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IMPACT OF REMITTANCES ON ECONOMIC GROWTH: EMPIRICAL EVIDENCE FROM SOUTH-EAST EUROPEAN COUNTRIES

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Abstract

South-East European (SEE) countries are experiencing high emigration, resulting in a significant increase in remittance inflows, exceeding FDI flows. Today the most important challenge facing SEE countries is how to grow at a higher speed to achieve faster economic convergence with the EU. The objective of the paper is to empirically examine the relevance of remittances as a factor of economic growth, using quarterly balanced panel data set of six SEE countries: Albania, Bosnia and Herzegovina, Croatia, Montenegro, the Republic of North Macedonia, and Serbia (SEE6) over 2008q1-2020q2. Panel regression with the fixed-effects model is employed to account for potential cross-section heterogeneity. This study provides original econometric evidence that remittances have a significant positive impact on economic growth in our panel of SEE6. Those results will be useful both to scholars and policymakers in the process of the creation of policies that will direct remittances into investments in the economy.

Keywords: *Remittances, economic growth, panel data, South-East European countries*

JEL Classification Codes: *C33, F24, O47, O52*

1. Introduction

Today, more than ever, speeding up economic growth and boosting the process of economic convergence are the main challenges facing six countries in South-East Europe: Albania, Bosnia and Herzegovina, Croatia, Montenegro, Republic of North Macedonia, and Serbia (SEE6). All of them, except Croatia which became a fully-fledged member state of the European union (EU) in 2011, aspire to membership in the EU, but today they face a major convergence challenge in terms of living standards. After more than twenty years of intense Europeanization, despite progress achieved, SEE countries still lag far behind the EU average, with living standards in 2020 between 15.4 percent (Albania) and 40.8 percent (Croatia) of EU27 average GDP per capita (in Purchasing Power Standards - PPS). When looking at the real GDP growth, SEE countries have shown volatile and slow economic growth in the past ten years. Real GDP growth rates have been in the low single digits, and even negative. According to Uvalic (2019), the main reasons for the slow catching up of these countries lie in the

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persistent structural problems, such as persistent external imbalances, problems in the labor markets, and fast deindustrialization. The latest available data covering the year 2020 (Eurostat 2021) shows that all SEE countries for which data are available have recorded a slowdown in economic activity, as a consequence of the Covid-19 pandemic.

Sources of economic growth have been the focus of economists for more than half a century. Despite the rising magnitude of remittances at a global level, the empirical literature on the impact of remittances on economic growth is rather scarce. The majority of them cover Asian countries (Pakistan, Bangladesh, India, etc.), Latin American countries, and sub-Saharan countries, while only a few studies refer to European countries (Haller et al. 2018). SEE countries, as a group of countries, are underrepresented in these studies (Saadi 2020, Polat and Rodríguez Andrés 2019, de Haas et al. 2019), although these countries have been experiencing a relatively stable inflow of remittances flows in the last two decades and are among the highest remittance recipients in the world (World Bank 2022). For most of these countries, remittances, followed by FDI, represent the largest source of external imbalances financing (Ratha 2019). During the global financial crisis of 2008, remittances to SEE countries remained relatively stable and more sustainable than FDI and other capital inflows, mainly due to the social contract that binds migrants to their families in their home countries. After the crisis, they recovered faster than FDI, resuming the level of growth rates registered in the pre-crisis period. However, today they are again under threat by the most devastating shock that hit the global economy since the Second World War, the Covid-19 pandemic, which is simultaneously hurting both countries of origin and countries of destination.

The gap in the existing literature on the relationship between remittances and economic growth covering the countries of South-East Europe, as well as the inconclusive results on this topic in previous empirical research, was the main motivation of this study. It will contribute to the current body of literature by providing additional and relevant empirical evidence on the effect of remittances on the economic growth of the SEE6 as a whole. Moreover, it would provide a basis for discussion among scholars and lead to further research on the impact of remittances on economic growth. In addition, the paper will be useful to policymakers, as it will provide information for the design and implementation of remittance-related policies and their direct and indirect impact on economic growth.

We estimate the impact of remittances on the economic growth of SEE6 using balanced panel data and a fixed effect model. Unlike previous studies that employ annual data, we use actual quarterly data over a relatively long period (2008q1-2020q2), covering both periods of economic boom and crisis, which makes our results much more reliable than the previous empirical studies. Our empirical results regarding the influence of remittances on economic growth revealed that remittance inflows to SEE6 in the analyzed period stimulated the economic growth of these countries.

The rest of the paper is structured as follows. The next section presents a brief review of the literature. Section 3 contains some stylized facts about remittances and FDI flows to SEE6. Section 4 describes the data sources and methodology used in the analysis. The results are presented in Section 5 and the conclusions in Section 6.

2. Literature review

Although there is still an ongoing discussion on factors affecting economic growth, institutions, trade openness, and remittances have been identified as the main determinants of economic growth. Remittances can affect economic growth through three main channels**:** first, by directly investing in capital accumulation; second, by labor inputs through labor force contributions; and third, by affecting total factor productivity growth (Barajas et al. 2009, Rahman 2014, p. 141). However, there is no theoretical consensus among scholars on the effect of remittances on economic growth. Concerning the impact of remittances on economic growth, we can distinguish three theories. The first theory is the developmental optimistic school, the second one is the developmental pessimistic school, and the third one is the remittances development pluralists' theory (Jushi et al. 2021). The first theory has an optimistic view on the impact of remittance on economic growth, i.e., it regards remittances as one of the key factors in reducing the poverty of migrant households in the home country, and also assumes that at the macroeconomic level remittances are used to finance imports and external imbalances. According to the pessimistic view, international migration increases the dependency level of remittance recipient country on remittance inflows, and also negatively affects economic development, since only a few households receive remittances, leading to inequalities among the population. The third theory highlights that there is no strict optimistic or pessimistic view on the impact of remittances on economic growth. Since there is no consensus among economists on the impact of remittances on economic growth, this controversy can be solved by examining the issue empirically.

