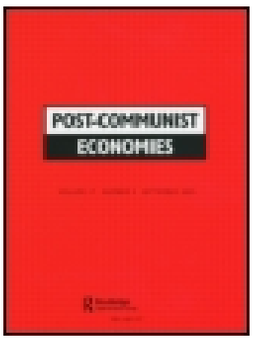

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Remittances, FDI and economic growth: the case of South-East European countries

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ABSTRACT

South-East European countries rely heavily on remittances and FDI as external sources of financing. Hence, an investigation of the behaviour of remittances and FDI during the business cycle and their impact on economic growth is of crucial importance. To achieve this objective, we first analyse the cyclical nature of remittances and FDI flows in Albania, Bosnia and Herzegovina, Croatia, Montenegro, the Republic of North Macedonia, and Serbia (SEE6) during their business cycles in the 2008q1-2021q2 period. Second, we investigate the causal link among these variables, and find out that although at the aggregate level remittances and FDI move synchronously and in the same direction as the business cycle, there are considerable variations across countries. Following Dumitrescu-Hurlin Panel Granger causality test, we find that for most SEE6 there is a bidirectional causal relationship between remittances and economic growth, i.e. economic growth is caused by remittances, and GDP growth also stimulates remittances.

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Remittances; foreign direct investment; economic growth; Dumitrescu-Hurlin Granger panel; South-East European countries

1. Introduction

The small and open economies of South-East Europe have been known for having persistent, long-term emigration, with significant emigration flows in both past and present times. It is likely this trend to continue, as an important share of the working-age population is considering emigrating in the future. The dissolution of Yugoslavia further intensified emigration, when 3.5 million individuals left the region (Jusufi & Ukaj, 2020). It should be noted that few parts of Europe are more marked by emigration than the SEE6 countries. But even though many people emigrated, SEE6 countries still lack official, reliable, detailed, and home-based migration data. According to OECD (2022) estimations, more than one-fifth of the population of the SEE6 countries lives abroad. By applying the '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 negative value of net emigration ranging from −1% (Montenegro, North Macedonia and Serbia) to −12% in Bosnia and Herzegovina.

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Consequently, remittance flows to these countries have been substantial (remittances received by the SEE6 countries in the period 2008–2022 averaged more than 8% of GDP), exceeding the FDI flows and official development assistance (ODA). These countries rely heavily on inflows of remittances and foreign direct investment (FDI) as external sources of financing domestic demand and investment. While remittances were and remain an important source of trade deficit financing in the SEE6 countries, FDI flows are an important driver for the economic development of these countries.

Although there are many studies on the behaviour of remittances during the business cycle, the empirical literature that analyzes the cyclicality and the causality among remittances, FDI inflows and economic growth of SEE countries is rather limited, while the results are ambiguous (Cismaş et al., 2020; Constantinescu & Schiff, 2014; Isakovic & Ilgun, 2015; De et al., 2016; Stojanov et al., 2019). The objective of our article is to fill the gap in the existing literature by analysing the behaviour of remittance and FDI flows in the SEE6 countries (Albania, Bosnia and Herzegovina, Croatia, Montenegro, the Republic of North Macedonia and Serbia) in relation to the different phases of business cycles of their domestic GDP, both at the regional and at an individual level and by investigating the causal link among remittances per capita, FDI per capita and GDP per capita in the period 2008q1-2021q2. Another contribution of our article is related to the use of balanced, actual quarterly data, rather than annual data for the SEE6 countries over a relatively long period (2008q1-2021q2), covering periods of economic boom and crises, including the global financial crisis of 2008–2009 and the COVID-19 crisis of 2020–2021, which makes the obtained results more reliable than previous econometric findings are. Our findings suggest that in the SEE6 group, remittances and FDI move synchronously and in the same direction as the business cycle of SEE6 countries. Applying the Dumitrescu-Hurlin panel Granger causality test, we find that for most countries in the sample (except Albania and Bosnia and Herzegovina) there is a bidirectional causality between remittances and economic growth. These results are useful for decision makers in the SEE6 countries in designing and implementing economic and social policies that will use remittances and FDI to drive economic growth.

The rest of the article is structured as follows: The next section presents a brief review of literature. Section 3 describes data sources and methodology used in the analysis. The results are presented in Section 4 and conclusions in Section 5.

2. Literature review

In this section, we will first analyse the economic theory and empirical studies on the cyclical properties of remittances and FDI in relation to the GDP of the recipient country at different stages of the business cycle, and then we will review the literature on the impact of remittances and FDI flows upon the economic growth of the receiving economy and the causal relationship among those variables.

