REGION
The Journal of ERSA
Powered by WU

Volume 13, Number 1, 2026, 115–152
DOI: 10.18335/region.v13i1.603

journal homepage: region.ersa.org
ISSN: 2409-5370

Integration, ethnic concentration and migrant self-employment in EU countries

Carla Massidda[1], Romano Piras[1], Silvio Tunis[1]

[1] University of Cagliari, Cagliari, Italy

Received: 15 May 2025/Accepted: 15 April 2026

Abstract. This study contributes to a deeper understanding of the complex relationship between migration, integration, and self-employment across European Union countries. Migration presents multifaceted challenges for host societies, particularly in terms of social cohesion and inclusive development. The Action Plan on Integration and Inclusion (2021-2027) emphasises the importance of migrant entrepreneurship in enhancing livelihoods and promoting sustained economic growth. However, empirical evidence on how integration shapes migrant entrepreneurship remains scarce, especially concerning the role of ethnic diversity. This research aims to fill this gap by examining the link between self-employment, integration, and ethnic concentration, distinguishing between migrants originating from European Union and non-European Union countries and further disaggregating the analysis by gender. It also investigates whether ethnic concentration mediates the effects of integration on migrant self-employment. Findings suggest that the relationship between integration and self-employment is multifaceted, with ethnic concentration having a significant influence and sometimes reversing this correlation.

Key words: ethnic concentration, migrant integration, migrant self-employment, Zaragoza indicators

1 Introduction

Migration has become a significant and complex phenomenon in European societies, presenting substantial challenges for policymakers tasked with fostering social cohesion and building inclusive communities. As widely acknowledged in the literature, this complexity encompasses multiple interrelated dimensions. These include cultural norms, social networks, and language proficiency (Wang et al. 2018), all of which interact with the characteristics of the local context (Biagi et al. 2025). Such multidimensional barriers can significantly influence the extent and quality of migrants' integration into host societies. The European Union's Action Plan on Integration and Inclusion for 2021-2027, as part of the broader New Pact on Migration and Asylum, directly addresses these challenges and outlines the necessary steps for integrating migrants into host societies (European Commission 2020). A notable focus within this plan is the promotion of migrant entrepreneurship through targeted policies and programs (European Commission 2020, p. 12). The rationale behind this approach is that fostering migrant entrepreneurship via dedicated integration strategies can yield mutual benefits, enhancing migrants' quality of life while simultaneously driving economic growth in host countries. This initiative

aligns with Europe's broader effort to establish a common set of integration indicators, known as the Zaragoza indicators, to facilitate international comparisons in the field of migrant integration.

However, a comprehensive understanding of how integration affects migrant entrepreneurship in Europe is far from being achieved due to the confluence of multiple factors and the scarcity of empirical studies that help distinguish among them. One of these factors concerns the ethnic diversity resulting from prolonged and heterogeneous immigration flows. As documented in the literature, the degree of ethnic diversity significantly affects migrants' decisions to turn to entrepreneurship (Awaworyi Churchill 2019) and, at the same time, influences their integration process into host societies. However, the interplay between integration and ethnic diversity in (dis)encouraging self-employment has not received considerable attention until now. To the best of our knowledge, while there is extensive literature on the relationship between ethnic diversity and entrepreneurship, empirical investigations on the relationship between integration and self-employment are scarce. Moreover, none of the existing works analyses the interplay between the integration process and ethnic diversity in pushing migrant entrepreneurship.

The present paper aims to contribute to the literature by focusing on migrant self-employment in European Union (EU) countries. Specifically, this study examines whether migrant integration and ethnic concentration influence migrant self-employment, and whether ethnic concentration acts as a mediator of the impact of integration. In addition, the analysis is conducted separately for migrants originating from other EU countries and migrants from countries outside the Union (NEU) and is further disaggregated by gender. This differentiation allows us to capture important sources of heterogeneity, as both country of origin and gender may shape access to resources, exposure to structural constraints, and the mechanisms through which integration and ethnic concentration affect self-employment outcomes.

To the best of our knowledge, we are the first to conduct this type of investigation from a macroeconomic perspective and to adopt the Zaragoza integration indicators for empirical analysis on this topic. Worth noting is that although our empirical analysis is conducted at the national level, the mechanisms we study (social and occupational integration, ethnic concentration, and sectoral specialisation) mirror regional and local dynamics. As widely acknowledged in the literature, national patterns are the aggregate outcome of processes that originate and evolve at subnational scales. Understanding these country-level relationships, therefore, helps to illuminate how regional disparities emerge and how territorial opportunity structures shape immigrant entrepreneurship across space. By framing our findings through this multiscalar lens, the paper connects directly with current regional development challenges.

The overall results confirm that the relationship between integration and entrepreneurship is highly complex, varying across different dimensions of integration. Furthermore, they reveal that ethnic concentration plays a significant role in shaping this relationship, potentially reversing the direction of the direct correlations.

The remainder of the paper is structured as follows. Section 2 reviews the relevant literature, first outlining the theoretical foundations and then summarising the main empirical evidence on migrant integration and the role of ethnic concentration in new business creation. Section 3 presents the methodological framework, describes the data and variables employed, and details the empirical strategy guiding the analysis. Section 4 discusses the results, distinguishing between migrants from EU and NEU countries, and includes a set of robustness checks. Section 5 offers a discussion of the key findings and their policy implications. Section 6 concludes the paper.

2 Literature review

2.1 Theoretical foundations of the relationship between migrant entrepreneurship, integration, and ethnic diversity

The relationship between integration and migrant entrepreneurship has been examined through different theoretical lenses. The Mixed Embeddedness Theory (Kloosterman

et al. 1999) is often adopted as an overarching framework because it explicitly combines individual resources, institutional contexts, and market opportunity structures. In this perspective, other theories typically cited in the literature, such as Human Capital Theory (Becker 1962, Schultz 1961), Blocked Mobility Theory (Kim et al. 1989), and (Segmented) Assimilation (Gordon 1964), should not be seen as competing or independent frameworks. Rather, they correspond to the micro- and meso-level mechanisms that are embedded within Mixed Embeddedness. Human Capital Theory captures the role of individual endowments; Blocked Mobility accounts for structural constraints and labour-market segmentation; and (Segmented) Assimilation Theory introduces the dynamic evolution of social integration, institutional access, and opportunity over time. By situating these mechanisms within Mixed Embeddedness, existing studies identify two opposing dynamics linking integration and migrant entrepreneurship.

On one hand, migrants may be compelled to pursue entrepreneurship due to adverse conditions in host countries, such as high unemployment, low wages, political instability, corruption, and discrimination, factors often associated with inadequate integration. This pattern was particularly prevalent in the early 20th century when immigrant entrepreneurship largely consisted of necessity entrepreneurs who established small businesses to meet their financial needs (Borjas 1986). In contrast, integration into host countries may empower migrants to pursue entrepreneurship to capitalise on enhanced opportunities, such as higher incomes and improved living standards. In recent decades, some studies have contended that immigrant entrepreneurship is predominantly characterised by opportunity entrepreneurs who, due to their high skill levels, are adept at identifying and seizing business opportunities that native-born individuals may overlook (Dheer 2018).

Within this complex framework, another important factor often discussed in the literature is the role of ethnic-cultural diversity resulting from sustained and heterogeneous immigration flows. Ethnic-cultural diversity can foster entrepreneurship by blending diverse ideas, creativity, and innovation (Awaworyi Churchill 2019), while enclave living can create economic constraints, isolating immigrants and limiting access to external opportunities (Borjas 2000). From a different perspective, however, ethnic diversity can represent a threat, especially in developing countries, where homogeneous ethnic groups might compensate for a lack of social and physical capital and new innovative ideas (Appau et al. 2019). The central concept deriving from the Ethnic Enclave Theory (Portes, Jensen 1987) posits that residing and operating within homogeneous ethnic groups or enclaves can offer valuable resources via social networks and enhanced information on job prospects.

In relation to ethnic diversity, an additional dimension merits consideration. Ethnic diversity may indirectly affect migrant entrepreneurship by shaping migrants' integration and social cohesion within host societies (Putnam 2007). In social sciences, two contrasting theoretical views emerge regarding the impact of diversity on social cohesion (Putnam 2007). While the Contact Theory views diversity as a source of social cohesion, the Conflict Theory argues that it can foster distrust and in-group loyalty. Consequently, the link between integration and entrepreneurship may vary with levels of ethnic diversity, a relationship that remains insufficiently explored despite growing research on diversity and entrepreneurship (Yavuz, Bahadir 2022).

In summary, the theoretical framework addressing the relationship between integration and entrepreneurship, through the lens of ethnic diversity, remains complex and fragmented with no definitive consensus on whether and to what extent integration facilitates business creation (Brzozowski 2019, Massidda et al. 2024).

2.2 Empirical literature on the relationship between migrant entrepreneurship, integration, and ethnic diversity

When theoretical frameworks fail to provide a unified interpretation, empirical evidence typically helps to discriminate among competing explanations. However, in the context of the present study, empirical evidence offers limited guidance, as existing research on the topic remains scarce. To the best of our knowledge, only a few studies have jointly examined integration and ethnic diversity as independent determinants of migrant en-

trepreneurship. A recent systematic review by Massidda et al. (2024) analysed 1,922 articles published between 2002 and 2023. The identification phase began with a search in the WoS and Scopus databases using keywords related to migration (e.g., migrant, diaspora, ethnic), integration (e.g., integration, inclusion, assimilation), and entrepreneurial activity (e.g., firm, business, entrepreneurship, self-employment). Then, under the PRISMA protocol, the study isolates 33 contributions that adopted a quantitative approach. Of these, only 15 empirically investigated the effects of integration processes on migrant entrepreneurship in host countries, and 10 focused specifically on the role of ethnicity in immigrants' business formation decisions. A common feature among these contributions is their reliance on microdata. At the macro level, however, empirical research has been significantly constrained by the lack of consistent and longitudinal indicators of migrant integration, thereby limiting the scope for large-scale comparative analyses. The subsequent subsections examine the main findings of this pertinent literature. Table A.1 in Appendix A provides a concise overview of the studies considered.

2.2.1 Migrant integration and new business creations

In empirical research, direct measurements of migrants' integration in the destination country are not always available. Consequently, researchers often rely on indirect indicators to capture this complex phenomenon.

One common indirect measure of integration is the length of stay (Lofstrom 2002, Constant, Shachmurove 2006, Wang, Li 2007, Abada et al. 2014, Matricano, Sorrentino 2014, Andersson, Hammarstedt 2015, Bashko 2022, Sun, Fong 2022, Zhang et al. 2024). According to Mixed Embeddedness Theory (Kloosterman et al. 1999), longer residence helps migrants acquire the social norms and legal knowledge necessary for entrepreneurship. Sun, Fong (2022), Wang, Li (2007), Bashko (2022), and Zhang et al. (2024) confirm that extended stays increase the likelihood of entrepreneurship. However, other scholars identify non-linear patterns: Andersson, Hammarstedt (2015) and Lofstrom (2002) report an inverted U-shape, Constant, Shachmurove (2006) a U-shape, while Matricano, Sorrentino (2014) find no significant effect.

Language proficiency and, more generally, education serve as alternative measures of integration. Authors recall arguments, in particular, from Human Capital Theory to support the view that linguistic ability and educational skills are essential for immigrants' economic assimilation, fostering connections across ethnic groups, facilitating resource sharing, and augmenting their self-employment capacity. For instance, Zhang et al. (2024) and Abada et al. (2014) show that a lack of proficiency in one of Canada's official languages reduces self-employment rates. Similarly, Sun, Fong (2022) argue that language skills facilitate adaptation and access to business opportunities, a view supported by Bashko (2022) and Wang, Li (2007). Regarding education, Sun, Fong (2022) find that higher education increases both entrepreneurial success and self-employment, a result confirmed by Lofstrom (2002), Bashko (2022), Zhang et al. (2024), and Constant, Shachmurove (2006). Furthermore, Andersson, Hammarstedt (2015) find non-linear effects (secondary education positive, university negative), Abada et al. (2014) highlight intergenerational differences, Wang, Li (2007) show low-educated migrants enter self-employment out of necessity, and Matricano, Sorrentino (2014) detect no significant relationship.

Other indirect integration measures include unemployment, wages, and earnings differentials. Assimilation Theory and the Blocked Mobility Theory offer contrasting perspectives: labour market Assimilation Theory suggests barriers discourage self-employment, whereas Blocked Mobility Theory argues they may push individuals toward it. Abada et al. (2014) find group-specific unemployment positively affects fathers' self-employment, is insignificant for second-generation males, and negative for third-generation males, supporting Blocked Mobility mainly for fathers. Conversely, Andersson, Hammarstedt (2015) and Andersson (2021) report no significant effects. Regarding earnings differentials, Abada et al. (2014) find a stronger positive impact for sons than fathers, while Lofstrom (2002) finds no significant relationship.

Distinct from the other studies listed in Table A.1, Zhang et al. (2024) are the only authors to propose variables for directly measuring integration, including social interac-

tion, social exclusion, and social identification, based on responses from the 2017 China Migrant Dynamic Survey. The authors contend that integration enhances networking and fosters a sense of identity, facilitating business operations within host societies.

2.2.2 Ethnic concentration and new business creation

Empirical research on ethnic concentration and entrepreneurship is largely grounded in ethnic enclave theory, which allows for both opportunity-enhancing and constraining mechanisms.

Most studies report a positive association. Lofstrom (2002), using U.S. data (1980–1990), finds that a higher share of co-nationals in metropolitan areas increases self-employment. Andersson, Hammarstedt (2015) show that ethnic enclaves in Sweden raise self-employment among Middle Eastern immigrants, although their ethnic network index-based on concentration weighted by average self-employment—has a negative effect. Andersson (2021) finds that co-ethnic self-employment and education increase refugees' probability of entering self-employment within five years, while co-ethnic unemployment is insignificant. Bashko (2022) reports that larger co-ethnic networks—measured by the number of co-ethnic contacts—enhance entrepreneurial opportunities among Chinese and Vietnamese immigrants in Warsaw. Zhang et al. (2024) show that migrant diversity promotes entrepreneurship in China, whereas ethnic diversity reduces it, highlighting the mediating role of social integration.

Other contributions find no significant effects. Abada et al. (2014) report that ethnic group population share does not affect immigrants' self-employment in Canada. Matricano, Sorrentino (2014) find ethnic economy variables insignificant for Ukrainian entrepreneurs in Italy, although living outside the enclave and being under 40 increase the likelihood of founding firms within it. Sun, Fong (2022) also detect no effect of co-ethnic population size in Hong Kong, stressing differences across ethnic groups, cohorts, and genders. Constant, Shachmurove (2006) and Wang, Li (2007), while not directly modelling ethnic concentration, highlight the role of demographic and local contextual factors in shaping immigrant self-employment.

2.3 Summary of the theoretical and empirical evidence

Overall, theoretical contributions do not exclude the possibility that both integration and ethnic diversity may exert either positive or negative effects on migrant entrepreneurship, depending on contextual factors. Moreover, the literature offers limited insights into the potential interaction between these two phenomena. From an empirical perspective, the evidence largely confirms this theoretical ambiguity. Based largely on microdata, studies examining the direct effects of integration and ethnic diversity on migrant entrepreneurship report mixed or inconsistent results. To date, no research has systematically investigated their interaction effects. Moreover, the lack of specific and comparable indicators of migrant integration across contexts limits the robustness and comparability of findings.

3 Methodology

3.1 Aims and research hypothesis

This study seeks to advance the literature on the relationship between migrant self-employment and integration by focusing on the context of EU countries. These countries provide a compelling scenario for investigation due to their increasing migratory flows, high rates of migrant entrepreneurship (Chodavadia et al. 2025), and the integration challenges that have attracted growing institutional attention. Worldwide, the latest available estimates report that in 2024, more than 304 million people lived in a country other than their country of birth. In Europe, the number of migrants is about 94 million. The corresponding figures in 1990 were 153 million and 50 million (McAuliffe, Oucho 2024). Another reason that makes the EU an interesting case study is the development of a harmonised set of country-level indicators measuring migrant integration. After the

Zaragoza Declaration (European Ministerial Conference 2010), the EU regularly monitors four distinct dimensions of the integration process: Education, Employment, Social Inclusion, and Active Citizenship (Eurostat 2020). Each dimension is operationalised through a set of multiple variables collected across different time spans, allowing for a dynamic assessment of migrant integration.

