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Unemployment and Remittances Nexus in Central, Eastern and Southeastern Europe

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Abstract:

In existing empirical literature, the effect of remittances has most often been examined in relation to economic growth, poverty reduction, and employment in recipient countries. Unlike previous empirical studies, this paper focuses its analysis on the impact of remittances on unemployment in selected Central, Eastern, and Southeastern European (CESEE) countries from 1998 to 2021, using the New economics of labor migration framework. These countries, which underwent deep economic and political transitions during the 1990s, faced significant challenges associated with high unemployment, particularly among the working-age population who lost their jobs, and among young people who struggled to integrate into the labor markets of these economies. As a result, they became major sources of migration flows toward the more developed and wealthier Western European countries, which in turn led to a substantial increase in the inflow of remittances to the CESEE region. This study highlights two effects of remittances: they can reduce unemployment by alleviating financial constraints and promoting job creation through human capital investments, but they may also create short-term labor market distortions by leading to decreased labor force participation, known as the "dependency effect". Using an Autoregressive Distributed Lag (ARDL) model, the analysis reveals a negative relationship between remittances and unemployment; that is, in the long run, an increase in remittances reduces the unemployment rate by facilitating job creation. Conversely, in the short term, remittances correlate with increased unemployment due to temporary declines in labor force

participation. Hence, the novelty and importance of this paper lie in its aim to explore the nexus between remittances and unemployment, and to underscore the need for policies that optimize the benefits of remittances while mitigating their potential adverse effects. However, the study is limited by the unavailability of data for certain countries, potential endogeneity between remittances and unemployment, and the omission of some institutional or structural factors that future research could address.

Keywords: remittances, unemployment, ARDL, labor market, CESEE countries

JEL codes: F22, F24, E24

1. Introduction

This study investigates the relationship between remittances and unemployment in selected Central, Eastern, and Southeastern European (CESEE) countries from 1998 to 2021. Various economic theoretical models offer insights into this relationship, highlighting both the potential benefits and drawbacks of remittance inflows on labor market dynamics.

One of the most prominent theoretical frameworks in this context is the New Economics of Labor Migration (NELM). According to Stark and Bloom (1985), migration and remittances are not solely individual decisions motivated by wage differentials across countries but are instead household strategies aimed at mitigating risks, particularly in economies characterized by underdeveloped labor markets or persistent unemployment. In this framework, remittances serve as financial assistance that enables households to manage income fluctuations and unemployment episodes, thereby mitigating the adverse effects of joblessness. Migration is often a collective household decision, where members seek alternative sources of income abroad to compensate for domestic income losses, including unemployment.

From a Keynesian macroeconomic perspective, remittances contribute to overall economic demand by increasing household consumption, which, in turn, fosters employment creation. The influx of remittances stimulates demand for goods and services, particularly in consumption-driven sectors, thereby generating employment opportunities. Empirical studies support this argument; for instance, Giuliano and Ruiz-Arranz (2009) find that remittances positively influence economic growth and employment, especially in economies with underdeveloped financial markets, where remittance inflows serve as a crucial source of external funding.

Nevertheless, remittances may also have unintended negative labor market effects, potentially distorting employment incentives. One such distortion arises from the Dutch Disease phenomenon, commonly associated with resource booms but also applicable to economies

experiencing large remittance inflows. A significant increase in remittances can lead to real exchange rate appreciation, rendering the export-oriented sector less competitive and increasing unemployment in tradable industries (Acosta et al., 2009). Additionally, remittances may discourage labor market participation, particularly when they are predominantly allocated to consumption rather than investment. This phenomenon, known as the "remittance dependency trap," has been documented by Amuedo-Dorantes and Pozo (2006), who find that remittance-receiving households exhibit lower probabilities of participating in formal employment.

Conversely, remittances can enhance employment prospects by facilitating human capital development. Households often allocate remittance toward education, healthcare, and skill acquisition, leading to increased labor productivity and employment opportunities in the long run (Adams, 2011). Over time, improved education and skill levels among remittance-receiving households may enhance their employability, thereby contributing to a reduction in unemployment.

Another theoretical consideration pertains to the impact of remittances on structural unemployment. If remittances are primarily spent on consumption or non-productive capital formation, such as housing, their effect on unemployment may be limited. However, when remittance inflows are directed toward financing entrepreneurial activities or human capital development, they can play a crucial role in addressing structural unemployment by fostering job creation and enhancing workforce adaptability. The extent to which remittances influence structural unemployment depends on various factors, including credit availability, labor market policies, and the overall business environment in the recipient country (Barajas et al., 2009).

This topic holds a particular relevance for Central, Eastern, and Southeastern European (CESEE) countries due to their transition from centrally planned to market-oriented economies, a process that profoundly reshaped their labor markets and migration dynamics. In the aftermath of this transition, many of these economies faced persistently high unemployment rates, which triggered large-scale labor migration to other European countries and beyond. As a result, remittances have become a vital source of household income, enabling families to sustain consumption levels, particularly during periods of economic instability. Despite their growing importance, empirical research on the impact of remittances on unemployment in CESEE countries remains scarce. Most of the existing studies have focused on the effects of remittances on economic growth, poverty alleviation, and employment in recipient economies. For instance, Peković (2025), employing the Generalized Method of Moments (GMM) approach, examines the influence of remittances on employment rates in 24 post-transition countries during the period 2008–2023, with a specific focus on gender differences. The findings suggest that remittances may reduce labor market participation, particularly among women, underscoring

the need for policies that channel remittance inflows into productive investments and entrepreneurial ventures to mitigate adverse labor market effects. Similarly, Parker and Piotrowski (2023) analyze remittance inflows and outflows in 21 Eastern European and Former Soviet Union countries, concluding that larger and more concentrated migrant populations are associated with lower remittances per migrant, while ethnically fractionalized countries tend to receive smaller remittance inflows. However, former socialist economies deviate from these general trends, as rural inefficiencies and post-transition structural legacies continue to exert a significant influence on remittance dynamics in these contexts.

Therefore, understanding the impact of remittances on unemployment in CESEE economies is crucial for assessing whether such financial inflows contribute to resolving labor market challenges or, conversely, discourage workforce participation. Given the heterogeneity in economic development, migration trends, and remittance dependency across these countries, this study also explores potential variations in the remittance-unemployment relationship.

Unlike of current studies, this study explores the impact of remittances on unemployment in selected Central, Eastern, and Southeastern European (CESEE) countries, specifically Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, North Macedonia, Poland, Romania, the Slovak Republic, and Slovenia, during the period from 1998 to 2021. The regional grouping of CESEE is not uniformly defined across various international institutions, which apply slightly different classifications of member countries. In this paper, the selection of countries was primarily guided by the availability of data and methodological consistency. While some economies commonly associated with the CESEE region, such as Serbia, Montenegro, and Kosovo, were initially considered for inclusion, ongoing data deficiencies in key variables-largely due to their state restructuring and subsequent independence-hindered the construction of a balanced panel. Furthermore, including these countries led to instability in specifications following diagnostic testing. Consequently, the final sample was confined to countries with consistent and complete time-series data to ensure the robustness and comparability of the findings.

The primary hypothesis posits that remittances significantly decrease unemployment, implying that increased remittance inflows stimulate job creation through enhanced consumption and investment. Conversely, an alternative hypothesis posits that remittances may also decrease labor force participation, as households receiving remittances could become less reliant on formal employment. The magnitude of this effect is likely to vary based on the specific economic conditions of each country.

The remainder of this paper is structured as follows: Section 2 presents a review of the relevant literature, Section 3 describes the data and methodology employed in the empirical analysis, Section 4 discusses the study's findings, and Section 5 provides concluding remarks and policy implications.

2. Literature review

The economic and social implications of migration and remittance inflows for recipient countries can be substantial and have been extensively examined in both theoretical and empirical literature over the past decades. A vast body of research explores the multifaceted socio-economic effects of international remittances on recipient economies (Adams, 2011; Amuedo-Dorantes and Pozo, 2023; Anwar et al., 2025; World Bank, 2006).

