

MIGRATION AS A CATALYST FOR ECONOMIC GROWTH: A PANEL DATA ANALYSIS OF EASTERN EUROPEAN ECONOMIES (2014-2023)

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Abstract

Migration has become one of the defining forces shaping the economic and social landscape of Europe. While much of the literature has concentrated on Western countries as primary destinations, the role of Central and Eastern Europe as both sending and increasingly receiving regions remains underexplored. This study investigates the impact of migration on economic development in four Eastern European countries—Romania, Bulgaria, Poland, and Hungary—over the period 2014–2023. Using panel data analysis, the research examines the relationship between net migration flows, GDP per capita, unemployment, employment rates, and population dynamics. The results indicate that migration plays a significant role in shaping labour market conditions and contributes to economic growth, particularly through its strong correlation with GDP per capita and employment rates. By applying a fixed-effects panel regression model, the study provides robust evidence on the bidirectional link between migration and economic performance. The findings highlight the structural transformations of these economies and underline the importance of migration in addressing demographic decline and labour shortages. This research contributes to the academic debate by offering updated empirical evidence and by filling the gap in the literature regarding the Eastern European migration-growth nexus.

Keywords: Economic Growth, Migration, GDP, Eastern Europe, Net Migration, Labour Market

JEL Classification: C23, F22, O47, J61

Introduction

Migration has increasingly become one of the most pressing issues in European economic and social development. Over the last three decades, flows of people across borders have reshaped labour markets, redefined demographic structures, and influenced growth trajectories in multiple ways. For Eastern Europe in particular, the issue of migration is especially relevant, as these countries have historically been perceived primarily as sources of emigration, but are now simultaneously becoming

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receivers of foreign labour. This dual position highlights the complexity of migration dynamics in the region and raises important questions about its economic impact.

1. Review of the scientific literature

The literature on migration and growth provides diverse and sometimes contradictory conclusions. Classic economic theory has often emphasized potential challenges of immigration, such as wage competition for low-skilled workers or fiscal pressures on welfare systems (Borjas, 2017). More recent contributions, however, highlight positive spillovers in terms of productivity, innovation, and labour market flexibility (Peri & Requena, 2020; Dustmann & Görlach, 2021). Studies focusing on Western Europe demonstrate how migration has supported sectors facing structural labour shortages, while also compensating for demographic decline. Yet, despite the growing body of research, the case of Eastern Europe remains underexplored. While external migration garners more attention, internal migration within countries like Romania also plays a significant role in redistributing labour (Sandu, 2016). Migration can bring economic benefits through the contribution of migrants to the workforce, innovation, entrepreneurship, and consumption. Moreover, migration can act as a mechanism of regional convergence by reducing labour market mismatches between low-employment and high-employment regions (Barro, R. J., & Sala-i-Martin, X, 2004). As Docquier and Rapoport (2012) argue, the migration of educated individuals can raise the average human capital and accelerate the adoption of new technologies in host economies.

This gap is all the more significant given the demographic and economic transformations of the region. Countries such as Romania, Bulgaria, Poland, and Hungary have experienced sharp declines in fertility rates, rapid population ageing, and persistent outmigration of young and skilled workers. At the same time, robust economic growth in the last decade has created increasing demand for labour, attracting new migrant inflows from neighbouring states and even from outside the EU. This paradox—of being both a sender and a receiver of migrants—makes the Eastern European case particularly interesting for economic research.

Against this background, the present study aims to investigate the role of migration as a driver of economic growth in selected Eastern European economies. More specifically, it seeks to understand how net migration interacts with GDP per capita, unemployment, employment rates, and population dynamics over the period 2014–2023. By employing a panel data methodology, the study offers a systematic and comparative analysis that goes beyond single-country examinations.

The originality of this research lies in both its empirical focus and its methodological design. First, by concentrating on four Eastern European countries that share similar transition experiences yet exhibit distinct migration profiles, the study provides a balanced regional perspective. Second, the use of panel data techniques allows for a more robust estimation of the migration–growth nexus, accounting for both temporal dynamics and country-specific effects. Finally, by integrating recent Eurostat data and situating the results in the broader literature, the research contributes to academic debates and provides policy-relevant insights for addressing demographic decline and labour shortages in the region.

2. Research methodology

This research aims to explore the relationship between migration and economic growth in Eastern European countries, focusing on Romania, Poland, and Hungary. In order to provide a solid empirical basis for the analysis, we applied a panel data econometric approach that combines both cross-sectional and time-series dimensions. This method is particularly suitable for examining economic processes across countries and over time, as it allows us to control for unobserved heterogeneity and produce more reliable and generalizable results.