The behaviour of remittances over the business cycle depends on the motives to remit. Lucas and Stark (1985), who laid the foundations for the theoretical debate on the determinants of remittances, identified three motives to remit: altruism, self-interest, and contractual arrangements. When remitting money is driven by altruism, the migrant wants to help his to his household members or relatives in the home country without expecting a personal gain or alternative material interest for himself. The wellbeing of his

family and friends in the home country represents a part of his own utility function (Mohapatra et al., 2009; Niimi et al., 2010; Rapoport et al., 2006; Yang & Choi, 2007). In case of altruist motivation, the worse the economic conditions in the receiving country, the higher the remittances sent, i.e. remittances are likely to be countercyclical with respect to the business cycle of the receiving economy.

The second motive is personal interest by which migrant workers remit money for business investments in the home country (portfolio approach). As remittances are profit-driven with portfolio considerations playing a crucial role, they are likely to be procyclical to macroeconomic variables and private capital inflows.

The third motive – contractual arrangement motive is implicit and usually takes the form of loan repayments, co-insurance, and exchange motives. Under this assumption, both the migrant and the receiving household gain from the remittances. However, the migrant remits more as the family's marginal utility decreases in income. From a macro-economic perspective, remittances are likely to be countercyclical with respect to the business cycle in the country receiving remittances.

The empirical literature studying the response of remittances in the aftermath of disruptive events gives support to the altruist motive in remitting money in case of natural disasters in migrant's home country (Banerjee et al., 2018; Bettin & Zazzaro, 2018; Clarke & Wallsten, 2004; Jackman, 2013; Mohapatra et al., 2009; Yang, 2008; Yang & Choi, 2007), wars and other political conflicts (Black et al., 2003; Chowdhury & Chakraborty, 2021; Nabar-Bhaduri, 2013) and economic crises (Akpa et al., 2020; Kapur & McHale, 2005). On the other hand, Lueth and Ruiz-Arranz (2008) found that remittances do not increase in the aftermath of natural disasters and financial crises.

As for the empirical literature analysing the cyclical properties of remittances in relation to macroeconomic variables at different stages of the business cycle, the results are, however, inconclusive. Some studies (Buch & Kuckulenz, 2004; Chami et al., 2005; Correia & Martins, 2016; Makhlouf & Kasmaoui, 2020; Poghosyan, 2020; Ramcharran, 2020; Sayeh & Chami, 2020; Yang & Choi, 2007) found a negative relationship between remittances and real GDP in receiving countries, thus supporting the evidence that remittances are countercyclical. Other studies found empirical evidences in favour of procyclical behaviour of remittances with respect to income in the migrant's home country (Constantinescu & Schiff, 2014; Farzanegan & Hassan, 2020; Hildebrandt & Moder, 2015; Khodeir, 2015; Lartey, 2016; Lueth & Ruiz-Arranz, 2008; Giuliano and Ruiz-Arranz, 2009; Mendoza-Cota & Torres-Preciado, 2019; Neagu & Schiff, 2009; Sayan, 2006; Spatafora, 2005) suggesting that remittances could not play a crucial role in limiting recipient country's vulnerability to shocks. According to Frankel (2011) remittances respond positively to the host country's GDP and negatively to the cyclical position in the migrant's home country. Bettin et al. (2017) found that remittances are negatively correlated with the business cycle in the migrant's home country and positively correlated with economic conditions in the host country. In case of similar adverse shocks to both home and host country, remittances remain countercyclical with respect to the recipient country.

The procyclical behaviour of FDI flows was documented by several economists. Kaminsky et al. (2005) found that the cyclical component of net capital flows to emerging markets and most OECD economies is positively correlated with the cyclical component of GDP. Broner et al. (2013) analysed a wider sample of advanced economies and emerging markets and came to conclusion that gross capital inflows are procyclical i.e. they expand

during times of economic growth, and decline during crises. Araujo et al. (2017) examined the cyclical behaviour of private capital inflows to the low-income developing countries relative to their business cycles and have found that capital inflows those countries are procyclical, but less procyclical than flows to more advanced economies are. More recently, Luk and Zheng (2020) found that FDI is procyclical to business cycles in emerging market economies, but only in normal times.

