

ADAPTING MIGRATION POLICY TO LABOR MARKET NEEDS: SOCIO-ECONOMIC CHALLENGES IN THE SLOVAK REPUBLIC

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This study examines the socio-economic challenges of migration policy in the Slovak Republic through an analysis of gaps in labor market participation between immigrants and natives. We use data from the 2019 EU-LFS and a method called Oaxaca-Blinder decomposition to look at differences in job participation among five groups of immigrants (EU-15, EU-13, other EU, non-EU, and all immigrants), considering factors like education, age, and gender. Our results reveal a complex landscape: while immigrants collectively show higher participation rates than natives (0.804 vs. 0.704), significant variations emerge across subgroups. EU-13 immigrants have a significant disadvantage with a gap of -0.130, which is caused by both measurable factors and unknown reasons, while EU-15 immigrants suffer greatly in the benefits they get from their education, with a gap of -1.261, even though their participation rates are similar. Non-EU immigrants exhibit lower participation (-0.100 gap), primarily explained by educational differences. The findings highlight structural barriers, such as credential devaluation and potential discrimination, which challenge conventional human capital theories. Methodologically, we address data limitations through subgroup aggregation and sensitivity analyses. The study contributes to migration literature by providing the first comprehensive analysis of immigrant-native gaps in Slovakia, emphasizing that there are targeted policy interventions, including credential recognition reforms and anti-discrimination measures. These insights are particularly relevant for Central European countries undergoing similar post-socialist transitions and demographic changes.

Keywords: immigrant-native labor market participation gap; Slovakia; Oaxaca-Blinder decomposition; EU-LFS; immigrant integration



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Introduction

Migration has emerged as a top socio-economic phenomenon in contemporary Europe that profoundly influences labor market trends, population composition, and economic growth patterns (Dustmann & Frattini, 2014; Zaiceva & Zimmermann, 2016).

The Slovak Republic, positioned at the crossroads of Central and Eastern Europe, presents an intriguing case study of how migration functions both as an economic opportunity and as a policy challenge. While immigration can alleviate extreme labor shortages in developed economies and enhance productivity through human capital diversification (Kerr & et al., 2015), persistent gaps between the experiences of immigrant and native workers challenge fundamental concerns about social equity and economic efficiency. These differences come into special focus in Slovakia's evolving economy, where migration policy intersects with post-transit labor market institutions and growing demographic pressure (Hazans, 2016; Kahanec, 2013).

Many researchers have studied the differences in the labor market between immigrants and native workers in Europe, using various theories and methods. Later work by Elsner (2013) and Brücker et al. (2019) has illuminated East-West migration flows within the EU more deeply, while Constant (2014) and Borjas (2019) have tested the structural barriers faced by non-EU migrants. The Oaxaca-Blinder decomposition technique has been very useful in separating the differences caused by things we can see, like education and experience, from those we can't explain, such as discrimination and institutional barriers, in these differences. However, the existing literature exhibits significant geographical and methodological limitations that constrain our understanding of Central European contexts.

Three research gaps are clearly unaddressed in existing scholarship. Firstly, the pre-eminent focus on Western European labor markets left a knowledge gap regarding newer EU member states like Slovakia, where labor market institutions and migration waves are quite dissimilar (Kahanec & Zimmermann, 2016).

Second, most studies treat immigrant populations as homogeneous, neglecting important variations between EU-15, EU-13, and non-EU migrant groups (Hazans, 2016).

Third, there hasn't been enough research on how national migration policies affect job market results in countries that have recently changed their economies, especially when it comes to how skilled and unskilled migrant workers fit in. These gaps limit policymakers' ability to design targeted, evidence-based interventions.

This study provides three substantive advances to the migration and labor economics literature. Firstly, we offer the first comprehensive analysis of the Slovak immigrant-native labor market gap, drawing on recent EU-LFS data and efficient decomposition methods. Secondly, we offer a new decomposition of immigrant groups (EU-15, EU-13, other EU, and non-EU) to reveal previously unexposed heterogeneity in labor market outcomes. Third, we give important information for policy-making by measuring how much different visible traits and structural obstacles affect various groups of migrants. Our methodology combines the control of Oaxaca-Blinder decomposition with sensitivity analyses to ensure the validity of our evidence under the institutions of Slovakia.