Unfortunately, the empirical literature on the impact of remittances on the economic growth of the receiving country is also inconclusive (World Bank 2019). Some papers provide empirical evidence that remittances have a positive effect on economic growth, others that remittances negatively influence the economic growth. Several empirical studies have not found any significant relationship between remittances and economic growth.

Bangake et al. (2019) provided empirical evidence that remittances have a positive and an significant impact on economic growth in developing countries, while aid and foreign direct investments have insignificant impact. Matuzeviciute and Butkus (2016) concluded that in general remittances have a positive impact on long-term economic growth, but the impact differs based on the country's economic development level and the abundance of remittances in the economy. Mim and Ali (2012) found a positive impact of remittances on consumption, investment, and economic growth, while Cooray (2012) found that remittances fostered economic growth through education and financial sector development. According to Rao and Hassan (2011), the increase in private transfers has a direct, positive, and also an indirect, positive effect on economic activity. Nsiah and Fayissa (2013) calculated that a 10 percent increase in remittances would result in a 0.4 percent increase in the growth rate of GDP per capita in the panel of 64 different countries in Africa, Asia, and Latin America-Caribbean in the 1987–2007 period. Giuliano and Ruiz-Arranz (2009) confirmed the existence of a positive correlation between remittances and economic growth, but only for economies with underdeveloped financial systems.

Kumar (2013) investigated the short and long-term effects of remittances, aid, and financial deepening on growth in Guyana from 1982 to 2010 and found that remittances have had a positive and significant effect both in the short and the long run. More recently, Batu (2017) analyzed 81 countries in the 1970–2012 period and concluded that temporary inflows of workers' remittances positively affect GDP per capita, while a permanent increase of remittances does not. Lartey (2017) found that a 1 percent increase in remittances, increases per capita growth by about 0.79 percent under a fixed exchange rate regime, while this effect increases by about 0.13 percent for a 1-point increase in the exchange rate flexibility index. Simionescu and Dumitrescu (2017) provided empirical evidence that migrants' remittances are positively related to economic growth and private consumption expenditure. Olayungbo and Quadri (2019) found that both remittances and financial development aid had positive effects on economic growth in the short and long run.

Below we will focus on the empirical studies that analyze the impact of remittances on the economic growth of Central and Eastern European (CEE) countries. To test the influence of remittances as an important source of capital on the economic growth of the receiving countries, Goschin (2014) analyzed ten CEE countries in the 1995-2011 period. The main result of her study is that remittances have a positive and significant impact on both absolute and relative GDP growth. Using panel data for six countries (Albania, Bulgaria, Macedonia, Moldova, Romania, and Bosnia and Herzegovina) for the 1999-2013 period, Meyer and Shera (2017) found that there is an important positive relationship between remittances and economic growth. Raggl (2017) concluded that remittances were an important source of income for households in ten CEE countries (Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Albania, Bosnia and Herzegovina, Macedonia, and Serbia).

On the other hand, Chami, Fullenkamp, and Jahjah (2005) and Karagöz (2009), found a negative and significant relationship between remittances and economic growth. According to Amuedo-Dorantes (2014), remittances could increase the consumption of non-tradable goods, raise their prices, appreciate the real exchange rate, and decrease exports, thus damaging the receiving country's competitiveness in world markets. Contrary to them, Jongwanich (2007) provided empirical evidence that remittances have only a marginal effect on growth. In the same vein, Barajas et al. (2009) found that remittances have no impact on long-term economic growth, while Clemens and McKenzie (2018) concluded that it is very difficult to detect the impact of remittances on economic growth. More recently, Chirila and Chirila (2017) and Cismaş et al. (2020), provided empirical evidence that remittances do not stimulate economic growth in Romania.

The two main conclusions from the aforementioned literature review are that there is no study on the effect of remittances on the economic growth of SEE countries as a group of countries and no consensus on the impact of remittance flows on the economic growth of the receiving countries at an aggregate level. The difference in the results could be attributed to the different empirical methodologies used, the divergence between countries, periods, and model specifications. The main purpose of our paper is to provide new empirical evidence on the role of remittances in the economic growth of SEE6 as a group of countries. To achieve this objective, we will formulate and test the following hypothesis:

H1. Remittance inflows have a positive impact on the economic growth of South-East European countries.

3. Remittance versus FDI flows to SEE countries: Stylized facts

SEE countries have a substantial number of migrant workers abroad, mostly in EU countries. However, SEE countries lack official, reliable, detailed, and home-based migration statistics, particularly in terms of the skill composition of migrants (Leitner 2021). By applying the newly developed 'cohort approach' to six countries (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia) for the 2010-2019 period, Leitner (2021) found that all six countries experienced a negative value of net emigration, but there are differences across countries in terms of magnitude and age patterns. The results of her study highlighted that the average net migration rates were highest in Bosnia and Herzegovina (-12%), Kosovo (-7%), and Albania (-4.5%), and lowest in Montenegro, North Macedonia, and Serbia with around -1%. As a consequence, remittance flows to these countries have been substantial, exceeding the FDI flows and official development assistance (ODA), reflecting the high dependent rate of SEE economies on remittance inflows.

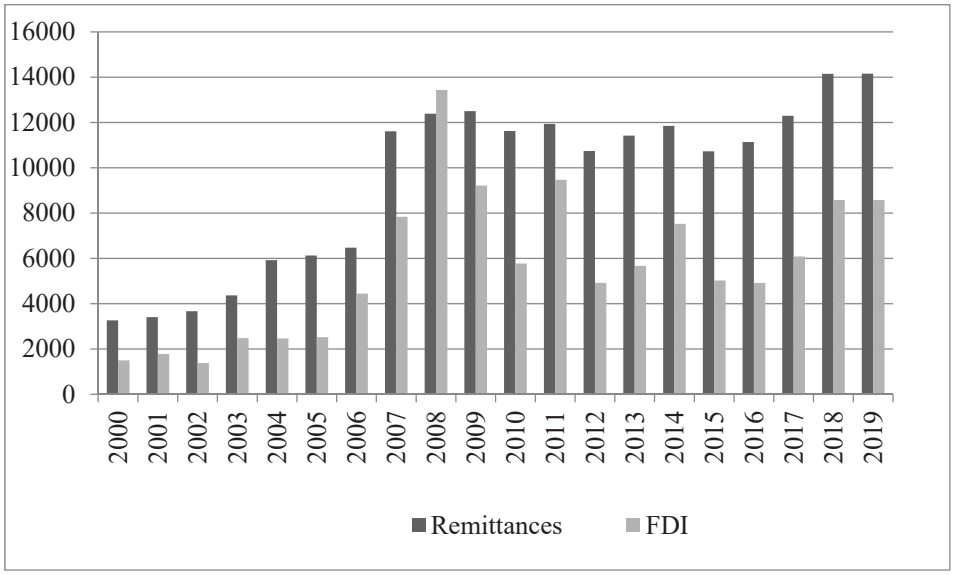
In the first half of the 2000s (2000-2008), both remittances and FDI flows to SEE6 remained stable, with an upward trend led by remittances, which was interrupted in 2008 when these flows declined due to the global financial crisis (Figure 1). After the outbreak of the crisis, the average annual decline of remittances received in SEE6 has been 1.8%, with differences across countries. Hence, while remittances to SEE countries have remained relatively stable, contrary to expectations, they turned out to be procyclical (Petreski et al. 2017).

