CHAPTER II.2

Mobility and migration in the EU: Opportunities and challenges ([1])

1. Introduction – Perceptions in the light of facts

This chapter focuses on EU mobility *and* third-country migration. The chapter looks at both opportunities and challenges of mobility and third-country migration in the EU from the specific angle of (optimal) factor allocation and the EU's growth potential. In other words, the chapter attempts to answer the questions of 1) whether people who are mobile within the EU and third-country migrants contribute positively to employment and economic growth and 2) whether the EU makes full use of their potential. The latter point focuses on their qualifications, how they are used, and whether these people are allocated optimally or could be better allocated across sectors and activities. The chapter attempts to provide additional and robust evidence on the economic contribution of both groups.

From this particular angle, the chapter shows that the labour market performance of people who are mobile in the EU (exercising their basic right to free movement) is very different from that of migrants from outside the EU, as a result of a number of factors (including education levels) and their very different legal situation and rights. In order to better work out these differences, the chapter includes both groups in one common analysis rather than engaging in two separate, unconnected analyses. Whereas third-country migrants often face legal obstacles in EU countries, free movement is a right linked to EU citizenship. While the chapter focuses on the economic impact of both groups of people moving across borders, it acknowledges that the value of intra-EU mobility and third-country migration goes well beyond their contribution to the economy.

As regards terminology, the term **EU mobility**, or related terms such as '**mobile EU people**' and '**intra EU-mobility**', refers to people born ([2]) in the EU who live in another Member State than the one they were born in. Currently there are 14 million EU residents aged between 15 and 64 years not living in their Member State of birth. The chapter further distinguishes between mobile people born a) in the EU-15 (i.e. in the Member States that comprised the EU before the 2004 enlargement), b) in the EU-10 (i.e. in those Member States which joined the EU in 2004) and c) in the EU-3 (i.e. in those Member States that joined after 2007: Romania, Bulgaria, Croatia). Where necessary, mobile people in EU-10 and EU-3 will be combined in one category: EU-13.

The term '**third-country migrants**' refers to people born outside the EU moving into EU Member States. It covers about 28 million people aged between 15 and 64 years who currently reside in an EU Member State, but were born outside the EU. As a result, the chapter refers to '**natives**' as those born and living in the Member State under review, '**mobile EU people**' as those born in another EU Member State but living in the Member State under review and '**third-country migrants**' as people born outside the EU but living in the Member State under review. The terms '**international migration**' or '**international migrants**' are more general terms covering anyone not living in her/his country of birth. These terms are often used by international organisations (e.g. OECD) who do not *a priori* distinguish between intra-EU mobility and third-country migration.

People, and in particular third-country migrants, cross borders for various reasons other than work, and these reasons may include family unification, studying and international protection. Indeed, economic conditions within and outside the EU coupled with political unrest beyond its borders currently spur unprecedented migration flows as people seek shelter or

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([2]) Unless differently annotated, the concept of 'country of birth' rather than 'nationality' is applied to distinguish the different groups of foreign populations. An exception is the analysis of Chapter 4.1 which builds on aggregate (instead of micro) data and uses the 'nationality' concept. The reason is that the EU Labour Force Survey does not include the variable 'country of birth' for Germany.

strive for better living conditions in Europe. In the first 8 months of 2015, almost 700 000 people applied for asylum in the EU – more than in the whole of 2014, and more than twice the number in the whole of 2010 ([3]). The sheer numbers and the individual tragedies often associated to the circumstances which made people leave their home countries have focused new societal and media attention on the issue of migration. The debate, however, goes well beyond refugee flows. It includes the impact of international migration in general and is often dominated by sentiments rather than facts.

Terms such as poverty migration, benefit or welfare tourism pop up regularly in connection with both intra-EU labour mobility and migration from third-countries. In addition, recently strong political sensitivities in a number of EU Member States render a fact-based discussion about the impact of intra-EU mobility and third-country migration more difficult.

These developments have their impact on public opinion about migration issues. Following a recent survey amongst EU citizens ([4]), 57 % responded that immigration from outside the EU 'evoked a negative feeling'. And even for EU workers exercising their basic rights, crossing EU borders as mobile EU people, 41 % of the respondents express this negative attitude. However, in-depth economic analysis is often absent from media coverage on these issues. To facilitate a more constructive debate, this chapter seeks to provide a fact-based analysis on the labour market performance of internationally mobile people living in the EU as well as their impact on the economy and public finance, with a particular focus on the host countries' perspective.

Looking at other regions with a long migration history, many analysts and studies suggest that economies can and do benefit from migration. For example, Canada is considered one of the largest recipients of immigrants since the 1950s. The country has over the years actively pursued pro-active, yet selective migration policies, trying to attract skilled immigrants. There is little 'doubt [that] immigration plays an important role in Canada's economy' ([5]).

The EU economy faces different challenges, above all: demographic ageing, a shrinking of working-age population, and comparably feeble productivity growth in the middle of an intensifying global competition on product and factor markets. It is hence suggested by some that migration could play a vital role in addressing some of the demographic and current economic challenges. Claims are that due to the younger age profile of migrants, their inflow into Member States could help to redress the ageing population trends as projections hint that demographic dependency ([6]) will double by the 2050s. At the same time, a more skills-oriented, yet more open, stance towards migration may address part of those challenges. Ideally, both mobility and migration would help reduce qualification mismatches and overcome bottlenecks on the labour market, thus improving labour allocation and reducing unemployment. However, despite recent progress that third-country migrants have made in terms of education, non-EU OECD countries seem to attract relatively more high-skilled migrants than the EU ([7]). At the same time, compared to mobility within the United States, intra-EU mobility is still relatively limited.

Section 2 outlines the extent of the demographic challenge before depicting recent observable trends of migration and EU mobility in Europe. As aggregate figures on employment or unemployment often fail to fully reflect the dynamics behind changing stocks, Section 3 engages in the analysis of micro-data. From the perspective of the individual, it sheds some light on what are the drivers of mobility within the EU as well as the labour market performance and dynamics of EU mobile workers and third-country migrants. Section 4 focuses on the wider economic impact of mobility and migration in the EU's most important host countries. It starts with an analysis of whether the current allocation of migrants and mobile workers across industries corresponds to the industries' growth performance. The section then outlines the importance of qualification and its efficient use and presents a model simulation on the economic impact of higher immigration at alternative levels of education. Finally, it highlights evidence on the effect on wages and public finances. Section 5 concludes.

2. Taking stock: Demographic reality and recent statistics

The section starts from the demographic reality which for the EU is characterised by a declining working-age population and an ageing of both total and working-age population. Those trends will increase demographic dependency on younger cohorts as well as a scarcity of human capital. The analysis will reflect on these developments from the perspective of growth and conclude what they could imply for tomorrow's policy stance towards migration and intra-EU mobility. It then offers a brief review of selected relevant statistics on foreign people's labour market performance in EU host countries.

2.1. The context of demography from the angle of growth

Pure demographic reality calls for comprehensive policy approaches

Eurostat expects the EU's working-age population to shrink by an average of 0.4 % every year over the coming four decades ([8]), though with huge variation across Member States. There is analytical evidence that additional migration can contribute to slowing down the trend, but it cannot stop it. To demonstrate this, authors usually draw on the 'economic dependency rate' (EDR), often defined as the ratio of those out of employment (the young below age 20 years plus the non-employed aged 20 to 64 plus older people above 64) per person in employment (aged 20 to 64) ([9]). Hence, one could define:

$$EDR = \frac{Number\ of\ dependent\ people}{Number\ of\ employed\ people} = \frac{YOUNG\left[<20\,years\right] + Not\ employed\left[20\text{–}64\,years\right] + OLDER\left[>64\,years\right]}{Employed\left[20\text{–}64\,years\right]}$$

([3]) Eurostat Asylum statistics, see table [migr_asyappctzm].

([4]) Eurobarometer 82, autumn 2014, p. 33.

([5]) Mohsen and Pendakur (2013), pp. 778-9.

([6]) Here: The share of people aged 65 and older per people aged 15 to 65.

([7]) Chaloff (2015), Gubert and Senne (2015).

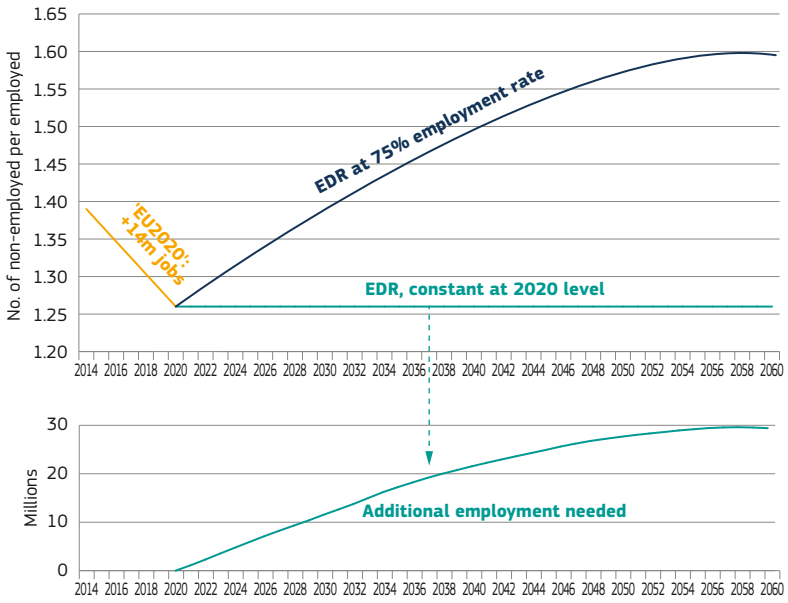
([8]) Eurostat Europop 2013 population projection, main scenario, age group 20-64 years (series proj_13npms).

([9]) For the concept see Titu et al. (2012). The following illustration is an update of Peschner (2012).

Consider that the EU-28 was to achieve its 'Europe 2020' employment target: by 2020, 75 % of all people aged between 20 and 64 years would be in employment ([10]). It would mean that, adding to today's employment rate of below 70 %, EU-wide 14 million people of that age group would enter into employment by 2020. EDR could then move from today's 1.41 down to 1.26 by 2020 as indicated by the orange line in Chart 1. However, if after the year 2020 the employment rate stays constant at 75 % (without further improvements), EDR will climb quickly. It will approach its maximum of 1.6 dependent people per employed around the year 2060 – see dark line in Chart 1. This will happen due to the decline of working-age population and the increasing number of older people as projected by Eurostat ([11]).

To demonstrate the impact of the declining working-age population, one could compare this constant – 75 % – scenario with a theoretical one that tries to keep EDR from rising. That is, it is kept constant at the level of 1.26 after 2020. In that theoretical case, in 2060 the EU would need some 30 million more people in employment compared to the situation where the employment rate would be 75 %. If this gap was to be filled with additional ([12]) third-country migrants, the number of additional migrants needed in 2060 would be much higher than 30 million. It would depend on the age structure and the employment rate of future third-country migrants. One would have to consider that today's working-age migrants and their descendants will also be dependent tomorrow. Moreover, as people migrate for different reasons than work, more than one third-country migrant would have to come in order to fill one vacancy. The *additional* number of third-country migrants necessary to fill a 30 million employment gap in 2060 would therefore be a multiple of 30 million. Today there are 28 million third-country migrants aged between 15 and 64 years living in the EU.

Chart 1: Pure demographics: Additional employment needed to maintain economic dependency rate (EDR) as from 2020, EU-28



Source: DG EMPL calculations based on Eurostat EU-LFS and Europop 2013 population projection, main scenario, update of Peschner (2012).

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This finding has strong implications for EU policies trying to address the challenge of demographic change for the labour market:

- It is not an option to put the entire pressure *exclusively* on migration because the number of additional third-country migrants necessary under these conditions would have to climb to unrealistic magnitudes.

- On the other hand, if no additional migration from third-countries was permitted to alleviate the pressure on employment, the employment rate of people aged between 20 and 64 years would have to climb up to the level of 86 % for the EU-28 (2014: below 70 %), also through higher intra-EU mobility of existing workers. Even today's benchmark (80 % in Sweden) would seem modest to the theoretical requirement for the entire EU in the very long run.

- Finally, if no policies at all were to materialise to improve the employment potential, then the pressure would be put exclusively on further productivity gains to compensate for the loss of potential employment if the economy were to continue growing at welfare-maintaining pace. Earlier work has shown that the speed of the theoretical productivity gains then necessary for the EU-28 would have to more than double, compared to the pre-crisis long-term average ([13]).

Putting the pressure on only one of the above magnitudes may be unrealistic, but it is a useful exercise as it demonstrates the extent of the challenge stemming from the declining working-age population. This indicates that migration alone will not sustain employment in the long run, and it points to a possible need for a comprehensive policy package including higher intra-EU mobility, i.e. increasing today's mere 4 % share in the EU's working age population who live in another EU country. As mobile EU people search for better employment opportunities in other EU countries they contribute to achieve higher employment rates in the EU, thus making better use of existing human resources in times when they get scarce due to the declining working-age population.

Indeed, seeing intra-EU mobility and third-country migration as instruments to safeguard economic growth may become a necessary change of paradigm as the demographic challenge adds to the EU's evidently weak growth performance vis-à-vis its main global competitors ([14]).

The analysis to follow will therefore concentrate on exploring the potential

([10]) European Commission (2010), esp. p. 5.

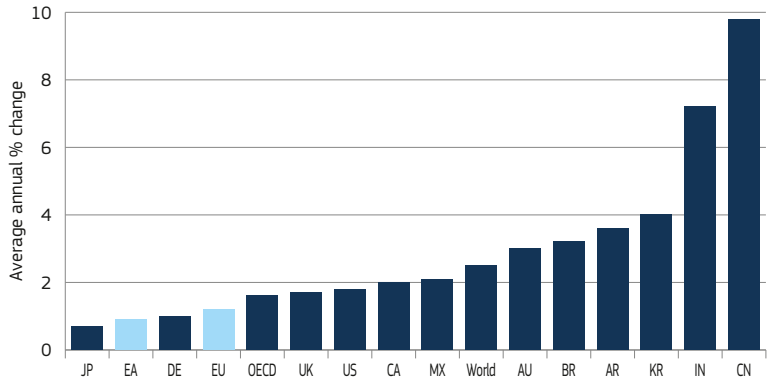
([11]) Eurostat's Europop 2013 population projection, main scenario.

([12]) 'Additional migrants' means in addition to the net migration component already included in Eurostat's population projection (annual net migration into the EU of around 900 000 people in 2015, climbing to 1.4 million by around 2040, before declining to some 1 million by 2060).

([13]) Peschner and Fotakis (2013), Fotakis and Peschner (2015).

([14]) For example: van Ark et al. (2013), Rincon-Aznar et al. (2014).

Chart 2: EU is in need of growth – GDP growth between 2000 and 2014, the EU and selected countries/regions



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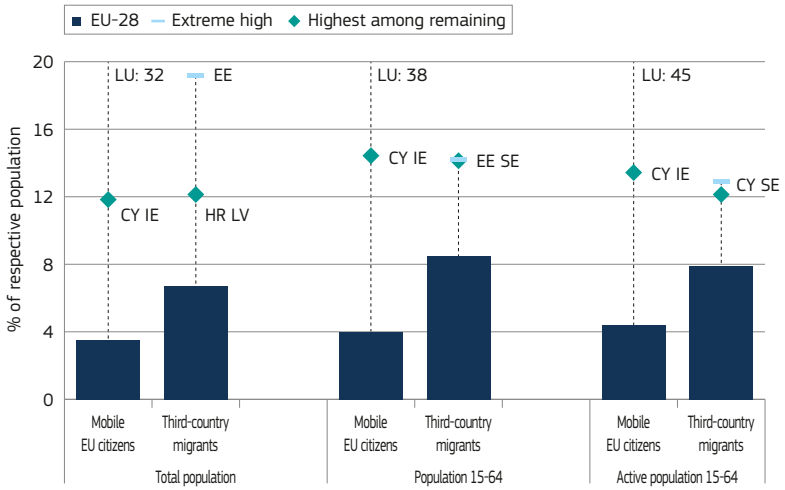
Source: World Bank.

Chart 3: Share of mobile EU citizens and third-country migrants – total population, working age population and active population of working age, 2014



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Source: DG EMPL calculations based on Eurostat Demographic statistics and EU-LFS.

Notes: EU aggregate based on DE 2013 for population indicators, EU aggregate based on estimates for DE. The 'extreme high' show the figure for the resp. country with highest shares in the EU.

impact of both intra-EU mobility and third-country migration **from the angle of the contribution they (could) make to economic growth**. It will show that it crucially depends on the formal qualification (and skills) they supply and its efficient use on the labour market.

Indeed, as Lemaître (2014) points out, 'the potential need for immigrants in the context of population ageing … cannot be assessed on the basis of demographic imbalances alone, but must take into account changes in the nature of employment' ([15]). This includes further dimensions, apart from the mere headcount, such as the level of qualification that migrants supply to the host-country's labour market as well as the occupations or the growth potential of the economic sectors they join.

These findings put the focus on the supply of higher education. Cedefop (2015) reckons that the EU's stock of highly educated labour force has been growing by some 3% annually since 2005, almost three times the average growth rate. It is, however, expected to slow significantly, down to just 1.8% in the next ten years. Mestres' (2014) findings for OECD countries suggest that the demographic decline of young cohorts, progressive retirement of well-educated older workers, and a moderate contribution of migrants are all factors leading to this trend. An intensifying global competition for talent may be its consequence ([16]).

For the efficient use of existing qualifications to support economic growth in the host-country, Lemaître hints that the allocation of migrants across occupations is not optimal. In Europe, new immigrants (both intra-EU and non-EU migrants) made up 15% of all entries into strongly growing occupations over the period 2000-2010. At the same time, immigrants represented 24% of Europe's entries into the most strongly declining occupations. This implies that a stronger support to growth would be possible through more growth-friendly human resource allocation – notwithstanding the fact that mobile EU people and third-country migrants may often work in jobs which are considered less attractive by native workers ([17]).

In addition, he provides evidence for sub-optimal use of existing migrant human resources – reckoning that despite recent progress in their education, half of low-skilled jobs in Europe are in fact taken by immigrants, with substantial cross-country variation, though. There is hence evidence that over-qualification is a serious impediment to economic growth ([18]).

2.2. Recent statistical facts

Still less mobile EU people in the EU than third-country migrants …

Before further elaborating on these important findings, this section gives a brief statistical overview over the recent development in the stocks and flows of mobile people in the EU and third-country migration into the EU. 3.5% of the EU's total population are people born in the EU, living in another EU country. Their share in the working-age population (between 15 and 64 years of age) is only slightly higher. Given that freedom of movement across borders is one of the basic rights of EU citizens, sought also to improve human resource allocation across EU labour markets, these figures still appear modest. As shown in Chart 3, the number of third-country migrants is roughly twice as high.

However, these figures hide substantial variation across Member States. The share of mobile EU people in total population exceeds 10% in Cyprus, Ireland and Luxembourg (32%), while the share of mobile EU people moving to EU-13 Member States (which joined the EU in 2004 or later) remains modest so far, below 0.5% in Bulgaria, Romania, the Baltic States, and Poland. Overall, five big Member States (Germany, Spain, France, Italy and the United Kingdom) host 70% of all mobile EU people. Similarly,

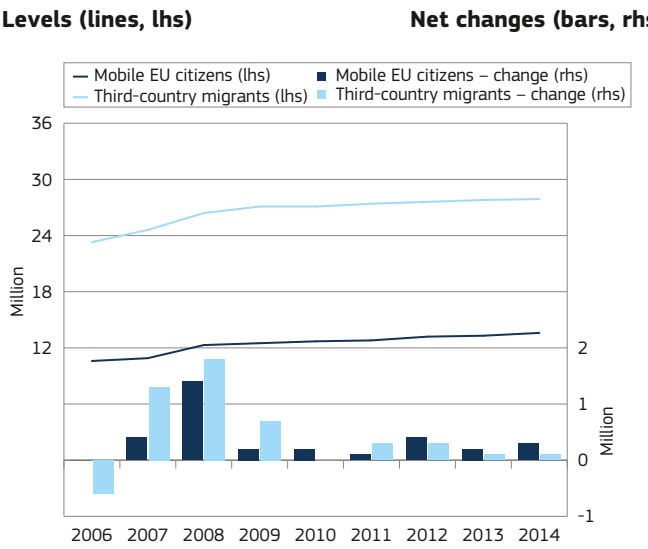
([15]) Lemaître (2014), p. 113.

([16]) Mestres (2014), esp. pp. 89-95.

([17]) European Commission (2014:2), p. 4.

([18]) Lemaître (2014), p. 113.

Chart 4: Mobile EU people and third-country migrants, aged 15-64, EU-25



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Source: DG EMPL calculations based on Eurostat Demographic statistics.

Note: Based on estimates (using LFS) for AT 2009, BG 2009-2010, HR 2009-2012, RO 2009-2011, SK 2009-2011, DE 2014 and all Member States 2005-2008.

Germany and the United Kingdom are the popular destinations

The distribution of inflows to EU destination countries varies considerably in the long-term ([21]). The 2013 picture reveals that intra-EU mobility and third-country migration follow different patterns: almost half of the people in the EU who changed residence for another EU country went either to Germany or the United Kingdom – two big Member States with high employment levels. On the other hand, France, Spain and Italy were the destinations of only 20% of all mobile EU people. The distribution of third-country migrants is very different from that pattern: Only 35% of them went to Germany and the United Kingdom while another 35% chose France, Spain, and Italy – where positive employment growth resumed only in 2014. There are obviously very different driving forces behind intra-EU mobility and third-country migration.

Table 1: Working age population and main labour market outcomes, EU, 2014

	Total	Native-born	Mobile EU citizens				Third-country migrants
			all	EU-15	EU-10	EU-3	
Population 15-64							
million	328.1	288.2	13.5	6.9	3.4	3.2	26.4
%			4.1	2.1	1.0	1.0	8.0
Active population 15+							
million	242.4	212.9	10.8	5.5	2.8	2.6	18.7
%			4.5	2.3	1.1	1.1	7.7
Activity rate 15-64							
Total	72.3	72.2	78.7	77.2	81.5	78.8	69.8
Resident for more than 6 years			78.7	77.5	80.9	79.7	72.7
Resident for 6 years or less			78.5	75.8	82.8	76.6	56.2
Resident for 3 years or less			77.3	72.8	83.8	76.5	52.1
Employment rate 15-64							
Total	64.8	65.2	70.3	70.9	74.9	64.3	57.9
Resident for more than 6 years			70.3	71.2	74.5	64.4	60.8
Resident for 6 years or less			70.1	68.8	75.7	64.0	43.6
Resident for 3 years or less			67.1	63.6	75.0	62.0	39.7
Unemployment rate 15+							
Total	10.2	9.6	10.5	8.1	8.1	18.3	17.0
Resident for more than 6 years			10.5	7.9	7.8	19.0	16.3
Resident for 6 years or less			10.8	9.2	8.6	16.4	22.3
Resident for 3 years or less			13.2	12.6	10.5	19.0	23.6

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Source: DG EMPL calculations based on Eurostat EU-LFS.

Note: EU aggregate based on estimates for DE (distribution of mobile people/third-country migrants based on nationality).

these countries host more than 70% of external migrants in the EU.

... but both EU mobility and third-country migration increased recently

Chart 4 reveals increasing mobility following the EU enlargement of 2004. In the EU-25 ([19]) in 2008, the stocks of mobile EU people and third-country migrants of working age grew by some 1.4m and 1.8m, respectively, but levelled down again from 2010. Since then, mobile EU people have seen a slightly stronger increase, mainly because inflows grew more intensely in the aftermath of the 2007 enlargement ([20]) (see Chart 4) as more EU people from Romania and Bulgaria were increasingly looking for jobs beyond their own countries.

Employment rate of mobile EU people higher than the natives'

Overall, mobile EU people' employment and activity rate in the EU exceed those of the native population with the

([19]) The EU-25 include all EU countries except EU-3 (Romania, Bulgaria and Croatia).

([20]) For example: Kahanec et al. (2014).

([21]) European Commission (2015:1), p. 84.

exception of people from EU-3 (Romania, Bulgaria and Croatia) who are as strongly affected by unemployment as are third-country migrants. That is, at least from the perspective of pure employment probability, mobile EU people's labour market performance is generally strong. Recent mobile EU people who arrived after the onset of the crisis (resident for up to six years) do not seem to be less attached to the labour market than their longer-established peers (resident for more than six years). Except for EU-3, they tend to show employment and activity rates which exceed those of native-born people.

... whereas third-country migrants are more strongly affected by both unemployment and inactivity...

For third-country migrants the picture is much more diverse. Very recent migrants seem to have particular problems (re-)joining the labour market – with an employment rate below 40%, though with a marked recovery, at low level, as they establish themselves in the host country. Chart 5 shows the employment rates of third-country migrants, depending on their time of arrival in the host country. It confirms the (low-level) upward-trend as they continue residing in the host country. It also confirms that the initial situation following arrival seems to have become more and more difficult in recent years: the first employment rate reported for the different entry cohorts has been declining almost continuously since 2004.

A selected set of more detailed statistics on international migrants' labour market performance and socio-demographic characteristics can be found in Annex 1.

3. EU-MOBILITY AND THIRD-COUNTRY MIGRATION IN THE INDIVIDUAL'S CONTEXT: TODAY'S DRIVING FORCES

This section contains a series of micro-data analyses to explain what factors drive people's decision to change residence from one EU country to another (Section 3.1); what are the reasons behind mobile EU citizens' and third-country migrants' individual labour market performance in the host country (Section 3.2) and behind changes in that performance (Section 3.3)? Unless differently annotated, the analyses are based on the 2012 and 2013 (merged) micro-data from the European Labour Force Survey (LFS).

