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DP16120

Migration and Labor Market Integration in Europe

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LABOUR ECONOMICS

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Discussion Paper DP16120

Published 07 May 2021

Submitted 05 May 2021

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This Discussion Paper is issued under the auspices of the Centre's research programmes:

- Labour Economics

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Abstract

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JEL Classification: F22, F53, J31, J61

Keywords: labor migration, wages, Europe, European Union Single Market

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Acknowledgements

We thank Thomas Brunnschweiler for outstanding research assistance. Maps showing administrative boundaries are ©EuroGeographics.

Migration and Labor Market Integration in Europe

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Abstract. The European labor market allows for the border-free mobility of workers across 31 countries that cover most of the continent's population. However, rates of migration across European countries remain considerably lower than interstate migration in the United States, and spatial variation in terms of unemployment or income levels is larger. We document patterns of migration in Europe, which include a sizable migration from east to west in the last twenty years. An analysis of worker-level microdata provides some evidence for an international convergence in wage rates, and for modest static gains from migration. We conclude by discussing obstacles to migration that reduce the potential for further labor market integration in Europe.

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The Treaty of Rome, signed in 1957 by Belgium, France, Italy, Luxembourg, the Netherlands and West Germany, envisioned the development of a common market with free movement of goods, capital, services and persons. Today, legal barriers to labor mobility across European countries have been dismantled: more than 460 million citizens of 31 European countries can choose to reside in any other partner country; they can work there without needing a work permit; and they are entitled to equal treatment with nationals in access to employment and public services.

However, the European labor market remains considerably less integrated and more heterogeneous than the one of the United States, which comprises a population of 330 million across the 50 states. For example, consider the dispersion of unemployment rates. In 2019, national unemployment rates in European countries were as low as 2.0 percent in the Czech Republic and 3.2 percent in Germany, but as high as 13.7 percent in Spain and 16.6 percent in Greece (Eurostat 2020a). By comparison, state-level unemployment rates within the United State ranged from 2.4 percent to 6.1 percent (BLS 2019). The European labor market also has much lower levels of spatial mobility. The share of European citizens living in a different country than their country of birth was less than 5 percent in 2019 (Eurostat 2020b), while the fraction of cross-state migrants in the US population has long been close to one-third (Molloy, Smith, and Wozniak 2011). However, whereas domestic mobility in the United States appears to be slowly declining, it is increasing in the European labor market.

The removal of restrictions to international migration has very large potential economic benefits, which may exceed the benefits of other integration measures such as free trade by an order of magnitude (Clemens 2011; Dustmann and Preston 2019). Nonetheless, European labor market integration remains a contentious policy issue. Skepticism about immigration is a signature issue of right-wing European populism (Margalit, 2019; Guiso et al. 2020) and is also strongly correlated with general distrust towards the European Union (Jeannet 2017).

In this article, we discuss the past, present and potential future of the European labor market. We begin by documenting patterns of labor mobility across European countries. We next ask whether and to which extent the labor markets of these countries have become more integrated over time. Finally, we discuss obstacles for European labor market integration. Our primary focus is on migration between European countries: for surveys of the literature on overall immigration in Europe, useful starting points are Dustmann and Frattini (2011) and De La Rica, Glitz and Ortega (2015).

Labor Market Integration in Europe

In the Treaty of Rome, the six founding members of the European Economic Community agreed on the free movement of citizens within those countries, thus extending to the entire economy the labor-mobility agreement for the coal and steel industries that had been introduced by the 1951 Treaty of Paris. The Schengen Agreement of 1985 further

led to the fall of national border controls, which facilitated cross-border work.¹ However, despite a harmonization of visa policies, each country maintained the right to apply its own rules for the provision of work visas to citizens of countries that do not participate in the common market.

In successive enlargements, six additional Western European countries joined the European Economic Community (EEC): the United Kingdom, Ireland and Denmark in 1973, Greece in 1981, and Portugal and Spain in 1986. In addition, East Germany was integrated into the bloc following the German unification in 1990. The 1992 Treaty of Maastricht established the European Union (EU), whose goal was a closer political integration among the EEC members, including the establishment of a EU citizenship. In the same year, the twelve members of the European Economic Community and the seven members of the European Free Trade Association (EFTA) signed an agreement to expand the common market beyond the EEC/EU by forming the European Economic Area (EEA), which covered nearly all of Western Europe. The EU and EEA then expanded eastwards and added a further 13 countries from 2004 onwards.²

Thus, since its foundation, the common European labor market grew from six countries with a population of 167 million in 1957 to 32 countries with a population of about 530 million in 2020. We will refer to these countries as “EEA countries”, and include in that group Switzerland, which participates in the common market despite not being an EEA member, and the United Kingdom, which left the common market in 2021. Prior to the “Brexit”, which reduced the expanse of the European labor market for the first time, the common market included all countries on the European continent, except most of the successor countries of the USSR and of Yugoslavia, as well as Turkey, Albania, and some micro-states.

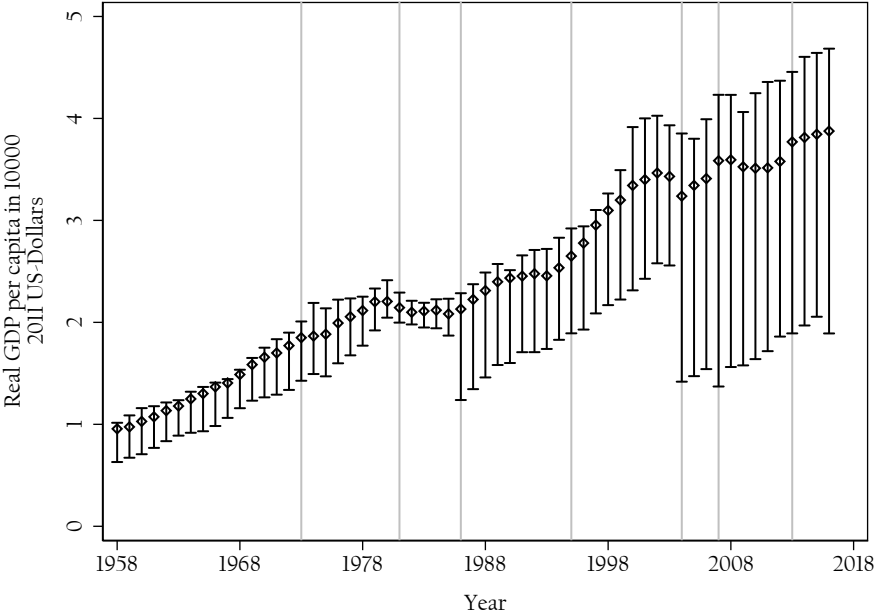
The changing membership in the European Economic Area had large implications for the dispersion of the material standard of living among member states. Figure 1 ranks the EEA population by the real per-capita income of their country of residence and shows the difference between the EEA resident at the 5th versus the 95th percentile: In 1958, an Italian resident was at the 5th and a German at the 95th percentile; in 2016, a Romanian was at the

¹ All but six of the countries, which eventually participated in the common European labor market, also became part of the Schengen area. The United Kingdom and Ireland opted out of joining the Schengen agreement, while some of the newest members of the European market in southeastern Europe are obliged to join in the future.

² Depending on data availability, we will subsequently report statistics for the following country groups: “EU-15” comprises the 12 European countries that had already been members of the EEC by 1986 (Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, United Kingdom), plus three countries that joined the EEA in 1994 as members of EFTA and subsequently acceded to the EU in 1995 (Austria, Finland, Sweden); “EFTA” comprises three EFTA members which joined the EEA in 1994 or 1995 (Iceland, Liechtenstein and Norway), and one that rejected an accession to the EEA in a referendum but later joined the common market via bilateral treaties in 2005 (Switzerland); “EU-28” comprises the EU-15 plus 13 countries that joined the EU in 2004 (Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia), in 2007 (Bulgaria and Romania) or in 2013 (Croatia); and “EU-27” is the same set of countries minus the United Kingdom following its exit from the EU in 2021.

5th while someone from Holland was at the 95th percentile.³ The figure indicates that per-capita income differentials – indicated by the 95/5 percentile ratio – have increased over time. The 95/5 percentile ratio expanded from 1.19 to 1.85 with the accession of Spain and Portugal in 1986, and later jumped to 2.82 and 3.47 following the Eastern enlargements of 2004 and 2007, respectively. For comparison, the 95/5 percentile ratio among US states in was 1.86 in 2018, with New York and South Carolina being the states at the 95th and 5th percentiles, respectively.

Figure 1
Income dispersion among countries in the common European labor market



Notes: The figure shows the distribution of real GDP per capita across countries that in a given year were part of the common European labor market through membership in the what was the European Economic Community and has evolved into the European Economic Area. Diamonds indicate the median value of the population-weighted distribution, while whiskers indicate the range between the 5th and 95th percentile. Vertical lines mark years in which new countries entered the European Union. Data source: Maddison Project Database (2018).

The Eastern enlargement and the resulting sharp increase in income differentials within the common labor market created the potential for large migration from poorer to richer countries. Most older member states, led by Germany and Austria who are in close proximity to the new Eastern European entrant countries, initially imposed rules that restricted the access of workers from new members states to their labor markets for a transitional period of up to seven years (Fihel et al. 2015). Only the United Kingdom, Ireland and Sweden immediately opened up their labor markets in 2004, and these countries received large inflows of Eastern European citizens as a consequence.

³ When Greece joined the EU in 1981, it became the poorest country among existing member states, but its population comprised less than 5 percent of EU residents. In 1986, Spain replaced Italy at the 5th percentile position, before that spot was taken over by Greece in 1990. From 2004 onwards, several Eastern European countries (Poland, Bulgaria and Romania) held the 5th percentile spot. The 95th percentile position was usually held by Germany or the Netherlands, with brief interruptions by Austria, Ireland, Sweden and Denmark.