The outbreak of the crisis in 2008 coincided with the end of a long period of FDI expansion in SEE6, as a result of the opening up of these countries and their subsequent accession to the EU. Starting from 2015, remittances and FDI inflows to SEE6 not only have recovered but started to increase, reaching their maximum level in 2019, which is higher than the pre-crisis years.

Observed in absolute numbers, Serbia and Croatia have the largest portion of remittances and FDI inflows among SEE6, while Montenegro and Macedonia receive fewer remittances and FDI flows (Figure 2 and Figure 3). Unlike most SEE6 that experienced a modest decline in remittances, and a sharp drop in FDI flows, remittances to Montenegro and Serbia in 2009 slightly increased compared to 2008, while FDI flows to Montenegro doubled. The country had a record inflow of FDI in 2009 as a result of the privatization of state-owned enterprises by foreign investors.

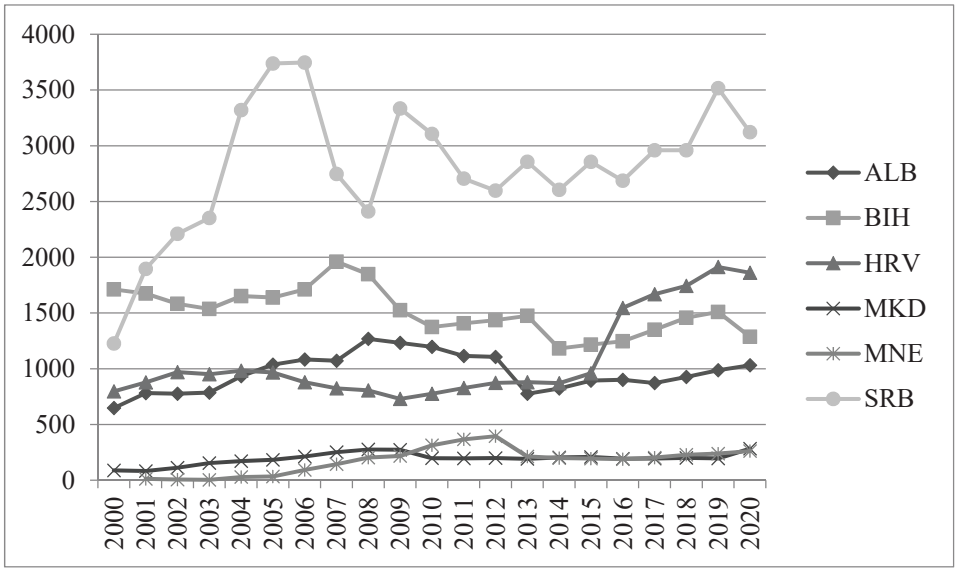
Share of remittances and FDI in a country's GDP are more relevant indicators for economic analysis than absolute numbers. Consistently with the pattern for all developing countries, the common characteristic of the SEE countries is the high dependency rate of their economies on remittance and FDI inflows. Dependency rates on international remittances are measured by the share of remittance inflows in the respective country's GDP. As we can see from Figure 4, the most reliant country on personal remittances

Figure 1. Remittances versus FDI flows to SEE6, 2000-2019 (in million EUR)



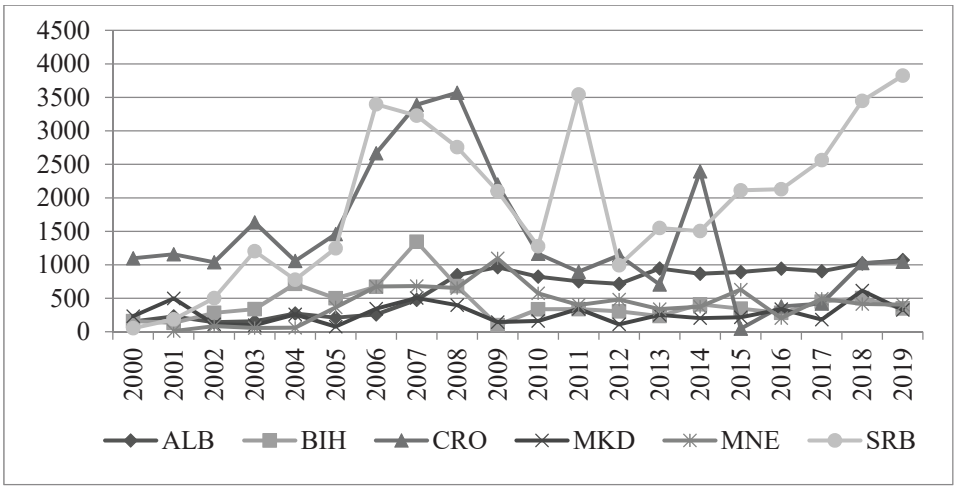
Source: Eurostat (2021), Eurostat database https://ec.europa.eu/eurostat/data/database

Figure 2. Remittances to SEE6, 2000-2020 (in million EUR)



Source: Eurostat (2021), Eurostat database https://ec.europa.eu/eurostat/data/database

