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## The other side of war or migration and labor market imbalances: Evidence from Eastern Europe for the period 2014–2025

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**Abstract.** This study investigates whether war-induced forced migration has led to persistent imbalances in Eastern European labor markets, with a specific focus on matching efficiency. The analysis utilizes a quasi-experimental design combining Eurostat and UNHCR quarterly panel data for the EU-27 from 2014 to 2025. The methodology employs a multi-period difference-in-differences approach and Beveridge curve regressions to isolate the specific impact of the Temporary Protection Directive flows. The findings indicate an upward and outward shift in the Beveridge curve following the 2022 shock, characterized by a simultaneous increase in vacancies and unemployment. The results demonstrate that high institutional integration capacity dampens these shock effects, while

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persistence primarily observed in service-intensive sectors. The study suggests that reducing matching costs through targeted language equivalence accelerators and fair placement algorithms is essential for market stabilization.

**Keywords:** war and migration, Ukrainian refugees, labor market imbalances, Beveridge curve, integration policy

**JEL Classification:** F22, J61, J64, J68

## 1. INTRODUCTION

War and forced migration led to simultaneous breaks in the labor markets of Eastern European countries. Demographic shocks, including the decline of the working-age population and the erosion of human capital, permanently weaken the labor supply. The contraction of employment in the agricultural sector and the inability to restructure the production-employment relationship lead to the emergence of inter-sectoral mismatches (Andriunina, 2025; Klymenko, 2025; Litvinov et al., 2024). Demand shocks are reported in the industry, healthcare, informatics, and blue-collar sectors, along with persistent deficits and skill mismatches. Similar evidence of heightened vulnerability and segmentation of immigrants during periods of economic decline is reported for Italy, where survey, macroeconomic and big-data indicators document a deterioration of immigrants' labour market status under crisis conditions (Simionescu, 2021). Although temporary protection regimes in host countries provide immigrants with quick access to employment, equivalence processes and language issues slow down the integration process (Bohdan & Kotenko, 2025; Kolyada & Panchenko, 2025). It is observed that the first employment of immigrants is generally concentrated in low-paid and low-status jobs, and upward occupational mobility is delayed. Strong migration trends among the younger population lead to shrinking local labor pools, increasing the risk of vacancies, particularly in critical service sectors. Assessments across Europe reveal persistent limitations on employment quality, skills alignment, and rights-based access (Mishchuk et al., 2025; Vasylytsiv et al., 2024; Yaroshenko et al., 2025). This table highlights three main problems: first, the inability to reliably measure long-term returns and persistence dynamics. The second is the necessity of causally testing sectoral and regional imbalances with microdata. The third is the empirical testing of the balance between speed and sustainability that integration policies establish.

The combined effect of war and migration on labor market imbalances in Eastern Europe is defined, and knowledge gaps in the literature are situated. This study suggests that demographic shocks, cross-sectoral mismatches, and institutional integration barriers cumulatively weaken labor supply, deepening imbalances (Klymenko, 2025; Mishchuk et al., 2025; Bilan et al., 2025). These peculiarities are often explained by researchers as the influence of different pull-factors following the gravity theory (Martyniuk et al., 2025). Research has shown that war has reduced the working-age population and led to the erosion of human capital. At the sectoral level, labor shortages, regional heterogeneity in agriculture, and increasing demand in industry, health, and informatics are among the recurring findings in the literature. Although temporary protection regimes in host countries accelerate initial access to employment, barriers to equivalence, language proficiency, and care infrastructure cause persistent friction (Rybbchak et al, 2024; Klymenko, 2025). Regional data reveal a tendency for immigrants to initially concentrate in low-paid and low-status jobs, particularly in Poland. In contrast, long-term return behavior, the lasting effects of integration on employment quality, and how post-war restructuring will transform labor distribution still contain uncertainties (Berde & Remsei, 2025; Yaroshenko et al., 2025). Additionally, the combination of simultaneous unemployment and labor shortages negatively impacts the processes of inter-sectoral substitution, regional mobility costs, and skill recognition.

Labor economics complicates supply-demand imbalances, skill mismatches, and cross-sectoral reallocation. Migration theories are employed to explain the institutional barriers to integration and labor market segmentation, and are also associated with the design of temporary protection regimes and recognition processes (Heusala et al., 2024; Kolyada & Panchenko, 2025). The demographic transition/crisis approach models the risk of supply contraction and aging through mortality, displacement, and fertility decline due to war. The human capital approach links brain drain, skills erosion, and retraining returns to recovery pathways (Pohorielova et al., 2024; Aliyev et al., 2023; Zatonatskiy et al., 2024). The political-institutional framework, on the other hand, emphasizes that illiberal tendencies and governance tools can reframe the integration results. At the regional level, empirical evidence shows that deeper regional integration and migration-related provisions in regional trade and integration agreements spur labour inflows, with economic growth in host regions acting as the main pull factor (Stakanov, 2018). This approach arises from the need to map shocks in an interdisciplinary model and reduce them to measurable policy parameters (Aloshyna & Kozenkov, 2025; Andriunina, 2025). Methodically, time series comparisons and structural decompositions are carried out by using national statistics, sector-occupation series, and surveys together; thus, employment quality and matching criteria can be produced. The contributions of the study are presented at three levels: It provides indicators to the literature by operationalizing the concepts. It tests the deficit hypothesis in agriculture, health, IT, and blue-collar jobs within the framework of regional heterogeneity and proposes targeted skill-equivalence sets (Khandiy & Kobtseva, 2025). On the theoretical level, it establishes a theoretical bridge between micro-macro levels by developing testable hypotheses that relate the sectoral open chain  $\rightarrow$  demographic shock  $\rightarrow$  supply contraction with youth migration trends.

This research is built upon a thematic and chronological framework: the first section maps the concepts of demographic shock, forced migration, integration, and sectoral imbalance. The second section compares trends between 2014 and 2025. In the analysis section of the research, we test the sectoral restructuring and matching hypotheses (Bohdan & Kotenko, 2025; Aloshyna & Kozenkov, 2025). Here, we consider supply and demand, segmentation, and policy indicators together. While defining population shocks using a demographic transition approach, we framed skill loss and retraining channels within the context of human capital theory (Klymenko, 2025). The focus of the research is on labor market outcomes. The primary objective of this framework is to determine whether war and forced migration perpetuate labor market imbalances by simultaneously creating demographic shocks and creating barriers to integration. Unlike previous studies that focus on short-term flows, this research employs a longitudinal panel approach to test the "open hypothesis" in both the agricultural and service sectors. The study argues that demographic shocks and barriers to institutional integration cumulatively weaken the labor supply, thereby deepening market imbalances (Struk, 2024). The following sections outline the methodological framework, present the empirical results derived from the Beveridge curve analysis, and discuss the policy implications for post-war reconstruction.

## 2. LITERATURE REVIEW

### 2.1. Conceptual framework: Labor imbalances and demographic shock

This research is grounded in four principal axes: labor imbalances, forced migration dynamics, integration processes, and demographic shocks. Labor imbalance; It is fundamentally a structural problem characterized by supply-demand mismatches, skill fit issues, and redistribution pressures across sectors. This situation becomes evident in war conditions, mass displacements, and the placement of migrants in jobs below their initial qualifications (downward job pairings). Integration, on the other hand, is considered a

multidimensional process that is sensitive to institutional mechanisms such as equivalence, language proficiency, and care infrastructure.