In more detail, this study aims to investigate three main research hypotheses. The first posits that migrant integration has a significant influence on migrant self-employment (H1). To investigate this hypothesis, we operationalise three of the four Zaragoza indicators, namely Education, Employment, and Social Inclusion (the fourth dimension, Active Citizenship, is excluded from our analysis due to data scarcity). With respect to Education, drawing on Human Capital Theory and the prevailing empirical evidence discussed above (see inter alia Sun, Fong 2022), we hypothesise that higher education integration increases the likelihood that migrants engage in self-employment (H1a).[1] In relation to Employment, building on Blocked Mobility Theory and prevailing empirical evidence (see inter alia Abada et al. 2014), we propose an inverse mechanism whereby greater integration into the labour market may lead to a decrease in migrant self-employment (H1b). Finally, regarding Social Inclusion, building on (Segmented) Assimilation Theory and previous empirical findings (Zhang et al. 2024), we assert a positive relationship between social inclusion and self-employment (H1c).

The second hypothesis (H2) posits that ethnic concentration influences migrant self-employment in a manner contingent upon the dominance of two opposing mechanisms. Drawing on Ethnic Enclave Theory and the prevailing empirical evidence, ethnic concentration can raise the likelihood of being self-employed (H2a). Conversely, concentration can discourage migrant entrepreneurship (H2b). Finally, the third hypothesis (H3) examines the potential moderating role of ethnic concentration in the relationship between integration and self-employment. As previously discussed, the relative strength of the Contact Theory versus the conflict hypothesis may shape how integration interacts with ethnic concentration. Given the lack of empirical evidence on this issue, we allow for both possibilities: a positive interaction (H3a) and its alternative (H3b).

Figure 1 summarises the hypotheses that we will empirically test, along with the theoretical frameworks underpinning these hypotheses. The thick solid lines illustrate the direct relationships between integration and ethnic diversity (H1 and H2) with self-employment, while the dashed line denotes the mediating role of ethnic diversity (H3).

In line with the conceptual framework presented in Figure 1, our research hypotheses are tested separately for migrants settled in EU countries and originating from other EU Member States, and those originating from NEU countries and settled in an EU country. The separate investigation of EU and NEU migrants appears especially promising in light of the marked structural differences between these two sub-samples. In this regard, it is crucial to note that NEU migrants are likely to be more diverse in background than EU migrants. In addition, migrants holding EU citizenship possess a set of legal entitlements and institutional protections that differ significantly from those granted to NEU migrants. These disparities encompass areas such as freedom of movement, access to the labour market, and eligibility for social services, all of which substantially shape their experiences within host societies. Consequently, such structural differences may contribute to, and indeed help elucidate, the divergent integration trajectories that we aim to analyse in this study.

For both EU and NEU sub-samples, we examine gender-specific patterns. A gender perspective deepens the analysis, as gender interacts with migration status to shape employment access, entrepreneurial opportunities, and social integration, enabling a more nuanced understanding of heterogeneous economic outcomes. Most migration studies overlook this dimension, implicitly treating migrants as homogeneous. Yet gender-disaggregated analysis is more appropriate. The common assumption that women migrate primarily as accompanying spouses is challenged by recent evidence showing diverse motivations and distinct integration trajectories (Yilmaz, Solano 2024).

[1] This hypothesis is further supported by empirical evidence on non-migrants (Van Der Sluis et al. 2008).

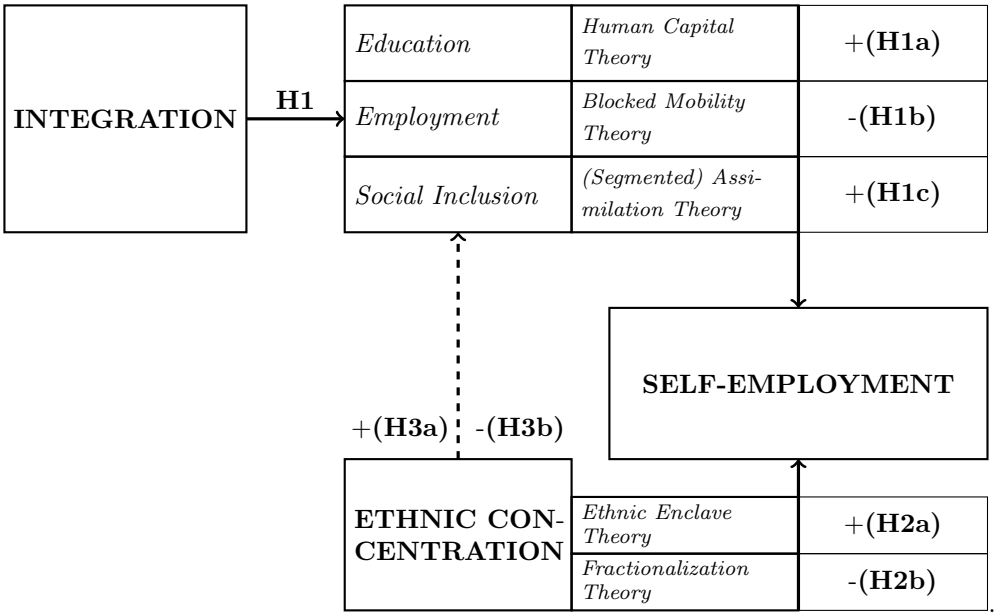


Figure 1: Conceptual framework

3.2 Variables description

3.2.1 Data and descriptive statistics

The primary data source for this study is Eurostat.[2] In the dedicated section on migrant integration, Eurostat reports the country/region of birth and, for each Member State, distinguishes between migrants coming from another EU country (excluding the reporting country) and migrants coming from a NEU country. Unfortunately, data availability is not fully homogeneous across country–year-gender observations. In some countries, data is entirely missing; in others, it is reported only for the total migrant population (aggregating male and female migrants), while disaggregated figures are available only for specific gender–origin combinations. To maximise country coverage and preserve the cross-sectional variation inherent in the dataset, we retain all countries for which relevant information is available for the specific sub-sample under consideration. Each specification is therefore estimated on the maximum set of country–year observations available for the corresponding origin–gender sub-sample. The use of unbalanced country–year panels driven by sub-sample-specific data availability is a common feature of macro-level analyses based on harmonised international databases, where coverage reflects reporting constraints rather than selective sample construction.

As a consequence, the time period and the list of countries included vary depending on the estimated model. The longest period spans from 2002 to 2021; the shortest, from 2010 to 2021. The number of countries ranges from 12 to 19. This lack of data stems from several factors, including the fact that 13 new Member States from Central and Eastern Europe joined the Union between 2004 and 2013[3], increasing the likelihood of missing observations in earlier years. Notice that the difference in country coverage consistently runs in one direction: the NEU sub-sample includes a few more countries than the corresponding EU sub-sample.

Table A.3 in the Appendix provides the descriptive statistics for the two sub-samples of self-employed immigrants in the EU, differentiating between individuals from other EU countries and those from outside the EU, with a further breakdown by gender for both female and male migrants. For each variable, descriptive statistics are computed based on the available data range. In both the EU and NEU samples, males exhibit a higher average percentage of self-employment compared to females. Furthermore, the

[2]See Table A.2 in the Appendix for details on variable definitions and sources.

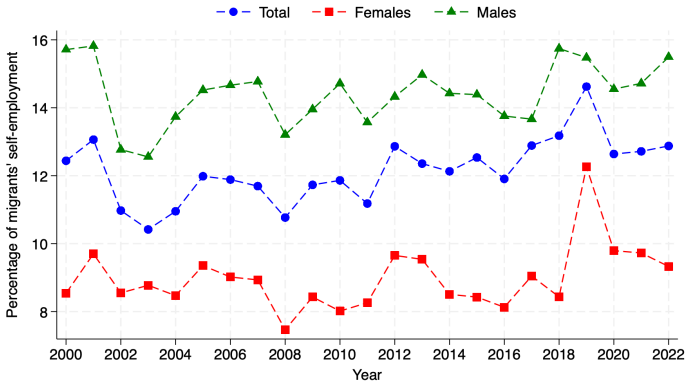
[3]In 2004, Cyprus, Estonia, Latvia, Lithuania, Malta, Poland, the Czech Republic, Slovakia, Slovenia and Hungary joined the EU, followed by Bulgaria and Romania in 2007 and by Croatia in 2013.

disparities between males and females are also evident in the key integration indicators associated with the primary independent variables. Overall, Table A.3 demonstrates a wide range of minimum and maximum values, indicating significant heterogeneity among countries.

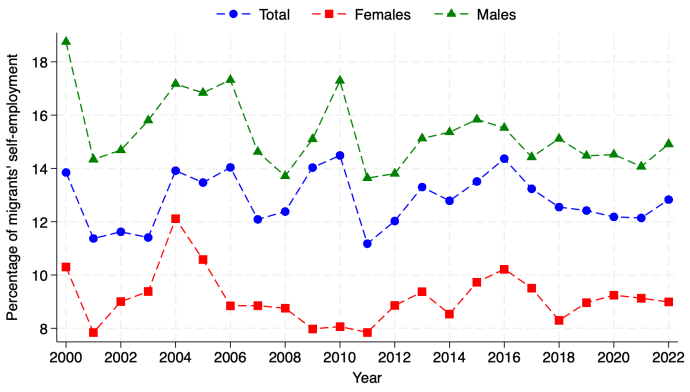
3.2.2 Dependent variable

Our dependent variable is the percentage of migrants self-employed over total employment (SE) in the age class 15-64. Figure 2 reports the percentage of migrants' self-employment as the average of migrants who are settled within an EU country. The top panel of the figure refers to migrants coming from an EU country, while the bottom panel refers to migrants coming from a NEU country.[4]

Within the EU migrants sub-sample, on average, the percentage of self-employed follows a fluctuating yet mildly increasing trend, with males consistently displaying higher rates than females. In the case of NEU migrants, the pattern of self-employment is confirmed: male migrants systematically exhibit a higher self-employment percentage than their female counterparts.



(a) EU migrants



(b) NEU migrants

Figure 2: Percentage of migrants' self-employment

3.2.3 Integration indicators

As previously anticipated, this analysis considers three out of the four dimensions of the Zaragoza indicators, namely Education, Employment, and Social Inclusion, which

[4]In Appendix A, Figure A.1 presents six informative maps showing the percentage of self-employed migrants (our dependent variable) across EU countries, differentiated by origin (EU and NEU) and gender. These maps correspond to the countries included in 2021 for which data were available.

are operationalised through multiple variables. We selected one representative variable for each dimension based on the longest time-span availability: for Education, we consider the intermediate level of education attainment (EDUCATION_{it}) corresponding to ISCED levels 3 and 4, upper secondary and post-secondary non-tertiary education; for Employment, we consider the unemployment rate (UNRATE_{it}); for Social Inclusion we consider the mean equivalised net family income expressed in purchasing power standard (INCOME_{it}). Then, to convert these variables into proper integration indicators, we calculate the difference in the outcome of the target group (migrants from EU and NEU countries) against that of the reporting country (REP). The educational gap, $\text{EDU\_GAP2}_{it}^{(\text{N})\text{EU}}$, is computed as the percentage-point difference between the percentage of migrants and the percentage of natives holding at least an upper-secondary degree in each country–year for the population aged 15–64 years. Since both variables are proportions bounded between 0 and 100, this yields a standardised and directly comparable measure of educational disparities across countries and over time. Analogously, the unemployment rate gap, $\text{UNR\_GAP}_{it}^{(\text{N})\text{EU}}$, is computed as the percentage-point difference between the unemployment rate of migrants and the unemployment rate of natives for the population aged 15–64 years. Therefore, for both education and unemployment, we are using gaps in percentage-point terms, which is the convention adopted by the OECD and Eurostat in labour market monitoring. Regarding the income gap, $\text{INC\_GAP}_{it}^{(\text{N})\text{EU}}$, we consider the mean equivalised net family income expressed in purchasing power standard. This is computed by Eurostat as the household's net disposable income, adjusted for household size using the modified OECD equivalence scale, and converted into purchasing power standards to ensure cross-country comparability of living standards. Given this definition, the absolute difference provides a transparent and policy-relevant measure of the magnitude of the economic disadvantage, commonly used in international monitoring (e.g. OECD, Eurostat).

Specifically, the three indicators are calculated as follows:

$$\text{EDU\_GAP2}_{it}^{(\text{N})\text{EU}} = \text{EDUCATION}_{it}^{(\text{N})\text{EU}} - \text{EDUCATION}_{it}^{\text{REP}} \quad (1)$$

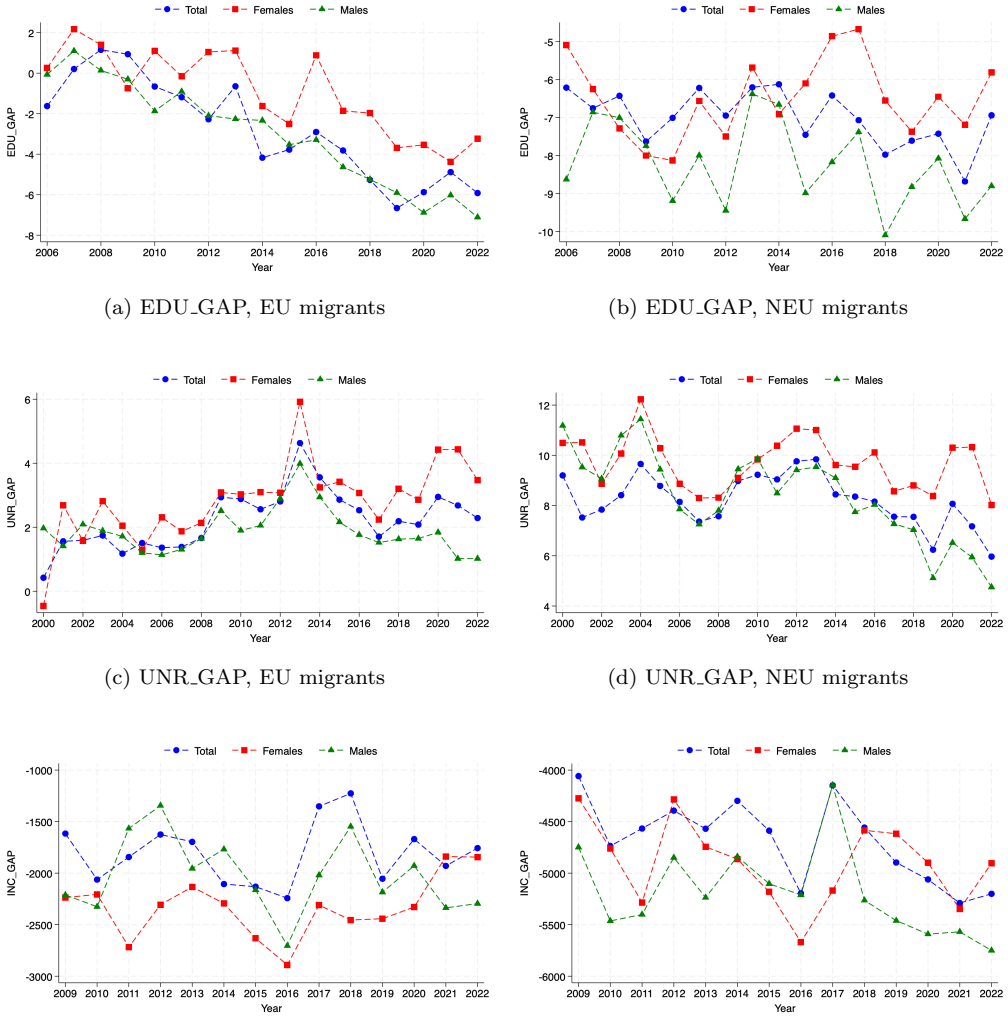
$$\text{UNR\_GAP}_{it}^{(\text{N})\text{EU}} = \text{UNRATE}_{it}^{(\text{N})\text{EU}} - \text{UNRATE}_{it}^{\text{REP}} \quad (2)$$

$$\text{INC\_GAP}_{it}^{(\text{N})\text{EU}} = \text{INCOME}_{it}^{(\text{N})\text{EU}} - \text{INCOME}_{it}^{\text{REP}} \quad (3)$$

Given this definition, a *negative* gap for $\text{EDU\_GAP2}_{it}^{(\text{N})\text{EU}}$ and $\text{INC\_GAP}_{it}^{(\text{N})\text{EU}}$ and a *positive* gap for $\text{UNR\_GAP}_{it}^{(\text{N})\text{EU}}$ indicate that EU and NEU migrants perform worse than natives. Figure 3 illustrates these gaps for EU and NEU migrants, as well as for total, female, and male migrants separately. Notice that since the data set is unbalanced, yearly information by country and gender is not fully covered. For some years and in different countries, only data for the total migrants are available (i.e., gendered data is not provided); in other circumstances, Eurostat provides data only for males or females. These are the reasons why the trendline for the total migrants does not always fall between the trendlines for females and males.