Figure 3. FDI to SEE6, 2000-2019 (in million EUR)

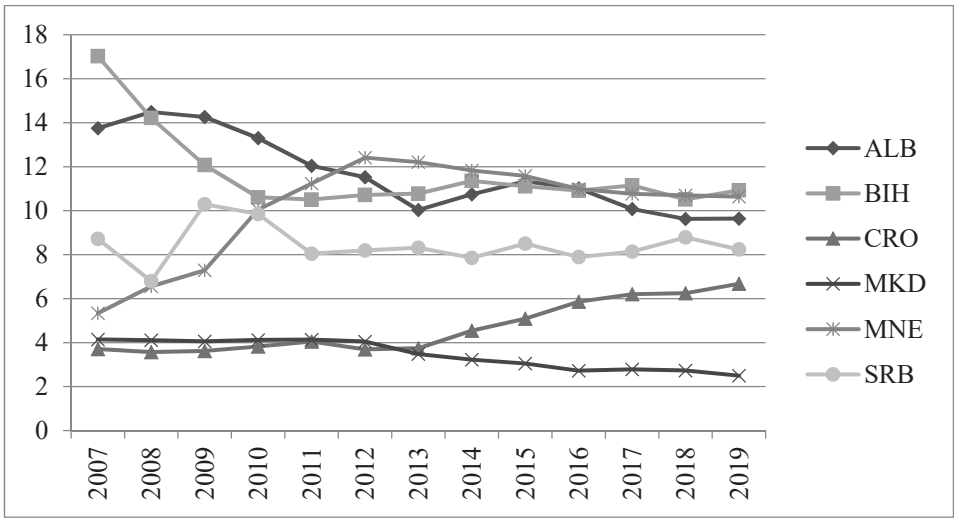


Source: Eurostat (2021), Eurostat database https://ec.europa.eu/eurostat/data/database

among SEE6 are Albania and Bosnia and Herzegovina (both 11.68% of GDP), Montenegro (10.12% of GDP), and Serbia (8.43% of GDP). Less dependent on this external source of income are Croatia (4.68% of GDP), and North Macedonia (3.47% of GDP).

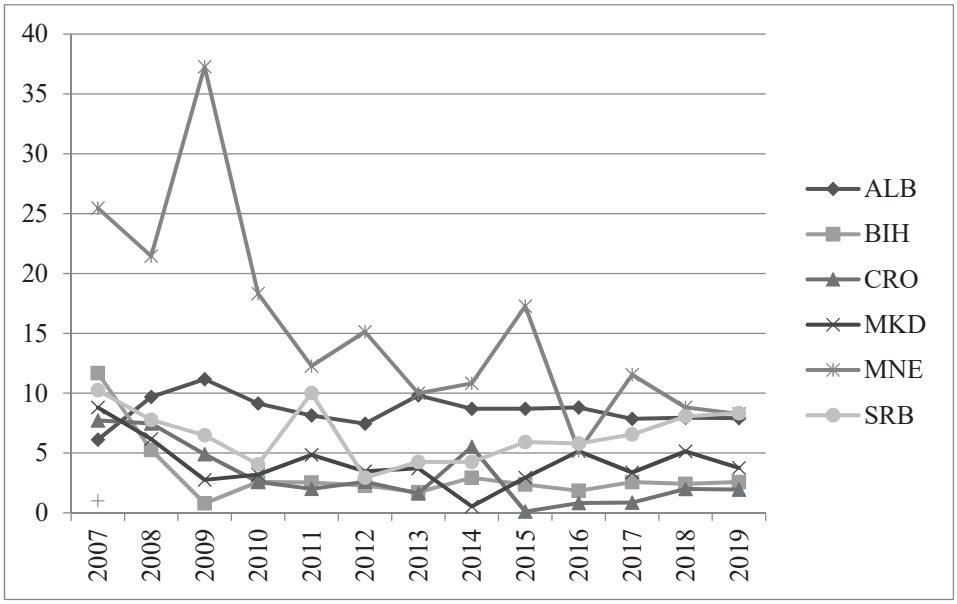
Despite attracting significantly fewer greenfield FDI projects than their counterparts in Central and Western Europe, the FDI inflows to SEE6 remained stable, due to their favorable geographical location, skilled labor force, and lower wage costs than in Central Europe (Figure 5). In the 2007-2019 period, Montenegro managed to attract most foreign investors and had the leading position among the sample countries with FDI accounting for 15.52% of GDP. Albania and Serbia also had a significant portion of FDI in GDP (8.57% and 6.51% of GDP respectively). On the other hand, the share of FDI in GDP was less than 5% in Bosnia and Herzegovina, Croatia, and North Macedonia.

Figure 4. Remittances as % of GDP in SEE6, 2007-2019



Source: Eurostat (2021), Eurostat database https://ec.europa.eu/eurostat/data/database

Figure 5. FDI as % of GDP in SEE6, 2007-2019



Source: Eurostat (2021), Eurostat database https://ec.europa.eu/eurostat/data/database

To sum up, remittances and FDI are significant sources of external financing for SEE countries. Unlike FDI, whose volume changes over the years depending on the country's risk and investment potential, remittances tend to be resilient during crises, and as such, they are a very stable source of foreign exchange inflows for SEE6. However, this may not be true of the latest economic crisis caused by the outbreak of the coronavirus (COVID-19) pandemic, since a significant portion of remittances comes from migrant workers working in EU countries that have been severely affected by the pandemic. Current FDI projects in SEE6 are likely to be slowed down, while future FDI flows to these countries will be delayed as most of the FDI flows to SEE6 originate in EU countries.

4. Data and methodology

Our sample consists of six high remittance recipient countries: Albania, Bosnia and Herzegovina, Croatia, Montenegro, the Republic of North Macedonia, and Serbia (SEE6). Apart from the significant share of remittances in GDP, the other reason why we focus on SEE6 is to ensure a high degree of comparability and relevance of our results. Namely, all SEE6 are middle-income countries, while their economies are small and open. They are former socialist countries and have all undergone a huge economic transition, characterized by trade liberalization and capital flows, which have opened up domestic markets to foreign competition.