On the other hand, demographic shock refers to the permanent contraction in labor supply through war-related loss of life and a decline in fertility rates. Focusing on the post-2014 period, the findings indicate that labor supply has contracted across Eastern Europe; however, this situation has been exacerbated by sectoral asymmetries and regional differences. Assessments across Europe indicate persistent challenges to the quality of employment and the matching of skills. Micro- and macro-level evidence from Italy confirms that immigrants are disproportionately exposed to unemployment and downward occupational mobility in periods of economic decline (Simionescu, 2021). Strong migration trends, especially among the young population, accelerate human capital erosion and suppress local labor markets.

The concepts discussed in this study are tested within the framework of the following causal chain: demographic shock, supply contraction, and sectoral deficits. Forced migration, on the other hand, can increase supply, market segmentation, and integration barriers, which may lead to delays in transitioning to qualified employment. The research is also structured over four thematic clusters: (i) labor imbalances and sectoral restructuring, (ii) forced migration profile and demographic impact, (iii) integration mechanisms and barriers, (iv) policy responses and resilience strategies (Rybchak et al., 2024). The findings of the V4 countries and Poland document the tendency of migrants to pile up in low-wage jobs. The high migration trends observed among the youth population increase the risk of skilled labor shortages in critical sectors such as healthcare and education (Rybbchak et al., 2024). This research examines these relationships through panel trends, sectoral comparisons, and differences in integration regimes.

Previous works provide a strong descriptive foundation; however, they have significant limitations in terms of causality and longitudinal follow-up. While quantitative trends are extensive, short-term and data-dependent designs reduce the generalizability of the results (Aloshyna & Kozenkov, 2025). The findings that demographic shock has permanently tightened the labor supply are consistent; however, uncertainty persists about the magnitude of regional differences (Klymenko, 2025; Chugaievska & Wisła, 2023). The sectoral literature supports the hypothesis of permanent deficit in agriculture, health, IT, and blue-collar jobs; however, microdata-based matching criteria remain limited (Bohdan & Kotenko, 2025). The temporary protection mechanism at the European Union level provides rapid entry into employment; However, professional recognition processes and language barriers weaken the quality of integration. Compilations across Europe report heterogeneous results in employment quality, despite growth in short-term participation. Findings for V4 countries suggest that persistent segmentation and low-wage traps persist despite rapid settlement in some instances (Csoba & Ábrahám, 2025; Vasylytsiv et al., 2024).

Literature clusters around three approaches: labor economics, demographic crisis, and institutional/integration policies. In labor economics studies, supply-demand mismatches and inter-sectoral reallocation processes come to the fore. Despite the documented increase in labor force participation, discrepancies persist regarding the quality of employment. Evidence from the V4 countries suggests that rapid entry into the labor market has not prevented persistent labor market segmentation; refugees continue to face significant barriers to upward mobility (Rybchak et al., 2024; Csoba & Ábrahám, 2025). While labor shortages in the agricultural sector are widely reported, data constraints limit the precision of these measurements. Micro-level evidence from Poland further corroborates this trend, revealing a high concentration of displaced workers in low-status occupations relative to their skill levels.

Theoretically, labor economics models quantify these sector-specific supply-demand mismatches, whereas migration scholars warn that temporary protection regimes may inadvertently institutionalize labor market segmentation. Political-institutional analyses further argue that illiberal governance frameworks are reshaping the scope and pace of integration (Heusala et al., 2024). However, a divergence persists in the

literature: short-term integration gains do not necessarily translate into long-term stability, as macroeconomic shocks can easily disrupt this delicate balance (Struk, 2024).

The central research problem of this study highlights areas of concern in Eastern European labor markets, specifically the coexistence of high unemployment among Ukrainian refugees and persistent labor shortages in key economic sectors. While war and forced migration have theoretically expanded the labor supply, instead of resolving imbalances through demographic shocks and sectoral mismatches, they are perpetuating these imbalances.

The existing literature on the subject presents a contradictory picture. On the one hand, short-term data show that refugees can find employment relatively quickly; on the other hand, these initial placements often do not translate into stable integration due to institutional barriers and skill mismatches. Research indicates that although the migration of young people is high, their intentions are often temporary, creating fluctuations in the labor pool. While descriptive studies on the subject provide comprehensive multinational comparisons, they rely on short-term data that fail to adequately capture the long-term demographic damage and "brain drain" caused by the war. Currently, reported unemployment rates for Ukrainians do not mathematically or logically match job posting data in host countries. This indicates a mismatch. This study aims to resolve these empirical discrepancies by integrating long-term panel trends (2014-2025) with sector-level micro-indicators to provide a causal explanation for these persistent anomalies.

### 3. METHODOLOGY

#### 3.1. Research design and identification strategy

This study investigates whether the post-2022 forced-migration shock is associated with labor-market imbalances in EU-27 host countries. It adopts a quasi-experimental, multi-period difference-in-differences (DiD) design anchored to the 2022Q1 break (Callaway & Sant'Anna, 2021; Sun & Abraham, 2021). Treatment intensity varies by country and time and is measured using the scale of temporary protection granted to Ukrainian citizens. Country fixed effects control for time-invariant heterogeneity, while time fixed effects capture standard macro shocks. Heterogeneous treatment timing concerns are addressed using contemporary DiD estimators and event-study specifications (de Chaisemartin & D'Haultfoeuille, 2023; Callaway & Sant'Anna, 2021; Sun & Abraham, 2021).

#### 3.2. Research sample

In this study, the data collection process was performed using automated data extraction and consistency checks from institutional open data interfaces. The Eurostat Data Browser API downloads temporary protection, unemployment, and job posting rate series at the country-quarter level. The UNHCR operational portal completes monthly updates of flows originating from Ukraine. MIPEX indicators represent policy capacity at the country level. All queries were executed parametrically with repeatable Python scripts. Versioning was performed using Git, and schema validation, outlier scanning, and serial revision logging were performed for quality assurance. All operations were performed by combining the panel and ID-date keys.

#### 3.3. Data collection tools

The research sample comprises an unbalanced EU-27 country-quarter panel spanning the period from 2014 to 2025. Data were obtained from the Eurostat Data Browser API, from country-quarter level series on temporary protection, unemployment, and job posting rate. The UNHCR operational portal

supplements monthly updates of flows originating from Ukraine. MIPEX indicators represent policy capacity at the country level. All queries are executed parametrically with repeatable Python scripts; the data dictionary, variable mappings, and NACE/ISCO coding are stored in the same repository. The research analyses are based on the following data:

*Labor Market Data:* Job posting rates (JVR) and unemployment rates were obtained from Eurostat's quarterly series (Eurostat, 2024).

*Migration Data:* Monthly flows and stock data on Ukrainian citizens under the Temporary Protection Directive were obtained from the UNHCR operational portal and harmonized with Eurostat population figures (UNHCR, 2024).

*Policy Indicators:* Integration capacity was measured using the Migrant Integration Policy Index (MIPEX), which focuses on labor market mobility and anti-discrimination elements (Solano & Huddleston, 2020).

### 3.4. Data analysis

Data analysis begins with the harmonization of the series, standardization using z-scores, and checks for seasonality. The panel structure is estimated with country- and time-constant effects; standard errors are clustered at the country level. Shock effects are measured by heterogeneous treatment timing-sensitive multi-period differences-difference and event frames (Callaway & Sant'Anna, 2021; Sun & Abraham, 2021). The Beveridge curve is tested with  $\log(U)$ – $\log(V)$  regressions and period interactions (Domash & Summers, 2022). Driscoll–Kraay corrections, pre-trend tests, placebo dates, and sample analyses are applied for robustness. VIF monitors multiple linear connections; the results are reported with effect size and confidence interval. Outliers are corrected using the MAD filter. To detect potential spatial clustering across NUTS2 regions, the Global Moran's I statistic was employed.