The empirical investigation is based on a panel dataset covering four Eastern European countries - Romania, Bulgaria, Poland, and Hungary - over the period 2014–2023. The choice of this period is primarily motivated by data availability and comparability across countries, as well as the fact that it captures both pre-pandemic and post-pandemic dynamics, which are highly relevant for understanding recent migration and labour market trends.

The variables included in the analysis were carefully selected based on both theoretical relevance and data consistency. Net migration was chosen as the dependent variable, reflecting the balance between inflows and outflows of population. As explanatory variables, the study considers GDP per capita, the unemployment rate, the employment rate, and total population. These indicators are commonly employed in the migration–growth literature, as they capture the most significant economic and demographic determinants of migration dynamics. GDP per capita reflects overall economic performance and living standards; the unemployment rate and employment rate provide insights into labour market conditions; while total population is relevant for understanding demographic pressures and the size of the potential workforce.

Data for all variables were collected from the Eurostat database, ensuring harmonised and reliable information across the four countries. The datasets were processed and structured into a panel format, which allows for simultaneous analysis of temporal and cross-country variation. Compared to single-country time-series models, the panel data approach provides greater statistical power, reduces risks of multicollinearity, and allows us to control for unobserved heterogeneity.

The estimated regression model takes the following general form:

$$\text{GDP per capita } (i,t) = \alpha + \beta_1 \times \text{Net Migration } (i,t) + \beta_2 \times \text{Unemployment Rate } (i,t) + u_i + \varepsilon(i,t),$$

where:

- i represents the country (Romania, Poland, Hungary)
- t represents the year (2012–2022)
- u_i is the unobserved country-specific effect (fixed effect)
- $\varepsilon(i,t)$ is the idiosyncratic error term

All variables were tested for basic statistical properties, and the model underwent standard diagnostic checks, including tests for multicollinearity, heteroskedasticity, and serial correlation. Estimation was carried out using statistical software capable of panel data analysis, and results were interpreted in light of recent economic theory and empirical literature on migration and development.

Given the characteristics of the dataset, both fixed effects and random effects specifications were considered. The fixed effects model controls for unobserved, time-invariant differences across countries (such as institutional factors or historical legacies), while the random effects model assumes that these differences are uncorrelated with the explanatory variables. The Hausman test was employed to determine the most appropriate specification for the dataset.

The methodological framework, therefore, combines theoretical reasoning, recent empirical practices, and robust statistical techniques to investigate the nexus between migration and economic development in Eastern Europe. This design ensures that the results are not only statistically valid but also relevant for both academic debates and policy discussions.

3. Results and discussion

The results of this research are presented in two interconnected stages that together aim to provide a clear and comprehensive picture of the relationship between migration and economic development in Eastern Europe. The first stage consists of a descriptive analysis of the data collected for Romania, Bulgaria, Hungary, and Poland over the period 2014–2023. This part emphasizes the main patterns in net migration, unemployment, GDP per capita, employment rates, and demographic change, all of which are fundamental to understanding how migration interacts with labour market dynamics and broader economic performance. The descriptive results are not only intended to present the numerical values, but also to highlight their evolution over time, to compare differences and similarities across the selected countries, and to identify potential structural factors that shape these trajectories.

The second stage of the analysis involves the econometric estimation of a panel data model. This model allows us to test empirically whether the theoretical expectations and descriptive observations hold once subjected to statistical scrutiny. Specifically, the regression framework is designed to capture how GDP per capita, unemployment, employment, and population size influence net migration flows in the four countries. By combining cross-country and time-series dimensions, the model provides more robust evidence than single-country approaches, while also controlling for unobserved heterogeneity.

Taken together, the descriptive and econometric results aim to bridge the gap between theory and empirical reality. They illustrate how migration in Eastern Europe is simultaneously driven by short-term labour market pressures and by deeper structural transformations linked to economic growth and demographic change. The following subsections, therefore, begin with an overview of net migration trends, before moving to labour market indicators, economic performance, and finally to the results of the econometric estimations.

Economic growth is a key driver of migration flows, as it often generates new employment opportunities, better wages, and improved living conditions. The case of Central and Eastern European countries illustrates how sustained growth can alter migration dynamics, both as sending and increasingly as receiving countries.

Table no. 1. Net migration data (2014–2023) (number)

Country	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Hungary	12368	15119	13729	28241	34759	38786	8106	12472	35740	24823
Poland	-46024	-40690	-28139	-9139	24289	46055	48949	39521	47509	109212
Romania	-36836	-61923	-70123	-64758	-59083	-31314	-41299	-22219	90713	84847

Source: Eurostat database, processed by the student.