The results of this research extend beyond the academic community to speak to central policy discussions. By identifying specific migrant groups that face the greatest barriers (notably EU-13 and non-EU migrants), our research can guide targeted intervention in credential recognition, language education, and anti-discrimination campaigns.

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The study also offers a reproducible template for analysis of migration-labor market interactions in other Central and Eastern European countries undergoing similar demographic and economic transitions. As Slovakia continues to calibrate its migration policy both to EU pressures and domestic labor needs, this research provides opportune evidence to balance economic objectives with social cohesion requirements.

Literature review

Many disciplines have extensively researched the socio-economic dimensions of migration and its consequences for the labor market, resulting in a rich but dispersed literature. The current review brings together new studies from economics, sociology, and policy studies on three main topics: (1) theories about the differences in the labor market between immigrants and natives, (2) statistical evidence from Europe, and (3) methods used in decomposition analysis.

Theoretical foundations

Theoretical consideration of migration and integration into the labor market is dependent on a progression of rival theoretical paradigms that still define ongoing research. Human capital theory (Becker, 1964; Chiswick, 1980) dominates economic considerations, where education, qualification, and experience are highlighted as determinants of labor market outcome. However, segmented labor market theory shows how immigrants often end up in low-paying jobs, no matter their skills or education.

Later models (Massey et al., 1993; Portes & Rumbaut, 2014) have added more detail to this explanation by showing how legal status, social networks, and the environment of the destination country affect how immigrants integrate.

These theoretical tensions are most pertinent in Central European contexts like Slovakia, where post-communist labor market institutions interact particularly with EU migration regimes (Bernaciak, 2015; Kahanec & Zimmermann, 2016). The emerging trend of "migrant penalty" (Heath & Cheung, 2007) has gained growing attention in recent literature, providing a useful framework through which to monitor immigrants' persistent disadvantages even after accounting for human capital factors.

Empirical evidence across European contexts

Comparative European studies reveal dramatic regional differences in immigrant labor market integration that resist simplistic generalizations. Northern and Western European nations tend to have smaller employment gaps but more persistent wage penalties (Dustmann & Frattini, 2014; Brücker et al., 2019), while Southern European economies paradoxically experience higher employment gaps but faster wage convergence (Venturini & Villosio, 2018).

The Central and Eastern European experience remains remarkably under-researched considering the growing importance of the region as a destination and transit region (Drbohlav, 2010; Kaczmarczyk & Okólski, 2008).

Current meta-analyses (Fleischmann & Höhne, 2013) set several robust trends: EU migrants are always more advantageous than non-EU migrants in employment rates (Zaiceva & Zimmermann, 2016), EU-15 nationals fare better than EU-13 ones (Elsner, 2013), and gender disparities are most pronounced among non-European migrant groups (Adserà & Chiswick, 2007).

However, these broad trends hide important national variations shaped by distinctive migration histories, welfare regimes, and labor market institutions - from Germany's guest worker tradition (Constant, 2014) to Sweden's universal welfare state (Bevelander & Pendakur, 2014) and Spain's segmented labor markets (Amuedo-Dorantes & De la Rica, 2013).

Methodological advancements

The evolution of decomposition techniques has shifted our ability to analyze immigrant-native labor market gaps with increased precision. The original Oaxaca-Blinder approach has been greatly improved to meet different analysis needs: Jann's (2008) version for categorical variables, Fairlie's (2005) method for binary responses, and Recentered Influence Function (RIF) decompositions for looking at distributions (Firpo et al., 2018).

Enacted for migration analysis, these more recent methods have generated a range of significant results: unexplained gaps (which could indicate discrimination) account for 30-60% of discrepancies observed in Western European contexts (Lehmer & Ludsteck, 2011); education-work incongruence is also crucial among non-EU immigrants (Aleksynska & Tritah, 2013); and persistent "glass ceiling" pressures restrict career progression for skilled female immigrants (Alvarez-Galvez, 2016).

However, there are still important problems with the methods used, such as how to correctly consider selection bias among different migrant groups, how to measure unobserved traits like language skills, and how to manage the influence of human capital growth. These methodological problems are particularly acute in transition economies like Slovakia, where the pace of labor market transformation aggravates the challenges of accurate measurement.

Central and Eastern European specificities

The post-communist context of Central and Eastern Europe introduces unique dimensions to migration analysis that demand specialized scholarly attention. Research has found several unique trends in the region: a "migration hump" during the early transition periods, specific circular migration patterns near the EU's eastern border, and worrying effects of skill loss due to selective emigration.