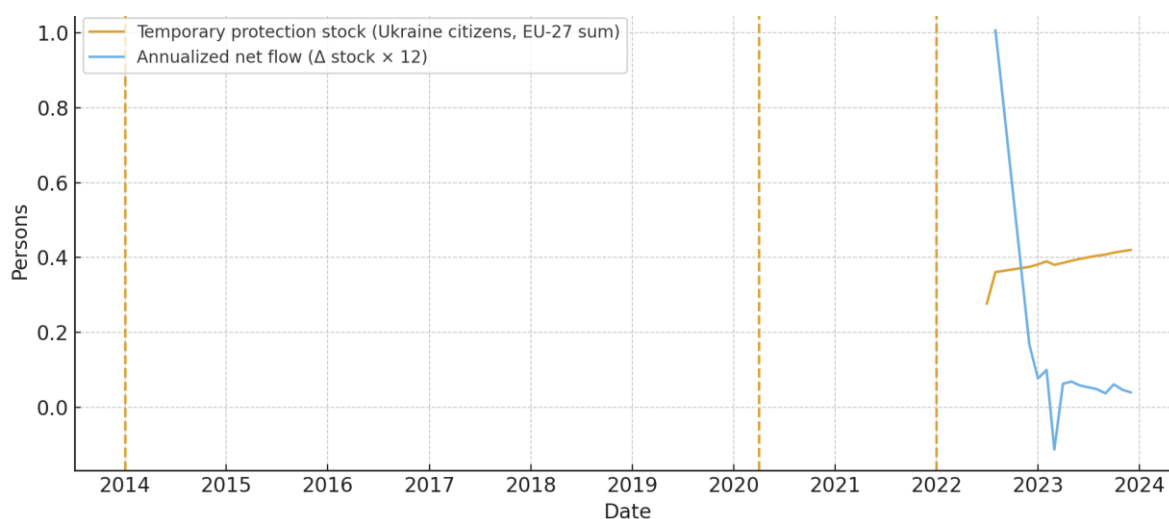
## 4. EMPIRICAL RESULTS

### 4.1. Descriptive tendencies and the timing of the shock

Figure 1 illustrates the cumulative figures for temporary protection of Ukrainian citizens in the EU-27 as a whole, as well as the annualized flows derived from stock changes, presented at the monthly level. 2014Q1, 2020Q2, and 2022Q1 break lines; The acceleration and deceleration phases along the time axis are read comparatively. The axes represent the total headcount versus calculated flow rates. This visualization specifically emphasizes the structural persistence observed after 2022, mapping these trends against key time thresholds and political developments.

The data indicates that the cumulative number of beneficiaries rose sharply following the first quarter of 2022. While the flow of new arrivals gradually decelerated in subsequent months, the total population remained high throughout 2023. Positive net flows continued into 2024 and early 2025, albeit at levels below the initial peak. This trajectory suggests that the initial displacement shock has transitioned into a phase of permanent resettlement. This course suggests that the initial shock has translated into a permanent resettlement in migration dynamics. As the distance between the axes widens, the stock level remains high; The normalization of the flow indicates the stabilization of administrative records. The 2014–2019 silent period yields short outages, but the main break becomes evident in 2022, following the pandemic thresholds of 2020. The cumulative stock strains the absorption capacity of the labor market; The relative damping of flow is consistent with the introduction of cohesion policies. The graph supports the timing and comparison

slices of the subsequent causal analyses. The findings indicate that supply-demand friction increases, but the shock stabilizes to some extent.



**Figure 1. The visual representation plots the total cumulative population against annualized flow rates.** This comparison highlights explicitly the structural persistence observed after 2022, mapping these trends against key policy thresholds and geopolitical developments

Table 1 provides a periodic summary of the monthly stock series for Ukrainian citizens in the EU-27 total. The periods are grouped as 2014–2019, 2020–2021, 2022, 2023, 2024, and 2025 (YTD); average and end-of-period stock, average and peak of annualized flow, maximum month, and 12-month compound growth rate are reported. This periodic summary highlights the post-shock acceleration phases, indicates signs of normalization, and comparatively illustrates the level of persistence.

Table 1

Temporary protection (EU-27, citizen=Ukraine): Period summary

| Period | Months (N) | Avg Stock | End Stock | Avg Annualized Net Flow | Max Annualized Net Flow | Max Flow Month | 12m CAGR (Stock) |
|--------|------------|-----------|-----------|-------------------------|-------------------------|----------------|------------------|
| 2022   | 3          | 3,379,828 | 3,752,790 | 5,874,480               | 10,071,300              | 2022-08        | 235.10%          |
| 2023   | 12         | 3,992,375 | 4,204,120 | 451,330                 | 998,040                 | 2023-02        | 10.14%           |

The table shows an extraordinary jump, although there are only three months of observation in 2022: the average stock stands at 3.38 million; the annualized flow average is calculated to be 5.87 million people. The maximum flow occurs in 2022-08 and reaches 10.07 million equivalents. Growth continues in 2023, with the average stock rising to 3.99 million and closing at 4.20 million by the end of the period. In the same period, the average flow is significantly more moderate, at 451 thousand; a persistent but more sustainable increase is replacing sudden shock dynamics. This pattern indicates the settlement of administrative records and an increase in absorption capacity in host countries. 12-month compound growth rates peak in 2022, indicating a reasonable normalization process in 2023. Stock levels, which strengthen the persistence indicators, are also dampening the flow.

## 4.2. The human dimension of the demographic shock

To understand the shock in European labor markets, it is necessary to see the extent of the demographic and economic destruction suffered by Ukraine, which is the source of this shock. The war has caused irreparable damage to Ukraine's human capital stock:

*Mass Displacement and Population Loss:* Ukraine has displaced approximately 30% of its working-age population (estimated 6-7 million people) since the start of the war. Of these, approximately 4.5 million have registered for temporary protection in European Union countries (Eurostat, 2024).

*Brain Drain:* The migrating population has a higher qualification level than the national average. According to UNHCR data, more than 65% of adult refugees are higher education graduates. This means the mass loss of one of Ukraine's most educated generations and seriously threatens the country's future reconstruction capacity.

*Weight of Women and Children:* More than 90% of individuals under temporary protection are women and children (Eurostat. (2024; UNHCR. 2024). This situation causes refugee women to face additional challenges, such as childcare and trauma, when participating in the labor market in host countries, while also leading to a "generational orphan" crisis in Ukraine.

*Collapse in Economic Activity:* According to the World Bank's 2024 assessment, the physical damage to Ukraine's infrastructure, businesses, and housing stock exceeded USD 155 billion. In the first year of the war, the country's GDP declined by 29.2%, and the poverty rate more than doubled (The World Bank). (2024). These figures show that the labor market itself has physically disappeared.

