

Intra-European Labor Migration in Crisis Times

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Summary

The question of whether migration can serve as a channel for regional adjustment to asymmetric shocks is crucial in an economic and monetary union. It is of particular interest within the Eurozone where countries do not have flexible exchange rates as an adjustment mechanism. By moving from countries with high unemployment to countries with better employment prospects, intra-European migrants should help countries to adjust to asymmetric shocks and lead to a more efficient allocation of resources within the free migration regime. This policy brief exploits the 2008 economic crisis to investigate how labor market disparities between EU15 countries affected intra-European migration. Our main contributions are threefold. First, over the period 2000-2013, we find that intra-European migration indeed responds to regional differences in employment conditions: a rise in unemployment differences between two EU15 countries fosters migration to the country with the better employment conditions. Second, we find that the 2008 economic crisis led to a strong reallocation of individuals within the EU15 between the southern countries (Greece, Italy, Portugal and Spain) which were the most affected by the crisis and the least affected countries, such as Denmark and the UK. Third, our results indicate that responsiveness to regional employment disparities is far greater among non-EU15 immigrants, compared to European-born people. This finding suggests that the mobility of Europeans within the EU15 could be greater, a hypothesis that is consistent with the higher mobility observed in the United States. Improving cross-country portability of social rights within the EU could thus be a relevant reform to foster intra-EU mobility.



■ Introduction

The principle of free movement of persons is, along with free movement of goods, services and capital, at the heart of the European project. Hence, the European Union (EU) Treaty guarantees free movement for all EU citizens, meaning that every EU national has the right to employment in any EU member state on the same basis as a national of that country (Article 45 of the Treaty on the Functioning of the European Union). However, the principle of free migration within the EU is a controversial issue for European countries, as illustrated by the recent “Brexit” debates in Great Britain.

From an economic viewpoint, greater geographic mobility is associated to positive externalities. Within a free migration regime, labor mobility has the potential to produce positive effects by bringing economic growth to countries with labor deficits, and prosperity to countries with a labor surplus. By voting with their feet and moving to regions with the best economic opportunities, workers should reduce labor shortages in some European countries, and this *in fine*, should lead to a more efficient allocation of resources (Borjas, 2001). Thus, labor mobility should improve labor market efficiency. Other potential (economic or otherwise) benefits from labor mobility might include increased trade, cultural exchanges, and education opportunities.

The positive economic effects associated to labor mobility should be even more important within a monetary union (such as the Euro Area), as suggested by Mundell’s (1961) theory on optimal currency areas. The creation of a monetary union implies the transfer of two national economic instruments - exchange rate and monetary policy - to the Union’s Central Bank. While these instruments can be used to respond to symmetric shocks within the monetary union, they are irrelevant when these shocks are asymmetric among member countries. More specifically, in the Eurozone, the resilience of member states to asymmetric economic shocks is expected to be strengthened by the conjunction of a common monetary policy with strong constraints on individual member state’s fiscal policies, while symmetric shocks can be absorbed at the Union level by exploiting monetary policy. In this specific context, labor mobility can be seen as an important alternative adjustment mechanism to smooth the consequences of asymmetric shocks within the Euro Area.

Therefore, the question of how labor mobility within the EU across member states responds to asymmetric economic shocks is crucial to better understand the internal adjustments within the Eurozone since free migration should balance labor market outcomes and improve labor market efficiency. In the present contribution, we study this issue by investigating how differences in labor market conditions between EU countries affect migration flows within that area.¹ We focus on the 2000-

(1) By design, we do not account for outmigration flows toward non-EU15 countries, or immigration flows from non-EU15 countries. We restrict our attention to intra-mobility flows.

2013 period to exploit the asymmetric shock produced by the 2008 economic crisis between the EU15 countries. We use the European Union Labor Force Surveys (EULFS), which provide consistent and rich data for the EU15 countries.

Our first set of results shows strong differences in employment reactions within the EU15 area after the 2008 economic crisis. We show that the negative effects of the crisis on employment rates are stronger in southern countries (Greece, Italy, Portugal, Spain) and are strongly magnified for non-EU immigrants. In accordance with these facts, we find a strong reallocation of individuals (especially non-EU15 immigrants) within the EU15 between the southern countries (most affected by the crisis), and the northern countries (least affected by the crisis). These preliminary results suggest that intra-EU15 migration responds to regional differences in employment conditions. We implement an econometric analysis to estimate the impact of unemployment differences among the EU15 on their bilateral migration flows.

We find that a 10% rise in the unemployment ratio in the origin country relative to the destination country is associated with a positive increase in bilateral migration rates of 11.8%.² In the United States, geographical labor mobility is considered to be far higher. The evidence suggests that in 2010, around 0.5% of the populations of the EU27 countries moved across national borders, compared to 2.5% of the total United States population moving between states (Eichengreen, 2014). Eichengreen (2014, p. 9) suggests that “Explanations for the contrast with the United States point to differences in language, limited access to local healthcare and benefits, and uncertainties regarding the transfer of pension rights”.

Moreover, our findings indicate that responsiveness to regional employment disparities is greater among non-EU15 immigrants – *i.e.*, non-EU15 immigrants respond more to differences in asymmetric economic shocks across countries compared to natives and immigrants born in an EU15 country. More generally, our results indicate that bilateral migration flows tend to “grease the wheels” of the labor market by helping the matching of unemployed skills with job vacancies. Thus, removing obstacles to intra-EU migration should lead to more efficient allocation of labor within the EU.

Section 1 provides some statistics regarding the presence of immigrants in Europe, and particularly in the EU15. Section 2 shows the asymmetric effects of the 2008 economic crisis on the employment conditions of natives and immigrants. Section 3 describes the effects of the crisis on intra-migration flows within the EU15 area. Finally, in section 4, we implement an econometric analysis to evaluate to what extent changes in migration flows arise (or not) from the observed differential in employment conditions between European countries.

(2) Assume that unemployment rates in two regions A and B are both 5%. Taking the ratio between the unemployment rates in regions A and B leads to an unemployment ratio equal to 1. Thus, a 10% rise in the unemployment rate corresponds to an increase from 1 to 1.1, *e.g.* due to a rise in the unemployment rate in region A from 5 to 5.5% (while employment conditions in region B remain unchanged). As a result, the share of people from the population of country A moving to B increases by 12%.

Table 1.1 – Immigrant population in the European Union in 2014

	Total immigrants		Born in an other EU member state		
	Thousands	% of population	Thousands	% of population	% of total migrants
Belgium	1 773	15,8%	835	7,5%	47,1%
Bulgaria	109	1,5%	40	0,6%	37,1%
Czech Republic	396	3,8%	155	1,5%	39,1%
Denmark	570	10,1%	192	3,4%	33,6%
Germany	9 818	12,2%	3 839	4,8%	39,1%
Estonia	265	20,2%	13	1,0%	4,9%
Ireland	741	16,1%	471	10,2%	63,6%
Greece	1 265	11,6%	339	3,1%	26,8%
Spain	5 958	12,8%	2 028	4,4%	34,0%
France	7 662	11,6%	2 167	3,3%	28,3%
Croatia	569	13,4%	70	1,7%	12,4%
Italy	5 737	9,4%	1 815	3,0%	31,6%
Cyprus	192	22,3%	111	13,0%	58,1%
Latvia	271	13,5%	28	1,4%	10,3%
Lithuania	137	4,7%	18	0,6%	12,8%
Luxembourg	238	43,3%	178	32,3%	74,7%
Hungary	447	4,5%	300	3,0%	67,1%
Malta	40	9,4%	19	4,4%	47,1%
Netherlands	1 953	11,6%	508	3,0%	26,0%
Austria	1 411	16,6%	639	7,5%	45,3%
Poland	620	1,6%	222	0,6%	35,8%
Portugal	859	8,2%	222	2,1%	25,8%
Romania	211	1,1%	82	0,4%	38,6%
Slovenia	235	11,4%	69	3,3%	29,2%
Slovakia	175	3,2%	146	2,7%	83,6%
Finland	298	5,5%	109	2,0%	36,6%
Sweden	1 533	15,9%	510	5,3%	33,3%
United Kingdom	8 036	12,5%	2 806	4,4%	34,9%
UE15	47 852	11,9%	16 658	4,1%	34,8%
UE28	51 520	10,2%	17 932	3,5%	34,8%

Source: Eurostat, Authors' calculations.

