ISSN
2671-3462 (print)
2671-3470 (online)

Economy, Business & Development (2024) 5(2), 1-14
DOI: 10.47063/ebd.00018

RESEARCH PAPER

Journal homepage: https://journals.ukim.mk/index.php/ebd

THE IMPACT OF REMITTANCES ON ECONOMIC GROWTH IN THE REGION OF CENTRAL AND SOUTHEASTERN EUROPE

Mite Miteski[1]
National Bank of the Republic of North Macedonia
miteskim@nbrm.mk

Abstract

The countries of Central and Southeastern Europe (CSEE) are significant net recipients of remittances, primarily due to the intensive emigration trends that occurred after they transitioned to market economies. The fact that these countries are among the highest recipients of private remittances in Europe, suggests that such financial inflows could potentially have a significant influence on fostering their economic growth. Hence, the main aim of our research is to empirically investigate the relationship between economic growth and remittances in a selected group of twelve CSEE countries. The empirical research was conducted using static unobserved effects panel data models. Specifically, we estimated fixed and random effects models within the Cobb-Douglas framework that incorporate remittances as the primary variable of interest, in addition to the standard determinants of economic growth. For this purpose, we used an unbalanced panel data set obtained from the World Bank World Development Indicators database with an annual frequency spanning over the 2002-2022 period. The empirical findings provide evidence that remittances indeed exert a positive and significant direct effect on economic growth in the analyzed group of countries, along with some of the other standard growth factors, such as physical and human capital. Given this conclusion, policymakers should implement appropriate strategies to maximize their impact.

Keywords: Remittances, economic growth, Central and Southeastern Europe, panel estimation

JEL classification: F21, F43, C23, O47

[1] The opinions and views expressed in this paper are only those of the author and do not necessarily reflect the position and views of the National Bank of the Republic of North Macedonia.

Introduction

The topic of remittances has drawn considerable attention in academic research and policy debates in the field of international economics. The reason is that these monetary transfers sent by migrants, which totaled close to $800 billion globally in 2022 according to the World Bank (2022), have great potential to affect the socioeconomic development of their home countries. Of course, these data only include officially recorded remittances, whereas migrants might also be able to transfer money unofficially, in ways that are difficult to measure. In the context of Central and Southeastern European (CSEE-12) economies[2], personal remittances have become increasingly relevant because they involve substantial financial inflows that can shape economic growth trajectories and reduce poverty (Mansoor and Quillin, 2006).

From a historical perspective, CSEE-12 countries transitioned from centrally planned economies to market-oriented systems, a change marked by the emergence of new market economic structures and increased integration into international markets. As the IMF (2014) concludes, there has been significant convergence with Western Europe during the transition period. Although the countries have been on a convergence path, they still progressed at a different pace and reached different stages of development. The transition process has been also accompanied by significant emigration from these countries and, consequently, by noticeable financial inflows directed toward them (Parker and Piotrowski, 2023). This specific backdrop generates continuous interest in examining the potential role of remittances as a source of economic growth within this region. Previous studies on the topic have indicated a positive correlation between remittances and economic performance, however, the relationship is multifaceted and complex, with some research indicating potential negative effects (Chami et al., 2003). Some of the negative effects include higher reservation wages, lower incentives to work, reduction of labor supply as well appreciation of the domestic currency (Dutch disease).

This research aims to fill the existing gap in the literature in two ways. First, it will add to the literature by analyzing the CSEE-12 countries, given that the literature in the field is mainly focused on Asian, South American, and African countries, while relevant research dedicated to CSEE countries is insufficient although, according to World Bank (2022), they are significant recipients of remittances. To the best of our knowledge, this specific group of countries has not been studied before. Second, given that empirical assessments on this subject have produced ambiguous results, we aim to provide fresh insights that would contribute to the academic debate as well as inform the policymakers and other relevant stakeholders about the potential role of remittances in promoting economic growth and development in this region. This is relevant considering that the impact of remittances may not be uniform across specific regions. For instance, both the different absolute level of remittances and their level relative to GDP may significantly influence the extent of the impact. Also, the effects can vary given the differences in terms of income, poverty levels, population, financial development, etc. across regions. Therefore, a methodical analysis of these effects in the CSEE-12 region would help to design appropriate remittance-conducive policies.

Against this background, the main goal of this research is to contribute to the empirical understanding of the remittances-GDP growth nexus in the selected CSEE-12 region, by employing panel econometric analysis on a sample of twelve economies for the period covering 2002-2022. Specifically, we aim to assess the magnitude and significance of the link between remittances and GDP growth by also taking due account of the complex interplay of various other economic factors that might affect it at the same time.
The paper is organized as follows. The second section provides a brief literature review on the analyzed topic while the third section presents the key stylized facts for the CSEE-12 region. The fourth section explains the selected empirical methodology and discusses the results. The fifth section concludes.