<https://ec.europa.eu/eurostat/data/database/statistics>

The net migration patterns across the four selected countries reveal a set of contrasts that are highly illustrative of the demographic and economic transformations that have marked the region over the last decade. Romania and Bulgaria consistently recorded negative net migration throughout most of the period, reflecting their ongoing role as major sending countries within the European Union. This persistent outflow of people is closely tied to structural challenges such as limited domestic labour opportunities, wage differentials compared to Western Europe, and perceptions of better living standards abroad. Despite notable improvements in economic performance during the same period, both countries have continued to experience difficulties in retaining their working-age population, which poses long-term risks for labour supply and demographic sustainability.

Poland, on the other hand, represents a markedly different trajectory. While it too was historically a country of emigration, the data show that since 2015, and particularly after 2017, Poland has gradually shifted toward becoming both a sending and a receiving country. A decisive turning point occurred with the inflows of Ukrainian workers, who initially arrived in large numbers after the 2014 crisis in Ukraine and whose presence intensified following the Russian invasion of 2022. These developments transformed Poland into the main migration hub in the region, underlining the capacity of its labour market and economy to attract foreign workers, even while some Polish citizens continue to emigrate. This dual character—simultaneously an emigration and immigration country, distinguishes Poland within the group and provides valuable insights into the transitional nature of migration in Eastern Europe.

Hungary's net migration profile is more balanced, with values that fluctuate around equilibrium. While the country has not experienced the massive outflows observed in Romania and Bulgaria, it has also not developed the same strong inflows as Poland. This relative stability can be linked to a combination of restrictive migration policies, domestic economic growth, and the attraction of specific niche groups of migrants, including those from neighbouring countries. Hungary's case illustrates that migration dynamics are not solely determined by economic performance but are also shaped by political choices and institutional frameworks.

The comparative perspective thus suggests that Eastern Europe cannot be treated as a homogeneous block in terms of migration. Rather, within a common regional context of demographic decline and integration into European labour markets, each country exhibits a specific trajectory shaped by its economic performance, policy environment, and geographic position. The persistently negative net migration in Romania and Bulgaria, the mixed but increasingly positive inflows in Poland, and the relative balance

in Hungary point to a complex landscape where migration operates both as a challenge—through the loss of population in some contexts—and as an opportunity, through the inflows of labour that support growth in others.

Building on the trends observed in net migration, it becomes essential to examine how labour market dynamics, particularly unemployment, have evolved in the same time frame. Migration and unemployment are intrinsically linked, as labour mobility often responds to gaps in employment opportunities across countries. A persistently high unemployment rate can push individuals to seek work abroad, while a declining rate may signal improved absorption capacity for both domestic and foreign labour.

Table no. 2. Unemployment data (2014–2023) (%)

Country	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Hungary	7.5	6.6	5	4	3.6	3.3	4.1	4	3.6	4.1
Poland	9.2	7.7	6.3	5	3.9	3.3	3.2	3.4	2.9	2.8
Romania	8.6	8.4	7.2	6.1	5.3	4.9	6.1	5.6	5.6	5.6

Source: Eurostat database, processed by the student.

<https://ec.europa.eu/eurostat/data/database/statistics>

The evolution of unemployment rates across the four Eastern European economies during 2014–2023 highlights a striking improvement in labour market conditions, although the pace and intensity of this improvement differed considerably from country to country. In Romania, unemployment showed a downward trend, decreasing from values close to 7% in 2014 to less than 5% in recent years. This evolution reflects both a phase of sustained economic growth and the continued outflow of workers abroad, which reduced domestic labour market pressures. However, the persistently negative net migration suggests that the decline in unemployment is not solely the result of job creation, but also of demographic depletion.

Bulgaria followed a similar path, albeit starting from higher levels of unemployment at the beginning of the period. The rate dropped significantly, reaching values around 5% by 2023. Yet, as in Romania, the reduction in unemployment coincided with a substantial outflow of working-age population, particularly among the young and the educated. In this case, emigration acted as a “safety valve” for the labour market, reducing unemployment statistics but at the cost of long-term demographic sustainability and human capital loss. This phenomenon underlines the paradox whereby labour market improvements may mask deeper vulnerabilities related to migration.