1 A brief overview of immigration in Europe during the 2000-2014 period

While the share of immigrants in the EU15 countries was around 11.9% in 2014, they are concentrated mostly in the richest countries and increasingly are coming from new member states or third countries.

1.1 The immigrant population is unevenly distributed in Europe across countries

In 2014, the immigrant population - an immigrant being defined as someone who is a foreign born, regardless of nationality at birth³ - reached 51.5 million people or 10.2% of the population of the 28 EU member states (table 1.1). This population is far from evenly distributed, and disparities among European countries are huge. For example, this share is only 1.1% in

Romania whereas it is over 43.3% in Luxembourg. Most (93%) of these migrants lived in one of the EU15 member states.

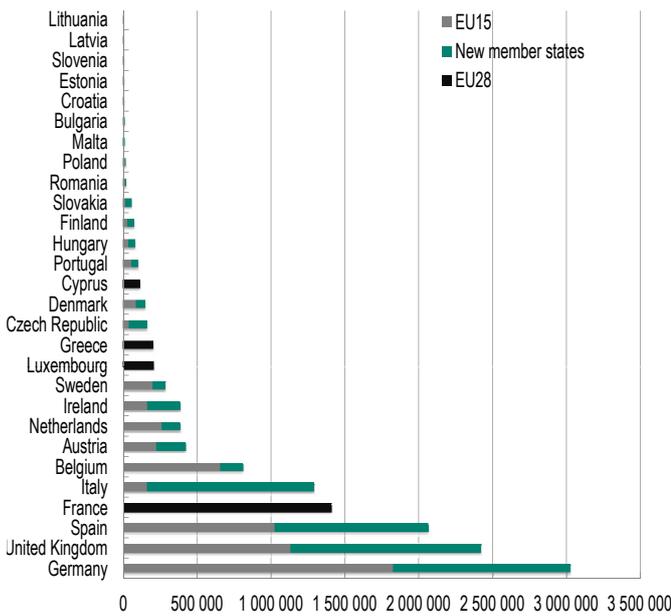
1.2 Intra-European migrants are concentrated in a small number of host countries

In 2014, the share of migrants from other EU countries represented on average 3.5% of the total population of each member state, against 6.7% for migrants from a country outside the EU. These proportions are 4.1% and 7.8% respectively for the EU15 countries only.

Most intra-EU migrants live in Germany, the UK, France, Spain or Italy. These five countries host 72% of total immigrants in the EU28, and 75% of working age adults from another EU state (figure 1.1). The picture is the same if we consider only migrations from a new member state resulting from EU enlargement to Central and Eastern Europe, in 2004, 2007 and 2013: 60% of migrants from the new member states live in one of the four main host countries cited above (there are no data available for France). Thus, the polarization is extremely strong. For example, three-quarters of Romanian citizens living in another European country reside in Italy or Spain. Similarly, two thirds of Polish migrants in Europe live in Germany or the UK.

(3) This definition differs slightly from that employed by the French national statistics institute (INSEE) which defines an immigrant as someone born abroad with foreign nationality at birth. Based on this definition, INSEE numbers 5.8 million immigrants in France, representing 8.9% of the total population (against 11.6% using the international definition of an immigrant).

Figure 1.1 – Total number of immigrants (18-64) and their origin distribution in 2013



Note: No indication of the origin of European citizens is available for France, Luxembourg, Greece, and Cyprus.

Source: Eurostat, Authors' calculations.

1.3 EU15 countries experienced an increase in the number of immigrants from new member states or third countries

To study labor migration, we use the yearly-harmonized EULFS.⁴ This dataset provides a consistent framework to compare EU15 countries on the basis of their economic, social, and demographic characteristics. We restrict our analysis to the 2000-2013 period and consider the working age population (aged 15-64) in all the EU15 countries except Germany for which no information is available concerning the country of birth of individuals.

Given that the EU is a free-mobility zone for EU citizens, where the applicable laws place no restrictions on migration, we consider three distinct groups of immigrants: those coming from the EU15 countries who are involved in free movement throughout the whole period of analysis (2000-2010), those from other EU countries except the EU15 (referred to in what follows as the EU13) resulting from the enlargements in 2003, 2004 and 2013, and the rest of the world.

Between 2000 and 2013, the share of migrants in the EU15 workforce increased significantly from 8.1% to 14.3% (table 1.2). While the share of migrants from the EU15 has remained broadly stable, the share of migrants from one of the new member states has tripled since 2004, arising from enlargement to Central and Eastern Europe. At the same time, the weight of the non-EU immigration in the workforce of

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(4) It is important to note that the information provided by this dataset is not exhaustive but gives a representative picture of the labor force.

the EU15 countries has also increased significantly from 5.7% in 2000 to 9.4% in 2013.

Disaggregation by employment status (employed vs. unemployed) does not at this stage, provide any clear message about the potential differential effect of the 2008 crisis according to migrant origin: there are no explicit differences if we disaggregate our data by employment status.

Table 1.2 – Share of Immigrants in the EU15 Labor Force by Employment Status (in %)

	2000	2004	2007	2009	2013
Share of Immigrants	8.1	10.3	11.8	13.1	14.3
Employed	7.7	9.9	11.4	12.3	13.4
Unemployed	12.2	16.1	17.5	20.4	20.2
Share of EU-15 Immigrants	2.4	2.6	2.2	2.2	2.5
Employed	2.4	2.6	2.3	2.3	2.6
Unemployed	2.3	2.6	2.2	2.1	1.9
Share of EU-13 Immigrants	-	0.8	1.6	1.9	2.5
Employed	-	0.8	1.6	1.8	2.4
Unemployed	-	1.0	1.9	2.6	3.1
Share of non-EU Immigrants	5.7	6.9	8.0	8.9	9.4
Employed	5.3	6.5	7.6	8.1	8.5
Unemployed	9.9	12.5	13.5	15.6	15.3

Note: We restrict our attention to EU15 countries and individuals who are economically active (i.e. employed or unemployed) aged 15 to 64, not enrolled at school, and not living in group quarters (e.g. prison, hospital, religious institution, etc.).

Source: EULFS, authors' calculations.

1.4 The 2008 economic crisis coincides with a change in the composition of migration in terms of origin but had no influence on their educational distribution

While the share of migrants has grown steadily over the period of interest, without any visible effect of the crisis, the composition of the immigrant workforce has been changed (table 1.3). If we

compare the two sub-periods (before and after the 2008 crisis), the weight of migrants from other EU15 countries has decreased in favor of migrants from the new member states. On the other hand, the weight of non-EU migrants has remained stable.