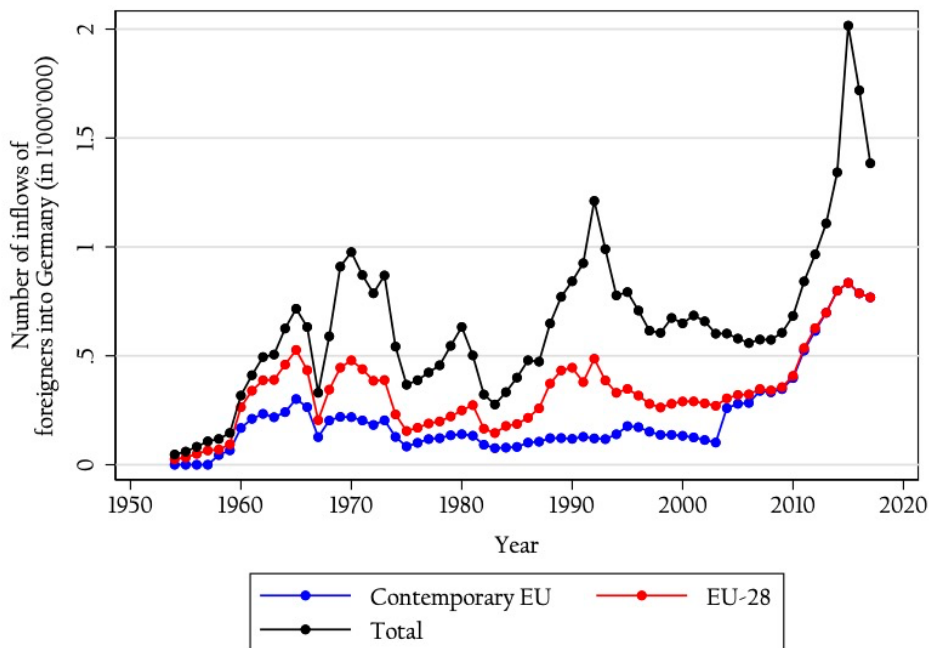
Patterns of Migration

To document the extent of migration within Europe over longer time periods, we first look at Germany, a large and wealthy country in the EEA for which longer-term migration data are available. We then take a closer look at migration patterns all over Europe since the year 2000 when within-EU migration flows started to surge. Finally, we show that, since 2000, within-EU migration has become increasingly high skilled.

Immigration into Germany since the 1960s

Figure 2 depicts the annual inflow of immigrants into Germany since the mid-1950s. It indicates that sizable immigration commenced in the early 1960s, when “guest workers” were attracted to fill labor shortages in the booming “*Wirtschaftswunder*” economy. During the 1960s and early 1970s, Germany was the leading destination of migrants from within the European Economic Community, while Italy was the most important origin country of these within-EEC migrants (Straubhaar 1988). However, many immigrants to Germany during the 1960s and 1970s originated from countries that were yet to join the EEC, such as Spain.

Figure 2: Annual inflows of foreign citizens into Germany



Notes: “Contemporary EU” indicates inflows of foreign nationals who were citizens of a country that was a member of the EEC/EU in the indicated year. “EU-28” indicates inflows of foreigners who were citizens of one of the 28 countries that eventually joined the EU. Data sources: DEMIG (2015), Federal Statistical Office of Germany (2020a).

From the 1970s onwards, a large fraction of immigrants also came from countries that never became part of the European labor market, such as Turkey. Immigration within the EEA increased rapidly only after 2011, when the citizens of the Eastern European countries that had joined the EU in 2004 gained full access to the German labor market following the expiry of the seven-year transitional arrangements. In 2015, a continuously high inflow of migrants

from Eastern Europe and a wave of refugees, primarily from Syria, led to a record immigration of two million individuals in a single year.⁴

Migration to and within Europe since the 2000s

The fact that inter-European migration increased strongly in recent years, as shown for the German case in Figure 2, motivates us to take a closer look at the last two decades. Column 1 of Table 1 reports the fraction of foreign nationals in the 2019 population of each European Economic Area country but Liechtenstein, with countries listed in descending order of their 2019 GDP per capita. The second and third columns separate this total into the proportion of EU-27 and non-EU-27 foreigners in a country. The fourth column indicates the number of a country's citizens that reside in another EEA country, expressed as a percentage of the source country's domestic population.⁵

The table illustrates that immigrant stocks are positively correlated with countries' income levels: for example, the share of foreign nationals in the domestic population is largest in Luxembourg (47.5 percent) and Switzerland (25.1 percent), which are among the countries with highest incomes per capita worldwide. Many of the poorer Eastern European members have small foreigner shares in their populations, such as 0.6 percent in Romania and 0.8 percent in Poland. The contrast becomes stronger still if one focuses only on foreigners with EU citizenship in column 2 of Table 1. The destinations of international migrants within the EEA are almost entirely the higher-income countries of Western Europe. Instead, most of the foreign citizens living in the eastern EEA countries come from non-EU nations, such as Russians residing in Estonia or Bosnians in Slovenia.

The patterns for emigrants, shown in column 4 of Table 1, are opposite to those for immigrants. Emigrants from Eastern Europe account for a large portion of citizens living in a different EEA country. Most strikingly, roughly one of every five Romanian citizens in the EEA—a total of 3.6 million individuals—is living outside of Romania. Some of the southern member states, like Portugal or Greece, also have large diasporas elsewhere in Europe. By contrast, wealthier countries of Western Europe, like Germany or the United Kingdom, have relatively few of their citizens living abroad, at least compared to the much larger number of EEA and non-EEA foreigners that these countries host.

The final two columns of Table 1 indicate the change in a country's immigrant share between 2004 and 2019, again differentiated by EU and non-EU citizens. It shows that immigrant shares increased in all but two countries, with several countries experiencing a growth of their foreign population share by 5 percentage points or more. The only exceptions are Latvia and Estonia, which saw many Russian nationals gain citizenship or returning to their home country. It is noteworthy that immigration from other EU countries

⁴ Historically consistent time-series for migration inflows are available for Germany and the Netherlands, but not for the other two large founding members of the European Economic Community: France and Italy. Appendix Figure A1 shows time-series data on immigration to the Netherlands, which are similar to those for immigration to Germany.

⁵ There are more comprehensive European migration statistics based on individuals' nationality rather than their country of birth. In 2018, 86 percent of the foreign nationals residing in EU-15/EFTA countries were born abroad. That fraction is lower in most Eastern member states, and as low as 49 percent in Bulgaria and Lithuania (Eurostat, 2020). Data on a country's emigrants is available only for those who reside in European Economic Area countries, but not for those who moved to a non-EU country.

was the main contributor to growing foreigner shares in most countries, especially those in Western Europe. Most of the EU's eastern member states only experienced modest increases in foreign population shares, which were often due to immigrants from outside the EU, such as Ukrainians moving to Poland. Overall, the patterns of Table 1 clearly suggest intra-European labor flows from poorer to richer European countries, and especially from East to West.

Table 1: Foreign citizens residing in EEA countries in 2019 and change in foreign citizens residing in EEA countries, 2004 to 2019

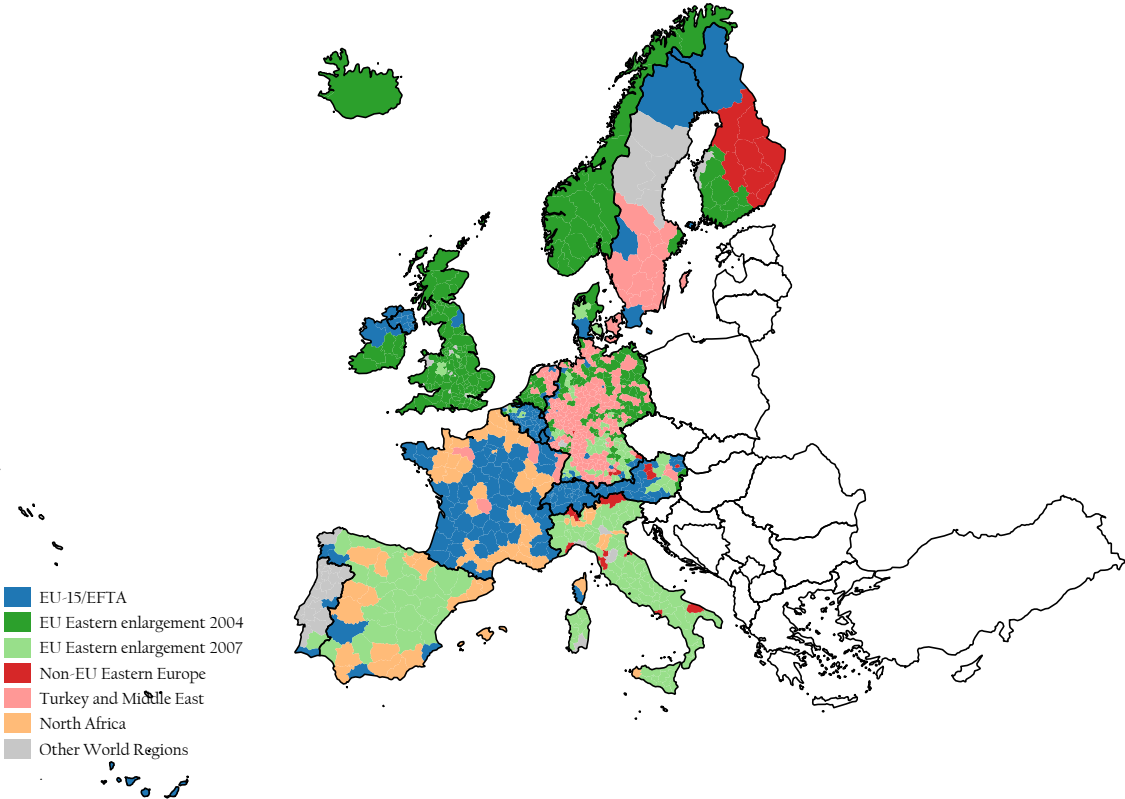
	Foreign citizens living in a country, in % of country's population, 2019			Country's citizens living in other EU country, in % of country's pop., 2019	change %pts of foreign citizens living in a country, 2004-2019	
	all foreign nationalities	EU nationalities	non-EU nationalities		EU nationalities	non-EU nationalities
	(1)	(2)	(3)	(4)	(5)	(6)
I. Countries with per capita income above EU average						
Luxembourg	47.5%	40.1%	7.4%	5.5%	5.8%	1.9%
Switzerland	25.1%	16.5%	8.6%	1.1%	4.8%	-0.1%
Ireland	12.5%	9.2%	3.3%	8.4%	1.0%	-0.1%
Norway	11.0%	6.8%	4.2%	1.6%	4.3%	1.5%
Iceland	12.4%	10.5%	1.9%	7.4%	4.9%	0.1%
Denmark	9.1%	3.9%	5.2%	2.4%	2.6%	1.4%
Netherlands	6.4%	3.3%	3.1%	3.4%	1.9%	0.2%
Sweden	9.1%	3.1%	6.0%	2.0%	0.8%	3.0%
Austria	16.2%	8.2%	8.0%	3.0%	5.7%	1.3%
Finland	4.7%	1.8%	2.9%	2.5%	1.1%	1.5%
Germany	12.2%	5.3%	6.9%	1.5%	2.3%	1.0%
Belgium	12.3%	8.0%	4.3%	2.5%	2.3%	1.7%
UK	9.3%	5.5%	3.8%	1.4%	3.5%	0.6%
France	7.3%	2.4%	4.9%	1.4%	0.4%	1.1%
Italy	8.7%	2.6%	6.1%	3.4%	2.0%	3.3%
Malta	16.9%	9.2%	7.7%	2.5%	6.8%	6.0%
Spain	10.3%	4.2%	6.1%	1.7%	2.1%	1.4%
II. Countries with per capita income below EU average						
Cyprus	17.8%	13.4%	4.3%	3.9%	6.2%	0.1%
Slovenia	6.6%	1.0%	5.6%	3.6%	0.9%	3.5%
Estonia	15.1%	1.6%	13.5%	7.0%	1.1%	-3.6%
Czechia	5.2%	2.2%	3.1%	1.6%	1.5%	1.8%
Portugal	4.7%	1.5%	3.1%	14.3%	0.6%	-0.1%
Lithuania	1.7%	0.3%	1.4%	15.8%	0.2%	0.5%
Slovakia	1.4%	1.1%	0.3%	6.7%	0.8%	0.0%
Greece	7.8%	2.0%	5.8%	4.8%	0.6%	-0.8%
Latvia	13.9%	0.3%	13.6%	10.9%	0.1%	-8.5%
Hungary	1.8%	0.8%	1.1%	4.8%	0.0%	0.5%
Poland	0.8%	0.1%	0.7%	6.9%	0.0%	0.6%
Croatia	1.7%	0.4%	1.2%	13.6%	0.2%	0.7%
Romania	0.6%	0.3%	0.3%	18.4%	0.2%	0.0%
Bulgaria	1.4%	0.1%	1.3%	12.7%	0.0%	0.9%