3.1. Individual and country-specific 'factors of gravity' for intra-EU mobility

Using 1992-2011 time series data from the OECD International Migration Database, the European Commission (2015:1), in its recent Labour Market and Wage Developments in Europe report, analyses what macro-economic factors trigger bilateral migration flows. The analysis looks in particular at what could be the impact of intra-EU mobility in the EU-15 in the event of economic shocks which hit countries asymmetrically ([22]).

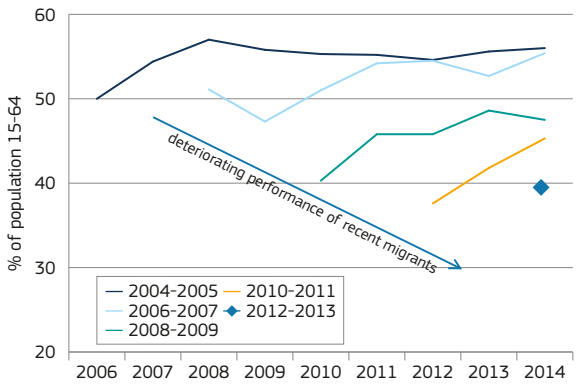
The findings from this analysis have far-reaching implications. It suggests that intra-EU mobility (as well as third-country migration) reacts significantly to the macroeconomic environment: e.g. differences in the unemployment rate or GDP per capita between the source and the potential destination country. These differences have become more pronounced in the EU during the crisis. Related to that, the analysis finds that intra-EU mobility has the potential to absorb asymmetric labour-demand shocks in the EU to some extent. They balance out labour demand shortages in some regions with over-supply (high unemployment) in others, preventing these shocks from having a more pronounced impact on unemployment or activity rates in the long run.

These findings imply that as people are mobile and cross borders they improve geographical (and sectoral) labour allocation as 'gravity' (differences in macroeconomic core variables) would pull labour to where it made a higher contribution to growth. For the EU this would imply that without intra-EU mobility the EU-wide hikes of unemployment during the crisis would have been even more pronounced. That is, evidence strongly suggests that cross-border labour mobility also contributes to the deepening of the Single Market.

This section looks at intra-EU mobility and explores to what extent the European Commission's (2015:1) findings hold at micro-level, i.e. from an individual's perspective: Which are the personal or country-specific 'factors of gravity' making people cross borders within EU countries?

This chapter looking at respondents in the LFS aged between 20 and 64 years who were living in the EU twelve months before the survey, the question is: has the person during the twelve months up to the survey been mobile within the EU? ([23]) He or she has been mobile if their

Chart 5: Employment rates of third-country migrants in the EU by year of arrival in the host country and years of residence



Source: DG EMPL calculations based on Eurostat EU-LFS.

Notes: Average rates of third-country migrants who arrived in 2005-2006, 2007-2008, 2009-2010, 2011-2012 and in 2013; Germany is excluded.

How to read this chart: Take the cohort 'entry 2008-2009'. In 2010 its employment rate was just around 40%. Over the years spent in a host country the rate of the cohort 'entry 2008-2009' has been on an upward trend approaching 48%.

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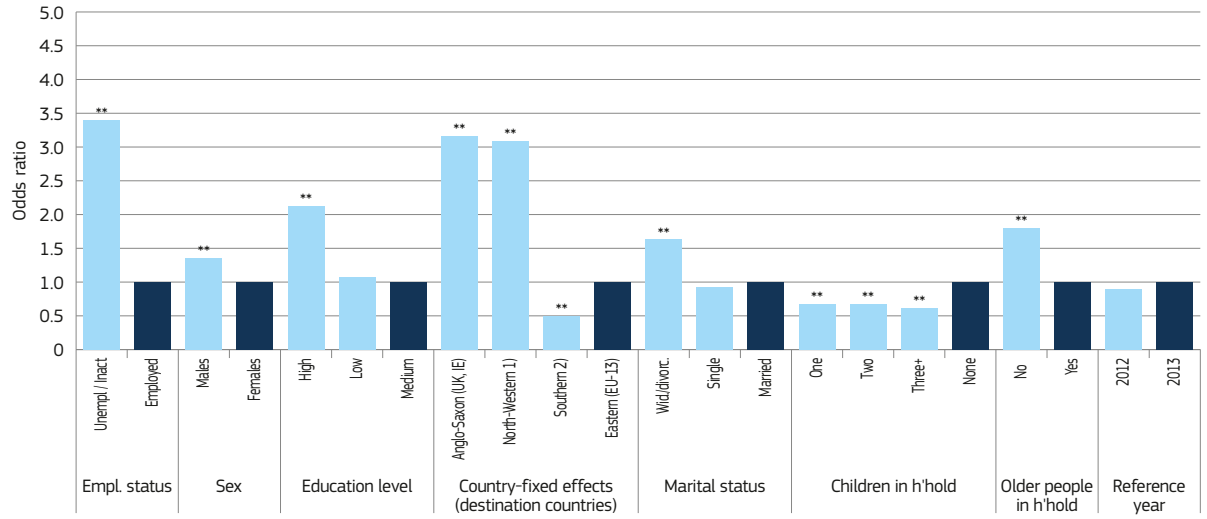
([22]) European Commission (2015:1), Part II, Section 1, earlier published as Arpaia et al. (2014).

([23]) The approach uses the retrospective question in the LFS asking for the country of residence one year before the survey. If this EU country is not identical to residence EU country at the time when the survey takes place, a dummy variable will be set equal to one, otherwise remains zero. This dummy will be the independent variable 'is mobile' in an ordinal logistic regression. People moving to the EU from outside the EU are excluded from the sample of mobile people in order to avoid too strong heterogeneity to the non-mobile control group.

Chart 6: Driving forces of intra-EU mobility - Odds ratios of having crossed intra-EU borders, relative to reference group (=1, darker)



Source: DG EMPL calculations based on Eurostat EU-LFS 2012 and 2013 micro-data (merged).

Notes: ** and * denote: coefficient is statistically significant below 1% and 5%, resp.

1) North-Western cluster: AT, DE, NL, LU, BE

2) Southern cluster: ES, PT, EL, IT, FR

How to read this chart: Take the variable 'Sex' as an example. Females are defined as the reference class. That is, the odds for females of crossing EU borders is normalised to 1. The odds for males are then 1.13. That is, the odds (chance or risk) of males crossing EU borders are 13% higher than they are for females, all other variables being equal.

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residence was changed from a country inside the EU to the surveyed EU country. It then uses regression analysis to understand what the drivers behind intra-EU mobility are.

The regression model tries to find whether or not 'being mobile' within the EU can be explained by an array of relevant variables which includes the basic individual characteristics such as age, sex, and education level, as well as the person's labour status 12 months before the survey, that is, whether the person has been in employment ([24]) or not (inactive or unemployed) ([25]). In addition, the family context is included as it is expected to have an influence on someone's decision to move abroad. Therefore, the model also controls for the marital status, the number of children in the household and whether or not there are older people living in the household. Another control variable is 'country-fixed effects' which are observed or unobserved differences in the surveyed countries. These include differences in labour market or institutional conditions which may trigger or hinder intra-EU mobility. For data limitation reasons the surveyed (destination) countries are grouped into four clusters in this section:

The United Kingdom and Ireland build the Anglo-Saxon cluster. The North-Western cluster consists of other high-income countries with a relatively stable labour market: Austria, Germany, the Netherlands, Luxembourg and Belgium. The Eastern cluster combines Eastern European Member States that joined in 2004 or later (EU-13) whereas the Southern cluster includes Spain, Portugal, Greece, Italy and France.

Finally, the regression is controlled for the reference year as the LFS 2012 and 2013 data-sets are used for the analysis. The method and all control variables are explained more in depth in Box 1 which holds for the regression analyses carried out throughout the entire chapter.

Annex 2 contains the results of the regression in different specifications, i.e., varying the above mentioned control variables. The full model with all control variables is shown in Chart 6. It shows the ratio of odds that a person in a Member State has been mobile during the previous 12 months, depending on all control variables. Each variable defines one reference class to which the odds ratio refers (dark bars). That is, the odds ratio is set equal to 1 for the reference class.

Strong pressure on people out of work to cross borders in search of employment...

The results confirm the macro-finding of European Commission (2015:1) that a person's own labour status prior to his or her decision to cross borders or not is a very strong driving factor in that decision. The odds of unemployed or inactive people crossing borders are more than three times the odds for employed workers. In other words, all other factors being equal, inactive workers or those made redundant are more strongly inclined to change residence for another EU country than those already in employment. This finding is in line with expectations, but the significantly higher odds imply that people, once out of work, tend to make a bigger effort to improve their situation by searching for employment in another country, which in turn helps to more efficiently allocate labour across the EU.

... and well-performing countries are magnets

Also in line with European Commission (2015:1), the destination country plays a pivotal role in that respect. Chart 6 reveals that country fixed effects vary a lot across clusters of countries. They reflect the chance of finding an EU-mobile person in the respective country-cluster relative to the Eastern cluster (=1) which combines

([24]) The labour status a year before it is captured in the LFS variable WSTAT1Y. WSTAT1Y= 1: Person carries out a job or profession, including unpaid work for a family business or holding, including an apprenticeship or paid traineeship etc.

([25]) 'Inactive' considers WSTAT1Y= 7 or 8: Persons fulfilling domestic services and 'other inactive persons' (other than pupils, students, pensioners, disabled persons).

Box 1: Basic methodology applied in this chapter on micro-data analysis - Ordinal logistic regression

Micro-data analysis presented in this chapter is based on a set of control variables that don't vary. Those variables are the independent variables in an ordinal regression which tries to explain a person-specific event. In this sub-section the event is her decision to move from one country to another, i.e., to be internationally mobile. Other sections below will look at the person's probability to be employed (and not unemployed or inactive), or to change labour status (moving into and out of employment), or the economic sector she works in. These are the dependent variables. The question is always: what factors make such individual event more probable? The analysis will be based on 2012 and 2013 data from the Labour Force Survey (LFS).

For all events, the following regression equation holds as a general rule:

$$\ln\left(\frac{p(event)}{1-p(event)}\right) = \mathrm{C} + \alpha \cdot RegionOfBirth + \beta \cdot SEX + \gamma \cdot EDUC + \Delta \cdot Age + \delta \cdot MaritalStatus + \varepsilon \cdot Child + \theta \cdot Elderly + \pi \cdot Country + ¥ \cdot Year$$

p(event) denotes the probability for a person that a certain event occurs. The explanatory variables are:

- ***Region Of Birth*** [not for Section 3.1 on factors of gravity]: a person's country (region) of birth. EU-15 for mobile citizens from the 15 Member States before 2004; EU-10 for the 10 Member States which joined in 2004; EU-3 for Romania, Bulgaria and Croatia. In addition, the analysis considers third-country migrants those born outside the EU.
- ***SEX*** and ***Age***: A person's gender and her Age (covariate)
- ***EDUC***: A person's highest educational attainment level according to the International Standard Classification of Education (ISCED 1997), distinguishing only Low (ISCED 1-2), Medium (ISCED 3-4), and High (ISCED 5-6) education
- ***Age***: A person's age (a 'covariate' as age is a continuous, not a classified variable like all others)
- ***Marital Status***: A person's marital status: Classified in three classes: Widowed/divorced; single; or married
- ***Child***: the number of children in the household (aged below 15 years): none, 1, 2, or more than 2.
- ***Elderly***: Elderly persons in the household (aged 65 or older): Yes or No
- ***Country***: Country-fixed effects are necessary to take into account observed or unobserved differences between host countries (different labour market situations, institutions, business cycles etc.) and to control for biases that may emerge due to different cultural backgrounds, i.e., different understanding of one and the same survey question in different countries.
- ***Year***: The survey year as the 2012 and 2013 Labour Force Survey micro datasets are merged to increase the number of observations (be more reliable). Mobility in these two years may have been systematically different, for example, because the two years mark different economic cycles in the survey countries. That would imply that the results in 2012 and 2013 are not necessarily comparable. In order to avoid that bias one has to control also for the reference year.

'Event' is binary classified (0 or 1). That is, the dependent variable is the *probability* of an event, p(*event*), relative to its counter-probability, 1-p(*event*). In other words: the dependent variable is the chance (or risk) that the event happens. The resulting coefficients α, β, etc. reflect ***ratio of odds*** relative to a reference case. For example, if the 'event' is to have been internationally mobile in the last 12 months or not, in the case of SEX the coefficient β could reflect that the chance for men of having been mobile is x times the chance for women if women are the reference (=1). Technically speaking, the ratio of odds follows directly from β. It is equal to e^{β} because β is the linear coefficient not for the odds p/(1-p) itself but for its natural logarithm, called the 'logit' (Backhaus et al. (2008), pp. 249-260).

EU-13 Member States. Controlled for all other individual factors, the Anglo-Saxon and North-Western countries which are characterised by relatively high per-capita income and low unemployment attract a large numbers of recently mobile people, whereas Eastern European and especially the Southern clusters are less popular destination countries. For Southern Europe this finding reflects the very difficult labour market situation at the time of the survey (2012/13).

These findings support the theoretical notion that given the diversity of labour market conditions EU-wide, labour is moving towards those places where conditions are best ([26]), helping to achieve a better allocation of productive resources across the EU.

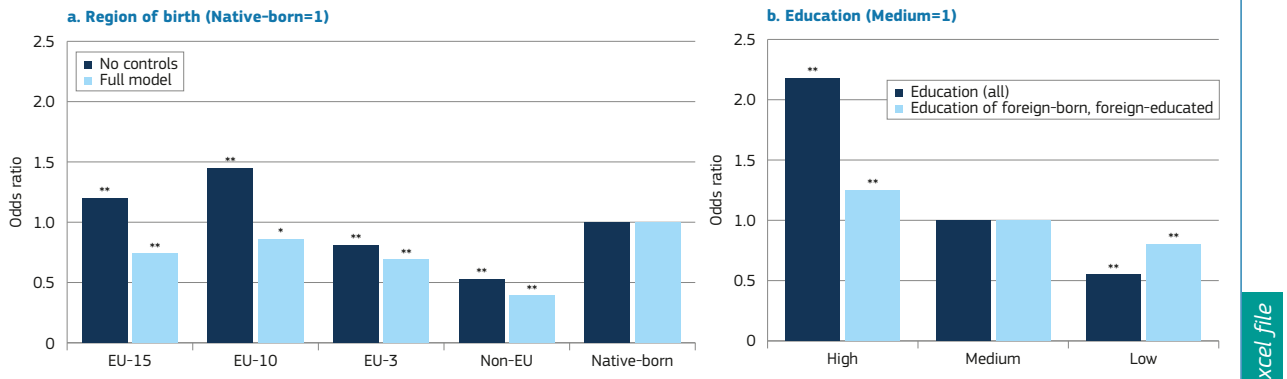
Other determinants of one's willingness to move to another country are:

- Whereas for the marital status no significant influence can be found, the presence of children lowers the probability to move to another EU country significantly. The probability is further reduced by the existence of elderly people in the household.
- Age (not shown in the chart for technical reasons ([27])): The findings confirm that higher age strongly reduces the odds of crossing borders within the EU. Furthermore, the chance is significantly higher for males than for females.

([26]) A gravity model in European Commission (2015:1) also demonstrated the importance of the relative unemployment rate for determining bilateral gross flows – while also population size, geographical proximity, EU membership of both source and destination country, a past colonial relationship, a common language and a country's migration history (network-effects) were found to play a role. All these effects are captured in the country-fixed effects.

([27]) Age is the only variable in the regression which is not categorical (divided into few classes), but given as a continuous range of values. It is therefore called a 'covariate' in the regression. Technically, interpretation of the age-coefficient is therefore different from the odds ratios given for the other (classified) variables.

Chart 7: Ordinal logistic regression: Odds ratio for being employed, by region of birth and education level; persons aged between 20 and 64 years, 2012/2013



Source: DG EMPL calculations based on Eurostat EU-LFS 2012 and 2013 micro-data (merged).

Note: ** and * denote: coefficient is statistically significant below 1 % and 5 %, resp.

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- Formal qualification: High education strongly correlates with higher intra-EU mobility. The sections to come will demonstrate that this finding has important implications for the contribution that mobile EU people and third-country migrants can make to the host country's labour market performance and its economy.

3.2. Relative employment performance and its drivers: empirical evidence

Aggregate statistics presented in Section 2 reveal substantial differences in the labour market performance between mobile EU people and third-country migrants from different regions of birth. A more complete stocktaking of the reasons for these differences requires taking people's socio-demographic background into account.

This section therefore engages in a regression analysis with a person's labour market status as the dependent variable: if aged between 20 and 64 years, the individual can be either working (i.e. be employed) or not working (be inactive or unemployed). For technical reasons the analysis is restricted to mobile EU people and migrants who have been residing in the EU host country for up to 10 years. The main explanatory variable is the person's region of birth where four groups are distinguished: EU-15, EU-10 and EU-3 as mobile EU people and third-country migrants. The other explanatory variables are the ones used in the previous section (see also Box 1): a person's gender, age, family context, level of education and country-fixed effects. However, in addition to these variables, another supplementary control variable is constructed which describes whether foreign-born people in the EU had gained the highest educational degree in the host country or outside (foreign education of mobile EU people and third-country migrants) ([28]).

Chart 7 looks at 20-64 year-old mobile EU people and third-country migrants who have been residing in their EU host country for up to 10 years. It shows their chance (odds) of being in employment, relative to the respective native-born population before and after controlling for all above-mentioned individual and country characteristics. The pure employment rates reported earlier are well reflected by the uncontrolled coefficients (no controls) given in Chart 7a: EU-15 and EU-10 mobile people stand a significantly better chance of being in employment than native-born people; for EU-3 people and especially third-country migrants the opposite is observed in that they show a lower chance of being employed than natives.

Controlling for the full set of characteristics (full model) reduces the odds of being in employment especially for **EU-15 and EU-10** mobile people. In particular, controlling for the full set of characteristics included in the regression reduces the odds of mobile people from EU-15 and EU-10 so strongly that they are now below those for native-born people.

Mobility tends to improve labour allocation across Europe, also because mobile EU people are well educated...

This means that these two groups' high employment odds are strongly explained by individual factors. Annex 3 shows a number of specifications for the regression, introducing the control variables one by one. One can see that three factors explain the biggest part of the difference as shown in Chart 7a in the case of mobile EU-15 and EU-10 people:

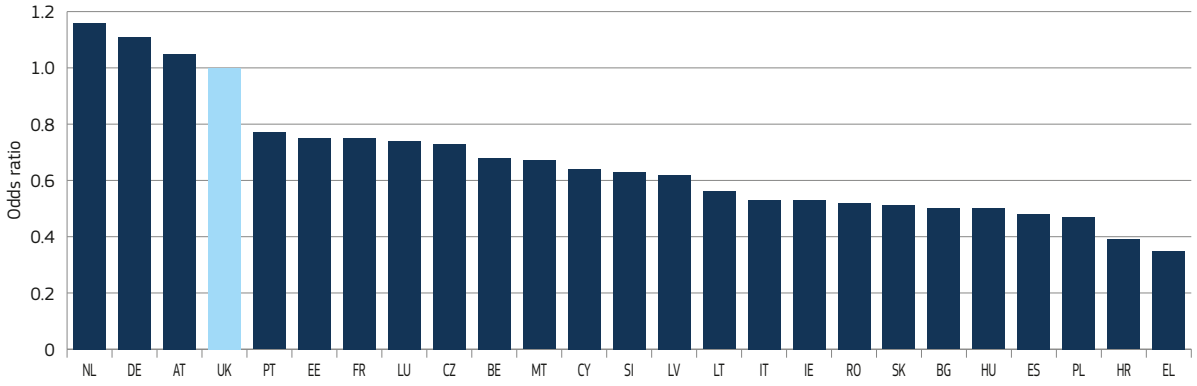
1. Education effect: The odds of being in employment are higher when the education level is higher (Chart 7b). On the other hand, the analysis below will show that the education-mix ([29]) of mobile EU-15 and EU-10 people tends to be higher, on average, than is the case with their native-born peers. The combination of these two findings implies that high employment rates of EU-15 and EU-10 mobile people are also due to a more favourable education-mix.

2. Country-fixed effects (Chart 8): Mobile EU-15 and EU-10 people tend to choose those countries in which

([28]) The LFS does not report on whether or not a person has acquired their highest education in the reporting country. However, there is an indirect proxy for foreign education: the variable HATYEAR captures the year when the highest qualification was acquired, and REFYEAR is the year of the survey. It is hence possible, together with the variable giving the years of residence in the host country (YEARESID), to prepare a dummy variable equal to 1 if REFYEAR - HATYEAR > YEARESID. In that case the acquisition of the highest qualification should have happened before entering the host country. For native-born people the dummy variable is set to '0' in any case.

([29]) The terms 'education mix' and 'qualification mix' in this chapter refer to the distribution across education levels.

Chart 8: Ordinal logistic regression: Country-fixed effects. Odds ratio of being employed, relative to the UK (=1); persons aged between 20 and 64 years, 2012-2013



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Source: DG EMPL calculations based on Eurostat EU-LFS 2012 and 2013 micro-data (merged).

employment rates are higher. This positive selection effect improves their own labour market performance in the host country and is thus a source of better labour allocation across the EU. In line with Guzi et al. (2015) and European Commission (2015:1), this confirms that mobile EU people and third-country migrants are responsive to the local labour market conditions in the host country.

3. Age effect: Mobile EU-10 people tend to be younger than nationals. At the same time, age is significantly negatively correlated with the odds of being in employment. Hence, the age-effect clearly improves their labour market performance.

... but there are problems with capitalising on higher education attained outside the host country.

Mobile EU people's and migrants' **return on higher education**, in terms of higher employment rates, is obviously much lower when having acquired the highest education abroad (outside the host country). This can be seen from the light in relation to the dark bars in Chart 7b. As people improve their education they will see their chances of being employed improve by much less if they are foreign-born and foreign-educated, compared to all people. This finding is in line with recent literature ([30]). It implies, expressed in positive terms, that higher education of mobile EU people and third-country migrants will indeed lead to better labour market prospects in the host country. But the return on higher education will be more significant if people attain these qualifications in the host country itself, for example because they acquire language and other country-specific relevant skills and experiences ([31]) – important levers to better capitalise one's formal education. Foreign education yields a lower return. At the same time, apart from the problem of formal recognition, local employers may assess qualifications acquired in other countries differently from those attained in the host country.

Many people often cross borders for different reasons than work. But legal obstacles may also prevent better performance of mobile EU-3 people and (especially) third-country migrants

Despite being two very different groups, Chart 7 reveals that **mobile EU-3 people and third-country migrants** face similar problems of employment performance. Their odds of being employed are significantly lower than the odds of the native population. Contrary to EU-15 and EU-10 mobile people, this finding does not change significantly when controlling for the individual characteristics (particularly education) and country differences. This implies (1) that these groups' return on higher education is particularly low and (2) that the low employment probability of mobile EU-3 people and third-country migrants is partly explained by other factors not taken on board by the model:

- Many third-country migrants come to the EU for reasons other than work (family unification, education, international protection). Table 2 shows that their employment rates are particularly low. There is a strong gender dimension behind this finding: In the important case of family unification, the employment rate of women (39%) is only half the level of men (76%).

Table 2: Third-country migrants (aged 25-64 years) established in the last 10 years, by main reason for migration, 2008

Main raison	Distribution (%)	Employment rate (%)
Employment	43	82
Family	36	49
International protection	6	41
Other	7	64
Study	8	59
Total	100	65

Source: Eurostat, EU-LFS, 2008 module, ad-hoc extractions.

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- However, even for those who come for work, discrimination, non-acceptance of their foreign qualifications and legal obstacles to taking up employment may further restrict people's access to the labour market. Legal barriers are a reality for third-country migrants. To a lesser extent this also holds true for mobile EU-3 people at a time (survey of 2012/2013) when nine out of 25 Member States, including the biggest ones, still had transitional restrictions in place to free movement for people from Bulgaria and Romania ([32]). As from 2014, with the restrictions removed by all EU countries, these findings may potentially change.

([30]) Damas de Matos and Liebig (2014) have elaborated extensively on this finding (esp. pp. 201-209).

([31]) Network effects also play a role. In addition, as workers reside in the host country, they get more acquainted with the working environment and vice versa. Mutual trust is being built up in the course of time.

([32]) France, Germany, Austria, Belgium, the Netherlands, Luxembourg, the United Kingdom, Malta and Spain.

3.3. Understanding labour market dynamics

Understanding the relative labour market performance of EU mobile workers and third-country migrants requires the inclusion of labour market **dynamics** in the analysis. Indeed, analysing the stocks of those employed, unemployed or inactive in a certain year gives 'only a still picture at a point in time' ([33]). In addition, an individuals' chance of getting a job if not in employment or the risk to transit into unemployment can have a decisive and sustainable impact on his or her further work-related biography. Therefore, the analysis of (static) labour market conditions is supplemented by an analysis of labour market **transitions**. The regression analysis stays at EU aggregate level in order to overcome data-shortcomings due to smaller sub-samples.

This section therefore looks at labour market transitions (1) from unemployment or inactivity into employment and (2) from employment into unemployment within a defined period. How do third-country migrants and mobile EU people perform relative to the control-group, the natives? And what are the factors explaining the differences? Like before, the analysis will be based on micro-data from Eurostat's 2012 and 2013 LFS. In a first regression analysis, the driving forces of a transition from unemployment or inactivity (one year prior to the survey) into employment (at the time of the survey) will be explored. A second regression examines transitions from employment into unemployment.

Box 2 presents the LFS variables used for the transitions, the data limits encountered, and how they are resolved.