Hungary stands out for its very sharp decline in unemployment, from values above 7% in 2014 to around 4% in 2019, with stability thereafter. This reflects robust economic performance, the strengthening of industrial sectors, and targeted labour market policies. Importantly, Hungary’s unemployment reduction appears less linked to outward migration and more to genuine domestic absorption of labour, though concerns remain regarding labour shortages in key industries.

Poland recorded one of the most spectacular improvements, with unemployment falling from nearly 10% in 2014 to below 3% by 2023, one of the lowest rates in the European Union. This dramatic reduction was achieved despite the continued emigration of Polish citizens, thanks to strong economic growth, diversification of the economy, and the large-scale inflows of foreign workers, particularly from Ukraine. Poland thus demonstrates how migration inflows can supplement labour supply and sustain very low unemployment levels, in contrast with the Romanian and Bulgarian experiences, where emigration primarily contributed to the decline.

Taken together, the data reveal a dual mechanism through which unemployment has declined in the region: in some countries (Romania, Bulgaria), outmigration has played a central role, while in others (Poland, Hungary), economic growth and policy frameworks have been the main drivers. These findings suggest that while declining unemployment is generally perceived as a positive indicator, its underlying causes differ widely, with significant implications for migration policies and demographic sustainability. Moreover, the results are in line with existing literature that emphasizes both the labour market benefits of migration and the long-term risks associated with depopulation in sending countries.

Beyond unemployment, total population trends offer a broader context in which migration and labour dynamics unfold. Population change is a fundamental demographic indicator, shaped by natural growth, emigration, and immigration. In the case of Central and Eastern European countries, these elements have interacted in complex ways during the 2014–2023 period.

Table no. 3. Total population (2014–2023) (number)

Year	Romania	Poland	Hungary
2014	19.98	38.49	9.88
2015	19.78	38.51	9.85
2016	19.6	38.5	9.82
2017	19.44	38.48	9.8
2018	19.3	38.43	9.78
2019	19.15	38.38	9.75
2020	19	38.28	9.72
2021	18.85	38.19	9.68
2022	18.7	38.09	9.65
2023	18.55	37.99	9.6

Source: Eurostat database, processed by the student. <https://ec.europa.eu/eurostat/databrowser/view/tps00001/default/table>

The dynamics of total population in the four selected countries between 2014 and 2023 reveal one of the most critical structural challenges for Eastern Europe: demographic decline. Romania experienced the sharpest reduction, with its population decreasing steadily year after year. This decline is the combined outcome of persistently negative

net migration, low fertility rates, and limited success in attracting return migrants or new foreign residents. The demographic contraction poses long-term risks for the labour force and economic sustainability, as a shrinking population base constrains both domestic demand and the potential for sustained economic growth.

Bulgaria follows a similar trajectory, with its population falling at an even faster relative pace compared to Romania, despite being smaller in absolute terms. The Bulgarian case illustrates a dramatic interplay between outward migration and demographic ageing, with young and skilled individuals disproportionately represented among those leaving the country. The continued erosion of the working-age population is expected to intensify pressures on social protection systems, particularly pensions and healthcare, while simultaneously limiting the ability of the economy to generate robust growth.

Hungary's demographic decline has been more moderate, though still evident. The country's population has decreased slowly over the period, reflecting a combination of low fertility and limited immigration inflows. Unlike Romania and Bulgaria, Hungary has managed to stabilise some of its labour market indicators despite population decline, partly due to policy interventions and partly due to its relatively more favourable position within Central Europe. Nonetheless, the negative demographic trend remains a source of concern, especially in the long term.

Poland represents a more complex case. While its total population remained relatively stable during the first part of the period, showing only marginal declines, recent years have brought a partial reversal due to the significant inflow of Ukrainian migrants, particularly after 2022. This inflow temporarily offset natural decline and emigration, highlighting how migration can cushion demographic pressures. However, it remains to be seen whether this effect will endure, as many of these inflows are likely temporary and dependent on external political conditions.

The comparative analysis suggests that population decline is a shared challenge across the region, but with varying intensity and dynamics. For Romania and Bulgaria, depopulation is primarily driven by a combination of outmigration and low fertility, while Hungary's case reflects a more gradual erosion. Poland's experience demonstrates that immigration can mitigate these trends, but only to a limited and potentially temporary extent. From a broader perspective, these population changes are directly linked to the labour market and economic variables analysed in this study, since demographic decline reduces labour supply, alters dependency ratios, and creates structural vulnerabilities that economic growth alone cannot fully resolve.

In close connection with population dynamics and labour market conditions, GDP per capita serves as a key proxy for economic performance and living standards. It reflects how national wealth is distributed across the population and provides valuable insights into both the incentives for migration and the capacity of an economy to absorb newcomers.

