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The Labor Market Integration of Migrants in Europe: New Evidence from Micro Data

by Giang Ho and Rima Turk-Ariss

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The Labor Market Integration of Migrants in Europe: New Evidence from Micro Data

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Abstract

This paper presents novel empirical evidence on the labor market integration of migrants across Europe. It investigates how successfully migrants integrate in 13 European countries by applying a unified framework to analyze a rich micro dataset with over ten million individuals surveyed between 1998 and 2016. Focusing on employment outcomes, we document substantial heterogeneity in the patterns of labor market integration across host countries and by migrant gender and origin. Our results also point to the importance of cohorts and network effects, initial labor market conditions, and the differential impact of education acquired domestically and abroad in determining migrants' subsequent employment prospects. The analysis has implications for the design of effective integration policies.

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This paper is dedicated to one of its authors, Giang Ho, who passed away unexpectedly on August 3, 2018. Giang's wit and smile will be sorely missed.

To Yen, Mika, Maika, and Annika

I. INTRODUCTION

The refugee crisis that recently gripped Europe has brought migration to the forefront of the policy debate. In 2015, a record 1.3 million people sought asylum in European Union (EU) states—the largest annual flow into the continent in 30 years. Although the influx of asylum seekers has subsided since then, integrating the large stock of refugees and other migrants into the host country's labor market and society remains a public policy challenge, with its slow progress likely fueling the political divide in the EU around the issue of migration. At the same time, adverse demographic trends (rapidly ageing population, low fertility rates) in many European countries call for measures to stem the projected decline in the labor force, including by better tapping the potential of the migrant population.[2] Helping newly arrived migrants to more quickly become productive members of the host country's workforce will also yield economic benefits down the road in terms of higher growth and productivity and lower budgetary costs (Aiyar and others 2016; Jaumotte, Koloskova, and Saxena 2016). Therefore, crafting an effective integration policy is especially important, requiring a greater understanding of key facts about the current integration process.

This paper seeks to use empirical evidence to inform the policy debate on migrant integration.[3] In particular, we study how successfully migrants integrate into the host labor market, how the speed of integration varies across Europe, and what factors affect it, with a special focus on the roles of initial labor market conditions and education. We answer these questions by analyzing a rich micro-level dataset—the European Union Labor Force Survey (EU LFS)—within a unified and well-established empirical framework. In doing so, our work provides the first comprehensive evidence on the labor market integration of migrants in European countries.

We find that migrants experience sizable employment gaps relative to natives upon arrival in the host country even after controlling for key individual characteristics, indicating an initial lack of country-specific knowledge. As country-specific skills accumulate with time in residence, the probability of being employed gradually converges to that of otherwise comparable natives, but in most cases full convergence is not observed even after over 20 years. The speed of employment integration varies substantially across migrants of different gender and country of origin, as well as across host countries. Moreover, poor macroeconomic or labor market conditions upon arrival tend to slow down integration, especially for female migrants. Finally, our analysis of the role of education indicates that

[2] For the importance of achieving a successful integration of migrants in Europe against the background of the demographic challenges, see Cuaresma, Huber, Oberdabernig, and Raggl (2015) and Cuaresma, Huber, and Raggl (2015).

[3] While we do not attempt to identify refugees in our dataset (Cortes, 2004), we provide a special focus on Middle East and North Africa, which is the region from which most asylum seekers originated during the recent refugee crisis in Europe.

foreign credentials earn lower "returns" (in terms of employment likelihood) than domestic schooling, and that the latter pays off less for migrants than for comparable natives, suggesting the presence of non-skill barriers to employment. We discuss the potential policy implications of these findings in the conclusion.

Our work contributes to a large strand of literature studying migrants' labor market integration. Many studies look at the U.S. labor market (e.g., Chiswick 1978; Borjas 1985, 1995, 2015), while evidence on Europe is more fragmented and often focused on a single country (e.g., see Okoampah 2016 for Germany; Clark and Lindley 2006, Dustmann and others 2003 for the UK; Zorlu and Hartog 2012 for the Netherlands; Bratsberg, Raaum and Roed 2017 for Norway). By contrast, our micro dataset derived from EU LFS covers over ten million individuals surveyed between 1998 and 2016 in 13 European countries with significant migrant populations. Our research approach estimates a measure of the pace of labor market integration of migrants, allowing for a meaningful cross-country comparison, as well as shedding light on the factors affecting integration. A caveat, however, is that our dataset does not enable us to track individuals over time, which means that our integration estimate is strictly an approximation using repeated cross-sections of data—we discuss the potential bias introduced by changing cohort quality. Another caveat is that, as information on wages/incomes is not available in our dataset, our concept of labor market integration is restricted to the migrants' employment outcome (i.e. being employed or not).

On the role of education in facilitating migrants' labor market integration, the analysis in our paper is related to previous work by Friedberg (2000). Unlike the majority of studies in this literature, Friedberg (2000) distinguishes between human capital accumulated abroad and that acquired in the host country, finding significant differences in their returns. We follow a similar approach, imputing the level of foreign and domestic education based on the information available in our dataset on the timing of migration. This approach allows us to explore not just the hypothesis that foreign and domestic schooling may not be very close substitutes, but also that the same type of schooling may yield different employment outcomes across natives and migrants.

The rest of the paper is organized as follows. We present the empirical framework to investigate migrant integration speed in Section II and describe the data and estimation sample in Section III. Section IV discusses the results on integration speed, and Section V investigates the role of education. Section VI concludes.

II. Analysis of Integration Speed: Empirical Framework

We adapt the empirical approach used by the established literature on the earning assimilation of migrants (Chiswick 1978; Borjas 1985, 1995, and 2015; Friedberg 2000) to study employment integration in Europe. Specifically, the standard earnings equation—with log wages as the dependent variable—is modified to explain the probability of being employed using a probit model. In particular, a migrant *i* gets employment (Emp_i=1) when the latent variable y_i>0:

$$Emp_i = \begin{cases} 0 \text{ when } y_i \leq 0 \\ 1 \text{ when } y_i > 0 \end{cases}$$

where the latent variable $y_i = x'\beta + \varepsilon, \;\; \varepsilon \sim N(0,1)$, implying that the probability of employment $\Pr(Emp_i = 1) = \Pr(y_i > 0) = \Phi(x'\beta)$, which is a probability that we estimate through maximum likelihood.

y_i is assumed to be a linear function as follows:

$$y_i = \beta_0 + \beta_1 M + \beta_2 Ysm + \beta_3 Ysm^2 + \beta_4 Edu + \beta_5 X + \varepsilon \quad (1)$$

where $M \in \{0,1\}$ is an indicator for being a migrant, Ysm is the number of years since migration (equal to zero for natives), Edu is the number of education years, and X is a vector of control variables which include other key worker characteristics (age, age squared, and marital status) as well as a full set of fixed effects (country × survey year and region). We explore differences in labor market integration profiles across migrants' country of origin and gender by running separate regressions on the respective sub-samples.

As the number of years since migration is included in this regression, the coefficient on migrant status (M) measures the initial employment gap between a newly arrived migrant and a native with comparable demographic characteristics and skill level—possibly due to the migrant's lack of country-specific skills (e.g., language) and information. As the migrant spends time in the host country and gradually acquires this country-specific knowledge, their labor market performance improves relative to that of the native counterparts. Thus, in the absence of systematic changes in the unobserved employment potential (ε) of successive migrant arrival cohorts (see further discussion below), the coefficient on Ysm captures the rate at which the migrant-native employment gap narrows over time—or the speed of labor market integration in our definition. The squared term (Ysm^2) is included to allow for possible nonlinearities in the convergence path.

We include country-year fixed effects, which absorb any time-varying factors at the host country level that may determine employment outcomes, such as macroeconomic and labor market conditions at the time of survey and changing labor market institutions and reforms. The region fixed effects capture unobserved characteristics of the region at the sub-national level where the household lives—e.g., economic and demographic structure, level of development, and local labor market policy. In addition, errors are clustered at the sub-national regional level to allow for the possibility that they are correlated within such a region.

The equation is estimated using individual-level information collected from labor force surveys across the European Union. We describe the EU LFS micro dataset and our estimation sample in the next section.

III. DATA AND SAMPLE

The EU LFS micro data

The EU LFS is an extensive household sample survey, covering 28 EU member states plus Iceland, Norway and Switzerland from 1983 onwards. It provides quarterly results on labor participation of people aged 15 and over as well as on persons outside the labor force. The surveys are conducted by national statistical institutes and centrally processed by Eurostat, so the data are harmonized in terms of various concepts, definitions and classifications.

A large number of individuals are sampled, for example, in 2016 the quarterly LFS sample size across the EU was about 1.5 million individuals. The dataset contains rich information both at the individual and household levels including, among others, demographics, labor market status, employment characteristics, and education. For migrants—defined as foreign born in our analysis, information is also available on the country of birth/nationality (aggregated to about 15 country groups) and on the length of residence in the host country.

This rich dataset naturally lends itself to a comprehensive empirical investigation of labor market integration of migrants, but it has important limitations. First, the data made available to outside researchers by Eurostat essentially come as repeated cross-sections as household identifications are randomized, not allowing to track survey respondents across time. Consequently, inference about the labor market integration of migrants—how their employment probability changes over time—relies on the assumption that different cohorts of migrants have similar employment potential. Second, the dataset does not contain information that would have been useful for our analysis, such as workers' wages/incomes, the type of migrants (e.g., whether the migrant is an asylum seeker or an economic migrant), or the migrant's language skill. One implication is that our results do not necessarily extend to the situation of refugees, whose experience in the host country for various reasons can be very different from that of the average migrant.

Our sample

For our analysis, we pool data from the past 19 survey wages in 1998-2016 or close to two decades. We focus on 13 European countries with relatively large migrant populations: Austria, Belgium, Denmark, Finland, France, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, and the United Kingdom.[4] We include only those individuals who are between 25 and 64 years of age to avoid having full-time students in the sample. Our final sample includes over ten million individuals living in a total of 130 regions (defined by the NUTS 2 statistical classification) and representing a wide variety of country origins, demographics, skill levels, and labor market performances (see below).

Table 1 reports, for the most recent survey in 2016, the distribution of individuals by country of birth. Out of a total of close to 590,000 persons surveyed that year, the share of migrants (foreign-born) averages 15 percent, ranging from seven percent in Finland to 21 percent in Belgium. On average, half of the migrants come from Europe, North America, Australia, and Oceania (EUR-NA)[5] and a quarter are from the Middle East and North Africa (MENA), with the remaining migrants originating either from Asia (14 percent) or Latin America (LAT-AM). Countries with large shares of migrants from the MENA region—the region of origin of the majority of the recent record asylum seekers in Europe—include Belgium, France, Portugal, and Sweden. Tables 2 and 3 show further breakdowns of the 2016 survey sample by demographic characteristics (age, gender, educational level) and labor market outcomes (employed, unemployed, or inactive). This survey is almost evenly split across female and

[4] Data for Germany are in EU LFS but were not made available for this research. Data for Ireland and Italy is available as of 2010.

[5] EUR-NA also includes Australia and New Zealand.

male individuals, with more than half aged above 45 years and with various educational levels. Also, the average employment rate of the foreign-born is below that of natives.

More broadly, Table 4 presents summary statistics of the variables entering our regression analysis for all survey years 1998–2016. Out of about 10.04 million survey respondents between 1998 and 2016, 72 percent are employed (the rest are either unemployed or inactive). The average individual in our sample has slightly less than 12 years of education, is almost 45 years old, and has a 62 percent probability of being married. Migrants account for 11 percent of total individuals, and they have an average length of stay in host countries of about 16 years.

IV. RESULTS ON INTEGRATION SPEED

Baseline results

This section discusses the estimation results on the integration speed of migrants following equation (1). Table 5 reports the estimated coefficients from the baseline probit regressions using the full sample of natives and migrants—distinguished by gender. Two coefficients are of special interest. First, the coefficient on migrant status is negative and statistically significant, and its magnitude is higher for females compared with male migrants. This result indicates that, when migrants first arrive in the host country, they have a lower employment probability relative to native individuals with comparable demographics and skills, and this gap is larger for women than for men. The lower employment probability of migrant women could be due to cultural differences as well as low labor market participation rate in their country of origin (Blau, Kahn, and Papps, 2011).[6] Second, the coefficient on years since migration is positive and significant, suggesting that the employment probability of migrants improves with each year of residence in the country (with this improvement moderating over time, as indicated by the negative coefficient on the squared term).[7] Thus, the initial native-migrant employment gaps tend to narrow over time.

Other estimated coefficients are of expected signs. For both female and male individuals, the probability of being employed increases with years of education, suggesting that job prospects are better for more highly educated individuals. Older individuals are also more likely to have a job, though with some nonlinear effect. However, marital status has a

[6] Recent work by Liebig and Tronstad (2018) suggests a role for effective labor and education policies to mitigate this. We thank Celine Piton and Arnout Baeyens for this comment.

[7] Assigning a value of 0 to the variable *Ysm* (year since migration in equation 1) to natives implies that natives are used as a "control group" for those migrants who just migrated. This could introduce some bias in the estimated coefficients that translates in an overstatement of the initial estimated difference in terms of labor market outcomes between natives and migrants. The option to assign a very large value to *Ysm* for natives leads to perfect correlation of *Ysm* with migrants *M*. Another option that allows for variability in natives' *Ysm* could arguably be to use their age as it measures the time they spent in the host country, but this variable would also not be suitable as a control.

differential effect on the job prospects of female and male individuals. Notably, being married lowers the employment probability of women, while increasing it for men.[8]

These probit coefficients in Table 5 are useful for assessing the sign and statistical significance of the regressors; however, economic significance can only be evaluated by looking at the marginal effects of the regressors on the probability of employment. We estimate marginal effects and simulate the employment profile of a 30-year old migrant with average education upon arrival to a host country. Figure 1 depicts how the employment probability of such a migrant evolves relative to a comparable native worker as more time is spent in the country. We allow the integration profile to differ across male and female migrants as well as by their origin, using the marginal effects estimated after running probit regressions on separate sub-samples (each sub-sample consists of all natives and the respective group of migrants being represented). These simulations reveal significant heterogeneity in the integration profile among migrants of different origins, both in terms of the initial conditional employment gaps relative to natives and the subsequent catch-up speed. For example, among the regions, migrants from MENA experience the largest employment gaps upon arrival, especially for females—a 30-year old female MENA migrant with average education has on average only a 20 percent predicted employment probability, compared with over 70 percent for a comparable female native. Although such a gap narrows over time, it remains substantial—at more than 20 percentage points—even after the migrant has been in the country for 20 years. Integration prospects seem brighter for migrants from the other three regions (although full convergence is not achieved even after 20 years of residence), with those from Asia experiencing particularly fast catch-up with the natives.

Considering that our long sample period of close to 2 decades may not be representative of a more recent period, we repeat the analysis on a shorter sample, pooling data from the seven most recent survey waves in 2010–16 only. Starting from 2010 helps avoid the acute crisis period when many foreign workers lost their job (although having country-year fixed effects in the regression would have attenuated such a bias). In addition, focusing on the most recent period helps ensure more balanced data coverage, as samples tend to be smaller for earlier years or simply not available (as is the case for Ireland and Italy). The results (available upon request) are qualitatively unchanged over this shorter period. Controlling for demographics and skills over this more recent period, migrants are less likely to have a job when they arrive to a recipient country and this gap is larger for women than for men, though all employment gaps tend to narrow over time.

