



Migration, Education, and Labor Market Integration: Evidence from a Panel Data Analysis of Institutional Heterogeneity in Europe

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ABSTRACT

Purpose: This study examines the relationship between migration intensity, education-related integration mechanisms, and labor market outcomes of the foreign-born population in selected European countries over the period 2010–2024. It explores how migration flows and migrant education interact within different institutional contexts.

Methodology: The analysis focuses on Germany, France, Italy, Austria, Sweden, and the United Kingdom and employs panel data techniques using two-way fixed and random effects models. Model selection is guided by the Hausman specification test, which strongly favors the fixed effects estimator, highlighting the role of country-specific institutional heterogeneity.

Findings: The results indicate that migration intensity alone is not significantly associated with improved migrant employment outcomes once unobserved heterogeneity is controlled for. In contrast, migrant tertiary education shows a positive relationship with employment performance. Public education expenditure, measured as a share of GDP, does not exhibit a robust direct effect, suggesting that aggregate spending levels are insufficient to drive integration outcomes.

Originality: By providing recent longitudinal cross-country evidence, the study contributes to the applied econometrics literature on migration and labor markets. It highlights the importance of institutional context and educational attainment in shaping migrant labor market integration across Europe.

KEYWORDS: Education, Institutions heterogeneity, Labor market integration, Migration, Panel Data, Europe

1. INTRODUCTION

International migration has become one of the defining structural features of contemporary Europe, reshaping demographic patterns, labor markets, and social relations across both destination and transit countries. While migration flows into Europe have been widely documented, the processes through which migrants become incorporated into host societies remain uneven and highly context-dependent. In recent decades, European countries have developed markedly different approaches to integration, reflecting variations in welfare regimes, labor market institutions, and education systems.

Existing policy debates often frame integration outcomes as primarily driven by migrants' individual characteristics, such as educational background or country of origin. However, this perspective overlooks the decisive role played by national institutional arrangements in shaping integration trajectories. Access to education, transitions into employment, and long-term labor market stability are not merely individual processes, but are embedded within broader policy and institutional frameworks that either facilitate or constrain social inclusion.

This study addresses this gap by examining migration and labor market integration outcomes across Germany, Italy, France, Austria, Sweden, and England over the period 2010–2024. Adopting a comparative panel data approach, the paper investigates how differences in migration intensity, education-related integration mechanisms, and labor market institutions translate into divergent employment outcomes for the foreign-born population. Rather than assuming convergence across European countries, the analysis highlights persistent institutional heterogeneity and its implications for migrant inclusion, social cohesion, and economic participation.

Unlike cross-sectional or single-country studies, this paper provides longitudinal within-country evidence on how institutional heterogeneity shapes the relationship between migration intensity and migrant employment outcomes. By focusing on variation over time within countries, the analysis isolates institutional effects that are often obscured in purely cross-sectional comparisons.



2. LITERATURE REVIEW

2.1 Migration and integration in the European context

Research on migration and integration in Europe has expanded substantially over the past two decades, reflecting the growing demographic and economic relevance of migrant populations. Early theoretical contributions were largely grounded in assimilation frameworks, which assumed a gradual convergence of migrants' socioeconomic outcomes with those of native populations over time (Alba & Nee, 2003). However, subsequent empirical studies have challenged this linear perspective, demonstrating that integration trajectories often remain segmented and highly dependent on host-country contexts (Heath & Cheung, 2007).

Comparative European studies highlight persistent disparities in employment rates, occupational mobility, and educational outcomes between migrants and natives, even among countries with similar levels of economic development (OECD, 2018). These findings suggest that integration cannot be fully understood without considering the institutional and policy environments in which migrants are embedded.

2.2 Education systems, labor markets, and institutional mediation

A growing body of literature emphasizes the mediating role of education systems and labor market institutions in shaping migrant integration outcomes. Education has been identified as a key mechanism through which migrants and their descendants gain access to stable employment and upward mobility (Dustmann & Glitz, 2011). However, the effectiveness of education as an integration channel varies considerably across countries, depending on early tracking systems, vocational training structures, and access to lifelong learning opportunities (Crul & Schneider, 2010).

Labor market institutions further condition integration processes. Countries characterized by coordinated labor markets and strong active labor market policies tend to exhibit smaller employment gaps between migrants and natives (Kogan, 2011). In contrast, segmented labor markets with high levels of temporary employment are associated with increased labor market vulnerability among migrant workers, particularly in Southern European countries (Bonifazi et al., 2009).