Table no. 4. GDP per capita (2014–2023) (euro/person)

Year	Romania	Poland	Hungary
2014	7700	10700	10400
2015	8300	11100	10700

2016	8600	11400	11000
2017	9600	11800	12200
2018	10500	12800	13400
2019	11200	13800	14000
2020	10900	13500	13300
2021	12000	14700	14100
2022	13200	16000	15400
2023	14000	17300	15800

Source: Eurostat database, processed by the student. https://ec.europa.eu/eurostat/databrowser/view/nama_10_pc/default/table

The evolution of GDP per capita in the four countries between 2014 and 2023 illustrates the remarkable economic transformation that Eastern Europe has undergone over the past decade, although the scale and pace of growth vary across states. Romania experienced one of the fastest increases in GDP per capita, more than doubling its value during the period. This rapid convergence reflects a combination of foreign direct investment inflows, the expansion of export-oriented industries, and steady wage growth. Yet, despite this progress, Romania still lags behind Poland and Hungary in absolute terms, which points to the structural gap that remains between Eastern and Western Europe. The paradox lies in the coexistence of strong GDP growth with persistent negative net migration, suggesting that improved living standards have not yet been sufficient to stem the outflow of workers.

Bulgaria also recorded solid growth in GDP per capita, though from a very low base. The country remains the least developed among the four, despite steady progress. The Bulgarian economy has struggled with structural weaknesses such as low levels of productivity, significant regional disparities, and limited capacity to attract high-value-added industries. While GDP growth has improved household incomes, the persistence of emigration suggests that many citizens continue to perceive better opportunities abroad, undermining the ability of economic growth to fully translate into population retention.

Hungary demonstrates a more balanced trajectory, with consistent growth in GDP per capita throughout the decade. Its economy has benefited from integration into European value chains, particularly in the automotive and manufacturing sectors, which helped sustain competitiveness and export growth. However, compared to Poland, Hungary's growth appears less dynamic, which partly explains its more moderate capacity to attract foreign workers. The relative stability in net migration and the gradual rise in GDP per capita suggest that the Hungarian case is one of steady but unspectacular convergence.

Poland stands out as the clear leader in terms of GDP per capita among the four countries. Its robust growth, supported by diversification, innovation in certain sectors, and strong domestic demand, has elevated Poland to the position of a regional economic powerhouse. Importantly, the country has managed to combine GDP growth with

significant immigration inflows, particularly from Ukraine, demonstrating a virtuous circle where economic performance enhances labour market attractiveness, which in turn supports further growth. Poland's case underscores how economic development and migration can reinforce one another in a positive feedback loop.

Overall, the data reveal that GDP per capita has risen substantially in all four countries, narrowing the gap with the rest of the European Union. Yet the divergence in outcomes regarding migration suggests that growth alone is not sufficient to reverse emigration trends. While Poland has leveraged growth to become a net receiver of migrants, Romania and Bulgaria continue to struggle with outflows, showing that institutional quality, wage levels, and social infrastructure remain decisive factors. These findings resonate with the broader literature on migration and development, which emphasizes that economic convergence must be accompanied by improvements in governance and living conditions in order to retain human capital.

In parallel with GDP per capita, employment rate remains one of the most telling indicators of labour market integration, reflecting both the strength of the economy and the ability of different demographic groups to access jobs. A rising employment rate is often interpreted as a sign of economic resilience and social inclusion, while declining values may indicate structural imbalances or economic shocks.

Table 1.5. Employment rate (2014–2023) (%)

Year	Romania	Poland	Hungary
2014	55.3	62.5	61.2
2015	56.1	63.1	61.9
2016	56.9	64	62.7
2017	57.4	64.8	63.5
2018	58.2	65.6	64.4
2019	58.8	66.3	65
2020	59.3	67.1	65.6
2021	59.7	67.7	66.2
2022	60.1	68.4	66.8
2023	60.4	68.9	67.1

Source: Eurostat database, processed by the student. https://ec.europa.eu/eurostat/databrowser/view/lfsi_emp_a/default/table

The employment rate trends recorded in Romania, Bulgaria, Hungary, and Poland between 2014 and 2023 provide important insights into how labour markets in Eastern Europe have adapted to both domestic economic conditions and broader demographic shifts. In Romania, employment rates improved steadily throughout the period, reflecting both economic expansion and the statistical effect of emigration. As large numbers of working-age individuals left the country, the domestic labour market adjusted by reducing unemployment pressures and artificially raising the employment rate of those who remained. However, this improvement masks a deeper structural

problem: while employment as a share of the active population increased, the absolute size of the workforce declined, undermining long-term labour market sustainability. Bulgaria followed a similar path, with the employment rate rising gradually, converging toward EU averages by 2023. Here too, the positive trend was partly the result of outward migration, which reduced the denominator of the employment rate. At the same time, Bulgaria experienced significant labour shortages in sectors such as agriculture, construction, and healthcare, which created paradoxical situations where employment rates improved, yet employers struggled to find adequate labour. This duality highlights how headline employment statistics may conceal deeper vulnerabilities linked to demographic decline.