[2] For the purpose of this research these include the Macedonian, Serbian, Croatian, Montenegrin, Bosnian-Herzegovinian, Albanian, Bulgarian, Kosovan, Slovenian, Slovakian, Romanian, and Hungarian economy.

Literature Review

The consensus in the literature regarding the impact of remittances on GDP growth is mixed, and the effects can vary across countries and regions due to their distinctive characteristics. While some studies suggest a positive relationship between remittances and GDP growth, others point in the other direction. These findings are extensively discussed in Lucas (2005). In this regard, studies that find a positive impact of remittances on GDP growth indicate that they can stimulate both consumption and investment, thereby increasing overall demand and growth in the domestic economy. On the other hand, there are studies suggesting that the impact of remittances on GDP growth might not be positive or even significant. These studies argue that remittances could lead to lower labor supply or to a phenomenon known as the "Dutch disease," where an influx of foreign currency leads to an appreciation of the domestic currency, making domestically produced goods internationally less competitive and thus hindering economic growth.

The studies concluding that remittances foster GDP growth in selected Central and Southeastern European countries are numerous. For instance, Meyer and Shera (2017) performed a fixed effects regression analysis to examine the impact of remittances on economic growth in six Southeastern European countries and found a significant positive link between them. Similarly, Škabić and Tijanić (2022) analyzed the remittances-GDP growth nexus in selected Central and Eastern European countries, with a particular focus on the period following the 2004 EU enlargement. Through a panel data analysis, they found that personal remittances significantly contributed to economic development in new EU member states. Bucevska (2022) also estimated a fixed-effects model using a balanced panel dataset from 2008 to 2020, and provided evidence that remittances have a positive impact on GDP growth in a group of six South-East European countries. In line with these findings, Kajtazi and Fetai (2022) employed similar econometric models to explore the effect of remittances on economic growth in ten Southeast European countries. Their results confirmed a positive relationship between remittance inflows and GDP growth, alongside positive effects from FDI, final consumption expenditure, and exports, further highlighting the significance of remittances as a key driver of economic growth in the region. Another research conducted by Raggl (2017) concluded that remittances have a crucial role in supporting household income in 10 Central and Eastern European countries. By focusing their analysis on the Western Balkan countries only, Topxhiu and Krasniqi (2017) and Bajra (2021) found that remittances are an important driver of economic growth in this region of Europe. Similar conclusions for the effect of remittances on economic growth across the Western Balkan countries were reached by Rehman and Hysa (2021), but they caution that when remittances are interacted with financial development, they have negative effect on economic growth.

However, the literature also presents different perspectives. For example, Chami et al. (2005) and Karagöz (2009) found a negative relationship between remittances and economic growth, arguing that remittances are compensatory in nature, and could lead to decreased labor supply. Similarly, Gjini (2013) also found a negative impact of remittances on economic growth by estimating a fixed effects model for 12 Central and Eastern European countries. Lacheheb and Ismail (2020) investigated the relationship between remittance and economic growth in a panel of 93 low and middle-income countries and likewise confirmed that remittances lead to deteriorating economic growth in the receiving countries. On the other hand, Trpeski et al. (2021) focused on the Western Balkans region instead and reached similar conclusions about a negative correlation between remittances and growth. They explain the negative relationship for two main reasons i.e. the incentives created by remittance recipients to join the workforce and the impact on the exchange rate by increasing domestic product prices. Other relevant studies on this topic point to further nuances. In this regard, Barajas et al. (2009) and Clemens and McKenzie (2018) research showed that the long-term impact of remittances on economic growth is marginal or negligible, emphasizing the difficulty in establishing a direct causal link. Also, Azizi et al. (2024) found that the impact of remittances on economic growth in the developing countries is insignificant. However, they note that when interacted with human capital the effect of remittances turns positive and significant, implying that remittances promote economic growth only in countries with high human capital, while they do not affect economic growth in countries with low human capital.

Taking into account this nuanced picture, continuous empirical research is needed to obtain insights into the relationship between remittances and GDP growth, particularly in the Central and Southeastern Europe region, given its dynamic economic and emigration developments. We intend to enhance the ongoing discussion on this issue through our research.

Stylized Facts for the CSEE-12 Region

Initially, a graphical representation and analysis of the developments in GDP and remittances may provide valuable insights before we proceed with our formal econometric analysis.