If distinguishing by educational level, it can be seen that low-skilled migrants (primary

or pre-primary education) are generally over-represented among non-EU migrants while the more skilled (first and second stage of tertiary education) are overrepresented among migrants from another EU15 country. The EU13 countries are in an intermediate situation with the medium-skilled overrepresented. Comparing the two sub-periods, there appears to be no relaxation of this breakdown in terms of education level.

Table 1.3 – Distribution of Immigrants by Country of Birth, Gender and Education Level in EU15 (in %)

	Time Period: 2004 - 2007				Time Period: 2008 - 2013			
	High Education	Medium Education	Low Education	All	High Education	Medium Education	Low Education	All
Panel A: Men and Women								
EU-15 Countries	25.9	19.8	18.8	21.1	23.5	15.7	14.1	17.5
EU-13 Countries	9.5	15.6	8.0	11.4	12.2	22.7	11.9	16.0
Non-EU Countries	64.6	64.6	73.2	67.5	64.3	61.6	74.0	66.5
Total	100	100	100	100	100	100	100	100
Panel B: Men								
EU-15 Countries	25.1	19.1	17.7	20.1	23.3	15.3	13.8	16.9
EU-13 Countries	8.3	14.8	7.3	10.5	10.0	21.7	10.8	14.6
Non-EU Countries	66.6	66.1	75.0	69.4	66.7	63.0	75.4	68.5
Total	100	100	100	100	100	100	100	100
Panel C: Women								
EU-15 Countries	26.8	20.7	20.3	22.3	23.7	16.3	14.8	18.2
EU-13 Countries	10.8	16.5	9.0	12.5	14.4	23.8	13.3	17.6
Non-EU Countries	62.4	62.8	70.7	65.2	61.9	59.9	71.9	64.2
Total	100	100	100	100	100	100	100	100

Note: We restrict our attention to EU15 countries and individuals who are economically active (i.e. employed or unemployed), aged 15 to 64, not enrolled at school, and not living in group quarters (e.g. prison, hospital, religious institution, etc.).

Source: EULFS, authors' calculations.

2 The negative effects of the 2008 economic crisis on employment

The 2008 economic crisis led to a deep recession in many European countries, giving rise to a substantial increase in unemployment. However, the burden of unemployment has not affected all workers equally; it is particularly heavy for immigrant workers since they are more concentrated in cyclically sensitive sectors, have lower levels of education, and are employed on less secure contracts than natives (OECD, 2009; Hatton, 2014). The deterioration in labor market outcomes for immigrant workers, in turn, should affect the levels of the migration flows among European countries (Hatton & Williamson, 1998).

...the fall in employment rates due to the economic crisis has disproportionately affected immigrant workers...

2.1 The decline in employment rates has fallen disproportionately on immigrant workers, especially the unskilled

For men, figure 2.1 reports evidence of higher employment rates for highly-educated workers relative to low-educated workers, and for natives relative to immigrants within the same education groups. Before 2008, employment ratios were generally fairly stable at between 90% to 97% for male natives, and 85% to 95% for male immigrants. In 2008, there was a break in employment levels, and since the economic crisis in that year, a continuous decline has affected all categories of workers. However, figure 2.1 indicates an asymmetric impact of the economic crisis on workers' employment according to (i) their education attainment, and (ii) their origin.

First, the negative employment response to the economic crisis is stronger for low education categories. While the employment rate for high-educated native workers decreased from 96.6% in 2008 to 93.0% in 2013 (93.9% to 89.6% for immigrants), this rate went from 90.8% in 2008 to 80.3% in 2013 for low-educated natives (86.4% to 75.5% for immigrants). The higher sensitivity of low-educated employment to economic activity is consistent with Dustmann *et al.* (2010) who investigate the relationship between employment and the economic cycle in Germany and the UK.

Second, figure 2.1 shows important differences in cyclical responses for employment between male immigrants and natives within the same education group. More specifically, the fall in employment rates due to the economic crisis has disproportionately affected immigrant workers, especially in the year following the

crisis when the decline in employment became steeper.

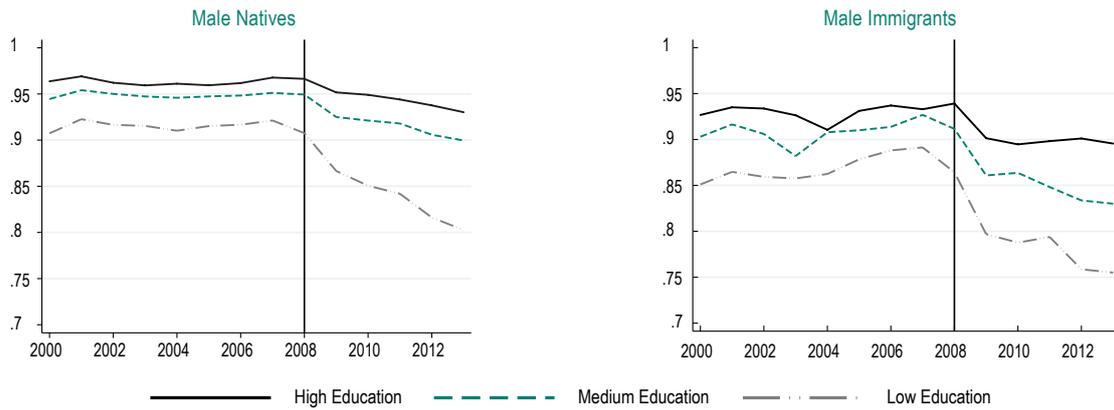
For women the results in figure 2.2 confirm the overall pattern found for men, although with weaker employment reactions after 2008. One reason why the fall in employment ratios is smaller for women is that they were more often employed in the service sector, and especially the public sector where the

effects of the recession were less severe (Papademetriou *et al.*, 2010; Hatton, 2014). Moreover, similar to men, employment rates for immigrant women decreased more than those for native women, particularly in the year after the crisis.

2.2 Immigrant workers are more vulnerable to economic downturns because they are less skilled, work more in cyclical sectors and have more insecure job contracts

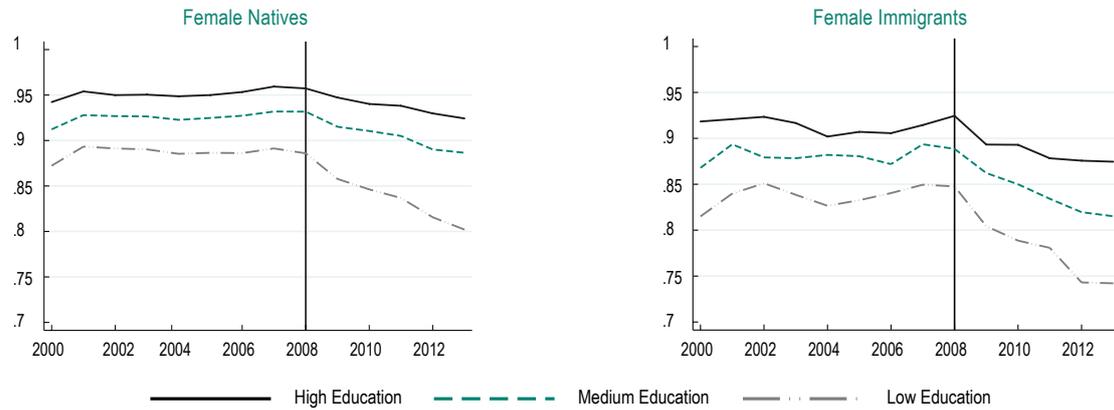
As shown previously, the negative changes in employment rates are more detrimental to low-educated workers relative to high-educated workers. One explanation for the asymmetric impact of economic activity on employment is related to the prevalence of capital-skill complementarity: physical capital tends to complement highly educated workers and substitute low-educated workers (Griliches, 1969, Funk & Vogel, 2004). During recessions, firms may want to reduce all factor inputs. However, since capital is a fixed factor (at least in the short-run), firms can only reduce the quantity of their labor input, particularly when wages cannot fully adjust downward (Dustmann *et al.*, 2010). In that context, firms are encouraged to reduce the number of workers with low levels of education since they are the closest substitutes for capital. Thus, a symmetric productivity