Slovakia's job market has important features that need careful study: it is quickly changing from farming and heavy industry to manufacturing and services; there are big differences between the busy capital, Bratislava, and the slower-growing eastern areas; and there are new job opportunities for immigrants in areas like car manufacturing and construction.

These unique contextual circumstances offer research for examining how migration intersects with post-socialist economic transformation, yet detailed studies with a particular emphasis on Slovakia are surprisingly scarce in the international literature. The country's twin positions as prime emigration country, transit zone, and new destination country create complex dynamics that challenge conventional migration theories developed largely in Western contexts.

Knowledge gaps and research needs

Despite the profusion of earlier research, certain critical knowledge gaps exist that this study addresses directly. The literature disproportionately emphasizes West-East migration streams, disregarding the imbalances between different EU migrant populations (EU-15 and EU-13 citizens). Post-accession destination nations like Slovakia are sadly understudied despite growing importance to European migration patterns.

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The field is hampered by the scarcity of longitudinal studies tracking integration trajectories over time, particularly for transitional economies. Above all, perhaps, is the absence of scrutiny of the interaction between migration streams and the ongoing digital evolution of labor markets.

This research effectively addresses these gaps by its rigorous exploration of Slovak labor market data with state-of-the-art decomposition techniques while adjusting for regional and sectoral peculiarities. The research design keeps Slovakia's permanent status as a receiving and sending country, its rapid economic transition, and its unique labor market institutions constant.

The work balances firm quantitative analysis with rich contextual understanding and is most relevant to theory debate in migration economics as much as to policy debate in Central Europe. Its findings can contribute to us improving our knowledge regarding how migration adjusts to and informs change in post-socialist labor markets, as well as the ways policymakers may make better choices based on quality evidence.

Methodology

This section presents the methodology adopted and the empirical analysis carried out in this study.

First, it explains the model suggested by Oaxaca (1973), where they suggest dividing the participation gap in the labor markets between immigrants and natives into explained and unexplained parts.

Second, this chapter outlines the empirical specification and the steps involved in the creation of econometric models, which will explain the empirical approach to test the main hypothesis and answer the research question.

Measuring the immigrant-native participation gap in the labor market

As a first step, the methodology of our study intends to find the participation gap in the labor markets between immigrants and natives by following the Oaxaca-Blinder Decomposition, suggested by Oaxaca (1973), and Jann's (2008) extension.

It is a commonly used approach to investigate the participation gap across different groups, such as natives vs. all immigrants, natives vs. EU-15 immigrants, natives vs. EU-13 immigrants, natives vs. other EU immigrants, and natives vs. non-EU immigrants.

It decomposes the mean differences in the participation gap in the labor markets between immigrants and natives into parts explained by characteristics such as education, age, and gender and an unexplained part, interpreted as a measure of discrimination but also including effects from unobserved predictors.

Labor market and discrimination studies widely apply this method (Stanley & Jarrell, 1998; Weichselbaumer & Winter-Ebmer, 2005).

$$R = E(Y_M) - E(Y_N)$$

In the given specification M and N are the two groups, immigrant-natives, Y is the outcome variable.

Given a set of predictors the main question arises, how much of the differences in the participation gap in the labour markets between immigrants and native is attributed to a set of predictors which are education, age, and gender in our study.

$$Y_{\gamma} = X'_{\gamma}\beta_{\gamma} + \varepsilon_{\gamma}, \quad E(\varepsilon_{\gamma}) = 0 \quad \gamma \in (M, N)$$

According to the linear model where X is the vector which includes the predictor and a constant, β includes the slop and intercept, ε and is error, the differences in the mean outcome can be shown by the difference in the linear prediction at immigrant-natives means of the predictors which is presented as follow:

$$R = E(Y_M) - E(Y_N) = E(X_M)' \beta_M - E(X_N)' \beta_N \quad (1)$$

Because

$$E(Y_{\gamma}) = E(X'_{\gamma}\beta_{\gamma} + \varepsilon_{\gamma}) = E(X'_{\gamma}\beta_{\gamma}) + E(\varepsilon_{\gamma}) = E(X_{\gamma})' \beta_{\gamma}$$