To explore host country heterogeneity, we next run the same probit regressions over 1998-2016 on individual country samples instead of pooling all 13 countries, with the country-year fixed effects replaced by year fixed effects. Figure 2 presents, by country, the estimated conditional native-migrant employment gaps upon arrival (panel A) and the average migrant integration speed (panel B). The gaps are measured in percent of a comparable native's employment probability, and the integration speed is measured as the marginal effect of years since migration on the migrants' employment probability. The figure shows that countries

[8] We expect this result to be affected by the presence of children in the household, which could be particularly relevant for women. While the number of children is in principle included in the LFS, it is not available for most countries in our sample across years.

such as Sweden and France have particularly large conditional gaps for both female (around 50 percent) and male migrants (close to 30 percent), but also relatively fast integration speed. For example, a male (female) migrant in Sweden can be expected to improve his (her) probability of employment by roughly one (two) percentage points with each year of residence—this translates into a substantial improvement of 20 (40) percentage points over 20 years.

The cross-country differences are partly explained by the composition of migrant population, e.g., Sweden and France tend to receive a large share of migrants from MENA region. To avoid the composition effect, Figure 3 presents the same information as Figure 2, focusing on MENA migrants. This changes the ranking of countries slightly, with Ireland and Austria (in addition to Sweden) also standing out as those with relatively large employment gaps but fast catch-up speed.

Based on the individual country regressions, we conduct simulations of employment paths for each country separately, similar to those presented in Figure 1 for the pooled sample. These are presented in Appendix Figure A.1.

Cohort effects

Borjas (1985, 1995, 2015) observed that estimates of integration speed in cross-sectional regressions may be biased if there are quality differentials among migrant cohorts. Specifically, if earlier migrant cohorts have higher employment potential than more recent cohorts, the coefficient on the years since migration variable will be biased upward, leading us to overstate the true catch-up speed. The opposite is true if the quality of the cohorts is improving over time.

We test for cohort effects by including in the baseline specification variables indicating the decades when the migrants arrived in the country.[9] That is, instead of the dummy for migrant status M, the regression includes dummies for migrants arriving in the 1940s, 1950s, …, 2000s, and 2010s, for a total of eight dummies (natives are still the excluded group). Thus, the native-migrant employment gap—adjusted for age, education and other characteristics—is allowed to vary across different arrival cohorts, whereas it was the same for all migrants in the baseline specification. Table A.1 in the appendix presents the cohort results alongside the baseline.

As expected, the only coefficient that changes significantly when allowing for cohort effects is the coefficient on years since migration, which captures the integration speed. For both men and women, this coefficient becomes larger when the cohort dummies are included, suggesting that we are *understating* somewhat the employment catch-up speed under the baseline specification. The effect of changing cohort quality on the estimated integration speed is more pronounced for women than for men. Another interpretation of the increase in the size of the coefficient on *Ysm* when controlling for cohorts following Borjas (2015)

[9] While in principle cohort quality can change within a decade, we group cohorts in such a way to have a manageable number of dummy variables.

suggest that the "quality" of migrants may have improved over time or that more recent immigrants are likely to assimilate faster than earlier migrants.

Network effects

The labor economics literature points at the importance of network effects in the job search process, documenting that it is quite common for employees to obtain jobs through family members or friends (Dustmann et al. 2016). For migrants, informal social networks are likely to be equally important in determining their labor market outcomes. People who migrate in a country with an extensive community of people coming from their same country of origin may find it easier to find jobs. For instance, all else equal, Algerian migrants may find it easier to integrate in France where there is a large Algerian community, than they would in, say, Norway.[10]

To address this issue, we retrieve from the Eurostat website data on the region of birth of migrants in the recipient countries that are in our sample.[11] We choose the aggregation by region rather than country of birth to be able to match these data with our micro dataset, as the country of birth of migrants in the LFS is provided in country groups. Since the Eurostat data are available for the more recent period only, we restrict our analysis in this section to the sample over 2010–16. For better coverage of all of our 13 countries, we also retrieve similar data from the UN International Migrant Stock database.[12] The UN dataset the benefit of a more complete dataset on the region of birth of the stocks of migrants, though information is available for 2010, 2015, and 2017 thereby requiring interpolation for missing years. We then account for the intensity of linkages between the migrant's geographic area of origin and the recipient country by controlling in equation 1 for the presence of a community that originates from the same region as the migrant in two ways. We include two variables "Stock of Migrants" and "Share of Migrants" for the stock of migrants and their share in total migrants, respectively, coming from the same geographic region as the surveyed migrant respondent.

The results using Eurostat data (reported in Table 6) indicate that a higher stock of migrants who are born in the same region as the immigrant survey respondent raises the probability of having a job in the recipient country, though the findings are insignificant when considering the share of migrants as another proxy for network effects. However, more consistent results emerge when considering the dataset with better coverage from the UN. In Table 6, both estimated coefficients on the stock and share of existing community of migrants of same origin are positive and significant for male migrants, while they are insignificant for female migrants, with the results on all other coefficients maintained. This finding suggests that the existence of a larger community of same origin as male migrants increases their probability of employment, but it does not raise the likelihood that a female migrant becomes employed. We investigate further by running separate regressions for migrants from different regions

[10] We thank Davide Malacrino and Anna Raggl for suggesting examining network effects.

[11] For France, Ireland, Portugal, and the UK, these data are either not available or missing for the majority of years considered.

[12] http://www.un.org/en/development/desa/population/migration/data/estimates2/estimates17.shtml

(EUR-NA, MENA, ASIA, and LAT-AM) and considering the "Stock of Migrants" as proxy for the network effects. We find positive and significant coefficients across most specifications suggesting the presence of network effects, except for the sub-samples of female migrants from MENA and ASIA and for male migrants from LAT-AM where the coefficients are insignificant though positive.

Quality of employment

Whereas the baseline specification considers all types of employment, migrants are more likely to take on part-time or temporary jobs—often with lower pay and benefits—given their labor market disadvantages. Thus, ignoring the "quality" of jobs may lead one to paint a rosier picture than reality about migrant integration. We re-estimate the baseline specification using the probability of having a full-time and permanent job over our full sample 1998–2016. Results—reported in Table A.2 in the appendix—show that labor market integration is indeed slower when controlling for job quality, as indicated by the smaller coefficient on years since migration relative to the baseline, notably for the female group.

Initial labor market conditions

Do cyclical conditions prevailing in the host country around the arrival time of the migrant matter? How do labor market or macroeconomic conditions in the host country upon arrival shape the integration outcome? One would expect that a tight labor market helps facilitate migrants' early entry into the workforce, which positively affects the subsequent employment path as they gain greater on-the-job learning and build professional networks early on. On the contrary, lackluster labor demand at the time of arrival could lead to delay in getting the first job, with the consequence that re-entry becomes increasingly difficult as the migrants' human capital depreciates with time spent away from work. These considerations can be especially relevant for female migrants, whose labor supply tends to be more elastic than that of male migrants, and which is also a function of the opportunity costs of staying at home and taking care of children.

We investigate this question in our empirical framework by adding to equation (1) an interaction term between years since migration and a variable capturing labor market conditions upon arrival. Specifically, we use the estimated economy-wide unemployment gap for the host country in the year immediately after the migrants arrive—where the natural unemployment rate is proxied using the Hodrick-Prescott (HP) filter measure. The one-year lag helps mitigate the potential selection bias caused by a demand-pull story, whereby favorable economic conditions in the host country may increase the propensity of labor migrants to come and seek work in that country. Given the uncertainty in estimating the natural rate of unemployment, we use another measure of the unemployment gap from the OECD Economic Outlook database as a robustness check, as well as estimates of the output gap and the labor force participation gap from the same database. These measures are provided for the period 1985–2017, whereas the HP unemployment gap measure is available for the period 1995–2017. The output gap captures wider macroeconomic conditions but should generally be correlated with conditions in the labor market.

Using our full sample over 1998–2016, we find that poor labor market conditions upon arrival significantly reduce subsequent probabilities of employment, especially for female

migrants (Figure 4). For example, for female migrants, the estimated marginal effect of residence years on the probability of employment falls from 1.7 percentage points per year for an unemployment gap of -8 percent to 0.3 percentage points per year for an unemployment gap of +8 percent—roughly the range of gap values observed in the data. This difference is highly statistically significant, as seen in the reported 95-percent confidence intervals. Economically, this can translate into more than 4 percentage-points difference in employment probability after 3 years of residence. The effect on male migrants is less pronounced but still sizable, with a corresponding difference of about 0.3 percentage points between -8 and +8 percent unemployment gaps resulting in close to one percentage points increase in employment probability after 3 years of residence. Using the alternative measures of initial conditions mentioned above gives similar qualitative pictures (see Appendix Figure A.2).

Figure 5 further breaks down the estimates by migrant origin. It shows that migrants from Asia tend to be most affected by initial labor market conditions—with the effect almost doubling that for the average migrant. In contrast, those from Europe, North America, Australia, and Oceania are least affected by initial labor market conditions—in fact, the effect is indistinguishable from zero for male migrants from these countries. It could be because these migrants are more often among the highly qualified or that they work in jobs which are less influenced by economic cycles.

V. The Role of Foreign and Domestic Education

How does human capital determine integration outcomes for migrants? Upon arrival to a host country, migrants bring along their initial human capital as proxied by the duration of education in their country of origin, but many also acquire further education in the host country, adding to their human capital. To explore the role of education in improving employment prospects, we follow the approach in Friedberg (2000) and decompose a migrant's total number of education years into those acquired in their home country (foreign, denoted with superscript *f*) and those acquired in the host country (domestic, denoted with superscript *d*):

$$Edu = Edu^f + Edu^d \qquad (2)$$

where by definition $Edu^f = 0$ for natives. Thus, assuming that a migrant spends their time in the host country either enrolled in school or working continuously, years since migration can be written as:

$$Ysm = Edu^d + Exp^d + k \qquad (3)$$

where Exp^d denotes domestic working experience, and $k = \max(0, 6 - Age + Ysm)$ ($k = 0$ for the majority of migrants who come to the host country after the school-entering age of six). Substituting (2) and (3) into equation (1) and ignoring the Ysm^2 term, we obtain:

$$y_i = \beta_0 + \beta_1 M + \beta_2[(Edu^d + Exp^d + k) \times M] + \beta_4(Edu^f + Edu^d) + \beta_5 X + \varepsilon$$

Or after collecting terms and relabeling the coefficients:

$$y_i = \alpha_0 + \alpha_1 M + \alpha_2 Edu^f + \alpha_3 Edu^d + \alpha_4 Edu^d \times M + \alpha_5 X + \varepsilon \qquad (4)$$

Here we assume that domestic work experience (Exp^d) can be proxied by the age variable already included in the vector of controls X. Equation (4) is a less restrictive version of equation (1), where the "returns" to education (in terms of employment outcome) are allowed to vary depending on the source of education—foreign or domestic ($\alpha_2 \neq \alpha_3$); moreover, the "returns" to domestic education can differ for natives and migrants ($\alpha_4 \neq 0$). s
Estimating equation (4) requires information on the amount of schooling acquired domestically and abroad. The EU LFS dataset contains the information to impute these variables, as foreign-born survey respondents report the timing of migration as well as the year in which their highest educational level was achieved. We impute the foreign and domestic education variables, assuming that education is continuous.

Table 7 reports, alongside the baseline from the previous section (columns 1 and 4), results from estimating both a restricted version of equation (4), in which α_4 is assumed to be zero, and the fully flexible version, in which the "returns" to domestic education can vary across natives and migrants. It shows that the equality of "returns" between education from different sources can easily be rejected—foreign education matters less for employment outcomes compared with education acquired in the host country (columns 2 and 5). Formal tests (not reported) show that, for both men and women, the coefficient on foreign education is statistically significantly different from that on domestic education. In addition, estimating the unrestricted version of equation (4) further rejects the possibility that human capital accumulated domestically earns equal "returns" for natives and migrants—the "returns" are significantly lower for migrants, as indicated by the negative coefficient on the interaction term between domestic education and migrant status (columns 3 and 6). This suggests that country-specific skills, including language proficiency, may enable natives to extract more productive potential from a year of schooling compared with migrants.

Figure 6 illustrates the differential effects of domestic education on the probability of employment for natives and migrants. Interestingly, for women, the return differential is especially pronounced at higher levels of education, whereas for men it is broadly similar across all levels of education.

Finally, it is worth noting that allowing for the differential impact of human capital across sources (foreign vs. domestic) and migrant status can fully explain the initial native-migrant employment gap for women—the coefficient on migrant status is no longer significant in column 3 (Table 7). For men, the gap is significantly narrowed, as indicated by the fact that, as one goes from column 4 to column 6 (Table 7), the magnitude of the coefficient on migrant status becomes significantly smaller.

Yet, there might be further heterogeneities in foreign education across origin countries than what is being captured with our data, as the LFS does not provide information on the language skills of migrants.[13] Such omission might considerably influence our results, notably that the effect of foreign vs. domestic education could be strongly driven by language skills—domestic education implies in many cases that the local language is spoken. To mitigate for this possibility, we repeat this analysis for a subsample of immigrants that come from countries in which the language of the host country is spoken. France and the United

[13] We are grateful to Anna Raggl for this suggestion.

Kingdom are suitable sub-sample candidates as French and English are spoken in many origin countries. For this sub-sample, we likewise find (results not reported) a negative coefficient on the interaction term between domestic education and migrant status.

VI. Concluding Remarks

In this paper, we investigate how migrants in Europe integrate into the host country's labor market, using a rich micro dataset covering almost two decades and a unified and well-established empirical framework. Focusing on employment as the outcome of interest, we document a general tendency for migrants to catch up with comparable natives in terms of labor market status as they spend time in the host country and accumulate country-specific skills, although this is a lengthy process and full convergence is seen for only a few sources of migrants. The pattern of integration varies significantly across host countries. We construct an empirically-grounded measure that captures the speed of integration—the marginal effect of years of residence on the probability of being employed, which facilitates cross-country comparison. There are also vast differences across migrant groups, as expected. For example, female migrants tend to be more disadvantaged initially—the initial conditional employment gaps with natives are larger—but they also catch up faster compared with men. In addition, integration is often significantly slower for migrants from the MENA region, which the region of origin of most people who moved to Europe as refugees.

We find that recent migrants assimilate faster than previous ones and that informal social networks are likely to be important in determining the labor market outcomes of male migrants. We also document that favorable labor market or macroeconomic conditions in the host country around the time of the migrants' arrival help smooth their transition into the labor market—this is especially the case for female migrants, possibly reflecting their more elastic labor supply. Finally, an investigation into the role of education shows that schooling acquired in the migrants' home country tends to pay off less than that acquired in the host country, possibly due to difficulties in validating foreign degrees and/or transferring them into equivalent domestic-based qualifications given differences in education systems. Moreover, the "returns" to domestic education—in terms of employment outcomes—are lower for migrants than for natives of similar characteristics, suggesting that non-skill barriers may be at work.