Notes: Countries are listed in declining order of GDP per capita in 2019. The stock of foreign nationals living in a country (separately reported for EU-27 and non-EU-27 citizens) and the stock of a country's own citizens living elsewhere in the EU are each reported as percentages of a country's current domestic population. For some countries, data on foreign citizens in the domestic population is unavailable for 2004, and data from the next available year is used instead. Data source: Eurostat (2020c, 2020d, 2020e).

We further investigate the regional patterns of immigrants' location choices in the Western European countries that are the main recipients of immigration in Europe. Figure 4 plots the nationality of the main foreigner group in a geographic region in the years 2018/19 based on data that we collected from individual countries. Our data set comprises 1,095

“NUTS-3” regions, as defined by the European Union.⁶ There are 53 different nationalities that form the predominant group of foreigners in at least one of these 1,095 regions. Figure 4 does not try to display all of these nationalities separately, but indicates to which of seven different country groups the main foreign nationality belongs.

Figure 3: Origin regions of largest foreign nationality by NUTS-3 geographic region



Notes: The figure indicates the source region of the largest foreign nationality residing in each of 1,095 NUTS-3 regions of Western Europe, or in more aggregate NUTS-1 regions for Scotland and Northern Ireland. Population counts by nationality are measured on December 31st 2018 or January 1st 2019 if available, or at the latest available date otherwise. All data is sourced from individual countries’ statistical offices: Central Statistics Office (Ireland) (2017), Federal Statistical Office of Germany (2020b), Institut national de la statistique et des études économiques (France) (2020), Institut national de la statistique et des études économiques du Grand-Duché de Luxembourg (2020), Insituto Nacional de Estadística (Spain) (2020), Italian National Institute of Statistics(2020), Office for National Statistics (UK) (2018), PORDATA (Portugal) (2020), Secrétariat d’état aux migrations (Switzerland) (2020), Statistics Belgium (2020), Statistics Austria (2020), Statistics Denmark (2020), Statistics Finland (2020), Statistics Iceland (2020), Statistics Netherlands (2020a), Statistics Norway (2020), Statistics Sweden (2020). © EuroGeographics for map with administrative boundaries.

The blue areas of Figure 4 show that within many regions of Austria, Switzerland, France, Belgium and Luxembourg, the predominant foreigner group comes from an EU-15 or EFTA country, most often Portugal, Germany, Italy, or France. Out of the 15 countries that

⁶ NUTS is an acronym for *Nomenclature des unités territoriales statistiques* (Nomenclature of Territorial Units for Statistics), which is a hierarchical system of geographic regions that Eurostat uses for statistical purposes. The NUTS-3 units are defined as “small regions” that usually comprise populations between 150,000 and 800,000 individuals.

were part of the EU prior to its eastern enlargement, *each* one accounts for the main group of foreigners in at least one region of another country.

If one looks at the blue, dark green, and light green areas, it is clear that in a majority of regions, the largest group of foreign nationals comes from another country within the European Economic Area. The dark green areas show that for a strikingly large number of regions, the main foreigner group hails from one of the countries that joined the European Union in since 2004. Polish nationals form the largest immigrant group in most of the British Isles, and in parts of Scandinavia, Germany and the Netherlands. In many regions of Italy and Spain, as well as in some areas of Austria and Southern Germany, the largest foreign groups instead are the citizens of Romania, which joined the European Union in 2007 and became the second most populous eastern member state behind Poland.

Finally, the red, pink, orange, and gray areas on Figure 4 show regions where the main foreign nationality comes from a non-EEA country. In many regions of Germany, the Netherlands and southern Sweden, the dominant foreigner groups are Turkish or Syrian nationals, where the latter group includes many recently arrived refugees. Immigrants from North Africa, especially from Morocco and Algeria, form sizable communities in the Mediterranean countries Spain and France, and to a lesser extent in Italy. Other source countries of immigrants that play a dominant role in a few regions include Brazilians in Portugal, Russians in Finland, Albanians in Italy, and Indians and Pakistanis in the United Kingdom.

What explains the location choices of different foreign nationalities that move to Western Europe? We explore this question in more detail in Appendix Figure 2, which investigates the choice of destination countries for the nine immigrant nationalities whose numbers in western Europe grew the most between 2001 and 2018: Romania, Morocco, Syria, Poland, China, Bulgaria, Ukraine, Albania, and Russia. The nine panels of Appendix Figure 2 plot separately for each of these nationalities their initial percentage in the population of western European countries in 2001, and the net inflow into these countries between 2001 and 2018.

For most immigrant nationalities, the initial stock and subsequent inflow to a destination country are positively correlated, which implies that immigrants tend to locate in countries that already host a sizable diaspora of the same nationality. This is the case in particular for non-European immigrants: Syrians moved primarily to Sweden and Germany, which already hosted relatively large proportions of Syrians in 2001, while Belgium remained a popular destination for immigrants from Morocco, and Italy for immigrants from China.⁷

Geographic distance also plays an apparent role in migrants' destination choices. For three of the nine main migrant nationalities, the net inflow from 2001 to 2018 was largest in the geographically closest western European country, with Moroccans moving to Spain, Albanians moving to Italy, and Russians moving to Finland. Language distance arguably had a

⁷ An extreme counterexample to this pattern is the location choice of Ukrainians, whose net inflow was largest in Portugal, which was the country with lowest population share of that nationality in 2001. The number of Ukrainian citizens registered in Portugal grew from 71 individuals in 1996 to 62,448 individuals in 2002 (Fonseca 2016). Most of these migrants benefited from a 2001 immigration law, which allowed individuals who had arrived with a tourist visa to gain a work permit after presenting an employment contract to authorities.

less important influence, because none of the nine sending countries shares a national language with a western European country. However, it is noteworthy that Romanians often moved to Italy and Spain, whose languages are related to Romanian.

A particularly interesting pattern of migration is that for citizens of Poland, which is the largest eastern European country that joined the EU. In 2001, the share of Polish nationals was largest in Germany and Austria, the two western European countries that are geographically closest to Poland. When Poland and other eastern European countries joined the EU in 2004, Germany and Austria imposed transitional arrangements that fully opened their labor markets to the new eastern EU members only by 2011. The only countries that immediately opened their labor markets to eastern Europeans in 2004 were the United Kingdom, Ireland and Sweden, while several other countries including Norway opened their markets in 2006. As a consequence of this staggered access to western European labor markets, the largest net inflows of Polish immigrants relative to domestic population occurred in three countries that hosted few Polish nationals in 2001 but opened their markets early: Ireland, Norway, and the United Kingdom. Perhaps guided by that experience, these three countries no longer immediately allowed unrestricted immigration when Romania and Bulgaria joined the EU in 2007, but instead opened their markets to Romanians and Bulgarians only five to seven years later.

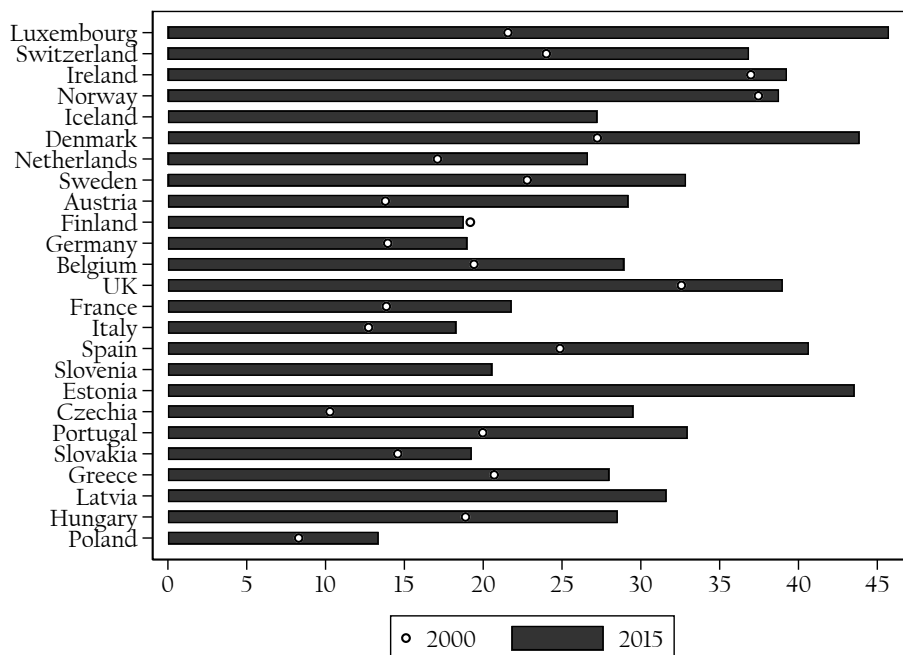
Migration by educational attainment

Much of the earlier migration from poorer to richer European countries, such as the flow of southern European guest workers to Germany in the 1960s and 1970s, involved unskilled workers that provided cheap labor in construction, factory jobs, or low-paid service occupations. However, globalization and technical change have raised the relative demand for high-skilled workers, particularly in countries with a comparative advantage in skill-intensive goods. As a consequence, worldwide migration to high-income countries has become more skill-biased in recent decades (Kerr et al. 2016).