2.3 Integration policies and cross-country diversity

Despite the development of common principles on integration at the European level, policy implementation remains predominantly national. Scholarly work has documented significant variation in integration models, ranging from multicultural approaches to more assimilation-oriented frameworks (Favell, 2014). Empirical evidence indicates that countries investing in comprehensive integration policies—combining language training, education access, and labor market activation—achieve more sustainable integration outcomes (MIPEX, 2020).

Nevertheless, much of the existing literature relies on cross-sectional analyses or single-country case studies, limiting the capacity to capture integration as a dynamic, long-term process. Longitudinal and comparative studies remain relatively scarce, particularly those that explicitly link institutional arrangements to changes in migrant outcomes over time (Brell, Dustmann, & Preston, 2020).

2.4 Research gap and contribution

Building on these strands of literature, the present study addresses two key gaps. First, it adopts a longitudinal panel data approach to examine migrant labor market integration across multiple European countries over an extended period. Second, by incorporating both EU member states and England as a comparative reference, the analysis provides a broader institutional perspective on migration and integration in Europe. This approach allows for a more nuanced understanding of how education systems, labor market institutions, and integration policies jointly shape migrant inclusion and social cohesion.

2.5 Hypotheses Development

Drawing on the literature reviewed above, this study formulates five testable hypotheses. First, migration intensity may exert pressure on host-country labor markets, particularly in contexts where institutional absorption capacity is limited. This leads to the following hypothesis:

H₁: Higher migration intensity is associated with weaker labor market outcomes for the foreign-born population.

Second, education is widely recognized as a central mechanism facilitating migrant integration by enhancing employability and reducing skill mismatches:

H₂: Higher levels of tertiary educational attainment among migrants are positively associated with migrant employment outcomes.



Third, public investment in education reflects long-term commitments to human capital development, which may influence integration outcomes indirectly:

H₃: Higher public education expenditure is positively associated with migrant labor market outcomes.

Fourth, the effectiveness of integration policies depends on their institutional design and implementation rather than expenditure levels alone:

H₄: Active labor market and integration policies play a mediating role in shaping migrant employment outcomes.

Finally, the literature consistently emphasizes the importance of institutional heterogeneity across countries:

H₅: Institutional differences across countries significantly shape migrant labor market integration outcomes.

3. DATA AND METHODOLOGY

3.1 Data sources and sample selection

The empirical analysis relies on a unbalanced panel dataset covering **Germany, Italy, France, Austria, Sweden, and England** over the period 2010–2024. These countries were selected to capture a wide range of integration regimes, welfare state models, and labor market structures within Europe, while also allowing for a comparative perspective between EU member states and a non-EU reference case.

Data were collected from internationally harmonized sources to ensure comparability across countries and over time. Migration and labor market indicators were obtained from Eurostat and the OECD International Migration Database, while macroeconomic and education-related variables were drawn from the World Bank World Development Indicators. The use of multiple sources allows for cross-validation of key indicators and reduces the risk of measurement bias.

The dependent variables capture key dimensions of migrant integration in host societies. Labor market integration is measured through the employment rate of the foreign-born population and, alternatively, the unemployment rate among migrants. Educational integration is proxied by the share of migrants with upper secondary or tertiary education, as well as participation in education and training programs.

The main explanatory variable is the share of the migrant population in the total population, which reflects the demographic relevance of migration in each country-year observation. To account for institutional and policy-related influences, the analysis includes indicators of education expenditure, active labor market policies, and overall economic conditions.

Control variables include GDP per capita, overall unemployment rates, and population structure, which are commonly used in the migration literature to isolate the effect of institutional arrangements on integration outcomes. All monetary variables are expressed in real terms, and logarithmic transformations are applied where appropriate to reduce skewness.

Table 1. Reports variable definitions and data sources used in the empirical analysis.

Table 1. Variable Definitions and Data Sources

Variable	Definition	Source
Foreign-born employment rate (emp_fb)	Employment rate of the foreign-born population (%)	Eurostat
Migrant share of population	Foreign-born population as a share of total population	Eurostat
Foreign-born tertiary education share	Share of foreign-born population with tertiary education (%)	Eurostat
Public education expenditure	Public education spending (% of GDP)	World Bank (WDI)
GDP per capita (ln)	Log of real GDP per capita	World Bank (WDI)
Unemployment rate	Total unemployment rate (%)	OECD
Active labor market policies	Public expenditure on ALMPs (% of GDP)	OECD

Source: Authors' compilation based on Eurostat, World Bank (World Development Indicators), and OECD databases.

Notes: All variables are annual. Monetary variables are expressed in real terms. Logarithmic transformations are applied where appropriate. Data are obtained from Eurostat, the OECD, and the World Bank (WDI).