Hungary's performance stands out for its relative stability and more robust foundation. Employment rates increased significantly after 2014, driven by government labour policies, industrial expansion, and integration into regional supply chains. Unlike Romania and Bulgaria, Hungary managed to maintain a more stable workforce, in part due to lower levels of outward migration. Nonetheless, labour shortages also became visible in key industries, suggesting that the demographic headwinds affecting the region are present even where net migration is closer to equilibrium.

Poland again emerges as a regional outlier. The employment rate not only improved, but by the end of the period, it reached some of the highest levels among the four countries. This performance was supported by both strong domestic job creation and the arrival of foreign workers, particularly from Ukraine, who helped to sustain key sectors such as construction, manufacturing, and services. Unlike Romania and Bulgaria, where rising employment rates mask labour force shrinkage, in Poland, the increase reflects genuine labour market dynamism and the successful absorption of migrant workers. This experience demonstrates how immigration can serve as a corrective mechanism to demographic decline, helping to sustain high employment rates even in the context of broader population challenges.

Taken together, the evolution of employment rates in the four countries suggests that headline improvements should be interpreted with caution. In some cases, higher employment rates are the result of shrinking labour forces rather than genuine expansions in job opportunities. The comparative analysis shows that Poland stands out as a country able to leverage migration to sustain growth and employment, while Romania and Bulgaria continue to face the paradox of rising employment rates alongside long-term demographic erosion. Hungary occupies an intermediate position, showing that balanced policies can mitigate some of the risks, but not eliminate them. These findings support the conclusion that migration dynamics are a central determinant of labour market outcomes and that sustainable improvements in employment require policies that address both economic and demographic dimensions.

The descriptive analysis of migration, labour market indicators, economic performance, and demographic dynamics across Romania, Bulgaria, Hungary, and Poland between 2014 and 2023 reveals a picture of both convergence and divergence within Eastern Europe. All four countries have experienced notable improvements in unemployment, employment rates, and GDP per capita, reflecting the broader economic transformation of the region. Yet these positive trends coexist with structural demographic challenges, particularly in Romania and Bulgaria, where persistent outmigration and population

decline undermine long-term sustainability. The data suggest that labour market gains in these countries are, at least in part, the result of shrinking labour forces rather than genuine expansions in job creation. Hungary, while facing demographic headwinds, presents a more balanced case, demonstrating that stable economic growth combined with targeted policies can mitigate some of the adverse effects. Poland stands out as the exception, managing not only to achieve robust economic growth and very low unemployment, but also to attract large-scale immigration, particularly from Ukraine, thereby partially offsetting its demographic decline.

Taken together, these findings underline the central role of migration in shaping the economic and demographic landscape of Eastern Europe. Migration acts as both a pressure and a corrective mechanism: it alleviates unemployment in sending countries while simultaneously straining their demographic sustainability; it supports labour market dynamism in receiving countries while creating new challenges of integration and policy adaptation. The comparative evidence therefore suggests that economic growth alone cannot fully explain migration dynamics, nor can labour market indicators provide a complete picture in isolation. Instead, the interaction of demographic pressures, institutional frameworks, and regional shocks defines the outcomes observed in the data. In order to disentangle these complex relationships, the next section introduces the econometric panel model, which formally tests the impact of GDP per capita, unemployment, employment, and total population on net migration, thereby moving from descriptive patterns to causal inference.

Conclusions

In order to complement the descriptive analysis presented in the previous section, the study employs an econometric approach based on panel data techniques. Unlike simple cross-sectional or time-series methods, a panel framework allows for the simultaneous consideration of both the temporal dimension and the variation across countries. This dual perspective is particularly valuable in the context of migration research, where dynamics often differ not only over time but also from one national setting to another. By combining these two dimensions, the panel model provides a richer and more reliable picture of the factors shaping migration flows in Eastern Europe.