From a positive perspective, remittances significantly enhance the well-being of recipient households as a stable source of non-labor income. They are also quite stable and usually act as a countercyclical buffer, helping these households smooth their consumption during economic downturns (World Bank, 2006). Additionally, remittances improve child development by enhancing living standards, increasing access to education, and reducing child labor (Cuadros-Menaca and Gaduh, 2020). Though the overall relationship between remittances and education is mixed, many studies indicate a positive association (Adams, 2011; Arif et al., 2019). Evidence also suggests that remittances can improve health outcomes and aid in poverty alleviation in developing countries, but their effect on income inequality is inconclusive (World Bank, 2006; Tashevska et al., 2023). Furthermore, they can promote capital accumulation, savings, and financial literacy, easing credit constraints and supporting investment and self-employment (Aggarwal et al., 2011).

While remittances have positive effects, they may also lead to adverse consequences. Critics point out that they can create dependency among recipient households, reducing labor market participation and promoting economic inactivity. Furthermore, remittance income might be spent on conspicuous consumption instead of productive investments. The Dutch Disease phenomenon is another concern, as large remittance inflows can appreciate the real exchange rate and diminish the competitiveness of tradable goods sectors (Amuedo-Dorantes and Pozo, 2023). The impact of remittances on macroeconomic factors, such as unemployment, human capital, and economic growth, is complex and varies by context, indicating the need for further research to clarify their effects on recipient economies.

An important research question that has gained a lot of attention is the impact of remittances on the labor market and labor market outcomes in developing countries, which is in direct

relation to the behavior of recipient family members (Anwar et al., 2025). Remittances are a significant source of income for families, easing budget constraints and influencing labor decisions, such as reservation wages, labor participation, and unemployment duration (Blanchard et al. 2013; Chami et al., 2018; Anwar et al., 2025). They often reduce labor supply and employment for several reasons: recipients may raise their reservation wage, shift from formal to informal work, invest in entrepreneurship, or focus on domestic responsibilities, especially women (Funkhouser 1992; Kovtun et al., 2014; Amuedo-Dorantes and Pozo, 2023; OECD, 2011). This support may also lead women to leave low-paid jobs for child-rearing and housework, contributing to decreased female labor force participation. Educational investments from remittances can initially decrease labor supply but enhance long-term human capital development (Chami et al., 2018).

The micro-level impact is usually explored using household data and typically focuses on labor supply, wages, investment decisions, occupational choices, etc., whereas some studies refer to the macro-level effects (Pekovic, 2025). However, most of the research focuses on labor market participation/labor supply rather than on employment/unemployment. Empirical evidence generally suggests that international migration and remittances reduce household labor supply and participation. This finding is supported by research in countries such as Mexico (Airola, 2008), Jamaica (Kim, 2007), Ghana (Asiedu and Chimbar 2020), Nicaragua (Funkhouser, 1992), India (Dey, 2022) and Kosovo (Tahiri et al., 2023) whereas Cox-Edwards and Rodríguez-Oreggia (2009) in Mexico and Jadotte (2009) in Haiti, found no significant effects. Cross-country analyses, such as Chami et al. (2018), reported a negative impact on labor force participation in developing countries. Atoyan et al. (2016) observed a stronger impact on inactivity in Western Balkan countries compared to Central European countries, attributed to higher reservation wages and relaxed budget constraints. Conversely, Posso (2012), for a cross-country sample covering a 25-year period, found that remittances positively affect labor participation, explaining it with non-migrant households trying to acquire skills to be more competitive in pursuit of work abroad or with higher wages.

Research shows that the impact of remittances on labor supply is complex and might vary by age, gender, employment type (formal vs. informal), and location (rural vs. urban). For instance, Amuedo-Dorantes and Pozo (2006) found that remittances decrease female labor participation in rural areas, while they reduce formal employment for men in both settings but increase informal work. Conversely, Jadotte (2009) notes that international remittances do not significantly influence female labor participation in Haitian households, a finding supported by Posso (2012) and Jijin (2024). Additionally, Asiedu and Chimbar (2020) highlight that remittances lower labor market participation in rural Ghana. Remittances not only affect labor participation

but also the informality of work, allowing individuals to shift from poor formal jobs to better informal ones. Chami et al. (2018) found a more pronounced effect on labor market informality in areas with lower existing informality. For a panel of 50 lower-middle-income countries over the period 1990–2020, Jijin (2024) concludes that remittances strongly reduce labor force participation among young and elderly, but not among the prime labor force, arguing that recent empirical research overestimates the disincentive effect of remittances on the work effort in the receiving households, because they do not take into account the heterogeneity of the labor force. The largest impact on youth is confirmed by Carare et al. (2024) for Latin America and the Caribbean. Anwar et al. (2025) published a meta-analysis based on comprehensive literature on the impact of remittances on labor supply decisions of recipient households. They find that overall, remittances reduce labor supply, with a stronger impact from international versus domestic remittances. They also note that regional disparities in economic development, labor market structures, and opportunity costs of leisure, in addition to different methodologies employed, could influence diverging findings in the remittance-labor supply relationship.

The relationship between remittances and labor supply is well-documented, but its effects on unemployment are more complex and depend on various factors influencing labor supply and demand. Remittances may lead to voluntary unemployment due to dependency and higher reservation wages. Drinkwater et al. (2009) suggest that for unemployed individuals, remittances make staying jobless more appealing, potentially increasing the unemployment rate. However, remittances can boost productivity and entrepreneurial investment, enabling households engaged in family businesses to reinvest in their activities, potentially leading to reduced working hours without increasing unemployment (León-Ledesma and Piracha, 2004; OECD, 2011). Remittance inflows can alleviate credit constraints, fostering investment and self-employment in micro and small enterprises (Anyanwu and Erhijakpor, 2010). If the investment effect exceeds the search income effect, unemployment rates may decline. Additionally, increased household consumption from higher income can stimulate demand for local goods and services, promoting local development. While Funkhouser (1992) found that remittances decreased labor force participation but increased self-employment in Nicaragua, Kokotović and Kurečić (2022) reported that in the short run, remittances decrease self-employment due to poverty alleviation, with no significant relationship observed in the long run for Southeast European countries.

Research on the impact of remittances on unemployment in migrants' home countries is limited and nuanced compared to labor supply studies. Several recent studies highlight this relationship in a single country setting, mostly relying on micro-level household data. Habib (2023) and Biplob and Siddiqee (2024) found that remittances positively affect unemployment in Tunisia from 1997–2017 and Bangladesh from 1991–2020, respectively. Saani et al. (2023)

reached similar conclusions for Ghana from 1990–2021, particularly for the female labor force in the short run. Cardona-Arenas and Sierra-Suarez (2023) indicated that in Colombia, remittances exacerbate long-term unemployment during crises, like the Covid-19 pandemic. In Kosovo, Tahiri et al. (2023) showed that remittances decrease the employment probability of recipients and increase the inactivity probability. Asad et al. (2016) identified a long-run relationship between remittances and unemployment in Pakistan, while Mazher et al. (2020) found no short-run impact but a long-term reduction in unemployment. Chetachukwu (2021) observed a negative effect of remittances on unemployment in Nigeria (1977–2018), but Ihedimma and Opara (2022) suggested that remittances could increase unemployment initially, contradicting this when considering dependency ratios.

Cross-country studies show mixed results on the relationship between remittances and unemployment. Sevencan (2023) found a unidirectional causality from remittances to unemployment only in upper-middle-income countries among 113 developing nations from 1990–2019. Pal et al. (2022) reported that remittances increase unemployment in high-income countries but reduce it in low- and middle-income countries from 1991–2020. In a worldwide sample, Chami et al. (2018) noted that a rise in remittances reduced unemployment from 1991-2015, though the effect was weaker in non-OECD countries. Wu et al. (2023) found that remittances lower unemployment rates in Asian economies from 2004–2021. Ikhsana et al. (2023) used GMM to categorize 65 countries based on remittance levels and found a negative effect on unemployment, particularly in high-remittance countries. Jackman (2014) identified a non-linear relationship in Latin America, where low remittance-to-GDP ratios positively impacted unemployment and high ratios negatively impacted it. Drinkwater et al. (2009) found no significant effect of remittances on unemployment in 19 developing countries from 1976–2003, while Elorabi et al. (2024) highlighted that political stability enhances the diminishing impact of remittances on unemployment in the MENA region.