3.2 Econometric specification

To examine the relationship between migration and integration outcomes, the study employs panel data econometric techniques that account for unobserved heterogeneity across countries and over time. The baseline model is specified as follows:

$$Y_{it} = \alpha + \beta X_{it} + \gamma Z_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Where

Y_{it} - represents the integration outcome for country i in year (t) ,

X_{it} - denotes migration-related variables,

Z_{it} - is a vector of control variables,

μ_i captures country-specific effects,

λ_t - controls for time-specific shocks common to all countries, and

ε_{it} - is the error term.

Both fixed effects (FE) and random effects (RE) estimators are employed. The fixed effects model controls for time-invariant country characteristics such as institutional traditions or cultural factors, while the random effects model allows for efficiency gains under the assumption that unobserved heterogeneity is uncorrelated with the regressors. The Hausman test is used to assess the appropriateness of the RE specification relative to the FE model.

3.3 Identification strategy and robustness

The identification strategy relies on within-country variation over time, thereby reducing bias arising from cross-country structural differences. To enhance robustness, alternative model specifications are estimated using different dependent variables and subsets of explanatory variables. Lagged independent variables are also introduced to account for potential delayed effects of education and labor market policies on integration outcomes.

Standard errors are clustered at the country level to address potential heteroskedasticity and serial correlation. Sensitivity analyses are conducted by excluding individual countries from the sample to verify that the results are not driven by any single case.

3.4 Methodological contribution

By combining longitudinal panel data with a comparative institutional perspective, this methodological approach allows for a more dynamic assessment of migrant integration processes than cross-sectional analyses. The inclusion of England as a non-EU benchmark further strengthens the analytical framework, enabling an exploration of how different governance structures shape integration trajectories in Europe.

This methodological design ensures consistency between the theoretical framework and the empirical strategy adopted in the analysis.

Panel data techniques are widely employed in cross-country macroeconomic research to account for institutional heterogeneity (e.g., Magazzino, 2016).

4. DESCRIPTIVE STATISTICS AND CORRELATION ANALYSIS

4.1 Descriptive Statistics

Table 2 presents the descriptive statistics for the main variables used in the empirical analysis, covering 85 country-year observations across six European countries. The average employment rate of the foreign-born population is approximately 64.6 percent, with a relatively moderate dispersion, indicating meaningful variation in migrant labor market outcomes across countries and over time.

The migrant share of the total population averages around 14.4 percent, ranging from about 7.7 percent to over 22 percent. This wide range reflects substantial differences in migration intensity across European host countries, underscoring the relevance of a comparative panel framework. The share of foreign-born individuals with tertiary education averages roughly 30.7 percent, with considerable dispersion, suggesting heterogeneity in migrants' human capital endowments across national contexts.

Public education expenditure, measured as a percentage of GDP, averages approximately 5.5 percent but exhibits a smaller number of observations due to data availability constraints. The variation in education spending highlights differences in national education systems and fiscal priorities, which may shape long-term integration outcomes rather than immediate labor market effects.

Overall, the descriptive statistics reveal sufficient cross-country and temporal variation in the key variables, supporting the suitability of panel data methods for the empirical analysis.



Table 2. Descriptive Statistics (2010–2024, N = 85 country–year observations)

Variable	Mean	SD	Min	Max	N
Foreign-born employment rate (<i>emp_fb</i> , %)	64.602	4.618	55.400	74.700	85
Migrant share of population (ratio)	0.144	0.038	0.077	0.221	85
Foreign-born tertiary education share (% , 25–64)	30.739	11.958	12.200	53.200	85
Public education expenditure (% GDP)	5.495	1.114	3.795	7.953	67

Source: Authors’ calculations based on Eurostat and World Bank (World Development Indicators).

Notes: All variables are annual. *emp_fb* denotes the employment rate of the foreign-born population (percent). Migrant share represents the proportion of foreign-born residents in the total population. Foreign-born tertiary education share refers to the percentage of foreign-born individuals aged 25–64 with tertiary education. Public education expenditure data are sourced from the World Bank (World Development Indicators) and contain fewer observations due to missing country–year values.

4.2 Correlation Analysis

This subsection provides descriptive evidence on the main variables employed in the empirical analysis and examines their pairwise relationships. The descriptive statistics offer an initial overview of cross-country and temporal variation in migrant labor market outcomes, migration intensity, educational attainment, and institutional characteristics, thereby motivating the subsequent panel data estimations.

To further explore the relationships among the variables, pairwise correlation coefficients are examined. Table 3 reports the Pearson correlation matrix for the dependent variable and the main explanatory variables.