To estimate the impact of remittance inflows on the domestic GDP of the above SEE6, we employ actual quarterly data on the following indicators: real GDP, real personal remittances (net inflows), real foreign direct investment (net inflows), inflation rate, trade openness, and gross capital formation as a percent of GDP. Data for all variables are balanced and cover a long period (2008q1–2020q2), which includes episodes of macroeconomic growth as well as shocks and sudden stops. Data were obtained from databases of the central banks and statistical offices of the respective countries and are expressed in Euro. While the time-series data on GDP, remittances, and FDI received by the respective countries were in nominal Euro terms, these series were converted into real terms by using the quarterly Gross Domestic Product Deflator for Euro (2015=100), obtained from the Eurostat database.

To properly test the hypothesis that remittances have a positive effect on the economic growth of SEE6 countries, we follow previous empirical works on economic growth determinants and control for endogeneity, by addressing the problem of an omitted variable using a set of variables that control for other factors associated with economic growth, for assessing the strength of an independent link between remittances (REM) and economic growth (GDPGRRATE). Economic growth is measured as a percentage rate of increase in the real gross domestic product (GDP). Real GDP was selected as a relevant indicator of output in the context of national income accounting conventions that define GNP as GDP plus net factor income from abroad (NFI). As NFI includes net remittance receipts, the GDP series omit remittances received by countries in the sample.

According to the Sixth Edition of the IMF's Balance of Payments Manual (International Monetary Fund 2013), personal remittances consist of two items of the balance of payment: personal transfers, referring to all current transfers (in cash or in-kind) between resident and non-resident individuals, and compensation of employees, referring to the income of border, seasonal, and other short-term workers (shorter than a year) who are employed in an economy where they are not resident and of residents employed by non-resident entities. Foreign direct investment (inflows) refers to direct investment equity flows in the reporting economy. It is the sum of equity capital, reinvestment of earnings, and other capital. We use the inflation rate (INFL) as an indicator of macroeconomic stability and the trade openness (TROPEN) as a sum of exports and imports of goods and services relative to GDP, to capture the degree of openness of an economy. The investment ratio (GCF) is measured as the ratio of gross capital formation to GDP.

To test our hypothesis that remittances have a positive impact on the economic growth of SEE6 as remittance recipient countries, we estimate the following econometric model:

$$GDPGRRATE_{it} = \beta_0 + \beta_1 REM_{it} + \beta_2 FDI_{it} + \beta_3 GCF_{it} + \beta_4 INFL_{it} + \beta_5 TROPEN_{it} + \lambda_i + \mu_t + \varepsilon_{it} \quad (1)$$

where the dependent variable *GDPGRRATE* is the rate of change of the real GDP, β_0 represents the constant term (or intercept), β_1 to β_5 are the coefficients of the explanatory variable, *REM* stands for remittances received as a percentage of GDP, *FDI* is a foreign direct investment as a share of GDP, *GCF* is the gross capital formation relative to GDP, *INFL* is the inflation rate, *TROPEN* is trade openness of the country, λ_i is an unobserved country-specific effect, μ_t is time-specific effect and ε_{it} is the error term, i represents each SEE6 country and t represents the analyzed periods (2008q1–2020q2).

Given that our main interest is remittances and their impact on the economic growth of SEE6, which is among the highest remittance recipient countries globally (World Bank 2021), we put remittances (*REM*) as the first independent variable in the model. *REM* represents personal remittances received (in Euro) in real terms measured as a percent of GDP. As we have seen in Section 2, both the theoretical and empirical literature give miscellaneous results on the importance of remittances for economic growth (no impact, marginal effect, positive or negative impact). We follow the theory of the developmental optimistic school and expect that remittance inflows to SEE6 will spur the economic growth of these countries as a whole.

Regarding the effect of the FDI variable on economic growth, there is also no consensus among economists. Savicevic and Kostic (2020) and Dinh et al. (2019), found that FDI played a positive role in economic growth. Contrary to them, Jyun-Yi and Chih-Chiang (2008) and Lyroudi, Papanastasiou, and Vamvakidis (2004) concluded that FDI flows do not promote economic growth in the short-run, while Estrin and Uvalic (2016) empirically indicated that FDI inflows had almost no significant impact on manufacturing value-added, manufacturing employment, and manufacturing exports of the Western Balkan countries in the 2002-2012 period. Schoors and van der Tol (2002) provided empirical evidence that FDI flows have a negative effect on economic growth.

Gross fixed capital formation (GFC) or domestic investment has been recognized as an essential component to facilitate economic growth and employment (Overseas Development Institute, 2016). Regarding gross capital formation (GCF), which is measured as a share of GDP, we expect a positive effect of this variable on GDP growth since the increase of fixed capital investments increases the domestic GDP (Solow 1958, Tobin 1965, DeLong and Summers 1992,Wei, Yao, and Liu 2009).

Trade openness (TROPEN) is an indicator of the openness of a country's economy to international trade and is measured as the sum of exports and imports of the country under consideration as a share of that country's GDP (in %). It can positively or negatively impact economic growth. Both theory (the neoclassical and the endogenous growth theory) and empirical studies (Chang, Kaltani, and Loayza 2005, Huchet, Le Mouël, and Vijil 2018, Bermejo-Carbonell and Werner 2018), assert that TROPEN positively affects GDP growth. However, another group of researchers asserts that openness has a negative effect on economic growth (Keho 2017). We expect the openness of the economy to international trade to cause a positive effect on economic growth.

The final independent variable in our model is the inflation rate, which is used as a proxy for macroeconomic stability. The inflation rate is measured by the consumer price index (CPI), defined as the change in the prices of a basket of goods and services that are typically purchased by specific groups of households. To measure inflation, we estimate how much CPI has increased in terms of percentage change over the same period the previous year. Mundell (1963) and Tobin (1965) claim that high inflation reduces investment and capital accumulation, thus leading to low economic growth. Empirical studies that investigate the nature of the relationship between inflation and growth indicated: a positive, negative, and no causality between inflation and economic growth. Fisher (1993), Ramey and Ramey (1995), and Barro (1995) found a negative relationship between macroeconomic instability and economic growth. Ismihan et al. (2009) investigated the relationship between potential growth and macroeconomic instability in the case of Turkey in the 1960-2006 period and concluded that during the episodes of macroeconomic instability, there was a significant decrease in real output. Ali and Rehman (2015) provided empirical evidence that macroeconomic instability has a deep-rooted and detrimental impact on the gross domestic product of Pakistan. On the other hand, Sidrauski (1967) found no relationship between inflation and economic growth, while Paul et al. (1997) showed no causality relationship between inflation and economic growth in 40% of the analyzed countries, bidirectional causality in about 20% of countries, and a unidirectional relationship in the rest of the countries.