Figure 5 shows the share of individuals with tertiary education in a country's foreign resident population both for the years 2000 and 2015. During this period, average education levels of immigrants increased in all countries but Finland, and the increases were often large. Luxembourg, Denmark, Spain and Switzerland all experienced a growth of the high-skill share among their foreign population by more than 12 percentage points. While the trends toward more highly educated immigrant populations is pervasive across countries, there remains large variation in the education levels of immigrants in different countries. For example, Spain (41 percent tertiary education share among immigrants) and the United Kingdom (39 percent) have relatively highly educated populations of foreigners, while Germany (19 percent), France (22 percent) and Italy (22 percent) have more low-skilled foreigner populations.

Although immigrant education levels have increased, immigrants remain less educated than natives in most European countries. In 2019, the tertiary education share in the EU-27 countries was 30 percent for foreign-born immigrants, but 35 percent for natives (Eurostat 2020g). Conversely, the share of individuals with at most a lower secondary education was considerably larger among the migrants (33 percent) than among the natives (17 percent).

Figure 4: Share of tertiary-educated individuals among foreign residents in 2000 and 2015



Notes: Countries are listed in declining order of GDP per capita in 2015. All data refers to citizens of European OECD member countries who live in another European OECD member country. Estonia, Iceland, Latvia and Slovenia are included only in 2015 but not in 2000. Due to data availability, the initial share of foreigners with tertiary education in the total stock of foreigners with known educational attainment is measured in 2005 instead of 2000 for Germany. Data sources: Eurostat (2020c, 2020f), OECD (2020).

A further differentiation of immigrants by source countries indicates that intra-EEA migrants possess slightly lower average education levels than natives, but higher education levels than immigrants from outside the EEA (Eurostat 2020g). Drawing on data from the 2007-2009 European Labor Force Survey, Dustmann and Frattini (2011) further report that individuals who moved between Western EU countries had higher average educational attainment than the natives, while migrants who moved from the Eastern to the Western EU countries had lower education levels.

The data of Figure 4, which lists countries in declining order of their GDP per capita, suggest that there is a weak positive correlation between a country’s high-skill immigrant share and its income level. Moreover, countries that had higher income levels in 2000 also experienced a slightly larger growth in the high-skill immigrant share from 2000 to 2015. We thus find that migration does not only flow from poorer to richer countries, but richer countries also tend to attract more skilled immigrants.

Equilibration of Labor Market Outcomes

The common European labor market can contribute to an equilibration of labor market outcomes across European countries. In theory, a complete removal of all mobility barriers should lead to factor price equalization. When production factors can be relocated without costs, the operation of market forces will attract workers to locations paying high

wages and will induce firms to invest in locations where labor costs are low. In practice, however, markets are far from perfect. A broad set of mobility costs and frictions create substantial inertia. We discuss further below that even with open borders between European countries, obstacles to migration continue to exist due to different languages, heterogeneity in education, training and social security systems, as well as anti-immigrant attitudes of the native population and discrimination against immigrants. Given the presence of mobility frictions, differences across countries in such dimensions as the skill composition of the labor force, industry composition, infrastructure, or institutional environment will continue to determine cross-country wage differences while making wage- and income-convergence a slow and long-lasting process; and permanent differences in amenities offered by countries to workers and firms may inhibit full wage convergence.

Nonetheless, there is little doubt that the European integration process has substantially reduced mobility frictions, notably by giving foreign EEA citizens the same legal access to a country's labor market that domestic citizens have. Head and Meyer (2021) estimate that mobility costs within Europe fell rapidly in the 1960s, while reductions in these costs were more modest during the past two decades. Indeed, more than half of the EEA's current population live in the six founding members of the EEC for whom border-free mobility already became possible in the 1960s, and more than three quarters live in countries that were part of the common labor market by the mid-1990s. Much of the removal of mobility barriers in Europe thus already occurred several decades ago.

Recent wage convergence in the European labor market

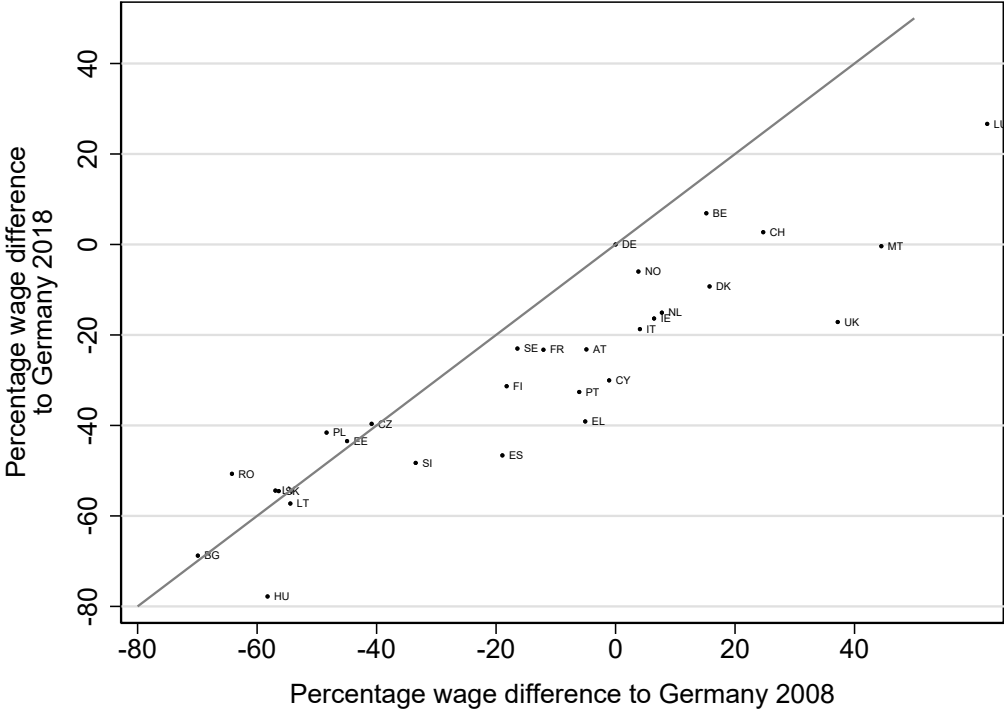
We study below the wage convergence across European countries between 2008 and 2018. The arguably most important removal of mobility frictions during this period concerned the opening of the labor markets of the wealthier western European countries to the citizens of the poorer eastern European countries that joined the EEA since 2004. Therefore, one would in particular expect to see wage convergence between the eastern and western European countries.

Of course, forces other than migration will also affect convergence in European wage and income levels. There was arguably a large potential for catch-up growth in the Eastern European countries following their transition from communism to capitalism 30 years ago that would have led to some convergence even absent the common labor market. Moreover, by joining the EU, the Eastern member states also gained access to the free movement of goods, capital, and services, and to support through the EU's spatial cohesion policy. That policy seeks to reduce economic disparities between countries and regions within the EU. From 2014 to 2020, the EU allocated about €645bn, or one-third of its overall budget, to instruments such as subsidized infrastructure projects that support that cohesion policy (Von Ehrlich and Overman, 2020).

Yet despite these forces in favor of convergence, economic differences between the EU member countries remain remarkably large. In 2019, average labor costs in the European ranged from €6/hour in Bulgaria to €45/hour in Denmark (Eurostat 2020h). Although Denmark has the highest and Bulgaria has the lowest price level in the European Union, real wages still differ by a factor of 2.8 between the two countries (Eurostat 2020i).

Here, we draw on microdata from EU-SILC (Statistics on Income and Living Conditions) to study convergence in real wages and in wages adjusted for skill levels. Our sample includes 253,894 workers in 2008 and 262,255 workers in 2018, who reside in 30 European countries. We regress, separately for each year, individuals' real log gross annual earnings on country fixed effects, and a set of control variables that includes a quartic in age and indicators for sex, marital status, and highest educational degree obtained. Germany is the reference country hence the coefficients for country fixed effects indicate countries' wage premia relative to Germany in the year under consideration.

Figure 5: Convergence in Real Wages across Countries



Notes: The figure indicates coefficient estimates for country fixed effects from year-specific regressions that relate individuals' log annual real wage to country fixed effects and controls for a quartic in age, sex, marital status, and highest education degree obtained. Country fixed effect estimates have been converted from log points to percentage points. Germany is the reference country for the country fixed effects. All wages are converted to Euros and adjusted for price level differences across countries. Data sources: SILC data and price level data from Eurostat (2020j, 2020k).

Figure 5 plots coefficient estimates for the 2018 country fixed effects against those for the 2008 fixed effects, where we converted these effects from a log point to a percentage point scale. The graph also includes a 45-degree line. The evidence shows that there was convergence in real wage levels. Consider the case of Romania ("RO") towards the bottom left corner of the figure. In 2008, the average Romanian worker earned 64 percent less than the average worker in Germany. However, that gap had shrunk to 51 percent ten years later. Indeed, for all eastern European EEA members, except Hungary, Latvia, and Slovenia, the country indicators lie above the 45-degree line, as shown in the lower-left portion of the figure. These countries reduced their wage penalty relative to Germany. By contrast, the country indicators for all Western European lie below the 45-degree line, as shown in the center and upper-right portion of the figure. Wage levels in these countries lost ground relative to Germany from 2008 to 2018.

A linear regression fit through the point cloud (not shown in the figure) would have a slope of 0.64. The slope of less than one implies that national wage levels had a greater dispersion in 2008 than in 2018: a wage difference which existed between any pair of countries in 2008 would be predicted to have shrunk by one-third by 2018.⁸

These wage estimates are broadly in line with recent evidence on convergence in GDP per capita across European countries and regions. Montfort (2020) finds convergence in per capita incomes between 2000 and 2008, which has slowed down substantially thereafter. Since 2008, overall convergence within the EU-28 has been weak, with countries of Eastern Europe slowly catching up, while there was some divergence within the EU-15. In sum, large income differences remain.

Static earnings gains from migration

The persistent and large earnings differences across European countries suggest that migration within Europe is associated with high earnings gains for migrants. To shed light on the order of magnitude of these gains, we undertake a simple accounting exercise. First, we calculate the difference in earnings levels between origin country i and destination country j , $(w_j - w_i)$, for the year 2018 based on a regression of log real yearly earnings on worker characteristics and country fixed effects, as in the analysis for Figure 5 above. Abstracting from the effects of immigrant selectivity (Borjas 1987) and immigrant assimilation (Chiswick 1978), i.e., the fact that immigrants typically face an earnings penalty initially and catch up only later on, differences in country fixed effects can serve as a measure for the earnings gain of a migrant moving from country i to country j . Second, we calculate the earnings gains from immigration for each origin-destination pair (i, j) as the product $M(i, j) \cdot (w_j - w_i)$, where $M(i, j)$ is the stock of migrants in destination j originating from country i .⁹ These earnings gains are static in the sense that they take wage levels as given, and abstract from any impact of migration on wages in the origin or destination countries.