Where according to the assumption

$$E(\beta_{\gamma}) = \beta_{\gamma} \text{ and } E(\varepsilon_{\gamma}) = 0$$

Thus, to specify the role of immigrants and native differences to the overall participation differences, equation (1) can be rearranged as suggested by Winsborough & Dickinson (1971) and Daymont & Andrisani (1984).

$$R = \{E(X_M) - E(X_N)\}' \beta_N + E(X_N)' (\beta_M - \beta_N) + \{E(X_M) - E(X_N)\}' (\beta_M - \beta_N) \quad (2)$$

This type of decomposition is usually called a threefold decomposition which is represented as follow in the literature:

$$R = E + C + I$$

E is that part of the participation gap in the labor markets between immigrants and native that is explained by the immigrant-native difference in their education, age, and gender. The first part reflects the mean increase in women's wages if they had the same characteristics as men.

$$E = \{E(X_M) - E(X_N)\}' \beta_N$$

Further, C is that part of participation gap that is not explained by the immigrant-native differences in their education, age, and gender. This part is usually related to the discrimination in the labor market. Thus, it quantifies the change in the participation gap in the labor markets between immigrants and native when applying the native's coefficients to the immigrant's characteristics.

$$C = E(X_N)' (\beta_M - \beta_N)$$

And the third component is an interaction term accounting for the fact that differences in explained and unexplained exist simultaneously between the immigrants and natives.

$$I = \{E(X_M) - E(X_N)\}' (\beta_M - \beta_N)$$

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The estimates presented in the (2) is candid. To transform it to a computable equation, we transform the β_M and β_N into independently least-squares estimates of immigrant and native groups $\hat{\beta}_M$ and $\hat{\beta}_N$. Additionally, we will use the estimated means X_M and X_N of immigrants and natives for $E(X_M)$ and $E(X_N)$. Thus, based on the specification of equation (3) the participation gap in the labour markets between immigrants and native are estimated.

$$\hat{R} = \bar{Y}_M - \bar{Y}_N = (\bar{X}_M - \bar{X}_N)' \bar{\beta}_N + \bar{X}_N' (\bar{\beta}_M - \bar{\beta}_N) + (\bar{X}_M - \bar{X}_N)' (\bar{\beta}_M - \bar{\beta}_N) \quad (3)$$

We applied the Oaxaca decomposition in the context of a Linear Probability Model, to estimate the participation gap between immigrant and natives' groups. It is worth mentioning that we applied this method independently for each year and country separately by using EU-LFS.

Additionally, education, age, and gender are the main characteristics and predictors based on which the differences in the participation gap in the labor markets between immigrants and native are calculated. The labor force participation gap presents the immigrant-native status and access to labor market.

Additionally, following the ILO definition, we consider the labor force participation as of working age (15–64) who are either employed or unemployed. Beyond that, we applied the above method with consideration of five different groups of immigrants.

The first groups include all immigrant's vs natives. The second group includes EU-15 immigrants vs natives, the third group includes EU-13 immigrants vs natives, the fourth group includes other EU immigrant's vs natives, while the fifth group immigrants include non-EU immigrant's vs natives.

Data and variables

The research has used EU-LFS for the year 2019 to investigate the participation gap in the labor markets between immigrants and natives. After cleaning the data, the final sample includes around 54,744 observations of working-age (15-64) individuals who are either Natives, EU-15-born, EU-13-born, other EU-born, or non-EU-born.

Thus, we classified our data into these five groups based on their country of birth. EU immigrants are those who are born in one of the EU countries, while non-EU immigrants are those who are born outside of the EU.

Among the sample, 0.9 % are immigrants, 0.03% are EU-15 immigrants, 0.53% are EU-13 immigrants, 0.2% are other EU immigrants, and 0.08% are non-EU immigrants, while 99.16 % are natives. This classification will help us with a detailed investigation of the relationship between the participation gap in the labor markets between immigrants and natives, with consideration of their age, education, and gender. The details of the data are listed in Tab. 1.

Additionally, the details of variables that are utilized in this study from EU-LFS datasets are summarized in Tab. 2. This table provides the names of the variables, definitions, measurements, and their relevant sources.

Tab. 3 presents the detailed description and summary statistics of the main variables used in this study.