For $\text{EDU\_GAP2}_{it}^{(\text{N})\text{EU}}$, panel (a) shows a general declining trend for EU migrants, which implies increasing educational gaps (i.e. lower integration), more pronounced for males. Panel (b) shows a less pronounced declining trend for NEU migrants. Recalling that citizens of the new Member Countries gained access to the EU labour market after a certain period, the decline in $\text{EDU\_GAP2}_{it}^{(\text{N})\text{EU}}$ for EU migrants might be partially explained by less skilled workers coming from these new Member States.

Considering $\text{UNR\_GAP}_{it}^{(\text{N})\text{EU}}$, panel (c) shows relatively stable levels for EU migrants except for a peak in 2014 for females. Such a pattern does not occur for NEU migrants, as shown in panel (d), where the gaps slightly decrease for all sub-samples while remaining significantly higher than those of EU migrants. Finally, regarding $\text{INC\_GAP}_{it}^{(\text{N})\text{EU}}$, the gap is substantially wider for NEU migrants, approximately 50%, than for their EU counterparts, but no clear trend emerges for the two sub-samples (panels (e) and (f), respectively).



(a) EDU_GAP, EU migrants

(b) EDU_GAP, NEU migrants

(c) UNR_GAP, EU migrants

(d) UNR_GAP, NEU migrants

(e) INC_GAP, EU migrants

(f) INC_GAP, NEU migrants

Figure 3: Integration indicators

Crucially, no comparable studies investigate the effects of these gaps on self-employment. However, the conceptual framework presented in Figure 1 and the empirical evidence summarised in Table A.1 provide some important suggestions on expected signs.

As reported in Figure 1, regarding $\text{EDU\_GAP2}_{it}^{(\text{N})\text{EU}}$, we expect a positive relationship between higher integration and self-employment (H1a). Being this gap negative (see Figure 3, panels 3a, 3b), its increase means that *algebraically*, it becomes higher going from, say, -5 to -4. However, in *absolute terms*, such a variation means a reduction of the gap, which implies higher integration among migrants. Therefore, to confirm H1a, we expect a positive estimated sign, indicating that migrants whose educational attainments are closer to those of their native peers are more likely to pursue self-employment. Concerning the role of education, we recognise that focusing exclusively on a single educational level entails a significant loss of information. Migrants' educational attainments are highly heterogeneous (see Table A.3 in the Appendix), and their motivations for pursuing self-employment may vary substantially depending on whether they are more or less skilled than natives. We will conduct additional analyses across different educational levels to address this limitation and present these additional results in Appendix D.

Regarding the unemployment gap, $\text{UNR\_GAP}_{it}^{(\text{N})\text{EU}}$, we expect an inverse relationship between integration and self-employment, which corresponds to H1b in Figure 1. Being this gap positive (see Figure 3, panels 3c, 3d), its increase, both *algebraically* and in

absolute terms, implies lower migrants' integration. Therefore, to confirm an inverse relationship between labour market integration and self-employment (H1b), we expect a positive estimated coefficient.

Finally, about the income gap ($\text{INC\_GAP}_{it}^{(\text{N})\text{EU}}$), we expect a positive relationship between higher integration and self-employment (H1c). Similarly to $\text{EDU\_GAP2}_{it}^{(\text{N})\text{EU}}$, being this gap negative (see Figure 3, panels 3e, 3f), we expect a positive estimated sign to confirm H1c, which suggests that as the income gap increases (in absolute terms, indicates greater integration), migrants are more likely to engage in self-employment within the labour market.

3.2.4 The Ethnic Concentration Index

The fourth main explanatory variable is the Ethnic Concentration Index, measured by a Herfindahl–Hirschman-type index:

$$\text{ECI}_{it} = \sum_{j=1}^{N_j} \left(\frac{\text{mig}_{jit}}{\sum_{j=1}^{N_j} \text{mig}_{jit}} * 100 \right)^2 \tag{4}$$

where mig_{jit} is the number of migrants from country j residing in an EU country i at time t, $\sum_{j=1}^{N_j} \text{mig}_{jit}$ is the total number of migrants from N_j different nationalities residing in an EU country i at time t.[5] Hence, $\frac{\text{mig}_{jit}}{\sum_{j=1}^{N_j} \text{mig}_{jit}}$ is the share of migrants from country j in the overall migrant population of EU host country i in year t. It is important to note that ECI_{it} is always positive and varies between 0 and 10000; 0 being the minimum level of ethnic concentration (i.e. the maximum level of ethnic diversity), while 10000 represents the limit case of full concentration: a single foreign nationality j residing in the host country i. As previously discussed, the expected sign of ECI_{it} in relation to the percentage of self-employment among migrants remains ambiguous at a theoretical level. A positive coefficient would suggest that countries with a high concentration of ethnic groups provide greater motivation and a more conducive environment for migrant self-employment (H2a). This positive effect is plausible if homogeneous ethnic groups facilitate self-employment by compensating for deficiencies in capital and innovative ideas (Appau et al. 2019). Conversely, a negative coefficient would imply that ethnic concentration may impede the generation of new ideas (Awaworyi Churchill 2019), whereas ethnic diversity may enhance migrants' self-employment by fostering creativity and innovation (H2b). Consequently, the influence of ECI_{it} on entrepreneurship is contingent upon the prevailing mechanisms in host countries.

To validate the robustness of our findings, we construct two alternative measures of the Ethnic Concentration Index: one (ECI1) based on Eurostat migration stocks, and the other (ECI2) based on the bilateral series estimated by Standaert, Rayp (2022). While the two sources differ in data construction, they ultimately measure the same underlying phenomenon. Eurostat draws on official administrative records, whereas Standaert and Rayp fill data gaps by reconstructing missing observations using a state-space model. Despite methodological differences, both datasets capture the same latent construct.

Figure 4 illustrates both indices. With respect to ECI1, the index exhibits significant fluctuations, characterised by a notable increase in 2004 and the lowest values recorded between 2008 and 2011. The overall trend suggests periods of heightened ethnic concentration accompanied by reduced diversity, followed by intervals of markedly low ethnic concentration and increased diversity. It is essential to note, however, that, similar to the integration variables, the Eurostat data used for ECI1 contain missing values for certain years and/or countries, which may compromise its accuracy. In contrast, and given the absence of missing data (by construction), ECI2 appears less volatile, exhibiting a generally slight declining trend.

[5] Notice that the number of different nationalities residing in each host country j varies.

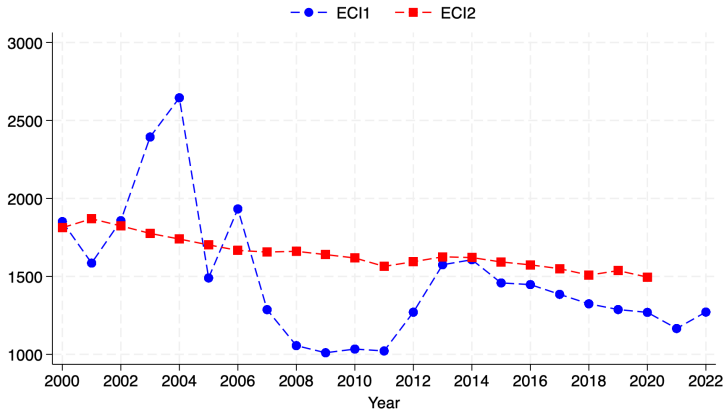


Figure 4: Ethnic Concentration Indexes

3.2.5 Control variables

The control variables incorporated in the analysis include the total native population (POP), real per capita gross domestic product (GDPPC), average full-time adjusted salary per employee (WAGE), domestic credit to the private sector as a percentage of GDP (CREDIT), and a regulatory quality index (RQI). The theoretical underpinnings behind the selection of the control variables are explained as follows. POP is included as an overall measure of the country's size. Intuitively, more populated countries are expected to boost general entrepreneurial activities and self-employment (Boudreaux 2020). Real per capita GDP (GDPPC) is included to account for the country's economic development. The relationship between economic development and self-employment is not established a priori. On the one hand, higher per capita GDP indicates a more developed economy with ample formal employment opportunities, potentially reducing the need for self-employment. On the other hand, it has been claimed (Wennekers et al. 2010) that in more developed economies, the desire for autonomy may render self-employment more appealing than wage employment. The average full-time adjusted salary per employee (WAGE) measures the opportunity cost of being self-employed; therefore, we expect a negative sign. CREDIT accounts for the ability to access financial resources, such as loans and working capital. Hence, we expect a positive sign. However, it is well known (Kariv, Coleman 2015) that migrants face challenges in obtaining creditworthiness from the banking system, and greater credit availability at the macroeconomic level does not necessarily imply that migrants could benefit from it. Lastly, RQI captures perceptions regarding the government's capacity to formulate and implement policies and regulations that facilitate and promote private-sector development (Kaufmann et al. 2010). It is posited that moderate levels of regulatory quality maximise entrepreneurial activity. Conversely, excessive or insufficient regulation can impede entrepreneurial initiatives (Polemis, Stengos 2020). Additionally, considering that well-regulated economies may provide a stable environment for formal employment, potentially reducing reliance on self-employment, we anticipate that RQI may be associated with a lower percentage of self-employment.

3.3 Empirical strategy

As previously anticipated, we estimate separate equations for each integration indicator, distinguishing between EU and NEU migrants. Additionally, separate estimations are performed for the total sample, as well as for female and male migrant sub-samples. In total, nine equations are estimated for each sub-sample of EU and NEU migrants. This methodology allows us to identify potentially varied behaviours that may lead to heterogeneous integration patterns in EU countries, depending on the migrants' country of origin (EU or NEU) and gender (total, females, and males).

To summarise the estimation of 18 models in a parsimonious style, we rely on three equations (one for each integration indicator) and use superscripts and subscripts to distinguish migrant origin (EU vs. NEU) and gender (total, female, male):

$$\begin{aligned} \mathrm{SE}_{i,t}^{g,o} &= \beta_1^{\mathrm{EDU},g,o}\mathrm{ECI}_{i,t} + \beta_2^{\mathrm{EDU},g,o}\mathrm{EDU\_GAP2}_{i,t}^{g,o} + \\ &\quad \beta_3^{\mathrm{EDU},g,o}\left(\mathrm{EDU\_GAP2}_{i,t}^{g,o} * \mathrm{ECI}_{i,t}\right) + \boldsymbol{z}'_{i,t}\boldsymbol{\delta}^{\mathrm{EDU},g,o} + \\ &\quad \mu_i^{\mathrm{EDU},g,o} + \tau_t^{\mathrm{EDU},g,o} + \varepsilon_{i,t}^{\mathrm{EDU},g,o} \qquad (5) \\ \mathrm{SE}_{i,t}^{g,o} &= \beta_1^{\mathrm{UNR},g,o}\mathrm{ECI}_{i,t} + \beta_2^{\mathrm{UNR},g,o}\mathrm{UNR\_GAP}_{i,t}^{g,o} + \\ &\quad \beta_3^{\mathrm{UNR},g,o}\left(\mathrm{UNR\_GAP}_{i,t}^{g,o} * \mathrm{ECI}_{i,t}\right) + \boldsymbol{z}'_{i,t}\boldsymbol{\delta}^{\mathrm{UNR},g,o} + \\ &\quad \mu_i^{\mathrm{UNR},g,o} + \tau_t^{\mathrm{UNR},g,o} + \varepsilon_{i,t}^{\mathrm{UNR},g,o} \qquad (6) \\ \mathrm{SE}_{i,t}^{g,o} &= \beta_1^{\mathrm{INC},g,o}\mathrm{ECI}_{i,t} + \beta_2^{\mathrm{INC},g,o}\mathrm{INC\_GAP}_{i,t}^{g,o} + \\ &\quad \beta_3^{\mathrm{INC},g,o}\left(\mathrm{INC\_GAP}_{i,t}^{g,o} * \mathrm{ECI}_{i,t}\right) + \boldsymbol{z}'_{i,t}\boldsymbol{\delta}^{\mathrm{INC},g,o} + \\ &\quad \mu_i^{\mathrm{INC},g,o} + \tau_t^{\mathrm{INC},g,o} + \varepsilon_{i,t}^{\mathrm{INC},g,o} \qquad (7) \end{aligned}$$

where the dependent variable $\mathrm{SE}_{i,t}^{g,o}$ is the percentage of migrants' self-employed on total migrants' employment of gender g (total, females, males), origin o (EU, NEU) in country i and year t and it is related to the ethnic concentration index (ECI_{it}), the three integration indicators ($\mathrm{EDU\_GAP2}_{i,t}^{g,o}$, $\mathrm{UNR\_GAP}_{i,t}^{g,o}$ and $\mathrm{INC\_GAP}_{i,t}^{g,o}$) and the set of control variables presented above represented by the vector $\mathbf{z'_{it}}$:

$$\mathbf{z}'_{i,t} = (\mathrm{POP}_{it}, \mathrm{GDPPC}_{it}, \mathrm{WAGE}_{it}, \mathrm{CREDIT}_{it}, \mathrm{RQI}_{it})$$

The vectors of parameters to be estimated are the β's and δ's. In addition, observe that both country and time fixed effects (different for gender, origin, and integration indicator) are included in all specifications. These fixed effects control for unobserved country-specific and unobserved year-specific effects. Finally, the ε's represent the residual error terms.

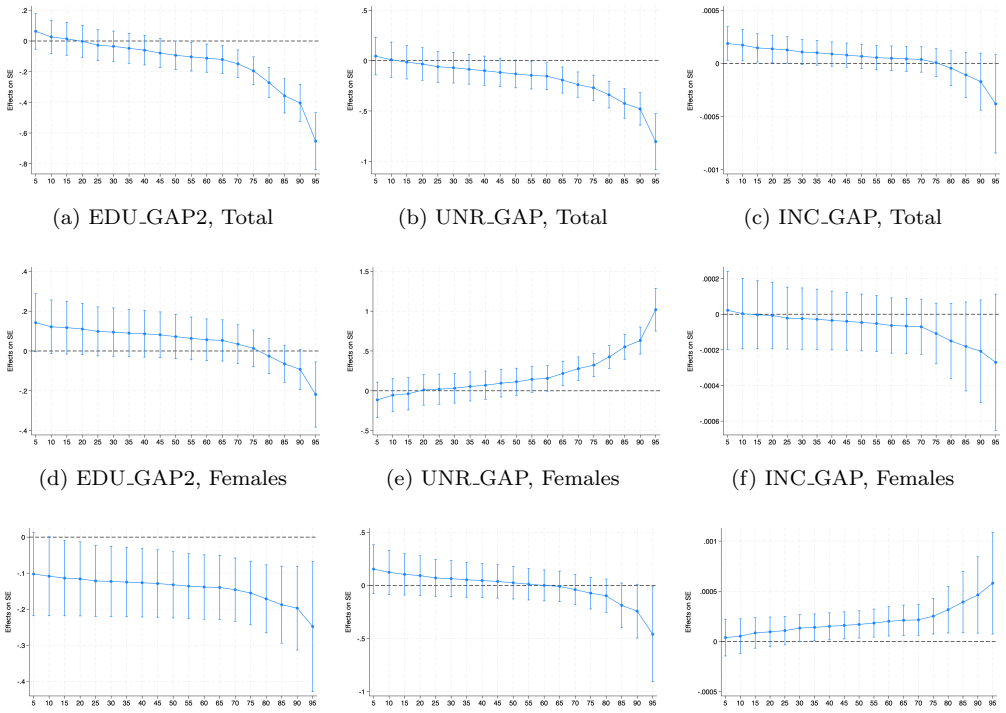
The simplest approach to estimate equation (2) is through ordinary least squares (OLS). However, a preliminary examination of the data revealed the presence of outliers (see Appendix B and Figures B.1 and B.2). To address this issue, various statistical techniques have been developed to mitigate the effects of outliers, employing robust regression estimators that down-weight observations with large residuals. Among the available robust estimators, we utilise iteratively reweighted least squares (IRLS). The IRLS estimator belongs to the class of M estimators and is highly efficient (Huber 1964). It first fits OLS, calculates the Cook's distance,[6] and drops those observations for which the Cook's distance is greater than one. Then, it applies an iterative algorithm that weighs absolute residuals. In doing that, cases with small residuals have weights equal to one; conversely, cases with larger residuals get progressively smaller weights.