The dependent variable is the odds of a transition. The independent variable of interest is the region of birth, again distinguishing mobile EU people from EU-15, EU-10 and EU-3, and third-country migrants. Socio-demographic control variables include the gender, the educational attainment level, the marital status, the number of children and the presence of elderly persons in the households, as well as country fixed effects ([34]).

Box 2: Calculating transitions: LFS data limits and how they are solved

The LFS variable MAINSTAT captures the current labour market status and is directly comparable to WSTAT1Y, the status from one year ago. Both variables distinguish employment, unemployment, and a number of other special labour market statuses (pensioners, pupils, students, disabled etc.). For the two transition directions, the following general rule is considered:

- Transitions into employment: those who were unemployed or inactive a year before the survey (WSTAT1Y =2, 7, or 8) ([1]) and employed (MAINSTAT =1) ([2]) at the time of the survey.
- Transitions out of employment: Those who were employed one year before the survey (WSTAT1Y =1) and unemployed (MAINSTAT =2) at the time of the survey. Inactive people are not included here as the analysis focuses on the risk of losing job rather than the chance to retire.

However, two important Member States, namely Germany and the United Kingdom, do not report the current status in the form of MAINSTAT. For those two countries MAINSTAT is replaced by ILOSTAT, having to accept certain statistical noise in the transitions because unlike MAINSTAT, the concept of ILOSTAT is not fully identical to WSTAT1Y. Therefore, for Germany and the United Kingdom the following is assumed:

- Transitions into employment: those who were unemployed or inactive a year before the survey (WSTAT1Y =2, 7, or 8) and employed (*ILOSTAT* =1) at the time of the survey.
- Transitions out of employment: those who were employed one year before the survey (WSTAT1Y =1) and unemployed (*ILOSTAT* =2) at the time of the survey.

Furthermore, Germany does not report the country of birth in the LFS. For that reason the concept of 'nationality' is used as a proxy for 'country of birth' in the case of Germany in order not to lose the biggest Member State in the sample.

This definition of a transition differs from the one applied by Eurostat which, inter alia, uses quarterly overlaps instead of year-on-year transitions based on annual LFS data ([3]).

([1]) WSTAT1Y/MAINSTAT= 2: Unemployed; For the inactive, 7: Person is fulfilling domestic services and 8: Other inactive persons. That is, the following circle of people are not included in the 'inactive': 3: pupil, student etc.; 4: in retirement or early retirement or has given up business; 6: in compulsory military service. By merging the unemployed and inactive into one group measurement errors are minimised. Those errors occur if survey respondents confuse being 'unemployed' with 'inactive'. They can disturb accuracy of estimations of labour market transitions (Artola and Bell (2001)).

([2]) WSTAT1Y/MAINSTAT =1: Carries out a job or profession, including unpaid work for a family business or holding, including an apprenticeship or paid traineeship etc.

([3]) See http://ec.europa.eu/eurostat/statistics-explained/index.php/Labour_market_flow_statistics_in_the_EU#Methodology.

Recently, labour market dynamics of EU mobile people into employment is strong...

Starting with the results for the year-on-year transition from unemployment and inactivity into employment, Annex 4 contains the complete results of the regression, introducing the above-mentioned control variables one by one in order to see what impact they have on the chance of mobile EU people and third-country migrants out of work to find employment, relative to native-born people. Chart 9 shows the results by region of birth. That is, the graph shows what the chances are of a foreign-born person of each of the four categories of having experienced a transition into employment over the last year, relative to a native-born person.

Those odds ratios are shown in Chart 9 for the full model including all the control variables (bright), and the model with no controls (except for the reference year,

([33]) Stibbard (1999), pp. 2, 3.

([34]) The general methodology and the variables used are outlined in Box 1.

dark). There are two major observations (for details see the respective coefficients in Annex 4):

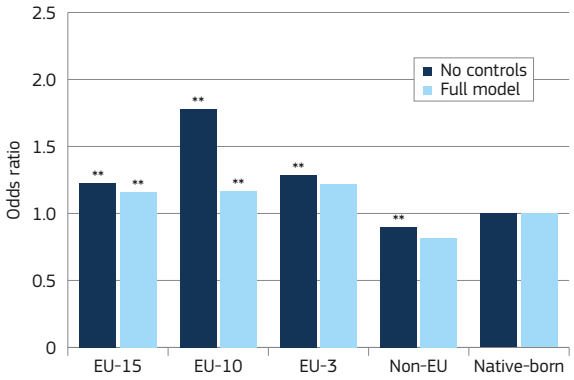
1. The uncontrolled odds-ratios show that the chance for all categories of mobile EU people to move into employment is higher than for native-born people. The positive labour market dynamics is particularly pronounced for people from the ten New Member States which joined in 2004 (EU-10 mobile people). Once unemployed or inactive, their chance to re-enter employment is 1.8 times the one of native-born people. On the other hand, entering into employment seems to be more difficult for third-country migrants than for nationals.

2. There is a pronounced difference between the uncontrolled odds and the full model for EU-10 people. This implies that the individual socio-economic context is particularly important in explaining this group's positive labour market dynamics. Most importantly, similar to the odds of being in employment examined above:
   - Country effects (selection effect): In 2014, excluding Germany ([35]), almost half of all EU-10 mobile people in the EU lived in the United Kingdom, a country which has seen an employment surge of +4% since 2011 – far above the EU-average (+0.8%). As EU-10 mobile people concentrate on destinations with dynamic labour markets, this improves their chance of finding employment once inactive or unemployed. To a lesser extent, the positive selection effect also improves labour dynamics of mobile EU-15 people and third-country migrants. Contrary to that, the selection effect in the case of mobile EU-3 people has a negative impact as many of them reside in Spain and Italy, two countries with high unemployment ([36]).
   - Age: EU-10 mobile people are younger, on average, than the native population in EU host countries. Age is significantly negatively correlated with the chance of moving into employment. As a result, the odds of transiting into a job tend to be higher for EU-10 (and to a lesser extent EU-3) mobile people, everything else being equal.
   - Education: Higher education improves the odds of transiting into employment to some extent. On average, EU-10 (and EU-15) mobile people show higher education levels than the native population in the respective host countries. Their good formal qualifications obviously help them re-enter into employment once unemployed or inactive. Contrary to that, including the variable of education seems to make little difference in the case of mobile EU-3 people and third-country migrants.

([35]) In Germany country of birth is not reported.

([36]) If one excludes Germany as a potential host country (Germany does not report the country of birth in the LFS), then in 2014 the majority of mobile EU-3 people lived in Spain and Italy. Hence, country fixed effects reduce the odds of entering into employment for this group.

Chart 9: Ordinal logistic regression: odds ratio for a transition from unemployment and inactivity into employment between 2011-2012 and 2012-2013, by region of birth, relative to native-born people (=1)



Source: DG EMPL calculations based on Eurostat EU-LFS 2012 and 2013 micro-data (merged).

Note: ** and * denote: coefficient is statistically significant below 1% and 5%, resp.

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Table 3: Ordinal logistic regression: odds ratio for a transition from unemployment and inactivity into employment between 2011/12 and 2012/13, by region of birth – uncontrolled odds ratios by time of residence

	All foreign-born	Resident for more than 1 year	Resident for more than 5 years	Resident for more than 10 years
EU-15	1.23**	1.11	0.96	0.89
EU-10	1.78**	1.54**	1.22	1.12
EU-3	1.29**	1.24**	1.21**	1.27*
non-EU	0.90**	0.89**	0.89**	0.85**

Source: DG EMPL calculations based on Eurostat EU-LFS 2012 and 2013 micro-data (merged).

Note: ** and * denote: coefficient is statistically significant below 1% and 5%, resp.

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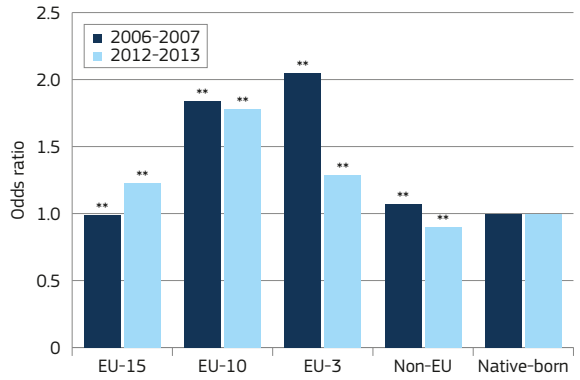
One has to consider that the odds ratios given in Chart 9 for all four groups of international migrants are probably somewhat upward-biased. To the extent that taking up a job in another country was the motivation for crossing borders within the previous year, it is a matter of fact that the probability of people who crossed borders experiencing a transition into employment is systematically higher. Even if this finding already constitutes evidence that mobile EU people help improve labour market dynamics across the EU, one may reduce that bias by excluding from the denominator those international migrants who have resided in the host country for less than a year.

The content of Chart 9 is being shown again in the first column of Table 3 for the uncontrolled model. It contains the odds for international migrants, relative to natives, of changing labour market status from either unemployed or inactive to employed (dark blue bars in Chart 9). The second column considers only those international migrants who have resided in the host country for more than a year. Columns 3 and 4 extend the residence period to more than five and ten years, respectively.

Expectedly, the odds ratios in the case of mobile EU people tend to become lower as they reside in the host country for a longer time, suggesting some assimilation of international migrants' labour market dynamics to the host society. The assimilation process seems to be

Chart 10: Ordinal logistic regression: odds ratio for a transition from unemployment and inactivity into employment, relative to natives (=1), comparison 2006-2007 and 2012-2013, by region of birth – uncontrolled model



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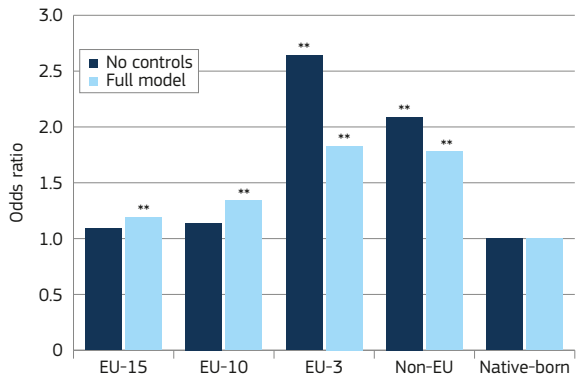
Source: DG EMPL calculations based on Eurostat EU-LFS 2006-2007 and 2012-2013 micro-data.

Note: ** and * denote: coefficient is statistically significant below 1 % and 5 %, resp.

Chart 11: Ordinal logistic regression: odds ratio for a transition from employment into unemployment between 2011-2012 and 2012-2013, relative to native-born people (=1), by region of birth



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Source: DG EMPL calculations based on Eurostat EU-LFS 2012 and 2013 micro-data (merged).

Note: ** and * denote: coefficient is statistically significant below 1 % and 5 %, resp.

significantly slower in the case of EU-10 and EU-3 mobile people who continue to see higher chances of entering into employment than natives for some time. In the case of third-country nationals, lower labour market dynamics than in the case of native people seems to be a lasting phenomenon with little convergence to the native population over time.

Together with the information gained from the previous section, these findings imply that third-country migrants, together with mobile EU-3 people, stand a much lower chance of **being in employment** than natives. However, unlike mobile EU-3 people, third-country migrants' chance of **finding employment** is relatively low, so there is a great risk that they stay out of employment for a longer time. Contrary to that, EU-15 and EU-10 mobile people stand a greater chance of being in employment than natives **and** show strong positive dynamics into employment.

EU-3 mobile people' dynamics into employment seem to have slowed down since 2006

In order to provide evidence on whether the crisis or the restrictions to freedom of movement have changed positive labour market dynamics, the same regression is repeated, but now applied to 2006-2007 LFS data instead of 2012-2013 as before. That is, the analysis considers transitions out of unemployment or inactivity between 2005-2006 and 2006-2007 – only shortly after the 2004 enlargement (with still restrictions to mobility in place in a number of countries), but before the onset of the crisis, see Chart 10.

Coefficients for EU-10 and EU-3 mobile people are based on few observations. As many countries still had restrictions to EU mobility in place, in 2006-2007 there were only half as many EU-10 and EU-3 people of working age either unemployed or inactive *and* residing in another EU country as six years later. Bearing these caveats in mind and comparing them to the more recent situation (2012/13), the following findings hold:

- In 2006-2007, chances for mobile EU-15 people to transit into employment seem to have been at the level of nationals, whereas more recently there has been more significant positive dynamics.

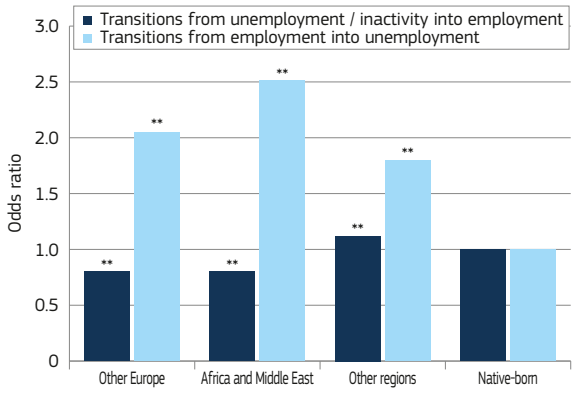
- The sample period includes the year 2007, the year of Romania's and Bulgaria's accession to the EU. The immediate effect of accession seems to have triggered labour market dynamics of many people from Romania and Bulgaria in that particular year although in 2007 the most important receiving Member States (notably Spain and Italy) still had made use of transitional restrictions to free movement. Relative to the native population, mobile people from EU-3 countries stood a greater chance of transiting out of unemployment or inactivity than 6 years later in 2012-2013. The crisis may have substantially reduced their labour market dynamics. For example, in 2013 the unemployment rate amongst EU-3 mobile people in Spain had risen to 37 % (from 12 % in 2007). The situation led Spain to re-introduce restrictions to free movement for Romanian citizens in 2011 (after having opened the labour market and applied EU law on free movement of workers from 1 January 2009).

Higher risk of losing job for all foreign workers…

Transitions from employment into unemployment reflect the risk of losing one's job which is influenced by a variety of potential drivers. Controlling for the same individual socio-demographic characteristics and country-effects as before (see Box 1), the following picture emerges (see Chart 11):

All categories of international migrants stand a greater risk of losing their job than do natives. But whereas the difference compared to native-born people in the uncontrolled model is insignificant in the case of EU-15 and EU-10 mobile EU people, people from EU-3 and third-country nationals seem to face similar and much more severe problems: Their risk of entering into unemployment is at least twice as high as is the natives' risk.

Chart 12: Ordinal logistic regression: odds ratio for a labour market status transition between 2011-2012 and 2012-2013, third-country migrants, by region of birth – uncontrolled model



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Source: DG EMPL calculations based on Eurostat EU-LFS 2012 and 2013 micro-data (merged).

Note: ** and * denote: coefficient is statistically significant below 1% and 5%, resp.

In addition, the pronounced difference compared to the fully controlled model implies that the individual characteristics and/or country-effects strongly drive mobile EU-3 people's risk of entering into unemployment. Annex 5 gives the detailed overview over a number of regressions that includes the control variables one by one. As before in the case of transition into employment, the main finding is that education, country fixed effects, and age are the variables which have the strongest impact on the odds of becoming unemployed. In detail:

- For EU-3 mobile people and third-country migrants the odds of falling into unemployment in the controlled model are significantly decreased as education is being included as a control variable. This implies that these groups' particular educational mix increases their risk of becoming unemployed (which is included in the uncontrolled odds).

- The country-fixed effects capture, to a large extent, the host-country-specific labour market situation. In the case of EU-3, the general risk strongly translates into a high individual risk of becoming unemployed. This is because workers from this region are quite strongly concentrated in Member States where unemployment is relatively high (especially Spain and Italy) ([37]). With EU-15 and (especially) EU-10 mobile people it is the opposite: they are to a larger extent present in countries where the labour market is more stable and the risk of being fired correspondingly low (mainly the United Kingdom and Germany).

- Younger age significantly increases the risk of becoming unemployed. As a result, controlling for age reduces the odds of mobile EU people (except mobile EU-15 people) and third-country migrants of transiting into unemployment. This is because on average they are younger than native populations of working age. Therefore, they generally face a higher risk of losing their job.

... and persisting problems for third-country migrants from certain regions.

The explanatory power of the above odds of entering or exiting employment may be limited in the case of third-country nationals as it hides substantial differences between regions of origin. In order to maintain acceptable group-specific sample sizes, Chart 12 introduces the broad regions of origin for third-country migrants.

The above shows that the total of migrants from third-countries face lower chances of entering employment but much higher risk of losing their job. The majority of third-country migrants included in the above regressions is represented by people from Europe (outside the EU) and Africa/Middle East ([38]).

They stand a lower chance of ascending from unemployment or inactivity into work than the native population after controlling for individual characteristics and country-differences. On the other hand, the dynamics of moving into employment is relatively pronounced for migrants from Latin and South America (they are the majority included in the 'Other regions'), probably reflecting lower language barriers when taking up work - often in Spain or Portugal.

The risk of moving into unemployment is much higher for people from all regions - more than twice as high for workers from Africa/Middle East and 'Other Europe' as for native workers. This is reflected by the fact that many of them come for reasons other than work, with particularly low employment rates (see Section 3.2).

Contractual labour market segmentation may explain part of the dynamics.

The findings obtained so far suggest that relative to the host countries' native populations, especially mobile EU-3 people and third-country migrants tend to face a higher risk of losing their job. On the other hand, mobile EU people stand a better chance of finding a new job. Higher labour market dynamics in both directions may be due to some extent to more frequent use of non-standard employment contracts facilitating both hiring and firing ('easy hire, easy fire'), see Table 4.

Table 4: Ordinal logistic regression: odds ratio for being on temporary employment and being on part-time employment, relative to natives, 2012-2013, by region of birth

	Temporary	Part-time
EU-15	1.20 **	1.03
EU-10	1.43 **	0.93
EU-3	1.62 **	1.40 **
non-EU	1.49 **	1.32 **

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Source: DG EMPL calculations based on Eurostat EU-LFS 2012 and 2013 micro-data (merged).

Note: ** and * denote: coefficient is statistically significant below 1% and 5%, resp.

Controlling for the same individual characteristics and country fixed effects as before (Box 1) one finds that EU-15 and EU-10 mobile people do not differ significantly from native-born workers in terms of taking up part-time jobs. However, mobile EU people and third-country migrants stand a significantly

([37]) Excluding Germany as potential host country for data availability reasons, Spain and Italy combine one third of all third-country migrants in the EU and two thirds of all EU-3 mobile workers.

([38]) 68% of third-country migrants who were inactive or unemployed a year before the survey were from Other Europe or Africa/Middle East. For those who were in employment the share is 59%.

higher chance of ending up in temporary employment, all other parameters being the same. Within the group of mobile EU people, those who come from Member States which joined the EU in 2004 and after are more affected by temporary employment contracts than EU-15 mobile people, as the latter group contains a much lower share of people who were mobile more recently (i.e. a higher share of longer-established mobile people) ([39]). The higher prevalence of temporary contracts amongst foreign-born people in the EU is a clear contributory factor to both high entry and high exit rates into/from employment. It is also complementary to frequent findings suggesting that immigrants face greater job insecurity and are more likely to experience significantly worse working-conditions than their native-born peers ([40]).

3.4. Conclusion

Good performance and higher labour market dynamics through intra-EU mobility…

Section 3 provides a micro-data analysis on the driving factors of mobility within the EU. It also analysed mobile EU people' and third-country migrants' labour market performance in EU host countries. The analysis confirms earlier evidence provided by the Commission that the individual labour market situation in the source country is a strong determinant in people's decision to cross borders within the EU. On the other hand, a strong-performing labour market in the potential host country is a pull-factor (positive selection effect). Once in the host country, the positive selection effect helps mainly two groups of mobile EU people to perform well on the labour market: relative to natives, mobile people from EU-15 and EU-10 stand higher chances of being in employment and, once unemployed or inactive, of re-joining employment. Other reasons for their good performance are their high formal education and their young age.

A positive selection effect cannot be found in the case of EU-3 mobile people as relatively many of them live in countries where unemployment is relatively high at the moment.

… but much of the potential is left untapped…

Enhancing internal labour mobility could make a significant contribution to overall employment growth, given large differences in labour market conditions across Member States which have been further amplified during the recent crisis ([41]). Available estimates suggest that up to a quarter of an asymmetric labour market shock could be absorbed by migration within a year ([42]). Intra-EU labour mobility could already have played an equilibrating role during the crisis that is already sizable when compared to the low labour mobility ([43]).

This highlights the large untapped economic potential for intra-EU labour mobility. Today, only 4% of the EU's working-age population (aged between 15 and 64 years) are mobile in another EU country. This figure compares modestly in the light of citizens' perception on mobility: one in four (25%) EU citizens say they would definitely (8%) or probably (17%) consider working in another EU country in the next 10 years ([44]). This discrepancy highlights the potential of labour mobility and the need to enhance it, in particular by clarifying and streamlining existing rules.

… while third-country nationals may often not have the chance to perform better.

Third-country nationals face a much lower employment probability and have lower chances to find a (new) job if not in employment. Much of this result may thus be explained by other (unobserved) determinants such as the channel of migration (family unification, education, international protection), but also discrimination or legal restrictions to taking up employment. These external factors reduce third-country migrants' labour market return on higher education.

Both groups often face segmented labour markets.

The risk of getting fired is higher for all groups of mobile EU people and third-country migrants. These findings support the thesis of 'easy hire, easy fire', given the strong prevalence of fixed term contracts amongst foreign-born people. However, higher job-finding dynamics, coupled with a high level of employment are a resource for improving factor allocation across Europe through mobility in the EU, particularly in the case of mobile EU people from EU-10 countries as they enjoy particularly pronounced labour market transitions out of unemployment or inactivity into new jobs. During the crisis this phenomenon may have helped to prevent even stronger hikes in unemployment. It offers significant growth potential in terms of a more efficient factor allocation. Section 4 will further elaborate on the extent to which Member States make use of that potential and the obstacles they face.

4. The wider economic impact of EU mobility and third-country migration

The end of the transitional restrictions on access of workers to the labour market of EU Member States for Romanian and Bulgarian citizens (beginning of 2014) has once more spurred the public debate on the wider economic impact of international migration from the host-countries' perspective. One concern is the effect on the host economy's labour market, another one is the fiscal effect that freedom of movement may have on the welfare system.

Literature on the wider economic impact of international migration is extensive and concentrates on the EU and the United States as receiving countries. The majority of studies conclude that domestic employment levels and wages would be affected only marginally, and mainly in the short term ([45]). In the long run, capital adjusts to immigration: Firms would invest a higher share of their profits in new equipment which

([39]) Looking at people aged between 15 and 64 years, the 2014 share of those resident for up to 2 years in the eight major host countries (Belgium, Germany, Spain, France, Italy, the Netherlands, Austria, United Kingdom) is 12% for mobile EU-15 citizens and 39% for mobile citizens fromthe EU-3/EU-10.

([40]) For example Eurofound (2007); Giuntella (2014) concludes that immigrants, by occupying more hazardous jobs, give room for native people to take up higher-quality jobs – improving their well-being on the job.

([41]) The divergence in unemployment rates across Member States suggests that in some countries there is an oversupply of labour when compared to the labour demand. In addition, skills mismatches and shortages have increased in many Member States, in part due to the crisis, but also to, inter alia, the ageing process.

([42]) Jauer et al. (2014) and European Commission (2015:1).

([43]) Chaloff (2012).

([44]) Special Eurobarometer 398 – Internal Market, October 2013.

([45]) Bratsberg and Raaum (2012).

is more complementary to the immigrants' skill mix, whatever that mix would be. Stronger investment will increase demand for workers, so that wage-declines which may have occurred in the short run, would level out in the long run ([46]). Those who find more significant enduring effects tend to outline the importance of the international migrants' educational mix. From a receiving country's perspective: the more the educational composition of immigrants and natives are substitutes for each other, the more likely it would be to have adverse effects on local labour market ([47]).

Section 4.1 looks at the extent to which the allocation of mobile EU people and third-country migrants across sectors is complementary to the local economies' existing industrial structure in order to gain a better understanding of whether the current pattern of intra-EU mobility and third-country migration helps or rather hinders optimal cross-EU factor-allocation. It then looks at overqualification as one major reason why foreign workers often fail to capitalise on their formal education. Section 4.2 continues with a model-simulation of higher immigration, based on DG EMPL's Labour Market Model – making the semi-theoretical assumption of purely low-educated and purely high-educated immigration in 14 Member States. The analysis reveals that the migrants' mix of qualification is crucial to growth. Finally, Sections 4.3 and 4.4 consider what intra-EU mobility and third-country migration could imply for the host-country's wage level and touch upon their potential impact on public finances and the notion of 'welfare dependency'.

4.1. Intra-EU mobility, third-country migration and efficient human resource allocation

Understanding the economic impact of international migration requires understanding to what extent it contributes to the objective of (optimal) human resource allocation **across economic sectors**.

The cross-country, cross-sector picture is so diverse that it makes sense to establish country-profiles for typical receiving EU Member States. Such profile is being presented for those countries which receive the most migrants. Then, a simple indicator for the efficiency of labour allocation through intra-EU mobility and third-country migration is being developed:

To what extent do foreign nationals join the fastest-growing sectors in a country? To the extent that those sectors attract people from abroad, this would hint towards higher complementarity of human resources from abroad to the local labour market needs and represent strong evidence that international migration will improve the allocation of human capital across the EU and hence its growth potential.

Contrary to the baseline in this chapter and especially to the micro-data analysis presented earlier, the analysis in this section takes on board the concept of 'nationality' instead of 'country of birth' when defining mobile EU people or third-country migrants. This is because the analysis here relies on aggregate data from the Labour Force Survey (and National accounts) which is not provided for Germany to the extent that it refers to 'country of birth'.