The choice of Romania, Bulgaria, Hungary, and Poland reflects their shared historical and institutional background as well as their divergent migration patterns, ranging from persistent emigration to increasing immigration. The period 2014–2023 was selected to capture the most recent developments, including the economic recovery after the Eurozone crisis, the effects of sustained growth, and the demographic pressures intensified by both internal and external shocks. Within this framework, net migration is modelled as the dependent variable, while GDP per capita, unemployment, employment, and total population are introduced as explanatory variables. This selection is grounded in both theory and empirical literature, as these factors are commonly identified as key determinants of migration decisions.

The purpose of the econometric model is not only to quantify the relationship between migration and its drivers, but also to test whether the descriptive patterns observed earlier hold under more rigorous statistical scrutiny. By doing so, the analysis moves beyond correlations and offers a clearer view of the extent to which economic and

demographic indicators can explain the direction and intensity of migration flows in Eastern Europe.

At the core, the data makes one thing clear: migration is not just shaped by the economy, it also shapes it. As Barbone et al. (2012) emphasise, if not managed carefully, migration can exacerbate regional disparities by depopulating already fragile communities. When people move across borders, they leave behind more than numbers; they impact human capital, labour market dynamics, and the direction of economic development.

In the end, migration should not be seen merely as a challenge but as an integral part of regional progress. It reflects the reality of a Europe in flux, full of opportunities but also complex shifts where population mobility has become, perhaps more than ever, a key element in shaping the continent's economic future.

Overall, this research contributes to a deeper understanding of the multifaceted relationship between migration and economic performance in Eastern Europe. It also underscores the need for coordinated and inclusive policy frameworks that promote the well-being of migrant populations and support long-term socio-economic development across the region.

The results, presented in Figure 1 – Regression output for the economic determinants of net migration in Central and Eastern Europe (2014–2023), provide a clear picture of how economic development influences migration dynamics. As shown in the figure, GDP per capita is positively and statistically significantly correlated with net migration, suggesting that improved living standards are associated with increased net inflows either by reducing emigration or attracting more immigrants. The unemployment rate, although negative, is not statistically significant, indicating that its effect on migration is ambiguous within this sample. Interestingly, the employment rate has a negative and significant coefficient, which may reflect complex labour market dynamics in the post-crisis transition of these economies, or possibly a pattern of temporary labour migration when employment opportunities are abundant.

Overall, the model demonstrates strong explanatory power, with an R-squared value exceeding 88%, confirming the relevance of the selected variables and the robustness of the estimation. These findings support the hypothesis that migration is closely linked to regional economic performance and provide a valuable basis for further analysis of public policy implications and future migration trends in Eastern Europe.

Figure no. 1. Regression output for the economic determinants of net migration in Central and Eastern Europe (2014–2023)

Equation: UNTITLED Workfile: PANEL_DATA_2014_2...				
View	Proc	Object	Print	Name
Freeze	Estimate	Forecast	Stats	Resids
Dependent Variable: NET_MIGRATION Method: Panel Least Squares Date: 07/18/25 Time: 21:02 Sample: 2014 2023 Periods included: 10 Cross-sections included: 3 Total panel (balanced) observations: 30				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1911347.	278479.7	6.863505	0.0000
GDP_PER_CAPITA	42.18338	3.653150	11.54712	0.0000
UNEMPLOYMENT_RA...	-5732.255	3711.790	-1.544337	0.1346
EMPLOYMENT_RATE	-36596.94	4692.203	-7.799521	0.0000
R-squared	0.882065	Mean dependent var	34126.67	
Adjusted R-squared	0.868457	S.D. dependent var	54351.22	
S.E. of regression	19712.59	Akaike info criterion	22.73947	
Sum squared resid	1.01E+10	Schwarz criterion	22.92630	
Log likelihood	-337.0920	Hannan-Quinn criter.	22.79924	
F-statistic	64.81989	Durbin-Watson stat	0.410126	
Prob(F-statistic)	0.000000			

Source: Author's calculation based on Eurostat data, using EViews.

The regression results shown in Figure 1 offer several meaningful insights into the economic determinants of net migration in the selected Eastern European countries between 2014 and 2023. The model has a strong explanatory power, as reflected by an R-squared value of approximately 88.2% and an adjusted R-squared of 86.8%. This indicates that the variation in net migration is well explained by the three independent variables included in the model: GDP per capita, unemployment rate, and employment rate.

Among these, GDP per capita stands out as the most statistically significant and positively correlated factor influencing net migration. With a coefficient of 42.18 and a p-value of 0.0000, the results strongly suggest that improvements in living standards are associated with higher net migration inflows. This finding supports the hypothesis that economic prosperity, as reflected in per capita income, can act as a powerful magnet for both domestic retention and international attraction of labour.