Figure 2.1 – Employment rates for native and immigrant males in the EU15, 2000-2013



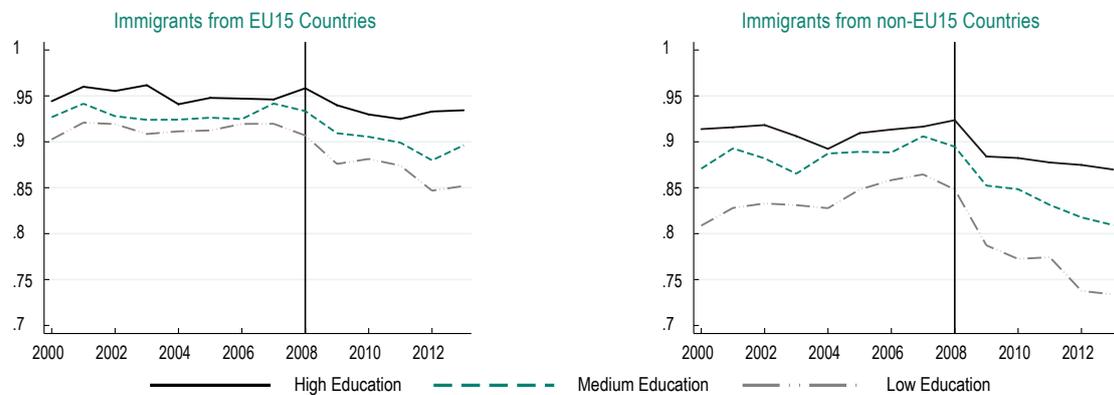
Note: We restrict our attention to EU15 countries and individuals who are economically active (*i.e.* employed or unemployed) aged 15 to 64, not enrolled at school, and not living in group quarters (*e.g.* prison, hospital, religious institution, *etc.*).
Source: EULFS, authors' calculations.

Figure 2.2 – Employment rates for native and immigrant females in the EU-15



Note: We restrict our attention to EU15 countries and individuals who are economically active (*i.e.* employed or unemployed) aged 15 to 64, not enrolled at school, and not living in group quarters (*e.g.* prison, hospital, religious institution, *etc.*).
Source: EULFS, authors' calculations.

Figure 2.3 – Employment rates of EU15 and non-EU15 immigrants



Note: We restrict our attention to EU15 countries and individuals who are economically active (*i.e.* employed or unemployed) aged 15 to 64, not enrolled at school, and not living in group quarters (*e.g.* prison, hospital, religious institution, *etc.*).
Source: EULFS, authors' calculations.

shock (e.g., induced by an economic crisis) should lead to an asymmetric employment response across education groups: this negative shock is likely to be mostly detrimental to low-skilled workers relative to high-skilled workers.

The other important fact which was highlighted previously is that within skill groups, unemployment is more cyclical for immigrants than for natives. Similar results were found for Sweden in the recession that occurred in the early 1990s (Arai & Vilhelmsson, 2004), and for the Netherlands in the recession that followed the 2008 crisis (Cervený & Van Ours, 2013). The fact that immigrant workers are more vulnerable to economic downturns is based on various structural factors. One is related to the sectoral distribution of immigrants and natives. In fact, immigrants tend to be more concentrated in sectors (such as construction), which are the most sensitive to the business cycle (OECD, 2009; Papademetriou *et al.*, 2010; Hatton, 2014).

Another factor is that immigrants are more often hired on insecure contracts (*i.e.*, fixed-term and temporary contracts) than natives with similar education. The main goal of these fixed-term contracts is to provide firms with the additional flexibility, which they might need to adjust their production levels in response to (negative or positive) economic shocks (Bentolila *et al.*, 1994; Goux *et al.*, 2001). Therefore, during economic recessions, firms tend to reduce their employment by ending fixed-term contracts rather than firing workers protected by permanent contracts. Since our data provide information on type of job contract (permanent vs. fixed-term/temporary), table 2.1 presents the distribution of immigrant and native workers by job contract and education attainment. Conditional on education, immigrants are employed on less secure contracts than natives, especially in the medium and low education groups (this holds for men and for women). Thus, immigrants more prone to being hired on insecure contracts compared to equally educated natives, are more exposed in economic downturns.

2.3 Employment rates among non-EU15 immigrants have been more depressed than the employment rates of EU15 immigrants

The immigrant population is heterogeneous with respect to several socio-economic characteristics. Thus, the employment reactions of immigrants to economic downturns may be heterogeneous. This is shown in Dustmann *et al.* (2010) who found that unemployment is more strongly cyclical for immigrants from non-OECD countries. We investigate this issue, and disaggregate the immigrant population into EU15 immigrants and non-EU15 immigrants. This decomposition should be relevant since EU15 immigrants may be less vulnerable compared to non-EU15 immigrants, especially because they are more likely to be protected by permanent contracts (table 2.2).⁵

(5) We do not decompose non-EU15 immigrants into those from the rest of the EU and the rest of the world since we did not find sufficient differences in their employment trends and job contracts.

Table 2.1 – Distribution of natives and immigrants by job contract (2000-2013) (in %)

	High Education		Medium Education		Low Education	
	Natives	Immigrants	Natives	Immigrants	Natives	Immigrants
Fixed-term Contracts	12.4	16.7	11.7	19.0	17.2	23.5
Permanent Contracts	87.6	83.3	88.3	81.0	82.8	76.5
Total	100	100	100	100	100	100

Note: We restrict our attention to EU15 countries and individuals who are economically active (*i.e.* employed or unemployed), aged 15 to 64, not enrolled at school, and not living in group quarters (*e.g.* prison, hospital, religious institution, *etc.*).

Source: EULFS, authors' calculations.

Table 2.2 – Distribution of EU15 and non-EU15 immigrants by job contract (2000-2013) (in %)

	High Education		Medium Education		Low Education	
	EU-15	Non-EU15	EU-15	Non-EU15	EU-15	Non-EU15
Fixed-term Contracts	12.9	17.9	11.8	20.7	13.2	26.0
Permanent Contracts	87.1	82.1	88.2	79.3	86.8	74.0
Total	100	100	100	100	100	100

Note: We restrict our attention to EU15 countries and individuals who are economically active (*i.e.* employed or unemployed), aged 15 to 64, not enrolled at school, and not living in group quarters (*e.g.* prison, hospital, religious institution, *etc.*).

Source: EULFS, authors' calculations.