Contrary to developing countries, Ghosh and Phillips (1998) studying the relationship between inflation and economic growth for 145 countries, found a positive relationship between inflation and economic growth when inflation is low, yet this relation turned negative for high inflation.

We will use panel data estimation to account for potential cross-section heterogeneity. The starting point of our analysis is a regression model for pooled data:

$$Y_{it} = \beta_0 + \sum_{j=1}^{k} \beta_j X_{itj} + \varepsilon_{it} \quad (2)$$

where i = 1,...,6 (SEE6) and t = 2008q1,...,2020q2, Y_{it} represents the dependent variable (GDP growth), X_{itj} are the independent variables, β_j is the parameter that summarizes the j factor contribution to the dependent variable, and ε_{it} is the error term with zero mean and constant variance.

Another advantage of panel data analysis is that it allows a deeper investigation of determinants of economic growth based on two additional models: fixed-effects and random-effects model. The fixed effects model includes sources of change within countries, while the random-effects model assumes random variations across countries and is more appropriate if differences among countries affect the dependent variable. Since we are dealing with a large panel, we assume that the fixed effects model will be more appropriate.

To adjust for unobserved unit-specific and time-specific confounders at the same time, we specify a fixed effects (FE) model:

$$Y_{it} = \beta_{0i} + \gamma_t + \Sigma_j \beta_j X_{jit} + e_{it}$$

$$\text{for } i = 1,...,6 \text{ and } t = 2008q1,...,2020q2 \quad (3)$$

where Y_t is capturing time fixed effects, such as economic growth, and β_{0i} is capturing cross-sectional fixed effects (country-specific characteristics that are time-variant in the 2008q1-2020q2 period).

Unlike the fixed effects model which assumes that the individual-specific effect is correlated with the independent variables, the random effects (RE) assumption is that the individual unobserved heterogeneity is uncorrelated with the independent variables, that the constant is a random variable, and that the individual intercepts β_{0i} are random deviations from the average constant β_0:

$$\beta_{0i} = \beta_0 + \varepsilon_i \quad (4)$$

therefore, the country-specific errors ε_i should be added to the usual errors ε_{it}:

$$u_{it} = \varepsilon_i + e_{it} \quad (5)$$

These composite errors u_{it} will be included in the general specification of the random effects model:

$$Y_{it} = \beta_{0i} + \Sigma_j \beta_j X_{jit} + u_{it}$$

$$\text{for } i = 1,...,6 \text{ and } t = 2008q1,...,2020q2. \quad (6)$$

Finally, to decide whether to use a fixed or random effects panel model, we will use the Hausman test. We also implement all the necessary tests of residuals for checking the fulfilment of the assumptions, i.e., we check the residuals for autocorrelation, heteroskedasticity as well as normality. We will use Eviews 9 and Stata 12 statistical software packages for our econometric analysis.

5. Empirical results

We start our analysis by testing the necessary assumptions for the OLS method. Namely, we have first tested the existence of the unit root test to see if the series are stationary. To check the robustness of the results, we have implemented several tests.

Based on the results from Table 1, we can conclude that all the series are stationary. Since we are dealing with panel data and taking into account the heteroskedasticity among the countries, we have implemented a fixed-effect model for the estimation of our regression, while the results are presented in Table 2.

Table 1. Unit root tests of the series

	FDI		GDP growth		GCF		Inflation		REM		TROPEN	
Method	Statistic	P-value	Statistic	P- value	Statistic	P- value	Statistic	P- value	Statistic	P-value	Statistic	P-value
Levin, Lin, and Chu t*	-8.3102	0.0000	1.7229	0.9575	-9.7266	0.0000	-6.5535	0.0000	-2.4698	0.0068	-2.3752	0.0088
Im, Pesaran and Shin W-stat	-9.2535	0.0000	-5.2466	0.0000	-9.9997	0.0000	-6.5563	0.0000	-2.1894	0.0143	-6.418	0.0000
ADF - Fisher Chi-square	102.357	0.0000	55.2063	0.0000	109.736	0.0000	67.0797	0.0000	24.2722	0.0187	78.8149	0.0000
PP - Fisher Chi-square	147.356	0.0000	53.892	0.0000	121.074	0.0000	33.9742	0.0000	38.4981	0.0001	70.7464	0.0000

Source: Author's own calculations

Next, we have estimated the regression using random effects, while the results of this regression are given in Table 3.

Based on these results, we have implemented the Hausman test to see which of these two models is more appropriate for our data. The results of the Hausman test are presented in Table 4.

Table 2. Fixed effect estimates

panel variable: country code (balanced)
time variable: year, 2008q1 to 2020q2
delta: 1 quarter

Regression results (fixed effects)

GDPgrrate	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
REM	0.026	0.029	0.91	0.363	-0.030	0.082	
FDI	-0.018	0.006	-3.35	0.001	-0.029	-0.008	***
GCF	0.082	0.032	2.55	0.011	0.019	0.145	**
TROPEN	0.115	0.018	6.53	0.000	0.080	0.150	***
INFL	0.267	0.084	3.20	0.002	0.103	0.432	***
Constant	-11.506	2.089	-5.51	0	-15.617	-7.394	***

Mean dependent var	1.723	SD dependent var	4.039
R-squared	0.206	Number of obs	300
F-test	14.993	Prob > F	0.000
Akaike crit. (AIC)	1619.26	Bayesian crit. (BIC)	1641.484

*** p<.01, ** p<.05, * p<.1

Source: Author's own calculations

Table 3. Random effect estimates

Regression results (random effects)