Our research findings have several policy implications. First, government support for migrants should target the "vulnerable" groups, such as women and those from the MENA region—from our analysis, these are the groups with most disadvantaged initial conditions and thus those with the largest scope for improvement. Second, integration policy would be more effective if combined with general macroeconomic and/or labor market support where needed—our findings indicate that a booming economy tends to "lift all boats", improving job prospects for natives and migrants alike. Third, foreign-based education should be put on a more equal footing with domestic training by improving the transferability of foreign qualifications where possible. And finally, policies should also aim at enhancing the returns to domestic education for migrants, for example by offering adequate language training early on and removing other non-skill barriers in the labor market. It is important to keep in mind, however, that the design of integration policy is also shaped by the specific circumstances of each country—political constraints, stakeholders' interests, and intricate linkages to many other policy areas including education, housing, labor market, and financial inclusion.

REFERENCES

Aiyar, S., B. Barkbu, N. Batini, H. Berger, E. Detragiache, A. Dizioli, C. Ebeke, H. Lin, L. Kaltani, S. Sosa, A. Spilimbergo, and P. Topalova, 2016, "The refugee surge in Europe: Economic challenges," IMF Staff Discussion Note SDN/16/02, International Monetary Fund.

Blau F.D., L.M. Kahn, and K.L. Papps (2011), « Gender, source country characteristics, and labor market assimilation among immigrants", The Review of Economics and Statistics 93(1), 43-58.

Borjas, G., 1985, "Assimilation, changes in cohort quality, and the earnings of immgirants," *Journal of Labor Economics,* Vol. 3, No. 4, pp. 463-489.

_____, 1995, "Assimilation and changes in cohort quality revisited: What happened to immigrant earnings in the 1980s," *Journal of Labor Economics*, Vol. 13, pp. 201-245.

_____, 2015, "The slowdown in the economic assimilation of immigrants: Aging and cohort effects revisited again," *Journal of Human Capital*, Vol. 9, No. 4, pp. 483-517.

Bratsberg, B., O. Raaum and K. Roed, 2017, "Immigrant labor market integration across admission classes," IZA Discussion Paper No. 10513.

Chiswick, B., 1978, "The effect of americanization on the earnings of foreign-born men," *Journal of Political Economy,* Vol. 86, No. 5, pp. 897-921.

Clark, K. and J. Lindley, 2006, "Immigrant labour market assimilation and arrival effects: Evidence from the UK labor force survey," IZA Discussion Paper No. 2228.

Cortes K.E., 2004, "Are refugees different from economic immigrants? Some empirical evidence on the heterogeneity of immigrant groups in the United States", *The Review of Economics and Statistics* 86(2), 465-480.

Cuaresma, J.C., P. Huber, D.A. Oberdabernig, and A. Raggl, 2015. "Migration in an ageing Europe: What are the challenges?," WWWforEurope Working Papers series 79, WWWforEurope.

Cuaresma, J.C., P. Huber, and A. Raggl, 2015. "Reaping the Benefits of Migration in an Ageing Europe," WWWforEurope Policy Brief series 7, WWWforEurope.

Dustmann C. and F. Fabbri, 2003, "Language proficiency and labour market performance of immigrants in the UK," *The Economic Journal,* Vol. 113, pp. 695-717.

Dustmann C., A. Glitz, U. Schönberg, and H. Brücker, 2016. "Referral-based Job Search Networks," *Review of Economic Studies* 83(2), 514-546.

Friedberg, R., 2000, "You can't take it with you? Immigrant assimilation and the portability of human capital," *Journal of Labor Economics*, Vol. 18, No. 2, pp. 221-251.

Jaumotte, F., K. Koloskova, and S. Saxena, 2016, "Impact of migration on income levels in advanced economies," Spillover Note, International Monetary Fund.

Liebig T. and K. Tronstad, 2018, "Triple disadvantage?: a first overview of the integration of refugee women", OECD Social, Employment and Migration Working Papers, No. 216, OECD Publishing, Paris.

Okoampah, S., 2016, "Estimating earnings assimilation of immigrants to Germany: Evidence from a double cohort model," Ruhr Economic Papers, No. 630, RWI – Leibniz-Institut fur Wirtschaftsforschung, Essen.

Zorlu A. and Joop Hartog, 2012, "Employment assimilation of immigrants in the Netherlands: Dip and catchup by source country," *International Journal of Population Research*, Vol. 2012.

Figure 1: Simulated Employment Probabilities of a 30-Year Old Migrant with Average Education, by Gender and Origin

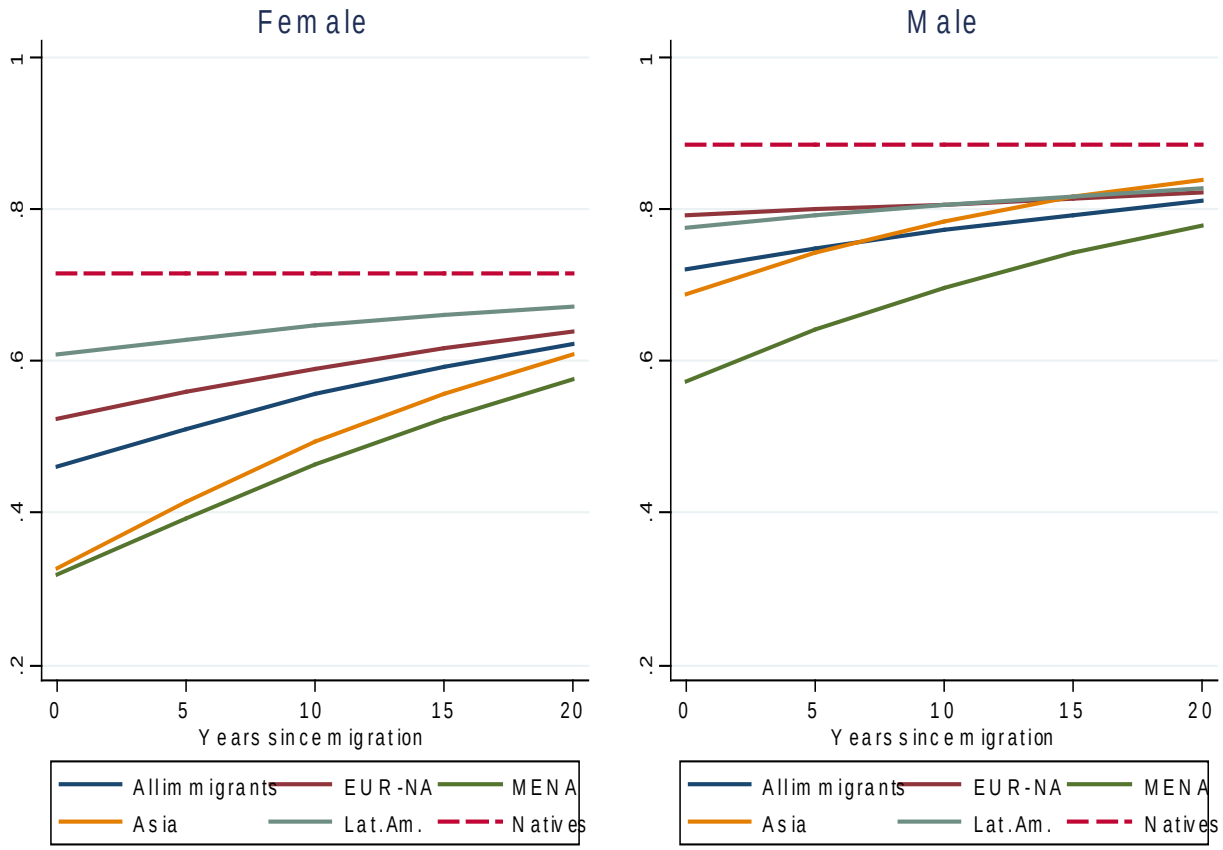
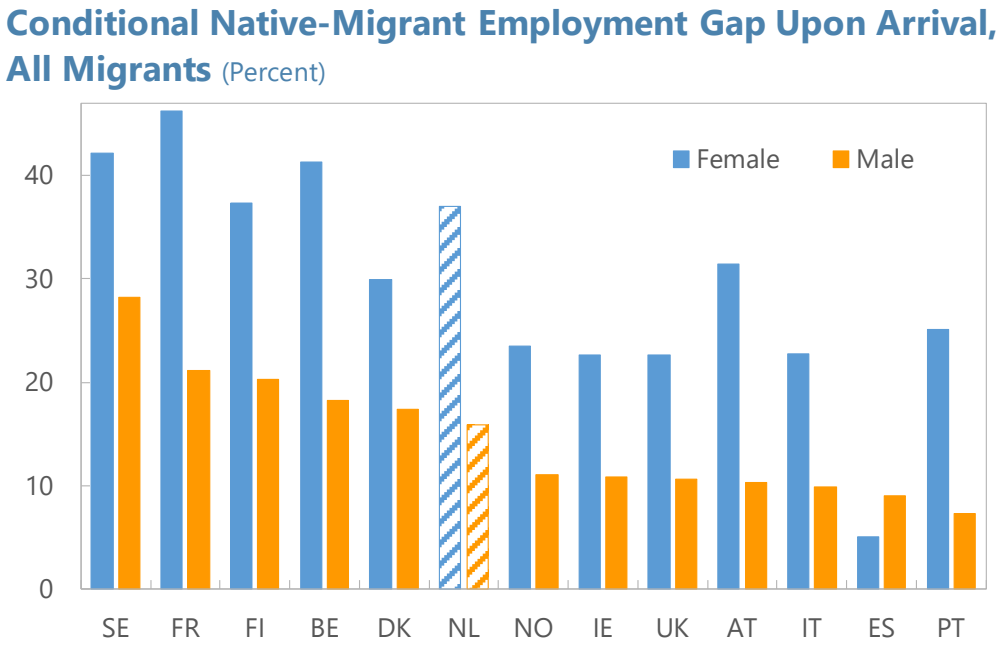


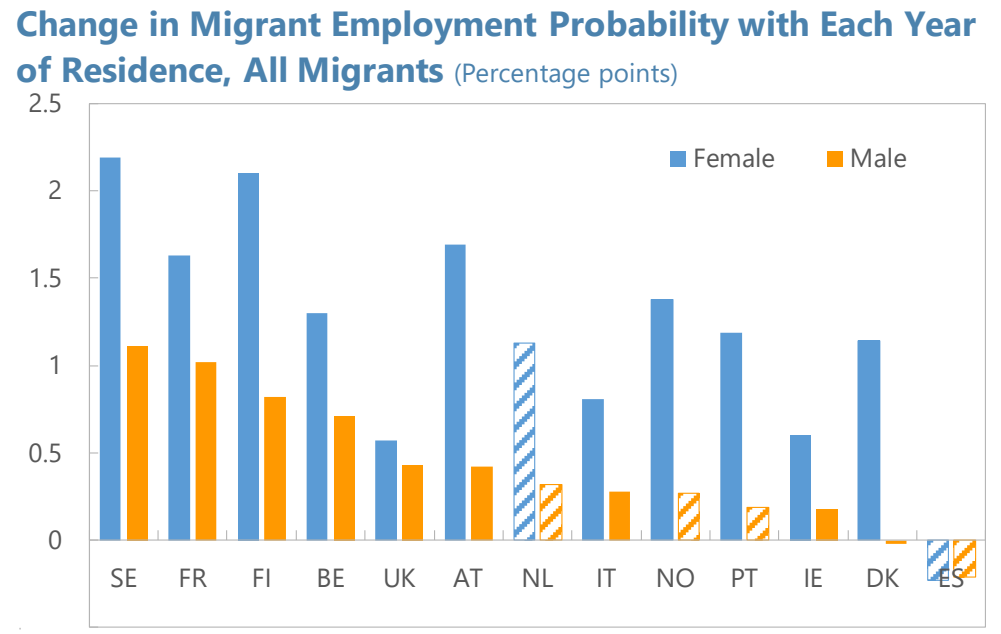
Figure 2: Estimates of Conditional Employment Gaps and Integration Speed for All Migrants, By Country

Panel A: Conditional gaps



Sources: Eurostat and Fund staff estimates.
Note: Pattern bars indicate not statistically significant.

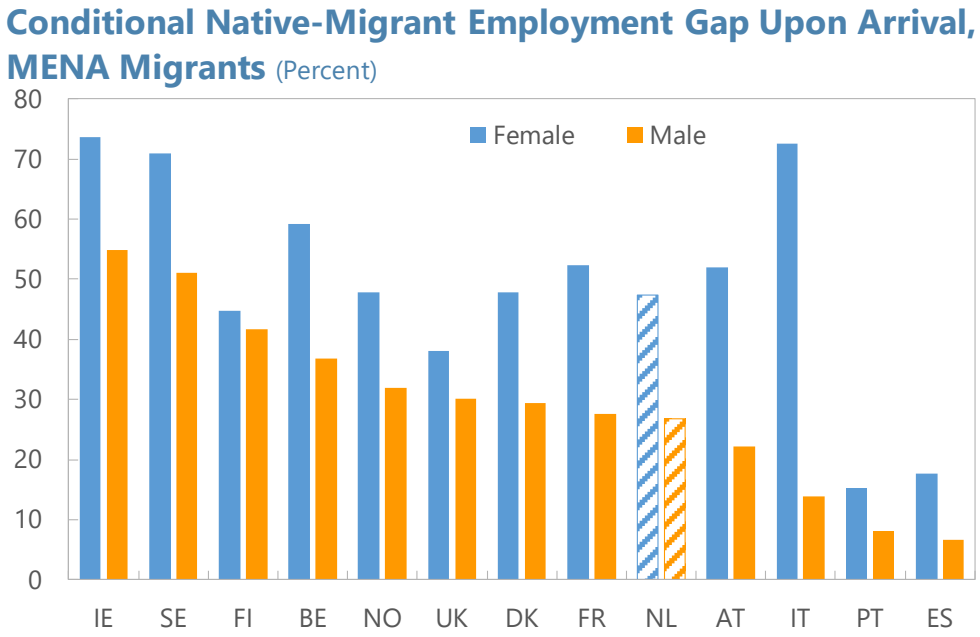
Panel B: Integration speed



Sources: Eurostat and Fund staff estimates.
Note: Pattern bars indicate not statistically significant.