The empirical studies analysing the stability of remittances relative to other capital flows (foreign direct investment and official development aid) at different stages of business cycle are rather limited. Buch and Kuckulenz (2004) provided evidence for the thesis that worker remittances provide a stable inflow of money to the receiving country, compared to other capital inflows. Remittances to developing countries are larger and more stable than FDI and other external financing, such as, private debt and portfolio equity (P. Ratha, 2016). D. Ratha (2019b, 2019a) also pointed out the stability of remittances relative to foreign direct investment (FDI), capital non-FDI flows and official development aid (ODA) in the stages of a business cycle. He found remittances to be more stable than ODA and FDI and much more so than the non-FDI capital inflows are. Subsequent empirical studies confirmed this finding. Analysing a set of 109 countries for the period 1980–2012, De et al. (2016) provided empirical evidence that remittances are mostly stable, less volatile than other foreign currency flows are and acyclical (they do not comove with business cycle fluctuations), of course, with some variations in cyclical behaviour across countries. Isakovic and Ilgun (2015) analysed the nature of comovement between remittance inflows to Bosnia and Herzegovina and its GDP and found a very strong positive cross correlation between remittance inflows and output. Regarding FDI inflows, they behave countercyclically to the cyclical components of GDP of this country. The co-movement was asynchronous, i.e. FDI led the Bosnian output cycle by one year, and as such, could be used as an instrument for mitigating the consequences of economic downturn or recession in that country. On the other hand, Stojanov et al. (2019) found that ODA flows have a negative impact on the economic growth of developing countries due to the high level of uncertainty, and that remittance flows, could also negatively affect the sustainable economic growth of these countries, but only in case their share of GDP is substantially high. Using contemporaneous and synchronous correlations, Cismaş et al. (2020) tested the hypothesis that remittances are more stable over the business cycle than FDI flows to Central Eastern European countries, with a special focus on Romania. They identified four countries where the co-movement of the cyclical component of GDP and remittances was procyclical (Czech Republic Estonia, Hungary, Estonia and Lithuania), two countries where it was countercyclical (Croatia and Latvia), while for five countries and for the whole sample the results indicated an acyclical comovement. They also found that FDI flows behaved procyclical to business cycles of the recipient country's GDP only in case of two countries (Bulgaria and Latvia), while the remittances co-movement was countercyclical or acyclical.

There are many studies analysing the causal relationship between remittances and economic growth, but their results are ambiguous. Several authors provided empirical evidence in support of the hypothesis that remittances spur the economic growth of remittance receiving countries Kajtazi and Fetai (2022); Abduvaliev and Bustillo (2020); Depken et al. (2021); Eggoh et al. (2019); Olayungbo and Quadri (2019); Rausser et al. (2018); Raggl (2017); Meyer and Shera (2017); Simionescu and Dumitrescu (2017); Batu

(2017); Lartey (2016), Matuzeviciute and Butkus (2016); Kumar (2013); Nsiah and Fayissa (2013); Mim and Ali (2012); Cooray and Mallick (2013); Giuliano and Ruiz-Arranz, 2009; Pradhan et al. (2008). Contrary to them, Amuedo-Dorantes (2014), Karagöz (2009), Chami et al. (2005) found that remittances exert a negative impact on economic growth of remittance recipient countries, while others provided empirical evidence that remittances have only a marginal effect (Bajra, 2021; Jongwanich, 2007) or no impact on the economic development of the remittance receiving countries (Barajas et al., 2009; Chirila & Chirila, 2017; Cismaş et al., 2020).

As for the effect of FDI on economic growth, the results of the previous empirical research are also miscellaneous. While Reisen and Soto (2001), Basu and Guariglia (2007), Prasad et al. (2007), Batten and Vo (2009), Li and Liu (2005) reported a positive and significant relationship between FDI and GDP growth, Balasubramanyam et al. (1996) found that FDI inflows enhance growth only in export-oriented countries, Johnson (2006) concluded that FDI spur growth only in developing countries, Xu (2000) only in the developed countries, and De Mello (1997) reported that FDI positively influence only the economic growth of the OECD countries, and not of the non-OECD countries. Bermejo Carbonell and Werner (2018), and Carkovic et al. (2005) reported no significant positive effects of FDI on GDP growth. Contrary to them, Bornschier et al. (1978), Fry (1993) and Herzer (2012) found that FDI exert a negative impact on the economic growth of developing countries.

The number of studies investigating the causal link between remittances and economic growth is rather limited, while their conclusions are miscellaneous. Nyasha and Odhiambo (2020) group these empirical studies into four groups. The first group of studies established an unidirectional causality from remittances to economic growth (Aboulezz, 2015; Munir et al., 2016), whereas the second group of studies found unidirectional causality between these two variables in the direction from economic growth to remittances (Ali et al., 2018). The results of the third group studies revealed that economic growth and remittances Granger-cause each other, i.e. there is a bidirectional causality between them (Ahmed & Hakim, 2017; Jouini, 2015; Kumar & Vu, 2014). The fourth group of studies provided empirical evidence that there is no causality between the remittances and economic growth (Ahmed & Hakim, 2017; Siddique et al., 2012).