According to the World Bank data[3], the CSEE-12 region represents a significant net recipient of remittances. As Figure 1 shows, remittance inflows have increased substantially in the past two decades and have reached $36 billion in 2022 (from $5 billion in 2002), despite a deceleration during the global financial crisis, and the recent decrease during the COVID-19 pandemic. Since 2016, the growth of remittance inflows in CSEE-12 has exceeded the world average, although, in recent years, growth has somewhat begun to converge. The analysis of the countries shows that Romania, Serbia, and Croatia are the largest recipients of remittances, both nominally (in USD) and on a net basis. However, in relative terms, remittances have the greatest significance for Kosovo, BIH, and Albania, with inflows of 16.9%, 13.4%, and 12.4% of GDP, respectively, on average in the analyzed period. At the same time, the strongest increase in remittances was recorded in Serbia and Croatia, while a decrease was registered in most of the other countries.

Figure 1: Inflows of remittances to CSEE-12, by recipient economy (USD billion)

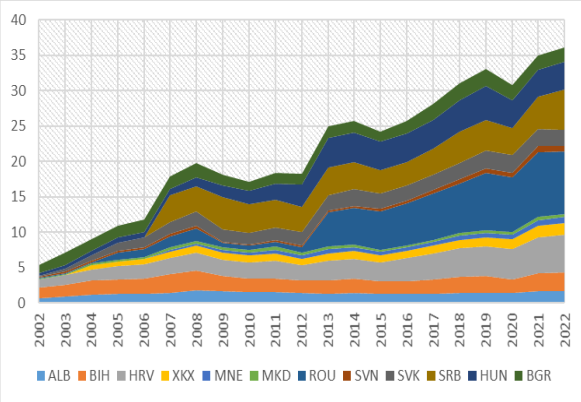
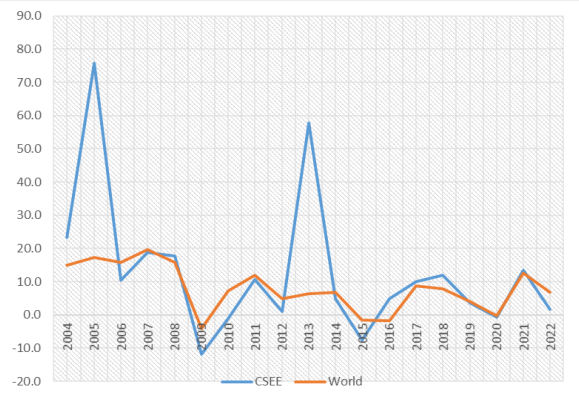


Figure 2: Remittances, annual change, average by region



[3] In this study, we utilize data on remittances for all countries as compiled and published by the World Bank. It should, however, be acknowledged that in the Macedonian case, the data do not include the cash through informal channels. Because of our commitment to data integrity, no alterations to the data used for econometric analysis were made, as such modifications fall outside the scope of this paper.

Figure 3: Remittances in CSEE-12, period average (USD billion)

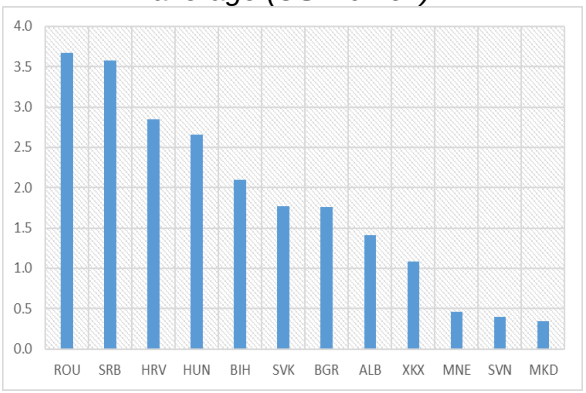
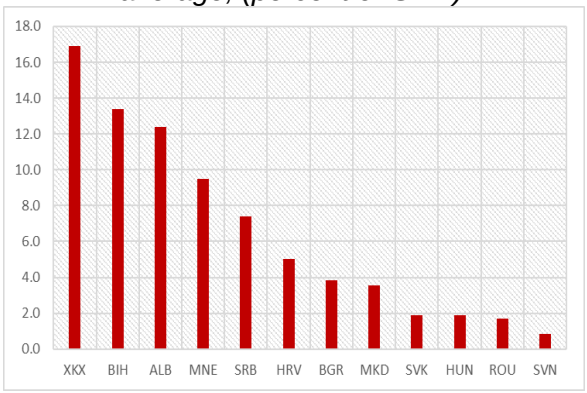


Figure 4: Remittances in CSEE-12, period average, (percent of GDP)



Source: World Development Indicators and own calculations.