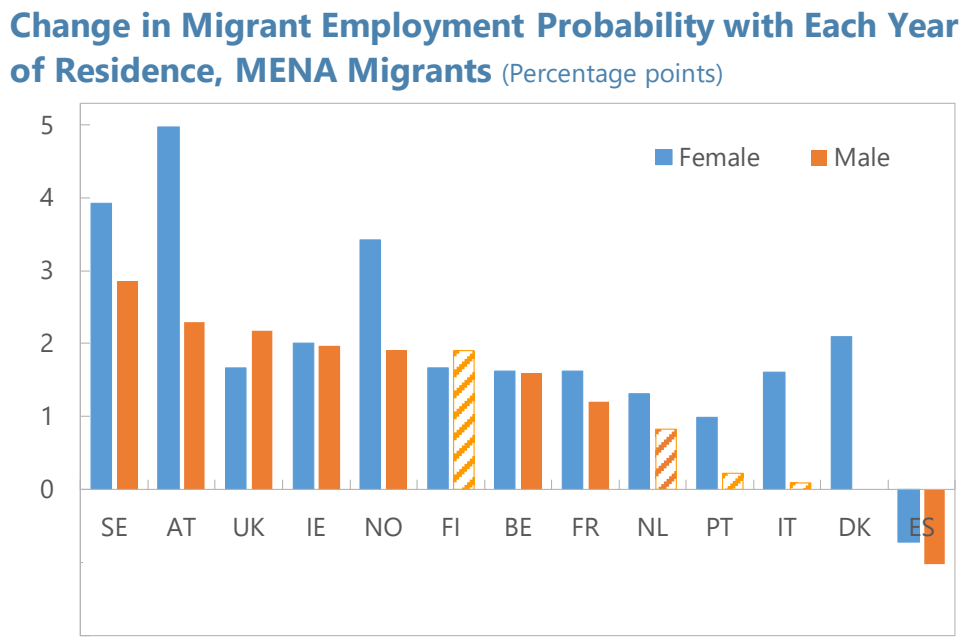
Figure 3: Estimates of Conditional Employment Gaps and Integration Speed for MENA Migrants, By Country

Panel A: Conditional gaps



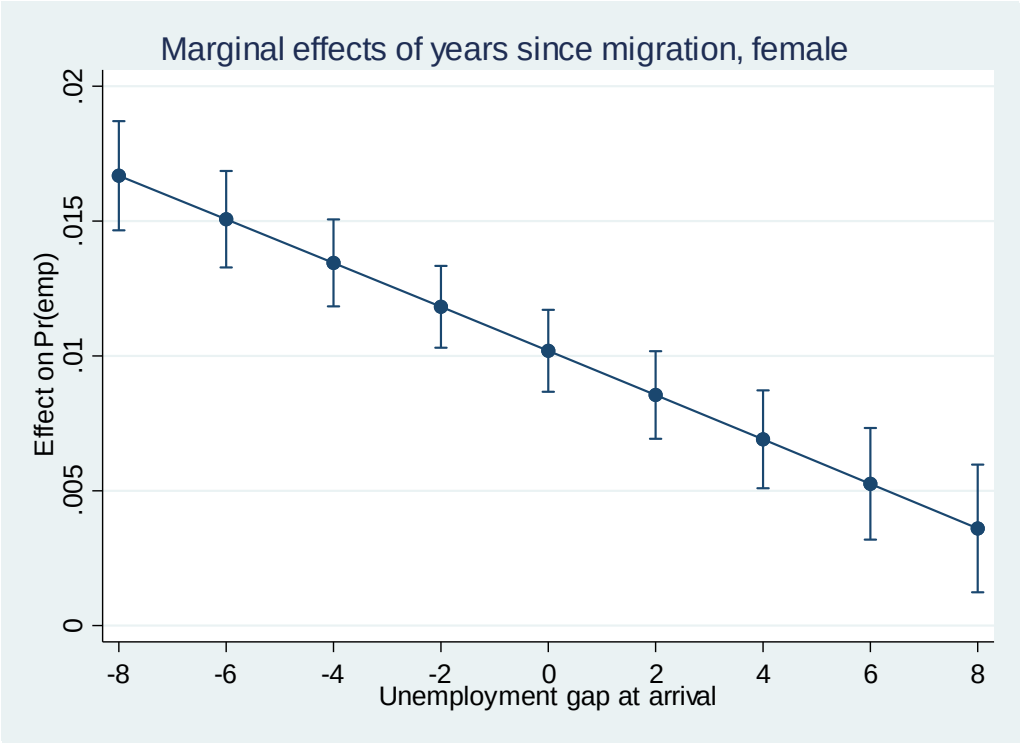
Sources: Eurostat and Fund staff estimates.
Note: Pattern bars indicate not statistically significant.

Panel B: Integration speed



Sources: Eurostat and Fund staff estimates.
Note: Pattern bars indicate not statistically significant.

Figure 4: Effects of Initial Labor Market Conditions (point estimates and 95-percent confidence intervals)


Marginal effects of years since migration, female
Effect on Pr(emp)
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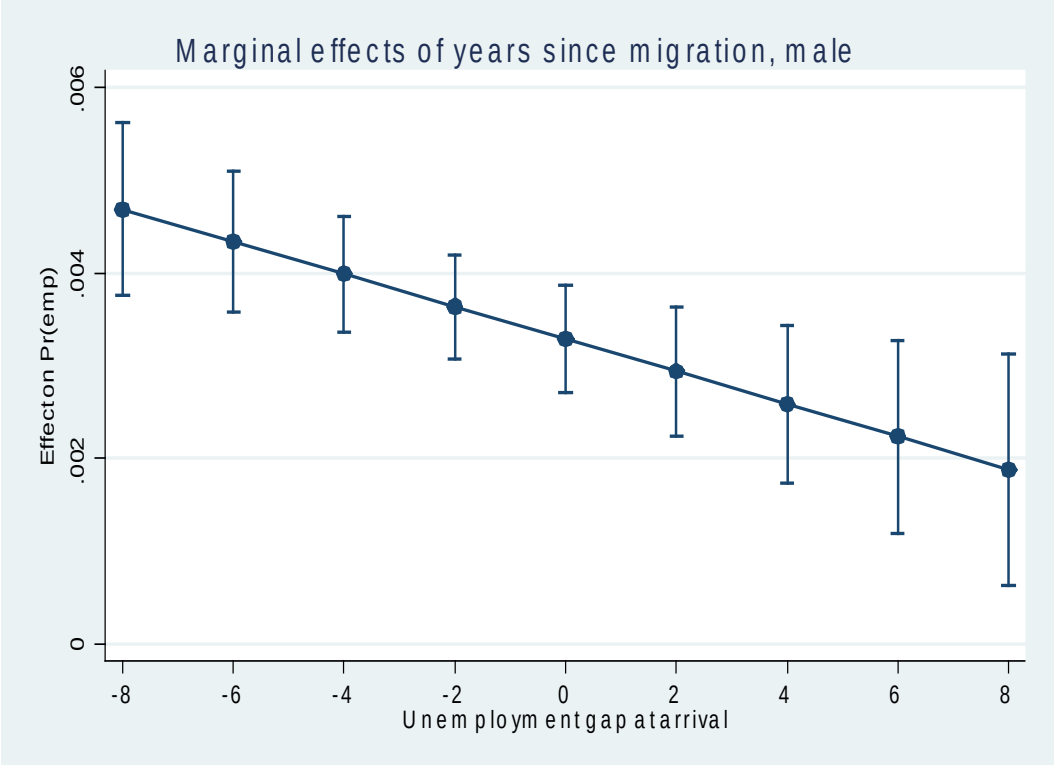
.01
.015
.02
-8
-6
-4
-2
0
2
4
6
8
Unemployment gap at arrival


Marginal effects of years since migration, male
Effect on Pr(emp)
0
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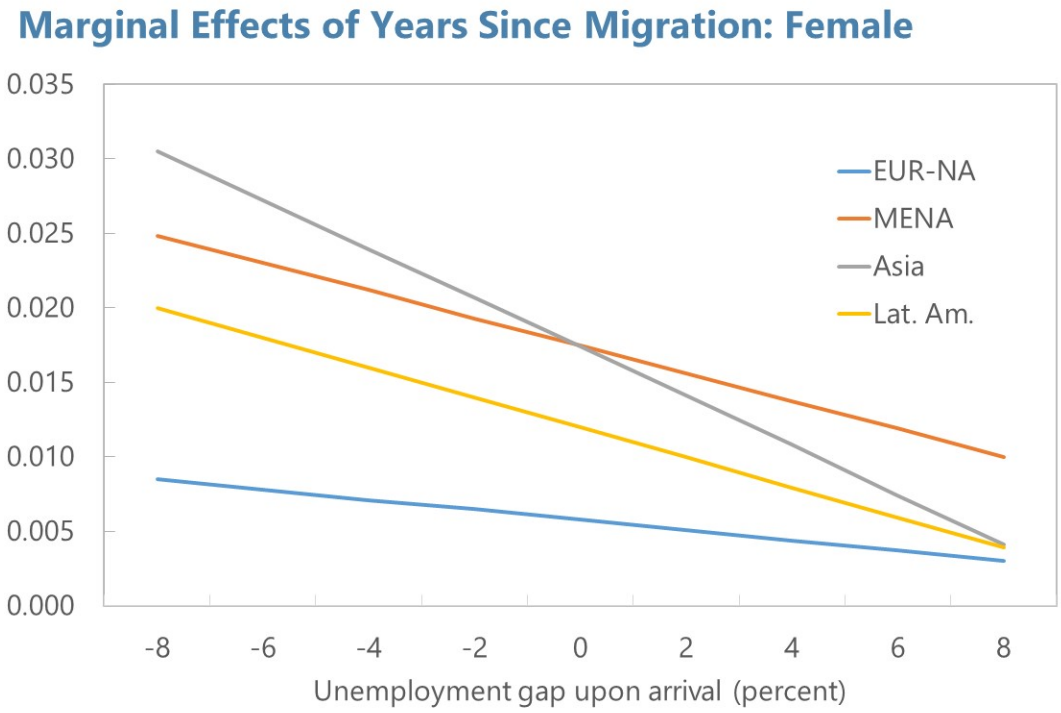
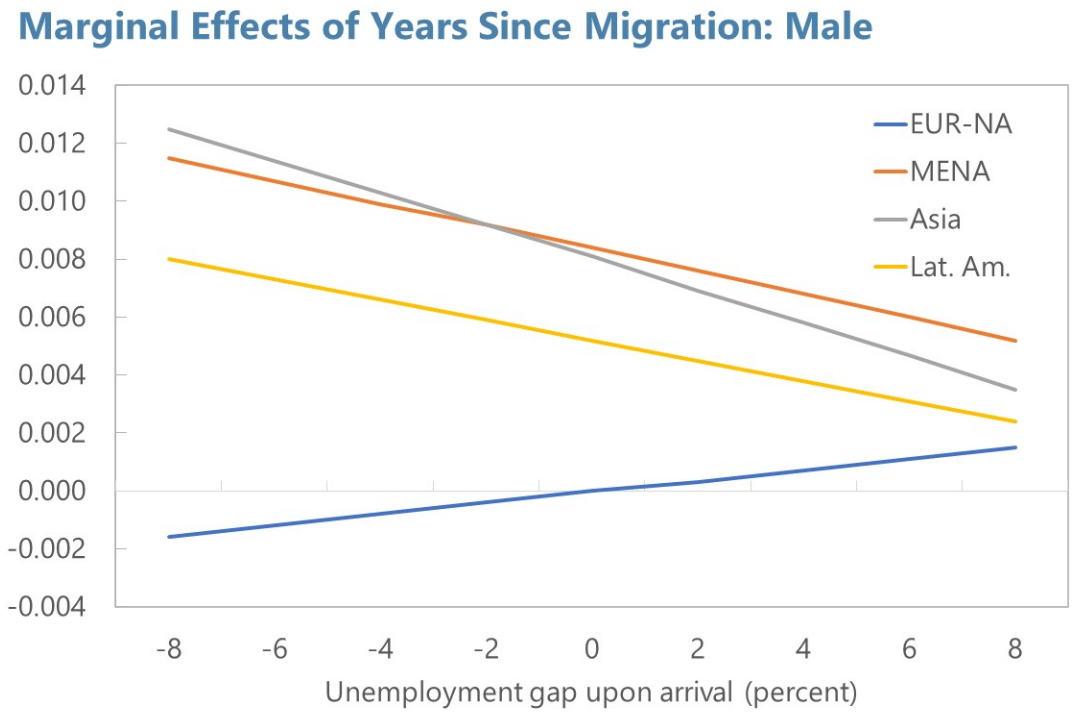
.004
.006
-8
-6
-4
-2
0
2
4
6
8
Unemployment gap at arrival

Figure 5: Effects of Initial Labor Market Conditions, by Migrant Origin



Sources: Eurostat and Fund staff estimates.



Sources: Eurostat and Fund staff estimates.

Figure 6: Effects of Domestic Education for Natives vs. Migrants

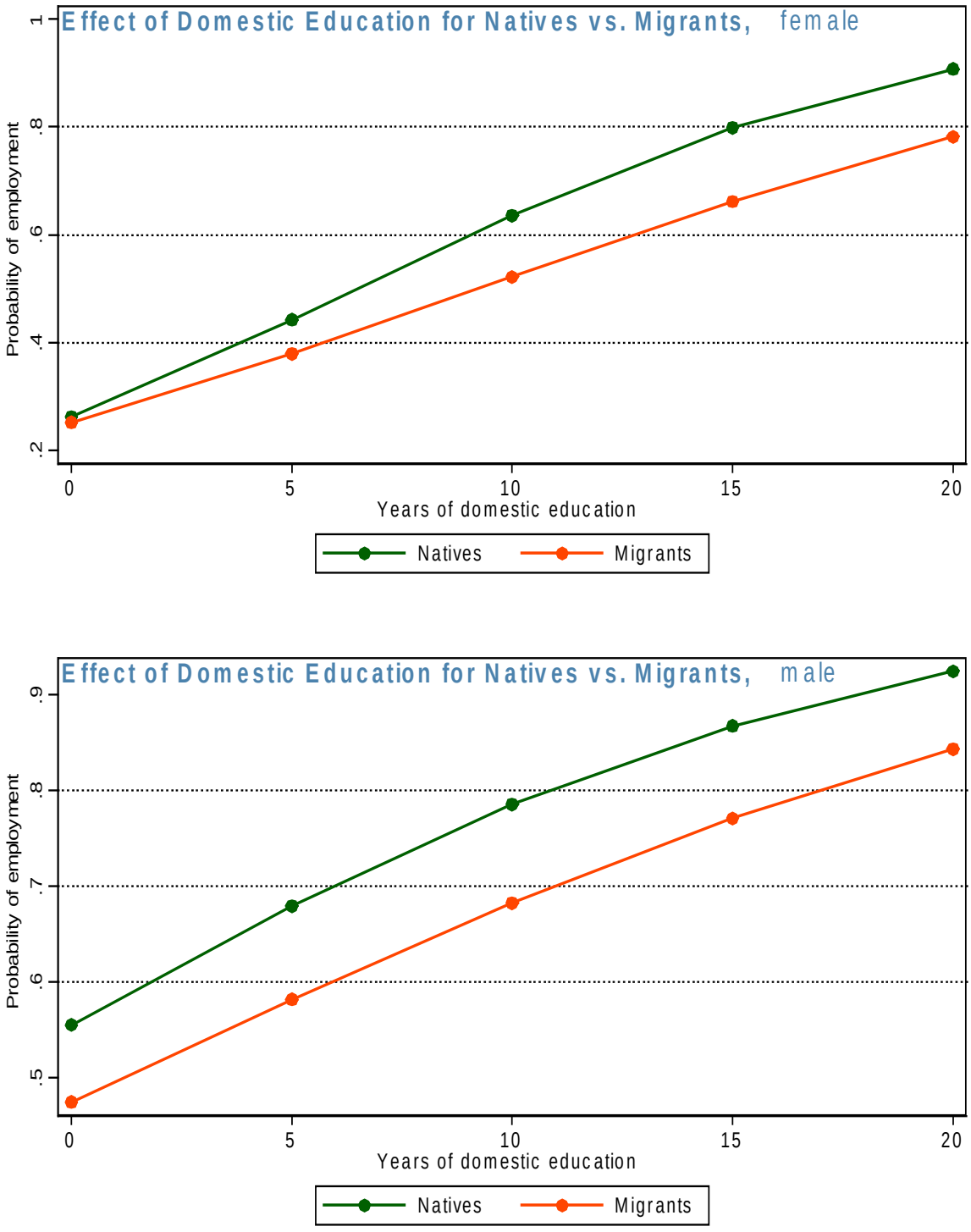


Table 1: Distribution by Country of Birth, EU LFS, 2016 Sample

Country	Number of Individuals		Share in total (percent)*					
			Natives	Foreign-born	EUR-NA	ASIA	LAT-AM	MENA
Austria	41,087		81	19	85	6	2	7
Belgium	19,328		79	21	54	8	3	35
Denmark	42,884		89	11	54	21	4	22
Spain	56,335		90	10	33	4	41	21
Finland	25,873		93	7	70	16	3	11
France	110,004		86	14	29	6	12	52
Ireland	41,760		80	20	66	15	6	13
Italy	65,746		85	15	57	14	10	20
Netherlands	43,844		90	10	38	15	24	24
Norway	5,127		86	14	49	25	6	20
Portugal	36,097		91	9	37	2	20	41
Sweden	61,349		81	19	45	13	6	37
United Kingdom	40,392		82	18	34	37	5	24
Total	*589,826*	*Average*	*85*	*15*	*50*	*14*	*11*	*25*

* EUR-NA = Europe and North America (incl. AUS and NZL); LAT-AM = Latin America; MENA = Middle-East and North Africa. Shares by region of origin are in percent of total foreign born.