Only a few studies analyze CESEE countries, despite their recent emigration trends linked to EU integration and Western Balkan countries showing high remittance-to-GDP ratios. In a single-country setting, Tahiri et al. (2023) and Haller et al. (2018) found adverse effects of remittances on labor outcomes in Kosovo and in Romania and Bulgaria, respectively. From a cross-country perspective, Kovtun et al. (2014) indicate a negative correlation between remittances and activity rates and a positive relationship with unemployment in these regions. They suggest that high remittances can reduce the motivation to pursue paid work, leading to increased long-term unemployment. Vostroknutova et al. (2017) also found a negative correlation between remittances and labor force participation, reinforcing the idea that remittances may disincentivize work. Kokotović and Kurečić (2022) found a negative effect of remittances

on self-employment in the short run and no significant relationship in the long run for Southeast European countries. Kllokoqi and Fetai (2024) further confirm that migration and remittances elevate unemployment rates in the Western Balkans. In contrast, León-Ledesma and Piracha (2004) found that remittances positively impact productivity and employment through entrepreneurship and investment. Pekovic (2025) detected gender disparities in the response of unemployment to remittances in 24 post-transition countries over the period 2008–2023. Namely, she found a negative impact of remittances on the total employment rate and on the female employment rate, but not on the male employment rate.

While prior work has extensively analyzed the effect of remittances on household labor supply, there is still scarce and inconclusive evidence on how remittances affect unemployment, especially in CESEE countries. Although some recent studies explore the labor market effects of remittances in the region, most of the studies of the impact on unemployment focus on countries from different regions, primarily Africa, Asia, and Latin America. Our study fills this gap with an in-depth analysis of the dynamic relationship between unemployment and remittances in this group of countries, using a panel ARDL model, which allows the analysis to effectively capture the immediate effects of fluctuations in remittances on unemployment while also identifying the long-term equilibrium relationships.

3. Empirical methodology

This section explores the theoretical foundation and empirical strategy for an analysis of the relationship between unemployment and remittances in selected Central, Eastern, and Southeastern European (CESEE) countries, including Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, North Macedonia, Poland, Romania, the Slovak Republic, and Slovenia. The empirical investigation utilizes statistical and econometric methods to analyze the impact of remittances on unemployment in these economies.

The sample includes selected CESEE countries for which consistent and complete data are available. While countries such as Serbia, Montenegro, and Kosovo are often classified within the CESEE region, they were excluded from the empirical analysis due to significant data gaps in key variables and limited data continuity following their political transitions and declarations of independence. These constraints prevented the construction of a balanced panel, and when initially tested, they caused model instability. Excluding these countries ensures a consistent dataset across all variables, thereby enhancing the reliability and comparability of the empirical results.

The dataset for this analysis is obtained from the World Bank's World Development Indicators, covering the period from 1998 to 2021 with annual data. All estimations and computations were performed using EViews 12 statistical software, which provides a comprehensive environment for time-series and panel data econometrics. The empirical analysis begins with a presentation of descriptive statistics for the key variables (Table 1). Additionally, Figures 1 and 2 illustrate the average unemployment rate (as a percentage of the total labor force) and the average remittances (as a percentage of GDP) for each country over the entire study period.

To further examine the relationship between remittances and unemployment, a correlation analysis is conducted (Table 2), followed by a graphical representation of the correlation between unemployment and remittances after controlling for foreign direct investment, GDP per capita growth, inflation, and domestic investment (Figure 3). Subsequently, the stationarity of the variables is tested using the Augmented Dickey-Fuller and Phillips-Perron panel unit root tests to determine the appropriate econometric model specification. The analysis proceeded through a structured sequence: (1) conducting descriptive and correlation analyses; (2) testing for stationarity using ADF and PP tests; (3) selecting the optimal lag structure for each variable according to the Akaike Information Criterion (AIC); and (4) estimating the ARDL model to obtain short-run and long-run coefficients. This step-by-step procedure ensures transparency and reproducibility of results, illustrating how the empirical research was carried out from data preparation to final estimation. Based on these preparatory steps, the ARDL model is then applied to estimate.

3.1 Data and Variables

The dependent variable in this analysis is the unemployment rate, measured as a percentage of the total labor force. The primary independent variable is remittance inflows, expressed as a percentage of GDP. To account for potential confounding effects, the model incorporates several control variables that may also influence unemployment dynamics. These include foreign direct investment as a percentage of GDP (FDI), GDP per capita growth (annual %), the inflation rate (GDP deflator, annual %), and gross fixed capital formation as a percentage of GDP (GFCF). Descriptive statistics for all variables across the full sample are presented in Table 1.

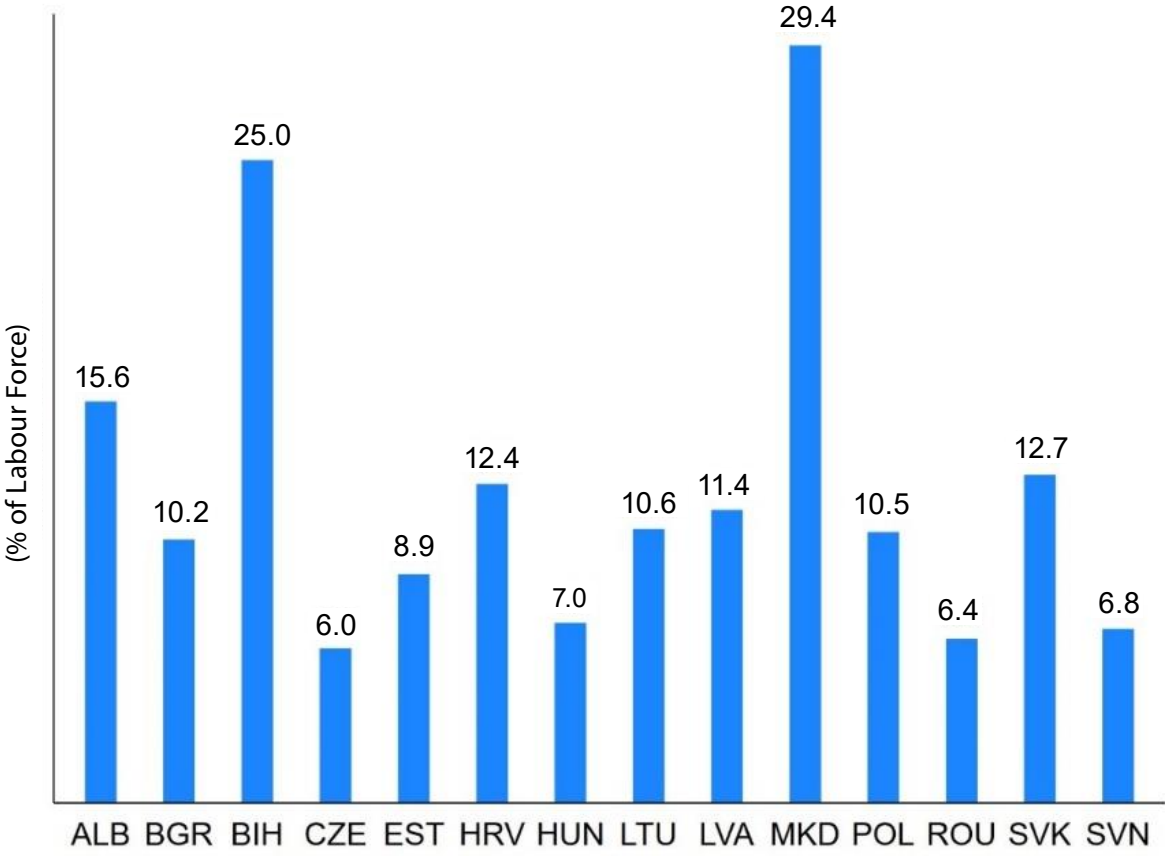
Table 1. Descriptive statistics of the variables

Variable	Obs.	Mean	Std. Dev.	Min	Max	Source
Unemployment	336	12.35	7.64	2.80	36.39	World Bank, WDI, unemployment, total (% of the total labor force) (modelled ILO estimate).
Remittances	336	3.96	4.88	0.05	25.86	World Bank, WDI, personal remittances received (% of GDP).
FDI	336	5.39	6.79	−4.21	50.38	World Bank, WDI, foreign direct investment, net inflows (% of GDP).
GDP pc growth	336	3.74	3.89	−8.38	13.00	World Bank, WDI, GDP per capita growth (annual %).
Inflation	336	4.29	5.39	−1.43	37.96	World Bank, WDI, inflation, GDP deflator (annual %).
GFCF	336	23.98	4.53	16.35	37.29	World Bank, WDI, gross fixed capital formation (% of GDP)

Source: Authors' calculations.