In summary, there is no empirical consensus neither on the cyclicality of remittances and FDI with respect to the business cycle of remittance recipient countries nor on the causal relationship among remittances, FDI and economic growth of the recipient countries. With this level of inconsistency in theory and empirical studies, and only a few studies related to SEE countries, it is necessary to revisit the topic. We contribute to filling the gap in the existing literature by investigating the cyclicality of remittances and FDI flows at different stages of business cycle of the receiving countries and the causality among remittances, FDI and economic growth in the SEE6 countries, since these countries are underrepresented in the existing literature.

3. Data and methodology

To estimate the behaviour of remittances and FDI flows to cyclical movements of the domestic GDP of SEE6 countries, we employ actual quarterly data on the following

indicators: real GDP per capita, real personal remittances (net inflows) per capita and foreign direct investment (net inflows) per capita.

Our sample includes the following six South-East European countries: Albania, Bosnia and Herzegovina, Croatia, Montenegro, the Republic of North Macedonia and Serbia (SEE6). We focus on these six countries in order to ensure a high degree of comparability and relevance of our results. Namely, all six countries in the sample are middle-income countries, while their economies are small and open. They are former communist countries. The collapse of communism 30 years ago broke down the bonds that had held these countries together (after the dissolution of Yugoslavia in 1993) and marked the start of the transition to market economy. In contrast to the turbulence of the first decade of transition, these countries have undergone a major economic transformation in the early and mid-2000s. The Stabilization and Association (SA) process launched by the EU in the aftermath of Kosovo war in 1999, opened new prospects for the future membership of the Western Balkan countries in the EU, culminating in Croatia's accession to the EU in 2013. Today all remaining sample countries have EU candidate or potential candidate status. Given the macroeconomic stability established and opening up of these countries and their subsequent accession to the EU, the SEE6 countries experienced large capital inflows.

In the first half of the 2000s (2000–2008), both remittances and FDI flows to SEE countries (Albania, Bosnia and Herzegovina, Croatia, Montenegro, the Republic of North Macedonia and Serbia and Kosovo) remained stable, with an upward trend led by remittances, which was interrupted in 2008 when these flows slightly declined due to the global financial crisis (the average annual decline of remittances received in SEE counties was 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 SEE countries. However, as of 2015, remittances and FDI inflows to SEE countries not only have recovered but started to increase, reaching their maximum level in 2019, which is higher than the pre-crisis years.

Consistently with the pattern for all developing countries, the common characteristic of the SEE6 countries is the high dependency rate of their economies on remittance and on 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 in Figure 1 the most reliant countries on personal remittances among the SEE6 countries are Albania with an average value of 11.27% of GDP and Bosnia and Herzegovina with an average value of 10.81% of GDP, followed by Montenegro (10.30% of GDP) and Serbia (8.17% of GDP). Less dependent on this external source of income are: Croatia (4.57% of GDP), and North Macedonia (3.33% of GDP).

Unlike remittances, which experienced a modest decline during the global financial crisis of 2008–2009, the outbreak of the crisis in 2008 marked the end of a long period of FDI expansion in the SEE6 countries, resulting with a sharp drop in the volume of FDI to SEE6 countries (see Figure 2). As of 2015, FDI inflows to SEE6 countries not only have recovered but have started to increase. In the period 2008–2021, Montenegro managed to attract most foreign investors and had the leading position among the sample countries with FDI accounting for 12.59% of GDP. Albania and Serbia also had

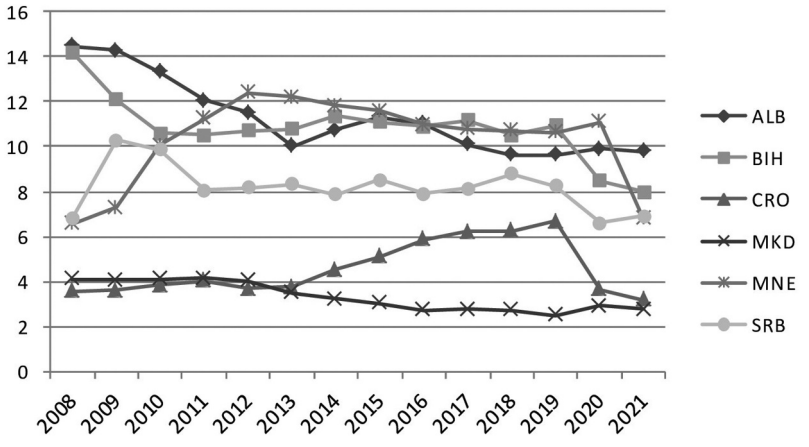

Figure 1. Remittances as % of GDP in the SEE6 countries, 2008–2021. Source: 2022, https://ec.europa.eu/eurostat/data/database