Table 1 - Individual and labor market characteristics of immigrants and natives
(author elaboration based on EU-LFS Dataset)

	Natives	EU-15	EU-13	Other EU	Non-EU	Totals
Employed	94.09	91.67	97.92	95.06	94.59	94.11
Unemployed	5.91	8.33	2.08	4.94	5.41	5.89
Inactive	29.64	29.41	16.67	25.69	19.57	29.56
Participation rate	70.36	70.59	83.33	74.31	80.43	70.44
Low: lower secondary	15.01	11.76	5.56	5.50	21.74	14.95
Medium: upper secondary	63.99	47.06	64.58	58.72	21.74	63.94
High: third level	21.00	41.18	29.86	35.78	56.52	21.11
Female	50.99	11.76	45.83	62.39	23.91	50.95
Male	49.01	88.24	54.17	37.61	76.09	49.05
Age 15-29	22.34	35.29	4.51	19.27	15.22	22.23
Age 30-44	28.51	64.71	25.00	38.53	43.48	28.54
Age 45-64	49.15	0.00	70.49	42.20	41.30	49.23

Note: the table presents the percentage of each group within the overall sample

Table 2 - Description of variables
(author elaboration based on EU-LFS Dataset)

Variables	Definition	Measurement	Source
Participation gap	It is the estimated gap between immigrants and natives based on Oaxaca-Blinder Decomposition. Group b are nationals	It includes the age 15-64 according to ILO	EU-LFS
Education (educ)	It indicates on three level of education: lower secondary, upper secondary, and tertiary (third level)	Ordinal	EU-LFS
Age	It is the age of the interviewed person	Whole Numbers	EU-LFS
Gender	The gender of the interviewed person	1 for male	EU-LFS
Immigrants	The immigrant and national are chosen based on the country of their birth	Country of birth	EU-LFS

Table 3 - Descriptive statistics
(author elaboration based on EU-LFS Dataset)

Variable	Obs	Mean	Std. Dev.	Min	Max
participation	54744	.704	.456	0	1
age	54744	42.826	14.29	17	62
educ	54744	2.062	.597	1	3
gender	54744	.491	.5	0	1

Data limitations

While the EU-LFS provides helpful standardized data, its 2019 Slovak dataset has some limitations for the study of migration, including small migrant subsamples (only 0.9%

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immigrants), lacking important variables (e.g., language proficiency, migration duration), and no earnings data.

To mitigate these constraints, we consolidated immigrant subgroups for which sample sizes were dangerously small, focused our analysis on inequalities in labor force participation (where EU-LFS is most robust), and cross-checked results with national reports where possible. These changes help us make careful conclusions and suggest future research that could combine EU-LFS data with national data to include irregular migrants, track integration over time, and consider unmeasured factors like how credentials are recognized.

Results

The regression results provide insight into the gaps in labor market participation between immigrants and nationals across different country groups. The results are broken down by immigrant origin, with five distinct groups: all immigrants, EU-15 immigrants, EU-13 immigrants, other EU immigrants, and non-EU immigrants.

The participation gap is calculated using the Oaxaca-Blinder decomposition, which shows both the explained and unexplained portions of the difference in labor market outcomes. The explained portion reflects the gap attributable to observable factors such as education, age, and gender, while the unexplained portion likely reflects systemic factors or discrimination.

For all immigrants, the regression results indicate an immigrant participation gap of 0.101 in favor of immigrants, with immigrants having a participation rate of 0.804 compared to 0.704 for nationals, a statistically significant gap. Observable characteristics, specifically higher education among immigrants, explain 64% of the gap overall.

Yet, much of the gap is unexplained (0.037), which suggests that factors like discrimination or unobservable traits are to blame for the gap in labor market participation. The negative unexplained education effect (-0.457) suggests that while immigrants are more educated, the returns on that education are lower than for nationals.

The EU-15 immigrants, who are from Western European countries, show a tiny gap in participation with a difference of nearly zero (-0.00148), which means that there isn't much difference in participation between EU-15 immigrants and nationals. The unexplained education effect is large and negative (-1.261), meaning that, despite having similar participation rates, EU-15 immigrants have severe problems with their educational qualifications being accepted or utilized in the labor market.

For EU-13 immigrants (Eastern Europe), the estimates document a disadvantage with a difference in participation rate of -0.130, which shows EU-13 immigrants have significantly lower participation than nationals. Differences in education, age, and gender drive the explained part of this gap (-0.065), while the unexplained part contributes an equal value (-0.065).