Figure 1 provides an overview of the average unemployment rates across selected Central, Eastern, and Southeastern European (CESEE) countries from 1998 to 2021. These statistics offer insights into labor market trends and economic conditions within the region. The data highlight substantial cross-country variations in unemployment rates, reflecting heterogeneous labor market conditions and regional economic challenges.

Figure 1. Average unemployment as % of total labor force by country in the period 1998–2021



Source: Authors' calculations based on data from the World Bank (2023).

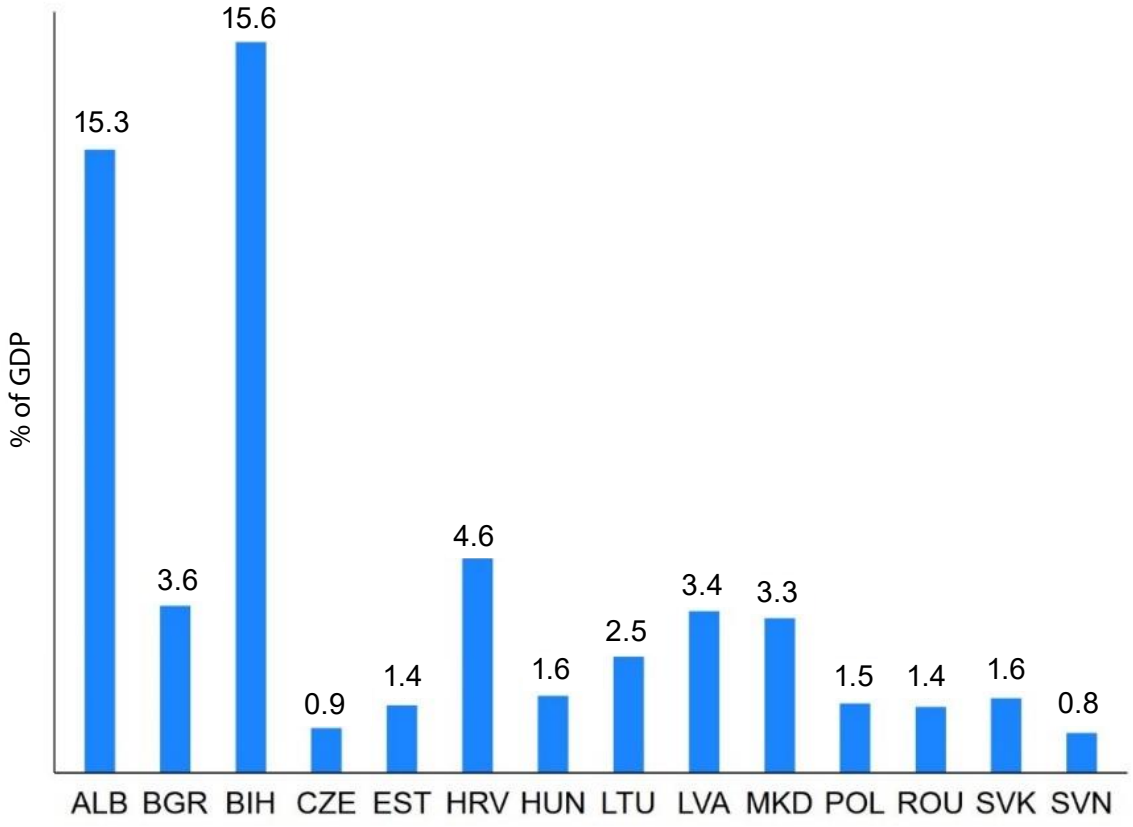
Among the selected countries, North Macedonia exhibits the highest average unemployment rate at 29.4%, indicating persistent labor market distress throughout the analyzed period. Similarly, Bosnia and Herzegovina reports a notably high average unemployment rate of 25.0%, suggesting significant structural unemployment. In contrast, the Czech Republic records the lowest average unemployment rate at 6.0%, reflecting a relatively stable and well-functioning labor market. Romania and Slovenia also maintain relatively low unemployment rates, averaging 6.4% and 6.8%, respectively, which may be attributed to effective labor market policies and broader economic stability.

Albania's average unemployment rate of 15.6% reflects persistent labor market challenges, which may be attributed to high youth unemployment and underemployment. Similarly, countries such as Bulgaria (10.2%), Poland (10.5%), Lithuania (11.4%), and the Slovak

Republic (12.7%) exhibit moderate unemployment rates, suggesting a combination of cyclical and structural factors influencing labor market dynamics in these economies.

Figure 2 presents the average remittances as a percentage of GDP across the selected countries for the analyzed period. These statistics provide valuable insights into the economic significance of remittance inflows in the region. The data reveal substantial cross-country variation in remittance dependency, highlighting differing levels of reliance on remittances as a source of external income and economic support. This variation suggests that while remittances play a crucial role in some economies, their relative importance differs based on broader economic conditions and migration patterns. The variation in remittance dependency across these countries highlights differences in economic structures, migration patterns, and the role of diaspora communities. Countries with higher remittance-to-GDP ratios benefit from the stabilizing effects of these inflows, including consumption smoothing and poverty alleviation. Conversely, countries with lower remittance inflows may exhibit more diversified and resilient economic bases, reducing their reliance on external financial support.

Figure 2. Average remittances as % GDP by country in the period 1998-2021



Source: Authors' calculations based on data from World Development Indicators.

Bosnia and Herzegovina records the highest average remittances at 15.6% of GDP, highlighting the substantial role of remittance inflows in sustaining its economy. Similarly, Albania demonstrates a significant reliance on remittances, with an average of 13.3%, further emphasizing the critical contribution of these financial inflows to household income and overall economic stability. The prominence of remittances in these economies underscores their importance in mitigating economic volatility and supporting domestic consumption.

In contrast, countries such as Slovenia (0.8%), the Czech Republic (0.9%), Estonia (1.4%), Romania (1.4%), Poland (1.5%), Hungary (1.6%), and the Slovak Republic (1.6%) report comparatively low remittance inflows as a percentage of GDP. This lower dependency on remittances may reflect stronger domestic economies, higher employment opportunities, and lower levels of emigration relative to other countries in the region. North Macedonia (3.3%), Bulgaria (3.6%), Latvia (3.4%), and Croatia (4.6%) exhibit moderate levels of remittance inflows, suggesting that while remittances contribute to their economies, they do not constitute a primary source of external income. In these countries, remittances likely serve as a supplementary income source rather than a primary economic driver.

The comparison between average unemployment rates and remittance inflows as a percentage of GDP provides insights into potential relationships between labor market conditions and reliance on external income sources. For instance, countries such as Bosnia and Herzegovina and Albania, characterized by both high unemployment rates and substantial remittance inflows, may experience significant labor migration, with remittances serving as a crucial financial support mechanism for the families of emigrants. In contrast, countries with lower unemployment rates and lower levels of remittances, such as the Czech Republic and Slovenia, likely possess stronger domestic labor markets, reducing dependence on external sources of income.