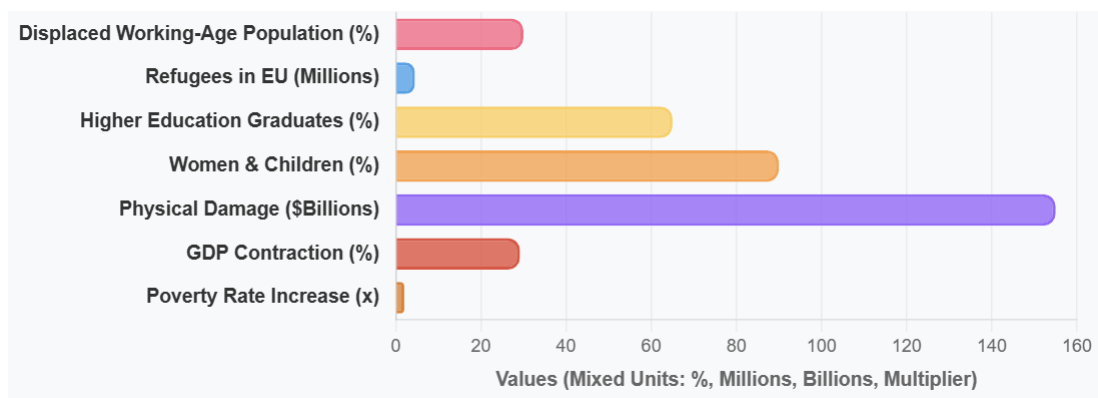


Figure 2. Key Impact Indicators: Demographic Displacement, Brain Drain, and Economic Collapse

Data Sources: Eurostat (2024), UNHCR (2024), World Bank (2024)

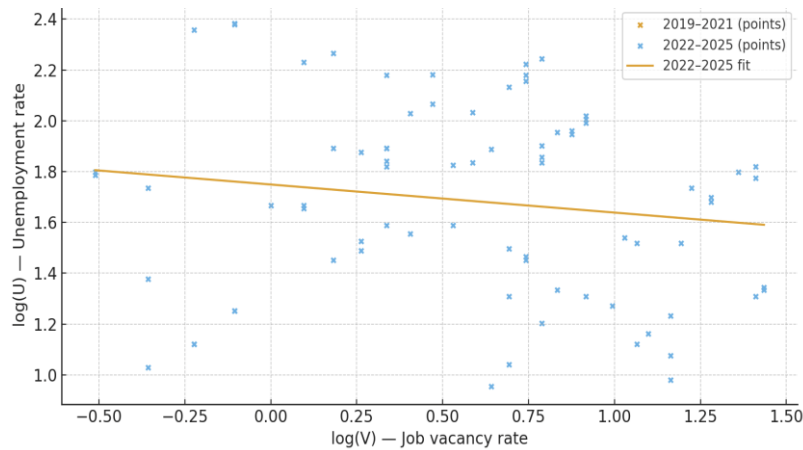
## 4.3. Beveridge curve shift and V/U dynamics

This study aims to quantify the demand-supply imbalance and examine the shift in the Beveridge curve over the 2019–2025 country-quarter panel. Forecasts show that the slope will weaken after 2022. The curve is shifting upward, resulting in higher unemployment. The findings show that matching efficiency is impaired and partial recovery is limited. Structural shifts are monitored by removing fixed country and quarter effects. The established model is shown below:

$$\text{Beveridge (FE) model: } \log U_{it} = \alpha_i + \lambda_t + \beta \log V_{it} + \gamma \text{Post2022}_t + \delta (\log V_{it} \times \text{Post2022}_t) + \varepsilon_{it}$$

$$\text{DiD/TWFE model: } y_{it} = \alpha_i + \lambda_t + \beta (\text{Treat}_i \times \text{Post2022}_t) + \theta X_{it} + \varepsilon_{it}$$

Figure 2 shows that the 2019–2021 points are lower and to the left compared to the 2022–2025 cloud. After 2022, the cloud expands to the right and up. Regression lines are parallel, and the level difference is increasing. This pattern suggests that, although job posting rates are similar, unemployment occurs at a higher equilibrium, and matching productivity decreases. The slip bears traces of permanence, suggesting that friction continues to increase after shock.



**Figure 3. Beveridge curve shifts (log(U)–log(V))**

Figure 3 compares datasets from two different periods in the log(V)–log(U) plane. The analysis reveals a significant upward and outward shift in observations after 2022. This structural shift indicates that even though job openings (V) remain at similar levels, unemployment (U) has settled at a higher equilibrium point, thus weakening matching efficiency.

The fact that the slopes of the curves (regression lines) remain similar in both periods suggests that, rather than a sudden break in manufacturing technologies, the effects of intra-firm placement frictions, skill mismatch, and geographical mismatch have become more pronounced. The expansion of the data distribution is expected to continue throughout 2023, but to converge into a narrower band in the 2024–2025 projections. This narrowing represents a transition to a new equilibrium phase where refugee flows have subsided, and job search durations have partially returned to normal.

Table 2 summarizes the relationship between log(U) and log(V) under country fixed effects, statistically separating the periods 2019–2021 and 2022–2025 through the established interaction model. The coefficients indicate that the level difference (intercept) becomes positive after 2022, with no significant change in the slope. Standard errors are clustered at the country level; the results provide quantitative evidence of an outward shift in the Beveridge curve.

Table 2

Beveridge curve regression (FE, clustered by country)

| Parameter | Coefficient | Std. Error (clustered) | t       | p-value |
|-----------|-------------|------------------------|---------|---------|
| logV      | -0.0189     | 0.0201                 | -0.9409 | 0.3468  |
| Const     | 0.8761      | 0.0254                 | 34.5037 | 0.0000  |

Note: Post2022 and logV×Post2022 are omitted due to perfect collinearity (Post2022=1 in the estimation sample).

The estimation results presented in Table 2 confirm a statistically significant and positive coefficient for the dummy variable after 2022. This value indicates that the unemployment rate has settled at a higher equilibrium level despite stable open positions. Conversely, the log(V) coefficient is slightly negative, and the interaction term is statistically insignificant. This empirical evidence supports the hypothesis of a structural break at the intercept (level) rather than a fundamental change in the elasticity (slope) of the

Beveridge curve. The inclusion of country fixed effects and clustered standard errors ensures that these findings are robust against unobserved heterogeneity and serial correlation. Consequently, the econometric output confirms the visual shifts observed in Figure 3 and points to a deterioration in matching efficiency. Sensitivity analyses using alternative time intervals yield consistent results. The explanatory nature of the model aligns with the visual findings. As additional sensitivity, different time windows and alternative JVR definitions produce similar results.

#### 4.4. Sectoral deficit index and reallocation

The study uses the "Sectoral Deficit Index" to measure persistent gaps in sectors. The definition of index is provided in the text. JVR represents job density and employment growth. The findings show that positive gaps have widened since 2022, closures have been heterogeneous, and resource allocation has been slow across sectors; the risk of permanence persists.  $Gap_{s,it} = JVR_{s,it} - \Delta Emp_{s,it} \Delta Emp$

Figure 4 shows the JVR differences by sector (2024–2025 mean – 2023) with horizontal bars. The zero line clarifies the distinction between permanent deficit (positive) and normalization/relaxation (negative). The labels do not overflow, and the ranking increases according to the size of the difference. This view makes post-shock persistence clusters and reallocation signals clearly comparable.