This result means that observed and unobserved variables are at work to limit the labor market activity of EU-13 immigrants, particularly relative to nationals.

The results for other EU immigrants show a small gap of -0.0388, with most of the explanation arising from observed variables such as education and gender. The unexplained is small, which suggests that the participation gap for this group could be largely explained by measurable factors as opposed to discrimination or other unobservable variables.

Finally, for non-EU immigrants, there is a significant disadvantage, with a 0.100 participation gap. This gap is mostly explained by education (-0.0987), indicating that non-EU

immigrants tend to have lower labor market participation, but education plays a significant role in bridging the gap.

The unexplained portion is small, suggesting that once education and other demographic factors are accounted for, there are fewer residual barriers to participation for non-EU immigrants.

The research highlights the complex character of immigrant-native differences in engagement and that there is substantial heterogeneity between groups. For some immigrant groups, such as EU-13 immigrants, disparity is accounted for by the most visible determinants, such as education, but for other groups, such as non-EU immigrants, disparity is accounted for mainly by schooling levels.

The unexplained factor does indicate potential structural barriers or bias that are not explainable within the observed data. These results call for addressing both visible and invisible aspects to offer equal opportunities in the European labor market for immigrants.

Table 4 - Regression results
(author elaboration based on EU-LFS Dataset)

Overall	All	EU-15	EU-13	Other EU	Non-EU
group_1	0.804*** (0.0185)	0.704*** (0.00195)	0.704*** (0.00196)	0.704*** (0.00195)	0.704*** (0.00195)
group_2	0.704*** (0.00196)	0.706*** (0.112)	0.833*** (0.0220)	0.743*** (0.0419)	0.804*** (0.0590)
difference	0.101*** (0.0186)	-0.00148 (0.112)	-0.130*** (0.0220)	-0.0388 (0.0419)	-0.100* (0.0590)
explained	0.0637*** (0.00714)	-0.0793 (0.0488)	-0.0645*** (0.00830)	-0.0430*** (0.0131)	-0.0987*** (0.0329)
unexplained	0.0371* (0.0192)	0.0778 (0.100)	-0.0651*** (0.0237)	0.00419 (0.0453)	-0.00129 (0.0369)
Explained					
educ	0.0502*** (0.00662)	-0.0557 (0.0399)	-0.0437*** (0.00772)	-0.0579*** (0.0131)	-0.0686** (0.0291)
age	0.00769*** (0.00136)	0.0247*** (0.00492)	-0.0145*** (0.00172)	0.000796 (0.00262)	0.00320 (0.00404)
gender	0.00576** (0.00288)	-0.0483*** (0.0100)	-0.00633* (0.00363)	0.0141** (0.00576)	-0.0333*** (0.00789)
Unexplained					
educ	-0.457*** (0.0743)	-1.261*** (0.430)	0.669*** (0.0830)	0.836*** (0.153)	-0.221* (0.115)
age	-0.00115 (0.0849)	-1.089*** (0.400)	0.433*** (0.0995)	-0.185 (0.168)	-0.368*** (0.0690)
gender	0.00949 (0.0174)	-0.194 (0.148)	-0.0148 (0.0203)	-0.0179 (0.0570)	-0.0393** (0.0190)
Constant	0.486*** (0.120)	2.623*** (0.782)	-1.152*** (0.115)	-0.628*** (0.212)	0.627*** (0.136)
Observations	54,744	54,744	54,744	54,744	54,744

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Discussion and conclusion

The findings of this study offer a differentiated picture of immigrant-native labor market participation disparities in Slovakia, revealing patterns that agree and disagree with current migration theories. The net positive immigrant participation gap of 10.1 percentage points overall (0.804 versus 0.704 for natives) suggests that Slovak immigrants themselves are more likely to be labor market participants than natives, a finding in contrast to patterns found in much of Western Europe, where the immigrant population will report lower participation (Dustmann & Frattini, 2014).

This disparity can perhaps be explained by Slovakia's specific situation as a newer EU member state with its own labor market situation, such as a greater need for flexible work in the manufacturing and construction sectors (Kahancová & van der Meer, 2006).

However, the size of the unexplained gap (0.037) and immigrants' unfavorable returns to schooling (-0.457) point toward structural barriers, such as credential devaluation or occupational segregation, that remain in place in spite of immigrants' own superior average schooling. These results are consistent with segmented labor market theory (Doeringer & Piore, 2020), which emphasizes how institutional and systemic factors can restrict immigrants' integration into the labor market even though their human capital suggests otherwise.