Table 2 presents the correlation coefficients between key variables, along with their statistical significance, with a particular focus on the relationship between unemployment and remittances. Additionally, Figure 3 illustrates a scatter plot of the relationship between the variables after controlling for other variables such as foreign direct investment, GDP per capita growth, inflation and domestic investment.

Table 2. Correlation matrix of the variables

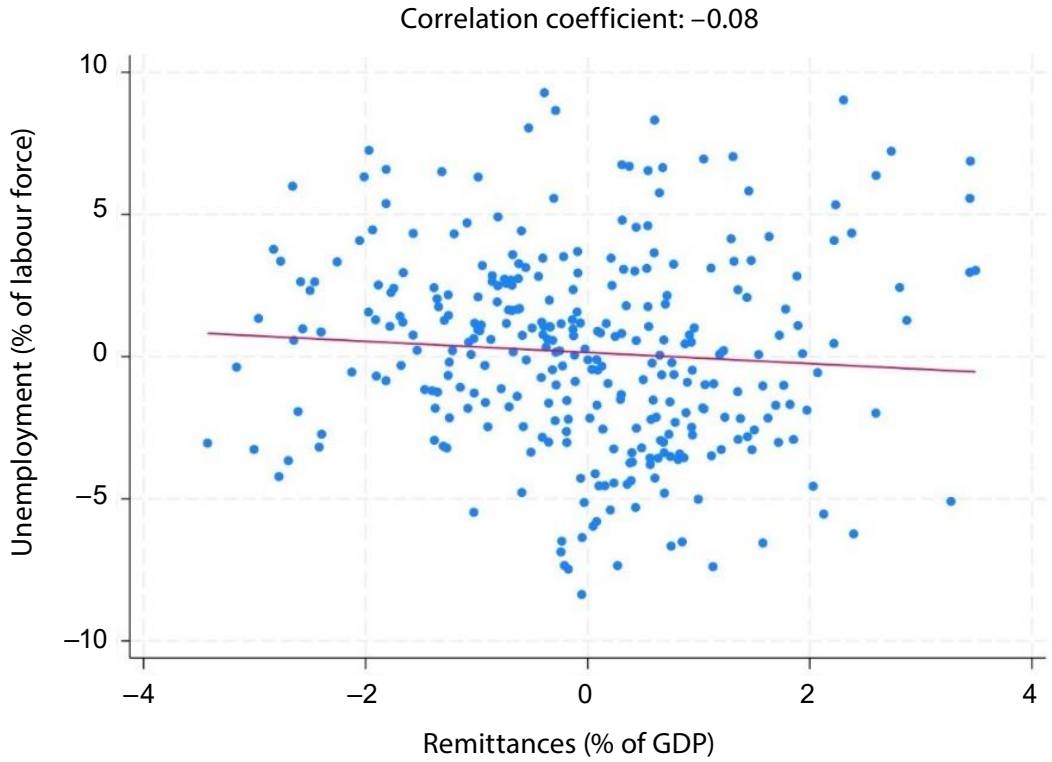
Variable	(1)	(2)	(3)	(4)	(5)	(6)
(1) Unemployment	1.00					
(2) Remittances	0.4871***	1.00				
(3) FDI	−0.1134**	−0.0349	1.00			
(4) GDP pc growth	0.0327	0.1931***	0.0794	1.00		
(5) Inflation	−0.1530***	−0.0907*	0.0834	0.1934***	1.00	
(6) GFCF	−0.0927*	0.2346***	0.2013***	0.2713***	0.1289**	1.00

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Source: Authors' calculations.

The correlation coefficient of 0.4871 suggests a moderately strong positive relationship between unemployment and remittances, with statistical significance at the 1% level. This indicates that higher levels of unemployment are associated with increased remittance inflows, and vice versa, implying that higher remittances are received during periods of high unemployment. However, it is essential to acknowledge that this correlation coefficient represents only the direct relationship between the two variables and does not account for other potential determinants. Consequently, this statistical relationship may not fully capture the underlying causal dynamics between remittances and unemployment, necessitating further econometric analysis to control for confounding factors.

Figure 3 presents a scatter plot illustrating the relationship between the unemployment rate and remittances after controlling for key economic variables: foreign direct investment (FDI), GDP per capita growth, inflation, and gross fixed capital formation (GFCF). These controls are introduced to isolate the direct relationship between unemployment and remittances by accounting for other economic factors that may simultaneously influence both variables. The pattern observed in Figure 3 differs notably from the simple correlation presented in Table 2. After controlling for these economic factors, the correlation coefficient between unemployment and remittances shifts to -0.08, suggesting a negative relationship. The observed shift in the correlation suggests that the initially identified positive relationship between remittances and unemployment was largely driven by other economic determinants. However, this relationship remains complex, as economic growth (GDP per capita growth), investment levels (GFCF), inflation, and FDI can simultaneously impact both remittances and unemployment, potentially confounding the direct relationship between these two variables.

Figure 3. Scatter diagram on the relationship between unemployment and remittances after controlling for other factors in the period 1998-2021



Source: Authors' calculations based on data from World Development Indicators.

Another limitation of the study pertains to the presence of extreme values in certain countries, particularly Albania, Bosnia and Herzegovina, and North Macedonia. These outliers have the potential to influence the overall findings; however, excluding these countries would result in a less comprehensive understanding of the region's dynamics. To address this issue while maintaining their inclusion, the Winsorizing method is applied to manage outliers. Specifically, the lower limit is set at the 1st percentile and the upper limit at the 99th percentile for each variable. Values below the 1st percentile are replaced with the 1st percentile value, and values above the 99th percentile are replaced with the 99th percentile value. This approach helps mitigate the impact of extreme observations while preserving the integrity of the dataset.

3.2 Theoretical Model and Empirical Model Specification

The "new economics of labor migration" framework explores the impact of remittances on the global economy, particularly their role in fostering macroeconomic development in the migrants' home countries. Remittances serve as a crucial financial inflow that alleviates credit constraints

for businesses, facilitates capital accumulation to an optimal level, and contributes to a reduction in unemployment (Taylor and Castelhano, 2016).

Drinkwater's labor market search-matching model further suggests that the relationship between international remittances and unemployment is complex, as remittances can influence unemployment both positively and negatively, depending on the risk-averse behavior of recipients. Specifically, remittances may ease credit constraints, enabling business expansion and job creation, which in turn lowers unemployment rates and increases capital stock. However, once remittance income reaches an optimal threshold, its additional growth predominantly exerts a search effect, influencing job-seeking behavior rather than directly affecting employment levels (Saani et al., 2023).

To empirically examine the relationship between unemployment and remittances, we adopt the econometric model proposed by Arslan and Zaman (2014), Maqbool et al. (2013), and Saani et al. (2023). This model provides a structured framework for analyzing the nexus between remittance inflows and labor market dynamics within the selected countries. The model is defined as:

$$Unemployment_{i,t} = \beta_0 + \beta_1 Remittances_{i,t} + \beta_2 FDI_{i,t} + \beta_3 GDP_{i,t} + \beta_4 CPI_{i,t} + \beta_5 GFCF_{i,t} + \gamma_i + \varepsilon_{i,t} \quad (1)$$

where the unemployment rate, expressed as a percentage of the total labor force, serves as the dependent variable. The primary independent variable of interest is remittances, measured as a percentage of GDP. To account for potential confounding factors and ensure a more robust analysis, we incorporate several control variables: foreign direct investment (FDI) as a percentage of GDP, annual GDP per capita growth (expressed as a percentage change), inflation (measured as the annual percentage change in the consumer price index), and gross fixed capital formation (GFCF) as a percentage of GDP.