4.1.1. Sectoral allocation of mobile EU workers and third-country migrants from the growth perspective

There is strong theoretical and empirical evidence that international migration, no matter how it is defined, will contribute to better allocation of human resources. Workers who are free to move from region to region or from sector to sector, from the European perspective contribute to growth by 'reducing labour market imbalances, improv[ing] skill matches in an integrated market … and [by generating] higher levels of innovation and entrepreneurship' ([48]). One can assume that these positive economic externalities are the stronger when a greater foreign workforce joins those sectors which offer the highest growth potential. This section examines the sectoral allocation of mobile EU-workers and third-country migrants in the EU. It concludes that there may be scope for using intra-EU mobility and third-country migration as tools to enhance a country's growth potential through re-allocation of human resources across sectors.

4.1.1.1. Taking stock: A simple composite indicator for allocative efficiency

Box 3 develops a simple index for the allocative efficiency of intra-EU mobility and third-country migration. The aim is to derive a synthetic index for the extent a country manages to get its foreign workforce to join those sectors, which, during a given reference period would have seen the fastest economic expansion. It is hence composed of two sub-indices:

1. **the sector's growth performance:** The average annual percentage increase of real gross value added per sector over the reference period.

2. **the sectoral migrant representation index**: The difference (in percentage points) between the share of native workers and mobile EU people/third-country nationals working in a given sector at a given point in time. The aim is to look at how foreign workers are distributed across sectors and then compare the distribution to the one of nationals ([49]). If the share of foreign workers in a given sector is higher than the share of native workers, this would imply an 'over-representation' of international migrants in that sector.

The analysis cannot include interactions between foreign workers and nationals. For example, low-skilled services in private households provided by foreign people may facilitate labour market participation of high-skilled nationals. However, even despite these limitations a strong and persistent 'over-representation' of foreign workers in many fast-growing sectors could be strong evidence that international migrants actually help the country in question to improve its human resource allocation.

Before presenting the indicator the section starts with a descriptive part on the sub-indices it is composed of. Chart 14

([46]) European Commission (2008), p. 54.

([47]) Peri (2014). For an overview see Kerr and Kerr (2011).

([48]) Bonin et al. (2008), p. 6.

([49]) As for data reliability reasons the analysis operates on stocks rather than flows, it looks at the sectoral migrant representation at the end of the reference period. That is, it is implicitly assumed that labour migrant stocks adjust to long-term economic trends with a time-lag so that the sectoral representation index reflects the developments in the reference period to acertain extent.

shows the two indices for the EU as a whole: The sector's migrant representation index by nationality (bars), and its recent growth profile (blue line) over the period 2000 to 2013. Both indices are standardised. That is, they are given as indices with a value of zero implying national average.

Positive (negative) values represent positive (negative) deviation from the national average ([50]). To improve reliability, the analysis considers only the broad 10-sector breakdown.

The sectoral allocation of employed foreign workers has to be seen in the context of a country's overall employment rate which is given in a supplementary chart. People not in employment are not in the position to contribute to a country's performance (as measured by GDP). This is particularly relevant for third-country migrants, given their large employment-rate gap towards the nationals (-8 % pts). This section, however, intends to extend the debate on mobile EU people' and third-country migrants' growth contribution towards the objective of allocating employed human resources towards fast-growing sectors.

Chart 13 suggests that there is scope to increase efficiency as the sectors' growth performance across the EU is far from reflecting international migrants' sectoral employment allocation. This tends to be true for all four categories of international migrants

Apart from public administration (included in O-Q), the strongest deviation of actual migrant workforce allocation from the current sectoral growth pattern is shown for the ICT sector (J), growth of which has been far above average. Yet, migrants in the ICT sector are only slightly over-represented for EU-15 mobile people, or even under-represented for the other three categories of foreign nationals. On the other hand, due to the crisis, the construction sector (F) has shown negative growth. Yet, it strongly over-represents people from EU-10 and EU-3.

Traditional services, i.e. sales/accommodation/food services sectors (G-I), have also seen relative over-representation of international migrants, particularly of mobile workers from EU-10 and third-country nationals. Contrary to that, service sectors R-U have shown below-average growth over the period in question. The strong over-representation of international migrants in those sectors is mainly due to their employment in households as employers. It is very pronounced as concerns mobile EU workers from EU-3 as well as third-country nationals. A large number of them work in private households in **Spain** and **Italy**, and, to a lesser extent, **France** and **Belgium**. This can be seen in Chart 14 below, which for the six EU countries with the highest stock of international migrants in employment provides strong evidence that the EU aggregate hides pronounced cross-country differences in human resources sectoral allocation.

Germany shows a strong over-representation of international migrants in the (shrinking) construction sector and in traditional services. Strong growth of ICT activities, on the other hand, fails to translate into a higher share of international migrants in the sectors' employment.

The **United Kingdom**'s international migrant workforce allocation across sectors tends to best reflect the sectoral growth-performance in the case of third-country nationals and mobile workers from EU-15 – but not for workers from the New Member States. The profiles of **Spain, Italy, and France** still show important signs of the financial crisis: a shrinking construction sector with pronounced over-representation particularly

([50]) More concretely, the scaling represents the number of standard-deviations from the national average.

Box 3: Efficient allocation of mobile EU citizens and third-country migrants – a simple indicator

Be E_{ij} the number of employed people in country i by nationality j, distinguishing only two groups: people whose nationality is that of the reporting country ('nationals', j=0) and foreign workers (mobile EU people or third-country migrants) living there (j=1). Be $_{Eijk}$ the number of those nationals or foreign workers who are employed in sector k. In order to avoid too small sub-samples the analysis considers the broad sectoral division of NACE, rev.2, one digit which distinguishes ten economic activities.

The first sub-index is the degree of over- or under-representation of foreign workers in a certain sector r_{ik}. For that purpose:

$$(1) \quad r_{ik} = \frac{E_{i1k}}{E_{ij}} - \frac{E_{i0k}}{E_{ij}}.$$

That is, r_{ik} is positive (negative) if the share of foreign workers employed in sector k is higher (lower) than the share of nationals employed in that sector. This situation is plotted against a sector's growth of gross value added (volumes) over a reference period (g_{ik}) which ends in the year for which r_{ik} is calculated.

Next, both r_{ik} and g_{ik} are standardised, using the standard transformation:

$$(2) \quad r^s_{ik} = \frac{r_{ik} - \mu(r)}{\sigma(r)}, \quad g^s_{ik} = \frac{g_{ik} - \mu(g)}{\sigma(g)}, \text{ for k = 1,..,10 in country i.}$$

μ(.) and σ(.) are the average and the standard deviations of representation factor r and growth rate g, respectively.

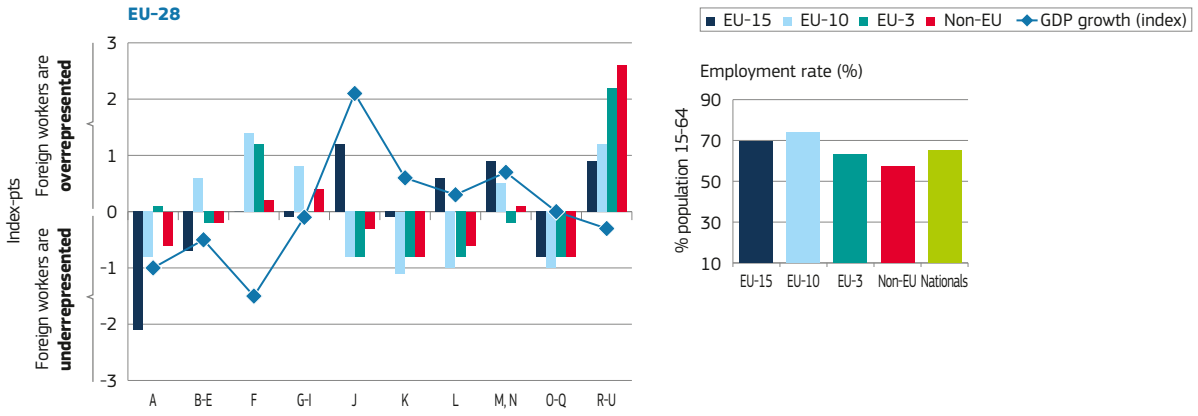
Be w_{ik} the sector-specific weight reflecting the percentage share of sector k in total current gross nominal value added, then the country's composite indicator is described by

$$(3) \quad A_i = \sum_{k=1}^{10} (|r^s_{ik} - g^s_{ik}| \cdot w_{ik}).$$

as a potential index for EU mobility's or migration's allocative efficiency in country i. A_i is the mean difference between foreign workers' standardised sectoral representation index and the standardised sectoral economic expansion. $A_i = 0$ would imply perfect growth-compatibility of foreign workers' cross-sector distribution in country i. A value of 1 would imply the absolute difference to be exactly one standard deviation in either direction.

Interpretation of A_i would then be straightforward: Higher A_i would imply lower allocative efficiency of foreign human resources. In other words: The more workers from other countries are concentrated in fastest-growing sectors, the more will the index approach a value of zero.

Chart 13: Sectoral representation of international migrants 2014 (by nationality) and sectoral growth contribution over the period 2000-2013 (standardised), employment rate (15-64 years), EU-28



Source: DG EMPL calculations based on Eurostat EU-LFS and National Accounts.

Legend (abbreviations used for the 10 broad sectors according to NACE, rev 2) [1]:

A	Agriculture, forestry and fishing
B-E	Industry (except construction)
F	Construction
G-I	Wholesale and retail trade, transport, accomodation and food service activities
J	Information and communication
K	Financial and insurance activities
L	Real estate activities
M, N	Professional, scientific and technical activities; administrative and support service activities
O-Q	Public administration, defence, education, human health and social work activities
R-U	Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organizations and bodies.

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[1] NACE: Statistical Classification of Economic Activities in the European Community. See http://ec.europa.eu/competition/mergers/cases/index/nace_all.html

of EU-13 migrants and (related to that) strongly growing real-estate activities with a strong under-representation of all international migrants. In **Belgium, the United Kingdom, France and Germany** traditional services show strong over-representation of third-country nationals which by far exceeds the sectors' growth performance in those countries. In **Belgium and the United Kingdom**, recent growth in professional, scientific, and technical activities experiences some support by strong representation of all international migrant categories except EU-13 in the United Kingdom.

Overall, there seems to be room for a more growth-oriented use of international migrant's human resources, especially by attracting them for fast-growing activities such as ICT and professional services that require adequate skills and higher formal qualifications.

Charts 13 and 14 suggest that the allocation of migrant workforce across the different sectors may to a large extent still be influenced by the crisis – given the relatively weak growth in industrial production and traditional services, the shrinking of construction and the associated over-representation of international migrants in those sectors. One would suggest that the economy's adjustment to such a pronounced economic shock took time and materialised on a country's international migrant sectoral allocation profile only with a considerable time-lag – with part of these adjustments yet to come.

Therefore, to better reflect upon the potential impact of the crisis to international migrant workers' allocation across the sectors, the synthetic indicator described above will be applied to two alternative reference periods: the pre-crisis period 2000-2008 and the period which includes the financial crisis, i.e., 2008-2014 [51].

Box 3 above describes the simple methodology used to condense the international migrant representation index and sectors' growth performance index down to one measure which should inform to what extent a country's cross-sectoral allocation of economic growth reflects the allocation of international migrant human resources. A value close to zero would imply only small differences

[51] As the crisis started in 2008, the letter period should well capture the impact on the stocks of migrants employed in the different sectors to a considerable extent, even if adjustments are imperfect and sluggish.

Chart 14: Sectoral representation of migrants 2014 (by nationality) and sectoral growth contribution over the period 2000-2013 (standardised); employment rate (15-64 years)

Source: DG EMPL calculations based on Eurostat EU-LFS and National Accounts.

Note: Because of data reliability problems, the analysis is restricted to the six Member States with the biggest number of mobile EU people. Furthermore, migrant representation data is aggregated for EU-3 and EU-10 (to EU-13); 1 Number or standard-deviations from national average.

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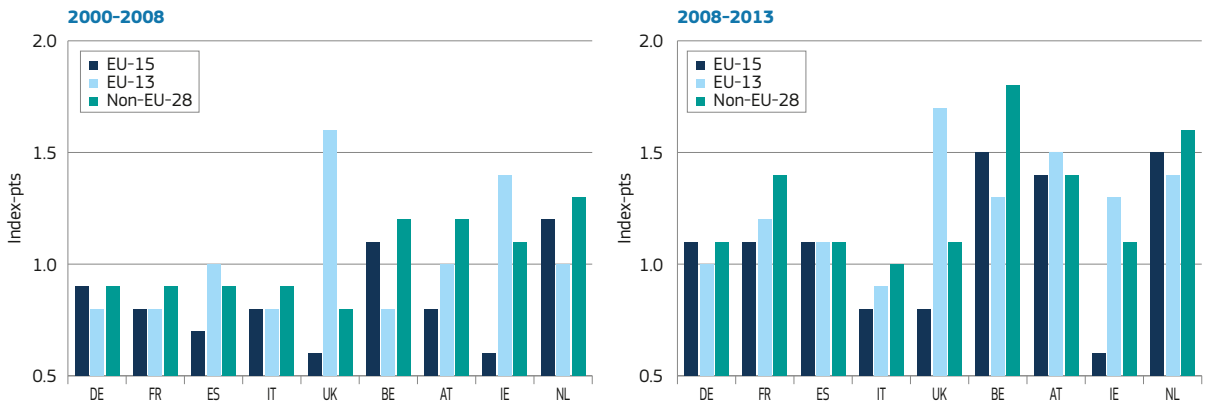
Chart 15: Migrant allocation efficiency index for alternative reference periods, by nationality



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Source: DG EMPL calculations based on Eurostat EU-LFS and National Accounts.

between those two indicators, i.e., a good match between growth and international migrant human resource allocation. The higher the value, the less perfect the match would be.

Chart 15 shows the international migrant allocation efficiency index for both periods, adding Austria, Ireland and the Netherlands to the list of countries despite data-reliability problems. The Chart supports four main findings:

- Of all three groups of international migrants, EU-15 mobile people' sectoral allocation seems to support growth the most, with third-country migrants it tends to be the opposite.

- The chart outlines the particular profile of the United Kingdom (and to a lesser extent Ireland) as a country where the allocation of mobile EU-15 workers and third-country migrants appears to be particularly growth-friendly. In sharp contrast to that, mobile workers from the Member States which joined the Union in 2004 or after are much more concentrated on relative lower-growth activities than is the case in the other countries.

- In the other countries except Spain, allocation of third-country migrants tends to be the least growth-friendly.

- At least from the point of view of sectoral human-resource allocation, the crisis has undoubtedly reduced growth-friendliness of international migrant workforce allocation across the board as shown on the right-hand side of the chart. All countries and all categories of international migrants tend to show much stronger deviations of sectoral allocation from the centres of growth than was the case before the crisis. This is strong evidence that people tend to accept low-pay low-profile jobs to a much larger extent as times get harder.

4.1.1.2. The dynamics of sectoral allocation

Hence, one main finding is that the recent (2014) allocation of both mobile EU workers' and third-country migrant human resources across sectors may not reflect those sectors' growth performance as seen since the beginning of the century. The analysis is static in the sense that it does not reflect upon factor-reallocation in the course of taking up residence: Once they have entered their host country, mobile EU people and third-country migrants may start out in low-growth sectors but change to other sectors once they have established themselves, after acquiring necessary country-specific skills or getting their formal qualification recognised ([52]).

To capture the dynamics of sectoral allocation, a similar approach is being applied as above in Section 3.3 which elaborated on the odds of a transition from and into employment. The difference is that the analysis now asks for sectoral transitions towards growing sectors *within* employment.

Exploring sectoral dynamics is tricky as the core Labour Force Survey (for which the number of observations would be sufficient when it comes to breaking the sample down into country of birth or nationality) does not follow people over a longer period time. However, the LFS question about a person's current activity (NACE-sector) has a retrospective counterpart which refers to the situation one year before the survey. This allows to explore transitions from one group of NACE sectors to another one during the last year prior to the survey, and to do this for different residence periods. In reality, higher sectoral dynamics in the case of mobile EU workers and third-country migrants would be reflected by a higher probability of changing from lower-growth to growing sectors, relative to the native population, after they had resided in the host country for some time.

Sectors of destination regroup the NACE activities J (ICT), K (Financial and insurance activities), M (Professional, scientific, technical activities) and P (Education). Though this regrouping is arbitrary it combines the activities that had seen the fastest growth EU-wide since the year 2000 or that usually require higher qualification levels. The origin sector combines all remaining activities except public administration (O) and extraterritorial organisations (U).

In the tradition of the micro-data analysis of labour status transitions shown earlier, the analysis turns back to the concept of 'region of birth' instead of 'nationality' (except for Germany). It now considers transitions from sector of origin (the year before) to the sector of destination (currently) as the dependent variable in an ordinal regression. The analysis gives the odds for mobile EU people and third-country

([52]) The sections below present evidence that acquiring country-specific skills is a significant determinant on whether foreign-born people manage to gain a foothold on the host country's labour market.

Table 5: Ordinal logistic regression: odds ratio for a transition into NACE activities J, K, M, and P between 2011/2012 and 2012/2013, by region of birth, relative to native-born people (=1)

	All foreign-born	Resident for more than 1 year	Resident for more than 10 years
EU-15	1.52 **	1.49 **	1.52 *
EU-10	0.88	0.90	0.54
EU-3	1.17	1.11	0.81
non-EU	1.00	1.01	1.03

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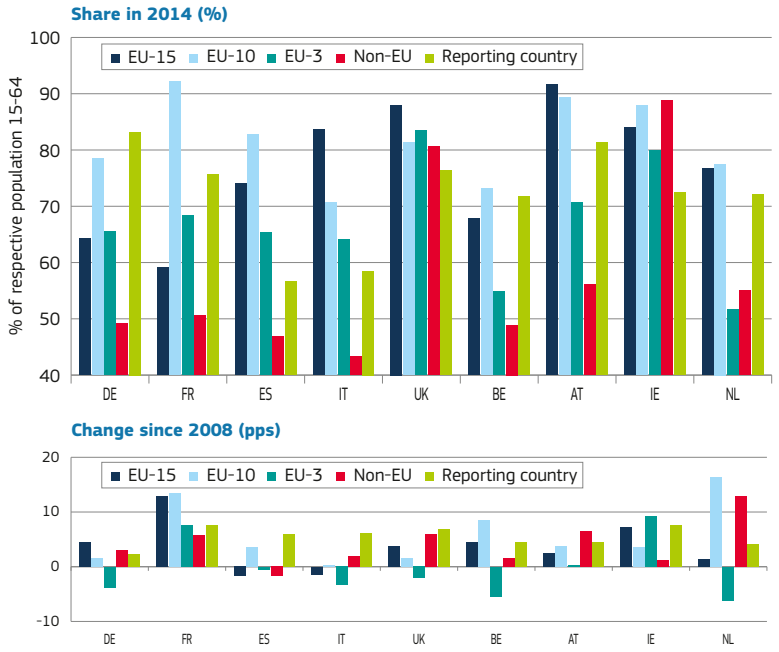
Source: DG EMPL calculations based on Eurostat EU-LFS 2012 and 2013 micro-data (merged).

Note: ** and * denote: coefficient is statistically significant below 1 % and 5 %, resp.

Chart 16: Share of people aged 15-64 years holding at least upper secondary education by nationality in percent (2014)



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Source: DG EMPL calculations based on Eurostat EU-LFS.

migrant workers of having undergone such transition during the year before the survey, relative to the native population. Different periods of residence in the host country are being considered. Further control variables are age, sex, education level, fixed country effects and the reference year of the survey.

Table 5 presents evidence that the above notion of significantly higher mobility into higher-growth sectors is a reality for EU-15 mobile people. They seem to show significantly stronger dynamics into the higher-growth destination sectors than is the case for native-born group.

The odds-ratios for the other categories stay below statistical significance, mainly due to the low number of observations. However, evidence for an equally strong upward-mobility for those groups is weak. The analysis to follow reveals that this phenomenon goes hand in hand with significant over-qualification.

4.1.2. Mobile EU and third-country workers' qualifications and their ability to capitalise on them

For a more concrete picture about mobile EU and third-country workers' growth potential it is necessary to also take into account the qualifications they bring and the kind of employment they are engaged in. Chart 16 shows the share of employed people by nationality who have attained at least upper secondary education.

Many mobile EU people tend to be (formally) well-qualified, less so the third-country migrants...

Generally, most receiving countries show a comparable or even higher share of EU-10 and EU-15 mobile people with at least upper secondary education than the national population. The situation for mobile EU-3 people tends to be mixed.

On the other hand, the share of third-country migrants with at least upper secondary education is way below average, except in the United Kingdom and Ireland. Third-country migrants' gap compared to nationals exceeds 20 percentage points in Belgium, Austria and France, and even 30 percentage points in Germany – the country that has shown the strongest overall labour market performance in recent years. Relative to its native workers, the qualification profile of foreign people in Germany appears less favourable across the board. Germany's highly competitive industrial base seems to recruit its qualified staff mainly from its well-educated and trained domestic workforce with little reliance on foreign workers' qualifications.

Educational levels seem to have made substantial progress over recent years. Both mobile EU citizens and third-country migrants have increased their share of at least medium educated people of working age. One exception is the educational profile of EU-3 mobile citizens which saw either a stagnation or a decline in that share, except in France (where their number is low).

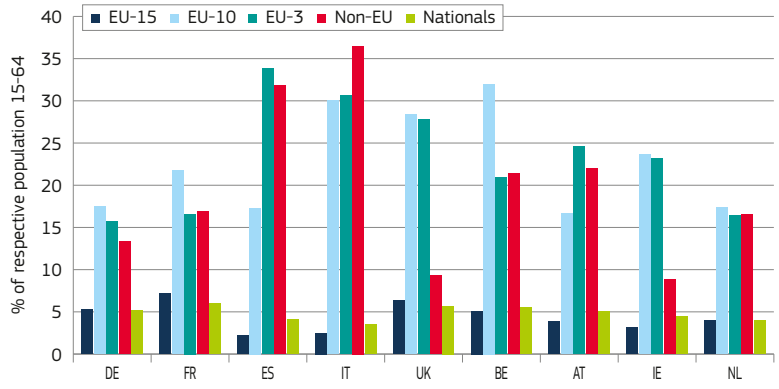
Mobile EU workers from EU-10 and EU-3 New Member States in the United Kingdom and Ireland may stand lower chances to join the fastest-growing sectors as demonstrated above. However, at the same time, they tend to be extremely well educated: All categories of mobile EU people and third-country migrants in those two countries show a higher share with at least upper secondary education than the native workforce. In the context of EU-15 mobile people, Belgium and the Netherlands seem to be other examples of countries in which a significant number of well-qualified foreign workers engage in low-growth sectors.

Literature suggests that a high share of well-educated mobile EU people may indicate strong prevalence of over-qualification which – from the point of view of a country's growth potential – can be considered a suboptimal allocation of resources similar to the less supportive sectoral distribution of international migrants as shown in the previous section. Numerous indicators were designed to capture the prevalence of qualification mismatches ([53]), and EU

([53]) Technical measures can be found in Bonfanti and Xenogiani (2014), pp. 274-75.

II

Chart 17: Share of people with at least upper secondary education working in elementary occupations, in percent by nationality, average 2009-2014



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Source: DG EMPL calculations based on Eurostat EU-LFS.

Commission services have examined them extensively ([54]). For the purpose of demonstration two broad approaches are being distinguished.

... but formal qualifications do not always pay...

Firstly, the share of the employed workforce having attained at least upper secondary education, working in 'elementary occupations' according to the International Standard Classification of Occupations (ISCO) is shown in Chart 17. These activities do not require any particular formal education but 'consist of simple and routine tasks which mainly require the use of hand-held tools and often some physical effort' ([55]). For data reliability reasons the average is built over the years 2009-2014.

The Chart shows that in the main receiving countries over-qualification amongst international migrants is a widespread and pronounced phenomenon. With the exception of EU-15 mobile workers, the share of all other categories of at least medium-educated international migrants who work in elementary jobs tends to be a significant multiple of the nationals' share. Its share exceeds 30% in Spain and Italy for third-country migrants.

The degree of over-qualification is most remarkable in the case of well-qualified employed workers from EU-10 and EU-3 Member States – the difference to nationals being enormous in all countries considered.

Secondly, over-qualification is not a mere statistical phenomenon but may well be a matter of perception. The analysis is therefore complemented by making use of micro-data from Eurofound's 5th European Working Conditions Survey (EWCS) from 2010 ([56]). The EWCS captures a question on self-perceived over-qualification as the respondents were to subscribe or not subscribe to the statement: "I have the skills to cope with more demanding duties." In another ordinal logistic regression the response is taken as the dependent variable in a regression. A number of individual characteristics are the explanatory variables: gender, age, the size of the organisation one works in, the sector (private, public, others), the type of contract (indefinite, fixed-term, temporary agency, others) and our target variable: having a foreign background (either oneself or parents having been born in another country). Data does not allow distinguishing the region of origin, though. There is a very strong statistical significance (far below 1%) that a foreign-background increases one's risk of ending up over-qualified in the EU, the odds being at +11% compared to people without a migratory background. This result is very robust with respect to all control variables mentioned.

... as both mobile EU people and third-country migrants often lack country-specific skills needed to reap the fruits of higher education ...