Table 2: Distribution by Demographics and Education, EU LFS, 2016 Sample

Country	Distribution by (in percent of total)							
	Age			Gender		Educational Level		
	<30	30-45	>45	Male	Female	Low	Medium	High
Austria	10	34	55	49	51	15	55	30
Belgium	13	37	50	46	54	26	37	37
Denmark	10	32	58	48	52	15	42	43
Spain	8	35	56	48	52	43	22	35
Finland	10	34	56	49	51	12	44	44
France	10	35	55	48	52	25	43	32
Ireland	11	42	47	48	52	20	37	43
Italy	12	35	53	46	54	41	42	17
Netherlands	8	29	63	48	52	20	41	39
Norway	12	36	52	51	49	17	39	44
Portugal	8	36	56	47	53	59	21	20
Sweden	13	36	51	50	50	16	45	39
United Kingdom	11	37	51	47	53	24	36	40
Average	*10*	*35*	*54*	*48*	*52*	*26*	*39*	*36*

Table 3: Distribution by Labor Market Outcome, EU LFS, 2016 Sample

Country	Distribution by labor market outcomes (in percent of total)					
	Natives			Foreign-born		
	Employed	Unemployed	Inactive	Employed	Unemployed	Inactive
Austria	78	3	19	70	6	23
Belgium	71	5	25	54	11	35
Denmark	84	3	13	69	7	23
Spain	65	13	22	62	21	18
Finland	79	4	17	68	10	22
France	72	7	22	56	12	32
Ireland	72	5	23	71	7	22
Italy	61	8	32	60	12	29
Netherlands	81	4	14	66	8	26
Norway	84	2	13	79	5	16
Portugal	70	8	21	74	11	15
Sweden	86	4	10	71	12	18
United Kingdom	78	3	19	75	3	22
Average	*75*	*5*	*19*	*67*	*10*	*23*

Table 4: Summary Statistics of Variables Entering Regression Analyses

Variable	Obs.	Mean	Std. Dev.	Min	Max
Pr (Employment)	10,044,922	0.72	0.4	0	1
Migrant status	10,044,922	0.11	0.3	0	1
Years since migration*	1,033,342	16.0	12.9	0	67
Education years	9,773,923	11.7	3.3	6	24
Age	10,044,922	44.6	11.1	27	62
Married	10,044,922	0.62	0.5	0	1

* Calculated for migrants only, zero for natives.

Table 5: Baseline Results from Probit Regression

VARIABLES	(1) Female	(2) Male
Migrant status	-0.663	-0.608
	[0.062]***	[0.038]***
Years since migration	0.027	0.017
	[0.003]***	[0.002]***
Years since migration squared/100	-0.032	-0.014
	[0.004]***	[0.003]***
Education	0.104	0.074
	[0.003]***	[0.002]***
Age	0.193	0.226
	[0.005]***	[0.005]***
Age squared	-0.002	-0.003
	[0.000]***	[0.000]***
Being married	-0.076	0.481
	[0.014]***	[0.007]***
Country-Year fixed effects	Y	Y
Region fixed effects	Y	Y
Observations	4,993,587	4,698,090
Pseudo R-squared	0.148	0.163

Note: The dependent variable is the probability of being employed. Robust standard errors are clustered at the regional level.

Table 6: The Effects of Networks of Migrants

	Probability of having a job							
	Eurostat Data*				UN Data			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
VARIABLES	Female	Male	Female	Male	Female	Male	Female	Male
Migrant status	-0.705	-0.602	-0.63	-0.543	-0.679	-0.621	-0.674	-0.619
	[0.108]***	[0.081]***	[0.109]***	[0.074]***	[0.086]***	[0.057]***	[0.080]***	[0.051]***
Stock of Migrants	0.002	0.002			0.008	0.047		
	[0.000]***	[0.000]***			[0.010]	[0.008]***		
Share of Migrants			0.001	0.001			0.020	0.159
			[0.001]	[0.001]			[0.024]	[0.034]***
Years since migration	0.021	0.008	0.021	0.008	0.024	0.014	0.024	0.014
	[0.004]***	[0.003]**	[0.003]***	[0.003]***	[0.003]***	[0.002]***	[0.003]***	[0.002]***
Years since migration squared/100	-0.024	-0.002	-0.024	-0.002	-0.027	-0.013	-0.027	-0.011
	[0.005]***	[0.005]	[0.005]***	[0.005]	[0.004]***	[0.003]***	[0.004]***	[0.003]***
Education	0.099	0.077	0.099	0.077	0.098	0.076	0.098	0.076
	[0.003]***	[0.003]***	[0.003]***	[0.003]***	[0.003]***	[0.003]***	[0.003]***	[0.003]***
Age	0.204	0.225	0.205	0.226	0.203	0.223	0.203	0.223
	[0.009]***	[0.008]***	[0.009]***	[0.008]***	[0.009]***	[0.008]***	[0.009]***	[0.009]***
Age squared	-0.002	-0.003	-0.002	-0.003	-0.002	-0.003	-0.002	-0.003
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Being married	-0.041	0.458	-0.042	0.459	-0.053	0.447	-0.052	0.448
	[0.015]***	[0.007]***	[0.015]***	[0.007]***	[0.015]***	[0.007]***	[0.015]***	[0.007]***
Country-Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Region fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,105,973	1,961,276	2,105,973	1,961,276	2,207,812	2,050,399	2,207,812	2,050,399
Pseudo R-squared	0.146	0.148	0.146	0.147	0.143	0.146	0.143	0.145

* Data is not available for France, Ireland, Portugal, and the UK.

Note: Dependent variable is the probability of being employed. Robust errors are clustered at regional level. *** p<0.01, ** p<0.05, * p<0.1

Table 7: The Impact of Foreign and Domestic Education

		Female			Male	
	(1)	(2)	(3)	(4)	(5)	(6)
		Restricted	Unrestricted		Restricted	Unrestricted
VARIABLES	Baseline	eq. 4	eq. 4	Baseline	eq. 4	eq. 4
Migrant status	-0.663	-0.327	-0.036	-0.608	-0.368	-0.233
	[0.062]***	[0.018]***	[0.049]	[0.038]***	[0.022]***	[0.040]***
Years since migration	0.027			0.017		
	[0.003]***			[0.002]***		
Education	0.104			0.074		
	[0.003]***			[0.002]***		
Education--foreign		0.100	0.081		0.073	0.064
		[0.005]***	[0.003]***		[0.002]***	[0.002]***
Education--domestic		0.105	0.109		0.074	0.076
		[0.003]***	[0.003]***		[0.002]***	[0.002]***
Domestic education x Migrant status			-0.029			-0.013
			[0.004]***			[0.002]***
Country-Year fixed effects	Y	Y	Y	Y	Y	Y
Region fixed effects	Y	Y	Y	Y	Y	Y
Observations	4,993,587	5,036,531	5,036,531	4,698,090	4,737,392	4,737,392
Pseudo R-squared	0.148	0.147	0.147	0.163	0.162	0.162

Note: The dependent variable is the probability of being employed. Other control variables include years since migration squared, age, age squared, and marital status. Robust standard errors are clustered at the regional level.

Appendix Tables and Figures

Table A.1: Cohort effects

	Female		Male	
	(1)	(2)	(3)	(4)
VARIABLES	Baseline	With cohort effects	Baseline	With cohort effects
Migrant status	-0.663		-0.608	
	[0.062]***		[0.038]***	
Years since migration	0.027	0.026	0.017	0.017
	[0.003]***	[0.003]***	[0.002]***	[0.004]***
Years since migration squared/100	-0.032	-0.042	-0.014	-0.024
	[0.004]***	[0.006]***	[0.003]***	[0.006]***
Education	0.104	0.105	0.074	0.074
	[0.003]***	[0.003]***	[0.002]***	[0.002]***
Age	0.193	0.193	0.226	0.225
	[0.005]***	[0.005]***	[0.005]***	[0.005]***
Age squared	-0.002	-0.002	-0.003	-0.003
	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Being married	-0.076	-0.076	0.481	0.481
	[0.014]***	[0.014]***	[0.007]***	[0.007]***
1940s cohort		-0.311		-0.436
		[0.155]**		[0.057]***
1950s cohort		-0.156		-0.246
		[0.089]*		[0.069]***
1960s cohort		-0.333		-0.373
		[0.069]***		[0.064]***
1970s cohort		-0.547		-0.515
		[0.054]***		[0.067]***
1980s cohort		-0.590		-0.556
		[0.038]***		[0.056]***
1990s cohort		-0.604		-0.591
		[0.042]***		[0.052]***
2000s cohort		-0.642		-0.590
		[0.065]***		[0.050]***
2010s cohort		-0.958		-0.765
		[0.068]***		[0.029]***
Country-Year fixed effects	Y	Y	Y	Y
Region fixed effects	Y	Y	Y	Y
Observations	4,993,587	4,993,587	4,698,090	4,698,090
Pseudo R-squared	0.148	0.148	0.163	0.163

Note: The dependent variable is the probability of being employed. Robust standard errors are clustered at the regional level.

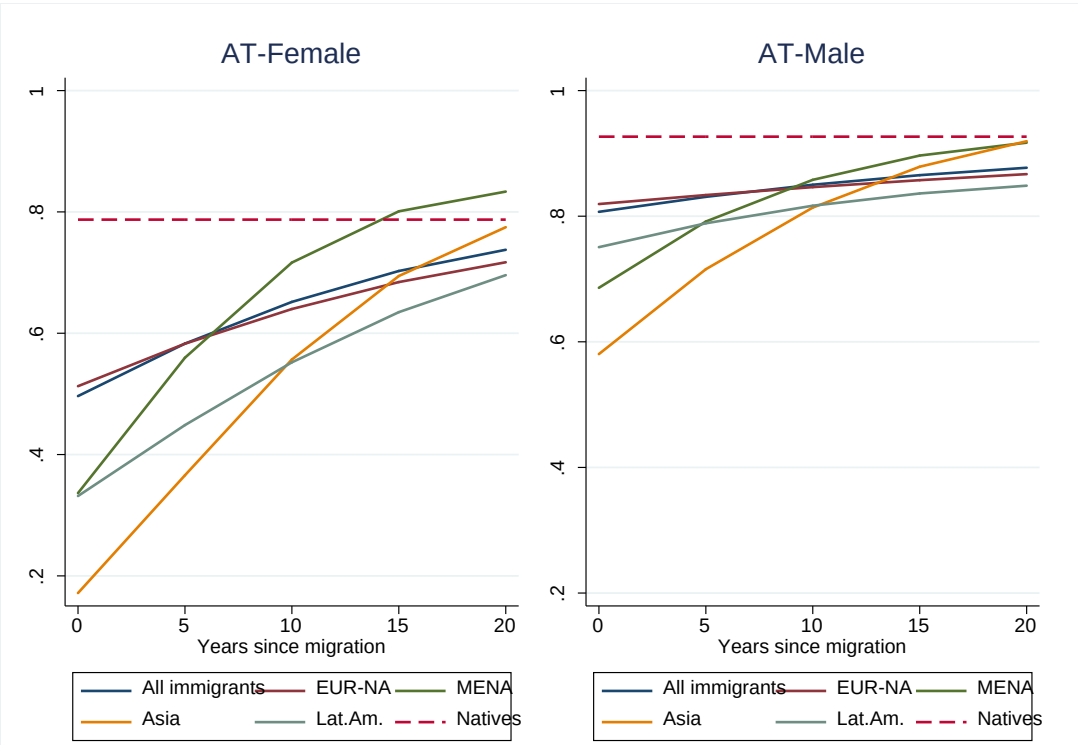
Table A.2: Quality of employment

	Probability of having a full-time & permanent job	
	(1)	(2)
VARIABLES	Female	Male
Being immigrant	-0.380	-0.530
	[0.046]***	[0.046]***
Years since migration	0.019	0.015
	[0.005]***	[0.003]***
Years since migration squared/100	-0.023	-0.020
	[0.007]***	[0.005]***
Education	0.084	0.045
	[0.004]***	[0.005]***
Age	0.119	0.160
	[0.008]***	[0.003]***
Age squared	-0.001	-0.002
	[0.000]***	[0.000]***
Being married	-0.234	0.297
	[0.021]***	[0.005]***
Country-Year fixed effects	Y	Y
Region fixed effects	Y	Y
Observations	4,993,587	4,698,090
Pseudo R-squared	0.0988	0.0826

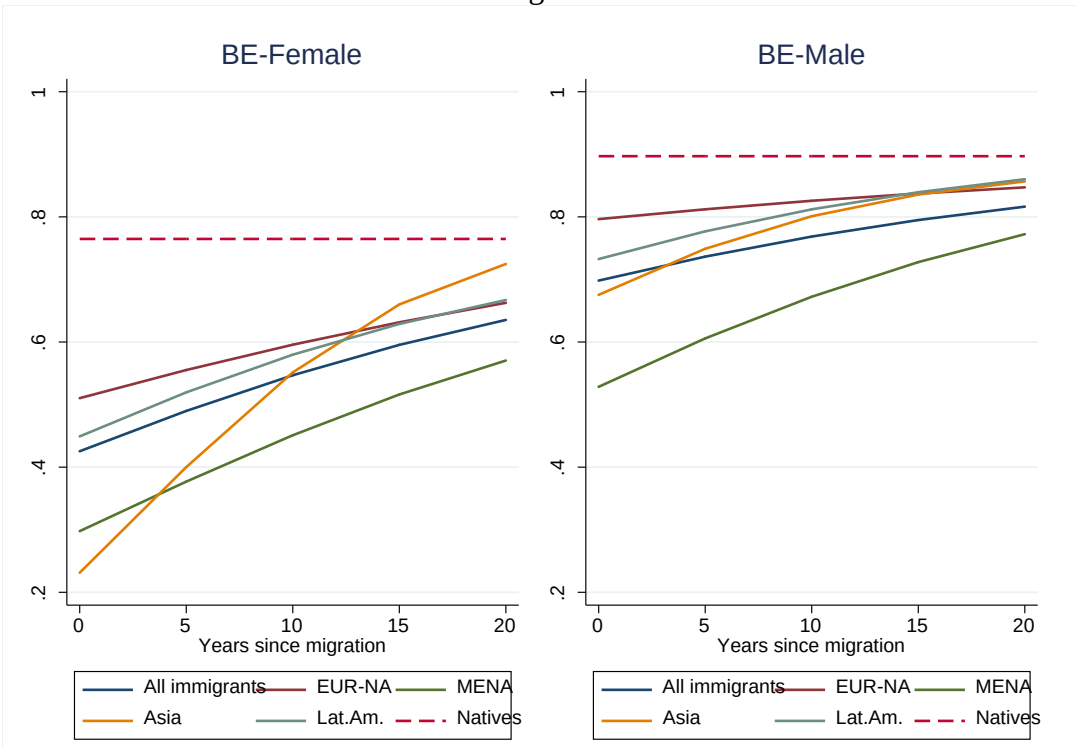
Note: The dependent variable is the probability of being employed. Robust standard errors are clustered at the regional level.