Table 2.2 shows that the share of EU15 immigrants and the share of native workers employed on permanent contracts are quite similar. Conditional on education, however, non-EU15 immigrants, tend to have more insecure contracts – more than a quarter of low-educated immigrants from non-EU15 countries are employed on fixed-term contracts, making them more exposed to economic downturns.

Figure 2.3 reports the evolution of labor force employment rates for EU15 and non-EU15 immigrants.⁶ It shows that the trends observed previously for immigrant employment (figures 2.1 and 2.2) are driven mainly by migrants coming from non-EU15 countries: the decline in employment rates which followed the 2008 economic crisis is more pronounced for non-EU15 immigrants, and particularly low-educated workers.

2.4 The negative impact of the economic crisis on employment rates is mostly concentrated in Southern EU15 member countries

The employment reactions of workers to economic downturns, and the differences in labor market adjustments between immigrants and natives, may be masking important country distinctions. We investigate this by focusing on employment rate evolutions for natives, EU15 immigrants, and non-EU15

(6) We do not split the immigrant population from EU15 and non-EU15 countries by gender since the employment rate evolutions for immigrant men and women are very similar.

immigrants, for three main groups of countries: northern, central, and southern European countries.⁷

The 2008 economic crisis led to a stronger deterioration in employment rates for Southern countries (figure 2.4) compared to Northern and Central countries (figures 2.5 and 2.6, respectively). For each country group, employment of low-educated workers is more sensitive to economic shocks relative to high-educated workers – in central countries, *e.g.*, the changes in employment rates for high-educated native and immigrant workers tend to be negligible over the period, and especially since 2008. Moreover, the stronger cyclicity in immigrant employment is not country-specific: between 2008 and 2009, figures 2.4, 2.5 and 2.6 show a larger decline in employment rates among EU15 and non-EU15 immigrants than among equally educated native workers.

Conditional upon education, the employment rate for non-EU15 immigrants tends to be much more volatile than employment of EU15 immigrants, especially in Central and Southern European countries. In fact, 2008 is marked by a stronger decline in the employment of non-EU15 immigrants compared to EU15 immigrants. In Northern countries, however, employment rates of immigrants regardless of their origin, decline after 2008.

The main facts that emerge from Figure 2.4 to Figure 2.6 are that (i) employment rates decreased more in Southern countries after the economic crisis than in the remaining EU15 countries, and (ii) employment losses were concentrated mainly among low-skilled immigrants from non-EU15 countries. These differences in employment conditions between country groups should affect the incentives for immigrants and natives to move from Southern European countries to Central and Northern countries to enjoy better employment prospects. This dimension is studied in the next section.

3 A reallocation of individuals from southern to northern countries, especially among the lowest and highest education categories

Since the seminal paper by Blanchard and Katz (1992), it is acknowledged that interstate migration in the United States is the main mechanism for adjusting to regional shocks, ahead of regional relative wage evolutions and firm reallocation. Blanchard and Katz's results are broadly consistent with labor mobility being relatively higher in the United States than in the EU (see, *e.g.*, Decressin & Fatás (1995), Obstfeld & Peri (1998), Bentivogli & Pagano (1999)). However, some more recent studies provide evidence of show a long term decline in United States internal migration over the past 30 years, and an upward trend for European countries (Molloy *et al.* (2011),

Beine *et al.* (2013)).⁸ Jauer *et al.* (2014) complement these results by showing that changes in labor market conditions due to the 2008 economic crisis lead to a stronger migration response within the EU. In this section, we study the relationship between migrant flows and economic shocks in the EU, building on EULFS data.

The EULFS provide information on respondents' country of residence and socioeconomic status for the survey year (t) and also the previous year ($t-1$). Therefore, we can identify intra EU15 movers between t and $t-1$, and also gather information on their:

- demographic, geographic, and socio-economic characteristics (*who they are?*);
- origin and destination countries (*where they come from and where they are bound?*);
- education levels (*does education matter?*).

These data provide the key elements to answer the question arising from the results of the previous part as to whether the 2008 economic crisis has modified patterns of geographic labor mobility and the characteristics of intra-EU movers. We have data only on movers who were in an EU15 country at time t and in another EU15 country at time $t-1$, which means that we have no information on movers who leave an EU15 country for a non-EU15 country, or people entering an EU15 country from a non-EU15 country. The available data allow us to study only intra EU mobility; we cannot get a picture of the labor market adjustments due to migration involving third countries.

3.1 The crisis increased the mobility of skilled workers within the EU and did not result in higher proportion of return migration

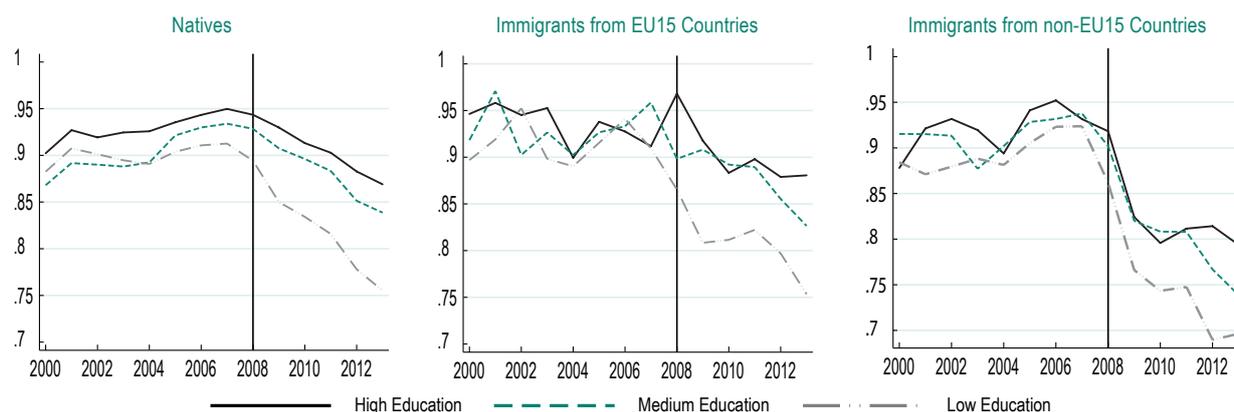
The economic crisis apparently has had no significant influence on the gender distribution of movers. Before and after the crisis, men constitute roughly 55% of movers (figure 3.1). This result is consistent with the fact that the economic crisis affected the employment conditions of male and female workers in the same magnitude (see previous section).

Before 2008, around 50% of movers were represented by returners to their EU15 origin country (according to the nationality criterion, Natives in figure 3.1); 40% had the nationality of another EU15 country, and 10% were nationals from a third country. EU15 citizens accounted for about 90% of intra EU15 labor mobility. The economic crisis had a significant effect on that distribution. After 2008, return migration accounted for only 40% of total migration; the shares of the other two categories increased by 5% points. Contrary to popular belief, the crisis has not resulted in a higher proportion of return migration (inside EU15). Rather, the reverse has occurred.

(7) Northern European countries include Denmark, Finland, Ireland, Sweden, and the UK. Central European countries include Austria, Belgium, France, Luxembourg, and the Netherlands. Southern countries include Spain, Greece, Portugal, and Italy. As explained above, for the case of Germany we cannot distinguish natives from immigrants, so we exclude this country from our analysis.

(8) These results based on pre-crisis data, do not call into question the stronger migration response to labor market shocks in the US compared to Europe.