These findings are confirmed by a number of sources and reflect the observation that foreign people face many more problems capitalising their qualifications in the form of better job-matches and/or adequate wages. There is evidence that foreign-born people often take up work from the extremes of the skills spectrum which is not desired by locals ([57]). An obvious reason for the high incidence of over-qualification is language skills. For example, based on the migration-related ad-hoc module of the 2008 Labour Force Survey, Damas de Matos and Liebig (2014) found that the incidence of language problems significantly reduces foreign-born people's employment rate in the EU ([58]). Apart from that, they find that the place of acquisition of the highest qualification is a strong determinant of over-qualification rates. Other authors confirm these findings ([59]). Indeed, one popular conclusion is that experience in the host-country counts a lot whereas experience outside seems to not pay to the same extent ([60]) – as also found in Section 3.2 above in relation to the chances of mobile EU people and third-country migrants to be in employment. The reasons may well be partly supply-side related to the extent that international migrants, despite being formally well educated, still lack specific skills needed on the labour market of the very host country they have moved to (including soft skills). Indeed, a substantial impediment to capitalise one's formal qualification on the job is the lack of relevant skills – see Box 4.

... but imperfect recruitment policies may play a role as well as problems of recognition

However, wrong measurement or a systematic underestimate of qualifications acquired abroad may play a role as well as unobserved demand factors such as discrimination of foreigners compared to native workers ([61]). These

([54]) The 2012 edition of this review devoted a chapter to skill mismatches in Europe. See European Commission (2012), Chapter 6. See also European Commission (2013:1).

([55]) ILO definition, see http://www.ilo.org/public/english/bureau/stat/isco/isco88/9.htm.

([56]) See http://www.eurofound.europa.eu/european-working-conditions-surveys-ewcs.

([57]) Giuntella (2014), European Commission (2014:2). Cancedda (2015) analyses the impact of EU mobility in four EU Member State cities selected because of their 'substantial migrant populations'. It is confirmed that mobile EU people are well educated compared to local populations, but continue to face higher exposure to the risks of being hired at low qualification levels, of detrimental working conditions and of exploitation. The increased labour supply would exercise pressure on wages mainly in the low-skilled segment.

([58]) Damas de Matos and Liebig (2014), p. 210.

([59]) For example: Bonfanti and Xenogiani (2014), esp. 279-288.

([60]) Damas de Matos (2014) lists evidence on p. 165. Using experimental data, Carlsson and Rooth (2006) find evidence that ethnic discrimination in is a widespread phenomenon amongst Swedish recruiters.

([61]) Damas de Matos (2014), pp. 174-5.

findings indicate a substantial prevalence of labour market segmentation 'pushing [even well-qualified] migrants towards the bottom end of occupational hierarchy' ([62]).

In order to use human capital efficiently, policy action is needed all the more as relative to the United States, the EU seems to offer little opportunities to international migrants to move up the job ladder once engaged in low-skilled activities ([63]). Findings in Section 4.1.1.2 have demonstrated that there is indeed scope for improvement.

For European citizens, these findings reveal the important contribution that freedom of movement when studying or working abroad can make when it comes to acquiring the skills necessary for fully capitalising one's qualification on the European labour market. With a view on the labour market integration of third-country migrants they also call for 'the need to encourage recognition and certification of experience [and] qualifications obtained abroad' ([64]). Immigrants who apply for recognition stand a much better chance of not ending up over-qualified on the host-country's labour market – but there is also evidence that few do apply ([65]).

As a result: Potential of mobile EU people is not fully exploited

Today, while third-country migrants are still over-represented around low qualifications. In the case of mobile EU people the situation is very different. Their qualification mix is often above host-country standards. This finding reflects stronger demand for higher qualification by the host economies but also a genuine educational progress in the countries of origin.

However, formal qualification of both mobile EU people *and* third-country migrants has generally made progress in the last decade. They could hence be a valuable source of future productivity growth, feeding the main receiving economies' skill needs and supporting their long-term growth potential.

([62]) International Organization of Migration (2012), p. 19.

([63]) Ibidem, p. 20.

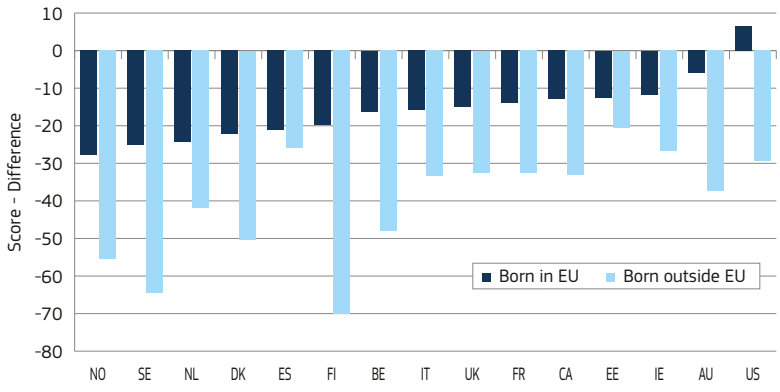
([64]) Bonfanti and T. Xenogiani, OECD (2014), p. 302.

([65]) Damas de Matos and Liebig, pp. 212, 213.

Box 4: Literacy-skill-performance of third-country migrants and mobile EU citizens

Based on the OECD's 2012 Adult Education Survey (PIAAC), Bonfanti and Xenogiani (2014) reckon that around 30% of the difference in over-qualification rates between natives and foreign-born people in 17 OECD countries is due to significantly lower literacy performance of the latter group.

Chart 18: Difference between the literacy score of foreign-born people and natives, PIAAC 2012, by region of birth



Source: Bonfanti and Xenogiani (2014), p. 266; controlled for sex, age, educational attainment and parents' education.

Smaller countries with rarely-spoken languages seem to have a comparative disadvantage as of the literacy skills of their migrant population. Moreover, the skill-disadvantage is particularly pronounced in the case of non-EU migrants. However, the authors show that the difference in the performance of migrants relative to natives tends to be substantially smaller if one looks at longer-residing people and those who immigrated at child-age. This is particularly true in countries with less popular languages. Indeed, there is strong evidence that mastery of the host-country's language is one of the main contributors to good literacy skills (though probably over-emphasised in PIAAC as the tests are taken in the language of the host country) (Bonfanti and Xenogiani (2014), pp. 266ff).

Based on the same 2012 PIAAC micro-data, a regression analysis in the 2014 Employment and Social Developments in Europe review confirms that, apart from literacy, foreign-born people also perform significantly less favourably in the numeracy and problem-solving disciplines which are equally as important for people's labour market performance – after controlling for sex, age, educational attainment and other characteristics (European Commission (2014:1), Chapter 2, pp. 121, 122).

Conclusion

Apart from low employment performance of third-country migrants in the EU, two major obstacles keep the host economies from reaping the full potential of EU-mobility and third-country migration. One is the sub-optimal sectoral allocation of both mobile EU people and third-country migrants when it coincides with labour shortages in high-growth sectors. The other, partly related, is the under-use of their qualifications. Both phenomena go at the expense of the host country's long-term growth prospect and need adequate policy response if host-countries were to fully exploit that potential. Indeed, there is a gap between the rich pool of existing well-qualified workers (especially mobile EU people) on the one hand and its productive use on the other hand which 'signifies a degree of down-skilling and possibly brain-waste' ([66]).

The potential of international migrant qualifications, if fully exploited, will be demonstrated in a model simulation presented in the next section.

4.2. International migrants' qualification and economic growth: evidence from the Labour Market Model

Earlier simulation exercises with DG EMPL's Labour Market Model (LMM), a general-equilibrium model with a particular focus

([66]) Kahanec (2013), p. 143.

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on labour market institutions ([67]), outline the significance of the workforce's skill-composition ([68]) to the economy's long-term growth potential and the labour market. As a result, in line with literature, the impact of international migration on the host economy will strongly depend on the skill-mix of international migrants ([69]), as shown European Commission (2013) ([70]) for Germany.

It was demonstrated that, in the long run, the additional workforce would trigger employment without noteworthy wage effects because investment would be stepped up, the extent of the shift depending on the skill-mix of the incoming international migrants. This is because firms try to re-establish the equilibrium capital intensity – which remains largely unchanged if the incoming people would not change the skill mix of the total workforce, or, in other words, if the skill-composition of the new migrant workforce is the same as the native workforce's (skill-neutral international migration). However, investment reacts sharply as the assumption on incoming people' skill composition is changed, given LMM's strong pronunciation of the capital-skill-complementarity: assuming only high-skilled international migration would change the workforce's skill mix to the higher end, strongly triggering investment and hence speeding up growth and employment as well as of lower-skilled workers ([71]).

As country-specific demographics and institutional labour market settings vary greatly across Member States, this section extends the earlier analysis to eight EU countries which are very different in that respect. In line with ESDE 2013, an increase of (net) international migration is simulated, equivalent to 0.1 % of the population aged between 25 and 49 years every year. However, the two theoretical borderline cases will be compared here: The additional international migrants are assumed to be either all low-qualified or all high-qualified. These strong assumptions do not claim to become realistic scenarios but help to demonstrate the importance of international migrant qualifications' complementarity to the domestic needs of qualifications and understanding their full growth potential. The results provide strong evidence that the notion of growth-enhancing high-qualified international migration holds true even in very different demographic contexts and institutional environments. Chart 19 shows the long-term impact on the macro-economic and labour market magnitudes of interest.

Chart 19: Simulation with DG EMPL's Labour Market Model: Net migration shifts each year by 0.1 percent of the population aged between 25 and 49, percentage change in selected core-magnitudes in the very long run

Source: DG EMPL simulations with the Labour Market Model.

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All countries show the strong impact of international migrants' skills on their long-term labour market and growth prospects. Following the changing skill-mix of the total workforce, low (high) qualified international migration tends to lower (increase) average labour productivity and hence wages. As, in line with literature ([72]), capital is assumed to be more complementary to higher than to lower qualifications, firms step up investment much more pronouncedly in case of high-skilled international migration. Higher investment will lead to stronger labour demand across all skill levels, supporting the notion that better conditions for high-skilled jobs also bring more low and medium-skilled jobs. As a result, the overall employment effect is stronger in the case of high-skilled international migration. Both stronger employment growth and higher capital intensity will fuel higher growth of real GDP.

The findings provide evidence for the earlier-mentioned complementarity argument stressed by literature ([73]): To the extent the international migrants' skill mix resembles that of the domestic workforce, the impact on total employment, investment and GDP tends to be lower as the international migrants' qualification are less complementary to the domestic industry's skill demand:

High-skilled international migration tends to have stronger positive effects

([67]) The model was made for DG EMPL by the Austrian Institute for Advanced Studies and the University of St. Gallen. See Berger et al. (2009).

([68]) In this section the terms 'skills' and 'qualifications' are used synonymously. They refer to the educational attainment level, measured as described in the next footnote.

([69]) LMM distinguishes low-, medium and highs-skilled workforce according to the ISCED-classification, i.e., the term 'skills' in the context of 'skill-mix' being the equivalent to formal educational attainment in the model.

([70]) Chapter 1 of the 2013 Employment and Social Developments in Europe review (ESDE).

([71]) European Commission (2013:2), Chapter 1, esp. Sec. 6.2.

([72]) For example, see Goldin and Katz (1998) and Krussell et al. (2000). In economic modelling it is quite common to reflect the notion of complementarity between high-skilled workers and capital formation. This is the case in DG EMPL's Labour Market Model, see Berger et al., p. 33.

([73]) For example: Kahanec et al. (2009), pp. 3-5.

on total employment and GDP in countries where the share of high-skilled in employment tends to be relatively low.

Overall, however, high-skilled international migration will lead to more pronounced gains in total employment and much higher investment activity due to the skill-composition effect towards the higher end. Hence, high-skilled international migration, if efficiently used by the host economy, can contribute to higher productivity and higher growth. This finding is in line with earlier analysis and emphasises that the economic impact of international migration crucially depends on the skill-mix of international migrants and on how capital reacts to the additional supply of workers and their qualifications ([74]). It is also in line with recent evidence provided by Fassio et al. (2015), who find for Germany, France and the United Kingdom that it is high-qualified international migration which has a positive impact on growth via innovation, at least to the extent they join high-tech sectors ([75]).

4.3. Impact on wages

The simulation also reveals that the international migrants' qualification level is a strong determinant of how wages react to immigration. There are two effects at work: as wages increase with skill-level, low-skilled international migrants will reduce and high-skilled international migrants increase average wages, following the simple wage composition effect. The second effect affects labour demand. As mentioned before, the model assumes a complementarity between skills and capital accumulation – the latter being a strong driver of both productivity and labour demand. Hence, it is a matter of fact that low-skilled international migration would tend to rather dampen wage development whereas high-skilled international migrants will stimulate wage shifts from the demand side of the labour market.

Indeed, for the labour demand effect, the bulk of literature stresses the importance of complementarity, confirming a strong link between international migrants' qualification-mix and the one prevailing in the host country. For example, as Borjas (1999) puts it, 'relative supplies *do* affect relative prices'. If the skill-mix of foreign-born people resembles the one of the native workforce, one can expect stronger competition between the two with potential downward-pressure on wages. If, in the case of high-skilled international migration to modern industrialised economies, their skills are complementary to the local workforce, responding to the needs of the local economy, this would give room to stronger wage shifts, along with higher productivity growth and stronger economic growth ([76]). Indeed, even if in the very long run capital investment adjusts to low-skilled international migration ([77]), there is strong empirical evidence for the link between the international migrants' skill-mix and their impact on the local labour market, wages in particular ([78]).

However, apart from these macro-economic considerations, whether or not foreign workers reduce average wage levels also depends on their individual capacity to capitalise their experience or skills in the form of adequate wages in the host country. A negative composition effect from international migration tends to be the stronger the more foreign-born people receive below-average wages at given individual characteristics such as education or experience.

Significant wage penalty, particularly for mobile workers from EU-13 Member States and third-country migrants…

In order to demonstrate the impact of being born in another country on wages, a regression is run based on the 2012 PIAAC ([79]) micro-data as this includes hourly earnings, contrary to the Labour Force Survey. Hourly earnings (excluding bonuses for wage and salary earners) of the employed population are the dependent variable in a regression. Hourly wages are given in deciles. That is, the sample is divided in ten classes, each representing an equal number of respondents. The first (tenth) decile represents those 10% having the lowest (highest) earnings. As the dependent variable is classified, another ordinal logistic regression is run, with the following main explanatory variables:

- the region of birth, distinguishing four cases: born in the reporting country, born in EU-15, born in EU-13, born outside the EU.
- the country where the highest education was gained, same classification (origin of education).
- an interaction between the place of birth and the main language (foreign or native language).

A number of other relevant variables are controlled for: gender, educational level, the type of contract (indefinite contract; fixed-term contract; temporary agency contract; apprenticeship or training; no contract), the sector one works in (private, public, non-profit), and the age group.

The regression is restricted to a sample of 11 EU-countries ([80]). For the region of birth and the origin of education, the following odds-ratios result from the regression (relative to people born / educated in the reporting country):

Table 6: Ordinal logistic regression: Odds ratio for a shift in wages by one decile, relative to people born in the reporting country (=1)

	Born in…	Education gained in…
EU-15	0.75 *	1.12
EU-13	0.48 ***	0.56 *
non-EU	0.40 ***	0.73 *

Source: DG EMPL calculations based on OECD PIAAC 2012 micro-data.

Note: ***, ** and * denote: coefficient is statistically significant below 1%, 5%, and 10%, resp.

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There tends to be a significant wage penalty resulting from being born outside the reporting country. Considering people from the Member States which joined from 2004 and people born outside the EU: their chance of climbing up the wage-ladder by one decile is less than half of what it is

([74]) D'Auria et al. (2008).

([75]) Fassio et al. (2015), p. 19.

([76]) Borjas (1999), p. 47.

([77]) Firms' capital investment may adjust to the situation in the long run, complementing low-skilled workers with the latest techniques in an attempt to maximise their profits so that labour demand and wages may again catch up to some extent. European Commission (2008), p. 54.

([78]) For example: European Commission (2008), Ruhs and Vargas-Silva (2014).

([79]) OECD's Programme for the International Assessment of Adult Competencies (PIAAC), see http://www.oecd.org/site/piaac/surveyofadultskills.htm.

([80]) Those are Austria, Belgium, Czech Republic, Denmark, Estonia, France, the Netherlands, Poland, Slovak Republic, Spain and the United Kingdom, as those are the EU countries reporting on the country of birth.

for those born in the reporting country. Interestingly, the wage penalty for mobile EU-15 people is much lower and only significant at 10% level. Relative to mobile EU-13 people, this finding may reflect the fact that amongst mobile EU-15 people the share of those longer established in the host country is much higher ([81]). This is in line with the above-presented ([82]) finding of a lower upward mobility towards growing sectors or high-qualification activities in the case of mobile EU-13 people and third-country migrants. The second column confirms that having an education in the reporting country helps to improve wages in the case of people educated in EU-13 and outside the EU. On the other hand, in the case of international migrants with qualification gained in the EU-15 there is a positive, yet insignificant, difference compared to those who gained their degree in the reporting country.

... but language skills and experience abroad do help.

The statistical significance of the 'place of education' variable is relatively low because there is some correlation to the third variable of interest: the language. International migrants speaking the language of the reporting country as the main language stand a 19% greater chance of joining a higher wage-group compared to those without this language. For native-born people the main language makes no significant difference.

A recent OECD analysis ([83]) confirms these findings. Also based on PIAAC 2012 micro data, Bonfanti and Xenogiani (2014) calculate the average wage difference to native workers for three categories of international migrants: mobile EU workers, third-country workers, and a separate regression on tertiary educated foreign-born workers. They control for the years of experience, the years of schooling, gender, and a dummy variable indicating part-time work. Their analysis reveals that all those wage differentials are significant in most countries – mostly so for highly educated workers. In Italy, the Netherlands and Spain, tertiary educated foreign-born workers earn at least 20% less than their native peers. For mobile EU people, only France and the Netherlands see no negative difference. However, the authors find that the overall wage differences become insignificant in most countries if, besides the usual individual characteristics, one also controls for the country in which the highest qualification was acquired, the years of residence in the host country (less or more than 5 years), the PIAAC literacy score, and language skills.

As already outlined above, those variables capture relevant host-country-specific experience and language skills. Together with recognition and validation of foreign qualifications, these are very strong predictors of whether or international migrants manage to receive a return on their qualification in the host country. They also contribute to the pronounced wage-difference in the case of tertiary-educated people. Even if wages increase with international migrants' education levels, so does the probability of working below the qualification level.

4.4. Fiscal impact

The ability to capitalise on one's qualification is also the main predictor when it comes to assessing the net fiscal impact of international migration in the host country. A number of studies have been performed on European countries recently. Depending on the methodology applied, they come to different conclusions. However, overall, the net effect seems to be modest in most OECD countries – hardly ever exceeding 1% of GDP in both directions – and it crucially depends on the labour status of immigrants – the impact of labour migration on the host country's tax-benefit systems tending to be favourable in general ([84]).

There are basically two methods to calculate the net fiscal impact of international (im)migration:

Cross-sectional (static) models tend to ignore the long-term dynamics of one and the same generation of international migrants. Most of the studies account for today's immigrant population's contribution to the local tax-benefit system or the production of public goods against the expenditure and the consumption of public goods.

For the United Kingdom, Rowthorn (2008) reckons that 'net fiscal contribution of past international immigration normally lies within the range ±1 per cent of GDP' ([85]), the sign of the impact in his model depending on the prevalence of 'unfavourable adjustments', i.e., extra cost imposed by extra medical expenses or asylum support as outlined in an earlier study by Gott and Johnsson (2002). For Germany, Löffelholz et al. (2004) expected that international immigrants provided a net contribution of around 1% of GDP, mainly because they create additional domestic demand, and hence income and jobs. Public households would take advantage, not least because of Germany's high share of public expenditure. In the long run, higher international immigration led to higher investment, better allocation of labour and stronger productivity growth ([86]).

Dynamic models, including generational balancing, try to consider the streams of contributions and expenditure over a longer period – which seems to be more accurate but also suffers from numerous uncertainties associated to the projection of revenue and expenditure which depends on, inter alia, future discount rates, consumption profiles, or tax rates. However, Bonin's (2014) recent generational-accounting study ('Bertelsmann-Studie') has triggered public debate on the net fiscal impact of international immigration in Germany. In line with most sources, he finds that the future balance of immigrants for public budgets crucially depended on their skills ([87]). The currently positive balance could actually be much more significant if more was invested in the facilitation of their educational progress and their labour market integration than is actually the case ([88]).

([81]) See footnote 39 above.

([82]) See Section 4.1.1.2.

([83]) Bonfanti and Xenogiani (2014).

([84]) OECD International Migration Outlook (2013), p. 128.

([85]) Rowthorn (2008), p. 577. See also Bødker, Højbjerg Jacobsen and Skaksen (2013); Baas and Brücker (2012).

([86]) Löffelholz et al. (2004), pp. 43-45.

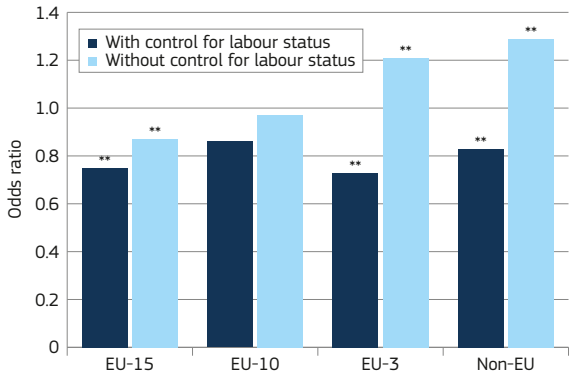
([87]) See also Fassio et al. (2015).

([88]) Bonin (2014), pp. 1-2.

Box 5: Dependence on benefits or assistance, with and without controlling for the labour status

In an ordinal regression analysis the analysis makes use of the LFS variable REGISTER which captures if a person is registered at the public employment service and if they receive ssome kind of benefit or assistance. The question is put to all the people, not only to the unemployed. The probability of receiving benefits or assistance is the dependent variable in a regression, with the country of birth as the explanatory variable, controlling for sex, age, education level, marital status, family context, and the reference year (see Box 1). Two separate regressions are being run: one with, one without controlling for a person's labour status (employed vs. unemployed).

Chart 20: Ordinal logistic regression: odds ratio for receiving some benefit or assistance relative to the native-born population (=1)



Source: DG EMPL calculations based on Eurostat EU-LFS 2012/2013 micro-data.

Note: ** and * denote: coefficient is statistically significant below 1% and 5%, resp.

The light blue bars indicate the odds ratios of receiving benefits or assistance without controlling for a person's labour status. EU-3 mobile citizens and third-country migrants face higher odds of receiving benefits or assistance than the native population. However, this finding goes into the extreme reverse if one controls for the labour status, i.e., if one takes into account that mobile EU-3 citizens and migrants are much more strongly affected by unemployment (dark blue bars). This finding supports many studies which claim that there is no per se higher welfare dependency of foreign-born people in the EU.

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The simulation with DG EMPL's Labour Market Model of low-skilled and high-skilled international migration presented earlier in Section 4.2 confirms this important finding. It was implicitly assumed that any impact of higher international migration on public budgets be balanced out through lump-sum taxes or lump-sum transfers from/to private households – an assumption which has an influence on the simulation results [89]. However, international migrants' skills have a very strong budget impact in any case. In the long run, for the countries considered in the simulation with the Labour Market Model, an additional inflow of low-skilled international migration by an annual 0.1% of the population aged 25-49 would imply that net transfers to private households be very modest, ranging from -0.2% to +0.2% of GDP in the countries considered. For high-skilled international migration the impact is +0.4% to +0.9%. It depends crucially on the overall total effect on employment and GDP which, as outlined above, is considerably stronger in the case of high-skilled international migration.

Indeed, there is evidence that the employment effect may be the main determinant of the budget implications of international migration. For example, the regression analysis in Box 5 shows that dependency of mobile EU-3 people and third-country migrants is higher than for the native-born population. However, this result reverses if one controls for the labour status, i.e., if one takes into account that third-country migrants and EU-3 mobile people are much more exposed the risk of unemployment. The finding confirms earlier analysis by the European Commission on the impact of intra-EU mobility that found mobile EU workers to have higher activity rates and be less likely to draw on social benefits [90].

A recent comprehensive cross-country study was done by the OECD (2013) [91]. It applies the cross-sectional (static) approach, exploring the direct fiscal net position of international immigrant households in several OECD countries. It concludes that their net fiscal position is positive in most of the countries, the net-yield, though, being lower than for native-born households [92]. For the big receiving countries, France and Germany, where the contribution is found to be negative, the study concludes that 'immigrant populations are relatively old and thus overrepresented among the population receiving pension'. However, the recent refugee crisis could change this picture significantly.

As of the difference to native-born people, the main explanatory factor is employment, i.e., the likelihood of being employed which tends to be lower on average for international migrants than for natives. In fact, half of the difference to the fiscal position of natives stems from the employment effect, mainly lower female employment: lower taxes and social security contributions follow lower employment rates.

OECD (2013) concludes that overall, the contribution side (via employment) is much stronger a determinant of international migrants' net fiscal position than the expenditure side. This is mainly because their dependence on social security benefits tends to be lower, mainly because they are often not fully eligible. On the other hand, international migrants do rely more on social assistance than the native population.