4 Results

4.1 Migrants from EU countries

The regression results concerning migrants from EU countries are presented in Table 1. Columns (1) to (3) report estimates for the total number of self-employed migrants, while columns (4) to (6) and (7) to (9) pertain specifically to female and male migrants, respectively. A key finding is that, across all estimates, the primary effect of the Ethnic Concentration Index (ECI1) is negative, with its estimated coefficient consistently demonstrating high statistical significance. This finding aligns with previous literature indicating that foreign entrepreneurship is inhibited by ethnic concentration and, conversely, encouraged by ethnic diversity (Awaworyi Churchill 2019). Such results provide

[6] Cook's distance is the scaled change in fitted values and shows the influence of each observation on the fitted values. Basically, it measures how much the fitted values in the model change if the *i-th* observation is deleted. An observation with a large Cook's distance strongly affects the fitted values.



(a) EDU_GAP2, Total (b) UNR_GAP, Total (c) INC_GAP, Total

(d) EDU_GAP2, Females (e) UNR_GAP, Females (f) INC_GAP, Females

(g) EDU_GAP2, Males (h) UNR_GAP, Males (i) INC_GAP, Males

Figure 5: Marginal effects of integration indicators on the percentage of migrants' self-employment at different centiles of ECI1 (migrants from EU)

robust support for hypothesis H2b, suggesting that in countries characterised by high ethnic concentration, social interactions and economic relationships among different groups are diminished, thereby reducing the potential role of ethnic networking in promoting self-employment. In contrast, the patterns observed in the other covariates present a less uniform scenario across the groups.

Focusing on the total migrant population (columns 1 to 3), we examine the role of integration indicators. The primary results indicate that the direct effects of EDU_GAP2 and INC_GAP are both positive and statistically significant, thereby confirming hypotheses H1a and H1c. Namely, the positive coefficients suggest that an increase in these variables, which, by definition, reflect a reduction in the gaps between migrants and natives, would result in higher levels of self-employment (SE) among migrants. In contrast, the direct effect of UNR_GAP is not statistically significant, providing no support for H1b.

As for the interaction terms between any of these gaps and ECI1, they are consistently negative and statistically significant, indicating that increasing ethnic concentration negatively mediates (moderates) the direct effects of the gaps on self-employment (SE). Therefore, the estimates support hypothesis H3b. The marginal effects analysis provides a clearer picture of these dynamics.

Figure 5 illustrates the marginal effects of the three integration indicators on the self-employment of migrants from the EU across different centiles of the ECI1 distribution. The vertical bars in the figure represent the 90% statistical confidence interval. Panels (a) to (c) pertain to the total migrant population, while panels (d) to (f) focus on female migrants, and panels (g) to (i) concentrate on male migrants.

Panel (a) shows that at low values of ECI1, up to the 45$^{\text{th}}$ centile, the marginal effect of EDU_GAP2 on SE is statistically insignificant; above the 45th centile, it is negative and statistically significant. Given the negative sign of the interaction term, the relationship between EDU_GAP2 and SE decreases as ECI1 increases. Consequently, the negative marginal impact of EDU_GAP2 on SE increases (*in absolute terms*) the higher ECI1 is. For example, at the 75$^{\text{th}}$ centile, the marginal effect is -0.19, while at the 90$^{\text{th}}$ centile it is

Table 1: The effect of ethnic concentration and integration indicators on the percentage of self-employment (migrants from EU)

	Total			Females			Males		
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ECI1	-0.008373***	-0.002438***	-0.002211**	-0.004874***	-0.004667***	-0.002138*	-0.005520***	-0.004119***	-0.001760
	[0.001090]	[0.000399]	[0.000911]	[0.001194]	[0.001224]	[0.001120]	[0.001383]	[0.001189]	[0.001411]
EDU_GAP2	0.198594**			0.212050*			-0.076511		
	[0.090546]			[0.113982]			[0.088817]		
EDU_GAP2*ECI1	-0.000387***			-0.000196**			-0.000078		
	[0.000078]			[0.000084]			[0.000076]		
UNR_GAP		0.185769			-0.343551*			0.260350	
		[0.144379]			[0.175996]			[0.194373]	
UNR_GAP*ECI1		-0.000421***			0.000618***			-0.000327*	
		[0.000116]			[0.000132]			[0.000196]	
INC_GAP			0.000284**			0.000092			-0.000076
			[0.000142]			[0.000192]			[0.000175]
INC_GAP*ECI1			-0.000000*			-0.000000			0.000000
			[0.000000]			[0.000000]			[0.000000]
POP	0.000002***	0.000002***	0.000002***	0.000002***	0.000002***	0.000002***	0.000003***	0.000003***	0.000002***
	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000001]
GDPPC	0.000034	0.000007	0.000116**	-0.000031	-0.000045	0.000066	0.000047	-0.000032	0.000085
	[0.000060]	[0.000056]	[0.000050]	[0.000062]	[0.000068]	[0.000062]	[0.000070]	[0.000066]	[0.000078]
WAGE	-0.000195**	-0.000003	-0.000445***	-0.000068	0.000204*	-0.000222**	-0.000005	-0.000060	-0.000237*
	[0.000086]	[0.000074]	[0.000080]	[0.000100]	[0.000109]	[0.000106]	[0.000113]	[0.000106]	[0.000123]
CREDIT	-0.017892	-0.030929***	-0.005062	-0.037918***	-0.064410***	-0.016390	-0.027058*	-0.041234***	-0.021882
	[0.011180]	[0.009470]	[0.010050]	[0.012245]	[0.012512]	[0.013186]	[0.013836]	[0.011920]	[0.016401]
RQI	-1.999708**	-0.871328	-1.074626*	-0.242811	1.019061	0.132430	-2.126632**	-1.544828	-3.210566***
	[0.812248]	[0.715382]	[0.633099]	[0.874548]	[0.980415]	[0.851091]	[0.987547]	[0.935290]	[0.973259]
Observations	182	200	152	142	161	123	160	174	137
R-squared	0.92	0.83	0.92	0.71	0.71	0.75	0.90	0.89	0.90

Notes: Outlier robust regressions. Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Country and year fixed effects included but not reported. The dependent variable is the percentage of migrants' self-employment on total employment. See the main text for more details.

-0.40. Thus, a one-unit increase in EDU_GAP2 would lower the percentage of migrants who are self-employed by 0.19 at the 75th centile and by 0.40 at the 90th centile.

In summary, although the direct effect of EDU_GAP2 on SE is positive, the total effect becomes negative when accounting for the interaction effect with ECI1. Therefore, we conclude that higher levels of educational integration are associated with lower self-employment among migrants, particularly in countries with greater ethnic concentration. This finding suggests that migrants are more likely to perceive entrepreneurship as a necessity when their educational integration is low.

Panels (b) and (c) of Figure 5 present the marginal effects of UNR_GAP and INC_GAP on self-employment (SE), respectively. Regarding UNR_GAP, the marginal effect is statistically insignificant up to the 50th centile. Beyond this point, it becomes negative and statistically significant, with the negative impact intensifying as ECI1 increases. This finding indicates that in countries characterised by high ethnic concentration, a higher UNR_GAP (reflecting lower integration) is associated with reduced self-employment among migrants. In this context, the decision of migrants to engage in entrepreneurial activities does not appear to stem from necessity but rather from a desire to capitalise on improved labour opportunities. In contrast, the marginal effect of INC_GAP is positive up to the 25th centile and becomes statistically insignificant thereafter. This result suggests that in countries where ethnic concentration is low, specifically in highly fractionalised or ethnically diverse contexts, greater integration (as indicated by an increase in INC_GAP) promotes self-employment among migrants.

For female migrants (Table 1, columns (4) to (6)), the main effect of EDU_GAP2 is positive, confirming hypothesis H1a, whereas the effect of UNR_GAP is negative and therefore does not support hypothesis H1b. Additionally, no direct relationship is observed between INC_GAP and self-employment (SE). The impact of ECI1 is negative, thereby confirming hypothesis H2b. In terms of the interaction terms, a negative coefficient is estimated for EDU_GAP2 (confirming hypothesis H3b) and a positive coefficient for UNR_GAP (confirming hypothesis H3a). No direct effect is identified for INC_GAP or its interaction with ECI1. Given these results, panels (d) and (f) of Figure 5 illustrate that the overall impact of EDU_GAP2 is statistically insignificant across most centiles, with the exception of the highest 95th centile of ECI1. Conversely, panel (e) reveals that, above the 60th centile of ECI1, UNR_GAP exerts a positive, increasing, and statistically significant overall effect on SE. It is noteworthy that this finding contrasts with the results observed for the total migrant population. This discrepancy suggests that in countries with high ethnic concentration, female migrants may be compelled to pursue self-employment due to challenges associated with lower labour market integration, as indicated by higher levels of UNR_GAP. In this context, unlike the total sample, the decision of female migrants to start their own businesses appears to stem from necessity rather than a desire to capitalise on better opportunities.

For male migrants (columns (7) to (9) of Table 1), the Ethnic Concentration Index (ECI1) demonstrates negative and statistically significant coefficients (generally confirming hypothesis H2b). However, none of the main effects of the integration variables are statistically significant, nor are the interaction effects between EDU_GAP2 and INC_GAP with ECI1. The only exception is the interaction between UNR_GAP and ECI1, which is mildly statistically significant and negative, thereby confirming hypothesis H3b. Nevertheless, the marginal effects illustrated in panels (g) to (i) of Figure 5 reveal a more nuanced narrative. Specifically, the marginal effect of EDU_GAP2 (panel g) is consistently negative across all centiles of ECI1 and is statistically significant in nearly all instances. Conversely, the marginal effect of UNR_GAP is never statistically significant (panel h). In contrast, the marginal effect of INC_GAP exhibits an increasing trend as ECI1 rises, becoming statistically significant above the 35th centile (panel i). These findings suggest that the overall effect of higher educational integration, as measured by increasing EDU_GAP2, is associated with lower self-employment among male migrants, regardless of the level of ethnic concentration. However, once ECI1 exceeds the 35th centile, greater integration, as indicated by an increase in INC_GAP, is positively correlated with higher self-employment among male migrants.

Consequently, while there are no significant differences between males and females

concerning EDU_GAP2, the data reveal markedly distinct scenarios for UNR_GAP and INC_GAP. For female migrants, lower labour market integration has a positive impact on self-employment (SE) at increasing levels of ECI1, whereas the effect of the income gap remains negligible at all levels of ECI1. In contrast, for male migrants, lower labour market integration does not influence SE at any level of ECI1; however, the effect of the income gap on SE becomes positive as ECI1 increases.

To complete the analysis of the sub-sample of migrants from EU countries, we will now briefly examine the control variables. The results presented in Table 1 indicate that the total native population (POP) consistently exhibits a positive coefficient that is highly statistically significant. The variable representing real per capita gross domestic product (GDPPC) shows a statistically significant positive coefficient only in column (3). When significant, the coefficients for domestic credit to the private sector as a percentage of GDP (CREDIT) and the regulatory quality index (RQI) are negative. The variable for average full-time adjusted salary per employee (WAGE) presents a somewhat less consistent pattern; it is negative in the total sample estimates reported in columns (1) and (3), as well as in the regressions for both females and males when considering the INC_GAP variable (columns 6 and 9, respectively). However, in column (5), the estimated coefficient is mildly statistically significant and positive.

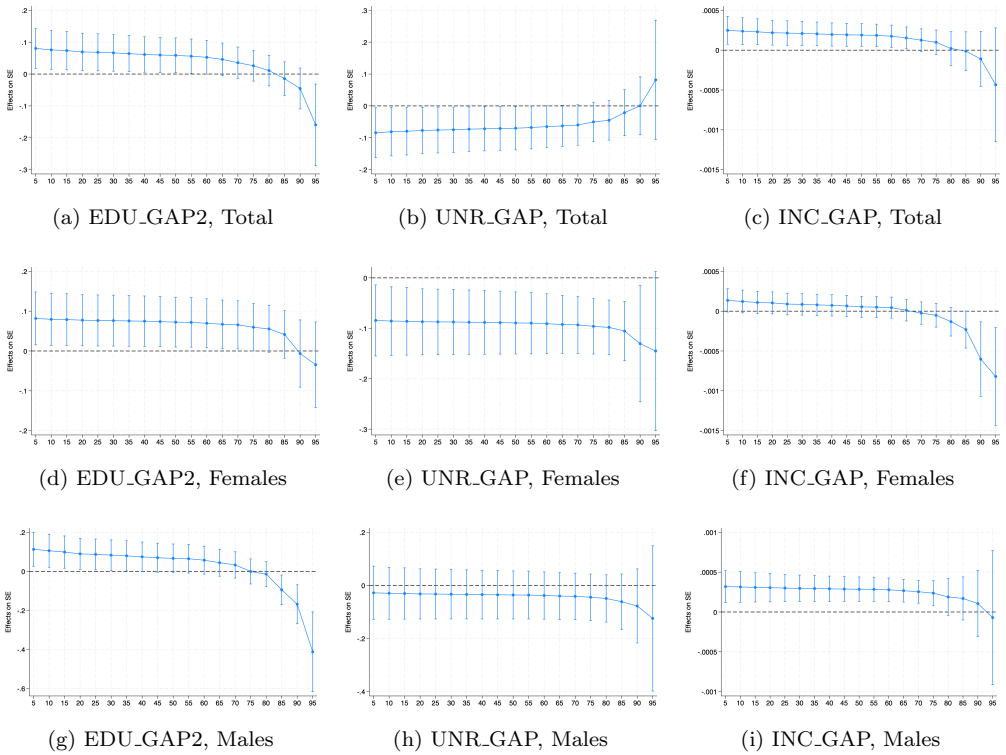
4.2 Migrants from NEU countries

Table 2 presents the regression results for the NEU migrant population, while Figure 6 illustrates the marginal effects of the integration variables.[7] Overall, our findings indicate that hypotheses H1a and H1c are confirmed across all sub-samples, while hypothesis H1b is not confirmed for either total or female migrants. Additionally, hypothesis H2b is typically confirmed, and the results for hypothesis H3 yield mixed outcomes.

To provide a concise analysis, we will focus on the marginal effects shown in Figure 6 and compare them with those for EU migrants. The analysis of total migrants presented in panel (a) of Figure 6 reveals that the marginal effect of EDU_GAP2 is positive up to the 60th centile. Beyond this point, the effect becomes statistically insignificant and ultimately exerts a negative impact on self-employment (SE) at the highest 95th centile of the ethnic concentration index (ECI). In contrast, panel (b) illustrates that the marginal effect of UNR_GAP remains negative up to the 60th centile and is statistically insignificant thereafter. Similarly, the marginal effect of INC_GAP, as shown in panel (c), diminishes with increasing ECI; however, the positive effect persists up to the 70th centile. These findings suggest that higher integration, as measured by increases in both EDU_GAP2 and INC_GAP, is correlated with greater self-employment among migrants, particularly in contexts of lower ethnic concentration. Conversely, lower integration, as indicated by increasing UNR_GAP, is associated with reduced self-employment among NEU migrants.