When allocated efficiently within an economy, remittances have the potential to contribute to a reduction in unemployment. A high level of remittance investment can alleviate credit constraints, facilitate entrepreneurial activity, and stimulate business development, thereby lowering the unemployment rate. Similarly, FDI is expected to have a positive effect on reducing unemployment by promoting economic growth through capital inflows, technology transfer, and job creation. Moreover, GDP per capita growth is theoretically linked to declining unemployment levels, as outlined by Okun's law, which establishes a direct relationship between economic growth and reduction of unemployment. Additionally, the Phillips curve suggests an inverse relationship between inflation and unemployment, implying that higher inflation

rates are often associated with lower unemployment levels, and vice versa. Furthermore, the capacity of an economy to enhance its overall output and reduce unemployment is significantly influenced by the level of capital formation. A high gross fixed capital formation (GFCF) indicates increased investment in infrastructure and productive capacity, which fosters economic expansion, enhances labor demand, and ultimately contributes to a lower unemployment rate.

This study employs the Auto-Regressive Distributed Lag (ARDL) model to conduct an in-depth analysis of the dynamic relationship between unemployment and remittances. The ARDL model is particularly well-suited for examining both short-term dynamics and long-term equilibrium relationships within a panel data framework. By utilizing this approach, the analysis effectively captures the immediate effects of fluctuations in remittances and other control variables on unemployment while also identifying the long-term equilibrium relationships. The chosen ARDL specification corresponds to the ARDL (2, 2, 2, 2, 2, 2) model, selected based on the lowest AIC value. This specification effectively captures the dynamic interactions between variables by allowing both short-term adjustments and long-term equilibrium relationships to be estimated simultaneously. The model is defined as:

$$\begin{aligned}
&\Delta Unemployment_{i,t} = \theta + \sum_{i=1}^{n} \theta_{1i} \Delta Unemployment_{i,t-1} + \sum_{i=1}^{n} \theta_{2i} \Delta Remittances_{i,t-1} + \\
&\sum_{i=1}^{n} \theta_{3i} \Delta FDI_{i,t-1} + \sum_{i=1}^{n} \theta_{4i} \Delta GDP_{i,t-1} + \sum_{i=1}^{n} \theta_{5i} \Delta CPI_{i,t-1} + \sum_{i=1}^{n} \theta_{6i} \Delta GFCF_{i,t-1} + \\
&\beta_1 Unemployment_{i,t-1} + \beta_2 Remittances_{i,t-1} + \beta_3 FDI_{i,t-1} + \beta_4 GDP_{i,t-1} + \beta_5 CPI_{i,t-1} + \\
&+ \beta_6 GFCF_{i,t-1} + \varepsilon_{i,t}
\end{aligned} \tag{2}$$

where Δ represents the first difference of the variables, capturing short-term dynamics. The parameter θ denotes the constant term, while θ_1 to θ_6 correspond to the short-term coefficients associated with the lagged differences of the respective variables. Similarly, β_1 to β_6 represent the long-term coefficients for the levels of the respective variables. The term $\varepsilon_{i,t}$ denotes the error term, where i indexes the countries and t indexes the time under analysis.

4. Results and Discussion

The unit root test results presented in Table 3 indicate that the stationarity properties of the variables differ based on the test specification and type. According to the Augmented Dickey-Fuller (ADF) test, the unemployment rate is stationary at its level under both the intercept-only and intercept plus trend specifications, with statistically significant p-values of 0.0368 and 0.0001,

respectively. However, remittances do not exhibit stationarity at their level under either specification, as indicated by p-values of 0.4084 and 0.9545. Foreign direct investment (FDI) is found to be stationary at its level under both the intercept (p-value: 0.0000) and intercept plus trend (p-value: 0.0005) specifications. Similarly, GDP per capita growth and gross fixed capital formation (GFCF) are stationary at their levels across both specifications, with highly significant p-values. In contrast, inflation is stationary at its level in the intercept-only specification at the 1% significance level (p-value: 0.0000), while under the intercept plus trend specification, it exhibits borderline significance (p-value: 0.0648). After first differencing, all variables achieve stationarity at the 1% significance level, confirming that any potential issues related to non-stationarity in the dataset are addressed. These preliminary properties indicate that our variables meet the preconditions for an ARDL framework, allowing us to proceed to the main estimations.

The results of the Phillips-Perron (PP) test largely corroborate the findings of the Augmented Dickey-Fuller (ADF) test, with minor discrepancies. The unemployment rate is found to be non-stationary at its level under both the intercept-only and intercept plus trend specifications, with p-values of 0.9706 and 0.6541, respectively. However, after first differencing, the variable becomes stationary, as indicated by the highly significant p-value for d.Unemployment (0.0000). A similar pattern is observed for remittances, which are non-stationary at their initial levels under both specifications (p-values of 0.6093 and 0.9979, respectively) but achieve stationarity after first differencing (p-value: 0.0000). In contrast, foreign direct investment (FDI), GDP per capita growth, and inflation exhibit stationarity at their levels across both test specifications at the 1% significance level. Gross fixed capital formation (GFCF) is found to be stationary under both specifications at a 5% significance level, with p-values of 0.0114 and 0.0363, respectively. After first differencing, all variables achieve stationarity at the 1% significance level, confirming the robustness of the dataset for further econometric analysis. Unit root test results indicate that FDI, GDP per capita growth, inflation, and GFCF are stationary at levels, whereas unemployment and remittances require first-differencing. This supports the use of the ARDL model, which effectively analyses the dynamic relationships between unemployment and its determinants, allowing for short-term and long-term estimations.

Table 3. Unit root test results

Variable	Augmented Dickey-Fuller test				Phillips-Perron test			
	Intercept		Intercept + Trend		Intercept		Intercept + Trend	
	Statistic	p-value	Statistic	p-value	Statistic	p-value	Statistic	p-value
Unemployment	–1.7889	0.0368	–3.6411	0.0001	1.8903	0.9706	0.3965	0.6541
Remittances	–0.2316	0.4084	1.6901	0.9545	0.2774	0.6093	2.8687	0.9979
FDI	–4.9165	0.0000	–3.3049	0.0005	–7.0108	0.0000	–5.2900	0.0000
GDP pc growth	–7.0463	0.0000	–4.9792	0.0000	–10.5213	0.0000	–8.3710	0.0000
Inflation	–4.3072	0.0000	–1.5155	0.0648	–9.4854	0.0000	–7.0695	0.0000
GFCF	–3.2563	0.0006	–4.1281	0.0000	–2.2782	0.0114	–1.7953	0.0363
d.Unemployment	–7.3059	0.0000	–4.6710	0.0000	–7.7974	0.0000	–5.2393	0.0000
d.Remittances	–6.2577	0.0000	–5.3946	0.0000	–11.6413	0.0000	–10.7034	0.0000
d.FDI	–13.0211	0.0000	–10.5188	0.0000	–18.8364	0.0000	–16.5052	0.0000
d.GDP pc growth	–14.2627	0.0000	–11.6388	0.0000	–20.4172	0.0000	–17.8865	0.0000
d.Inflation	–14.2898	0.0000	–13.5911	0.0000	–19.9354	0.0000	–18.2530	0.0000
d.GFCF	–11.7262	0.0000	–9.2881	0.0000	–11.2608	0.0000	–8.8538	0.0000

Source: Authors' calculations.

Given the evidence in Table 3, we next turn to the ARDL estimates in Table 4 to assess the magnitude and sign of the relationships of interest. The results of the ARDL (2, 2, 2, 2, 2, 2) model, as presented in Table 4, provide a comprehensive understanding of the relationship between remittances, foreign direct investment (FDI), GDP per capita growth, inflation, and gross fixed capital formation (GFCF) with unemployment in both the short and long run. The estimated long-run coefficient for remittances is −2.844800 (p-value < 0.01), indicating a statistically significant negative long-run impact of remittances on unemployment. This finding suggests that an increase in remittances as a proportion of GDP leads to a reduction in the unemployment rate. These results align with the theoretical framework of the "new economics of labor migration" as proposed by Taylor and Castelhano (2016), which posits that remittances help address credit market imperfections, enabling households to invest in business ventures and

self-employment activities that generate employment opportunities (Adams and Page, 2005). Additionally, increasing the inflow of remittances contributes to improved access to education and healthcare, which enhances human capital development and reduces long-term unemployment (Giuliano and Ruiz-Arranz, 2009). Taken together, the long-run pattern is consistent with remittances easing liquidity constraints and supporting labor absorption through entrepreneurship and human capital channels (Adams and Page, 2005; Giuliano and Ruiz-Arranz, 2009). For CESEE economies, this implies that policies which facilitate the channeling of remittance inflows toward enterprise formation and skills upgrading are likely to reinforce the observed reduction in unemployment over time.

