8	8	.
	AT	BE	CY	CZ	DK	EE	FI	FR	DE	EL	HU	IS	IE	IT	LV	LT	LU	MT	NL	NO	PL	PT	SK	SI	ES	SE	CH	UK

Table A4 Foreign Population Stocks from 10 CEECs

Columns: Destination countries

Rows: Year

Cell: Numbers of source countries for which we have some observations on the number of foreign population stocks from 10 CEECs for each particular year

	AT	BE	CY	CZ	DK	EE	FI	FR	DE	EL	HU	IS	IE	IT	LV	LT	LU	MT	NL	NO	PL	PT	SK	SI	ES	SE	CH	UK
1995	.	2	.	.	8	.	8	.	8	7	6	5	.	1	.	.	.	.	8	8	.	7	7	.	2	8	8	2
1996	.	2	.	7	8	.	8	.	8	7	7	5	2	1	.	.	.	.	8	8	.	7	7	.	4	8	8	2
1997	.	2	.	7	8	.	8	.	8	8	7	8	.	8	.	.	.	.	8	8	.	8	7	.	8	8	8	6
1998	.	8	.	7	8	.	8	.	8	.	7	8	.	2	.	.	.	.	8	8	.	8	7	7	8	8	8	8
1999	.	8	.	7	8	.	8	8	8	.	7	8	.	8	.	.	.	.	8	8	.	8	7	7	8	8	8	2
2000	8	8	.	7	8	7	8	.	8	8	7	8	.	8	.	.	8	.	8	8	.	8	7	7	8	8	8	6
2001	8	8	.	7	8	.	8	.	8	.	7	8	.	8	.	7	.	8	8	8	.	8	7	7	8	8	8	6
2002	8	8	8	7	8	.	8	.	8	.	7	8	8	8	.	.	7	.	8	8	7	8	7	7	8	8	8	6
2003	8	8	.	7	8	.	8	.	8	8	7	8	.	8	7	.	7	.	8	8	.	8	7	7	8	8	8	6
2004	8	8	.	7	8	.	8	.	8	7	7	8	.	8	7	7	7	.	8	8	.	7	7	7	8	8	8	6
2005	8	8	.	7	8	.	8	8	8	8	7	8	.	8	7	7	7	.	8	8	.	8	7	7	8	8	8	6
2006	8	8	.	7	8	.	8	8	8	8	7	8	8	8	7	7	7	.	8	8	.	8	7	7	8	8	8	6
2007	8	8	.	7	8	.	8	8	8	.	7	8	.	8	7	7	8	.	8	8	.	8	7	7	8	8	8	7
2008	8	8	.	7	8	.	8	8	8	.	7	8	.	8	7	7	8	8	8	8	.	8	7	7	8	8	8	8
2009	8	8	.	7	8	.	8	.	8	.	7	8	8	8	7	.	8	.	8	8	7	8	7	7	8	8	8	8
2010	8	.	.	7	8	.	8	.	8	.	7	8	8	8	7	.	8	.	8	8	7	8	7	7	.	8	8	8

Table A5 Descriptive Statistics: Definitions and Sources

VARIABLES	Definition	Source	Obs	Mean	Sd	Min	Max
Ln Emigration Rate	Ln(migration inflow from i to j per source population)	Data collection by Pytliková, see Tables A1 and A3	4592	-4.433088	2.399245	-10.56272	2.493448
Ln Stock of Migrants _{t-1}	Ln(foreign population stock from i in j per source population) t-1	Data collection by Pytliková, see Tables A2 and A4	3950	-2.586115	2.673323	-9.356689	3.72002
Ln Destination GDPperCap _{t-1}	Ln GDP per capita, PPP (constant 2005 international \$) in destination j, t-1	WDI, World Bank	7960	9.959007	0.4464946	8.677208	11.2175
Ln Origin GDPperCap _{t-1}	Ln GDP per capita, PPP (const 2005 international \$) in origin i, t-1	WDI, World Bank	7168	9.320158	0.3569551	8.670577	10.21086
Destination GDPperCap _{t-1} ratio	GDP per capita , PPP (const 2005 international \$) divided by average GDP per capita, PPP in destination countries, in t-1	WDI, World Bank	5369	1.057682	0.24128	0.487143	1.777199
Ln Origin GDPperCap _{t-1} sq	Ln GDP per capita, PPP (const 2005 intern \$) in origin i squared, t-1	WDI, World Bank	7168	86.99274	6.685347	75.17891	104.2616
Ln Destination UnemplRate _{t-1}	Ln Unemployment, total (% of total labor force) in destination j, t-1	WDI, World Bank	6470	1.910653	0.5786851	-0.5108256	3.173169
Ln Origin UnemplRate _{t-1}	Ln Unemployment, total (% of total labor force) in origin i, t-1	WDI, World Bank	4844	2.194176	0.5404275	-0.5108256	3.063391
Destination Unempl Ratet-1 ratio	Unemployment, total (% of total labor force) divided by the average Unemployment rates in destination countries, j, t-1	WDI, World Bank	4823	1.347344	0.829243	0.38868	4.919215
Ln Distance in km	Ln Distance between capitals of destination j and origin i in km	Own extension of CEPII	9792	7.018627	0.6552635	4.087008	8.217607
Neighboring Dummy	Dummy variable for neighboring countries	Own extension of CEPII	10080	0.0892857	0.2851698	0	1
Linguistic Proximity	Linguistic Proximity index between i and j countries using their main official language.	Adsera and Pytliková(2014)	7920	0.1138636	0.1597715	0	1