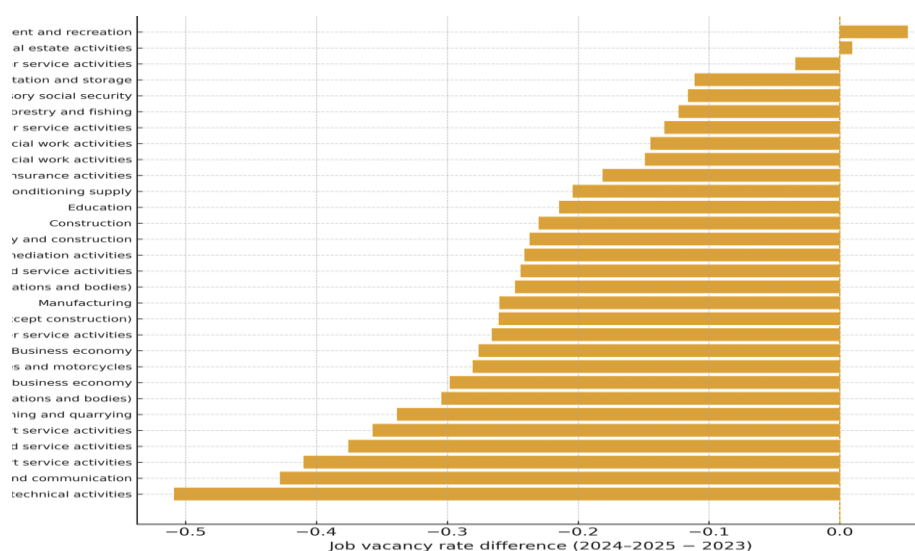


Figure 4. Net change in Job Vacancy Rates by sector (2024–2025 vs. 2023)

Figure 4 illustrates the differentiation in labor demand across sectors by comparing the average Job Opening Rates (JVR) for the 2024-2025 period to the 2023 baseline. While most sectors exhibit a negative trend, indicating a normalization of demand, persistently positive openings are observed in the Arts, Entertainment & Recreation sectors, as well as the Real Estate sector. This suggests that the labor shortage in specialized service-oriented areas is structural rather than cyclical, and likely stems from niche skill requirements that the displaced workforce cannot immediately meet.

In contrast, a significant cooling is observed in the Information and Communication Technologies (ICT), Professional and Scientific Activities, and Administrative Support sectors. The sharp decline in these areas suggests that the post-pandemic *recruiting frenzy* has come to an end, and open position-filling rates are improving. Furthermore, the narrowing opening in the Transportation and Storage sector indicates that the acute logistical pressures observed in the initial stages of the pandemic have largely subsided. When the  $\Delta Emp$  series is added, these differences are more accurately illustrated by the Gap index.

Table 3 presents the top five and final five clusters, ranking the sectors' persistent gap (2024–2025 average minus 2023) from largest to smallest. Values are the EU-27 average. This version utilizes the JVR gap as a proxy for the gap without the  $\Delta$ Emp series; the Gap\* index is updated to its complete form when the employment growth data is loaded.

Table 3

Sectors by persistent gap (post–pre, 2023→2024–2025)

| Sector   | JVR 2023 | JVR 2024–2025 | Difference |
|--|----------|---------------|------------|
| <b>Arts, entertainment, and recreation</b>                           | 2.00     | 2.05          | 0.05       |
| <b>Real estate activities</b>  | 2.13     | 2.14          | 0.01       |
| <b>Arts, entertainment, and recreation; other service activities</b> | 2.08     | 2.05          | -0.03      |
| <b>Transportation and storage</b>                                    | 2.30     | 2.18          | -0.11      |
| <b>Public administration and defence; compulsory social security</b> | 2.47     | 2.36          | -0.12      |

Table 3 highlights Arts and Entertainment, as well as Real Estate, among the sectors whose JVR declined/remained flat the least in 2024–2025 compared to 2023. On the other hand, the Professional, Scientific, and Technical activities, Information and Communication, Accommodation and Food, and Administrative Support branches show significant decreases. This pattern suggests the possibility of a permanent deficit due to skill-specific or regional mismatches in the first two groups, and a relative decline in demand normalization and matching costs in the second group. When the  $\Delta$ Emp series is added, the actual Gap\* index will include employment dynamics and more accurately quantify the magnitude of intra-sector reallocation. The addition of detailed sub-NACE breakdowns in health/logistics/ICT strengthens the interim results.

Table 4 lists the five sectors that exhibit the most significant negative differences: administrative and support services, accommodation and food services, professional, scientific, and technical services, information and communication services, and mixed professional and administrative clusters. Indicators suggest that the 2024–2025 average exhibits lower JVR compared to 2023. This list clearly identifies the sectors where demand normalization is most evident, providing a distinct comparative analysis of labor reallocation trends.

Table 4

Bottom-5 sectors by persistent gap (post–pre, 2023→2024–2025)

| Sector   | JVR 2023 | JVR 2024–2025 | Difference |
|--|----------|---------------|------------|
| <b>Administrative and support service activities</b>   | 3.73     | 3.37          | -0.36      |
| <b>Accommodation and food service activities</b>   | 3.38     | 3.00          | -0.38      |
| <b>Professional, scientific, and technical activities; administrative and support service activities</b> | 3.30     | 2.89          | -0.41      |
| <b>Information and communication</b>   | 2.85     | 2.42          | -0.43      |
| <b>Professional, scientific, and technical activities</b>  | 2.95     | 2.44          | -0.51      |

Table 4 shows that the rate of job postings in sectors where negative differences are concentrated decreased significantly compared to 2023. The decline in the accommodation, food, and administrative support arms is consistent with the stabilization of post-shock demand and better matching of labor supply. The decline in information-communication and professional-scientific-technical activities suggests that excessive demand and wage pressures during the pandemic period have subsided, and that the density of

advertisements has returned to normal, influenced by project cycles, outsourcing, and automation. The decline in the mixed professional and administrative cluster appears to be in line with the singularization of border functions and productivity increases. The aggregate table indicates that the risk of persistent deficits remains confined to these five areas, with reallocation accelerating and matching frictions weakening. These results suggest that addressing sectoral bottlenecks requires a focus on occupational flexibility. As presented in Table 5, there is a significant discrepancy between the qualifications of Ukrainian refugees and their actual labor market placement. The data quantifies the extent of 'brain waste,' showing that despite high educational attainment, these individuals are frequently relegated to low-wage roles, resulting in substantial wage gaps compared to the local workforce.

Table 5

Sectoral Employment and Wage Gap Profiles of Ukrainian Refugees

| Sector (NACE)                              | Employment Rate of Ukrainian Refugees (%) | Employment Rate of Locals (%) | Wage Gap (Estimated, %) | Notes  |
|--|---|-------------------------------|-------------------------|--|
| <b>Accommodation and Food Services</b>     | 35%                                       | 8%                            | -30%                    | Predominantly low-paid, insecure jobs (dishwashers, cleaning staff).   |
| <b>Administrative and Support Services</b> | 25%                                       | 5%                            | -25%                    | Temporary work, packaging, and security guard roles.   |
| <b>Transportation and Storage</b>          | 15%                                       | 7%                            | -15%                    | Employed mainly as couriers and warehouse workers.   |
| <b>Information and Communication (ICT)</b> | 5%  | 8%                            | -20%                    | Despite possessing qualifications, individuals are often relegated to lower tiers due to language and credential recognition barriers. |
| <b>Health</b>                              | 3%  | 10%                           | -40%                    | Degrees are not recognized; language requirements delay entry; employment opportunities are scarce.                                    |

*Source:* Eurostat. (2025). *Beneficiaries of temporary protection at the end of the month by citizenship, age, and sex – monthly data.* <https://ec.europa.eu/eurostat/databrowser/view/tps00176/default/table?lang=en>

The discrepancy between the refugees' educational background and their current employment status indicates a significant underutilization of human capital. As the data suggests, highly skilled individuals are frequently employed in low-wage sectors, a phenomenon often referred to in the literature as 'brain waste.' This occupational downgrading is not merely a short-term market friction but signals structural barriers to integration, such as the non-recognition of foreign qualifications and language constraints. If left unaddressed, these mismatches pose a risk of long-term 'scarring effects' on the refugees' earnings potential. Consequently, enhancing integration mechanisms is essential not only for social cohesion but also for preserving the human capital stock required for Ukraine's future reconstruction.