GDPgrrate	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
REM	0.037	0.016	2.32	0.021	0.006	0.068	**
FDI	-0.018	0.005	-3.71	0	-0.028	-0.009	***
GCF	0.076	0.029	2.59	0.009	0.019	0.133	***
TROPEN	0.068	0.012	5.47	0	0.044	0.092	***
INFL	0.25	0.076	3.31	0.001	0.102	0.398	***
Constant	-7.079	1.324	-5.35	0	-9.674	-4.483	***

Mean dependent var	1.723	SD dependent var	4.039
Overall r-squared	0.161	Number of obs	300
Chi-square	56.554	Prob > chi2	0.000
R-squared within	0.190	R-squared between	0.174

*** p<.01, ** p<.05, * p<.1

Source: Author's own calculations

Table 4. Hausman specification test

	Coef.
Chi-square test value	27.235
P-value	0

Source: Author's own calculations

Since the p-value is zero, we can conclude that the fixed effect model is more appropriate. This complies with what we have expected since we are dealing with a large panel (t=50, N=6). We are proceeding further to test if the fixed effect model fulfills all the assumptions. We start first by testing the presence of multicollinearity using variance inflation factors (VIF). The values of VIFs are given in Table 5:

Table 5. Variance Inflation Factors

Variance Inflation Factors			
Sample: 1 300			
Included observations: 300			
Variable	Coefficient Variance	Uncentered VIF	Centred VIF
REM	0.000744	2.675427	1.091384
FDI	0.0000332	1.336406	1.028441
GCF	0.000734	7.355751	1.009911
INFL	0.002806	1.332613	1.100485
TROPEN	0.000228	8.37335	1.214441

Source: Author's own calculations

Based on the values of VIFs, we can conclude that there is no multicollinearity in the model since all the values are less than 10.

Next, we test the presence of autocorrelation using the Wooldridge test (Table 6), and based on the obtained result we find out that there is no autocorrelation of the first order in the model.

Table 6. Test of autocorrelation

Wooldridge test for autocorrelation in panel data	
H0: no first-order autocorrelation	
F (1,5)	3.9830
Prob > F	0.1025

Source: Author's own calculations

We test the model for the presence of heteroskedasticity and find out that the statistic is:

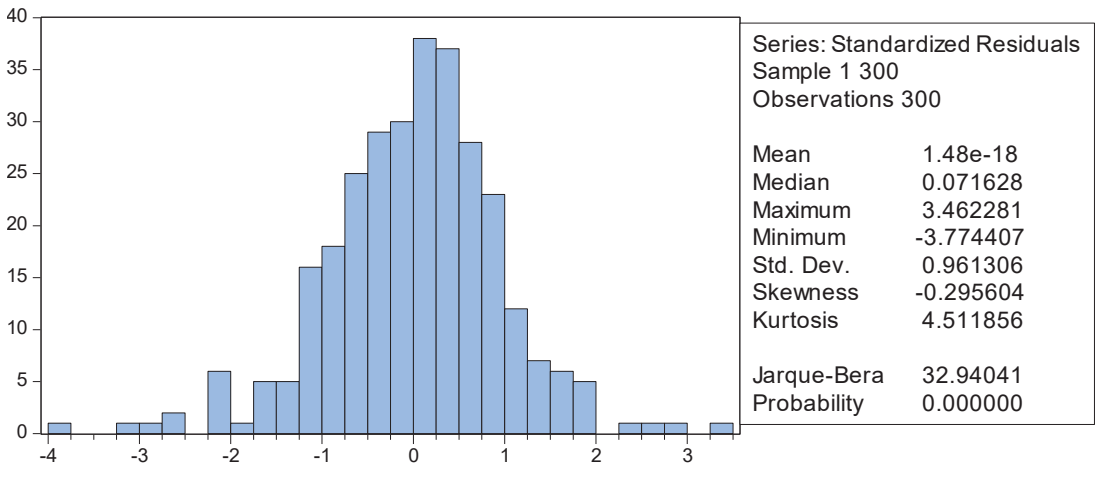
Likelihood-ratio test LR chi2(104) = 47.88

(Assumption: homo nested in hetero) Prob>chi2 = 0.0000

As we can see from the results of the test, we are still facing the problem of heteroskedasticity.

The test of normality of residuals shows that this assumption is not fulfilled, but that is expected since it is very rare for panel data to express the normal distribution of the residuals.

Figure 6. Test of normality



Source: Author's own calculations

We also check for the presence of cross-section dependence and the results are presented in Table 7.

Table 7. Cross-Section Dependence Test

Residual Cross-Section Dependence Test			
Null hypothesis: No cross-section dependence (correlation) in weighted residuals			
Equation: EQ01FIXED			
Periods included: 50			
Cross-sections included: 6			
Total panel observations: 300			
Cross-section effects were removed during estimation			
Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	7.444732	15	0.9441
Pesaran scaled LM	-2.474842		0.0133
Bias-corrected scaled LM	-2.536067		0.0112
Pesaran CD	1.666095		0.0957

Source: Author's own calculations

To investigate the causal link between remittances and FDI, remittances and GDP growth, and FDI and GDP growth, we employ the Granger causality tests. The empirical results presented in Table 8 suggest that, in the case of SEE6, there is a simultaneous causality between remittances and FDI, i.e., remittances Granger cause FDI, and vice versa. There is independence between remittances and GDP growth rate, and a bilateral causal relationship between FDI and GDP growth rate.

Since we are dealing with cross-section dependence and we are facing the problem of heteroskedasticity, we are going to use the Feasible Generalised Least Squares Method (FGLS) to estimate our regression. The results of FGLS regression are presented in Table 9.

The results of FGLS estimation show that the coefficient of REM is statistically significant at the level of significance of 5%, while all other coefficients (FDI, GCF, TROPEN, and INFL) are statistically significant at the level of significance of 1%. As expected, the results confirm that the remittances variable (REM) is positively associated with economic growth. Namely, an increase in REM of 1 unit results in an increase in GDPGRRATE of 0.0478%, ceteris paribus.