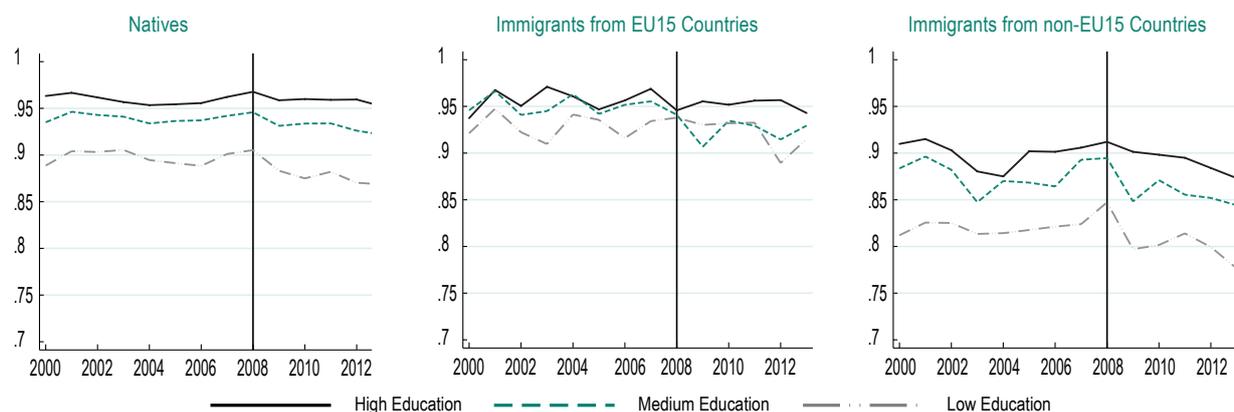
Figure 2.4 – Employment rates of natives and immigrants by group of countries - Southern countries



Note: We restrict our attention to EU15 countries and individuals who are economically active (*i.e.* employed or unemployed) aged 15 to 64, not enrolled at school, and not living in group quarters (*e.g.* prison, hospital, religious institution, etc.).

Source: EULFS, authors' calculations.

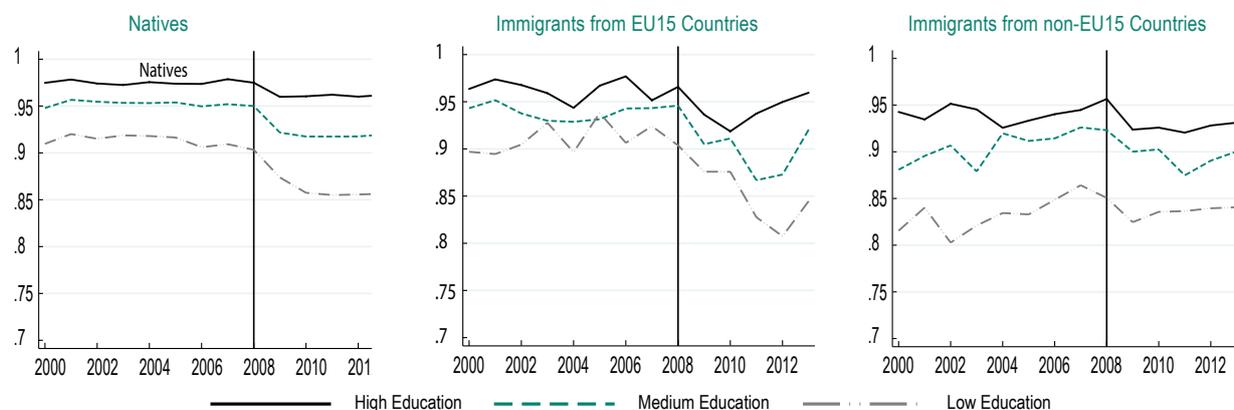
Figure 2.5 – Employment rates of natives and immigrants by group of countries - Central countries



Note: We restrict our attention to EU15 countries and individuals who are economically active (*i.e.* employed or unemployed) aged 15 to 64, not enrolled at school, and not living in group quarters (*e.g.* prison, hospital, religious institution, etc.).

Source: EULFS, authors' calculations.

Figure 2.6 – Employment rates of natives and immigrants by group of countries - Northern Countries



Note: We restrict our attention to EU15 countries and individuals who are economically active (*i.e.* employed or unemployed) aged 15 to 64, not enrolled at school, and not living in group quarters (*e.g.* prison, hospital, religious institution, etc.).

Source: EULFS, authors' calculations.

Highly-educated people constitute a significant proportion of intra EU15 movers. Their share increased after the 2008 crisis (figure 3.2), from around 47% before the crisis to 55% afterwards. Their greater mobility may in part, explain why in all European labor markets, they were the least affected by the crisis in terms of employment rates (figure 2.3 in the previous section).

The crisis does not seem to have affected the distribution of individuals with respect to employment status before migration. The decrease in the proportion of employed in total movers (from 66% to 61%, figure 3.2) follows the trend of their share in the total workforce.

3.2 The crisis has diverted mobility flows towards Northern Europe

If we focus on the patterns of geographical intra EU15 mobility, then the impacts of the crisis appear even more pronounced (figure 3.3). Before the crisis, more than 70% of movers migrated from a Northern (35%) or a Central (36%) European country. After the crisis, this share dropped to around 60% (28% and 32% respectively), with numbers leaving Northern countries much reduced. Where are they going? Again, the crisis has led to significant changes in relation to destination countries. Before the crisis, 20% of migrants headed towards the group of Northern countries; since 2008 this share has more than doubled while the proportion of people moving towards a Central European country has been roughly constant over the whole period. The increased attractiveness of Northern countries contrasts with a reduced interest in migrating to a Southern country (39% vs. 17% after the crisis). This change shows that the more favorable labor market conditions in Northern countries post crisis (see figure 2.4 in the previous section) have resulted in a major reorientation of intra EU15 labor mobility.

If we conduct a more detailed geographical analysis and examine bilateral flows between the three groups of countries, we find that movers have turned to the North or Center of Europe in large numbers, regardless of their origin country (figure 3.4). More than 55% of those who left a Northern country pre- 2008, moved to another country in the Northern or Central groups; the crisis increased this share to 76%. This trend becomes even more pronounced if we consider origin countries in the South Europe group. After 2008, 80% of migrants originating from a Central European country migrated to the group of Center and Northern countries (compared with 63% before the crisis), and this share reaches 90% when we consider people coming from the South (vs. 67% before 2008). The preference for Northern countries is especially pronounced for the Southern group; one in five movers from the south migrated to a Northern country before

the crisis compared to half choosing this location after 2008. Before the crisis, intra-South mobility accounted for one in three movers but this fell to one in ten after 2008.

These results clearly illustrate the major changes in patterns of geographical intra EU15 labor mobility resulting from the 2008 crisis. Intra-European flows have been diverted towards the North of Europe, attracted by better employment conditions.

3.3 This geographical reorientation has affected all education levels

All education levels have experienced change in the pattern of geographical intra EU15 labor mobility, with a re-orientation away from South and towards the group of Northern and Central countries (figure 3.5). The biggest increases in percentage points involve high skilled migrants who left a Northern country for another Northern or Central country (around +30 points); and low-skilled migrants moving from a Southern to a Northern country (+32 points). However, these shares were very low before the crisis and with less than half followed this trend after 2008.

Our descriptive results (sections 2 and 3) suggest that labor market conditions affect the decision to migrate between EU15 countries. This confirms the intuition that poor employment opportunities tend to foster migration towards countries with better economic conditions. In the next section, we implement an econometric analysis to examine how intra-EU15 migration responds to regional differences in employment conditions?