In line with most studies, the OECD study concludes that the positive net contribution of international migrants tends to

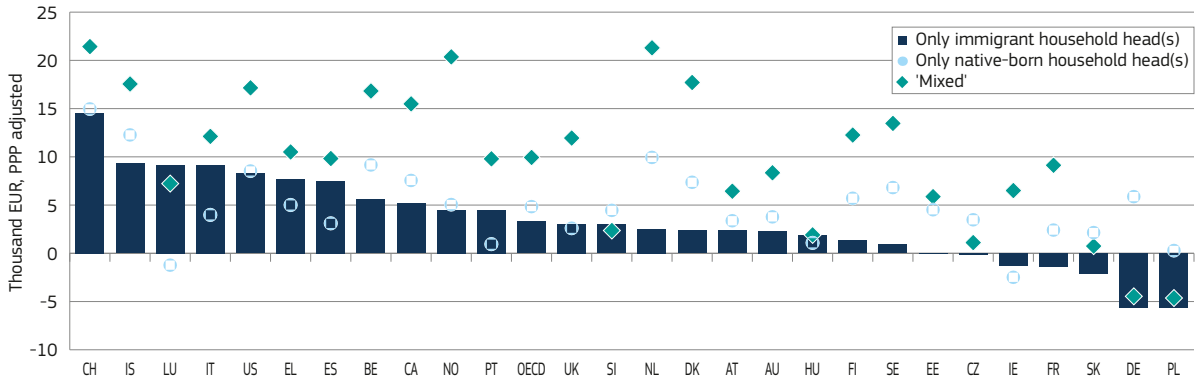
(89) Unlike labour taxes or VAT, lump-sum levies/transfers are assumed to 'have no incentive effects other than shifting income from the private to the public sector' (Berger et al., 2009, p. 9) and would hence not change resource allocation of neither firms nor households.

(90) European Commission (2013:3). See http://europa.eu/rapid/press-release_IP-13-1151_en.htm.

(91) OECD (2013), Chapter 3: The fiscal impact of immigration in OECD countries.

(92) That is, both native and immigrant households contribute more to the fiscal budget than they receive, the net balance being less favourable for immigrants. This is not due to higher dependency on benefits but almost exclusively because immigrants contribute lower levels of social contributions and taxes on average than native-borns (OECD (2013), p. 125).

Chart 21: Average net direct fiscal contribution of households by migration status of the household head, 2007-2009 average, as estimated by OECD



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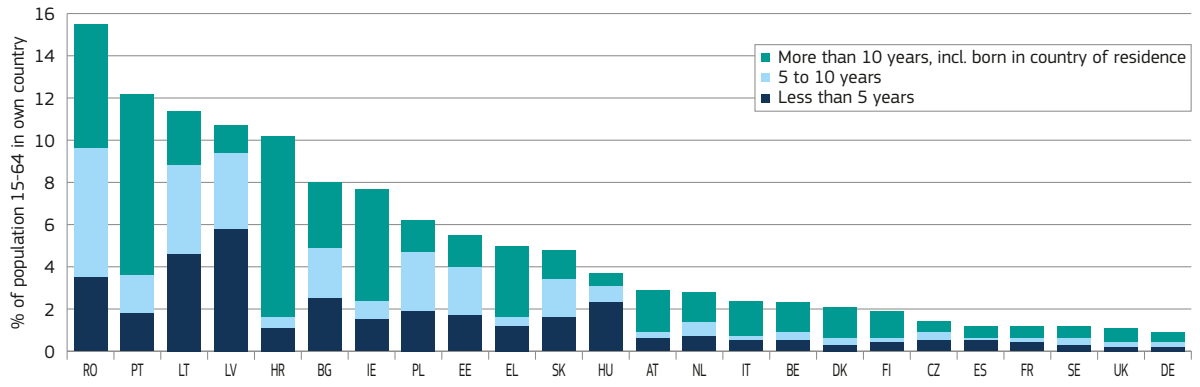
Source: OECD (2013), p. 147.

Chart 22: Mobility rate by country: a country's working age citizens living in another EU country, by years of residence (age group 15-64, 2014, as a percentage of the working age population of the country of citizenship)



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Source: DG EMPL calculations based on Eurostat EU-LFS.

Notes: The mobility rate is the number of working-age citizens living in another Member State in 2014, as a percentage of the working-age population of the country of citizenship. Figures for Cyprus, Luxembourg, Malta and Slovenia are too small to be reliable. Figures for Denmark, Estonia, Finland and Hungary are of limited reliability due to the small size of the sample.

be the higher the younger they are when they immigrate, and the better educated – nonetheless this is because those two factors mainly determine the long-term outcome on the labour market. However, as the difference to the native population's net contribution to the public budgets is higher for higher educated people, here again the deficit to capitalise on international migrant's qualification emerges. To the extent they work below their qualification, they have to accept lower wages and contribute less to the public budgets (see previous section on wages).

4.5. The perspective of EU countries of origin

The increase in intra-European labour mobility led to particularly strong flows out of some countries that recently joined the EU and, to a lesser extent, countries that were heavily affected by the crisis. This development has raised concerns about these countries' growth potential, demographic balance, public finances, and the risk of a brain drain. This section briefly examines the size of outflows from these EU countries to other EU countries, their demographic impact, their skills composition, their fiscal and social impact, as well as their impact on GDP – including through remittances.

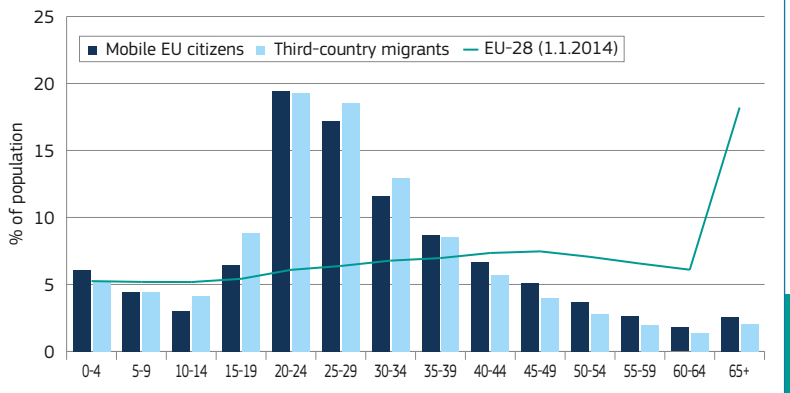
Following successive intra-EU mobility flows, people in the EU living in another Member State now represent more than 10% percent of the working-age population of Romania, Portugal, Lithuania, Latvia and Croatia (Chart 22). On the contrary, the number of working age emigrants represents less than 2% in Germany, the United Kingdom, Sweden, France, Spain, the Czech Republic and Sweden. This reflects the above-mentioned finding that a relatively low level of GDP and a relatively high level of unemployment are important drivers of mobility, in line with European Commission (2015:1). Over time, the pace of outmigration can change considerably. While Portugal was a major source of outflows in the 1970s and Croatia in the 1990s, outflows from these countries have levelled down considerably more recently.

The balance of in and outflows also changes with changes in relative development – e.g. traditional sending countries such as Italy and Spain have become important destinations.

Demography of emigration: young drain while return migration softens the picture

As shown in Section 3.1, young people are geographically more mobile than older people; consequently they are significantly overrepresented among the movers, often dubbed as "young drain". In the EU the share of 20-29 year old among those having moved is about three times their share in the general population – while very few elderly move. (Chart 23). The young are similarly overrepresented for both those

Chart 23: Age profile of the EU-28-population, plotted against that of mobile EU citizens and third-country migrants, 2013



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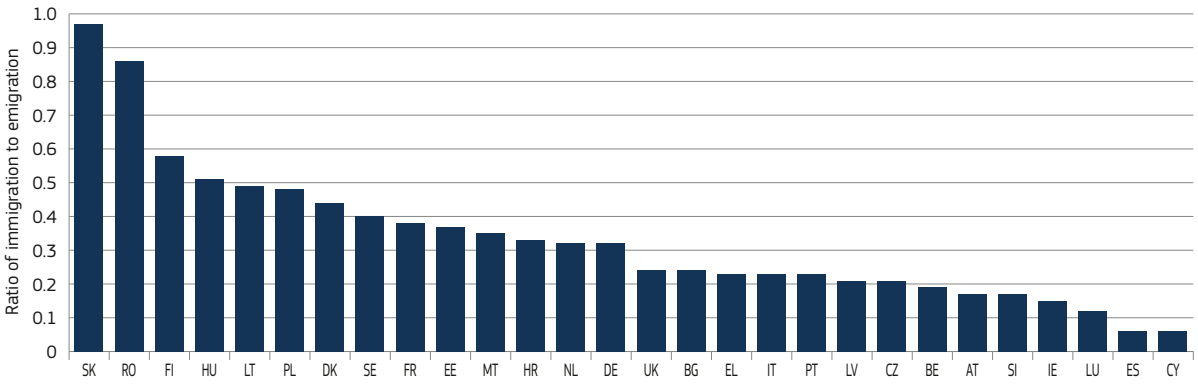
Source: Eurostat [migr_imm3ctb_1] and [demo_pjangroup_1].

Chart 24: Return migration relative to emigration flows, 2013



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Source: Eurostat [migr_imm1ctz] and [migr_emi1ctz].

Note: The particularly good or particularly bad economic situation of some countries in 2013 of course strongly influences the proportion shown in the graph.

moving within the EU and third-country migrants moving from outside the EU. Looking at the country level, young are strongly overrepresented among leavers in all EU countries except the United Kingdom – their share among those who leave the country is usually double their share in the national population. While 0.5 % of young people in the EU-28 and EFTA have left their country of citizenship in 2012, five countries had a much higher share of young people leaving: Romania had a 1.4 % outflow, medium-sized Ireland had 2.2 % and countries with a smaller population like Lithuania and Latvia had 2.9 % and 1.9 % respectively [93]. From a static point of view, this pattern is a possible source of a double demographic cost for the sending society: young people of working age leave, raising their children abroad which in turn makes re-settling back in the country of origin less likely.

The population living abroad represents a labour reserve with a high affinity towards returning to their home country. Return flows are sizeable indeed for many important sending countries. (Chart 24)

Nevertheless, comparing to stocks of nationals residing in other EU countries, usually less than 10 % of those who left their home country at some stage actually return home in a year.

Well-qualified emigrants bring up the question of brain drain

Different skills are used in the labour market in a complementary way: low-skilled professions depend on high-skilled professions to form a working unity, and people in various professions – including the often quoted doctors, nurses, engineers, but also masons, mechanics, cooks – are all needed to make an economy work. Shortages in one job type have repercussions on other linked areas in the economy. For this reason, if emigration from a country leads to labour shortages that are hard to remedy, welfare losses can be the result, at least until a new person is trained to fill the gap [94]. The simulation exercise in Section 4.2 with the Labour Market Model has revealed that high educated **im**migration may bring higher wages, higher productivity gains and bigger welfare surpluses than is the case with low-skilled migrants.

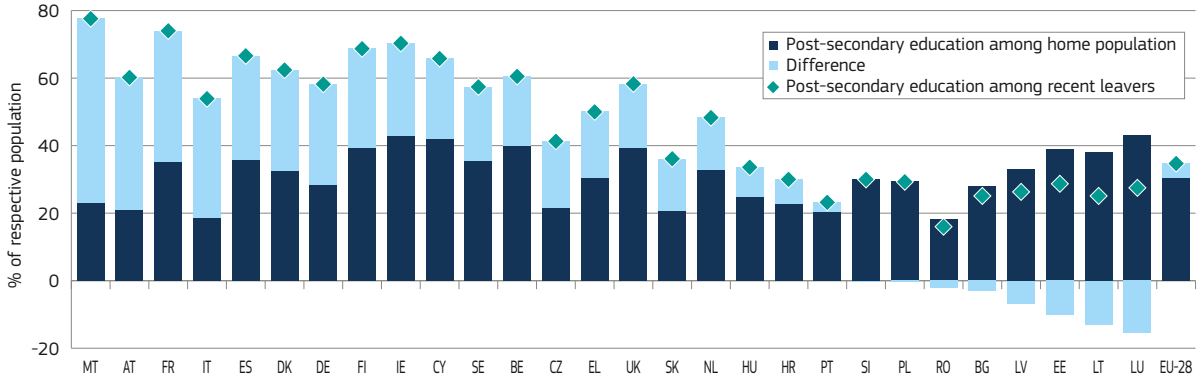
Turning this finding around, in the case of **em**igration wage, productivity, and welfare losses may be bigger if a higher-educated person leaves, where education is more timely and costly ("brain drain"). Higher educated people are indeed overrepresented among those leaving in most EU countries (Chart 25). Countries with the highest rate of active, highly educated people of their total population having left within the past ten years are Romania (9 %), Lithuania (7.2 %), Slovakia (6.5 %), Latvia (6.2 %) and Poland (6.2 %). With the exception of Slovakia, these are also the countries with the highest overall rate of recent active EU movers [95].

(93) Canetta et al. (2014).

(94) Grubel and Scott (1966).

(95) Canetta et al. (2014).

Chart 25: Share of a country's population with a post-secondary degree among all people and among those who recently settled abroad (living for less than 10 years in another EU MS), 2013



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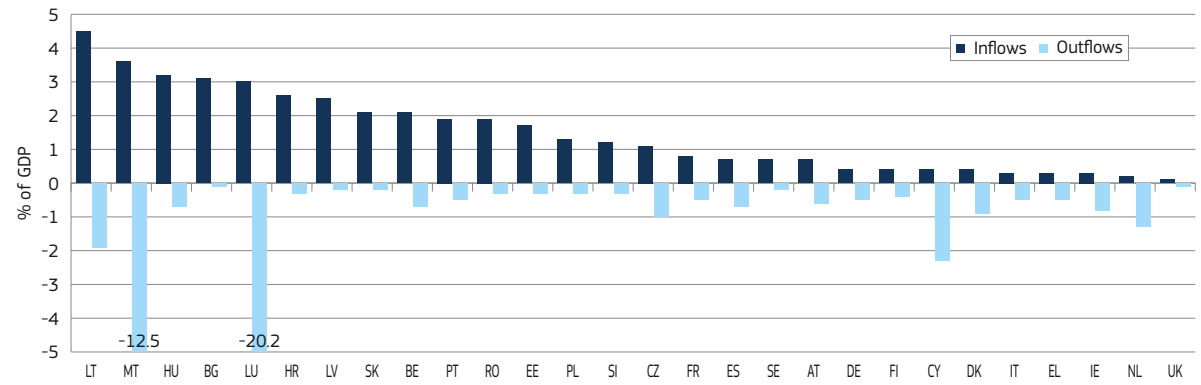
Source: Labour Force Statistics, extraction by Eurostat.

Chart 26: Remittance inflows and outflows, as a share of GDP



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Source: World Bank Annual Remittances Data (updated as of Apr. 2015).

However, there are second-round effects not taken on board by the Labour Market Model. The wage reduction in the case of high-educated emigration may be counterbalanced by the increased scarcity of workers. In addition, the "drain" effect may also be balanced out to the extent the emigrant acquires human capital abroad before returning, or if the prospects of emigrating incentivises more people to study, of whom only a fraction eventually emigrates (a dynamic effect of 'brain gain')[96]. Tertiary attainment rates have been increasing across the EU, which has mitigated the negative impact of relatively higher educated people leaving.

Emigration helps to better allocate labour

As mentioned earlier, the European Commission (2015:1) found that labour mobility helps adjust to negative labour market shocks. While unemployment and inactivity are still the main reactions to a labour demand shock affecting only one country in the EU, mobility plays an increasing role in absorbing the shock, and mobility flows within the euro-area have become more sensitive to differences in the unemployment rate. Without the mobility reversals in Spain and Ireland, the hikes in unemployment would have been even higher in those countries.

As people emigrate, relative scarcity of labour increases. This may have a beneficial effect on unemployment and wages. As young workers represent the majority of emigrants, the decrease in the number of young workers increases the wage of remaining young workers. Hence, the wage distribution between old and young workers may change to the benefit of the young[97]. At the same time, as the workforce becomes older on average, this structural effect may pull up average wage levels because older workers tend to have higher wages than their younger peers.

Remittances often important source of income

Financial resources transferred by emigrants to their home country (remittances) provide significant income flows to emigrants' families and are often very important sources of finance to the migrants' countries of origin. Inflows can be compared to current account deficits and exceed 1 % of GDP in half of the EU Member States. Remittances tend to increase after leaving the home country, but eventually decrease with a migrant's duration of stay in the host country. This development reflects the fact that emigrants are increasingly detached from their home country as they continue residing in the in the destination country. This 'detachment effect' tends to outweigh the positive impact of gradually increasing wages on remittances[98]. This pattern is also evident in the EU where remittance flows tend to be higher where the share of recently established emigrants is higher (Chart 26).

Impact on GDP: potentially negative

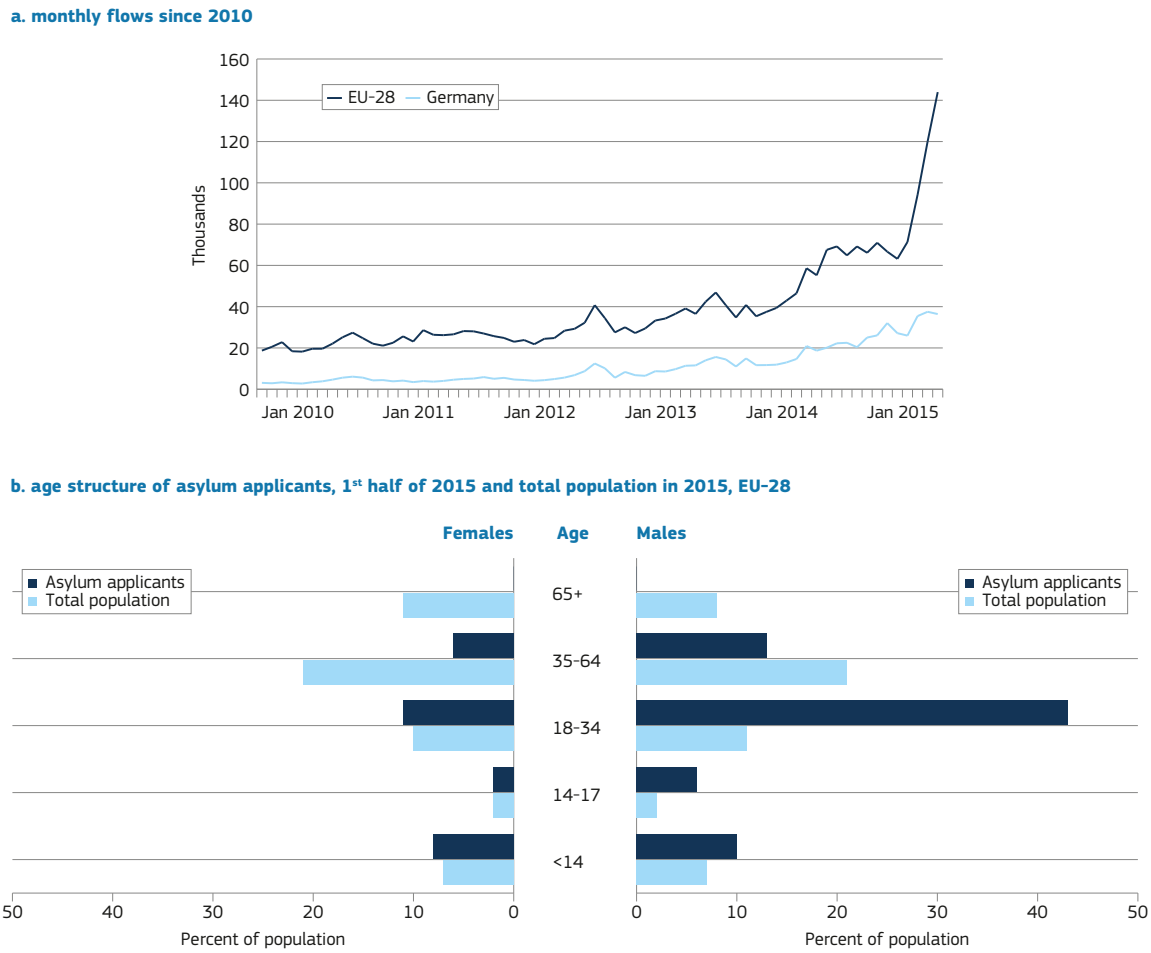
Following the (reversed) conclusions of Section 4.2 which had shown a simulation of higher **im**migration with the Labour Market Model for typical receiving

(96) Beine et al. (2001).

(97) Elsner (2013).

(98) Carling (2008).

Chart 27: Current flows of asylum applicants in the EU



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Sources: Eurostat migration statistics [migr_asyappctzm] and Europop 2013 demographic projections.

countries, **em**igration may lead to lower labour input, and consequently lower aggregate GDP – the extent crucially depending on the emigrants' qualification-mix. There is evidence that remittances tend to compensate for the loss only partially and in the short term. For example, outflows between 2004 and 2009 were estimated by Holland et al. (2011) to reduce potential output by 5% to 11% in the most affected countries: Bulgaria, Romania, and Lithuania. The same study found the impact on GDP per capita to be significantly smaller, while still negative in most of the sending countries. GDP per capita may have declined over the same period by 0.5% to 3% for Romania, Bulgaria, Latvia, Estonia, Lithuania and Slovakia.

4.6. Impact of the current refugee crisis

The current refugee crisis has triggered unprecedented flows of asylum seekers into the EU. Already in 2014 almost 630 000 asylum applicants in the EU meant an increase of nearly 50% compared to 2013. In 2015 that number had already been exceeded in August. One third of the 2015 applications were for Germany. Many of the current asylum applicants are young, with males strongly over-represented, as seen in Chart 27 which plots the age structure of asylum seekers who arrived during the first half of 2015 against the total population.

Compared to other third-country migrants, refugees face a number of particular barriers to accessing the labour market. These obstacles include the 'loss of identity documentation and qualification certificates, non-acceptance of qualifications or educational attainment, trauma and uncertainty, anxiety over family separation, the long period of inactivity in the asylum system, and limited social networks' ([99]). These problems usually lead to their strong underemployment in the host countries. As a result, the employment rate amongst those third-country migrants who came to the EU seeking international protection is much lower than for all migrants ([100]). However, it is too early to analyse in-depth the impact of the sudden flow of migrants on Member States' labour markets. Much will depend on whether the current trend continues and on the share of refugees who stay in the EU after a potential political stabilisation in their home countries.

In the short run: impact on government budgets may be more sizable in certain countries...

The European Commission's Autumn Economic Forecast ([101]) provides a first assessment of the economic impact of the current refugee inflow. In the short run, additional public expenditure could increase GDP (albeit by less than the population). For the EU as a whole, this impact is projected to be moderate,

([99]) UNHCR (2013), p. 9.

([100]) According to the 2008 special EU-LFS module on migration, amongst those third-country migrants (aged 25-64 years) who established in the last 10 years, their employment rate was only 41%. As a comparison: For all third-country migrants it was 65%. See Section 3.2 above.

([101]) European Commission (2015:3), pp. 48-52.

while it could be more sizeable in some Member States, depending on the size of the flows received, whether these flows will transit or stay, the recognition rate of asylum seekers, the different conditions for accessing the labour market as well as the economic structure of the country. One of these Member States is Germany where a negative impact on the government balance until 2020 may amount to 0.2-0.3% of GDP if the assumption holds that Germany will see its population increase by 700000 in 2015, 530000 in 2016 and 255000 in 2017, and all refugees are low-qualified.

Likewise, the German Council of Economic Experts (*Sachverständigenrat*) estimates in its 2015/16 report that the current flows of refugees to Germany will incur extra direct public expenditure which may amount to 0.2-0.3% of GDP in 2015 and 0.3-0.5% of GDP in 2016 under different scenarios. The Council confirms that labour market integration is a crucial prerequisite to societal integration and calls for reducing obstacles to entering the labour market. With a view to the refugees' young age and their low average education, the Council sees a 'significant need for qualification' ([102]).

As for the short-term labour market impact, initial estimates by the German Institute for Employment Research (IAB) show that a potential inflow of 1 million refugees to Germany, both in 2015 and 2016, could increase unemployment in Germany by an annual average of 130000 people (+ 4.5%) in 2016 ([103]). However, past German experience also shows that the employment rates of refugees tend to increase fast during the first five years of residence: from below 10% in the year of arrival to almost 50% ([104]). In the past, people benefitting from international protection tended to have a gradual catch-up to the employment rate of other migrants, although never quite reaching the employment rate of labour migrants ([105]). Over-qualification – finding only a job below one's qualifications – tended to remain a problem ([106]).

In the long run, the impact is likely to depend a lot on qualifications...

For those refugees who will stay in the EU, the analysis in this chapter shows that their qualifications are crucial for their successful integration into the labour market. Indeed, the model simulation in Section 4.2 made alternative assumptions of migrants being either only low-qualified or only high-qualified. It showed that the long-run impact of migration on the labour market and the economy crucially depends on migrants' mix of qualifications: Highly qualified migration will lead to higher investment, higher productivity, and more jobs in the long run ([107]). However, the analysis has also shown that this positive impact of higher formal qualifications requires their efficient use by removing the factors that hinder better labour market performance of third-country migrants. These include tackling shortages of specific skills, reducing restrictions to labour market access as well as tackling discrimination and non-acceptance of qualifications.

Currently, however, there is little statistical evidence about the current asylum seekers' qualification mix. According to very preliminary estimates for Germany (the country receiving the highest number of asylum seekers), based on figures provided by the Federal Office for Migration and Refugees (BAMF) ([108]), current asylum seekers' average qualification is below that of other groups of foreign people: Almost a third of those asked in 2015 claimed they had 'attended' either only elementary school or no school at all – though the share varies widely across the origin countries of the asylum applicants ([109]). Therefore, in line with the conclusions of the German Council of Economic Experts, some countries are expected to see a more significant budgetary impact of the current refugee flows in the medium term, with the extra expenditure including higher investment in the refugees' qualifications. In the long run, Section 4.2 showed that these investments can actually pay in terms of higher employment and higher growth. In addition, as seen in Section 2.2, employment rates of third-country migrants tend to increase fast over the duration of residence in the host country ([110]).

All current estimates are subject to high uncertainty and should be interpreted with due care. However, high refugee streams to the EU may not only be a temporary phenomenon. In that case, given the low qualification mix of refugees and the importance of qualification for the German and the EU labour markets in general, investment in their language skills and qualifications seems to be key to integrate those migrants into the labour market.