With respect to the self-employment of NEU female migrants, the marginal effect of EDU_GAP2, as depicted in panel (d), remains positive up to the 75th centile. Conversely, the marginal effect of UNR_GAP, illustrated in panel (e), is consistently negative throughout the range. In contrast, the marginal effect of INC_GAP, presented in panel (f), is negative and statistically significant only above the 85th centile. Excluding INC_GAP from consideration, the other two integration indicators demonstrate that increased educational integration—reflected in higher values of EDU_GAP2, correlates with greater self-employment among female migrants. Conversely, lower labour market integration, indicated by higher UNR_GAP, correlates with reduced self-employment among NEU female migrants. Notably, this presents a significant contrast to EU female migrants, where obstacles to labour market integration (as measured by higher UNR_GAP) appear to encourage self-employment, whereas NEU female migrants are deterred by similar challenges.

[7]Since the NEU regressions include a slightly larger set of countries than the EU specifications, we re-estimated the NEU models on the identical country sub-sample used for the EU analysis. The results are qualitatively unaffected, further supporting the robustness of our conclusions. The corresponding estimates are available upon request. We thank an anonymous reviewer for bringing this point to our attention.



(a) EDU_GAP2, Total (b) UNR_GAP, Total (c) INC_GAP, Total

(d) EDU_GAP2, Females (e) UNR_GAP, Females (f) INC_GAP, Females

(g) EDU_GAP2, Males (h) UNR_GAP, Males (i) INC_GAP, Males

Figure 6: Marginal effects of integration indicators on the percentage of migrants' self-employment at different centiles of ECI1 (migrants from NEU)

Regarding self-employment of NEU male migrants, the marginal effect of EDU_GAP2 remains positive up to the 40th centile of ECI1, as illustrated in panel (g). However, it is statistically insignificant between the 40th and 80th centiles, subsequently turning negative beyond the 80th centile. Conversely, the marginal effect of UNR_GAP, depicted in panel (h), consistently demonstrates statistical insignificance. In contrast, the marginal effect of INC_GAP, as shown in panel (i), remains positive up to the 80th centile of ECI1. The most significant distinctions when compared to NEU female migrants pertain to the overall effects of unemployment and income gaps. However, no notable differences emerge in comparison to EU male migrants.

As for the control variables, they exert a more pronounced impact on explaining self-employment among NEU migrants compared to their influence on EU migrants. In particular, GDPPC and CREDIT demonstrate a significant negative role. In contrast to the estimates for EU migrants presented in Table 1, the coefficients for these variables in Table 2 are consistently negative and highly statistically significant. Therefore, it appears that the general economic conditions of the countries provide a more robust explanation for the self-employment of NEU migrants.

4.3 Robustness check

To assess the robustness of the findings, we employ an alternative measure of the ethnic concentration index (ECI2), constructed utilising data from Standaert, Rayp (2022). Unlike ECI1, which contains gaps for certain years and/or specific EU countries, ECI2 does not suffer from missing observations and therefore offers broader coverage. The corresponding regression results and the marginal effects of the three integration indicators on self-employment are presented in Appendix C.

For EU migrants, the results in Table C.1 largely confirm those presented in Table 1. The same holds for the marginal effects depicted in Figure C.1, which show very similar trends to those observed in Figure 5. The only notable difference concerns the relationship between the unemployment gap (UNR_GAP) and self-employment (SE) among females.

Table 2: The effect of ethnic concentration and integration indicators on the percentage of self-employment (migrants from NEU)

		Total			Females			Males	
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ECI1	-0.000348	-0.000184	-0.001134**	-0.000443**	-0.000286*	-0.001046**	-0.000591*	-0.000213	-0.001412**
	[0.000232]	[0.000127]	[0.000533]	[0.000194]	[0.000150]	[0.000442]	[0.000315]	[0.000191]	[0.000655]
EDU_GAP2	0.096998**			0.089382**			0.148984**		
	[0.042945]			[0.042738]			[0.060554]		
EDU_GAP2*ECI1	-0.000047**			-0.000022			-0.000103***		
	[0.000019]			[0.000014]			[0.000030]		
UNR_GAP		-0.094373*			-0.080506*			-0.021526	
		[0.053742]			[0.047819]			[0.067894]	
UNR_GAP*ECI1		0.000031			-0.000011			-0.000018	
		[0.000026]			[0.000022]			[0.000035]	
INC_GAP			0.000292**			0.000192*			0.000343**
			[0.000128]			[0.000101]			[0.000150]
INC_GAP*ECI1			-0.000000			-0.000000**			-0.000000
			[0.000000]			[0.000000]			[0.000000]
POP	0.000001***	0.000001***	0.000001	0.000001*	0.000001***	-0.000000	0.000001***	0.000001***	0.000001***
	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000001]
GDPPC	-0.000355***	-0.000424***	-0.000305***	-0.000460***	-0.000348***	-0.000416***	-0.000316***	-0.000368***	-0.000297***
	[0.000051]	[0.000047]	[0.000062]	[0.000048]	[0.000047]	[0.000052]	[0.000072]	[0.000065]	[0.000071]
WAGE	0.000093	0.000148**	0.000053	0.000081	0.000033	-0.000026	-0.000041	-0.000068	0.000031
	[0.000066]	[0.000058]	[0.000095]	[0.000077]	[0.000072]	[0.000088]	[0.000099]	[0.000090]	[0.000115]
CREDIT	-0.057761***	-0.069664***	-0.056624***	-0.078975***	-0.062287***	-0.078359***	-0.038500***	-0.049934***	-0.042776***
	[0.009256]	[0.008008]	[0.012193]	[0.009120]	[0.007815]	[0.010773]	[0.013315]	[0.010881]	[0.014118]
RQI	-1.904916***	-0.992543	-1.810920**	-1.293155*	-1.498114**	-0.977621	-3.382694***	-3.283133***	-2.426470**
	[0.692873]	[0.606884]	[0.834950]	[0.687858]	[0.653855]	[0.690543]	[0.952719]	[0.820580]	[0.962658]
Observations	236	261	198	171	188	153	223	236	188
R-squared	0.968005	0.967216	0.964299	0.964359	0.965292	0.933004	0.965780	0.965388	0.974037

Notes: Outlier robust regressions. Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Country and year fixed effects included but not reported. The dependent variable is the percentage of migrants' self-employment on total employment. See the main text for more details.

Table 3: Synthesis of the estimated effects of the integration indicators on EU and NEU migrants' self-employment

	EU migrants	NEU migrants
EDU_GAP2: higher educational integration (secondary)	*discourages* total self-employment at high levels of ethnic concentration and male self-employment independently of ethnic concentration; *does not affect* female self-employment	*encourages* total, female and male self-employment, until very high levels of ethnic concentration
UNR_GAP: lower economic integration	*discourages* total self-employment at high levels of ethnic concentration; *encourages* female self-employment at high levels of ethnic concentration; *does not affect* male self-employment	*mildly discourages* total self-employment at low levels of ethnic concentration; *discourages* female self-employment independently of ethnic concentration; *does not affect* male self-employment
INC_GAP: higher social integration	*mildly favours* total self-employment at very low levels of ethnic concentration*; does not affect* female self-employment; *encourages* male self-employment at high levels of ethnic concentration	*encourages* total and male self-employment; *does not affect* female self-employment

In Figure 5, ECI1 appeared to negatively mediate this relationship, whereas in Figure C.1, ECI2 suggests a positive mediation effect.

For NEU migrants, the coefficients in Table C.2 are generally less statistically significant than in the baseline estimates. Nevertheless, Figure C.2 shows that, taking into account the interaction effects, the overall patterns remain largely consistent with those in Figure 6. Again, differences emerge mainly along gender lines: for females, the relationship between UNR_GAP and self-employment (SE) changes when using ECI2 (panel (e)), and, for males, a similar discrepancy appears in the link between the income gap (INC_GAP) and self-employment (panel (i)).

5 Discussion of the main findings and policy implications

The empirical analysis has been developed through several avenues, addressing the impact of integration indicators and ethnic concentration on migrants' self-employment. Concerning the direct effects of the main explanatory variable, the general key findings can be summarised as follows. Among both EU and NEU migrants, higher levels of educational and social integration encourage self-employment, supporting H1a and H1c, in line with findings from Sun, Fong (2022) and Zhang et al. (2024). Regarding the unemployment gap, in both EU and NEU sub-samples, its direct effect is almost negligible in line with Andersson (2021), among others, offering no strong support for H1b. The Ethnic Concentration Index (ECI1) consistently shows a negative effect across all specifications, supporting H2b and aligning with previous evidence that foreign entrepreneurship tends to be fostered by ethnic diversity (Awaworyi Churchill 2019).

The scenario becomes significantly more nuanced and complex when considering the interaction between integration indicators and ECI1. To manage this complexity, we summarise our results in Table 3.

In general, the picture shows heterogeneous patterns that vary depending on migrants' area of origin and gender. More in detail, three major outcomes are worth noting. The first concerns the effect of educational integration among EU migrants with respect to NEU migrants. When ethnic concentration is high, higher educational integration discourages self-employment for the total sample and for males, while it does not appear to influence females. The second result to highlight concerns the effects of an increase in the employment gap for females, specifically among EU migrants, where lower integration is associated with higher self-employment rates. These findings indicate that integration policies may have opposite effects across gender and nationality. Lastly, regarding the income gap, no significant differences are noted between the EU and NEU sub-samples or across genders. Greater integration generally supports self-employment

among total and male migrants, and integration policies are likely to systematically favour self-employment by reducing uncertainty.

These results underscore the central finding of our analysis: the interaction between integration and ethnic concentration plays a crucial role in shaping migrants' self-employment. This implies that ethnic and cultural diversity should be carefully considered when designing policies aimed at promoting migrant entrepreneurship. Measures that enhance integration may have very different, potentially opposite, effects in areas with high ethnic concentration, and vice versa.

Moreover, our analysis highlights how the issue of immigrant entrepreneurship is influenced by two fundamental aspects of migration policies: the integration of those already residing in the host country and the encouragement or discouragement of new arrivals. Regarding individuals already settled in host countries, our findings suggest that policymakers should implement tailored policies focused on citizenship and gender, while also considering the degree of ethnic concentration, as this factor could significantly impact policy effectiveness. In terms of new arrivals, our results indicate that overly restrictive policies concerning the number and origin of migrants may hinder entrepreneurial growth in potential host countries.

Other important implications of our findings emerge when interpreted through the lens of current regional-level challenges in Europe. The heterogeneous interaction patterns observed across origin, gender, and integration dimensions offer useful insights for interpreting sub-national dynamics as well. Integration levels, labour-market conditions, and ethnic concentration vary widely across European regions, creating territorial opportunity structures that shape migrants' incentives for self-employment. The fact that the effects of educational, occupational, and social integration differ across groups and depend on ethnic concentration suggests that regional self-employment responses are strongly conditioned by local contexts. This is particularly relevant given the persistent disparities across European regions in labour-market inclusiveness, demographic composition, and sectoral specialisation. Our findings suggest that such differences may amplify or even reverse the effects of integration policies. Hence, integration and entrepreneurship support measures may operate differently in areas characterised by high ethnic diversity, tight labour markets, or strong sectoral concentration. Overall, the national patterns identified in our analysis help clarify how region-specific conditions mediate the relationship between integration and self-employment, as well as how regional challenges shape the potential contribution of migrant entrepreneurship to local development.

To conclude, it is important to recognise that the available economic policy options are challenging to implement and often uncertain in their effects. This uncertainty may explain why the literature has yielded contradictory results regarding the impact of integration policies on migrants' self-employment, with many studies reporting either scarce or nonexistent effects (Solano et al. 2022).

6 Concluding remarks

This study presents a new macro-comparative perspective on the relationship between integration and migrant entrepreneurship in EU countries, utilising harmonised integration indicators available across Member States. Despite extensive research on migrant entrepreneurship, empirical work that jointly examines integration outcomes and self-employment remains scarce, and this scarcity becomes even narrower when ethnic concentration and fragmentation are taken into account. To our knowledge, no macro-level comparative study has analysed this relationship using explicit and standardised measures of integration; existing micro-level contributions rely on indirect proxies and are not based on harmonised indicators. Against this backdrop, the paper makes three main contributions. First, it provides an integrated analysis of migrant entrepreneurship, integration, and ethnic concentration. Second, it adopts a macroeconomic perspective, offering a cross-country comparison largely absent from previous research. Third, it exploits harmonised indicators that ensure comparability across EU Member States and enable a systematic assessment of how different dimensions of integration relate to migrant self-employment.

While these contributions suggest the value of a macro-comparative approach, certain limitations must also be acknowledged. Macro-level data cannot capture the full complexity of migrant self-employment, including factors such as local context, residential mobility within the host country, length of stay, or motivations for migration. Addressing these mechanisms requires access to individual-level data, which represents a central avenue for future research. A further limitation concerns the temporal coverage of available indicators: although the dataset spans a long period and multiple countries, changes in migration policies or labour-market regulations within individual Member States cannot be fully isolated. Nevertheless, by establishing the first macro-comparative analysis based on standardised integration indicators, this study opens a space for systematic and comparable research on the economic and social incorporation of migrant entrepreneurs in Europe.

Acknowledgements

We thank the Editor Zoltán Elekes and two anonymous reviewers for useful and constructive comments and suggestions. All usual disclaimers apply.

Funding

This study was funded by the European Union – NextGenerationEU, Mission 4, Component 2, in the framework of the GRINS – Growing Resilient, INclusive and Sustainable project [grant number GRINS PE00000018 – CUP F53C22000760007]. The views and opinions expressed in this study are solely those of the authors and do not necessarily reflect those of the European Union, nor can the European Union be held responsible for them.