The results indicate that foreign direct investment (FDI) has a negative and statistically significant effect on unemployment, with a coefficient of −0.282612 ($p < 0.01$). This suggests that FDI inflows contribute to job creation in the long run by introducing capital, technology, and skills into the economy. FDI is particularly crucial for sectors capable of generating substantial employment, thereby fostering economic growth and reducing unemployment over time (Borenszteinet al., 1998). Furthermore, the coefficient for GDP per capita growth is −1.903506 ($p < 0.01$), confirming that higher economic growth is associated with lower unemployment, consistent with Okun's law. Economic expansion generates new employment opportunities by increasing demand for goods and services, which necessitates a larger workforce (Meyer and Shera, 2017). Conversely, the coefficient for inflation is positive at 0.523683 ($p < 0.01$), confirming the hypothesis that a high inflation rate contributes to rising unemployment in the long run. This positive relationship may stem from the adverse effects of inflation on economic stability, as elevated inflation reduces consumer spending and introduces uncertainty into investment decisions, thereby hindering job creation. These findings align with previous research indicating that inflation can have detrimental effects on employment levels in specific macroeconomic contexts (Chami et al., 2005). Finally, the coefficient for gross fixed capital formation (GFCF) is 0.845053 ($p < 0.01$), suggesting that increased investment in physical capital does not necessarily lead to lower unemployment in the long run. This may be attributed to capital investments being concentrated in capital-intensive industries, which have limited capacity for employment generation (Blanchard and Katz, 1992). In line with these studies, the evidence points to a policy mix centered on attracting efficiency- and export-oriented FDI, sustaining growth, and preserving price stability. The finding on GFCF suggests that capital deepening alone is insufficient to reduce unemployment unless accompanied by measures that raise labor absorption—such as targeted vocational training and support to labor-intensive tradables (Borensztein et al., 1998; Blanchard and Katz, 1992).

Table 4. ARDL (2, 2, 2, 2, 2, 2) model results

Variable	Coef.	Std. err.
Long run equation		
Remittances	−2.844800***	0.392790
FDI	−0.282612***	0.107994
GDP pc growth	−1.903506***	0.261999
Inflation	0.523683***	0.119982
GFCF	0.845053***	0.157009
Short run equation		
Error correction term	−0.104106***	0.036840
d.Unemployment (-1)	0.236152***	0.089080
d.Remittances	0.845369***	0.323079
d.Remittances (-1)	0.371003	0.472507
d.FDI	−0.028845	0.036708
d.FDI (-1)	0.086787	0.087671
d.GDP pc growth	0.013866	0.095901
d.GDP pc growth (-1)	−0.048874	0.064935
d.Inflation	−0.117872***	0.038509
d.Inflation (-1)	−0.125312***	0.041932
d.GFCF	−0.169821*	0.097019
d.GFCF (-1)	−0.127756	0.095897
Constant	−0.100909	0.391487

Notes: *** p < 0.01, ** p < 0.05, * p < 0.1.
Source: Authors' calculations.

The ARDL estimates in Table 4 also identify the adjustment path, to which we now turn, before examining short-run heterogeneity across countries. The error correction term is

statistically significant and negative, with a coefficient estimate of −0.104106 ($p < 0.01$), indicating that approximately 10.4% of the short-run disequilibrium is corrected in each period. This suggests a moderate speed of adjustment, implying that the labor market gradually returns to its long-term equilibrium after experiencing short-term shocks. This pace of convergence suggests that durable employment gains in the region are likely to accumulate over several periods, reinforcing the importance of stable macroeconomic and financial conditions in sustaining the long-term effects of remittances and FDI.

In the short run, the coefficient for remittances (d.Remittances) is 0.845369 ($p < 0.01$), suggesting that an increase in remittances leads to a rise in unemployment in the short term. This can be attributed to the fact that remittances often provide financial security to recipient households, thereby reducing their immediate need to participate in the labor market, a phenomenon commonly referred to as the "dependency syndrome." Additionally, remittance income is often directed towards consumption rather than investment in income-generating activities that could create employment opportunities. While this increase in consumption may boost demand in the short run, it does not necessarily lead to job creation, and thus, remittances may not reduce unemployment in the short term. Furthermore, the coefficient of the lagged difference of remittances (d.Remittances (-1)) is statistically insignificant, suggesting that the short-term effects of remittances do not persist into subsequent periods. In the context of CESEE, this pattern is compatible with households temporarily postponing job searches when remittance inflows rise, while the long-run results indicate that these inflows ultimately support employment once they are channeled into entrepreneurial or human capital uses.

The coefficients of the current (d.FDI) and lagged (d.FDI (−1)) variables are found to be statistically insignificant, suggesting that Foreign Direct Investment (FDI) does not have an immediate impact on unemployment in the short run. This implies that the effects of FDI on employment take time to materialize and are not instantaneous. Similarly, the coefficients for the short-run effects of GDP per capita growth (d.GDP pc growth) are statistically insignificant, indicating that short-term fluctuations in GDP do not have a direct or immediate effect on unemployment. Economic growth generally requires time to translate into new employment opportunities, particularly in emerging markets, where structural adjustments may be necessary. This delayed response aligns with the notion that technology transfer, supply-chain integration, and skill upgrading operate over longer horizons rather than affecting unemployment contemporaneously.

Table 5 highlights notable heterogeneity in short-run remittance effects across CESEE countries, to which we now relate the broader mechanisms identified above. The coefficients for inflation (d.Inflation) and lagged inflation (d.Inflation(-1)) are negative and statistically

significant, suggesting that inflationary pressures in the short run may contribute to a reduction in unemployment. This phenomenon can be attributed to the increase in demand that inflation often triggers, as individuals and businesses tend to increase consumption and investment in anticipation of rising prices. Such demand-driven economic activity can stimulate job creation in the short term. Additionally, moderate inflation can incentivize firms to boost production to meet heightened demand, necessitating the hiring of more workers and thereby reducing unemployment. However, these effects are likely to be temporary, as persistent inflation is known to erode purchasing power and destabilize economic conditions over the long run. Furthermore, the coefficient for gross fixed capital formation (d.GFCF) is negative and significant at the 10% level in the short run, indicating that short-term capital accumulation does not necessarily lead to immediate employment generation. This could be due to the fact that capital investments often take time to bear fruit in terms of employment creation, or they may be directed toward capital-intensive industries that are less likely to generate substantial job opportunities. In practice, these short-run patterns suggest that transitory demand effects can temporarily reduce unemployment, but sustained improvements require channels consistent with the long-run mechanisms already discussed—namely, productivity-enhancing investment and stable macroeconomic conditions.

The short-run cross-sectional estimations indicate that the impact of remittances on unemployment varies across countries. In the cases of Albania and Croatia, the coefficients for remittances are negative and statistically significant, suggesting that remittances contribute to a reduction in unemployment in the short run. This could be attributed to the use of remittance income in productive sectors, such as financing small-scale enterprises or enhancing consumption levels within the economy, which in turn stimulates job creation. Conversely, positive and significant coefficients are observed between unemployment and remittances in countries such as Bosnia and Herzegovina, Bulgaria, Estonia, Latvia, Lithuania, Hungary, North Macedonia, Romania, and Slovenia, indicating that remittances may contribute to increased unemployment in the short run. This phenomenon can be explained by the possibility that recipients of remittances may withdraw from the labor force or allocate the remittance income toward consumption rather than investment in income-generating activities. This behavior may reflect a dependency effect, where the financial security provided by remittances diminishes the immediate need for labor market participation. These country differences are consistent with the broader evidence that the employment impact of remittances depends on how effectively financial inflows are intermediated and whether recipient households face binding credit constraints. Where such constraints are relaxed and investment opportunities exist, the negative short-run participation effect is more likely to transition into long-run employment gains.