Based on this calculation, we estimate that 12.7 million intra-EU migrant workers obtain an average PPP-adjusted static earnings gain of about 6,500 Euros per year each. The product of these numbers yields a PPP-adjusted static earnings gain from within-EU migration of 83.2 billion Euros, or 0.5 percent of EU-wide GDP. The bulk of this benefit, 67.9 billion Euros, accrues to migrants from Eastern Europe, whose earnings gains amount to 2.8

⁸ Details of the regression underlying Figure 5 and additional results are available in the online Appendix. In Appendix Figure A3, we repeat the same analysis based on an augmented cross-country wage regression that additionally controls for various characteristics of workers' jobs: weekly work hours, detailed occupation, and industry of employment. That setup seeks to isolate differences in countries' wage levels that cannot readily be explained by international differences in job types. Cross-country convergence is slightly weaker when we add these controls: a regression line through the point cloud of country fixed effect estimates has a slope of 0.68 rather than 0.64. Note that the estimated slope will be biased towards zero if countries' wage differences relative to Germany are measured with error. Therefore, one might interpret the slope estimate as lower bound for its actual value.

⁹ We calculate country-specific wage premia and earnings gains separately for migrants with and without tertiary education. Appendix Figure A4 shows that in many countries, wage differences relative to Germany are larger for highly educated workers than for less educated ones. Our calculation also takes into account that earnings gains from migration accrue not to all migrants, but only to working-age individuals who are employed. The online appendix provides further detail on the computation of gains from migration.

percent of eastern EU countries' GDP. For Bulgaria, which is the poorest member country of the EU, the static migration gain is largest at 8.0 percent of GDP.

The above calculation assumes that the gain from migrating from country i to country j is the same for all workers of a given broad education group. In reality, the potential gains from migration may however vary across workers, and it is plausible that those who stand to gain more will be more likely to migrate. By not taking into account this selection effect, one will tend to underestimate the gains from migration. In particular, while our simple calculation implies an earnings loss for every worker who moves from a richer to a poorer country, it is possible that at least some of these workers in reality earn more in the poor host-country than in their rich home-country. If we only take into account migration flows from poorer to richer countries, the EU-wide gains from migration are indeed larger, amounting to 97.4 billion Euro or 0.6 percent of EU GDP (PPP adjusted). For eastern EU countries, the gains from migration are, unsurprisingly, barely affected as almost all migrants from Eastern Europe move to a richer EU country.

Another source of bias in our baseline calculation stems from the fact that foreign citizens often obtain lower wages in a destination country than domestic citizens. By ignoring that pattern, one will tend to overestimate the earnings gains from migration. Indeed, when we account for such wage penalties by calculating separate wage levels in a country for domestic and foreign citizens, then the gains from migration are substantially smaller. They amount to 0.2 percent of EU GDP for EU-wide migration, to 1.7 percent of GDP for the member states in Eastern Europe, and to 5.7 percent of GDP for the poorest country, Bulgaria.

Clemens (2011) reviews a broader literature on the potential gains from reducing worldwide barriers to labor mobility. While a complete removal of such barriers could generate gains of more than 100 percent of worldwide GDP according to some estimates, the realization of such gains would require that more than half of the world population moves to another country. With partial reductions of mobility barriers that lead to a migration of about 1-2 percent of the world population, world GDP could still grow by about 1-2 percent. In comparing such calculations to migration gains for Europe, it is important to note that income differentials within Europe are much smaller than worldwide, which leads to smaller potential gains from migration. Indeed, our simple quantification of migration gains can be used to highlight how gains from migration depend on both migration rates, and earnings differences between countries. Consider first the case of Bulgaria. The number of Bulgarian workers in other EU countries corresponds to about 8 percent of Bulgaria's population, and average migration gain per Bulgarian worker is about equal to the country's per-capita GDP. As a consequence, we obtain a migration gain of 8 percent of GDP for Bulgaria in our baseline calculation. When we instead look at the entire EU, both the fraction of migrant workers (about 2.5 percent) and the average gain per worker (about 20 percent of per-capita EU GDP) are substantially lower than in the Bulgarian case, and in combination result in the much smaller migration gain of 0.5 percent of EU GDP.

Earnings effects of immigration on host country wages

The above simple accounting exercise calculated earnings gains from within-EU migration based on the assumption that wages in the involved countries are not themselves

affected by immigration. This is a strong assumption but perhaps somewhat less unreasonable given the large and highly persistent cross-country variation in real wages across European countries.

One possible explanation for that persistence in wage differentials is that the labor flows within the common European labor market are not large enough to create a stronger convergence in wage levels. Another possible explanation is that labor markets adjust to immigration primarily through an adjustment of employment, rather than an adjustment of wages. For example, Glitz (2012) looks at the large immigration flow into Germany of 2.8 million ethnic Germans from Eastern Europe and the former Soviet Union during the 1990s and early 2000s. He finds no effect on wages, but a large employment effect: for every 10 immigrants who find a job, three native workers become unemployed. A related study by Dustmann, Schönberg, and Stuhler (2017) analyzes a local labor supply shock in a German border region when workers from the nearby Czech Republic were allowed to enter the country. It finds a moderate decline in the German wage but a large negative response in local native employment.

The intuitive conjecture that migration should equilibrate wages and employment rates rests on the implicit assumption that labor is homogeneous, and labor demand is constant. But these assumptions may not hold. If labor is heterogeneous and there is little substitutability between immigrant and native workers, then a migrant inflow will generate little downward pressure for the wages of natives. Moreover, immigrants may contribute to firm growth by filling important labor shortages or by contributing to innovation, in which case immigration may trigger an increase in labor demand that raises the native wage level.

With these ideas in mind, certain areas of Switzerland offer an interesting case study for the effects of European labor market integration. The Swiss had rejected membership in the European Economic Area in a 1992 referendum, and only became part of the common European labor market in 2005 after a set of bilateral agreements with the EU. From 2000 to 2019, immigration increased the share of foreigners in the Swiss work force by more than 8 percentage points. This surge in immigrant workers included many workers who reside in neighboring regions of Italy, France and Germany, and who commute daily to Switzerland in order to take advantage of the elevated Swiss wages. The number of workers employed in Switzerland but residing in a neighboring country almost tripled since 2000 and now accounts for an astonishing 6.5 percent of the Swiss labor force.

Cross-border work in Switzerland is particularly important in the cantons of Geneva near the French border and Ticino near the Italian border, where cross-border workers account for 26 and 29 percent of all workers in those cantons, respectively. In these cases, frictions to cross-border labor mobility seem very limited. In particular, there are no restrictions arising from language differences (Geneva is a French-speaking, Ticino is an Italian-speaking canton), and cross-border transportation systems are well developed. Several recent studies explore how the increase in cross-border work affected the local labor markets of both Switzerland, where labor supply increased dramatically, as well as the border regions of France and Italy, which lost many workers to Switzerland.

Beerli et al. (2020) find that the increase in cross-border workers in the most strongly exposed border regions of Switzerland left wages and employment of native Swiss workers

largely unchanged. Indeed, wages of university-educated natives even increased. It appears that migration allowed highly productive and skill-intensive firms to close their labor shortages. Conversely, the French and Italian border regions lost a sizeable fraction of their employees to Swiss firms. For the French border regions, Hafner (2020) finds that the wages of low-skilled workers were slightly rising, while wages of high-skill workers remained unaffected. Dicarolo (2020) shows that Italian firms in the border region faced substantial labor shortages after large numbers of Italian workers took up jobs in nearby Switzerland. In particular, Italian firms in high-skill sectors in the border region struggled to compensate for this loss in labor supply. Nevertheless, wages in these firms declined, most likely because the most productive workers went to Switzerland.

Taken together, these papers suggest that labor market integration between Switzerland and its neighbors did not decrease – and perhaps even increased – the wage differences across national borders. Various studies have also found positive wage effects of immigrants on natives in other European countries. For instance, Dustmann, Frattini, and Preston (2013) find that, on average, UK immigration slightly increased the average wage of native workers, though wages responded differentially along the wage distribution (some wage declines below the 20th percentile of the wage distribution but modest wage gains in the upper ranks of the distribution). Ortega and Verdugo (2014) show that immigration into France raised the wage of French workers by fostering a reallocation of the native workers to better-paying occupations.

The general message from all these studies is that migration flows may have surprisingly weak effects on wages. Despite increasing migration flows within Europe, an equilibration of wage levels across countries does not seem near.

Obstacles to Migration and European Labor Market Integration

The labor market of the European Economic Area remains considerably less integrated than the US labor market, and has much lower migration rates. A proximate reason for these relatively modest migration rates in Europe is that labor market outcomes for migrants are often worse than those of similarly educated natives. Some citizens of Europe's poorer countries would likely struggle to obtain adequate jobs if they moved to a richer country, and their financial gain from moving would thus be considerably smaller than suggested by the large international wage differences indicated in Figure 5. Algan et al. (2011) review the labor market performance of immigrants in Europe's three largest economies—Germany, France, and the UK—and conclude that immigrants do worse than natives in terms of employment rates and earnings, after controlling for education, potential experience and regional location. The immigrant-native gaps appear quite persistent across first- and second-generation immigrants (that is, native born children of foreign-born parents). Importantly, immigrants' labor market performance varies widely across immigrant groups. While migrants from other western European countries have fairly similar outcomes than natives, very large gaps exist for immigrants from outside Europe of different races and ethnicities, such as Africans in France, or Bangladeshi and Pakistani in the UK. Eastern Europeans, and in some cases Southern Europeans such as Greeks or Italians in Germany, also do worse than the natives. Calmfors and Sanchez Gassen (2019) show that immigrants' employment prospects are substantially below those of natives even in the egalitarian Nordic countries.

Language and culture

Europe's remarkably large heterogeneity in languages is one reason why immigrants may struggle to gain a foothold in another country's labor market. The European Union alone lists 24 different official languages, and the non-EU members of the common labor market add another three. A lack of proficiency in the destination country's language not only limits immigrants' ability to find jobs quickly, but can also reduce productivity in the workplace and social inclusion. A large literature has documented that poor language proficiency has a sizable negative effect on labor earnings of immigrants (Chiswick and Miller 2014). Other research suggests that language differences between the origin and destination countries constitute a barrier for migration. Adsera and Pytlikova (2015) show that in a panel of OECD countries, migration flows are stronger between countries that share the same language. Moreover, English-speaking countries generally receive greater migrant inflows, which is likely due to the widespread teaching of English as a foreign language. In the European Union, 96 percent of all students in upper secondary education learn English as a foreign language, while the fractions of students learning Spanish, French and German are just 26 percent, 22 percent and 20 percent, respectively (Eurostat 2020g). Language can also more broadly proxy for local culture, and migrants across language borders may have to learn not only a new language but also to familiarize themselves with local practices of interpersonal interaction and labor market behavior. Consistent with such an interpretation of language as a proxy for culture, Eugster et al. (2017) show that workers' job search behavior differs notably across nearby German-speaking and French-speaking regions in Switzerland that share the same formal labor market institutions.