Table 3. Correlation Matrix of Key Variables

Variable	<i>emp_fb</i>	<i>migrant_share</i>	<i>fb_tertiary_share</i>	<i>edu_exp_gdp</i>
Foreign-born employment rate (<i>emp_fb</i>)	1.000			
Migrant share of population	0.586	1.000		
Foreign-born tertiary education share	0.480	0.506	1.000	
Public education expenditure (% GDP)	0.172	0.648	0.688	1.000

Source: Authors’ calculations based on Eurostat and World Bank (World Development Indicators).

Notes: Pairwise Pearson correlation coefficients are reported.

The correlation coefficients remain below conventional multicollinearity thresholds, and variance inflation factors (VIFs) are also within acceptable limits, indicating that the explanatory variables can be jointly included in the regression models without compromising estimation reliability.

The correlation matrix shows that the employment rate of the foreign-born population is positively associated with both migration intensity and tertiary educational attainment among migrants. This suggests that countries with larger migrant populations and higher shares of highly educated migrants tend to exhibit more favorable labor market outcomes for foreign-born individuals. However, the magnitude of these correlations remains moderate, implying that the relationships are present but not mechanically strong.

A positive association is also observed between migration intensity and the share of foreign-born individuals with tertiary education, suggesting that countries with higher migrant shares may attract or retain migrants with greater human capital. Public education expenditure is moderately correlated with migration intensity and migrant education, reflecting cross-country institutional differences.

Overall, the correlation analysis provides preliminary insights into these relationships. However, as these are bivariate associations, they do not control for unobserved country-specific effects or time dynamics. The following section therefore employs panel data estimations to identify within-country relationships while accounting for unobserved heterogeneity.



5. EMPIRICAL RESULTS

5.1 Baseline Fixed Effects Estimates

Table 4 reports the results from the two-way fixed effects estimations examining the relationship between migration intensity, education-related integration mechanisms, and labor market outcomes of the foreign-born population. The specification controls for unobserved country-specific heterogeneity and common time shocks, thereby identifying the effects of within-country changes over time.

The coefficient on migration intensity, measured as the share of the migrant population in total population, is negative. Although the estimate does not reach conventional levels of statistical significance ($p = 0.103$), its magnitude suggests that increases in migration intensity are associated with weaker employment outcomes for migrants.

This result provides partial empirical support for **Hypothesis H₁**, indicating that higher migration intensity may be linked to short-term adjustment pressures in host-country labor markets.

Educational attainment among migrants exhibits a positive association with labor market outcomes. The coefficient on the share of foreign-born individuals with tertiary education is positive, consistent with theoretical expectations regarding the role of human capital in facilitating labor market integration.

While the effect is not statistically significant at the 5 percent level ($p = 0.123$), its direction supports **Hypothesis H₂** in directional terms.

Public education expenditure, measured as a percentage of GDP, displays a positive but statistically insignificant relationship with migrant employment outcomes. This finding suggests that aggregate education spending alone does not have an immediate or direct impact on migrant labor market integration.

Consequently, **Hypothesis H₃** receives limited empirical support in the baseline fixed effects specification.

Table 4 presents the two-way fixed effects estimates examining the relationship between migration intensity, education-related integration mechanisms, and labor market outcomes of the foreign-born population.

Table 4. Fixed Effects Estimates of Migrant Employment Outcomes

Variable	Coefficient	Std. Error	t-Statistic	p-Value
Migrant share	-36.902	(22.212)	-1.661	0.103
Foreign-born tertiary education	0.218	(0.139)	1.572	0.123
Public education expenditure (% GDP)	0.448	(0.785)	0.570	0.571
Country fixed effects	Yes			
Time fixed effects	Yes			
Observations	240			
Countries	6			

Source: Authors' calculations.

Notes: This table reports two-way fixed effects estimates of the determinants of migrant employment outcomes. The dependent variable is the employment rate of the foreign-born population. All specifications include country and year fixed effects to control for time-invariant country characteristics and common time shocks. Robust standard errors clustered at the country level are reported in the Std. Error column.

*, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

The coefficient on migrant share is negative but not statistically significant at conventional levels ($p = 0.103$), suggesting no robust evidence of a direct association once country and time effects are controlled for.

5.2 Random Effects Estimates and Model Comparison

To assess the robustness of the fixed effects results, a random effects specification is also estimated. While the random effects model yields coefficients that are broadly comparable in sign for some variables, notable differences emerge in both magnitude and statistical significance. These differences reflect the underlying assumption of the random effects model that unobserved country-specific characteristics are uncorrelated with the explanatory variables.