Intra-European flows have been diverted towards the North of Europe, attracted by better employment conditions.

4 The impact of unemployment differences among EU15 countries on intra-EU migration

We employ econometric analysis to investigate how employment disparities among EU15 countries affect bilateral migration (*i.e.*, intra-EU15 migration). We use the same EULFS dataset and rely mostly on work that uses gravity models for bilateral migration.

In line with our previous disaggregation by country groups (section 2), we adopt three European regions (within the EU15 area): Southern, Northern, and Central. This allows us to estimate the impact of unemployment differences between these regions on their bilateral migration flows. The first equation to be estimated is as follows:

$$\log (movers_{ijt}/Population_{it}) = \alpha + \beta \cdot \log + \delta_t + \varepsilon_{ijt} \quad (1)$$

This equation is derived from structural gravity models for bilateral migration (see *e.g.*, Bertoli & Moraga, 2013; Beine *et al.*, 2015). The dependent variable is the log bilateral migration rate. The bilateral migration rate is simply the number

Figure 3.1 – Demographic and geographic characteristics of intra-EU movers



Note: We restrict our attention to EU15 countries and individuals who are economically active (*i.e.* employed or unemployed) aged 15 to 64, not enrolled at school, and not living in group quarters (*e.g.* prison, hospital, religious institution, etc.).

Source: EULFS, authors' calculations.

Figure 3.2 – Economic and education characteristics of movers



Note: We restrict our attention to EU15 countries and individuals who are economically active (*i.e.* employed or unemployed) aged 15 to 64, not enrolled at school, and not living in group quarters (*e.g.* prison, hospital, religious institution, etc.).

Source: EULFS, authors' calculations.

Figure 3.3 – Origin and destination countries of movers (1)



Note: We restrict our attention to EU15 countries and individuals who are economically active (*i.e.* employed or unemployed) aged 15 to 64, not enrolled at school, and not living in group quarters (*e.g.* prison, hospital, religious institution, etc.).

Source: EULFS, authors' calculations.

Figure 3.4 – Origin and destination countries of movers (2)

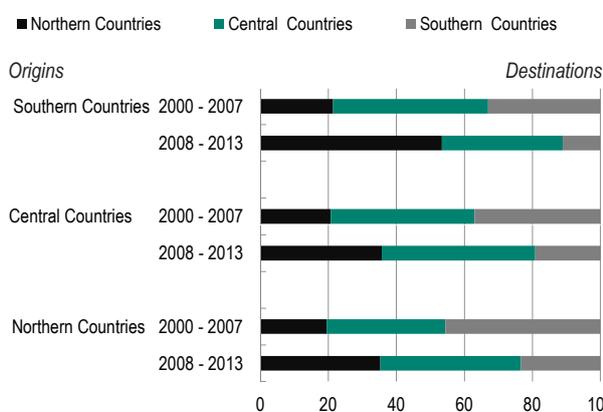
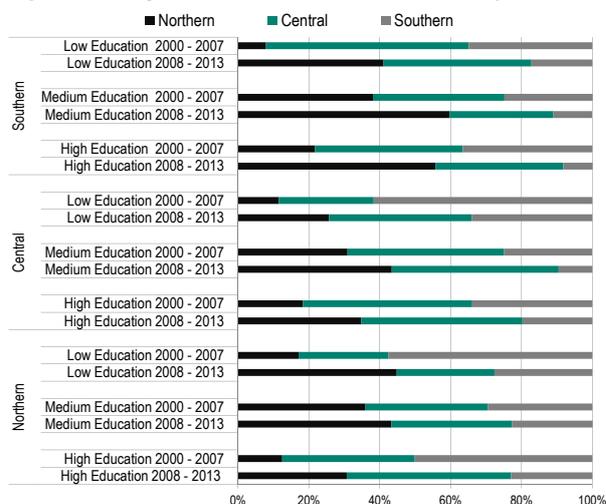


Figure 3.5 – Origin and destination countries of movers by education



Note: We restrict our attention to EU15 countries and individuals who are economically active (*i.e.* employed or unemployed) aged 15 to 64, not enrolled at school, and not living in group quarters (*e.g.* prison, hospital, religious institution, etc.).

Source: EULFS, authors' calculations.

of movers (or migrants) from region i to region j divided by the total population staying in region i . Our variable of interest is the log of the relative unemployment rate of region i compared to region j . This variable is derived from Bertoli *et al.* (2013) and captures employment disparities between regions. The dummy variables (or dyadic fixed effects), denoted δ_{ij} , control for all time-invariant factors that are country-pair specific such as distance or common language. We also include time-fixed effects, denoted δ_t , to capture that part of the migration costs which are time-specific. The error term is ε_{ijt} .

Table 4.1 reports the OLS estimates of β for alternative samples from the model in equation (1)⁹. Thus, each coefficient in the table comes from a different regression.¹⁰ Table 4.1 column 1 includes the full sample (natives and immigrants). We find that unemployment differences between regions have a positive impact on bilateral migration within the EU15 area: a decline in the relative employment conditions of region i encourages individuals from i to move to region j . The estimated coefficient in column 1 implies that a 10% rise in the unemployment ratio between origin and destination is associated with a positive increase in bilateral migration rates of 11.8%.

In order to measure the explanatory power of our main variable of interest, we compute the within R-squared from the baseline regression (column 1) which includes only country-pair fixed effects. The within R-squared indicates that 8% of the variation in bilateral migration rates can be attributed to differences in relative unemployment between regions. Thus, the role of unemployment differences between regions on intra-EU mobility is relatively modest.

Beine *et al.* (2013) find similar results showing that an increase in unemployment rates positively affects the decision to migrate between OECD countries, while Bertoli *et al.* (2013) find that the prevailing economic conditions in the origin country are an important determinant of migration.

The other columns in table 4.1 present the different types of bilateral migration: return migration for natives (column 2) and traditional migration for all immigrants (column 3), immigrants born in the EU15 area (column 4), and immigrants born in the non-EU15 area (column 5). We decompose the immigrant

...a 10% rise in the unemployment ratio between origin and destination is associated with a positive increase in bilateral migration rates of 11.8%.

(9) With 3 regions and 14 years of data, each regression should have 84 observations. However, some regressions have fewer than 84 due to lack of bilateral migrant flows between regions. When estimating equation (1) using OLS, we omit these observations. However, deleting zero flows means that relevant information on pairs of countries where there are no migratory movements is overlooked. In order to account for these zero flows, we follow the literature and estimate equation (1) with poisson pseudo-maximum likelihood, PPML (Silva & Teneyro, 2006; Beine *et al.* 2015). These alternative estimates are very close to those presented in table 3, and moreover are (except for column 4) highly significant.

(10) The table also reports robust standard errors that correct for heteroskedasticity. It is likely that there is serial correlation at the country-pair level which would require clustering the standard errors; however, it is well known (Cameron & Miller, 2015) that clustered standard errors are downward biased if there are only a few clusters in the data. Thus, we do not cluster our standard errors at the country-pair level. We account for this issue in the next estimations.