Parallel to the remittance dynamics, CSEE-12 countries also experienced rapid growth, especially in the years before the Global financial crisis, benefiting from the favorable global conditions and the process of convergence with Western Europe (Żuk et al., 2018). The average growth in the CSEE-12 region was around 3.5%, exceeding the world average of 3%. However, the ensuing global crisis was devastating for the region, with GDP declining by more than double than the rest of the world. The economic underperformance continued until 2015 when the region saw above-average growth again, which was once more interrupted, this time by the large downfall caused by the COVID-19 crisis.

Remittances might have played a crucial role in sustaining the growth of the CSEE-12 region in the analyzed period as, as mentioned earlier, they have the potential to provide financial relief and stimulate domestic economies by increasing consumption and investment. In fact, the simple visualization of the relationship between the growth of remittances and real GDP points to a positive correlation between these variables observable in the data (Figure 6). In the next section, we aim to formally test the remittance-led growth hypothesis by constructing a growth model that includes remittances as the main variable of interest, alongside the other standard economic growth determinants.

Figure 5: GDP growth in CSEE-12 and the world

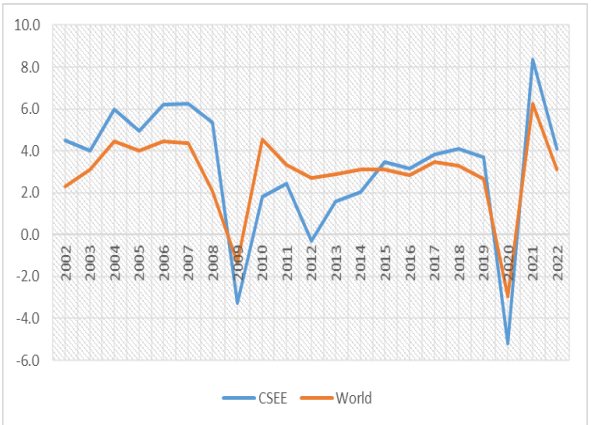
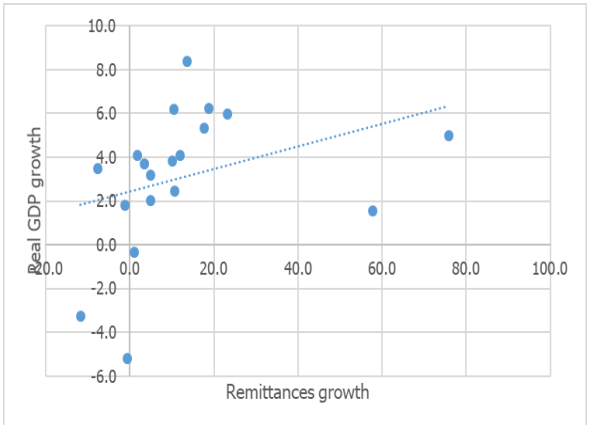


Figure 6: Remittances and GDP growth in CSEE-12



Source: World Development Indicators and own calculations.