A direct comparison between the fixed and random effects estimates highlights the sensitivity of the results to modeling assumptions regarding institutional heterogeneity. Given the strong theoretical expectation that national institutions influence both migration intensity and labor market outcomes, these differences motivate a formal model selection test.

Table 5 compares fixed effects and random effects estimates of foreign-born employment outcomes.

Table 5. Fixed Effects vs. Random Effects Estimates

Variable	Fixed Effects (FE)	Random Effects (RE)
Migrant share of population	-36.902 (22.212)	32.986 (21.974)
Foreign-born tertiary education share	0.218 (0.139)	0.206 (0.097) **
Public education expenditure (% GDP)	0.448 (0.785)	-1.353 (0.805) *
Intercept	—	61.059 (3.575) ***
Country effects	Fixed	Random
Time effects	Yes	Yes
Observations	85	85
Countries	6	6

Source: Authors' calculations.

Notes: Robust standard errors clustered at the country level are reported in parentheses. The intercept is absorbed by country fixed effects in the FE specification.

*, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

While both specifications control for time effects, they rely on different assumptions regarding country-level characteristics that are not directly observed. The random effects approach treats these country-specific factors as independent from the explanatory variables, whereas the fixed effects model allows them to be correlated.

The results differ meaningfully across the two specifications. Most notably, the estimated effect of migration intensity reverses sign when moving from the RE to the FE model, suggesting that cross-country differences may influence the RE estimates. Migrant education maintains a positive association with employment outcomes in both models, although statistical significance emerges only under the random effects framework. Similarly, public education expenditure displays inconsistent signs across specifications, reinforcing the relevance of accounting for unobserved country heterogeneity.

5.3 Model Selection: Hausman Test

Table 6 reports the results of the Hausman test comparing the fixed and random effects estimators. The test strongly rejects the null hypothesis that the random effects estimator is consistent ($\chi^2 = 11.285$, $p = 0.010$). This result indicates that unobserved country-specific effects are correlated with the explanatory variables, violating the key assumption required for the validity of the random effects model.

This finding provides strong empirical support for **Hypothesis H₅** emphasizing the decisive role of institutional heterogeneity in shaping migrant labor market integration outcomes.

Table 6 reports the results of the Hausman specification test comparing fixed effects and random effects estimators.

Table 6. Hausman Test Results

Test	Chi-square (χ^2)	Degrees of Freedom	p-value	Preferred Model
Hausman test	11.285	3	0.010	Fixed Effects

Source: Authors' calculations.

Notes: This table reports the results of the Hausman specification test. The null hypothesis assumes that the random effects estimator is consistent, implying no correlation between unobserved country-specific effects and the regressors. A statistically significant test statistic indicates a preference for the fixed effects specification.

The Hausman test strongly rejects the null hypothesis that the random effects estimator is consistent ($\chi^2 = 11.285$, $p = 0.010$). This result indicates that unobserved country-specific effects are correlated with the explanatory variables, violating the key assumption underlying the random effects model.

Consequently, the fixed effects specification is preferred, as it provides consistent estimates by controlling for time-invariant national characteristics such as institutional frameworks, labor market structures, and integration regimes. This finding highlights the importance of accounting for country-specific heterogeneity when analyzing migrant labor market outcomes in Europe. Accordingly, the fixed effects specification is preferred, as it provides consistent estimates by controlling for time-invariant national characteristics such as labor market institutions, integration frameworks, and governance structures.

5.4 Robustness: Lagged Migration Variable

To address potential simultaneity between migration intensity and migrant employment outcomes, the baseline fixed effects model is re-estimated using a one-year lag of the migration share variable. This specification reduces concerns that contemporaneous labor market conditions may influence migration flows within the same period.

The results remain broadly consistent with the baseline estimates. The coefficient on lagged migration intensity preserves its negative sign and comparable magnitude, while statistical significance remains limited. The estimated effects of migrant tertiary education and public education expenditure are likewise stable across specifications.

Overall, these findings indicate that the main results are not driven by reverse causality and support the robustness of the fixed effects framework.

5.5 Graphical Evidence

The regression findings are complemented by graphical analysis illustrating cross-country trends and bivariate relationships.

Figure 1 depicts the evolution of migrant employment rates across countries over time, highlighting substantial heterogeneity in integration trajectories.