References

Abada T, Hou F, Lu Y (2014) Choice or necessity: Do immigrants and their children choose self-employment for the same reasons? *Work, Employment and Society* 28: 78–94. CrossRef

Andersson H (2021) Ethnic enclaves, self-employment, and the economic performance of refugees: Evidence from a Swedish dispersal policy. *International Migration Review* 55: 58–83. CrossRef

Andersson L, Hammarstedt M (2015) Ethnic enclaves, networks and self-employment among Middle Eastern immigrants in Sweden. *International Migration* 53: 27–40. CrossRef

Appau S, Awaworyi Churchill S, Farrell L (2019) Social integration and subjective well-being. *Applied Economics* 51: 1748–1761. CrossRef

Awaworyi Churchill S (2019) Firm financial performance in Sub-Saharan Africa: The role of ethnic diversity. *Empirical Economics* 57: 957–970. CrossRef

Bashko A (2022) Entrepreneurship and ethnic economy employment among Chinese and Vietnamese residents of Warsaw. *International Migration* 60: 177–192. CrossRef

Becker GS (1962) Investment in human capital: A theoretical analysis. *Journal of Political Economy* 70: 9–49. CrossRef

Biagi B, Lambiri D, Meleddu M (2025) Do local attitudes change with the exposure and the status of the migrants? *REGION* 12: 47–71. CrossRef

Borjas GJ (1986) The self-employment experience of immigrants. *The Journal of Human Resources* 21: 485–506. CrossRef

Borjas GJ (2000) Ethnic enclaves and assimilation. *Swedish Economic Policy Review* 7: 89–122

Boudreaux CJ (2020) Ethnic diversity and small business venturing. *Small Business Economics* 54: 25–41. CrossRef

Brzozowski J (2019) Entrepreneurship and economic integration of immigrants: A critical review of literature. *International Journal of Entrepreneurship and Innovation Management* 23: 584–604. CrossRef

Chodavadia S, Pekkala Kerr S, Kerr W, Maiden L (2025) Immigrant entrepreneurship: New estimates and a research agenda. *A Research Agenda for Migration and Innovation* 7: 101–127. CrossRef

Constant A, Shachmurove Y (2006) Entrepreneurial ventures and wage differentials between Germans and immigrants. *International Journal of Manpower* 27: 208–229. CrossRef

Dheer RJS (2018) Entrepreneurship by immigrants: A review of existing literature and directions for future research. *International Entrepreneurship and Management Journal* 14: 555–614. CrossRef

European Commission (2020) Action plan on integration and inclusion 2021–2027. European Commission, Luxemburg, https://eur-lex.europa.eu/legal-content/EN/TXT/-PDF/?uri=CELEX:52020DC0758

European Ministerial Conference (2010) Declaration of the European Ministerial Conference on integration. Zaragoza. https://migrant-integration.ec.europa.eu/library-document/declaration-european-ministerial-conference-integration-zaragoza-15-16-april-2010_en

Eurostat (2020) Migrant integration statistics. Eurostats. https://ec.europa.eu/eurostat/web/products-statistical-books/-/ks-06-20-184

Gordon MM (1964) *Assimilation in American life: The role of race, religion, and national origins*. Oxford University Press, USA. CrossRef

Huber PJ (1964) Robust estimation of a location parameter. *Annals of Mathematical Statistics* 35: 73–101. CrossRef

Kariv D, Coleman S (2015) Toward a theory of financial bricolage: The impact of small loans on new businesses. *Journal of Small Business and Enterprise Development* 22: 196–224. CrossRef

Kaufmann D, Kraay A, Mastruzzi M (2010) The worldwide governance indicators: Methodology and analytical issues. *World Bank Policy Research Working Paper* 5430. CrossRef

Kim KC, Hurth WH, Fernandez M (1989) Intra-group differences in business participation: Three Asian immigrant groups. *International Migration Review* 23: 73–95. CrossRef

Kloosterman R, Leun J, Rath J (1999) Mixed embeddedness: (in)formal economic activities and immigrant businesses in the Netherlands. *International Journal of Urban and Regional Research* 23: 252–266. CrossRef

Lofstrom M (2002) Labor market assimilation and the self-employment decision of immigrant entrepreneurs. *Journal of Population Economics* 15: 83–114. CrossRef

Massidda C, Tunis S, Piras R (2024) Migrant integration and entrepreneurship: A systematic literature review through the lens of bibliometrics. *Rivista Internazionale di Scienze Sociali* 132: 401–427. CrossRef

Matricano D, Sorrentino M (2014) Ukrainian entrepreneurship in Italy: Factors influencing the creation of ethnic ventures. *Journal of Innovation and Entrepreneurship* 3: article number 10. CrossRef

McAuliffe M, Oucho LA (2024) *World Migration Report 2024*. International Organization for Migration (IOM), Geneva. CrossRef

Polemis ML, Stengos T (2020) The impact of regulatory quality on business venturing: A semi-parametric approach. *Economic Analysis and Policy* 67: 29–36. CrossRef

Portes A, Jensen L (1987) What's an ethnic enclave? The case for conceptual clarity. *American Sociological Review* 52: 768–70

Putnam RD (2007) E pluribus unum: Diversity and community in the twenty-first century (The 2006 Johan Skytte Prize Lecture). *Scandinavian Political Studies* 30: 137–174. CrossRef

Schultz TW (1961) Investment in human capital. *The American Economic Review* 51: 1–17

Solano G, Yilmaz S, Huddleston T (2022) The link between migration policies and migration and migrant integration dynamics. An overview of the existing literature. (deliverable 8.1; HumMingBird project 870661 – H2020, https://www.researchgate.net/-publication/360335787, Leuven

Standaert S, Rayp G (2022) Where did they come from, where did they go? Bridging the gaps in migration data. UNU Institute on Comparative Regional Integration Studies. Working Paper Nr. 4, https://cris.unu.edu/sites/cris.unu.edu/files/WP22.04%20-%20Standaert%20and%20Rayp_0.pdf

Sun SB, Fong E (2022) The role of human capital, race, gender, and culture on immigrant entrepreneurship in Hong Kong. *Journal of Small Business and Entrepreneurship* 34: 363–396. CrossRef

Van Der Sluis J, Praag M, Vijverberg W (2008) Education and entrepreneurship selection and performance. A review of the empirical literature. *Journal of Economic Surveys* 22: 795–841. CrossRef

Wang Q, Li W (2007) Entrepreneurship, ethnicity and local contexts: Hispanic entrepreneurs in three U.S. Southern metropolitan areas. *GeoJournal* 68: 167–182. CrossRef

Wang Z, Graaff T, Nijkamp P (2018) Barriers of culture, networks, and language in international migration: A review. *REGION* 5: 73–89. CrossRef

Wennekers S, Stel A, Carree M, Thurik R (2010) The relationship between entrepreneurship and economic development: Is it U-shaped? *Foundations and Trends in Entrepreneurship* 6: 167–237. CrossRef

Yavuz RI, Bahadir B (2022) Remittances, ethnic diversity, and entrepreneurship in developing countries. *Small Business Economics* 58: 1931–1952. CrossRef

Yilmaz S, Solano G (2024) Migrant integration. In: *The Palgrave Handbook of Global Social Problems*. Palgrave Macmillan, Cham. CrossRef

Zhang P, Wei X, Mao G (2024) Cultural diversity, social integration, and migrant entrepreneurship—evidence from the China migrants dynamic survey. *Small Business Economics* 62: 1135–1155. CrossRef

Appendices

A Basic Information

This appendix provides supplementary material referenced in the main text. Table A.1 reviews the empirical literature discussed in Section 2, summarising the main characteristics and key findings of each study. Table A.2 lists all variables used in the analysis, together with their definitions and data sources. Table A.3 reports summary statistics separately for the EU and NEU subsamples, with an additional breakdown by gender. Finally, Figure A.1 presents six maps illustrating the geographical distribution of migrant self-employment rates across EU Member States in 2021, disaggregated by country of origin (EU and NEU) and gender.

Table A.1: Literature review

Author(s)	Dependent variable	Integration variable(s)	Ethnic dimension	Countries/City	Period	Methodology	Main findings
Lofstrom (2002)	Probability of being self-employed	- Length of stay (LoS) - Education - Earnings differentials	Proportion of immigrants from the same country and living in the same metropolitan area	USA	1980-1990	OLS/Probit	- LoS: *inverted_U-shaped* - Education: *positive* - Earning differentials: *no effect* - Ethnic groups: *positive*
Constant and Shachmurove (2006)	Probability of being self-employed	- Length of stay (LoS) - Education	Analysis divided by ethnic groups	Germany	2000	Binomial logit/Logistic	- LoS: *U-shaped* - Education: *positive* - Age in different ethnic groups: *positive*
Wang and Li (2007)	Probability of Hispanic immigrants being self-employed	- Length of stay (LoS) - Language proficiency (English) - Education	Characteristics of Hispanic Entrepreneurs in the USA in three metropolitan areas	USA	2000	Logistic	- LoS: *positive* - Language proficiency: *positive* - Education: *negative*
Abada et al. (2014)	Probability of being self-employed	- Length of stay (LoS) - Language proficiency - Education - Unemployment - Earnings differentials	- Ethnic group population share	Canada	1981 and 2006 census data	Probit	- LoS: *positive* - Language proficiency: *positive* - Education: *differences in generations* - Unemployment: *positive for fathers* - Earning differentials: *positive (stronger for sons than for fathers)* - Group population share: *no effect*
Matricano and Sorrentino (2014)	Probability of Ukrainians creating a new ethnic venture within the enclave	- Length of stay (LoS) - Unemployment - Education	- Co-ethnic employees - Inputs from co-ethnic suppliers - Ethnic output for existing ethnic markets	Caserta (Italy)	2009-2010	Logistic	- LoS: *no effect* - Education: *no effect* - Ethnic dimension: *no effect*

Table A.1: Literature review (cont.)

Author(s)	Dependent variable	Integration variable(s)	Ethnic dimension	Countries/City	Period	Methodology	Main findings
Andersson and Hammarstedt (2015)	Probability of Middle Eastern immigrants being self-employed by	- Length of stay (LoS) - Education - Unemployment	- Ethnic enclave (group concentration) - Ethnic network	Sweden	2011	Probit	- LoS: *inverted-U* - Education: *non-linear effect* - Unemployment: *no effect* - Ethnic enclave: *positive* - Ethnic networks: *negative*
Bashko (2022)	Probability of being self-employed	- Length of stay (LoS) - Language proficiency - Education	- Self-declared number of co-ethnic friends who reside in Poland	Warsaw (Poland)	2017	Logistic	- LoS: *positive* - Language proficiency: *positive* - Education: *positive* - Network size: *positive*
Andersson (2021)	Probability of refugees being self-employed (within 5 years)	- Unemployment	- Co-ethnic self-employment - Co-ethnic education	Working-age foreign-born adults who were given a residence permit in Sweden during 1990 or 1991	1990-2014	Linear probability model	- Unemployment: *no effect* - Co-ethnic self-employment: *positive* - Co-ethnic education: *positive*
Sun and Fong (2022)	Probability of being self-employed	- Length of stay (LoS) - Language proficiency - Education	Co-ethnic size	Hong Kong	2001 and 2016 census data	Linear probability model	- LoS: *positive* - Language proficiency: *positive* - Education: *positive* - Co-ethnic size: *no effect*
Zhang et al. (2024)	Probability of being self-employed	- Length of stay (LoS) - Social interaction - Social exclusion - Social identification - Education	- Cultural diversity - Migrant diversity - Ethnic diversity	China	2017	Logit	- LoS: *positive* - Education: *positive* - Food diversity: *negative* - Migrant diversity: *positive* - Ethnic diversity: *negative*

Table A.2: Variable definitions and sources

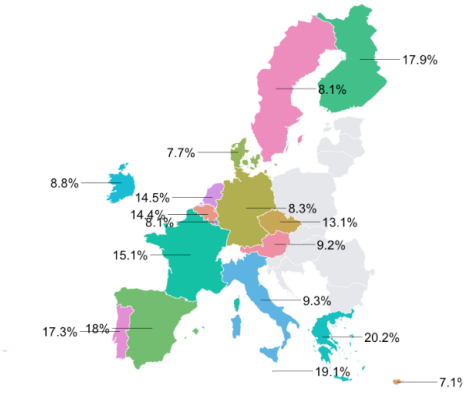
Name	Definition	Source
Dependent variables		
SE	Percentage of migrants' self-employment in total employment	Eurostat
Main independent variables		
EDU_GAP1	Primary school educational gap (migrants vs. native population)	Eurostat
EDU_GAP2	Secondary school educational gap (migrants vs. native population)	Eurostat
EDU_GAP3	Tertiary school educational gap (migrants vs. native population)	Eurostat
UNR_GAP	Unemployment rate (migrants vs. native population)	Eurostat
INC_GAP	Income gap (migrants vs. native population)	Eurostat
ECI1	Ethnic concentration index	Authors' elaboration based on Eurostat data
ECI2	Ethnic concentration index	Authors' elaboration based on Standaert and Rayp (2022) data
Control variables		
POP	Total native population	Eurostat
GDPPC	Real per capita gross domestic product	Eurostat
WAGE	Average full-time adjusted salary per employee	Eurostat
CREDIT	Domestic credit to the private sector as a % of GDP	Eurostat
RQI	Regulatory quality index	World Bank

Table A.3: Descriptive statistics

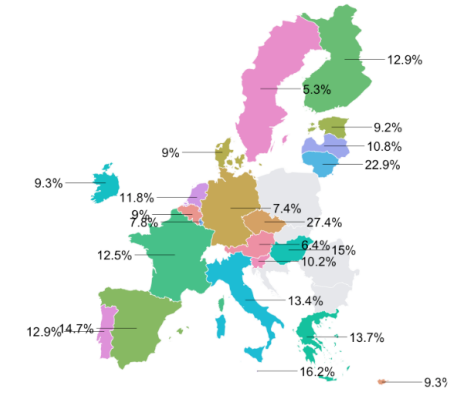
	EU sub-sample											
	Total				Females				Males			
	Mean	Sd	Min	Max	Mean	Sd	Min	Max	Mean	Sd	Min	Max
SE	12.23	4.84	3.00	45.20	9.03	4.17	2.40	56	14.45	5.74	3.4	45.30
EDU_GAP1	-1.71	11.89	-30.60	25.00	-1.78	11.20	-33.70	26.30	0.04	12.73	-33.20	26.80
EDU_GAP2	-2.91	11.44	-32.90	23.70	-1.01	11.03	-19.90	24.30	-3.13	11.83	-30.80	24.00
EDU_GAP3	6.18	12.61	-19.40	65.50	4.29	11.46	-21.60	45.90	5.79	13.92	-17.7	70.80
UNR_GAP	2.33	2.67	-6.90	17.30	2.99	3.60	-13.80	32.20	1.92	2.43	-3.80	13.30
INC_GAP	-1805	3079	-7751	10139	-2330	3071	-8893	10864	-2022	3215	-7328	11243
	NEU sub-sample											
	Total				Females				Males			
	Mean	Sd	Min	Max	Mean	Sd	Min	Max	Mean	Sd	Min	Max
SE	12.87	8.18	2.60	55.00	9.06	5.22	3.40	38.70	15.22	9.86	3.60	71.10
EDU_GAP1	9.70	13.89	-20.90	35.70	11.49	14.10	-19.20	46.70	9.45	14.65	-23.40	49.80
EDU_GAP2	-7.01	12.19	-30.40	22.10	-6.49	13.26	-33.40	26.90	-8.24	12.39	-35.00	35.10
EDU_GAP3	-0.07	12.55	-25.30	39.60	-2.60	12.53	-28.30	35.70	1.67	13.67	-23.30	43.70
UNR_GAP	8.17	6.20	-6.70	26.60	9.65	7.52	-10.00	35.50	8.14	6.05	-3.80	27.60
INC_GAP	-4683	3533	-15524	9037	-4893	3364	-15854	5975	-5185	3710	-15123	12167

Table A.3: Descriptive statistics (cont.)

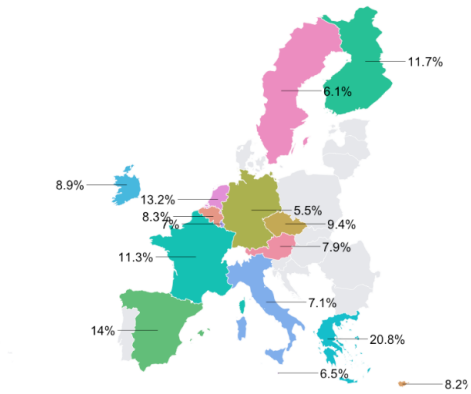
	Common variables across EU and NEU sub-samples			
	Total			
	Mean	Sd	Min	Max
ECI1	1446	1546	304	10000
ECI2	1649	1429	244	7827
POP(thousands)	14900	19900	277	75200
GDPPC	24726	16790	2990	88250
WAGE	24341	14926	1919	72247
CREDIT	83.48	42.79	0.19	254.67
RQI	0.13	0.96	-2.08	1.93



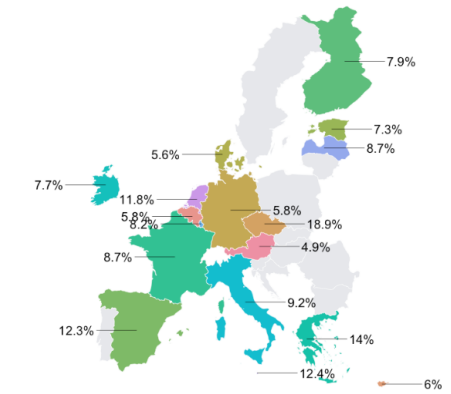
(a) EU migrants (Total)



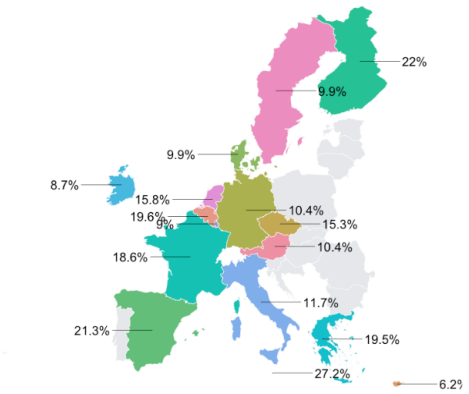
(b) NEU migrants (Total)