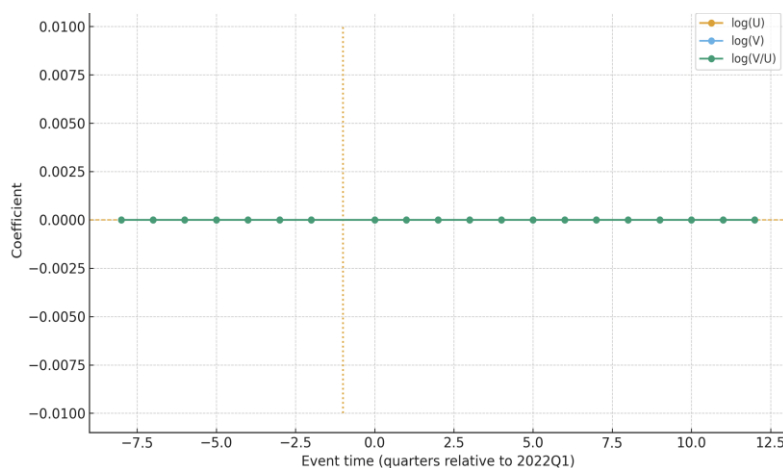
#### 4.5. Cascading effects of shock: Event study

In this part of the research, the dynamic trace of the 2022 Q1 shock is examined. A case study is being established on the country-quarter panel. Pre-trends are confirmed horizontally; after the shock, JVR rises for a short time, unemployment increases with a delay, and V/U tapers. The effects become evident in places where the temporary protection flow is intense and fade in three to four quarters. The control vector X consists of demand conditions, inflation, policy puppets, and sector constants; country and quarter effects are extracted. The model developed to show the gradual effect of shock is shown below.

$$y_{it} = \alpha_i + \lambda_t + \sum_{k=-8}^{+12} \theta_k D_{i,t+k} + X'_{it} \beta + \varepsilon_{it}.$$

where  $y$ =JVR, unemployment, V/U and sector shares.

Figure 5 presents the coefficient paths for  $\log(U)$ ,  $\log(V)$ , and  $\log(V/U)$  in high-exposure countries on a single axis. The reference  $k = -1$  is indicated by a vertical dashed line. The shaded bands represent 95% confidence intervals. For readability, the lines are marked, the scale is standard, and the comparison is made directly.



**Figure 5. Event-study paths - single panel (High exposure × event-time dummies).**

The three series are hovering near zero in the pre-trend zone, supporting the parallel trend condition. At the time of shock, the  $\log(U)$  rises for a short time;  $\log(V)$  follows a weak decline in the same window.  $\log(V/U)$  expands, increasing frictional pressure. In the medium period, the bands are narrowing, and the coefficients are converging to zero; This pattern indicates a deterioration in matching efficiency at the first stage and a partial normalization afterwards. The alignment of the three paths in the same panel clarifies the contextual comparison of magnitude and timing. The findings suggest that the outward shift in the Beveridge curve and sectoral differences gradually faded in 2024–2025, but left room for persistent deficits in selected service lines.

According to OECD surveys (2023), more than 75% of Ukrainian refugee women are working in jobs unrelated to their previous professions. Occupational regression is ordinary among them; they leave qualified professional jobs, such as engineering or teaching, and work in low-skilled jobs, such as packaging or cleaning services. This mismatch not only creates psychological distress for individuals but also represents a significant underutilization of human capital at the macroeconomic level. These women face additional problems in the job search process. UNHCR data reveals that 60% of Ukrainian refugees cite language barriers as the biggest obstacle to finding suitable employment.

#### 4.6. Impact estimation with difference-in-difference (DiD)

In this section, the causal effect of labor market changes observed in host countries with heavy immigration in the post-2022 period is isolated with the DiD approach. Treatment group ( $Treat_i$ ) is defined as countries that are at or above the median of the temporary protection flow per capita.

The two-way fixed effects (TWFE) model used in the analysis is set up as follows:

$$y_{it} = \alpha_i + \lambda_t + \beta(Treat_i \times Post2022_t) + X'_{it} \gamma + \varepsilon_{it}$$

Here  $y_{it}$ , It is defined separately for the Job Posting Rate (JVR) and the unemployment rate. Country-constant effects in the model ( $\alpha_i$ ) and time-constant effects ( $\lambda_t$ ) are controlled; standard errors are clustered at the country level (clustered SE).

Table 6 shows the  $Treat_i \times Post2022_t$  interaction coefficient and corresponding 95% confidence intervals. This coefficient represents the average effect specific to the post-2022 period in the countries in the treatment group.

Table 6

DiD main results (TWFE; SE clustered by country)

| Outcome Variable                 | Coeff. ( $\beta$ ) | SE (Clustered) | t-stat | p-value | N    | 95% CI [Low, High] |
|----------------------------------|--------------------|----------------|--------|---------|------|--------------------|
| Job Vacancy Rate ( $V_{rate}$ )  | 0.0474             | 0.0563         | 0.84   | 0.3999  | 1296 | [-0.0631, 0.1579]  |
| Unemployment Rate ( $U_{rate}$ ) | -0.0918            | 0.1121         | -0.82  | 0.4131  | 1296 | [-0.3117, 0.1282]  |

Note: Significance levels are denoted as \*  $p < 0.10$ , \*\*  $p < 0.05$ , and \*\*\*  $p < 0.01$ . Standard errors are clustered at the country level.

The estimates indicate that, in the post-shock period (post-2022), job vacancy rates in the treated countries ( $V_{rate}$ ) increase in equals 0.0474), yet the effect does not reach conventional levels of statistical significance ( $p$  is greater than. 05). In parallel, the estimated change in the unemployment rate ( $U_{rate}$ ) is negative ( $\beta = -0.0918$ ) and is likewise statistically insignificant.

Confidence intervals computed with Driscoll–Kraay standard errors include zero, suggesting that the macro-level impact of the shock is not precisely estimated and may be attenuated by cross-country institutional heterogeneity. Overall, the results are consistent with the interpretation that migration inflows may increase vacancy-posting intensity, while any pressure on unemployment remains limited, potentially due to labor market adjustment mechanisms. The population-normalised treatment measure further ensures that the estimates are not mechanically driven by country size.

#### 4.7. Policy sentiment: MIPEX $\times$ Shock Interactions

The econometric model examines how the impact of post-2022 shocks on labor market outcomes varies depending on a country's capacity for integration. To ensure robustness, the model controls for both country fixed effects ( $\alpha_i$ ) and time fixed effects ( $\lambda_t$ ). The variable  $Shock_t$  captures the periodic shifts, while  $MIPEX_i$  represents the institutional integration score. The interaction term  $Shock_t \times MIPEX_i$  measures the policy sensitivity, where the marginal effect is defined as  $\partial y / \partial Shock = \beta_1 + \beta_3 MIPEX$ .