Empirical Analysis

Data Description

In our study, we examine econometrically the impact of remittances on economic activity in a panel of twelve Central and Southeastern European countries. In particular, we are interested in the economies that receive the bulk of the remittances in Europe, such as the Macedonian, Serbian, Croatian, Montenegrin, Bosnian-Herzegovinian, Albanian, Bulgarian, Kosovan, Slovenian, Slovakian, Romanian, and Hungarian economy. Namely, according to the latest figures these countries account for around 20% of all remittances received in Europe, with an average share of around 6.5% of their GDP. The following variables are used in our model i.e. per capita real GDP growth rate, gross capital formation, education enrolment, GDP per capita, personal remittances, inflation, government consumption, trade openness, as well government effectiveness as a preferred institutional variable. Data is acquired from the World Development Indicators and Worldwide Governance Indicators databases of the World Bank and are expressed as ratios to GDP, percentages, or index scores. The dependent variable is GROWTH, which represents the growth rate of real GDP per capita in annual terms. In line with the growth theory, in the model we need to account for the role of capital in the production process. However, since the data for the physical capital are usually unavailable, especially for the countries of interest, we use gross capital formation (GCF) as a proxy to account for the importance of investment for economic growth, which is in line with the research practice on this topic. According to the theoretical and empirical propositions, a positive impact from the increase of gross capital formation on GDP growth is expected (Solow, 1958; Tobin, 1965; DeLong and Summers, 1992; Wei and Liu, 2009). In addition, a properly specified growth model should also contain a variable related to the human capital stock, since it is now widely accepted that investment in human capital represents an important generator of economic growth. There are many measures and components of the stock of human capital, and within the limitations of the available data, we choose the gross enrolment ratio in secondary education of both genres (EDU) as the preferred proxy for this growth determinant. Accordingly, we expect this variable to display a positive effect on economic growth, as synthesized in Lucas (2003). In order to control for the possible catching-up process of the countries in our sample, as recommended by the theory, we include a suitable variable for the initial level of GDP per capita (GDPPC), which represents the level of GDP based on purchasing power parity divided by the population, in the year before the real GDP growth rates were recorded. To confirm the belief of an existence of a convergence of growth across countries, the sign of the coefficient on this variable should be negative, which is ex-ante expected. Remittances as a share of GDP (REM) serve as the main variable of interest in our paper whose significance for the economic growth of the recipient countries that are analyzed we aim to assess. According to the Sixth edition of the IMF's Balance of Payments and International Investment Position Manual (2013), remittances consist of personal transfers, which include all current transfers in cash or in kind between resident and nonresident individuals, and compensation of employees, which includes the income of border, seasonal, and other short-term workers who are employed in an economy where they are not resident and of residents employed by nonresident entities. As argued before, the sign on the coefficient can take both positive and negative values. Although examining how remittances influence economic growth is the primary goal of our paper, accounting for additional growth determinants is of crucial importance in order for the model to be correctly defined and to alleviate the issue of omitted variable bias. As a result, the model also contains other important macroeconomic variables, such as domestic inflation as a proxy for macroeconomic (in)stability (INF), general government final consumption spending as a share of GDP (GOV.CONS.) as a measure of government size, and the ratio of exports and imports to GDP (OPEN) as a measure of international openness. Regarding inflation, the expected effect on GDP can be positive or negative, as indicated by empirical studies. The majority of studies find a negative association between inflation and growth (Fisher, 1993; Barro, 1995; Andrés and Hernando, 1997; Gillman et al., 2004), however, some studies indicate a positive relationship, especially at low levels of inflation (Sarel, 1996; Ghosh and Phillips, 1998). This also applies to the effect of government consumption. On the one hand, greater government size is believed to distort markets and thus should have a detrimental effect on economic activity, as the studies of Romero-Avila and Strauch (2008), Afonso and Furceri (2010) and Ghourchian and Yilmazkuday (2020) show. On the other hand, there are studies that find positive and significant effects of government spending on growth (Lin, 1994; Ghali, 1999). Thus, ex-ante it is unclear whether the estimated government consumption coefficient will have

a positive or negative value. With regard to trade openness, the synthesis of the literature points that international trade has a positive impact on GDP growth (Dollar and Kray, 2003), and in this vein, our study makes the same proposition. Since the quality of institutions is also found to be an important determinant of economic growth (Kaufmann et al., 1999; Galindo-Martín et al., 2020) we include additionally in the model an estimate of government effectiveness (INST), which we obtain from the Worldwide Governance Indicators[4] data published by the World Bank. We consider the government effectiveness indicator the most suitable proxy for the quality of institutions, since methodologically it encompasses perceptions of the quality of public institutional services, the quality of the civil service and the level of its independence from political influence, the quality of policy preparation and realization, and the credibility of the government's adherence to the formulated policies. Taking into account the empirical findings of previous research on this topic, a priori, we hypothesize a positive link between institutional quality and economic growth. In our view, from an extensive list of potential determinants of economic growth, the variables that we decided to use have distinguished themselves as a standard group of variables in order for the model to be considered as properly specified (see e.g. Temple, 1999; Barro and Sala-i-Martin, 2004). This is to a great extent consistent with earlier empirical studies regarding the factors that drive economic growth, although accounting for the institutional quality is one of the peculiarities of our approach.

The panel is unbalanced since observations are not available for an equal period of time for all countries. For that reason, we operate with around 170 observations instead of the potential of around 230 observations. The dataset used in our research covers the period from 2002 to 2022. The sample size is constrained to the period after 2002 since data for some of the important variables is rather scarce for the years before for some of the countries. Details of the variables and their expected impact on the economic activity are contained in Table 1, whereas Table 2 provides the descriptive statistics of the variables over the entire sample.

Table 1: Variables Descriptions

Variable	Definition	Expected sign
GROWTH	GDP per capita growth (annual %)	/
REM	Workers' remittances received, % of GDP	+/−
GDPPC	Initial GDP per capita, PPP (constant 2017 international $)	−
GCF	Gross capital formation (% of GDP)	+
EDU	School enrollment, secondary (% gross)	+
INF	Inflation (annual %)	+/−
OPEN	Trade (% of GDP)	+
GOV.CONS.	General government final consumption expenditure (% of GDP)	+/−
INST	Government effectiveness, score	+

[4] The Worldwide Governance Indicators (WGI) are a research dataset summarizing the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. These data are gathered from a number of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms.