Figure A.1: Simulation of Employment Paths for Migrants from Individual Host Countries

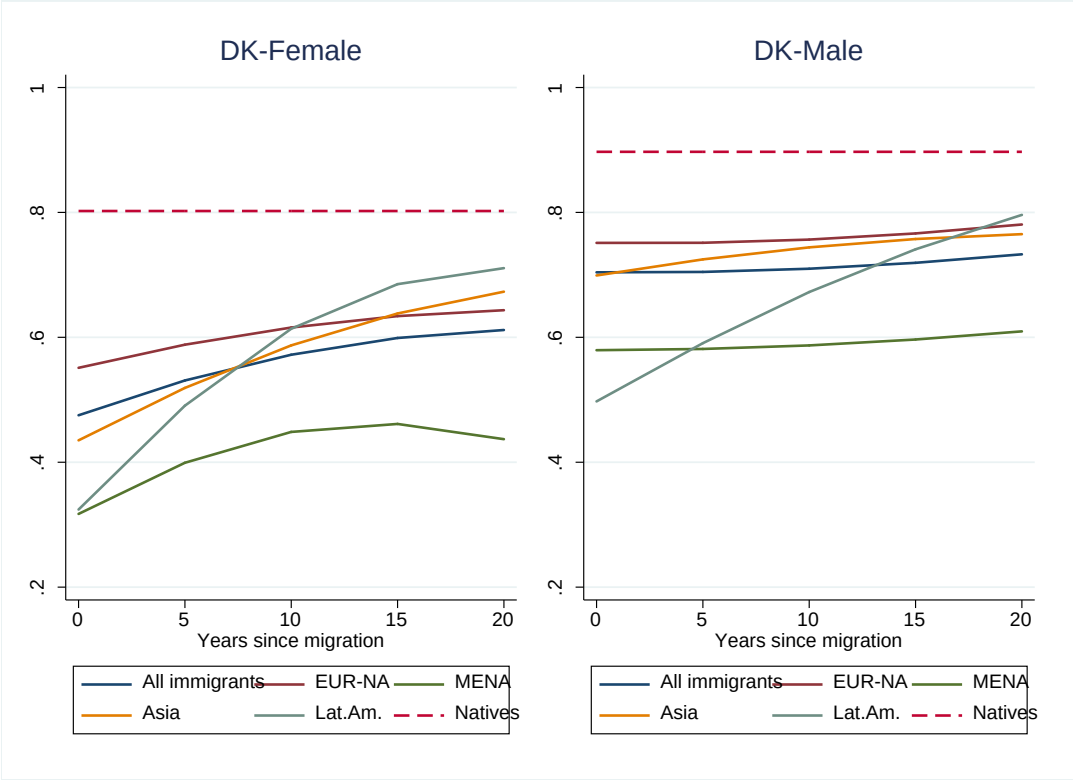
Austria



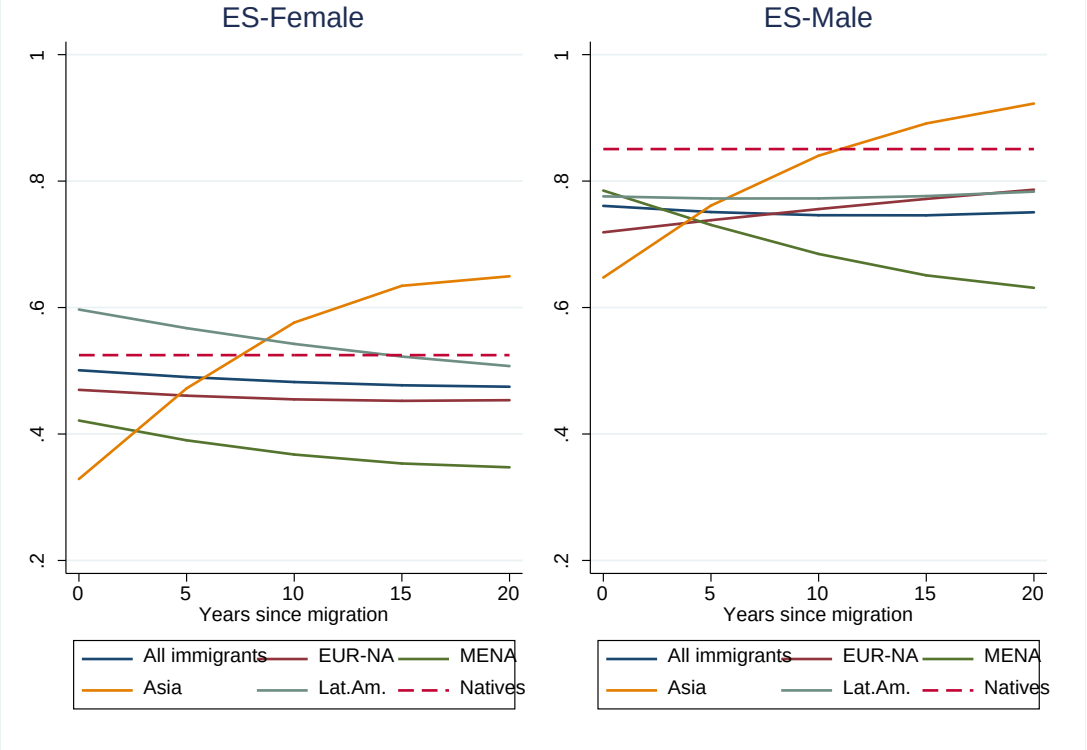
Belgium



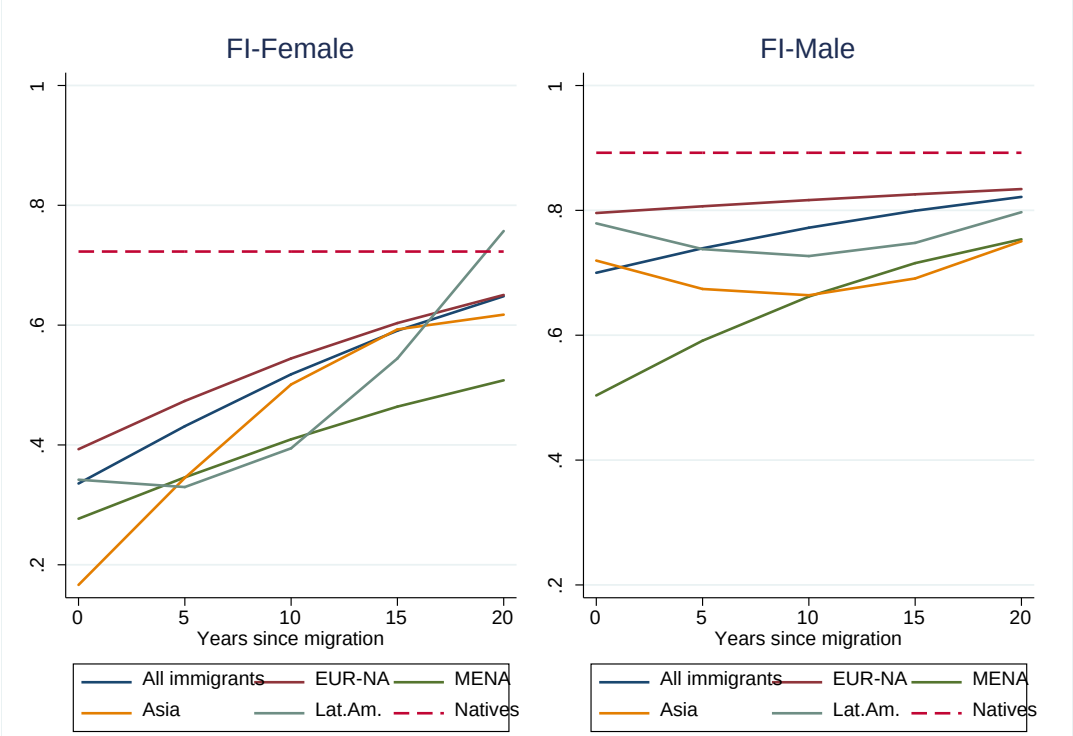
Denmark



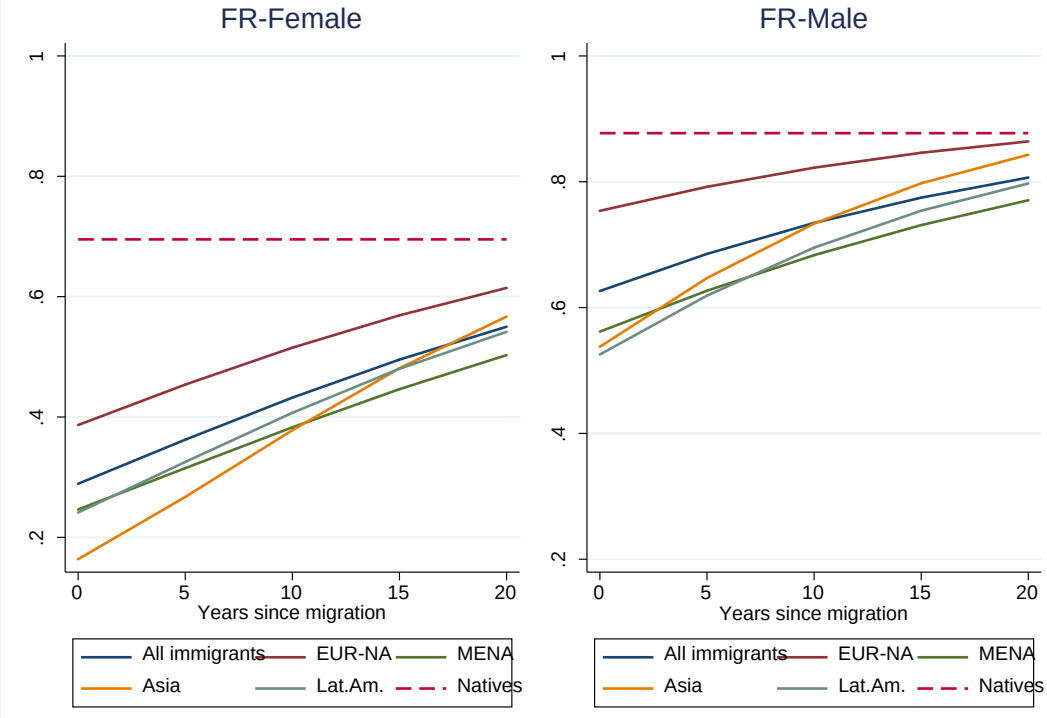
Spain



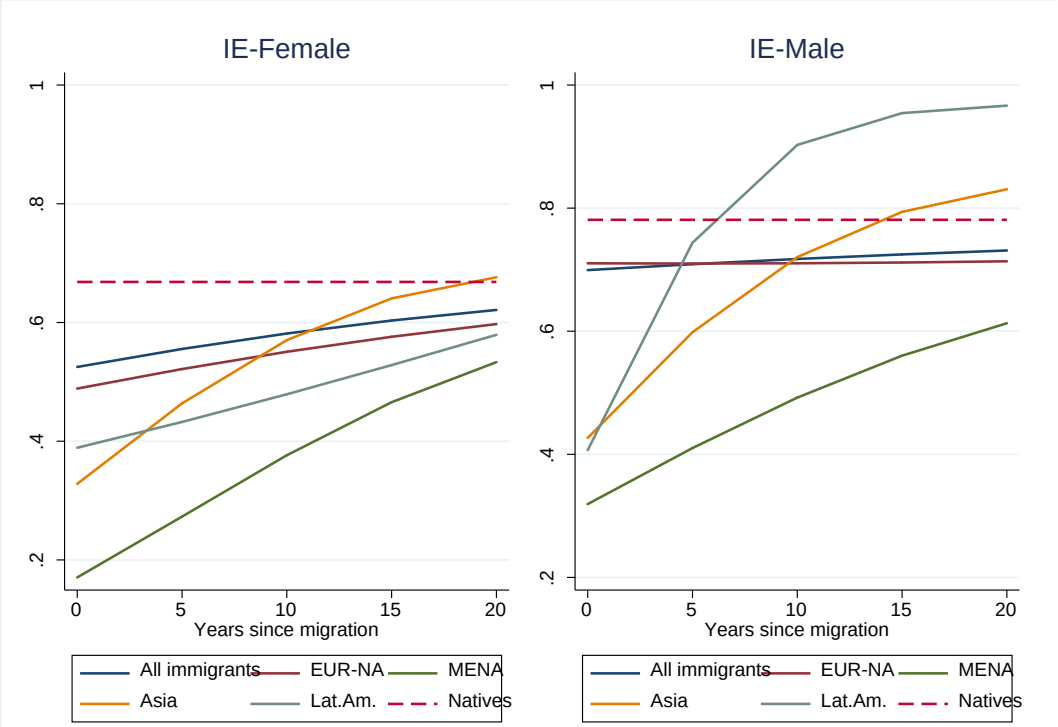
Finland



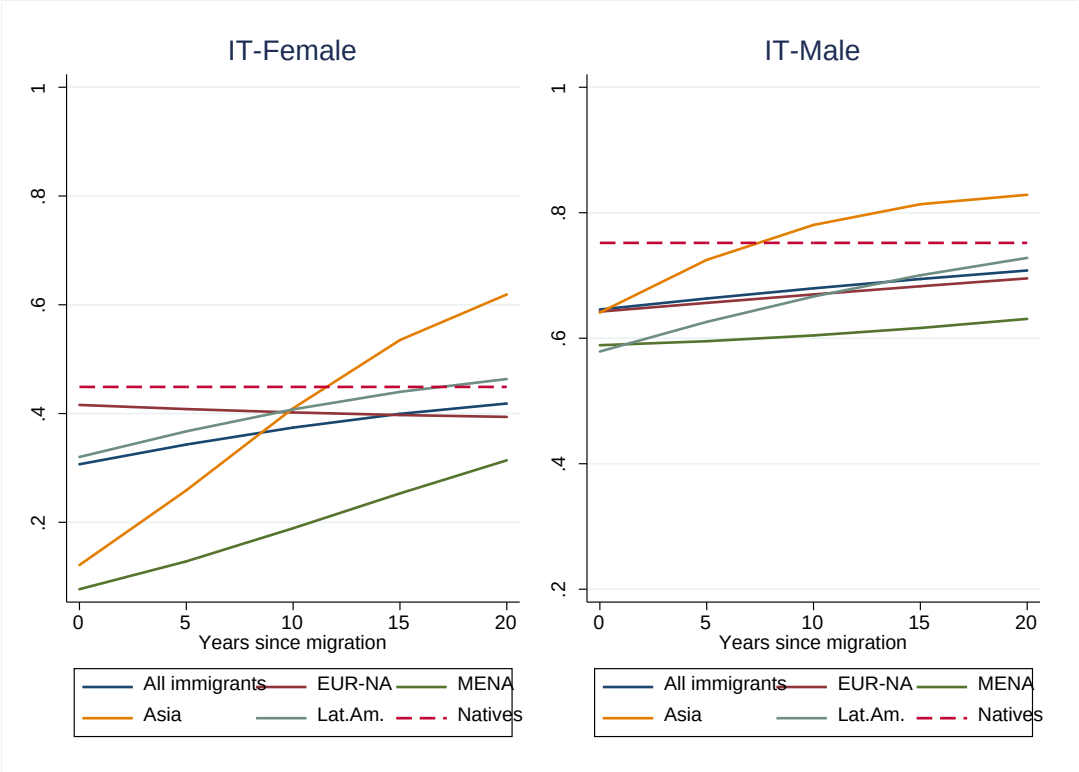