The obtained results show that the FDI variable is negatively associated to economic growth, which is in line with some previous empirical research (Schoors and van der Tol 2002). An increase in FDI of 1 unit results in a decrease in GDPGRRATE of 0.0205%, ceteris paribus.

Following the Solow growth model, the investment variable (GFC) has a positive sign, reflecting the increasing nexus between capital accumulation and growth (Barro and Sala-i-Martin 2004). An increase in GCF of 1 unit results in an increase of GDPGRRATE of 0.0788%, ceteris paribus.

The variable trade openness (TROPEN) positively affects growth, which is in line with both the neoclassical and endogenous growth theories. An increase in TROPEN of 1 unit results in an increase of GDPGRRATE of 0.0826%, ceteris paribus.

As expected, since all SEE6 had low inflation rates in the analyzed period, the variable inflation (INFL)

Table 8. Granger Causality Tests

Pairwise Granger Causality Tests			
Date: 02/22/22 Time: 13:04			
Sample: 1 300			
Lags: 4			
Null Hypothesis:	Obs	F-Statistic	Prob.
REM does not Granger Cause FDI	276	4.39909	0.0018
FDI does not Granger Cause REM		68.8655	0.0000
GDPGRRATE does not Granger Cause FDI	276	3.57700	0.0073
FDI does not Granger Cause GDPGRRATE		7.03105	0.0000
REM does not Granger Cause GDPGRRATE	276	1.03545	0.3893
GDPGRRATE does not Granger Cause REM		1.69672	0.1510

Source: Author's own calculations

Table 9. Feasible Generalised Least Squares Estimates

FGLS_Feasible Generalised Least Squares (N<T)

Cross-sectional time-series FGLS regression						
Coefficients: generalized least squares						
Panels: heteroskedastic						
Correlation: no autocorrelation						
Estimated covariances = 6			Number of obs. = 300			
Estimated autocorrelations = 0			Number of groups = 6			
Estimated coefficients = 6			Time periods = 50			
			Wald chi2(5) = 73.09			
Log likelihood = -793.6455			Prob > chi2 = 0.0000			
GDPGRRATE	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
REM	0.04781	0.02097	2.28	0.023 **	0.00670	0.08893
FDI|	-0.02052	0.00654	-3.14	0.002***	-0.03333	-0.00771
GCF	0.07884	0.02869	2.75	0.006***	0.02261	0.13506
TROPEN	0.08261	0.01201	6.88	0.000 ***	0.05908	0.10614
INFL	0.22534	0.05502	4.10	0.000***	0.11750	0.33318
cons	-8.53518	1.24728	-6.84	0.000 ***	-10.9798	-6.09050
Akaike crit. (AIC)	1619.26		Bayesian crit. (BIC)			1641.48

*** p<0.01, ** p<0.05, * p<0.1

Source: Author's own calculations

positively affects economic growth and that is in line with Ghosh and Phillips (1998). Namely, an increase in INFL of 1% results in an increase in GDPGRRATE of 0.2253% ceteris paribus.

The above results provide empirical evidence that remittance inflows to SEE6 have a significant and positive impact on the economic growth of these countries in the analyzed period, which is in line with previous empirical research on the impact of remittances on the economic growth of CEE countries (Goshin 2014, Simionescu and Dumitrescu 2017, Meyer and Shera 2017, Raggl, 2017).

6. Conclusions

Today, more than ever, SEE countries are facing the challenge of accelerating economic growth to achieve faster economic convergence with EU countries. Remittances are one of the main factors of economic growth, while SEE countries are characterized by a high emigration rate and a substantial inflow of remittances, which serve as the most important and largest external source of financing. In this context, assessing the impact of remittance inflows on economic growth could be useful for scholars as well as for policymakers in these countries.

We formulated the hypothesis of remittances spurring the economic growth of SEE6. To test this hypothesis, we constructed a growth model including remittances as the main variable of interest, alongside the traditional factors of economic growth, and tested the model using balanced quarterly panel data that cover SEE6 high remittance recipient countries over 2008q1-2020q2.

The main empirical result of this study is that remittances have a significant positive effect on the economic growth of the analyzed SEE6 for the period under consideration. This finding can be explained by the developmental optimistic theory according to which the increase in aggregate demand occurs as a result of the increase in consumption and investment of migrants' families in their home countries. Also, the results reveal that the role of foreign direct investment on economic growth was negative and statistically significant. Furthermore, we found a positive and statistically significant role of other factors of economic growth, such as investments in gross fixed capital and trade openness in stimulating economic growth.

The empirical results ascertained that remittances stimulate economic growth in SEE6, even in times of crisis. These findings have potential policy implications and recommendations. Policymakers in the analyzed SEE6 should design such economic policies that

will ensure that remittances from migrants and wider diaspora keep flowing, though lowering remittance costs, declaring money transfer agents as an essential finance service, improving formal channels of cross-border transactions, providing greater access to and use of digital remittance channels for migrants and families and establishing economic support measures that will benefit migrants and remittance service providers. Supporting the continued flow of remittances is also crucial for the resilience and recovery of SEE economies heavily affected by the health and economic crisis caused by the spread of COVID-19. On the other hand, our empirical findings that FDI has a negative and statistically significant impact on the economic growth of SEE6, and investment in gross fixed capital (domestic investment) positively and significantly fosters economic growth, imply creating and implementing adequate economic policies. The progress made in the EU accession process could improve attractiveness of the SEE6, but it is not sufficient. Instead of competing among themselves who is going to provide more incentives to foreign investors, the governments of SEE6 should design a more proactive industrial policy that would use the investments to diversify and upgrade the production and export base and create an investment promotion policy directed toward both foreign and domestic investors (Estrin and Uvalic 2016), for an increase of much-needed foreign and domestic investment in productive capacities in these countries.

The purpose of our paper was to provide empirical evidence on the impact of remittances on the economic growth of SEE6 high remittance recipient countries. An important direction for future research would be to expand research to other small and open economies in the world, rather than only in South-East Europe, and to compare the results by region. We could also improve the existing econometric model by introducing new variables that could lead to new insights. Also, to determine the magnitude of the influence of each independent variable on the predictor over a period, we could consider the idea of developing a dynamic econometric model.

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