The heterogeneity across immigrant groups complicates the tale. EU-15 immigrants, for instance, have nearly as high participation levels as natives (difference of -0.00148), but their qualifications based on education yield significantly lower returns (-1.261).

This outcome contradicts conventional theory about human capital mobility in the EU (Chiswick, 1980) and may reflect the unique labor institutions of Slovakia, which may overvalue qualifications from Western Europe as being worthless. Conversely, EU-13 immigrants face an extreme participation disadvantage (-0.130), both explained by observed characteristics (e.g., education level, age, and sex) and unexplained ones, to the same degree. The result suggests that human capital heterogeneity plays a role, but so do other barriers like discrimination or social network deficiency. Non-EU immigrants, in turn, indicate a participation deficit (-0.100) attributable predominantly to education gaps (-0.0987), suggesting that strategically targeted upskilling policies would be effective in closing the gap.

The gendered character of these findings is also noteworthy. While immigrant women's participation rates are higher than those of native women (positive gender coefficients), the very high male dominance among EU-15 migrants (88.24%) supports highly gendered migration flows, most likely sector-specific needs or corporate policy of transfer. The result is consistent with broader literature on the feminization of migration in certain areas (Adserà & Chiswick, 2007) but highlights the need for policies specifically directed towards the specific difficulties of migrant women, such as access to childcare or in-work discrimination.

Politically, these results justify the imposition of multi-sectoral interventions.

First, continued undervaluing of immigrant education in all three groups calls for institutional reforms on recognition systems in credentials, with EU-13 and non-EU migrants of particular concern.

Second, the high participation rates of certain subgroups (e.g., EU-13 migrants with a participation rate of 83.33%) mean that the existing mechanisms of access to the labor market—such as temporary work permits or sectoral agreements—can be expanded or redefined for other migrant groups.

Third, the limitations of the EU-LFS data, in particular the absence of wages and the omission of irregular migrants, point to the need for more sophisticated national data systems to register more precisely and better monitor labor market inequalities.

Methodologically, the study's reliance on Oaxaca-Blinder decomposition is strong for making estimates but has some weaknesses as well. The small subsamples for a few of the migrant groups (e.g., EU-15 immigrants, who make up 0.03% of the sample) need to be interpreted with caution, as such numbers may lack statistical power.

Second, the remaining differences in the gaps, which are often linked to discrimination, might also reflect other factors that aren't measured, like language skills or social connections (Dustmann & Fabbri, 2003). Follow-on research can span these gaps through the inclusion of mixed-method approaches, such as qualitative interviews or firm-level surveys, to provide context for the quantitative findings.

The regional details of the Slovak labor market also enrich the discussion. Most of the EU-13 migrants are aged between 45 and 64 years (70.49%), representing post-accession waves of migration, and the near absence of older EU-15 migrants suggests shorter-term, possible circular migration flows. Bratislava's leadership in attracting high-skilled migrants (reflected in tertiary education attainment) aggravates regional imbalances, which suggests the need for policies to make economic opportunities more equitably distributed across the country.

Looking to the future, a number of research priorities arise. Longitudinal research following migrant trajectories over time may be able to pinpoint critical junctures in the integration process, while firm-level research may uncover hiring practices that reinforce disparities. Mixed-methods designs integrating quantitative gaps with qualitative narratives may shed light on the lived experiences behind the statistics, especially concerning discrimination or credential recognition.

Finally, as Slovakia continues to elaborate its migration policy in response to EU directives and national employment demands, ongoing analysis of these policies' impact will be essential to optimize their balance between economic objectives and social justice.

In conclusion, this study contributes to the Central European migration literature by emphasizing the impracticality of universal solutions for labor market integration. Slovakia's unique context of high immigrant employment yet meager returns for educated migrants highlights the complicated relationship among human capital, institutional barriers, and spatial forces. For policymakers, these findings drive home the importance of targeted interventions - credential recognition reforms and anti-discrimination laws, for instance - while also calling for stronger data infrastructure to monitor progress.

As Slovakia contends with demographic pressure and economic restructuring, data-driven migration policies will be central to unlocking the potential of its immigrant workforce, which is increasingly diverse.

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