France



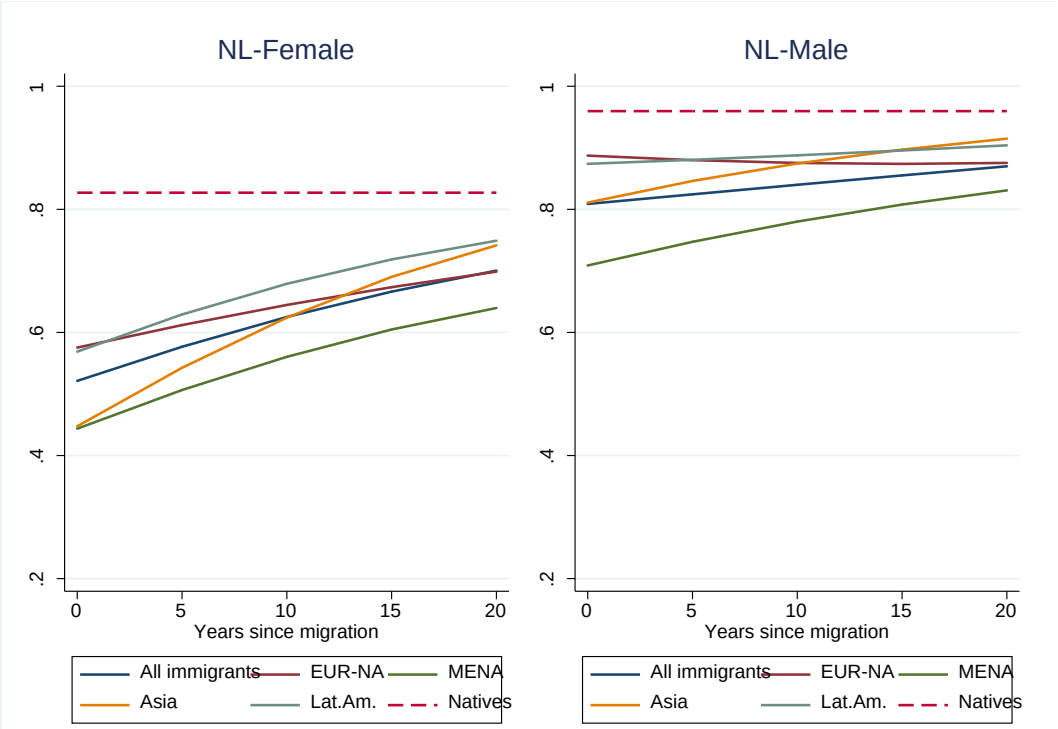
Ireland



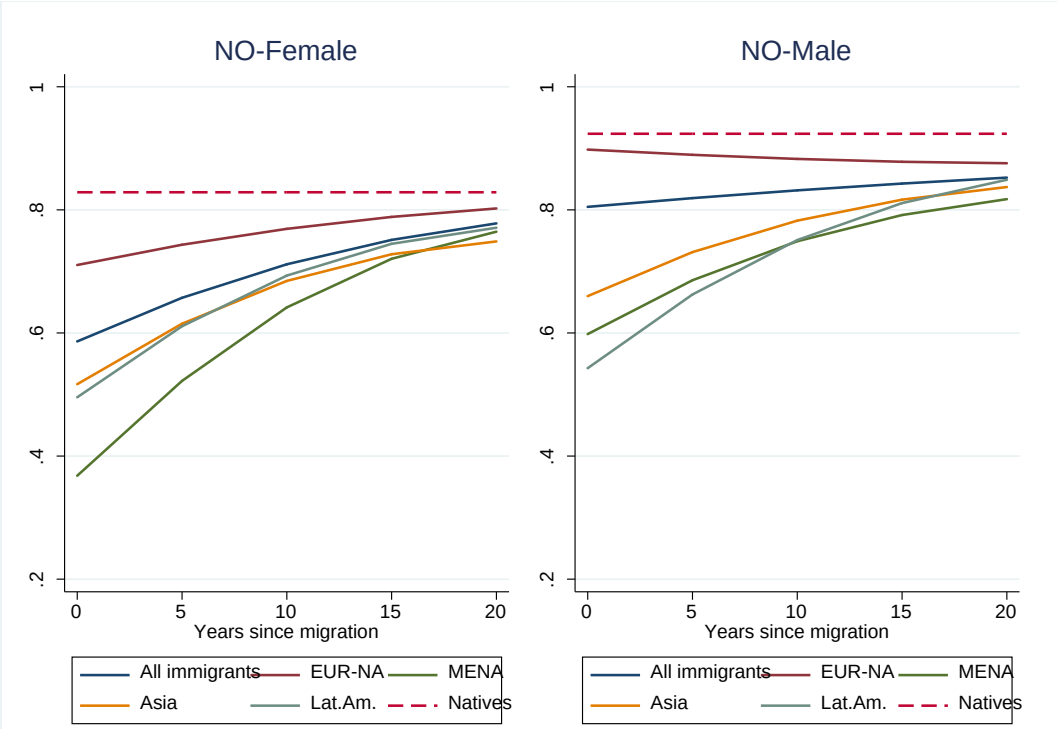
Italy



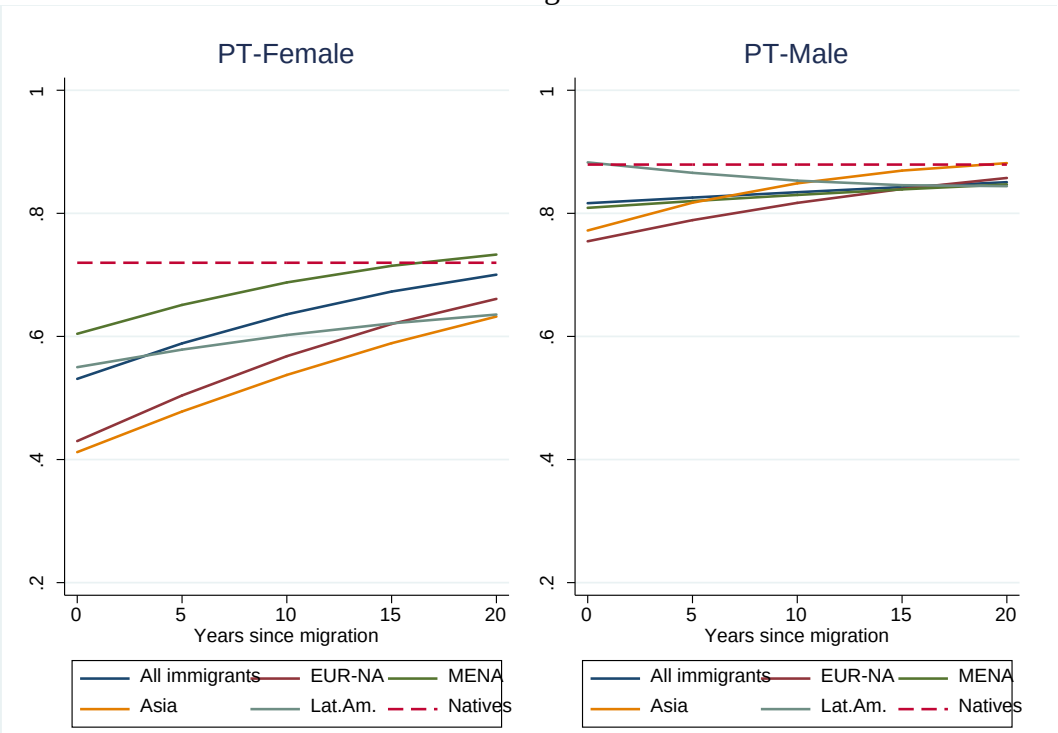
Netherlands



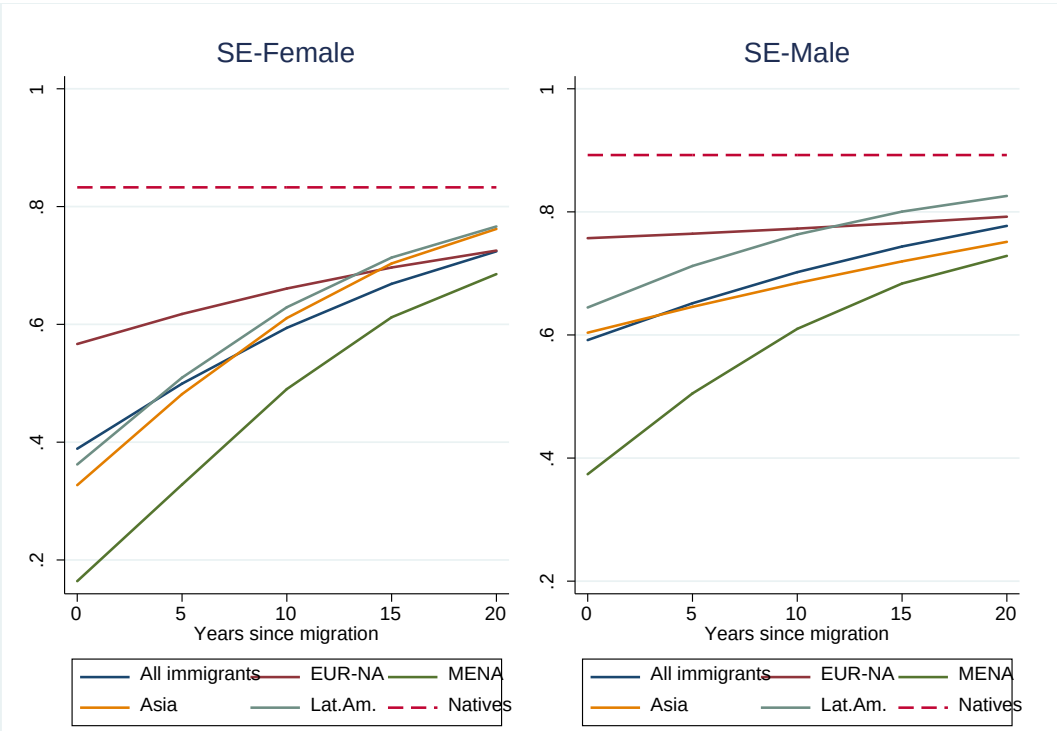
Norway



Portugal



Sweden



United Kingdom

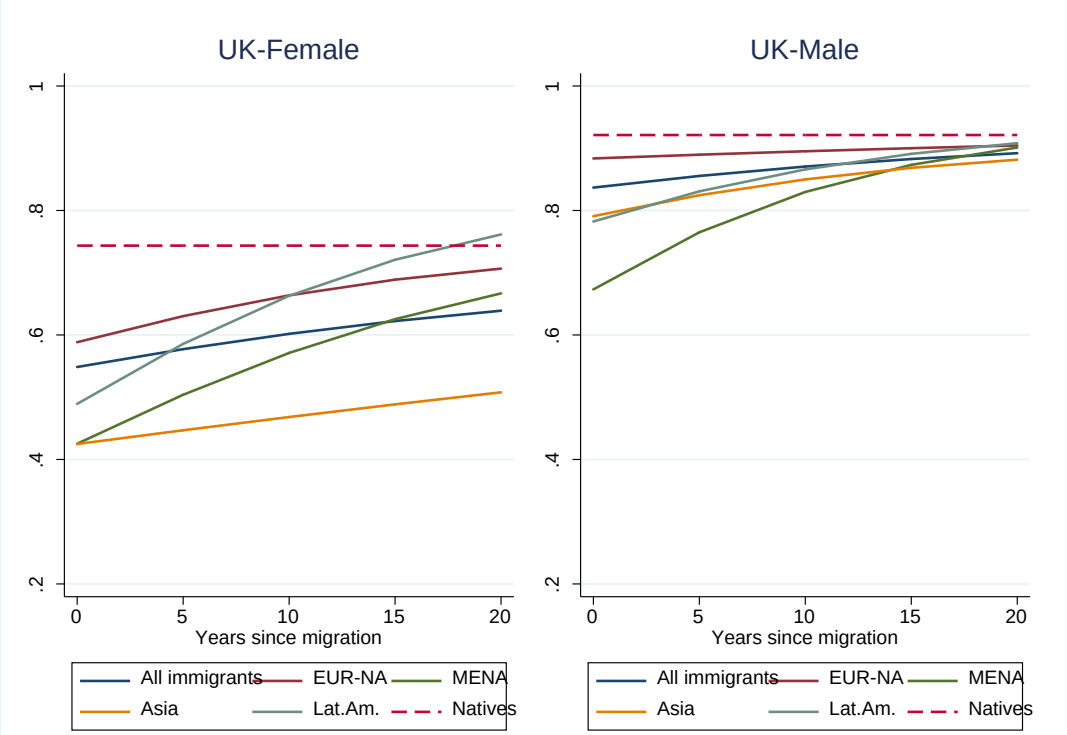
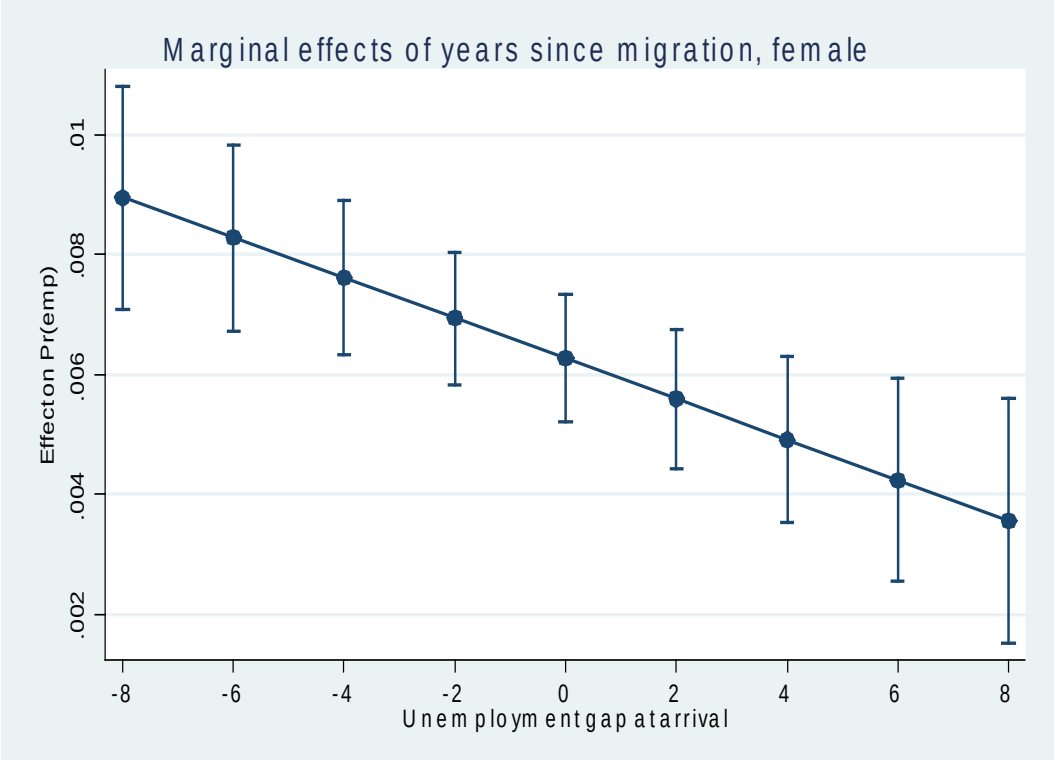