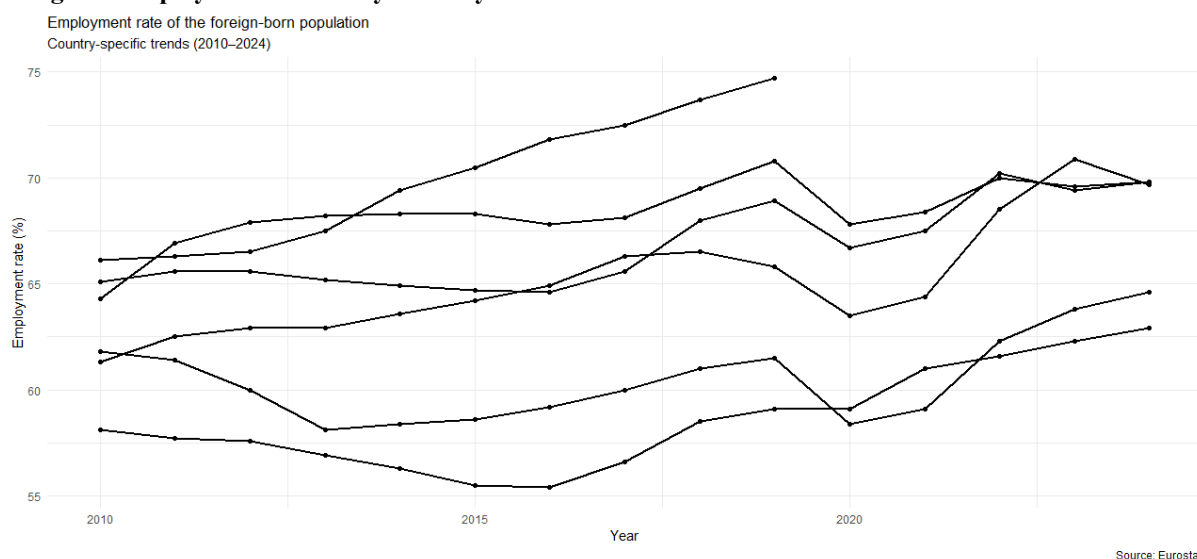
Figure 2 illustrates the relationship between migration intensity and migrant employment, while

Figure 3 shows the association between educational attainment among migrants and labor market outcomes.

Overall, the graphical evidence visually supports the regression results, reinforcing the importance of education and institutional context in shaping migrant employment outcomes across European countries.

Figure 1 illustrates substantial cross-country heterogeneity in foreign-born employment rates over time, reinforcing the relevance of institutional differences across host countries.

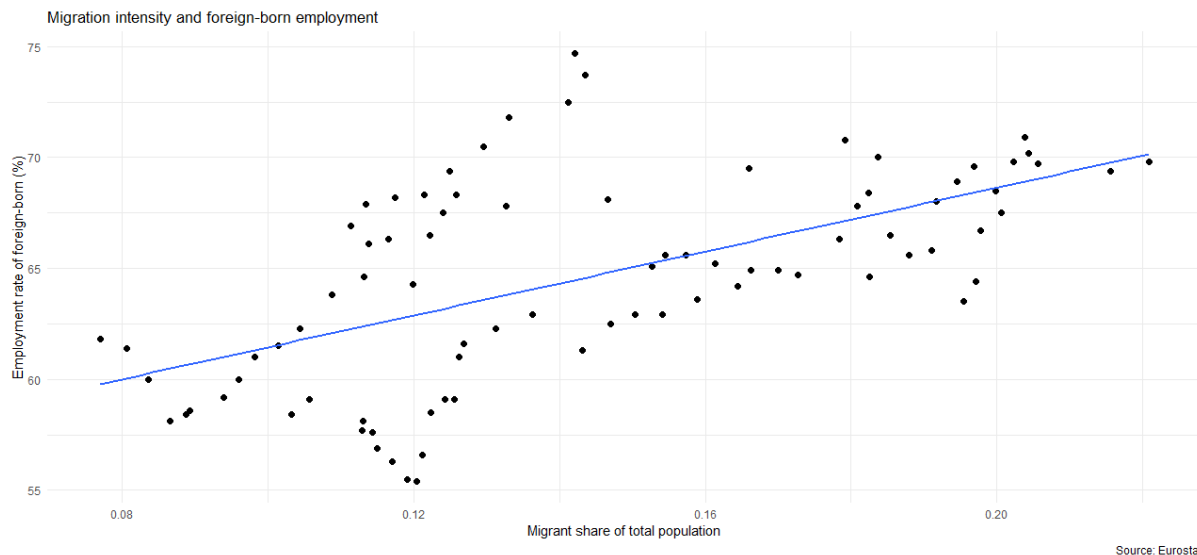
Figure 1. Migrant Employment Trends by Country



Note: Employment rates refer to the foreign-born population. Data source: Eurostat

Figure 2 shows a weak negative association between migration intensity and foreign-born employment, consistent with the negative but statistically insignificant coefficient estimated in the fixed effects model.