Table 2: Summary Statistics of the Variables (CSEE-12)

Variable	Obs	Mean	Std. Dev.	Min	Max
GROWTH	233	3.38	3.87	-15.21	17.38
REM	224	6.27	5.45	0.07	22.23
GDPPC	234	9.76	0.43	8.77	10.57
GCF	234	25.40	5.08	15.41	41.18
EDU	186	0.93	0.08	0.73	1.16
INF	233	3.79	3.75	-2.83	23.15
OPEN	234	106.26	33.24	53.71	189.80
GOV.CONS.	234	18.13	3.61	10.13	29.94
INST	233	0.12	0.52	-1.07	1.18

Source: Author's calculations.

Econometric Results and Discussions

This subsection presents the empirical framework used in our study and discusses the results. In terms of estimation, we employ two static panel models – fixed and random effects models that are suitable for estimating unbalanced panels with missing values for specific countries in certain periods. The chosen methods are in line with the ones used in previous empirical studies. They are particularly effective for analyzing the impact of remittances on economic growth because they control for unobserved characteristics that vary across countries but remain constant over time. These methods allow us to focus on within-country variations, isolating the specific effects of remittances while accounting for other factors that might influence economic growth and mitigating endogeneity issues. In this way, the reliability of the findings is enhanced and the bias from omitted variables is minimized, thus providing clearer insights into the direct relationship between remittances and economic growth.

The fixed effects regression model is given by:

$$y_{i,t} = \alpha_i + \beta x_{i,t} + \varepsilon_{i,t} \quad (1)$$

where α_i are fixed effects, or unobserved heterogeneity, that captures all unobserved, time-constant factors that affect $y_{i,t}$, and $\varepsilon_{i,t}$ is the idiosyncratic error, or time-varying error, representing the unobserved factors that change over time and affect $y_{i,t}$. Since we control for all time-invariant differences between the countries, the estimated coefficients in our model cannot be biased because of omitted country characteristics, such as type of public policies, political environment, etc.

The random effects regression model takes the following form:

$$y_{i,t} = \alpha + \beta x_{i,t} + (u_i + \varepsilon_{i,t}) \quad (2)$$

where α is the overall constant and $(u_i + \varepsilon_{i,t})$ is a composed residual, with u_i being the random disturbance characterizing the ith unit and $\varepsilon_{i,t}$ is the combined time series and cross-section error component i.e. the idiosyncratic term. The key issue regarding which model to use is whether one can plausibly assume that the unobserved heterogeneity is uncorrelated with each explanatory variable in all time periods. Since the fixed effects model allows arbitrary correlation, and random effects does not, it may be a priori a more convincing tool for estimating ceteris paribus effects. In any case, we will use a formal test to choose between fixed effects and random effects models. All of the econometric analysis is done in the STATA 15 software package.

With that being said, we base our model on the classic growth framework that incorporates a Cobb-Douglas production function with the usual capital and labor inputs, which we then extend by including remittances (*REM*) as an additional growth factor. As mentioned earlier, physical and human capital are approximated by gross capital formation (*GCF*) and gross enrolment ratio in secondary education (*EDU*), respectively. We also include additional control variables in our model in order to account for the bias

that may be caused by missing variables, thus ensuring proper model specification. They are, in the order shown in specification (3): initial GDP per capita (*GDPPC*), inflation (*INF*), government expenditure (*GOV_CONS*), trade openness (*OPEN*), and quality of institutions (*INST*). Therefore, the basic specification of our model to be estimated is as follows:

$$GROWTH_{i,t} = \alpha_i + \beta GCF_{i,t} + \gamma EDU_{i,t} + \lambda REM_{i,t} + \psi GDPPC_{i,t} + \phi INF_{i,t} + \theta GOV\_CONS_{i,t} + \eta OPEN_{i,t} + \varphi INST_{i,t} + \xi_{i,t} \quad (3)$$

where α_i is a set of unobserved country-specific effects and $\xi_{i,t}$ is an i.i.d error term.

We start our analysis by estimating the two unobserved effects panel data models as previously defined: fixed effects and random effects. The results of the estimation are contained in Table 3. Additionally, we apply the Hausman test to determine which model is most suitable for this concrete analysis. As the results indicate, the fixed effects model is the appropriate choice, leading us to exclude the random effects model from further consideration.