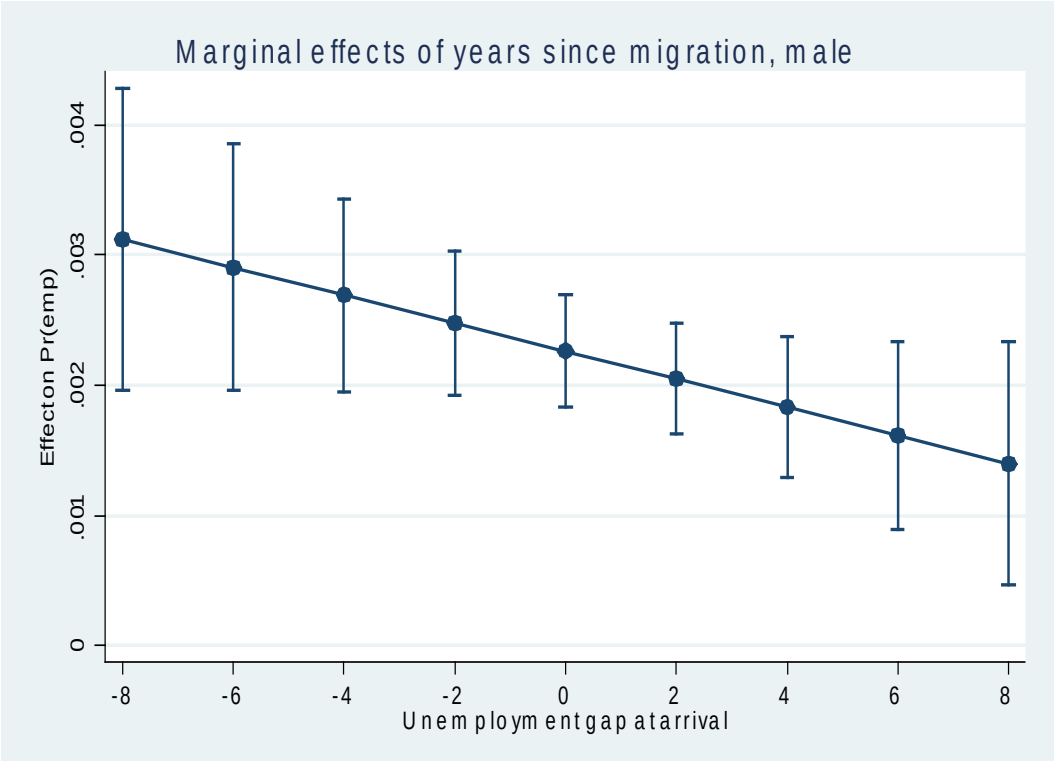


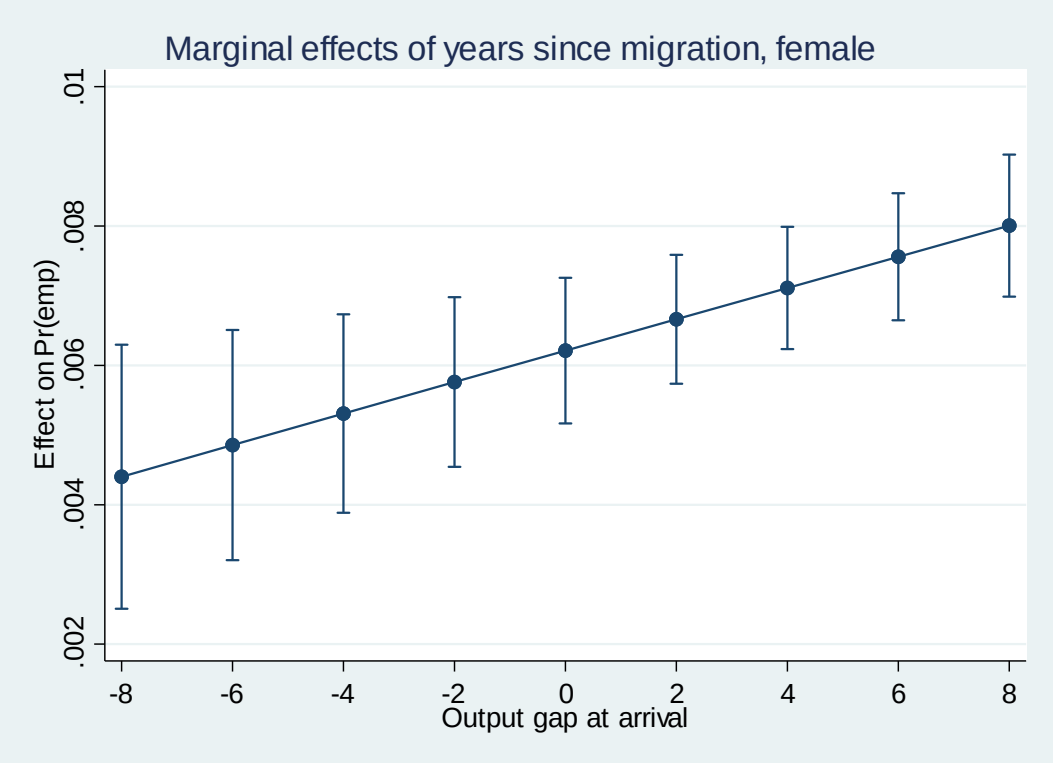
Figure A.2: Effects of Initial Conditions, Alternative Measures

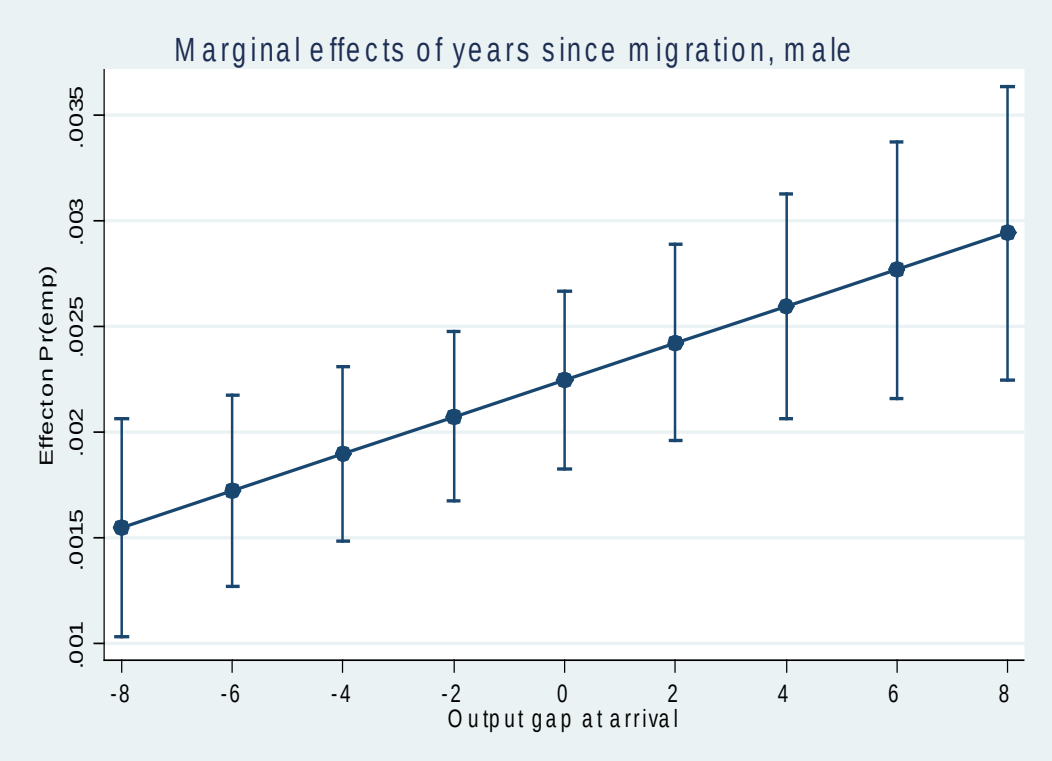
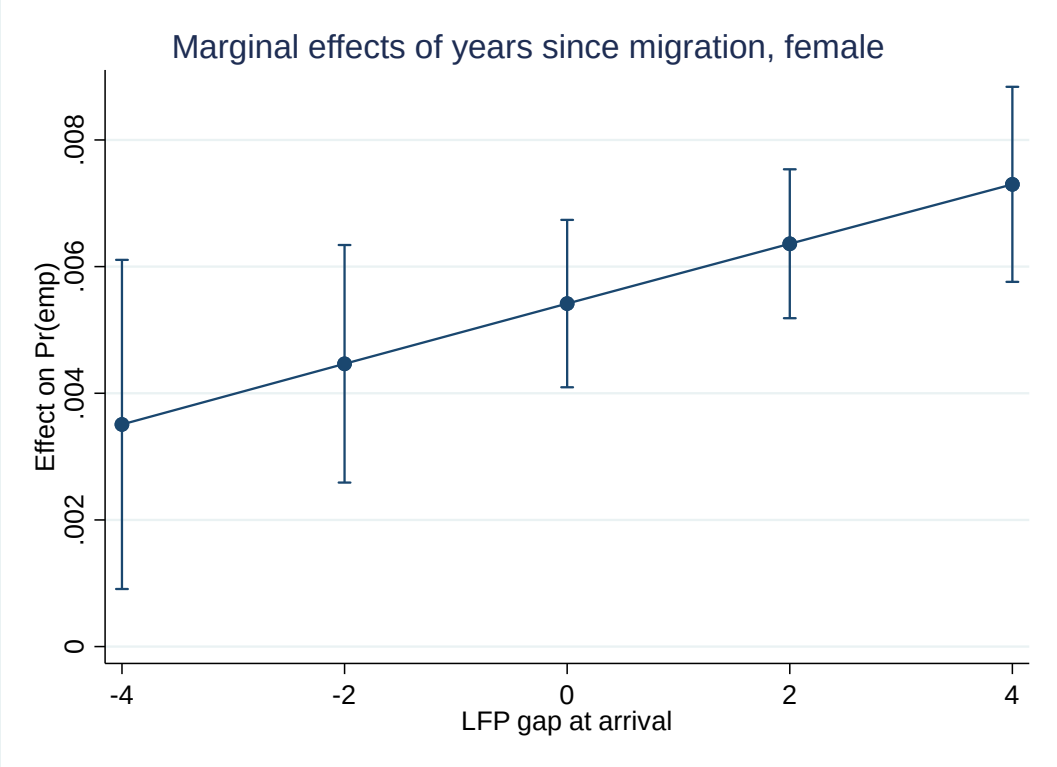
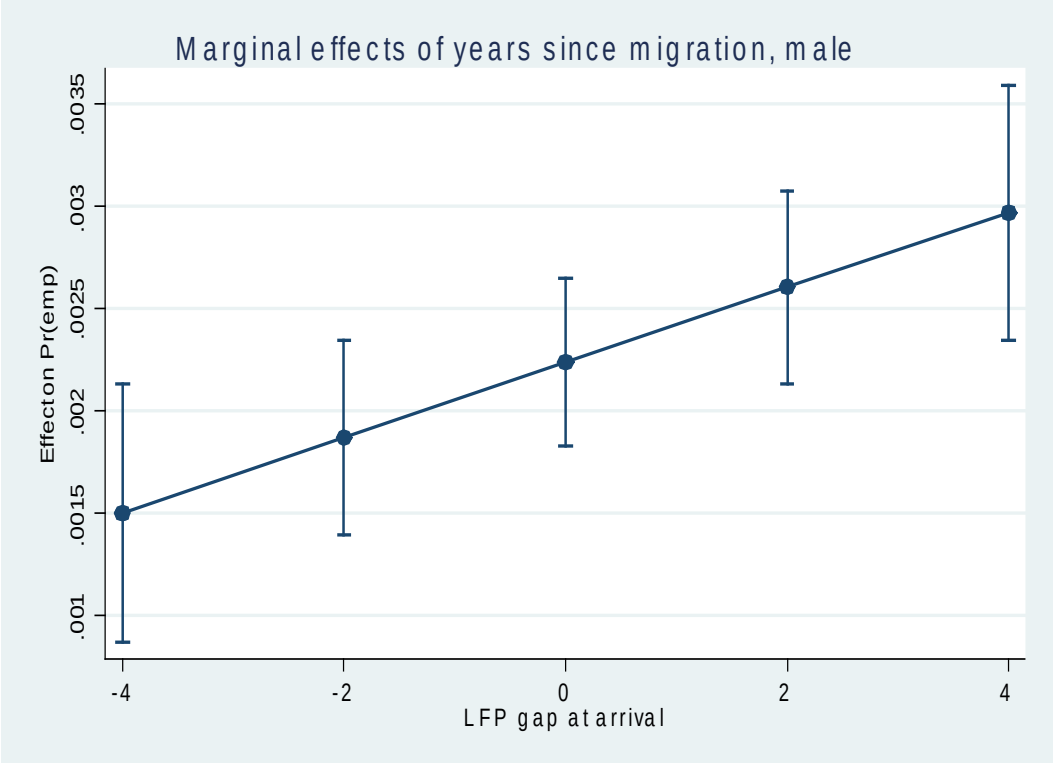
Panel A: OECD unemployment gap





Panel B: OECD output gap





Panel C: OECD labor force participation gap