Table 4.1 – Impact of the Unemployment Ratio between EU15 Countries on their Internal Migration

	All	Natives	Immigrants	EU15 Immigrants	Non-EU15 Immigrants
$\hat{\beta}$	1.18*** (2.63)	1.11*** -293	0.95** (2.07)	0.41 (0.59)	1.41*** (2.33)
Fixed Effects:					
δ_{ij}	Yes	Yes	Yes	Yes	Yes
δ_t	Yes	Yes	Yes	Yes	Yes
Observations	84	83	82	78	78

Note: ***, ** and * denote statistical significance at the 1, 5, and 10% levels, respectively. Student statistics are provided in parentheses and standard errors are heteroscedasticity-robust.

Source: EULFS.

population into EU15 and non-EU15 immigrants since the propensity to migrate might differ for these two groups. In particular, non-EU15 immigrants already bear the fixed cost of migration, and consequently, may be more mobile between EU15 countries. Our results indicate that natives and immigrants respond to regional differences in economic opportunities by moving to regions where unemployment is relatively lower. More specifically, the results in column 2

show that return migration depends partly on economic issues: within the EU15 area, individuals tend to return to their origin countries if employment conditions decline in the country to which they have migrated.

The results of our decomposition by immigrant nationality are also

interesting. We find that EU15 immigrants are not sensitive to employment differences between regions which should be compared to non-EU15 immigrants who are even more responsive to regional economic disparities than natives. More specifically, a 10% rise in the unemployment ratio of non-EU15 immigrants between region i and j increases migration of non-EU15 immigrants from region i to j by 14.1%.

In sum, the results in table 4.1 show that in the EU15 area, natives and non-EU15 immigrants tend to respond to regional differences in economic opportunities by moving to a more favorable area.

We extend our analysis to address a potential econometric issue related to the non-inclusion of a multilateral resistance term. Bertoli and Moraga (2013) define multilateral resistance to migration as the confounding influence exerted by the attractiveness of alternative destinations on the determinants of bilateral migration rates. This implies that any shock to another country-pair (such as a decrease in the cost of bilateral migration) has implications for flows in the country-pair analyzed. For instance, if Germany was to close its border (or implement an alternative migration policy), bilateral migration between France and Italy might increase although

Table 4.2 – Impact of the Unemployment Ratio between EU15 Countries on their Internal Migration at the Education Level

	All	Natives	Immigrants	EU15 Immigrants	Non-EU15 Immigrants
β'	0.52*	1.25**	0.91**	-0.14	2.03**
	(2.02)	(2.36)	(2.50)	(-0.39)	(-0.39)
Fixed Effects:					
δ_{ijk}	Yes	Yes	Yes	Yes	Yes
δ_{ijt}	Yes	Yes	Yes	Yes	Yes
δ_{kt}	Yes	Yes	Yes	Yes	Yes
Observations	166	162	148	138	114

Note: ***, ** and * denote statistical significance at the 1, 5, and 10% levels, respectively. Student statistics are provided in parentheses and standard errors are heteroscedasticity-robust.

Source: EULFS.

its relative characteristics would remain unchanged. Thus, not considering the influence of potential alternative destinations could bias the estimated impact of regional employment disparities on bilateral migration. One way to address this bias is to control for all factors which are country specific and which might vary over time (which can be by including destination-time and origin-time fixed effects). This solution could not be applied to estimation of equation (1) since the degrees of freedom are too small (*i.e.*, the inclusion of destination-time and origin-time fixed effects would absorb all the variation necessary to estimate β). Therefore, we decompose each country-pair into high- and low-educated individuals,¹¹ and use the following model to investigate how regional employment differences (within the EU15 area) for a given education group k affects the bilateral migration of individuals from that group:

$$\log(movers)_{ijkt} = \alpha' + \beta' \cdot \log\left(\frac{UR_{ikt}}{UR_{jkt}}\right) + \delta_{ijk} + \delta_{ijt} + \delta_{kt} + \varepsilon_{ijkt} \quad (2)$$

Equation (2) includes an important set of fixed effect: the term δ_{ijk} controls for time-invariant characteristics at the education-country-pair level; the term δ_{ijt} controls for country-pair factors (such as bilateral migration policy) which might change over time, and any changes which might occur in the destination country; the term δ_{kt} controls for any productivity or demand shocks at the education level which might affect both the propensity to migrate and employment conditions within the

(11) We use 2 broad education groups in order to have enough observations within education-country-pair cells. The high education group is composed of individuals with tertiary and post-secondary education; the low education group includes all other individuals.

EU15 area.¹² The explanatory variable is the ratio between the unemployment rate of individuals with education k in region i and region j . In order to compute the dependent variable, we do not divide movers by the total population in the origin country because we use country fixed effects which control for country-specific time-varying factors (as in Beine, 2015). Thus, our identification strategy allows us to identify the impact of regional unemployment differences on intra-EU15 mobility from changes within education groups between country-pair over time. Finally, we cluster the standard errors at the education-country-pair level to adjust for serial correlation.

The OLS estimates of β' are reported in table 4.2 for natives, immigrants, EU15 immigrants, and non-EU15 immigrants as in table 4.1.¹³ The quantitative and qualitative results are similar to those reported table 4.1. First, we find that regional unemployment differences for a given skill group affect the bilateral migration of individuals from that group. Second, an important determinant of return migration is employment differences between regions. Third, the sensitivity of intra-European migration to relative employment conditions between regions is stronger for non-EU15 immigrants; EU15 immigrants are insensitive to such differences.

The greater responsiveness of non-EU15 immigrants to regional employment disparities is consistent with Borjas (2001) which shows for the United States that foreign-born workers are more mobile geographically than native-born workers. Foreign-born individuals tend to “grease the wheels” of the labor market; by searching for (and moving to) regions with the best employment opportunities, they accelerate economic convergence and improve economic efficiency.

Conclusion

In theory, the mobility of people between member countries of a monetary union should help to balance employment conditions and improve the efficiency of each national labor market. The response of individuals to a negative asymmetric shock of moving from a more- to a less-affected country should help balance differences in labor market conditions, and in turn, should improve labor market efficiency.

The present contribution investigates how regional employment differences within the EU15 area have affected migration flows. We used the 2008 economic crisis which mostly increased unemployment in the Southern regions of Europe, and found

(12) The inclusion of these fixed effects should increase the precision of our estimates, even though they are uncorrelated with the unemployment ratio (Angrist & Pischke, 2008; chapter 2.3).

(13) Our results are fully robust to PPML estimation which allows us to account for potential zero migration flows between regions.

evidence of greater mobility after 2008 from Southern to Northern European regions. The deterioration in employment conditions observed in Southern countries encouraged people to move to regions where economic opportunities were better.

The descriptive results are supported by the results of an econometric analysis based on gravity models for migration. We estimated the impact of unemployment differences between EU15 countries on their bilateral migration flows. Our estimates indicate that a rise in unemployment differences between two European regions fosters migration to the region with the better employment conditions. In other words, workers respond to regional differences in economic opportunities by “voting” with their feet. From an economic viewpoint, these labor flows should balance labor market outcomes and increase the capacity of the

European labor market to absorb asymmetric shocks among Member States.

Finally, we found that non-EU15 immigrants are very responsive to differences in economic conditions between European regions, compared to natives or EU15 immigrants. This finding is consistent with the immigration literature, and suggests that those workers not born in the EU15 tend “grease the wheels” of the labor market because they are more mobile geographically. In contrast, this finding suggests also that the mobility of Europeans within the EU could be greater, a hypothesis that is consistent with the higher mobility observed in the United States. Improving cross-country portability of social rights within the EU could constitute the path to reform to remove pointless obstacles to intra-EU mobility.

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