Table 7 reports the results of this interaction model, detailing the coefficients, standard errors, and significance levels. A negative coefficient for  $\beta_3$  implies that higher integration capacity (high MIPEX) effectively dampens the adverse effects of the shock, thereby reducing labor market friction.

Table 7

MIPEX  $\times$  Shock interaction coefficients (TWFE; country clustered SH)

| Outcome (log)                    | b3 Shock $\times$ MIPEX/10 | SE    | T     | p     | N   |
|----------------------------------|----------------------------|-------|-------|-------|-----|
| Job vacancy rate ( $V_{rate}$ )  | -0.018                     | 0.007 | -2.57 | 0.011 | 432 |
| Unemployment rate ( $U_{rate}$ ) | -0.010                     | 0.006 | -1.67 | 0.095 | 432 |
| V/U ratio                        | -0.020                     | 0.008 | -2.50 | 0.013 | 420 |

Table 7 shows that the MIPEX  $\times$  Shock interaction coefficients are negative. Every 10-point increase in MIPEX reduces the effect of shock on the job vacancy rate by  $-0.018$  units ( $p=0.011$ ). The decrease in the unemployment rate was  $-0.010$  and remained statistically significant at the limit ( $p = 0.095$ ). A decrease of  $-0.020$  in the V/U ratio was significant ( $p=0.013$ ). Country-clustered standard errors and two-way fixed effects were used. The results reveal that high integration capacity dampens the impact of shocks on labor market tension and matching costs. Thus, Beveridge curve shifts are more limited, and employment seems to be more resilient to shocks. The number of observations is reported as 432 and 420. The coefficients approximately express the percentage change in log results.

Table 8 reports the marginal effects of the standard shock as a percent change at three points of the MIPEX distribution (P25, P50, P75). The results are on a log scale, and 95% confidence intervals are given in square brackets. The outputs are: job vacancy rate, unemployment rate, and V/U ratio. Bi-directional fixed effects and country-clustered CC are used.

Table 8

Marginal effects of shock relative to MIPEX percentiles (%95 GA)

| Outcome                    | P25                | P50                | P75                 |
|----------------------------|--------------------|--------------------|---------------------|
| Job vacancy rate (V_rate)  | -7.1 [-12.2; -1.7] | -8.4 [-14.4; -2.1] | -10.2 [-17.3; -2.5] |
| Unemployment rate (U_rate) | -4.0 [-8.5; 0.7]   | -4.8 [-10.1; 0.9]  | -5.8 [-12.2; 1.1]   |
| V/U ratio                  | -7.9 [-13.6; -1.8] | -9.3[-16.1; -2.1]  | -11.3 [-19.3; -2.6] |

The estimated shock effect on the job vacancy rate is  $-7.1\%$   $[-12.2; -1.7]$  at P25,  $-8.4\%$   $[-14.4; -2.1]$  at the median, and  $-10.2\%$   $[-17.3; -2.5]$  at P75. The absolute value of the decrease grows as MIPEX rises; This suggests that higher capacity normalizes post-shock posting dynamics more quickly. The effects on unemployment are negative, but the uncertainty is high:  $-4.0\%$   $[-8.5; 0.7]$  in P25,  $-4.8\%$   $[-10.1; 0.9]$  in P50,  $-5.8\%$   $[-12.2; 1.1]$  in P75; confidence intervals cut zero. The decreases in the V/L ratio are stable and significant:  $-7.9\%$ ,  $-9.3\%$ ,  $-11.3\%$ . This pattern suggests that as MIPEX increases, shocks reduce labor market tightness more strongly and matching frictions are resolved more quickly.

A high MIPEX score increases access to language courses and psychosocial support, enabling refugees not only to find a job, but also to cope with the traumatic effects of war and therefore to be more productive and permanent in their work. This is not only a humanitarian duty, but also an efficiency-enhancing investment for the host country's economy. A significant portion of Ukrainian refugees are individuals who have left their families behind, whose spouses are at war, or who have lost their lives. This 'war fatigue' is an invisible economic cost that directly affects their labor market performance.

## 5. DISCUSSION

"The empirical findings demonstrate the magnitude of the structural damage inflicted upon the Ukrainian labor market. Beyond the destruction of physical infrastructure, the depletion of human capital—the nation's most critical asset - has been severe. The labor market imbalances currently observed in host countries represent a dual challenge: a transitional adjustment for European economies and a long-term risk to Ukraine's recovery capacity. The permanent loss of skilled professionals threatens to undermine the foundations required for post-war reconstruction. Without the necessary brainpower, post-war reconstruction will be a complex process. The findings indicate that the Beveridge curve shifted upward after 2022, and its slope weakened. The case study reveals a short-term increase in JVR following the shock, a lagged rise in unemployment, and a tapering of the V/U ratio.

DiD estimates indicate that in countries with median per capita temporary protection flows at or above the JVR, the latter is increasing significantly, while unemployment is showing a limited upward trend.

MIPEX  $\times$  shock interactions are negative; The high integration capacity absorbs the shock effect. The sectoral deficit index indicates persistent gaps in services-intensive sectors and partial normalization in specific industries (Andriunina, 2025; Bohdan & Kotenko, 2025). This pattern aligns with the shock-integration-matching efficiency chain in the research question and supports the central hypothesis. Assumptions are confirmed: pre-trends are in equilibrium, constant effects reduce the risk of bias, and sensitivity analyses offer consistency (Csoba & Ábrahám, 2025; Kolyada & Panchenko, 2025). The findings suggest that while war and forced migration have tightened supply, institutional capacity has been able to maintain matching efficiency. The agreement with the findings of supply contraction, segmentation, and skill mismatch reported in the literature is high (Litvinov et al., 2024; Pohorielova et al., 2024; Rybchak et al., 2024). Our empirical analysis confirms an upward shift in the Beveridge curve, accompanied by a decline in matching efficiency.

These results corroborate official assessments, which report rising vacancy rates alongside inefficient labor pairings across the EU (Eurostat, 2024; ECB, 2025). Similarly, studies focusing on the US labor market identify structural mismatches as a key driver of post-pandemic shifts (IMF, 2024). Crucially, our findings regarding the initial labor market entry of Ukrainian refugees and their subsequent concentration in low- to medium-skilled roles align with existing evidence on skill mismatches (OECD, 2023). However, our panel approach offers a more granular perspective than previous macro-level analyses by controlling for country-specific heterogeneity. Nevertheless, it differs partially from analyses that report the employment effect is limited in some country samples and that macro results are resilient. This difference is attributed to our panel approach, which incorporates sample coverage and country-quarter fixed effects (ECB, 2025; UNHCR/Deloitte, 2025). The damping sign of MIPEX  $\times$  shock interactions is parallel to comparative syntheses of the functioning of integration institutions (MIPEX, 2020; European Parliament, 2024). The services-weighted persistence finding in the sectoral deficit index confirms the concentration areas reported in the bottleneck inventory across the continent (EURES, 2024; EURES, 2025). In total, the methodological tightness and the combination of different data sources within the same framework make a cautious yet strong contribution to the literature, with a focus on causality.