Education, training and social security

Certain institutional features may also hinder the smooth integration of immigrants into host country labor markets. European education and occupational training systems are organized and administered at the national level. Because these systems differ across countries, skilled immigrants often face limitations to enter the occupation in which they were trained at home. In some cases, employers may have difficulty assessing to educational credentials that were acquired abroad; in others, occupational licensing rules make it difficult to get formal recognition of occupational certificates acquired abroad.

Tertiary education is one area where standards have been harmonized. The 1999 Bologna declaration was signed by 29 European countries (the EU-28 except Cyprus, plus Norway and Switzerland). In follow-up agreements, the "Bologna process" was opened to other countries, including those of the former Soviet Union, former Yugoslavia and Turkey, and now includes 48 countries that form the European Higher Education Area. In this agreement, countries coordinated on adopting a system of comparable degrees, similar study cycles (undergraduate/graduate), and a system of portable study credits. Furthermore, there is an agreement to promote international mobility of students and teaching staff, and to harmonize the standards and quality of study programs (Huisman et al. 2014). By 2018, 1.3 million students enrolled in tertiary programs across the EU-27 came from abroad, with 44 percent coming from other European countries. Germany, France, Italy and the Netherlands attracted more than half of these foreign students (Eurostat 2020g).

EU legislation has also sought to standardize and facilitate the process of occupational recognition, yet significant barriers remain. Koumenta et al. (2014) document

that access to more than 800 occupations is regulated in at least one EU member state, with these occupations covering up to 24 percent of the EU labor force. They show that intra-EU migrants are less likely than natives to enter a profession subject to licensing. Further analyses show that occupational recognition has a significant effect on wages. Brücker et al. (2020), studying the impact of occupational recognition in Germany, find that three years after obtaining recognition of their occupational credentials, immigrants earn 20 percent higher wages and are 25 percent more likely to be employed than similar immigrants who never applied for recognition.¹⁰ Obstacles to occupational recognition likely contribute to occupational downgrading, where immigrants work in jobs that are inferior to their previous education and labor market experience (Dustmann, Frattini and Preston 2013).

An additional mobility barrier concerns the large heterogeneity in social insurance rights across European countries. These rights—including old-age pensions, unemployment payments, and government-financed healthcare services—are determined at the national level, and programs differ strongly across countries. For migrants, it is not always obvious whether rights acquired in one country are transferable to another country. For instance, a worker who moves frequently across countries, and works for only short periods in each of them, may not satisfy any country's minimum qualifying period that is required to gain access to an old-age pension. "Coordination Regulations" have been established to facilitate the portability of social insurance rights across countries, and to prohibit discrimination against immigrants or against return migrants who have since left a country (European Commission 2019).

Discrimination and anti-immigrant attitudes

Another explanation for immigrants' relative lack of labor market success is discrimination in the labor market. There is ample evidence from Europe and elsewhere for discrimination against racial and ethnic minorities in the labor market, which is reviewed in recent surveys by Bertrand and Duflo (2017) and Neumark (2018). In the context of migration within Europe, differences in national origins however are not necessarily visible from workers' physiques (used in audit studies of in-person job applicants) or from workers' names (in correspondence studies based on submissions of written job applications).

One recent study that explicitly investigates discrimination by nationality uses data from an online platform of the Swiss public employment service that connects jobseekers with recruiters (Hengartner et al., 2020). On this platform, recruiters observe not only the names but also the nationalities and language skills of job seekers. Holding constant other observables, jobseekers of non-European origin are 13 to 19 percent less likely to be contacted by recruiters than Swiss nationals. For migrants within the common European labor market, penalties are smaller and range from zero for Southern Europeans (which include Italians who form the largest group of foreigners in Switzerland) to 6 percent both for immigrants from Northwestern and Eastern Europe. Most of these penalties disappear when immigrants are naturalized, although recruiters may still infer the foreign roots of applicants based on their names and language skills in some cases (Kopp, Siegenthaler and Hangartner, 2020). The nationality of job applicants thus appears to play an important role in labor market discrimination, rather than just the ethnicity. Aslund et al. (2014)

¹⁰ In a US context, Kleiner and Krueger (2015) estimate that 29 percent of jobs are subject to occupation licensing rules and that licensing is associated with 18 percent higher wages.

additionally show that hiring chances of immigrants in Sweden are significantly lower in firms whose managers are born in Sweden instead of abroad, which suggests that discrimination may result from homophily.

The free migration of labor within Europe is arguably the politically most controversial element of the common European market. Alfano et al. (2016) argue that the United Kingdom's lack of control over immigration from the EEA became the single most important argument in favor of the "Brexit" referendum, whose success eventually led to the UK's exit from the common market. Support for Brexit was highest not in those regions that had received the most immigration in previous years, but in regions that experienced economic decline due to rising international trade competition (Colantone and Stanig 2018).

While it is unclear whether immigration has adverse impacts on the labor market outcomes of natives (Dustmann, Schoenberg and Stuhler, 2016), migrants affect natives also by changing the composition of nationalities, languages and cultures in neighborhoods, workplaces and schools. Card, Dustmann and Preston (2012) find that concerns related to such compositional amenities are 2-5 times more important than concerns about the labor market in order to explain people's attitudes towards migrants.

Despite the United Kingdom's exit from the common market and the rise of anti-immigrant in some European countries, attitudes of the general public towards immigration have not become more skeptical during the last two decades in most countries. In Appendix Figure 2, we compile data from the 2004 and 2018 European Social Survey, which asked respondents "to what extent do you think your country should allow people of the same race or ethnic group as most of your country's people to come and live here?". The fraction of survey respondents who answered either "allow many" or "allow some" (instead of "allow few" or "allow none") increased in 13 out of 14 western European countries, from an average of 66 to 77 percent, with declining support for immigration being observed only in Italy. In the six countries of Eastern Europe included in the surveys, support for immigration changed modestly from an average of 59 to 58 percent, with declines in Czechia, Poland and Slovakia.

Inflexible domestic labor markets

While obstacles to labor migration across European countries exist, it is worthwhile to point out that job-to-job mobility is also quite low *within* many European countries. The same reasons that prevent workers from changing jobs domestically may also keep them from moving internationally. In particular, Southern European countries tend to have strict employment protection regulations that require employers to pay sizable compensations to workers in case of layoffs. Such measures strongly reduce worker mobility across jobs (Martin and Scarpetta 2012). Alesina et al. (2015) also argue that the cultures of southern European countries value close family ties more strongly than cultures in northern European or Anglo-Saxon countries. In a culture with strong family ties, many adults do not want to move far away from their parents and relatives, which limits spatial mobility even if migration would be financially gainful.

Conclusions

We are still far from a common European labor market. In a 2014 survey conducted by the German think-tank IZA among 284 European labor economists, nearly three-quarters *disagreed* with the statement that “the single European labor market is largely achieved” (Krause et al. 2014). Despite the removal of legal barriers to labor mobility, large differences in labor market outcomes across European countries remain.

Of course, most domestic labor markets—including the US labor market—are segmented into geographic local labor markets where localized shocks can lead to fairly persistent differentials in wage and unemployment levels (Moretti 2011; Autor et al. 2021). However, migration rates within the European labor market are much smaller than in the US, despite larger geographic differentials in labor market outcomes across European regions, and notwithstanding that Europe covers a larger population distributed over a much smaller land area. As noted, some of the remaining obstacles to a more integrated European labor market include heterogeneity of Europe in terms of languages and cultures; national regulations related to education, training, and employment conditions; and discrimination against migrants.

National borders are no longer legal barriers to labor migration, but they remain important for Europeans’ self-identification. Four in seven EU citizens (57 percent) feel very attached to their own country, while only one in seven (14 percent) feel very attached to the European Union (European Commission 2018). The United Kingdom’s departure from the common market—which was partly driven by concerns about migration—makes clear that further European labor market integration cannot be taken for granted. While there is currently no indication that other countries will soon follow the United Kingdom’s path of leaving the EU, it is also unlikely that the European labor market will substantially grow over the next decade through the accession of new member states. While the EU has opened membership negotiations with five countries, the negotiations with the largest candidate country (Turkey) have now been frozen for many years, and the other four countries (Albania, Montenegro, North Macedonia and Serbia) would add less than 3 percent to the population of the European Economic Area. A further integration of that European labor market may thus more likely result from the EU’s efforts to harmonize or coordinate national regulations in order to reduce obstacles to migration within Europe, and from continued migration of workers from Eastern to Western Europe.

Acknowledgements

We thank Thomas Brunnschweiler for outstanding research assistance. Maps showing administrative boundaries are ©EuroGeographics.

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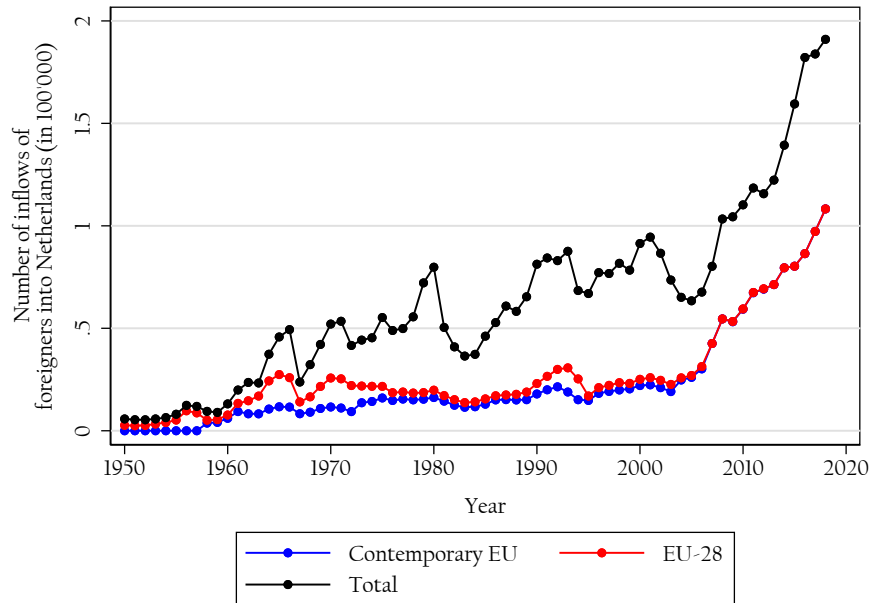
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Appendix A: Appendix Figures