4.7. Conclusion: Make better use of existing resources

The economic impact of both intra-EU mobility and third-country migration crucially depends on the qualification mix that foreign people supply to the host economies. The analysis shows that in most typical receiving EU countries formal qualification of mobile EU people tends to be even higher compared to the respective native population. However, the incidence of over-qualification is enormous especially amongst mobile EU workers from the Member States that joined in 2004 and after. It coincides with these workers often working in low-growth sectors and showing little mobility towards stronger growing sectors in the course of time. From the perspective of growth these findings imply that they tend to be a rich resource of which the EU and its Member States fail to make more efficient use.

Informal, host country specific skills can be a lever enabling foreign-born workers to capitalise more efficiently on existing formal skills – not only in the form of better employment prospects but also by reducing the currently enormous wage penalty. If used effectively, well-qualified international migrants would improve both the host-country's employment potential and its labour productivity. Their net-contribution to growth and

([102]) Sachverständigenrat (2015), p. 2.

([103]) Institut für Arbeitsmarkt- und Berufsforschung (2015:2), p. 5.

([104]) Institut für Arbeitsmarkt- und Berufsforschung (2015:1), p. 10.

([105]) OECD (2015), Fig 5. Employment rate by immigrant categories and duration of stay in European OECD countries, 2008.

([106]) OECD-European Union (2015).

([107]) This finding is also confirmed by Peri (2014).

([108]) Institut für Arbeitsmarkt- und Berufsforschung (2015:1). Neske (2015) presents figures from 2014.

([109]) In particular, the 2014 share of Syrian asylum applicants in Germany who 'attended at least upper secondary education' (*Universität, Fachhochshule, Gymnasium*) was much higher (49%) than for asylum applicants from Eritrea (25%), the average being 31% (Neske (2015)). See also OECD (2015), p. 8.

([110]) Annex 1 also shows that third-country migrants' employment rates vary greatly across Member States, indicating that some may have more effective policies in place to facilitate their access to the labour market.

public finance would be positive. To the extent that today mobile workers from EU-3 and third-country migrants show stronger dependency on benefits or assistance, this is exclusively due to the fact that they are much more affected by unemployment.

5. CHAPTER CONCLUSIONS

With the impact of demographic change starting to be felt across Member States, there is little doubt that both intra-EU mobility and third-country migration can contribute to maintaining the EU's long-term growth potential. Qualified third-country migrants would contribute to cushion the impact of the EU-wide workforce decline whereas higher mobility within the EU will help make more efficient use of the existing, ever scarcer human resources. Hence, in the light of its demographic prospects, the current gap in terms of growth compared to its main global competitors, and sluggish productivity growth, the EU will need to rely on both EU mobility and third-country migration to generate future growth. Whereas both the labour market performance and the qualification-mix of third-country migrants in the host country remain sub-optimal, there has been considerable progress, especially in the case of mobile EU people from Member States which joined the EU in 2004 (EU-10).

Most importantly, the chapter finds:

- Due to workforce shrinkage, dependency on the economically active part of the population will increase. Given the extent of the challenge, third-country migration alone will not solve the problem. However, migration from outside the EU, especially well-qualified migrants, can help in tackling human resource bottlenecks.

- While the EU's working-age population continues declining, only 4% of today's working-age population live in another EU country. That is, intra-EU mobility is a largely untapped resource of higher employment and higher growth as it contributes to improving labour allocation within the EU, helping reduce unemployment in times of crises which typically hit some Member States more than others.

- Indeed, the analysis on micro data reveals that a person's labour market status is a strong determinant of moving from one EU country to another. Mobile EU people of working age who are not in employment stand a much higher chance to cross EU borders than employed people. In other words, being out of the labour market is a strong push-factor for going abroad. On the other hand, the labour market situation in the host country is a strong pull-factor. Within the EU, mobile EU people (especially from the EU-10) tend to be attracted by countries where unemployment is low. This positive selection effect improves their personal labour market situation in the host country. These 'factors of gravity' help to make best use of the available human resources in the EU as workers move out of unemployment or inactivity by seeking employment opportunities abroad.

- Once in the host country, the positive selection effect especially benefits two groups of mobile EU people: those from the pre-2004 Member States (EU-15) and those from the Member States that joined in 2004 (EU-10). Relative to natives, they stand a greater chance of being in employment and, if not in employed, of re-joining the labour market. Other reasons for their good performance are their formal education which tends to be above host-country level as well as (in the case of mobile EU-10 people) their young age.

- Yet challenges remain as many EU mobile workers are unable to fully capitalise on their good formal qualifications. Apart from systematically lower wages, this affects over-qualification which is a particular problem especially for mobile people from the Member States that joined in 2004 and after (EU-13). The analysis shows that higher qualification does well translate into better job prospects. But it pays much less if obtained outside the host-country. At the same time, experience in the host country and country-specific skills are positive levers to make foreign qualification pay in the host country.

- Migration from outside the EU still tends to provide a lower qualification mix, coupled with low employment performance, including lower dynamics from non-employment into employment and lower wages.

- The qualification bias towards the low end seems to continue, as the current refugee crisis is triggering unprecedented refugee flows towards the EU. The number of asylum applicants in the first 10 months of 2015 reached almost 1 million. Initial evidence suggests that many of the current refugees are very young, but also low-educated, though the average education level varies largely across countries of origin.

- Low employment performance and low job-finding dynamics of third-country migrants – and to a lesser extent, mobile EU-3 citizens – are stable findings with little variation when controlling for individual characteristics such as education. This implies that their labour-market return on higher education is particularly limited.

- It also implies that other (exogenous, non-observed) factors strongly contribute to explaining their lower employment performance. One factor is the channel of migration. The majority of third-country migrants come to the EU for reasons other than work, namely family unification, education or international protection. These groups show very low employment rates. In addition, it is likely that other unobserved factors such as discrimination by potential employers, non-acceptance of formal qualifications and legal obstacles to employment keep both third-country migrants and mobile EU-3 people from performing better on EU labour markets.

- Both mobile EU people and third-country migrants in the EU seem to be strongly affected by labour market segmentation. Compared to native workers, they face significant wage penalties and stand a greater risk of working under non-standard employment contracts. Likewise, they tend to stand a significantly greater risk of losing job than native-born people.

- Model-simulations with DG EMPL's Labour Market Model show that the impact of international migration on the host economies crucially depends on the mix of qualifications migrants they can supply. **If efficiently used**, higher qualifications will lead to higher productivity,

trigger more investment and higher employment across all qualification levels. Hence, encouraging mobility across the EU and high-qualified migration from outside are crucial to growth.

- The EU and its Member States could further enhance their growth potential by better allocating both mobile EU people and third-country migrants to sectors with the biggest growth potential. Apart from EU-15 mobile people, they tend to be over-represented in low-growth activities and show little upward mobility over the course of time.

- The belief that mobile EU workers and third-country migrants are more dependent on welfare is not strongly supported by the literature ([111]). The chapter presented further evidence that dependence on benefits or assistance is lower in the case of EU-15 and EU-10 mobile people. In the case of third-country migrants and mobile people from Romania, Bulgaria or Croatia it is higher only to the extent that they are much more affected by unemployment. Controlling for the employment status, dependency of all groups of international migrants is way below that of native-born people.

The findings call for higher mobility across intra-EU borders, but also for well-qualified external migration for which global competition will intensify. To the extent mobile EU people and third-country migrants are to supply a qualification mix complementary to host economy's needs, they can be part of a win-win situation. However, to the extent that they cannot make a more significant contribution to growth in the host country, this is due to a large extent to the fact that labour market access is restricted, that activation policies fail, that qualifications are not efficiently used or allocated to fast-growing sectors, and/or that they are wasted due to over-qualification.

This chapter deals with the general economic and labour market aspects of intra- EU mobility third-country migration. The analysis also responds to the European Commission's European Agenda on Migration [112] which calls for a new policy on legal migration from the longer-term, strategic perspective. With a view to attracting talent and high-qualified workers, one of the new policy's priorities is a review of the Blue Card Directive which is currently under way.

However, the current refugee crisis makes more analytical work necessary to look thoroughly at problems related to the labour market and social integration, especially of third-country migrants. It should also focus on immediate action necessary to manage unprecedented current refugee flows as the New Agenda on Migration also aims at reducing the incentives for irregular migration from third-countries, a more effective border-management and a strong common asylum policy ([113]).

([111]) Wadsworth (2012); Giuletti and Wahba (2012).

([112]) European Commission (2015:2).

([113]) See http://ec.europa.eu/dgs/home-affairs/what-we-do/policies/european-agenda-migration/index_en.htm.

ANNEX 1: LABOUR MARKET PERFORMANCE AND CHARACTERISTICS OF POPULATION BY COUNTRY OF BIRTH AND YEARS OF RESIDENCE

Activity rates, employment rates, unemployment rates of natives, mobile EU citizens and third-country migrants in the EU by country, 2014

a) Total stock

Activity rate 15-64

	Total	Native-born	Mobile EU citizens				Third-country migrants
			All	EU-15	EU-10	EU-3	
BE	67.7	68.5	70.1	69.0	77.2	69.4	59.7
BG	68.8	68.8	:	:	:	:	(64.6)
CZ	73.7	73.7	74.3	:	74.3	(73.1)	78.8
DK	78.1	78.9	84.3	84.0	84.0	86.3	67.6
DE*	77.7	78.5	81.7	82.4	81.7	79.7	68.7
EE	75.2	75.3	73.0	:	73.7	:	75.1
IE	69.8	69.5	74.4	69.2	80.6	76.6	63.9
EL	67.4	66.5	74.0	70.1	62.8	81.7	77.5
ES	74.3	73.6	80.4	76.4	82.7	83.9	77.3
FR	71.3	71.9	73.2	72.8	75.3	76.3	65.6
HR	66.1	66.1	68.2	69.8	(64.7)	:	65.9
IT	63.9	63.1	71.4	65.8	67.7	74.2	69.1
CY	74.3	72.7	78.1	70.5	81.4	87.7	81.5
LV	74.6	74.8	67.1	(75.7)	65.2	:	72.9
LT	73.7	73.6	:	:	:	:	76.9
LU	70.5	64.3	77.9	77.4	84.0	90.7	72.0
HU	67.0	66.8	77.0	74.0	(66.2)	78.4	68.6
MT	66.3	66.0	69.4	69.4	:	:	70.5
NL	79.4	80.8	77.4	77.9	77.3	71.5	67.7
AT	75.4	76.1	78.9	78.2	79.0	79.7	67.6
PL	67.9	67.8	72.1	(65.9)	(78.8)	:	71.4
PT	73.2	72.5	85.3	85.3	:	85.5	78.6
RO	65.7	65.7	:	:	:	:	:
SI	70.9	71.4	63.8	77.5	:	59.4	67.9
SK	70.3	70.3	70.0	:	67.0	:	74.7
FI	75.2	75.2	86.1	86.0	85.7	(89.3)	68.6
SE	81.5	82.9	82.4	82.6	80.9	84.9	73.7
UK	76.6	77.0	83.3	79.7	86.3	83.6	70.2
EU-28	72.3	72.2	78.7	77.2	81.5	78.8	69.8

Employment rate 15-64

	Total	Native-born	Mobile EU citizens				Third-country migrants
			All	EU-15	EU-10	EU-3	
BE	61.9	63.8	62.6	62.5	69.7	56.4	45.7
BG	60.8	60.8	:	:	:	:	(59.5)
CZ	69.1	69.1	67.7	:	67.2	(64.4)	75.2
DK	72.8	74.2	76.1	77.8	73.9	72.9	58.3
DE*	73.8	74.9	77.2	78.6	76.1	74.8	61.9
EE	69.6	69.8	71.7	:	71.4	:	67.6
IE	61.7	61.9	64.5	59.9	70.1	66.3	55.0
EL	49.4	49.3	53.3	50.8	43.7	59.4	49.5
ES	56.1	56.7	57.4	60.9	70.8	52.7	50.0
FR	63.9	65.1	66.9	68.2	63.7	56.0	52.8
HR	54.6	54.8	57.1	57.0	(57.6)	:	52.5
IT	55.7	55.3	60.1	56.9	56.4	62.0	57.6
CY	62.1	60.4	65.6	57.9	73.7	74.4	70.7
LV	66.3	66.5	62.3	:	60.5	:	64.4
LT	65.7	65.6	:	:	:	:	68.6
LU	66.2	61.2	73.2	72.9	77.7	78.6	63.0
HU	61.8	61.6	72.5	71.5	(55.6)	74.1	64.3
MT	62.3	62.2	65.1	65.1	:	:	64.2
NL	73.9	75.8	71.3	72.5	69.4	66.1	58.1
AT	71.1	72.6	72.7	73.7	71.4	72.3	59.5
PL	61.7	61.7	64.2	(54.7)	(75.3)	:	62.5
PT	62.6	62.2	73.8	75.4	:	62.2	64.2
RO	61.0	61.0	:	:	:	:	:
SI	63.9	64.5	56.9	68.7	:	53.4	58.6
SK	61.0	60.9	64.4	:	60.8	:	70.3
FI	68.5	68.8	75.6	76.5	74.2	(74.6)	56.2
SE	74.9	77.7	74.9	76.9	70.7	74.6	59.5
UK	71.8	72.3	78.3	74.5	81.6	77.8	64.7
EU-28	64.8	65.2	70.3	70.9	74.9	64.3	57.9

Unemployment rate 15+

	Total	Native-born	Mobile EU citizens				Third-country migrants
			All	EU-15	EU-10	EU-3	
BE	8.5	6.8	10.5	9.3	(9.6)	18.6	23.5
BG	11.3	11.4	:	:	:	:	:
CZ	6.1	6.1	8.7	:	9.3	:	(4.5)
DK	6.6	5.8	9.7	7.3	12.0	(15.5)	13.7
DE*	5.0	4.4	5.4	4.5	6.7	6.2	9.8
EE	7.2	7.2	:	:	:	:	9.4
IE	11.2	10.7	13.2	13.4	13.0	(13.5)	13.9
EL	26.3	25.5	27.7	27.5	30.1	27.0	36.3
ES	24.4	22.7	28.5	20.1	14.3	37.1	35.4
FR	10.2	9.4	8.5	6.3	:	(26.5)	19.3
HR	17.2	17.0	(16.1)	(18.4)	:	:	20.0
IT	12.7	12.1	15.7	13.3	16.4	16.5	16.6
CY	16.1	16.6	15.9	17.7	:	15.2	13.2
LV	10.8	10.8	:	:	:	:	11.0
LT	10.7	10.7	:	:	:	:	(10.5)
LU	6.0	4.8	6.0	5.8	:	:	12.6
HU	7.7	7.8	(5.8)	:	:	(5.5)	:
MT	5.8	5.7	:	:	:	:	8.9
NL	6.7	6.1	8.4	7.7	10.1	:	14.0
AT	5.6	4.6	7.7	5.6	9.3	9.3	12.0
PL	9.0	9.0	:	:	:	:	(11.7)
PT	13.8	13.6	13.5	11.6	:	:	18.1
RO	6.8	6.8	:	:	:	:	:
SI	9.7	9.3	(10.5)	(11.2)	:	(9.7)	13.6
SK	13.1	13.2	:	:	:	:	:
FI	8.6	8.3	12.0	10.9	(13.4)	:	18.0
SE	7.9	6.1	8.9	6.6	12.9	11.9	19.1
UK	6.0	5.9	5.9	6.3	5.5	(6.9)	7.9
EU-28	10.2	9.6	10.5	8.1	8.1	18.3	17.0

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b) Established before the crisis 2008 (residing more than 6 years)

Activity rate 15-64

	Total	Native-born	Mobile EU citizens				Third-country migrants
			All	EU-15	EU-10	EU-3	
BE			67.7	67.1	74.4	66.2	61.3
BG			:	:	:	:	(70.0)
CZ			74.6	:	74.9	(73.2)	82.4
DK			86.6	87.5	84.3	86.5	67.6
DE*			82.9	83.6	82.4	81.1	72.2
EE			75.8	:	73.5	:	75.1
IE			73.9	68.3	81.9	70.9	70.2
EL			78.4	72.2	74.8	84.7	78.6
ES			80.7	76.0	83.6	84.6	78.6
FR			73.5	73.3	75.0	75.4	68.5
HR			68.6	71.2	(61.7)	:	66.2
IT			72.0	65.7	67.4	75.8	72.2
CY			77.9	71.6	83.2	87.4	77.8
LV			65.3	:	63.1	:	72.9
LT			:	:	:	:	77.1
LU			75.3	74.9	82.6	86.2	73.0
HU			77.9	75.3	(63.5)	79.2	69.5
MT			72.9	72.9	:	:	70.7
NL			79.2	77.7	83.3	79.9	68.9
AT			78.6	79.5	75.4	80.3	70.3
PL			(66.0)	(58.3)	:	:	77.3
PT			85.9	85.6	:	89.3	81.1
SI			64.1	77.9	:	60.0	70.6
SK			67.3	:	64.8	:	78.1
FI			87.7	87.6	88.1	:	75.1
SE			82.2	82.6	79.6	87.2	77.1
UK			82.4	80.3	85.0	76.3	74.0
EU-28			78.7	77.5	80.9	79.7	72.7

Employment rate 15-64

	Total	Native-born	Mobile EU citizens				Third-country migrants
			All	EU-15	EU-10	EU-3	
BE			61.1	61.2	67.3	50.2	48.5
BG			:	:	:	:	(65.4)
CZ			68.6	:	68.3	(67.4)	78.5
DK			78.3	80.1	76.2	(69.4)	58.1
DE*			78.9	80.1	77.3	77.2	65.3
EE			75.4	:	72.8	:	67.9
IE			63.7	58.9	70.9	60.1	61.2
EL			57.0	51.9	51.7	63.1	50.2
ES			57.4	59.7	70.7	53.8	51.7
FR			68.0	69.1	(64.6)	56.6	56.2
HR			56.9	58.1	(53.5)	:	52.9
IT			61.1	57.0	56.4	63.7	61.1
CY			64.7	58.5	75.4	73.0	62.6
LV			59.9	:	58.1	:	64.6
LT			:	:	:	:	68.9
LU			71.2	70.7	78.0	81.3	64.1
HU			73.5	72.4	(61.6)	74.5	65.3
MT			70.0	70.0	:	:	64.9
NL			73.9	72.4	78.1	75.1	59.5
AT			73.4	75.0	68.9	75.3	62.1
PL			(54.8)	(43.5)	:	:	68.8
PT			75.1	76.0	:	66.7	66.7
SI			57.8	69.2	:	54.4	61.9
SK			62.3	:	59.4	:	71.7
FI			79.6	78.3	81.7	:	61.4
SE			75.5	77.2	70.1	78.7	65.5
UK			78.3	76.2	80.9	73.1	68.4
EU-28			70.3	71.2	74.5	64.4	60.8

Unemployment rate 15+

	Total	Native-born	Mobile EU citizens				Third-country migrants
			All	EU-15	EU-10	EU-3	
BE			9.6	8.6	(9.6)	(23.9)	20.8
BG			:	:	:	:	:
CZ			7.9	:	8.5	:	(4.7)
DK			9.5	(8.4)	:	:	14.0
DE*			4.7	4.0	6.1	4.8	9.4
EE			:	:	:	:	9.1
IE			13.6	13.6	13.4	:	12.6
EL			27.1	27.9	30.5	25.3	36.3
ES			28.8	21.2	15.4	36.4	34.4
FR			7.4	(5.6)	:	:	17.7
HR			(16.9)	(18.4)	:	:	19.7
IT			15.1	13.0	16.1	15.8	15.3
CY			16.8	18.1	:	16.5	19.3
LV			:	:	:	:	10.9
LT			:	:	:	:	(10.4)
LU			5.5	5.5	:	:	12.0
HU			(5.5)	:	:	(5.9)	:
MT			:	:	:	:	(8.1)
NL			7.3	7.8	(6.2)	:	13.5
AT			6.5	5.6	(8.2)	(6.2)	11.6
PL			:	:	:	:	:
PT			12.7	11.2	:	:	17.6
SI			(9.5)	(11.0)	:	(9.0)	12.2
SK			:	:	:	:	:
FI			(9.2)	(10.4)	:	:	18.3
SE			8.0	6.1	12.6	(9.5)	15.0
UK			4.8	4.9	4.8	:	7.6
EU-28			10.5	7.9	7.8	19.0	16.3

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c) Movers since the onset of the crisis 2008 (residing 6 years or less)

Activity rate 15-64

	Total	Native-born	Mobile EU citizens				Third-country migrants
			All	EU-15	EU-10	EU-3	
BE			74.0	73.7	79.3	70.6	55.8
BG			:	:	:	:	:
CZ			72.5	:	70.8	:	66.4
DK			84.8	83.4	85.5	86.3	64.5
DE*			77.4	75.0	80.0	76.7	46.5
EE			:	:	:	:	(76.0)
IE			76.3	74.0	76.6	83.9	53.7
EL			50.6	(44.9)	:	68.7	68.9
ES			77.9	80.1	76.7	76.1	67.5
FR			71.4	69.6	:	(78.3)	49.4
HR			:	:	:	:	(56.4)
IT			68.1	66.5	70.9	68.0	53.6
CY			78.6	67.3	(78.6)	88.2	86.4
LV			:	:	:	:	(56.9)
LT			:	:	:	:	:
LU			84.3	83.7	86.0	95.2	69.6
HU			70.6	:	:	71.0	:
MT			57.8	57.8	:	:	70.0
NL			71.1	79.4	66.8	:	51.8
AT			79.4	75.4	85.6	78.4	54.0
PL			:	:	:	:	(57.4)
PT			75.9	:	:	:	57.8
SI			(60.4)	(74.8)	:	(48.9)	55.0
SK			(90.7)	:	:	:	:
FI			85.8	(97.1)	74.4	:	53.5
SE			83.0	83.0	83.7	80.9	64.6
UK			84.8	78.0	88.1	86.7	59.2
EU-28			78.5	75.8	82.8	76.6	56.2

Employment rate 15-64

	Total	Native-born	Mobile EU citizens				Third-country migrants
			All	EU-15	EU-10	EU-3	
BE			65.1	65.7	71.6	58.8	38.6
BG			:	:	:	:	:
CZ			62.8	:	60.6	:	63.9
DK			74.7	76.3	73.2	74.0	53.3
DE*			71.0	69.3	73.3	69.7	39.9
EE			:	:	:	:	(69.9)
IE			66.9	64.7	67.3	73.8	44.7
EL			33.9	:	:	43.6	43.4
ES			57.8	72.8	(71.7)	41.3	37.9
FR			60.7	62.2	:	:	33.5
HR			:	:	:	:	(38.2)
IT			55.0	59.6	57.2	54.4	39.4
CY			67.5	56.2	(71.2)	76.4	81.5
LV			:	:	:	:	:
LT			:	:	:	:	:
LU			78.3	78.4	77.3	75.8	60.6
HU			64.5	:	:	70.3	:
MT			(49.4)	(49.4)	:	:	62.0
NL			61.9	75.0	53.3	:	39.9
AT			71.2	71.0	76.1	65.8	46.0
PL			:	:	:	:	(47.4)
PT			54.9	:	:	:	43.8
SI			(46.0)	(65.1)	:	(36.7)	42.4
SK			:	:	:	:	:
FI			71.6	(80.6)	(67.0)	:	43.7
SE			73.1	75.7	72.2	66.7	43.7
UK			78.2	70.0	82.6	79.8	53.8
EU-28			70.1	68.8	75.7	64.0	43.6

Unemployment rate 15+

	Total	Native-born	Mobile EU citizens				Third-country migrants
			All	EU-15	EU-10	EU-3	
BE			12.0	10.9	(9.6)	16.8	30.7
BG			:	:	:	:	:
CZ			(13.3)	:	(14.5)	:	:
DK			11.9	(8.5)	(14.4)	:	17.4
DE*			8.2	7.5	8.3	9.1	14.2
EE			:	:	:	:	:
IE			12.3	(12.5)	12.2	:	16.7
EL			(32.9)	:	:	(36.5)	36.9
ES			25.8	(9.2)	:	45.7	43.8
FR			(14.9)	:	:	:	32.3
HR			:	:	:	:	(32.2)
IT			19.1	:	(19.3)	19.9	26.5
CY			14.1	(16.5)	:	(13.4)	(5.6)
LV			:	:	:	:	:
LT			:	:	:	:	:
LU			7.1	6.3	:	:	13.6
HU			:	:	:	:	:
MT			:	:	:	:	:
NL			(12.9)	:	(20.2)	:	23.1
AT			10.3	:	(11.1)	(16.0)	14.8
PL			:	:	:	:	:
PT			:	:	:	:	24.1
SI			:	:	:	:	(22.8)
SK			:	:	:	:	:
FI			:	:	:	:	(18.4)
SE			11.9	8.8	13.7	(17.6)	32.3
UK			7.7	10.3	6.3	(8.0)	9.1
EU-28			10.8	9.2	8.6	16.4	22.3