Table 3: Regression Estimation (Ordinary Least Square)

Dependent variable real GDP per capita growth rate		
	Fixed Effects	Random effects
REM	0.0135***	0.0010
	(0.413)	(0.179)
GDP PC	-0.1351***	-0.0366*
	(2.839)	(2.031)
GCF	0.0339	0.0337*
	(2.295)	(1.722)
EDU	0.0738	0.0238
	(7.941)	(7.274)
INF	0.0112**	0.0138***
	(0.470)	(0.436)
OPEN	0.0708*	0.0177
	(3.448)	(1.169)
GOV.CONS.	-0.0801	-0.0240
	(4.896)	(1.968)
INST	0.0212	0.0157*
	(2.191)	(0.856)
Constant	1.3040***	0.3841
	(30.19)	(23.99)
R^2	0.4185	0.2803
Observations	168	168
* p<0.10, ** p<0.05, *** p<0.01		
Test: Ho: difference in coefficients not systematic		
Chi^2	45.99	
p-value	0.000	

Source: Author's calculations.

Next, we apply the standard diagnostic tests to check whether the underlying assumptions of OLS regression are met and to detect potential problems with the fixed effects model (Table 4). Based on these tests, we have identified that the model suffers from heteroskedastic, autocorrelated, and cross-sectional correlated error structure. Therefore, we have chosen to estimate the regressions with Driscoll-Kraay (DK) standard errors[5] to ensure valid statistical inference, as this procedure is shown to be robust to all of the detected problems of our econometric model. The results of the FE-DK regression are given in Table 5.

[5] This was done through the xtscc program in Stata. According to Hoechle (2007) Driscoll-Kraay standard errors have better small sample properties than other more commonly employed estimators when cross-sectional dependence is present.

Table 4. Diagnostic Tests

Test for significance of fixed effects
H0: fixed effects are not significant
F = 5.99
p-value = 0.0000
Modified Wald test for groupwise heteroskedasticity in fixed effect regression model
H0: $(\sigma_i)^2 = \sigma^2$ for all *i*
χ^2 = 20.75
p-value = 0.0229
Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
F = 48.349
p-value = 0.0001
Test for normality of residuals
H0: residuals are normally distributed
joint χ^2= 9.00
joint p-value = 0.0111
Test of independence
H0: cross-sectional independence of the errors
Breusch-Pagan LM test: p-value = 0.0000
Pesaran's test: p-value = 0.0000

Source: Author's calculations.

The main result of the FE-DK regression is that remittances have a positive and significant effect on economic growth, either at the levels of significance of 5% or 10%, an effect which is present when including additional groups of growth factors. Namely, remittances persistently retain their significant positive effect on growth when controlling for per capita income and physical and human capital (Column 2), inflation, trade openness and government consumption (Column 3), and institutional quality (Column 4). When growth is regressed on remittances only the coefficient is insignificant, which is not surprising given the apparent misspecification of this econometric model. Moreover, in the regressions where the remittances coefficient is statistically significant, it is evident that it is quite robust, ranging from 0.013 to 0.015. Looking at the final specification that includes all independent variables (Column 4), the results suggest that a one percentage change in the share of remittances in GDP is associated with an increase of real GDP per capita growth rate by 0.014 percentage points, ceteris paribus. Regarding the convergence variable, the coefficient on the initial level of GDP per capita exhibits a strongly significant negative sign, thereby signifying that growth follows a trajectory which converges across the countries in the sample. Furthermore, the results show that gross capital formation is positively associated with economic growth, with a one percentage change resulting in an increase in growth of 0.03 percentage points. As proposed by theory, we find that the coefficient on human capital is positive and significant as well (at the 5% level). The results show that a one percentage increase in the gross secondary enrolment ratio as a proxy for human capital results in an increase of real GDP per capita growth rate of 0.07 percentage points, ceteris paribus, suggesting that it is one of the key drivers of economic growth. As elaborated earlier, the positive effect of human capital on growth is well established in economic theory. Many studies show that education increases both labor productivity and the innovative capacity of the labor force, and facilitates the diffusion and transmission of knowledge, thus fostering growth. Moving on to the variables that are indicative of macroeconomic (in)stability, the results show that they have opposing coefficient signs – positive for inflation and negative for government spending. On the one hand, we find that an increase in inflation by one percentage positively affects economic growth, which increases by 0.01 percentage point. This might be explained by the fact that in the period under observation, the countries in our sample realized low inflation rates on average, which is generally considered a growth conducive environment. On the other hand, increased government consumption by one percentage leads to a decrease in real GDP growth by 0.08 percentage points. Furthermore, the results show that trade openness is a significant catalyst for economic growth in the countries under consideration. A rise in trade openness of one percentage leads to a rise in real GDP growth of 0.07 percentage points. We also find that improved institutional quality has a beneficial role in economic

development, which is in line with the majority of other research on this topic[6]. Concretely, the results suggest that economic growth increases by 0.02 percentage points when institutional quality improves by one standard deviation, ceteris paribus.