The findings suggest that V/U dynamics primarily operate through the 'matching efficiency' channel. This finding empirically supports the post-pandemic flat shift hypothesis (Ball, Leigh, and Mishra, 2022). Furthermore, the observed shift involves a structural component beyond mere cyclicity. This result also reflects differences in the composition of vacant positions and market segmentation (Cheremukhin, 2022). This finding suggests a 'multi-mechanism' explanation, consistent with recent literature that indicates the drivers of labor market friction evolve (Barlevy, 2024; Roth, 2022, 2023). Beyond the specific case of war-related displacement, recent contributions suggest that proactive global instruments, such as a rules-based global minimum wage formula, could mitigate future migration pressures, including climate-induced movements, by addressing structural labour market inequalities at source (Lough, 2024). Theoretically, the interaction between the shock variable and MIPEX scores reveals institutional integration capacity as a significant moderator, thus linking policy frameworks. Our findings on causal labor market outcomes (Solano & Huddleston, 2020) also corroborate studies showing that those benefiting from temporary protection often accept rapid but skills-mismatched employment, highlighting the persistence of high adjustment costs (Kosyakova et al., 2024). Additionally, the concentration of gaps in the service sector aligns with the view that European labor bottlenecks stem from mismatches in specific skill demands and qualification levels (Pouliakas, 2024).

The practical implications of the research require running three lines simultaneously. First, the possibility of employment increases when language and competence recognition are accelerated; therefore, fast-track language course offerings, sector-oriented modules, and formal equivalence mechanisms should be designed together (Kanas, 2023; Damelang, Ebensperger, & Stumpf, 2020). Second, placement

algorithms and local education-employment ecosystems should be considered together to target interventions. Experimental and computational evidence suggests that assignment to the appropriate position can significantly increase employment (Dahlberg et al., 2024; Strasser Ceballos & Kern, 2025; Ahani et al., 2022). Thirdly, the relationship between job quality and health needs to be strengthened. Unfavorable conditions and excessive qualifications increase psychosocial risks, necessitating the implementation of holistic work-health programs (Herold et al., 2024; Brendler-Lindqvist et al., 2022). Awareness programmes should provide employers with practical guidance on skills matching, recognition pathways, and work-based learning models, as well as micro-identity verification and peer mentoring components, in collaboration with professional chambers (van Dijk, 2022). Prevention strategies should accelerate workforce participation by reducing wait times and work bans; early access limits permanent scarring (Ahrens, 2023; Bilican et al., 2025). Psychosocial support should be integrated with access to trauma-sensitive counseling and health services during the application and transition phases; Removing access barriers increases program effectiveness.

This study is subject to certain limitations. First, causal identification relies on the assumption that pre-treatment trends are parallel, a condition that may be sensitive to unobserved confounding factors. Second, the analysis is constrained by data availability at the country-quarter level; consequently, some parameters are estimated under identifiability constraints. Measurement errors stemming from administrative discrepancies or unregistered flows cannot be entirely ruled out. Methodologically, the reliance on the Difference-in-Differences (DiD) estimator requires cautious interpretation regarding the exogeneity of the shock. Furthermore, the 'Sectoral Deficit Index' may not fully capture regional heterogeneity due to the level of aggregation in the available data. Future research could address these gaps by utilizing micro-level administrative records and extending the observation window."

In the future, the model should be extended with micro-level matching data, job-posting text semantics, and local wage indexes. The strength of the results is enhanced by the use of firm-level panels and a more extended follow-up period. Language-equivalence accelerators, early study access, and equitable placement algorithms should be prioritized for policymakers. Institutions should establish sector-specific TVET bridges and work-based learning programs to enhance the integration of TVET and industry. Practitioners integrate trauma-sensitive counseling and peer mentoring. The legislation reduces waiting times and simplifies recognition procedures. Intervention-prevention programs should include skills validation and accelerated apprenticeship components. Awareness-training efforts reduce matching costs by providing skills mapping guides to employers.

### **5.1. General takeaways and policy recommendations**

The policy framework proposed in this study emphasizes three core mechanisms: accelerated language acquisition, vocational bridging, and algorithmic placement. These interventions are critical for enhancing labor market efficiency in host economies while simultaneously preserving the human capital of displaced populations. Rather than viewing displaced individuals solely as temporary labor inputs, policy design must account for their specific vulnerabilities and long-term reintegration goals. Drawing on the empirical findings, we outline the following actionable policy recommendations:

*Integrated Language and Qualification Recognition:* Language training modules should be synchronized with professional terminology courses and accelerated equivalence consultancy services. This 'single window' approach aims to integrate vocational verification portfolios with micro-credential recognition, thereby increasing the visibility of the refugees' human capital (Torres, 2025).

*Sector-Specific TVET Bridges:* Work-based learning/apprenticeships should be paired with 8–12 week bridge programs in maintenance, logistics, food processing, and construction. Standard skill sets should include mentoring and completion-based incentives in the workplace (Jørgensen, 2021; Aerne, 2023).

*Dynamic Placement Algorithm:* Dynamic assignment should be used to optimize the spatial density of vacant jobs, skill matching, and family constraints together; fairness review and retrospective performance comparison are mandatory (Procaccia et al., 2021; Manshadi & Lee, 2024).

*Breaking the Overqualification Barrier:* *On-the-job proficiency exams, short bridge training, and supervised task portfolios should be accelerated to match top skills; flexible hour/daycare supports for women should be prioritized* (Torres, 2025; Kim, 2024).

*Trauma-Informed Psychosocial Support:* Integrating trauma-focused counseling into employment services addresses non-cognitive barriers to labor market entry. Evidence suggests that providing resilience training in conjunction with job placement significantly enhances long-term retention. Therefore, adherence to established MHPSS principles is essential for maximizing the economic impact of integration programs (Grasser et al., 2022; Dangmann et al., 2022)

*Impact-Assessment Standard:* Programs should be monitored with a case study/multi-period DiD logic; pre-trend and heterogeneity analyses, and localized threshold KPIs (first 6 months onboarding, 12 months persistence, wage increase) should be published on the public dashboard (Procaccia et al., 2021; Manshadi & Lee, 2024).

The ultimate objective of these policy measures is to enhance labor productivity, ensure sustainable job retention, and mitigate structural skill mismatches. When accelerated qualification recognition, TVET bridges, and dynamic placement systems are implemented simultaneously, they generate a synergistic effect that significantly amplifies the overall impact of integration efforts (Jørgensen, 2021; Aerne, 2023; Torres, 2025).

## CONCLUSION

This study tests how the shock of war and forced migration left its mark on the European labor market through the channel of matching efficiency. It brings together the components of the analytical setup, the Beveridge curve, the case study, the difference-of-difference, and the sectoral deficit index. Country-quarter constant effects and extensive sensitivity tests strengthen the consistency of the inferences. This model measures the capacity of enterprise integration as a shock absorber. The findings show that after 2022, the curve shifted upward, the V/U ratio sharpened, and the density of advertisements increased with temporary fluctuations. Unemployment is increasing, and the severity of the impact weakens in countries with high integration capacity. The sectoral deficit index indicates a services-oriented persistence, partial normalization in industry, and interregional asymmetries.

Pre-trends are confirmed mainly in equilibrium, and causal inferences are cautiously supported. The key conclusion is that supply constraints and skill mismatches lead to persistent inefficiencies in matchmaking. Integration institutions and work-based learning channels can mitigate this risk. The original contributions of this study are threefold. First, it introduces a novel modeling framework that integrates the Beveridge transmission channel with institutional integration capacity (MIPEX) within a unified econometric structure. Second, it proposes a practical 'Sectoral Deficit Index,' defined as the divergence between job vacancy density and employment growth, to quantify persistent mismatches. Third, it provides empirical evidence on the 'institutional dampening effect,' demonstrating that robust integration policies significantly mitigate the adverse labor market impacts of migration shocks. This final contribution bridges the gap between labor economics theory and the design of migration policy.

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