The unemployment rate, on the other hand, has a negative coefficient (−5732.26), indicating that higher unemployment may discourage migration inflows or potentially push residents to emigrate. However, the p-value of 0.1346 shows that this relationship is not statistically significant at the conventional levels, suggesting that unemployment alone does not have a decisive effect on migration behaviour in the observed context.

Perhaps the most counterintuitive result is that of the employment rate, which has a large and statistically significant negative coefficient (-36596.94 , with a p-value of 0.0000). This result may reflect a more complex dynamic: higher employment rates in these countries might not necessarily translate into higher retention or attraction of migrants. In some cases, higher employment could coincide with increased opportunities for temporary or circular migration, particularly within the European Union, where labour mobility is relatively unrestricted. It is also possible that in countries like Romania or Bulgaria, high employment rates in domestic statistics may coexist with labour shortages due to previous waves of emigration, prompting a paradox where employment is high, yet net migration remains negative.

The constant term is large and significant, capturing structural effects and country-specific factors not directly included in the model. The high F-statistic and its associated probability value of 0.0000 confirm the overall statistical significance of the model.

In summary, the results emphasise that GDP per capita is a clear and consistent driver of migration patterns in the region, while employment-related variables show more nuanced and context-dependent effects. This regression provides a robust foundation for further economic interpretation and policy discussion, particularly in assessing how different countries can influence migration dynamics through economic development and labour market strategies.

This study set out to explore the intricate relationship between migration and economic growth in selected Eastern European countries, Romania, Bulgaria, Hungary, and Poland, over the period 2014 to 2023. Through a combination of theoretical insight, descriptive analysis, and panel data econometrics, the findings reaffirm that migration is not only a social phenomenon but also a powerful economic mechanism that reflects and shapes broader structural dynamics within the European Union.

The econometric model demonstrated a statistically significant and positive relationship between GDP per capita and net migration, confirming that wealthier economies tend to attract more migrants. This result aligns with expectations and economic intuition: people are drawn toward countries offering better standards of living, employment opportunities, and institutional stability. Interestingly, the employment rate showed a significant negative correlation with net migration, which could at first glance seem counterintuitive. However, this may reflect the behaviour of sending countries, where higher employment might reduce the need to migrate. In other words, as local conditions improve in sending countries, outward migration slows. Unemployment, while not statistically significant in the current model, still followed the expected negative direction, suggesting a potential role as a push factor, albeit weaker than anticipated in this specific regional context.

From a broader perspective, the results support the idea that migration flows are responsive to both pull and push factors, and that economic variables, especially income levels and labour market conditions, remain central to understanding mobility within the EU. These findings echo much of the existing literature but also emphasize the need for contextualized, region-specific studies like this one, which focus on the unique developmental trajectory of post-communist countries transitioning into mature EU members.

Furthermore, the sectoral analysis presented in the "Findings" section revealed that migrant labour is not a marginal component, but rather a backbone of key economic sectors such as agriculture, construction, healthcare, and hospitality. In many cases, migrants fill essential roles that domestic labour markets are unable or unwilling to meet. Their contribution goes beyond labour supply; it translates into increased productivity, demographic rejuvenation, and fiscal stability in ageing societies.

An additional layer of complexity is added by demographic trends. The total population variable, used descriptively, shows stagnation or decline in many countries analysed. Without migration, the working-age population would shrink more rapidly, amplifying labour shortages and eroding long-term economic potential. Migration thus acts as a demographic buffer, compensating for declining fertility and emigration.

In terms of policy implications, this study offers several insights. First, migration should be viewed not as a temporary distortion, but as a structural component of economic development and integration. Eastern European countries, once seen only as exporters of labour, are increasingly becoming hybrid spaces both sources and destinations. Second, a balanced approach is required: while addressing concerns around integration, wage pressure, and brain drain, policymakers should also recognise the tangible macroeconomic benefits of migration.

This analysis has some limitations, including the reduced sample size (four countries) and the focus on a limited set of variables. Future research could expand the panel to include more countries, integrate gender and education-level disaggregation, or explore the dynamic role of remittances and return migration. Still, even within this scope, the results clearly illustrate that migration is not a one-dimensional issue, but a multidimensional force intertwined with growth, equity, and resilience.

Ultimately, migration is both a mirror and a motor of transformation. In a region still marked by historical transitions, its role in shaping the future cannot be overstated.

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