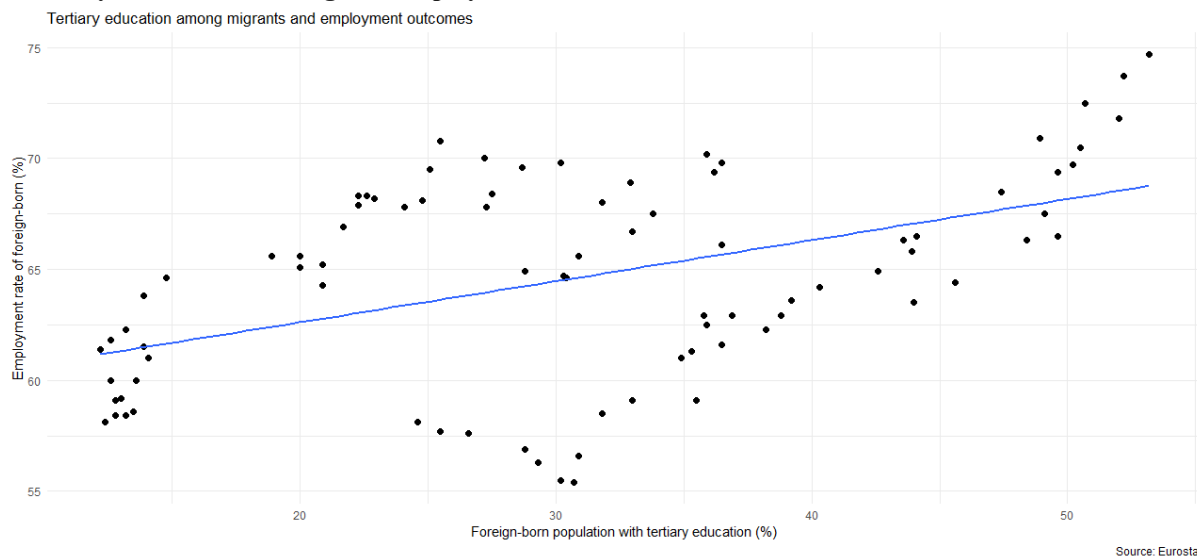
Figure 2. Migration intensity and migrant employment



Note: Migration intensity is measured as the share of foreign-born population. Employment refers to the foreign-born employment rate. Data source: Eurostat

Figure 3 illustrates a positive association between tertiary educational attainment among migrants and labor market outcomes, consistent with Hypothesis H₂.

Figure 3. Tertiary Education and Migrant Employment



Note: Tertiary education refers to the share of the foreign-born population aged 25–64 with tertiary education. Employment refers to the foreign-born employment rate. Data source: Eurostat.

6. DISCUSSION AND POLICY IMPLICATIONS

6.1 Discussion

This study investigates how migration intensity, migrant education and national institutional environments jointly shape employment outcomes for the foreign-born population in selected European countries. Rather than viewing migration as a



homogeneous process, the analysis emphasizes that integration unfolds differently across institutional settings, depending on how effectively labor markets absorb new entrants.

The fixed effects estimates indicate that higher migration intensity is associated with weaker migrant employment outcomes, although the relationship does not reach conventional levels of statistical significance. This pattern should not be interpreted as evidence of a negative impact of migration per se. Instead, it may capture transitional adjustment processes. When inflows expand rapidly, labor markets may require time to adapt, particularly in contexts where regulatory frameworks, credential recognition systems or hiring practices are relatively rigid. The descriptive evidence confirms substantial cross-country variation in migrant employment trajectories, underscoring the importance of institutional context.

Education emerges as a more stable determinant. Across specifications, higher shares of tertiary-educated migrants are linked to improved employment outcomes. This suggests that educational attainment enhances adaptability and facilitates better skill matching within host economies. Migrants with stronger human capital appear better equipped to navigate institutional constraints and secure more stable employment opportunities.

Public education expenditure, measured as a share of GDP, does not exhibit a consistent association with migrant employment. This finding points to a distinction between spending volume and policy effectiveness. The impact of education systems likely depends less on aggregate expenditure and more on how resources are structured and targeted toward integration-relevant initiatives.