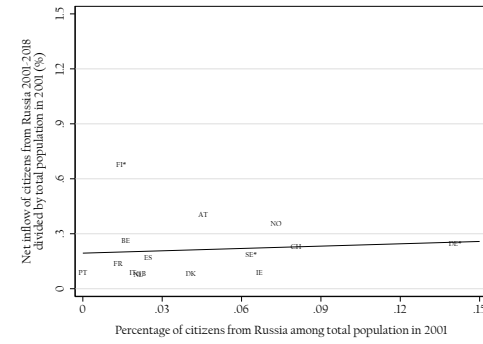
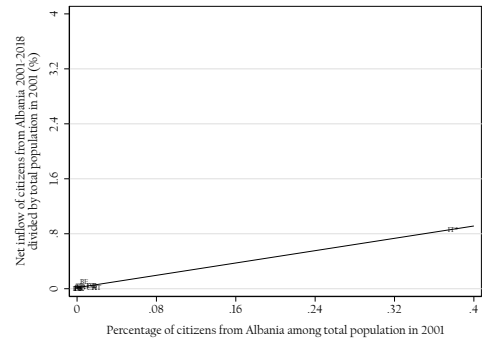
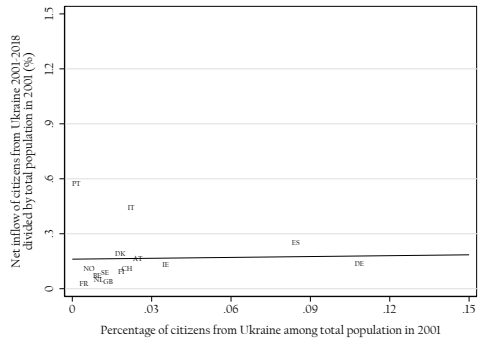
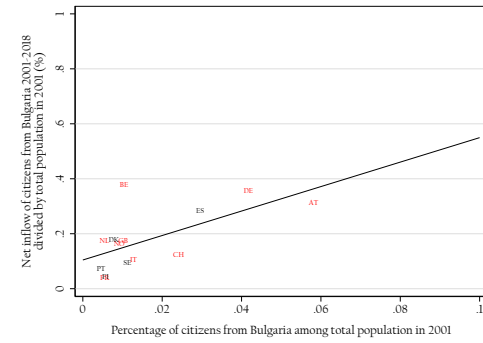
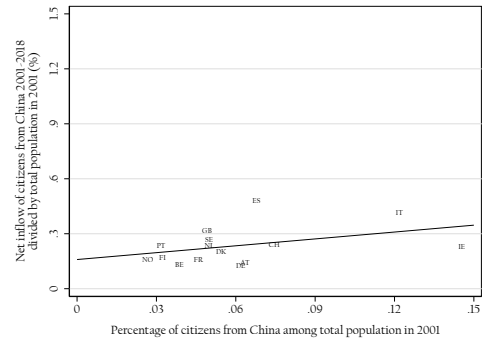
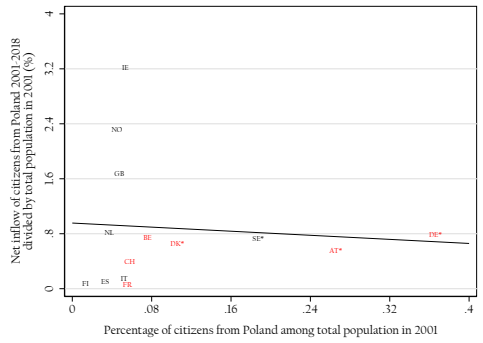
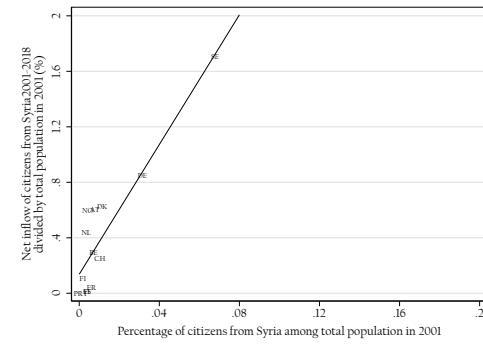
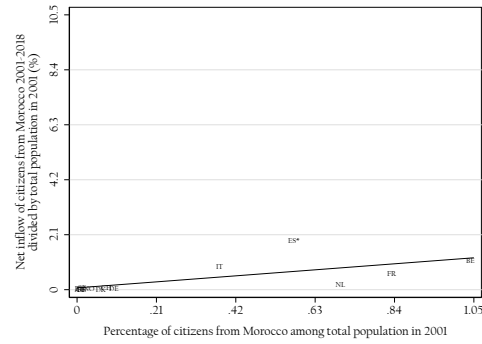
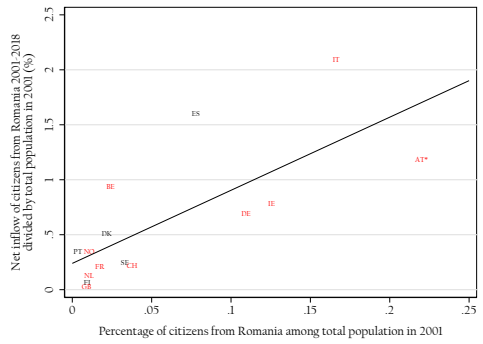
Figure A1: Annual inflows of foreign citizens into the Netherlands



Note: "Contemporary EU" indicates inflows of foreign nationals who were citizens of a country that was a member of the EEC/EU in the indicated year. "EU-28" indicates inflows of foreigners who were citizens of one of the 28 countries that eventually joined the EU.

Data sources: International Migration Institute (2015), Statistics Netherlands (2020a, 2020b).

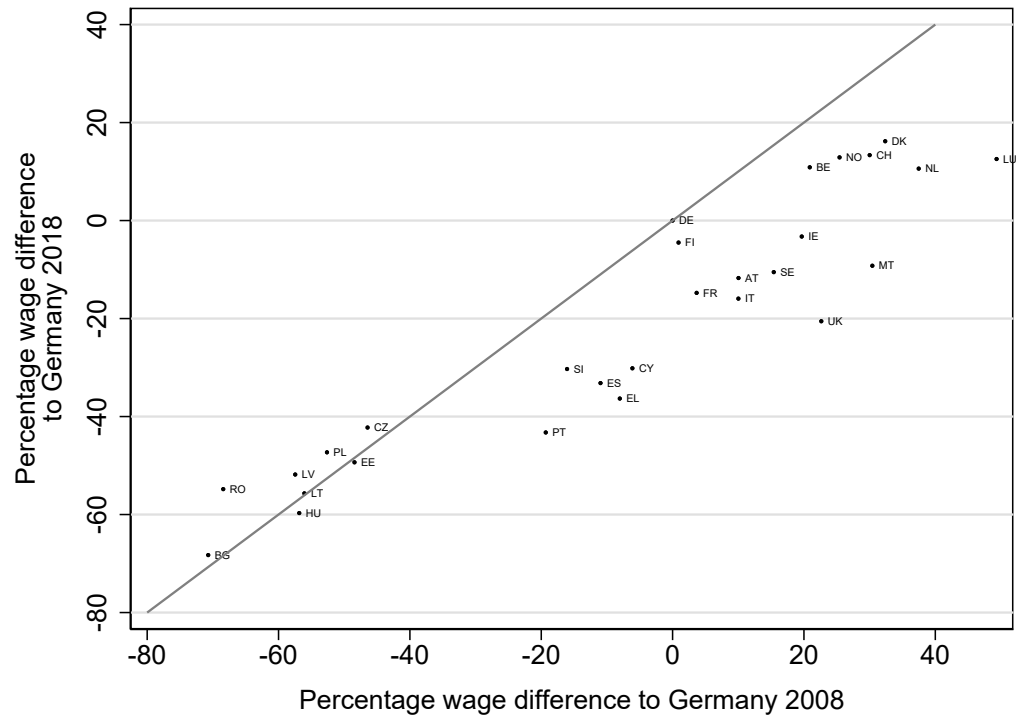
Figure A2: Net inflow of foreign citizens to western Europe from 2001 to 2018



Notes: The figure provides information on immigration in 15 western European countries (EU-15 without Greece and Luxembourg, plus Norway and Switzerland) for the period of 2001 to 2018. Each panel refers to one of the nine immigrant nationalities whose numbers increased the most in the destination countries during the outcome period: Romania, Morocco, Syria, Poland, China, Bulgaria, Ukraine, Albania and Russia. The panels plot the share of foreign citizens from the indicated source country in 2001 (or earliest available year) as a percentage of the destination country's population in 2001 against the growth in the number of citizens from the source country plus naturalizations for that nationality over the period 2001 to 2018, again expressed as a fraction of population in 2001. Each panel indicates a linear regression fit, where a regression slope of 45 degrees would indicate that the immigrant inflow from 2001 to 2018 equals ten times the stock of foreign nationals in 2001. Destination countries that are located within 500km of an origin country are indicated with an asterisk. The panels for immigration from the eastern European countries Romania, Poland and Bulgaria indicate in red the countries that opened their labor markets to these countries only 4 to 7 years after these countries joined the EU, and in black the countries that opened their labor markets either immediately or up to 3 years after the eastern countries' EU accession.

Data sources: Central Statistics Office (Ireland) (2017a, 2017b), Eurostat (2020a), Federal Statistical Office (Switzerland) (2020), Federal Statistical Office of Germany (2020), Instituto Nacional de Estadística (Spain) (2020), Institut national de la statistique et des études économiques (France) (2011, 2020), Italian National Institute of Statistics (2020), Office for National Statistics (UK) (2001, 2018), PORDATA (2020), Statistics Austria (2020), Statistics Belgium (2020), Statistics Denmark (2021), Statistics Finland (2020), Statistics Netherlands (2020a), Statistics Norway (2021), Statistics Sweden (2020).