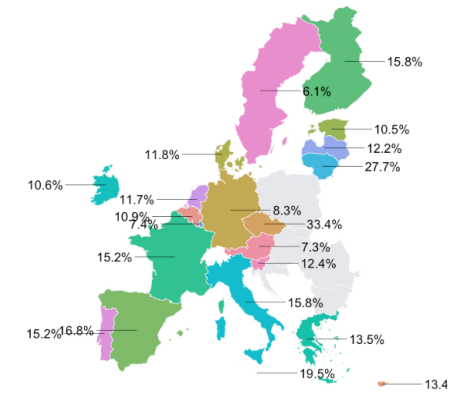
(c) EU migrants (Females)



(d) NEU migrants (Females)



(e) EU migrants (Males)



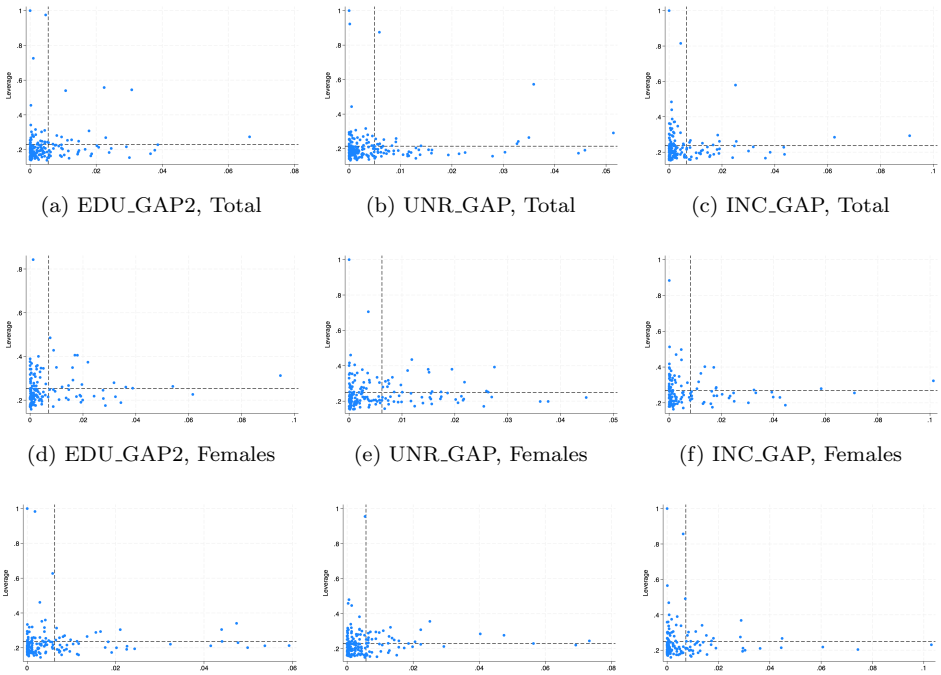
(f) NEU migrants (Males)

Figure A.1: Maps of the dependent variables (2021)

B Outliers in ordinary least squares (OLS) regressions

Outliers are observations that are inconsistent with the rest of the data, and in such situations, OLS estimates lead to inefficiency and result in low statistical power. They can have a strong adverse impact on the estimates and undermine OLS results should they remain unnoticed.

A simple and useful method for determining how a given point affects OLS regressions is illustrated in Figures B.1 (EU sub-sample) and B.2 (NEU sub-sample). In these figures, each panel represents the scatterplot of the leverage against the normalised residuals squared for the OLS regressions of equation (2). In this type of figure, the most problematic points have a high leverage and a high residual (located in the upper right of the plot). Somehow less problematic but still worrisome are points in the upper left of the plot that have a high leverage and a small, normalised residual squared. For both the EU and NEU sub-samples, Figures B.1 and B.2 show that all OLS regressions display problematic points (in both the upper right and upper left of the plot).

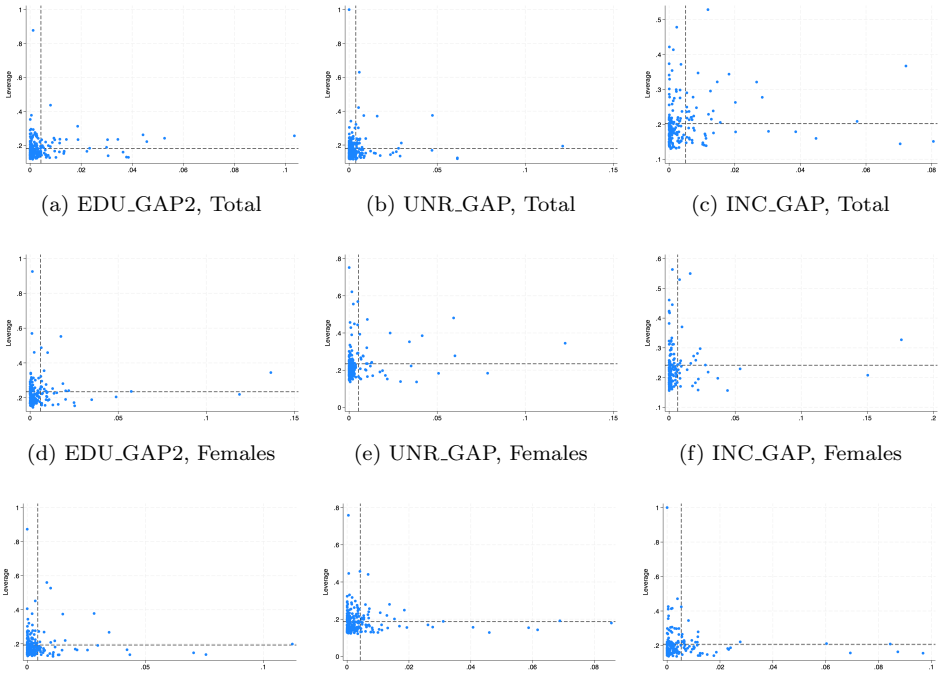


(a) EDU_GAP2, Total (b) UNR_GAP, Total (c) INC_GAP, Total

(d) EDU_GAP2, Females (e) UNR_GAP, Females (f) INC_GAP, Females

(g) EDU_GAP2, Males (h) UNR_GAP, Males (i) INC_GAP, Males

Figure B.1: Leverage against the normalised residuals squared. OLS regressions (EU sub-sample)



(a) EDU_GAP2, Total (b) UNR_GAP, Total (c) INC_GAP, Total

(d) EDU_GAP2, Females (e) UNR_GAP, Females (f) INC_GAP, Females

(g) EDU_GAP2, Males (h) UNR_GAP, Males (i) INC_GAP, Males

Figure B.2: Leverage against the normalised residuals squared. OLS regressions (NEU sub-sample)

C Additional results with ECI2

This appendix presents results based on the alternative ethnic concentration measure, ECI2, derived from the bilateral migration series estimated by Standaert, Rayp (2022). Tables C.1 and C.2 report the regression estimates for the EU and NEU subsamples, respectively, while Figures C.1 and C.2 illustrate the corresponding marginal effects across the ECI2 distribution.

Table C.1: The effect of ethnic concentration (ECI2) and integration indicators on the percentage of self-employment (EU sub-sample)

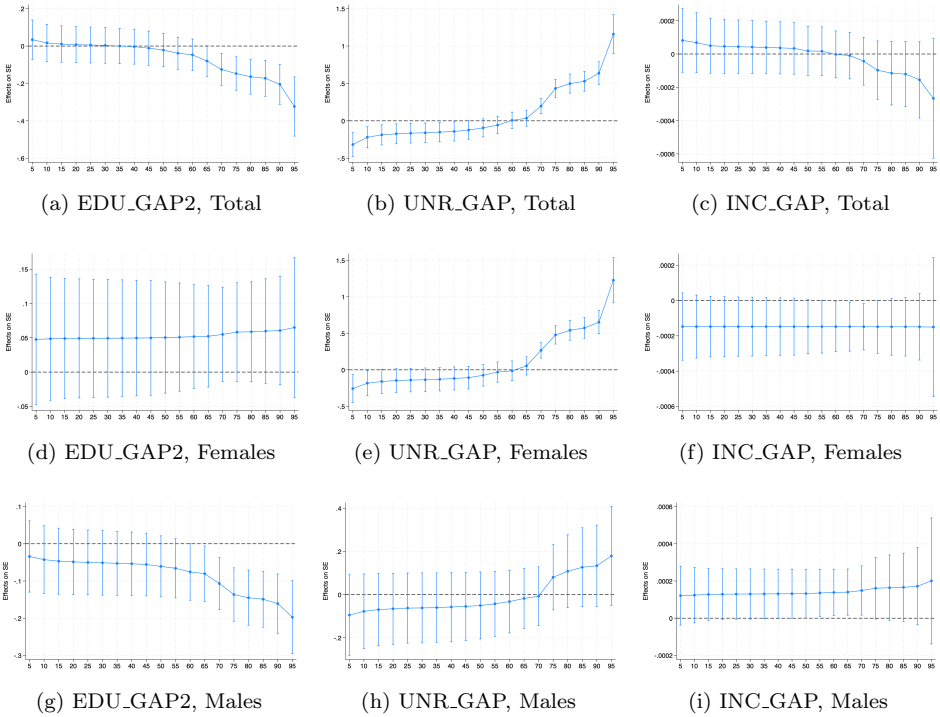
	Total				Females			Males	
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ECI2	-0.002956**	-0.000400	-0.000416	0.000288	-0.001464*	-0.000272	-0.001970	-0.000797	-0.000469
	[0.001481]	[0.000703]	[0.000664]	[0.001669]	[0.000786]	[0.000820]	[0.001274]	[0.001167]	[0.001057]
EDU_GAP2	0.124196			0.055296			0.001603		
	[0.082019]			[0.089659]			[0.094582]		
EDU_GAP2*ECI2	-0.000206***			0.000013			-0.000132**		
	[0.000074]			[0.000077]			[0.000060]		
UNR_GAP		-0.263455*			-0.456945***			-0.174206	
		[0.152902]			[0.151728]			[0.160293]	
UNR_GAP*ECI2		0.000340**			0.000592***			0.000264*	
		[0.000157]			[0.000136]			[0.000141]	
INC_GAP			-0.000148			-0.000474**			0.000034
			[0.000168]			[0.000183]			[0.000131]
INC_GAP*ECI2			0.000000			0.000000*			0.000000
			[0.000000]			[0.000000]			[0.000000]
POP	0.000002***	0.000002***	0.000002***	0.000002***	0.000001***	0.000001***	0.000002***	0.000002***	0.000002***
	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]
GDPPC	0.000111*	0.000106**	0.000119***	-0.000011	0.000107**	0.000061	0.000168**	0.000030	0.000166***
	[0.000058]	[0.000045]	[0.000045]	[0.000065]	[0.000051]	[0.000057]	[0.000073]	[0.000067]	[0.000057]
WAGE	-0.000096	-0.000060	-0.000242**	-0.000102	0.000056	-0.000234*	-0.000050	0.000068	-0.000250**
	[0.000076]	[0.000068]	[0.000104]	[0.000099]	[0.000083]	[0.000119]	[0.000114]	[0.000091]	[0.000115]
CREDIT	-0.003343	-0.011218	0.001859	-0.012168	-0.015765	-0.008085	-0.001467	-0.026788**	0.006839
	[0.008884]	[0.007091]	[0.008193]	[0.010224]	[0.010221]	[0.010807]	[0.011100]	[0.011155]	[0.009362]
RQI	-1.656295**	-0.039395	-2.126871***	-0.365856	0.147193	-1.479939	-0.757378	-1.315411	-1.739406
	[0.761142]	[0.687834]	[0.743523]	[0.838370]	[0.906072]	[0.972409]	[1.127216]	[0.950530]	[1.066503]
Observations	231	248	189	181	199	154	204	212	169
R-squared	0.89	0.82	0.85	0.59	0.60	0.63	0.86	0.86	0.86

Notes: Outlier robust regressions. Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Country and year fixed effects included but not reported. The dependent variable is the percentage of migrants' self-employment on total employment. ECI2 is computed using data from Standaert, Rayp (2022). See the main text for more details.

Table C.2: The effect of ethnic concentration (ECI2) and integration indicators on the percentage of self-employment (NEU sub-sample)

	Total			Females			Males		
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ECI2	0.000158	-0.001133	-0.000977	-0.001002	-0.001841	0.000230	-0.001571*	-0.000352	-0.002123***
	[0.000871]	[0.000876]	[0.000764]	[0.000921]	[0.001348]	[0.001398]	[0.000913]	[0.000995]	[0.000815]
EDU_GAP2	0.181489***			0.066551			0.216519***		
	[0.060673]			[0.064969]			[0.074359]		
EDU_GAP2*ECI2	-0.000079***			-0.000103**			-0.000153***		
	[0.000030]			[0.000043]			[0.000036]		
UNR_GAP		0.032600			-0.069248			0.150706*	
		[0.057589]			[0.074552]			[0.077786]	
UNR_GAP*ECI2		-0.000029			0.000112			-0.000069**	
		[0.000026]			[0.000074]			[0.000035]	
INC_GAP			-0.000030			0.000193			0.000057
			[0.000194]			[0.000155]			[0.000204]
INC_GAP*ECI2			0.000000			-0.000000			0.000000
			[0.000000]			[0.000000]			[0.000000]
POP	0.000002***	0.000001***	0.000001***	0.000001***	0.000001***	0.000000	0.000002***	0.000001**	0.000001***
	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000001]
GDPPC	-0.000354***	-0.000262***	-0.000256***	-0.000183***	-0.000199***	-0.000163***	-0.000304***	-0.000271***	-0.000195***
	[0.000070]	[0.000046]	[0.000048]	[0.000053]	[0.000052]	[0.000051]	[0.000082]	[0.000080]	[0.000069]
WAGE	0.000126	-0.000052	-0.000024	-0.000059	0.000016	-0.000058	0.000060	-0.000097	-0.000054
	[0.000094]	[0.000063]	[0.000100]	[0.000080]	[0.000081]	[0.000097]	[0.000125]	[0.000102]	[0.000133]
CREDIT	-0.046345***	-0.029435***	-0.031940***	-0.025976***	-0.025203***	-0.015255*	-0.023893	-0.025014	-0.000404
	[0.011204]	[0.007366]	[0.009935]	[0.008190]	[0.007997]	[0.008991]	[0.016324]	[0.015816]	[0.013728]
RQI	-2.665938***	-2.578807***	-3.003048***	-1.848037*	-1.104395	-1.563450	-5.258018***	-4.462711***	-6.181287***
	[0.881467]	[0.727736]	[0.896842]	[1.082735]	[1.079102]	[1.085529]	[1.423490]	[1.273426]	[1.328958]
Observations	298	313	241	214	228	186	275	284	226
R-squared	0.90	0.93	0.90	0.88	0.87	0.86	0.90	0.90	0.91

Notes: Outlier robust regressions. Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Country and year fixed effects included but not reported. The dependent variable is the percentage of migrants' self-employment on total employment. ECI2 is computed using data from Standaert, Rayp (2022). See the main text for more details.