A key insight from the analysis concerns the role of institutional heterogeneity. The Hausman test strongly supports the fixed effects specification, indicating that unobserved country-specific characteristics systematically influence the estimated relationships. Labor market institutions, governance arrangements and welfare structures therefore appear to play a substantive role in shaping integration outcomes. This interpretation aligns with broader evidence emphasizing the importance of institutional quality in determining economic performance (Law and Azman-Saini, 2012).

Although active labor market policies are not explicitly modeled in the baseline specification, their influence is partly captured through country-specific effects. This further reinforces the conclusion that migrant labor market integration cannot be examined independently of broader institutional frameworks.

6.2 Policy Implications

The findings point toward several practical considerations for policymakers. First, migration management should be accompanied by measures that strengthen the capacity of labor markets to absorb new entrants. Expanding migration flows without ensuring that institutional structures are prepared to facilitate integration may create transitional employment pressures rather than long-term gains.

Second, education policy plays a crucial role in shaping integration outcomes. However, the results suggest that the effectiveness of education systems depends less on overall spending levels and more on how resources are directed. Policies that facilitate language acquisition, recognition of foreign credentials, and access to continuous training opportunities appear particularly relevant for improving migrant employment prospects.

Third, the evidence of institutional differences across countries implies that integration strategies cannot be uniformly applied across Europe. While coordination at the European level remains valuable, national policy design should reflect domestic labor market structures and welfare arrangements.

Finally, the analysis underscores the importance of policy alignment. Migration, education, and labor market policies interact in meaningful ways, and fragmented approaches may limit their effectiveness. A coherent framework that connects migration governance with skills development and labor demand is more likely to produce sustainable integration outcomes.

These implications should be interpreted with caution, given the macro-level scope of the analysis and the inherent limitations of cross-country panel data.

7. CONCLUSION AND LIMITATIONS

7.1 Conclusion

This study explored how migration intensity, migrant education and national institutional settings relate to employment outcomes of the foreign-born population in selected European countries during the period 2010–2024. Drawing on longitudinal panel data



and two-way fixed effects estimations, the analysis examined how migration and education operate within different national frameworks.

The results suggest that increases in the migrant share of the population are associated with weaker employment outcomes in the fixed effects specification, although the relationship does not reach conventional levels of statistical significance. This indicates that labor market adjustment to migration is neither automatic nor uniform across countries. Integration outcomes appear to depend on broader institutional conditions rather than migration flows alone.

In contrast, educational attainment among migrants emerges as a consistently positive factor. Higher shares of tertiary-educated migrants are associated with better employment outcomes, underscoring the importance of skills and adaptability in navigating host-country labor markets. Education thus functions as an important channel through which integration is facilitated, particularly in contexts where institutional structures support effective skill utilization.

Public education expenditure, measured as a percentage of GDP, does not exhibit a stable direct association with migrant employment. This suggests that overall spending levels may be less decisive than how resources are allocated and implemented. The strong rejection of the random effects model by the Hausman test further highlights the role of country-specific characteristics, indicating that institutional differences systematically shape integration dynamics.

Taken together, the findings point to a multifaceted integration process shaped by individual characteristics, policy design and institutional context. Migration outcomes are therefore best understood as the result of interactions between human capital and national frameworks rather than as a direct consequence of migration intensity alone.

7.2 Limitations and Directions for Future Research

While the study offers useful insights, several limitations should be acknowledged. First, the analysis does not directly quantify active labor market policies. Their influence is partially absorbed through country-specific effects, but more detailed policy-level indicators would allow for a clearer assessment of how particular integration measures affect employment outcomes.

Second, the empirical framework relies on aggregate country-level data. As a result, it does not capture variation within migrant populations, such as differences by country of origin, gender, skill composition or duration of residence. Future research based on micro-level or matched employer–employee datasets could shed light on these internal dynamics and provide a more nuanced understanding of integration processes.

Third, the sample covers a limited group of European countries. Although this allows for focused comparison, broader geographic coverage would strengthen external validity and enable more comprehensive cross-country analysis.

Finally, the estimations emphasize contemporaneous relationships and do not explicitly model long-term adjustment paths. Subsequent studies could examine dynamic specifications or longer time horizons in order to better understand how integration evolves over time.

Exploring the interaction between migration flows, educational attainment and institutional structures remains an important avenue for future research, particularly in the context of evolving labor market conditions in Europe.

Ethical Statement

This study is based exclusively on secondary data obtained from publicly available international databases (Eurostat, OECD and World Bank). No primary data were collected, and no individual-level or personally identifiable information was used. Consequently, ethical approval was not required.

Declaration of Conflicting Interests

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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Data Availability Statement

The datasets analyzed during the current study are publicly available from Eurostat, OECD International Migration Database, and World Development Indicators (World Bank).



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