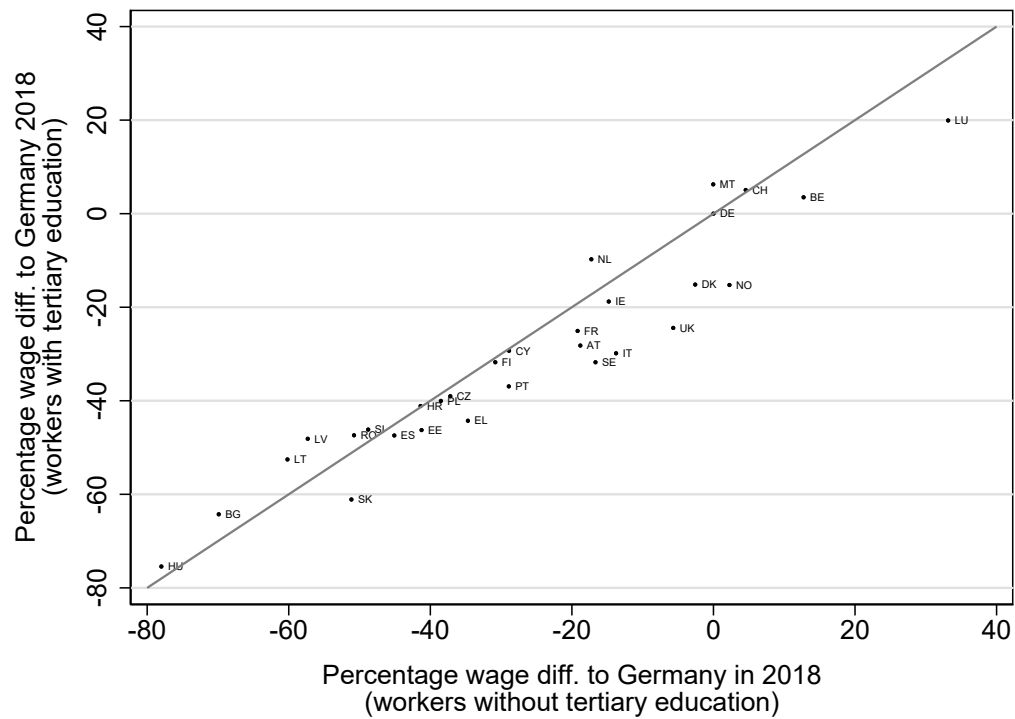
Figure A3: Convergence in real wages across countries, controlling for job characteristics



Notes: The figure indicates coefficient estimates for country fixed effects from year-specific regressions that relate individuals' log annual real wage to country fixed effects and controls for a quartic in age, sex, marital status, highest education degree obtained, weekly work hours, occupation, and industry of employment. Country fixed effect estimates have been converted from log points to percentage points. Germany is the reference country for the country fixed effects. All wages are converted to Euros and adjusted for price level differences across countries.

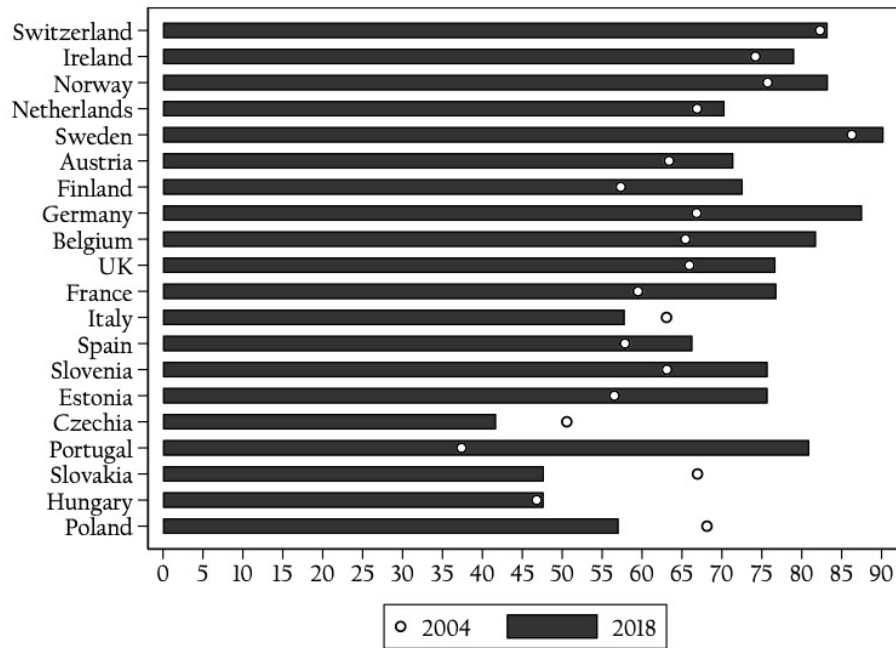
Data sources: SILC microdata and price level data from Eurostat (2020b, 2020c).

Figure A4: Real wage differences across countries by education group in 2018



Notes: The figure indicates coefficient estimates for country fixed effects from education group-specific regressions that relate individuals' log annual real wage to country fixed effects and controls for a quartic in age, sex, marital status, highest education degree obtained. Highly educated workers are those with tertiary education while low-educated workers are those without tertiary education. Country fixed effect estimates have been converted from log points to percentage points. Germany is the reference country for the country fixed effects. All wages are converted to Euros and adjusted for price level differences across countries. Data sources: SILC microdata and price level data from Eurostat (2020b, 2020c).

Figure A5: Change in Support for Same-Ethnicity Immigration, 2004-2018



Notes: The figure indicates the percentage of a country X's population who in 2004 or in 2018 answer the question "To what extent should country X allow people of the same race or ethnic group as most of country X's people to come and live there?" with either "allow many" or "allow some", as opposed to "allow few" or "allow none". Countries are listed by decreasing nominal GDP per capita in 2015. Data sources: European Social Survey data from NSD – Norwegian Centre for Research Data (2004, 2018), Eurostat (2020d).

Appendix B: Computation of Country-Specific Wage Levels and Gains from Migration

Our calculations of country-specific wage levels and static gains from migration draw on EU-SILC (European Union Statistics on Income and Living Conditions), which is a comprehensive microdata base administered by Eurostat. The underlying data is collected separately by the national statistical authorities in each of the participating countries, which some countries fielding surveys to obtain data for EU-SILC, and others drawing on pre-existing register and survey data. We use data for the two years 2008 and 2018, which cover all EU countries except Croatia, plus Switzerland, Norway and Iceland.

Our regression analysis includes all individuals present in EU-SILC who have positive gross earnings and for whom information on control variables is available. The sample size for our baseline regression (specification (1) below) is 253,894 observations in 2008 and 262,255 observations in 2018. The country-specific observation counts range from 8,644 (Malta) to 52,433 (Italy) in 2008, and from 9,815 (Malta) to 56,600 (Greece) in 2018. In regressions with additional control variables (specification (2) below), the sample sizes are 196,176 observations in 2008 and 197,470 observations in 2018, as especially information on industry of employment is not available for some workers. We use the regression weights provided in the EU-SILC data, which give each country a total weight proportional to its population. To account for variation in price levels across countries and over time, we adjust gross wages using Eurostat's price series for actual individual consumption to the EU-28 average price level.

We use the following regression specifications for our analysis of country-specific wage levels:

Specification (1) provides our baseline regression which underlies the estimates shown in Figure 5. We regress, separately for each year 2008 and 2018, individuals' log gross annual wage on a constant, a set of indicators for individuals' country of residence (omitting the indicator for Germany, so that the coefficients on the country dummies measure wage premia relative to Germany), as well as a quadratic in age, sex, marital status, and a vector of indicators for highest educational degree obtained (6 categories in 2008, 19 categories in 2018):

$$\ln(w_i) = \alpha + \gamma_c + \beta_1 \text{age}_i + \beta_2 \text{age}_i^2 + \beta_3 \text{sex}_i + \beta_4 \text{maritalstatus}_i + \text{education}_i \phi + \varepsilon_{c,i} \quad (1)$$

Specification (2), which is used for Appendix Figure A3, additionally controls for weekly hours worked, and two vectors with indicators for occupations (36 categories in 2008, 51 categories in 2018) and industries (12 categories in 2008, 13 categories in 2018):

$$\ln(w_i) = \alpha + \gamma_c + \beta_1 \text{age}_i + \beta_2 \text{age}_i^2 + \beta_3 \text{sex}_i + \beta_4 \text{maritalstatus}_i + \beta_5 \text{workhours}_i + \text{education}_i \phi_1 + \text{occupation}_i \phi_2 + \text{industry}_i \phi_3 + \varepsilon_{c,i} \quad (2)$$

We use the following formula to calculate static gains from migration:

$$G = G_l + G_h = \sum_{i=1}^N \sum_{j=1}^N [L_l(i, j) \cdot (w_{lj} - w_{li}) + L_h(i, j) \cdot (w_{hj} - w_{hi})] \quad (3)$$

The total gain G is the sum of migration gains for low-skilled workers without tertiary education, G_l , and for high-skilled workers who have completed at least short-cycle tertiary education, G_h . For each of the two education groups e , we obtain the static migration gain as the product of the stock of citizens from origin country i who work in destination country j , $L_e(i, j)$, multiplied with the difference in country-specific earnings levels, $(w_{ej} - w_{ei})$, and summed up over all origin-destination pairs (i, j) .

To obtain $L_e(i, j)$, we use data from Eurostat on the number of citizens aged 15-64 for each country origin-destination pairs (i, j) in the year 2018 (Eurostat 2020e). This data is available for every country pair in the EU, except for some immigrant nationalities in Spain, for which we used data from Spain's national statistical agency (INE 2020), and for Cyprus and Malta, which we exclude as both origin or destination countries in our analysis. Since the migrant stocks in Eurostat include not only workers but also individuals who are not employed, we multiply the migrant stocks with the destination country-specific employment rates of 15-64 year old immigrants from other EU countries (Eurostat 2021). This employment rate data is available from Eurostat for the year 2018 for all countries except Bulgaria and Romania, and our calculation of gains from migration thus considers these two countries only as migration origins but not as destinations. In order to roughly separate the stocks of migrant workers into those with (or without) tertiary education, we multiply with the share of high-skill (low-skill) migrants for the origin-destination pair (i, j) among the migrants observed in the EU-SILC microdata.

To obtain $(w_{ej} - w_{ei})$, we estimate equation (1) separately for workers who have or do not have a tertiary education, using the EU-SILC data for 2018. We then use the estimated education group-specific log wage premium of a migrants' source country relative to Germany, $\hat{\gamma}_{ei}$, and the corresponding wage premium of the destination country, $\hat{\gamma}_{ej}$, to calculate the migrant worker's static earnings gain as $(w_{ej} - w_{ei}) = \bar{w}_{ei} \cdot \left(\frac{\exp(\hat{\gamma}_{ej})}{\exp(\hat{\gamma}_{ei})} - 1 \right)$ where \bar{w}_{ei} is the average wage for workers of education group e in country i in the EU-SILC data.

We also consider an alternative version of this computation of static gains from trade, in which country-specific wage premia are allowed to vary between natives and foreigners. To this end, we estimate equation (1) separately for workers who have or do not have a tertiary education, and augment that equation with an interaction term between the country dummies and an indicator for whether or not an individual is a domestic or foreign citizen. In this case, earnings gains are computed as $(w_{ej}^f - w_{ei}^d) = \bar{w}_{ei}^d \cdot \left(\frac{\exp(\hat{\gamma}_{ej}^f)}{\exp(\hat{\gamma}_{ei}^d)} - 1 \right)$, which is the difference between the earnings of a domestic citizen in origin country i and the earnings of a foreign citizen in destination country j .

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