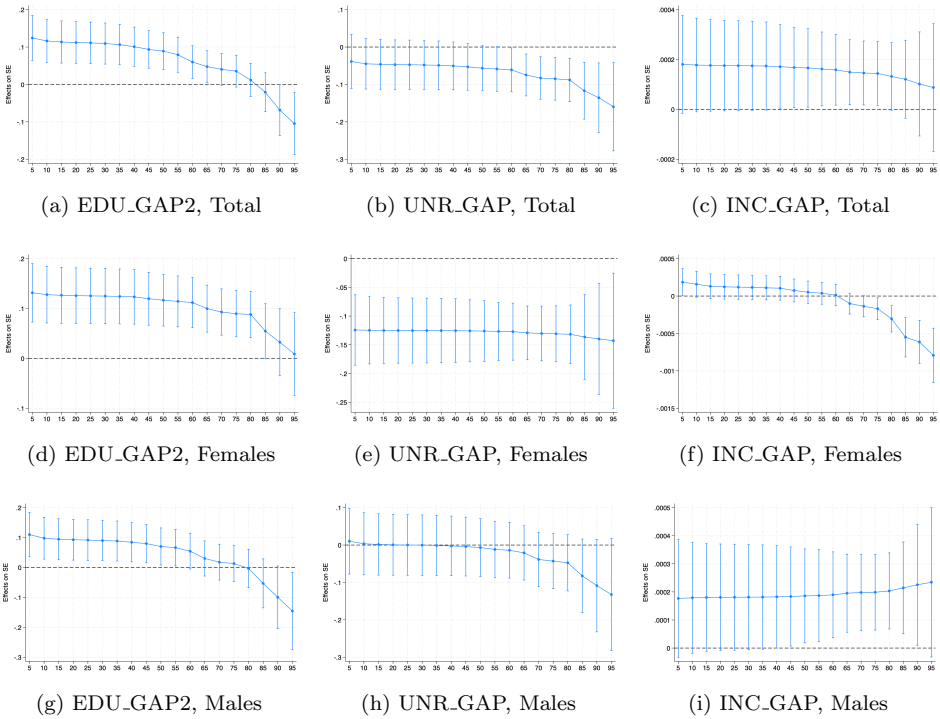


(a) EDU_GAP2, Total (b) UNR_GAP, Total (c) INC_GAP, Total

(d) EDU_GAP2, Females (e) UNR_GAP, Females (f) INC_GAP, Females

(g) EDU_GAP2, Males (h) UNR_GAP, Males (i) INC_GAP, Males

Figure C.1: Marginal effects of integration indicators on the percentage of migrants' self-employment at different centiles of ECI2 (EU sub-sample)



(a) EDU_GAP2, Total (b) UNR_GAP, Total (c) INC_GAP, Total

(d) EDU_GAP2, Females (e) UNR_GAP, Females (f) INC_GAP, Females

(g) EDU_GAP2, Males (h) UNR_GAP, Males (i) INC_GAP, Males

Figure C.2: Marginal effects of integration indicators on the percentage of migrants' self-employment at different centiles of ECI2 (NEU sub-sample)

D A deeper analysis of the role of human capital

We have seen in the main text that for the sub-sample of EU migrants, higher educational integration (higher EDU_GAP2) is an obstacle to total self-employment at high levels of ethnic concentration. However, it does not affect male self-employment independently of ethnic concentration, nor does it affect female self-employment. For the sub-sample of NEU migrants, increasing educational integration (higher EDU_GAP2) encourages total, male and female self-employment, particularly at low levels of ethnic concentration.

In this Appendix, we aim to delve deeper into the role of human capital by examining the impact of primary (EDU_GAP1) and tertiary (EDU_GAP3) educational gaps on migrants' self-employment.[8] Our estimates (Tables D.1 and D.2) reveal highly heterogeneous responses to migrants' self-employment. To be concise, we comment on these results, looking at the marginal effects of the three educational gaps on SE.

Figures D.1 and D.2 report the average marginal effects of the three educational gaps on self-employment for EU and NEU migrants, respectively. To better appreciate the differences across all educational level gaps, Figures D.1 and D.2 also report the marginal effects of EDU_GAP2 for EU and NEU migrants already shown in Figures 5 and 6, respectively. The results are striking.

Looking at total EU migrants, EDU_GAP1 does not affect SE (Panel (a) of Figure D.1), while EDU_GAP3 exerts a positive effect on SE above the 60^{th} centile (Panel (c) of Figure D.1), increasing at higher levels of ECI1. Notice that this result is the opposite of what was found for EDU_GAP2, as depicted in Panel (b) of the same figure. As far as female EU migrants are concerned (Panels (d)-(f) of Figure D.1), no statistically significant role emerges for any educational gap. The results regarding male EU migrants are particularly interesting, as they suggest a U-shaped relationship between migrants' educational level and their self-employment. Indeed, the overall effect of EDU_GAP1 is positive up to the 80^{th} centile of ECI1, whereas the overall effect of EDU_GAP3 is positive above the 45^{th} centile of ECI1. We interpret this result as suggesting the existence of distinct motivations to enter self-employment: low-skilled migrants are likely to become self-employed out of necessity to escape unemployment; conversely, high-skilled migrants are likely to become self-employed out of opportunity, as they are better equipped to navigate the complexities of business-related issues. In this interpretation, ethnic concentration plays a crucial role.

Moving to the NEU sample, total migrants' self-employment is neither affected by EDU_GAP1 nor by EDU_GAP3 (Panels (a) and (c) of Figure D.2); EDU_GAP2 positively influences it below the 60^{th} centile of ECI1 (Panel (b) of Figure D.2). As regards females, only EDU_GAP2 encourages SE below the 80^{th} centile of ECI1, while neither EDU_GAP1 nor EDU_GAP3 influences SE. Finally, the behaviour of male NEU migrants is similar to that of their EU counterparts regarding EDU_GAP3, albeit at higher values of ECI1 (above the 75^{th} centile compared with the 45^{th} centile for EU). Still, it is different for the primary and secondary educational gaps. Indeed, the total effect of EDU_GAP1 on SE is positive up to the third quartile of the ECI1 distribution, while the total effect of EDU_GAP2 turns out from positive (below the 40^{th} centile) to negative (above the 80^{th} centile).

[8] More precisely, we consider ISCED levels 0-2 corresponding to "Less than primary, primary and lower secondary education" and ISCED levels 5-8 corresponding to "Tertiary education".

Table D.1: The effect of ethnic concentration (ECI1) and integration indicators (EDU_GAP1, EDU_GAP2 and EDU_GAP3) on the percentage of self-employment (EU sub-sample)

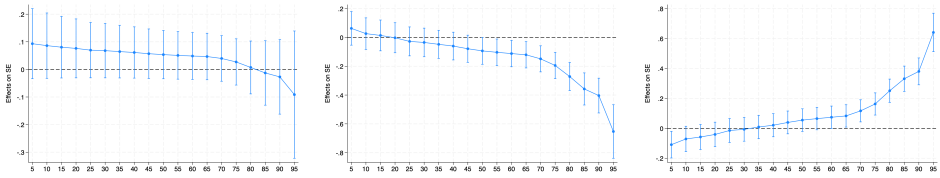
	Total			Females			Males		
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ECI1	-0.009362***	-0.008373***	-0.005915***	-0.004203***	-0.004874***	-0.003099***	-0.010472***	-0.005520***	-0.002539*
	[0.001661]	[0.001090]	[0.000710]	[0.001188]	[0.001194]	[0.001158]	[0.002014]	[0.001383]	[0.001342]
EDU_GAP1	0.127941			-0.097418			0.355680***		
	[0.106986]			[0.079284]			[0.097085]		
EDU_GAP1*ECI1	-0.000100			0.000104*			-0.000243***		
	[0.000102]			[0.000062]			[0.000089]		
EDU_GAP2		0.198594**			0.212050*			-0.076511	
		[0.090546]			[0.113982]			[0.088817]	
EDU_GAP2*ECI1		-0.000387***			-0.000196**			-0.000078	
		[0.000078]			[0.000084]			[0.000076]	
EDU_GAP3			-0.251825***			0.002294			-0.037697
			[0.065889]			[0.107030]			[0.094203]
EDU_GAP3*ECI1			0.000406***			0.000009			0.000191**
			[0.000051]			[0.000106]			[0.000092]
POP	0.000003***	0.000002***	0.000003***	0.000002***	0.000002***	0.000002***	0.000004***	0.000003***	0.000003***
	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]
GDPPC	0.000140**	0.000034	0.000082	-0.000006	-0.000031	-0.000008	0.000201***	0.000047	0.000009
	[0.000069]	[0.000060]	[0.000065]	[0.000063]	[0.000062]	[0.000061]	[0.000074]	[0.000070]	[0.000073]
WAGE	-0.000456***	-0.000195**	-0.000207**	-0.000097	-0.000068	-0.000029	-0.000424***	-0.000005	-0.000009
	[0.000101]	[0.000086]	[0.000086]	[0.000103]	[0.000100]	[0.000107]	[0.000114]	[0.000113]	[0.000112]
CREDIT	0.004769	-0.017892	-0.008544	-0.032877***	-0.037918***	-0.035370***	0.003908	-0.027058*	-0.033497**
	[0.012420]	[0.011180]	[0.012322]	[0.012278]	[0.012245]	[0.012506]	[0.013759]	[0.013836]	[0.014605]
RQI	-2.433851***	-1.999708**	-2.065733**	-0.241203	-0.242811	0.245080	-2.784294***	-2.126632**	-2.161109**
	[0.892043]	[0.812248]	[0.858302]	[0.889588]	[0.874548]	[0.911342]	[0.937169]	[0.987547]	[0.992567]
Observations	178	182	183	142	142	143	158	160	161
R-squared	0.838992	0.921092	0.915251	0.705771	0.705683	0.923012	0.894756	0.898617	0.918041

Notes: Outlier robust regressions. Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Country and year fixed effects are included but not reported. The dependent variable is the percentage of migrants' self-employment on total employment. EDU_GAP1 is the primary school education gap, EDU_GAP2 is the secondary school education gap (see also Table 1 in the main text), EDU_GAP3 is the tertiary school education gap. See the main text for more details.

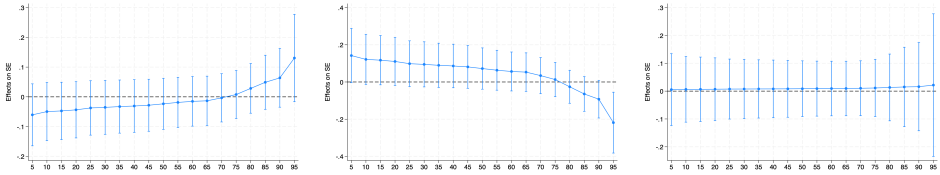
Table D.2: The effect of ethnic concentration (ECI1) and integration indicators (EDU_GAP1, EDU_GAP2 and EDU_GAP3) on the percentage of self-employment (NEU sub-sample)

	Total			Females			Males		
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ECI1	0.000002	-0.000348	-0.000233	-0.000206	-0.000443**	-0.000541**	-0.001140**	-0.000591*	-0.001133**
	[0.000296]	[0.000232]	[0.000497]	[0.000263]	[0.000194]	[0.000246]	[0.000546]	[0.000315]	[0.000512]
EDU_GAP1	-0.062287			-0.061321			-0.176721***		
	[0.045803]			[0.044546]			[0.049916]		
EDU_GAP1*ECI1	0.000009			0.000015			0.000088***		
	[0.000019]			[0.000022]			[0.000027]		
EDU_GAP2		0.096998**			0.089382**			0.148984**	
		[0.042945]			[0.042738]			[0.060554]	
EDU_GAP2*ECI1		-0.000047**			-0.000022			-0.000103***	
		[0.000019]			[0.000014]			[0.000030]	
EDU_GAP3			-0.039210			-0.038973			-0.000285
			[0.049891]			[0.050870]			[0.054156]
EDU_GAP3*ECI1			0.000052			0.000013			0.000056**
			[0.000032]			[0.000013]			[0.000025]
POP	0.000001***	0.000001***	0.000001***	0.000001**	0.000001*	0.000000	0.000002***	0.000001***	0.000002***
	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]
GDPPC	-0.000367***	-0.000355***	-0.000355***	-0.000467***	-0.000460***	-0.000443***	-0.000307***	-0.000316***	-0.000309***
	[0.000053]	[0.000051]	[0.000053]	[0.000049]	[0.000048]	[0.000049]	[0.000064]	[0.000072]	[0.000075]
WAGE	0.000082	0.000093	0.000115	0.000088	0.000081	0.000077	-0.000123	-0.000041	-0.000082
	[0.000073]	[0.000066]	[0.000075]	[0.000084]	[0.000077]	[0.000082]	[0.000091]	[0.000099]	[0.000108]
CREDIT	-0.056234***	-0.057761***	-0.060678***	-0.076936***	-0.078975***	-0.079975***	-0.030078**	-0.038500***	-0.039632***
	[0.010277]	[0.009256]	[0.009737]	[0.009504]	[0.009120]	[0.009316]	[0.012185]	[0.013315]	[0.013729]
RQI	-1.496990**	-1.904916***	-1.718289**	-1.144186	-1.293155*	-1.318031*	-2.711016***	-3.382694***	-3.577352***
	[0.707950]	[0.692873]	[0.703473]	[0.709553]	[0.687858]	[0.715090]	[0.848240]	[0.952719]	[0.987334]
Observations	224	236	234	171	171	171	215	223	222
R-squared	0.965672	0.968005	0.967394	0.962602	0.964359	0.962942	0.973754	0.965780	0.964164

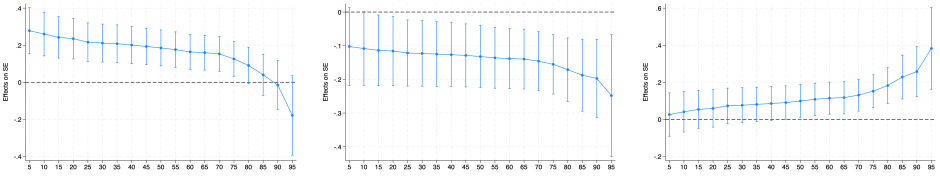
Notes: Outlier robust regressions. Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Country and year fixed effects are included but not reported. The dependent variable is the percentage of migrants' self-employment on total employment. EDU_GAP1 is the primary school education gap, EDU_GAP2 is the secondary school education gap (see also Table 1 in the main text), EDU_GAP3 is the tertiary school education gap. See the main text for more details.



(a) EDU_GAP1, Total (b) EDU_GAP2, Total (c) EDU_GAP3, Total

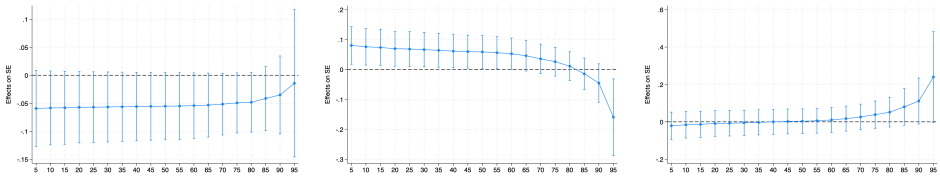


(d) EDU_GAP1, Females (e) EDU_GAP2, Females (f) EDU_GAP3, Females

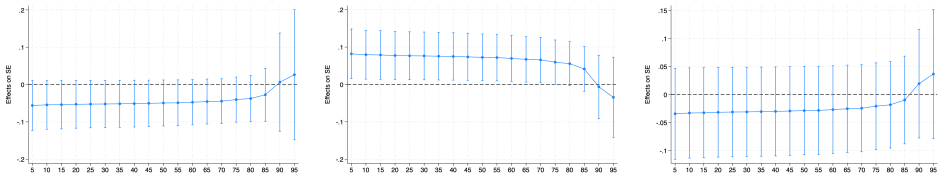


(g) EDU_GAP1, Males (h) EDU_GAP2, Males (i) EDU_GAP3, Males

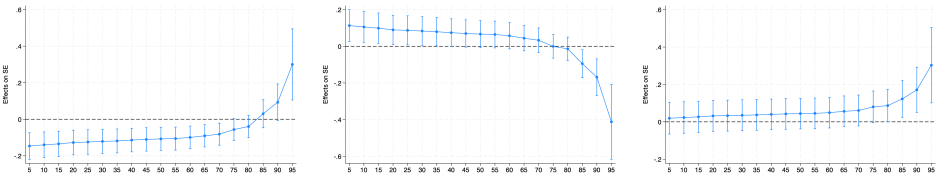
Figure D.1: Marginal effects of EDU_GAP1, EDU_GAP2 and EDU_GAP3 on the percentage of migrants' self-employment at different centiles of ECI1 (EU sub-sample)



(a) EDU_GAP1, Total (b) EDU_GAP2, Total (c) EDU_GAP3, Total



(d) EDU_GAP1, Females (e) EDU_GAP2, Females (f) EDU_GAP3, Females



(g) EDU_GAP1, Males (h) EDU_GAP2, Males (i) EDU_GAP3, Males

Figure D.2: Marginal effects of EDU_GAP1, EDU_GAP2 and EDU_GAP3 on the percentage of migrants' self-employment at different centiles of ECI1 (NEU sub-sample)