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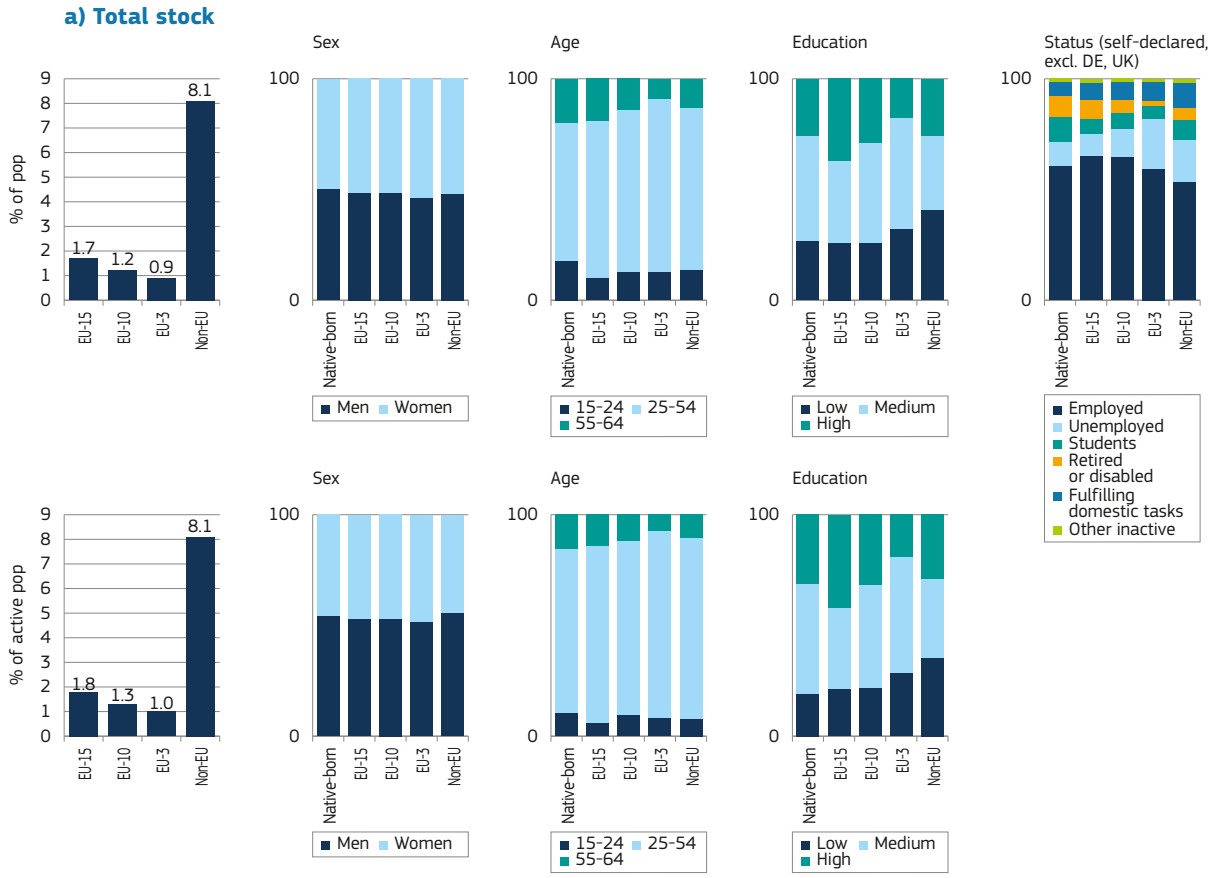
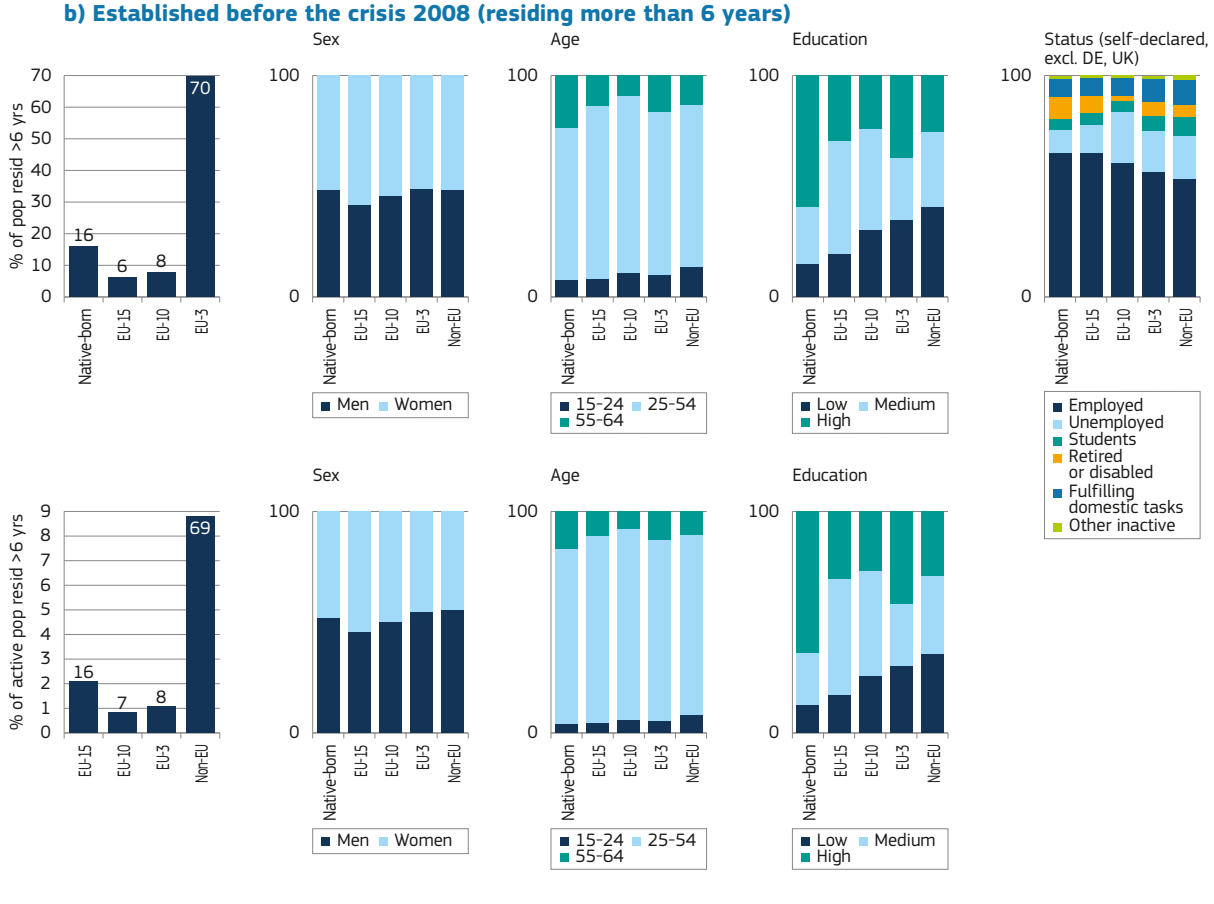
Source: DG EMPL calculations based on Eurostat EU-LFS.

Note: * DE estimate (distribution of mobile people/migrants based on nationality). ':' data not available due to very small sample size, data in brackets uncertain due to small sample size.

II

Socio-demographic characteristics of foreign-born population (pop) and labour force (LF) aged 15-64 in the EU-28, 2014





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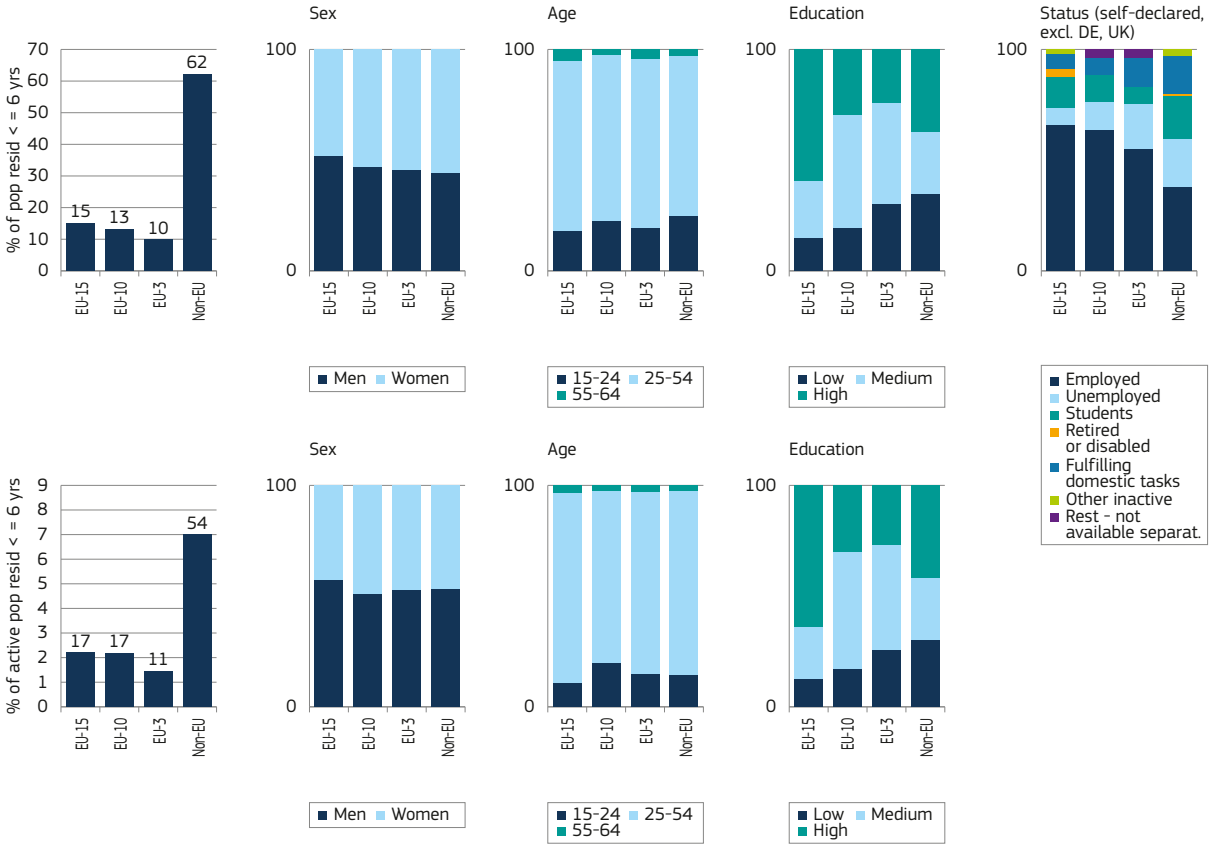
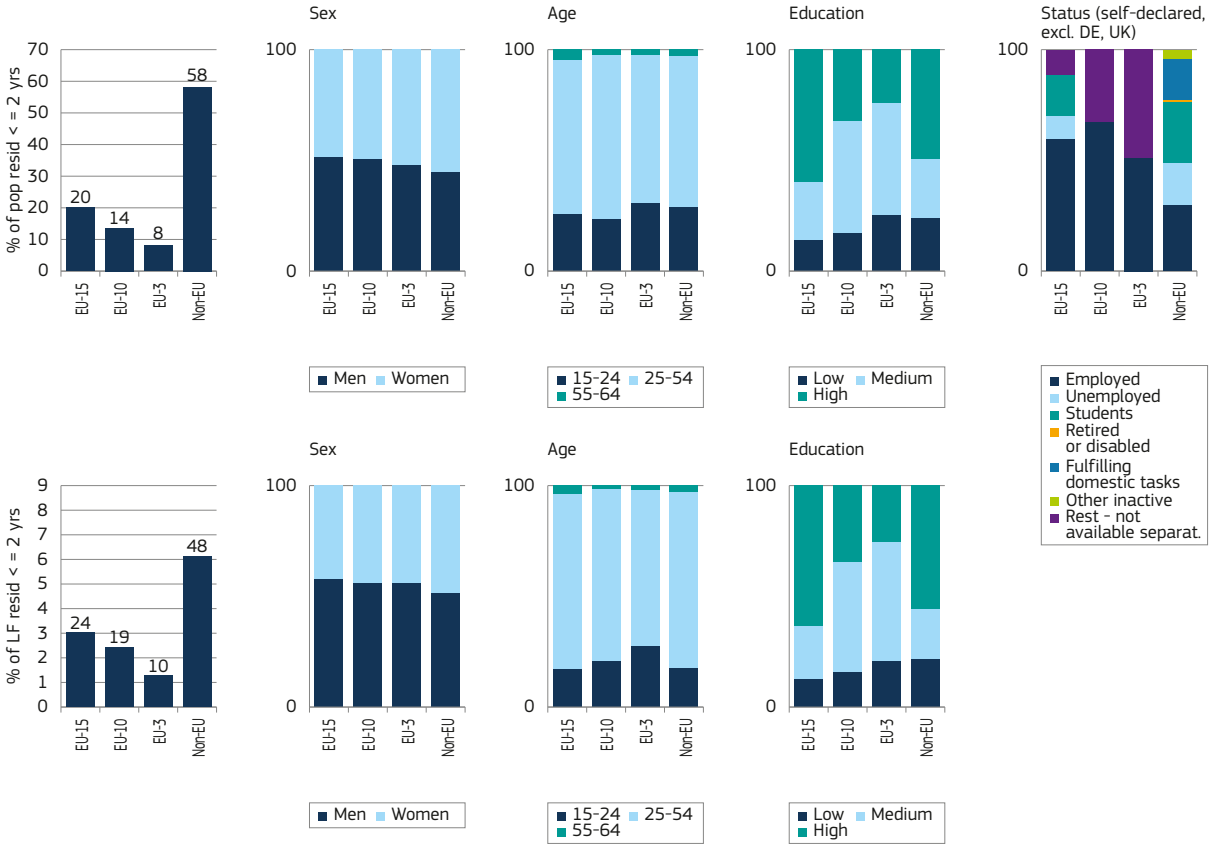
c) Movers since the onset of the crisis 2008 (residing 6 years or less)



d) Recent movers (residing 2 years or less)



Source: DG EMPL calculations based on Eurostat EU-LFS.

Note: EU aggregate based on estimates for DE (distribution of mobile people/migrants based on nationality). In the case of recent movers (b) and movers since the onset of the crisis 2008 (c) some 'work status' categories are aggregated ('Rest – not available separate.') when the sample sizes were very small.

Explanation: The first column of charts indicates for each group of foreign-born people its share in total population (first row) and the labour force (employed plus unemployed, second row) for the age-group 15-64 years. The shares add up to the respective total share of foreign-born people.
From column 2 to 5 the charts show the different categories of foreign-born people in the EU by sex (column 2), age (column 3), highest education (column 4) and self-declared work status (last column).

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ANNEX 2: ORDINAL LOGISTIC REGRESSION: ODDS RATIO FOR HAVING MOVED FROM ONE TO ANOTHER EU COUNTRY

EU country is destination. Odds relative to respective reference group (=1)

Specification		1	2	3	4	5	6	7	8 (full)
Control variable		Status	Status	Status	Status	Status	Status	Status	Status
			Sex	Sex	Sex	Sex	Sex	Sex	Sex
				Educ	Educ	Educ	Educ	Educ	Educ
					Marit stat	Marit stat	Marit stat	Marit stat	Marit stat
						Childr	Childr	Childr	Childr
							Elderly	Elderly	Elderly
								Age	Age
									Country-cluster
Age covariate (coefficient)								neg.	neg.
		Odds ratios							
Labour status	Unemployed / Inactive	2.26	2.41	2.95	2.78	2.74	2.84	2.62	3.40
	Employed	1	1	1	1	1	1	1	1
Sex	Males		1.3	1.4	1.3	1.3	1.3	1.3	1.4
	Females		1	1	1	1	1	1	1
Education	High			2.1	2.0	2.1	2.0	2.1	2.1
	Low			0.8	0.8	0.8	0.8	0.9	1.1
	Medium			1.0	1	1	1	1	1
Country-fixed effects 1)	Anglo-Saxon (UK, IE)								3.2
	North-Western								3.1
	Southern								0.5
	Eastern (EU-13)								1.0
Marital status	Wid./divorc.				1.4	1.5	1.5	1.8	1.6
	Single				2.3	2.3	2.3	0.9	0.9
	Married				1.0	1.0	1	1	1
Children in h'hold	One					1.0	0.9	0.7	0.7
	Two					1.1	1.0	0.7	0.7
	Three+					1.2	1.1	0.8	0.6
	None					1.0	1.0	1	1
Older people in h'hold	No						3.0	2.5	1.8
	Yes						1.0	1.0	1
Reference year	2012	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	2013	1	1	1	1	1	1	1	1

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Source: DG EMPL calculations based on Eurostat EU-LFS 2012/2013 (merged).

1) North-Western cluster: AT, DE, NL, SE, FI, LU, DK, BE
Southern cluster: ES, PT, FR, GR, IT, FR

How to read this chart: Take the variable 'Sex' as an example. Females are defined as the reference class. That is, the odds for females of crossing EU borders is normalised to 1. The odds for males are then 1.13. That is, the odds (chance or risk) of males crossing EU borders are 13% higher than they are for females, all other variables being equal.

ANNEX 3: ORDINAL LOGISTIC REGRESSION: ODDS RATIOS FOR BEING EMPLOYED

Relative to respective reference group (=1)

Third-country migrants and mobile EU citizens, aged between 20 and 64 years, living in their host countries for up to ten years. Odds ratios relative to the reference group (=1), different model specifications

Specification		1	2	3	4	5	6
Control variables			Sex	Sex	Sex	Sex	Sex
				Educ	Educ	Educ	Educ
					Country	Country	Country
						Family	Family
							Age
Age covariate (coefficient)							neg.
				Odds ratios			
Country of birth	EU-15	1.20	1.19	1.01	0.77	0.83	0.74
	EU-10	1.45	1.49	1.31	0.97	1.01	0.86
	EU-3	0.81	0.84	0.82	0.80	0.83	0.69
	Non-EU	0.53	0.54	0.54	0.47	0.47	0.39
	Nationals	1.0	1.0	1.0	1.0	1.0	1.0
Sex	Males		1.73	1.81	1.84	1.94	1.97
	Females		1	1	1	1	1
Education	High			2.18	2.18	2.17	2.18
	Low			0.48	0.53	0.52	0.55
	Medium			1	1	1	1
Foreign education	No			0.98	0.81	0.90	0.83
	Yes			1	1	1	1
Education level x Foreign education x Foreign born	High			0.59	0.56	0.57	0.58
	Low			1.54	1.52	1.53	1.44
	Medium			1	1	1	1
Country-fixed effects	AT				1.03	1.05	1.05
	BE				0.68	0.68	0.68
	BG				0.52	0.51	0.50
	CY				0.68	0.65	0.64
	CZ				0.77	0.74	0.73
	DE				1.05	1.09	1.11
	EE				0.74	0.74	0.75
	ES				0.50	0.49	0.48
	FR				0.72	0.73	0.75
	GR				0.37	0.36	0.35
	HR				0.41	0.39	0.39
	HU				0.51	0.50	0.50
	IE				0.53	0.52	0.53
	IT				0.56	0.54	0.53
	LT				0.60	0.58	0.56
	LU				0.76	0.76	0.74
	LV				0.65	0.63	0.62
	MT				0.72	0.69	0.67
	NL				1.14	1.15	1.16
	PL				0.52	0.48	0.47
	PT				0.84	0.79	0.77
	RO				0.59	0.54	0.52
	SI				0.61	0.61	0.63
	SK				0.54	0.52	0.51
	UK				1	1	1
Marital status	Wid., divorc. etc					0.84	0.86
	Single					0.73	0.53
	Married					1	1
Children in h'hold	One					1.60	1.38
	Two					1.57	1.30
	Three+					0.96	0.78
	None					1	1
Older people in h'hold	No					0.86	0.83
	Yes					1	1
Reference year	2012	1.00	1.00	1.02	1.01	1.01	1.01
	2013	1	1	1	1	1	1

Source: DG EMPL calculations based on Eurostat EU-LFS 2012/2013 (merged).

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ANNEX 4: ORDINAL LOGISTIC REGRESSION: ODDS RATIOS FOR THE TRANSITION FROM UNEMPLOYMENT OR INACTIVITY INTO EMPLOYMENT

Relative to respective reference group (=1)

Third-country migrants and mobile EU citizens' odds ratios relative to the reference group (=1), to transit from either unemployment or inactivity into employment, different model specifications

Specification		1	2	3	4	5	6	7	8 (full)
		None	Sex	Sex	Sex	Sex	Sex	Sex	Sex
				Age	Age	Age	Age	Age	Age
					Educ	Educ	Educ	Educ	Educ
						Country	Country	Country	Country
							Marital	Marital	Marital
								Children	Children
									Elderly
Age covariate (coefficient)				neg.	neg.	neg.	neg.	neg.	neg.
						Odds ratio			
Country of birth	EU-15	1.23	1.27	1.43	1.34	1.17	1.17	1.18	1.16
	EU-10	1.78	1.97	1.71	1.56	1.19	1.18	1.17	1.17
	EU-3	1.29	1.32	1.15	1.16	1.27	1.26	1.24	1.22
	Non-EU	0.90	0.91	0.86	0.90	0.80	0.80	0.82	0.82
	Nationals	1	1	1	1	1	1	1	1
Sex	Males		1.91	1.76	1.86	1.85	1.86	1.85	1.85
	Females		1	1	1	1	1	1	1
Education	High				1.7	1.6	1.6	1.5	1.5
	Low				0.6	0.6	0.6	0.6	0.6
	Medium				1	1	1	1	1
Country-fixed effects	AT					0.8	0.8	0.8	0.8
	BE					0.5	0.5	0.5	0.5
	BG					0.4	0.4	0.4	0.4
	CY					0.5	0.5	0.5	0.5
	CZ					1.5	1.4	1.4	1.4
	DE					0.8	0.8	0.8	0.8
	EE					0.8	0.8	0.7	0.7
	ES					0.6	0.6	0.6	0.6
	FR					0.8	0.8	0.8	0.8
	GR					0.2	0.2	0.2	0.2
	HR					0.3	0.3	0.3	0.3
	HU					0.7	0.7	0.7	0.7
	IT					0.4	0.4	0.4	0.4
	LT					0.8	0.8	0.8	0.8
	LU					0.7	0.7	0.7	0.7
	LV					1.1	1.1	1.1	1.1
	MT					0.4	0.4	0.4	0.4
	NL					0.7	0.7	0.8	0.8
	PL					0.5	0.6	0.5	0.5
	PT					0.6	0.6	0.6	0.6
	RO					0.2	0.2	0.2	0.2
	SI					0.5	0.5	0.5	0.5
	SK					0.5	0.5	0.5	0.5
	UK					1	1	1	1
Marital status	Wid./divorc.						1.2	1.2	1.2
	Single						1.0	0.9	1.0
	Married						1	1	1
Children in h'hold	One							1.0	1.0
	Two							0.9	0.9
	Three+							0.6	0.6
	None							1	1
Older people in h'hold	No								1.4
	Yes								1
Reference year	2012	1.01	1.01	1.01	1.03	1.02	1.02	1.01	1.01
	2013	1	1	1	1	1	1	1	1

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Source: DG EMPL calculations based on Eurostat EU-LFS 2012/2013 (merged).

ANNEX 5: ORDINAL LOGISTIC REGRESSION: ODDS RATIOS FOR THE TRANSITION FROM EMPLOYMENT INTO UNEMPLOYMENT

Specification		1	2	3	4	5	6	7	8 (full)
		None	Sex	Sex	Sex	Sex	Sex	Sex	Sex
				Age	Age	Age	Age	Age	Age
					Educ	Educ	Educ	Educ	Educ
						Country	Country	Country	Country
							Marital	Marital	Marital
								Children	Children
									Elderly
Age covariate (coefficient)				neg.	neg.	neg.	neg.	neg.	neg.
					Odds ratio				
Country of birth	EU-15	1.09	1.09	1.12	1.11	1.19	1.20	1.19	1.19
	EU-10	1.14	1.15	1.01	1.00	1.35	1.37	1.34	1.34
	EU-3	2.64	2.65	2.37	2.09	1.75	1.85	1.84	1.83
	Non-EU	2.09	2.09	2.04	1.80	1.70	1.80	1.78	1.78
	Nationals	1	1	1	1	1	1	1	1
Sex	Males		1.11	1.11	1.04	1.04	1.04	1.04	1.04
	Females		1	1	1	1	1	1	1
Education	High				0.6	0.6	0.6	0.6	0.6
	Low				1.9	1.5	1.5	1.5	1.5
	Medium				1	1	1	1	1
Country-fixed effects	AT					1.1	1.1	1.1	1.1
	BE					1.3	1.3	1.3	1.3
	BG					1.5	1.6	1.6	1.6
	CY					2.9	3.2	3.1	3.1
	CZ					1.5	1.5	1.5	1.5
	DE					0.8	0.8	0.8	0.8
	EE					1.5	1.5	1.5	1.5
	ES					3.0	3.0	3.0	3.0
	FR					2.1	2.0	2.0	2.0
	GR					2.8	2.9	2.9	2.9
	HR					2.6	2.7	2.7	2.7
	HU					1.9	2.0	1.9	1.9
	IT					1.7	1.7	1.7	1.7
	LT					1.9	2.0	2.0	2.0
	LU					0.9	0.9	0.9	0.9
	LV					2.3	2.3	2.3	2.3
	MT					0.4	0.5	0.4	0.5
	NL					1.0	1.0	1.0	1.0
	PL					1.7	1.9	1.8	1.8
	PT					3.0	3.1	3.1	3.1
	RO					0.4	0.5	0.5	0.5
	SI					2.0	2.0	2.0	2.0
	SK					1.5	1.6	1.5	1.5
	UK					1	1	1	1
Marital status	Wid./divorc.						1.6	1.5	1.5
	Single						1.6	1.5	1.5
	Married						1	1	1
Children in h'hold	One							1.0	1.0
	Two							0.9	0.9
	Three+							1.1	1.1
	None							1	1
Older people in h'hold	No								1.0
	Yes								1
Reference year	2012	0.99	0.99	0.99	0.98	0.97	0.97	0.97	0.97
	2013	1	1	1	1	1	1	1	1

Source: DG EMPL calculations based on Eurostat EU-LFS 2012/2013 (merged).

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