Table 5: Growth and Remittances, Fixed-Effects Regressions With Driscoll-Kraay Standard Errors

Dependent variable real GDP per capita growth rate

	(1)	(2)	(3)	(4)
REM	0.0051	0.0147*	0.0132**	0.0135**
	(0.735)	(0.824)	(0.609)	(0.606)
GDP PC		-0.1104***	-0.1301***	-0.1351***
		(2.647)	(3.104)	(3.129)
GCF		0.0736***	0.0323*	0.0339*
		(1.720)	(1.885)	(1.854)
EDU		0.1186**	0.0887**	0.0738**
		(5.253)	(3.567)	(3.486)
INF			0.0109***	0.0112***
			(0.357)	(0.356)
OPEN			0.0687*	0.0708*
			(3.633)	(3.604)
GOV.CONS.			-0.0873*	-0.0801*
			(4.381)	(4.110)
INST				0.0212*
				(1.024)
Constant	0.0498**	1.2810***	1.2450***	1.3040***
	(2.149)	(28.52)	(33.41)	(33.87)
R^2	0.0045	0.2678	0.4125	0.4185
Observations	223	177	168	168

* p<0.10, ** p<0.05, *** p<0.01

Source: Author's calculations.

The obtained results from this study are in line with the strand of research that finds a positive relationship between remittances and economic growth in the CSEE economies. We find a continuous robust positive impact of remittances, even after including several important control variables. However, our results diverge from studies such as those of Chami et al. (2005) and Gjini (2013), which suggested negative effects on growth. This difference suggests that in the panel context, the choice of economies and the time period analyzed might play a role in shaping the conclusions of the relationship between remittances and growth.

Discussion and Conclusion

This study aimed to ascertain the impact of remittances on economic growth in the CSEE-12 region while accounting for other standard growth factors and potential biases resulting from unobserved heterogeneity and endogeneity. Our research motivation stems from the fact that these countries receive the largest amount of financial inflows from private remittances in Europe, which may be conducive to the achievement of more noticeable economic growth. The empirical research was conducted using static unobserved effects panel data models. Specifically, we estimated fixed and random effects models within the Cobb-Douglas framework that incorporate remittances as the primary variable of interest, in addition to the standard determinants of economic growth. The study employed an unbalanced panel data set with an annual frequency spanning over the 2002-2022 period. The results of the estimations indicate that remittances have a positive contribution to economic growth in the countries under consideration, which is in accordance with other research studies on this issue. This finding suggests that CSEE-12 countries can have economic benefit from stronger remittance inflows. Additionally, the research presents compelling evidence that the other aforementioned factors, such as domestic investment, education, trade, and institutional quality have also a significant impact on fostering economic growth. Given that remittances play an important role in advancing economic development in

[6] See for example Hall, R. E., Jones C. I. (1999), Sokoloff, L. K., Engerman L. S. (2000) and Rodrik, D. (2000).

the CSEE-12 economies, policymakers should implement appropriate strategies to maximize their impact. For example, enhancing engagement with the diaspora community is likely to facilitate increased remittance inflows. Policymakers can also explore ways to formalize the inflows further, by reducing transactional costs, improving financial infrastructure to facilitate remittance transfers, and enhancing access to formal financial services. The submission of applications for accession to the Single Euro Payments Area (SEPA) that some of the non-EU CSEE-12 countries have made recently is an important step in this direction. With that being said, several limitations of our research need to be acknowledged. First, data quality and availability can be inconsistent across countries. Here it should be particularly noted that in some of the analyzed economies, the bulk of remittances comes in cash through informal channels, rather than through formal channels, which may affect the obtained results. Additionally, the choice of the economies and time period analyzed may affect the findings and the ability to generalize them outside our sample. Also, the impact of remittances may vary over time, and relying only on a static model may not capture well these developments. Thus, because different econometric approaches can yield different conclusions, the idea of analyzing this issue by developing a dynamic panel model, such as GMM, is an important area for extending this research in the future. Moreover, the findings of the paper have implications for macro modeling practices as well. They suggest that when developing more complex macroeconomic models, particular attention should be paid to the inclusion of remittances in the model structure. The development of such, for example, DSGE models has the potential to yield more sophisticated economic insights than those of panel models, which is also an important direction for further research.

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