Table 5. ARDL (2, 2, 2, 2, 2, 2) cross-section short-run coefficients

Country	Variable	Coef.	Std. err.
Albania	d.Remittances	−0.752416***	0.071967
	d.Remittances (−1)	−0.129204**	0.040789
Bosnia and Herzegovina	d.Remittances	1.749644*	0.665117
	d.Remittances (−1)	−0.565392**	0.145028
Bulgaria	d.Remittances	0.806990**	0.189625
	d.Remittances (−1)	−0.612658***	0.087996
Croatia	d.Remittances	−0.518935*	0.191553
	d.Remittances (−1)	−0.058874	0.140105
Czechia	d.Remittances	0.134199	0.724219
	d.Remittances (−1)	0.219048	1.851331
Estonia	d.Remittances	2.961415*	1.021545
	d.Remittances (−1)	2.431804	1.224946
Latvia	d.Remittances	0.263891***	0.034734
	d.Remittances (−1)	0.426639***	0.042514
Lithuania	d.Remittances	0.575268***	0.063558
	d.Remittances (−1)	1.127343***	0.041499
Hungary	d.Remittances	0.593207***	0.093925
	d.Remittances (−1)	−0.992063***	0.104701
North Macedonia	d.Remittances	3.429466***	0.318797
	d.Remittances (−1)	−0.185319	0.689951
Poland	d.Remittances	1.123028	0.801752
	d.Remittances (−1)	−2.003698	1.218559
Romania	d.Remittances	0.069523*	0.028310
	d.Remittances (−1)	−0.012905	0.025505
Slovak Republic	d.Remittances	0.026601	0.757805
	d.Remittances (−1)	0.128899	0.755528
Slovenia	d.Remittances	1.373286**	0.272426
	d.Remittances (−1)	5.420427***	0.512443

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Authors' calculations.

The cross-country variations are also evident in the lagged effects of remittances on the unemployment rate. In several countries, including Albania, Bosnia and Herzegovina, Bulgaria, and Hungary, the lagged remittance coefficients are negative and statistically significant, suggesting that remittance inflows have a delayed, positive effect on reducing unemployment. Conversely, in Latvia, Lithuania, and Slovenia, the lagged remittances are positively correlated with unemployment, indicating that the long-term effects of remittances in these countries might not be as beneficial. This suggests that, over time, the inflow of remittances may not lead to sufficient productive investment or employment generation, possibly exacerbating dependency and reducing labor market participation. These findings highlight the complex and varied relationship between remittances and unemployment, with the long-run effects contingent on how remittance income is utilized within each economy. The evidence for CESEE is consistent with the literature: when remittances are translated into entrepreneurial activity and human capital accumulation, unemployment tends to decline over the longer term; where such transmission is weak, the short-term income effect can dominate.

The long-run results of this study, which reveal that remittances reduce unemployment by stimulating investment and human-capital formation, are in line with the evidence provided by Comes et al. (2018) and Haller et al. (2018). Both studies observed that remittance inflows can enhance growth and welfare in Central and Eastern European countries by strengthening household incomes and supporting small-scale business activity, though their short-term effects on labor markets are often ambiguous. Similarly, Habib (2023) found that remittances act as a stabilizing factor in developing economies, promoting long-term economic growth through consumption smoothing and entrepreneurial financing, while short-term distortions emerge when remittance income is directed toward non-productive expenditure. This pattern aligns with our findings that remittances initially increase unemployment due to reduced labor-force participation—the so-called dependency effect—but subsequently contribute to job creation when invested in productive sectors. The significance of the long-run negative relationship between remittances and unemployment, therefore, underscores their dual nature: a temporary disincentive for work followed by employment-enhancing effects once the inflows are absorbed through productive channels.

In addition, Sharma and Cardenas (2016) and Cardona-Arenas and Sierra-Suárez (2024) provide complementary insights that help contextualize these results. Both papers emphasize that remittances can influence the persistence of unemployment, particularly when labor-market rigidities or institutional weaknesses prevent remittance-driven investment from generating sustainable employment. In economies with limited absorptive capacity, such as those examined in the present study, remittances may initially reinforce structural unemployment before

their benefits materialize. This interpretation supports the moderate speed of adjustment revealed by the error-correction term and aligns with the broader empirical consensus that the ultimate impact of remittances depends on institutional efficiency, financial intermediation, and macroeconomic stability. Taken together, the convergence of evidence from these studies and the current analysis highlights that remittances serve both as a buffer against cyclical shocks and as a catalyst for long-term employment growth, provided that economic and institutional frameworks enable their productive utilization.

While the econometric approach used in this study is robust, several limitations should be noted. First, the study focuses on a selected group of Central, Eastern, and Southeastern European countries, specifically excluding Serbia, Montenegro, and Kosovo due to the unavailability of data and historical inconsistencies that made it impossible to construct a balanced panel. Second, although the ARDL model is effective at addressing mixed integration orders, potential endogeneity between remittances and unemployment cannot be completely ruled out. For instance, higher unemployment may lead to increased migration, resulting in higher remittance inflows and possible reverse causality. Third, some variables may be prone to measurement error because remittance data often relies on recorded financial transfers, which may overlook informal channels and consequently underestimate the actual amounts. Finally, the analysis does not take into account other relevant macroeconomic or institutional factors that could affect the relationship between remittances and unemployment, such as labor market flexibility or the quality of governance. These limitations suggest that future research could benefit from employing instrumental variable approaches, utilizing broader datasets, or conducting country-specific analyses to further validate the findings.

Conclusion

The findings of this study highlight the dual and dynamic role of remittances in shaping labor market outcomes across Central, Eastern, and Southeastern European countries. The empirical results confirm a significant negative long-run relationship between remittances and unemployment, underscoring their capacity to stimulate economic activity and job creation through investments in human capital and entrepreneurial development. By facilitating access to education, healthcare, and business opportunities, remittances strengthen household resilience and promote inclusive growth. These results reinforce the theoretical propositions of the New Economics of Labor Migration, demonstrating that remittances can serve as a substitute for imperfect credit markets and support productive economic behavior over time. However, in the short run, the results reveal an increase in unemployment linked to a temporary "dependency effect," as households receiving remittances tend to reduce labor market participation due to improved

financial security. This asymmetry between short- and long-term effects illustrates the complex and transitional nature of remittances' influence on employment.

The novel contribution of this study lies in its integrated econometric assessment of both short- and long-term relationships between remittances and unemployment, using an ARDL framework applied to post-transition European economies—a region that has received limited empirical attention in this context. By distinguishing between immediate behavioral effects and structural labor market adjustments, this paper advances the understanding of how remittances function not merely as income transfers, but as long-term instruments for employment generation and economic stabilization. The results also contribute to the broader debate on migration and development by providing evidence that remittances can mitigate unemployment if complemented by effective institutional and financial mechanisms that channel these inflows into productive sectors.

From a policy perspective, governments should design measures that convert remittance inflows into sustainable employment opportunities. This can be achieved by encouraging households to direct remittances toward business start-ups, vocational training, and education through targeted incentives such as matching grant programs, tax benefits, or subsidised credit. Strengthening financial intermediation mechanisms—such as accessible savings, microfinance, and investment schemes—can enhance the productive use of remittances and support small-scale entrepreneurship. Moreover, fostering a flexible and innovation-oriented labor market will ensure that remittance-induced investments are absorbed efficiently. Such coordinated policies can help mitigate the short-term dependency effects while maximizing the long-term employment and growth potential of remittance inflows.

Finally, future research should address several limitations acknowledged in this study, including potential endogeneity between remittances and unemployment, omitted institutional or structural factors, and the exclusion of certain countries due to data unavailability. Expanding the analysis to include institutional quality indicators, migration intensity, or the digitalisation of financial services could provide a more comprehensive understanding of the remittances–labor nexus. Moreover, country-specific time-series analyses or instrumental variable techniques could further test the robustness of the observed relationships and identify the transmission channels through which remittances influence employment and economic growth in post-transition economies.

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