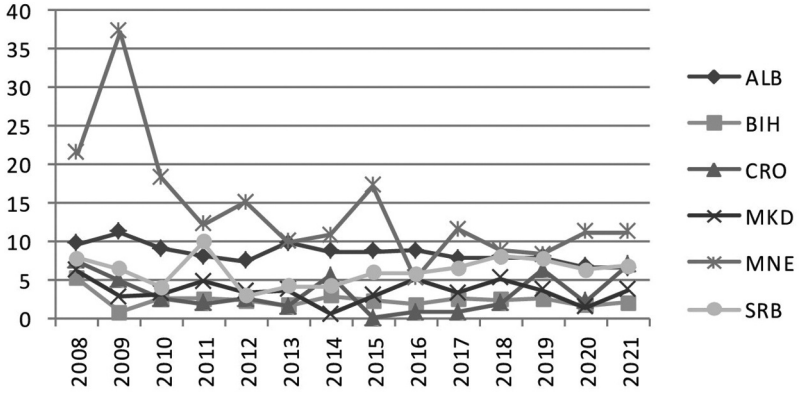

Figure 2. FDI as % of GDP in the SEE6 countries, 2008–2021. Source: 2022, https://ec.europa.eu/eurostat/data/database

a significant portion of FDI in GDP (7.52% of GDP and 5.27% of GDP respectively). On the other hand, the share of FDI in GDP in the analysed period was between 2% and 3% in Bosnia and Herzegovina, Croatia and North Macedonia.

Remittances have also shown greater resilience during the latest economic crisis caused by the outbreak of the COVID-19 pandemic. Contrary to very pessimistic forecasts of a 20% decline, remittance inflows to the SEE6 in 2020 dropped by only 4.7% compared to 2019 (Eurostat, 2022), with an increase in some countries (Montenegro, North Macedonia and Albania). Remittance inflows stabilised in 2021, when most of the analysed countries recorded a robust growth of remittances. Unlike remittances, FDI to the SEE6 declined by 12.18% in 2020 compared to 2019 (UNCTAD, 2022). Current FDI projects in these countries were slowed down, and future FDI flows were delayed as most of the FDI flows to the SEE6 countries originate in EU countries that have been severely affected by the COVID-19 pandemic.

To estimate the behaviour of remittances and FDI flows to cyclical movements of the domestic GDP of the SEE6 countries, we employ actual quarterly data on the following indicators: real GDP per capita, real personal remittances (net inflows) per capita, and foreign direct investment (net inflows) per capita.

Data for all variables are balanced and cover a relatively long period (2008q1–2021q2). The selection of the period 2008q1-2021q2 is based on the availability of quarterly data, as we want to use actual quarterly and balanced data for the panel of countries we analyse, rather than estimated data. The selected period (52 observations) also includes episodes of macroeconomic growth, as well as shocks and sudden stops, which is important for a precise assessment of the cyclical behaviour of remittances and FDI flows relative to the GDP of recipient countries.

Real GDP per capita 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, GDP series omit remittances received by countries in the sample. According to the Sixth edition of the IMF's Balance of Payments Manual 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.

Data for the above variables were obtained from Eurostat (2022) 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 Gross Domestic Product Deflator (2015 = 100).

We analyse the business cycle properties of real remittances and real FDI per capita in relation to the behaviour of real output per capita in the sample recipient countries, both individually and as a group, over the period 2008–2021, employing the methodology from the business cycle literature (Kydland & Prescott, 1990; Lucas et al., 1977; Neagu & Schiff, 2009; Pallage & Robe, 2001; Sayan, 2006). To assess the cyclical properties of remittances and FDI over business cycle, we define business cycles as the deviations of real variables from their respective trends as in Lucas et al. (1977) and Kydland and Prescott (1990). Thus, cyclical characteristics of remittances and FDI are examined here by looking at the co-movements between deviations from trend of real remittances and real FDI and those of real GDP.

According to Sayan (2006), this approach is different than multiple regression analysis based on time series or panel data, where any parameter estimate about the relationship between real GDP and remittance and FDI inflows for one or more countries over a sample period refers to the whole period and does not necessarily capture the co-movements of remittances and FDI with the real GDP as the GDP cyclically fluctuates up and down along a trend with alternating growth and stagnation/crisis episodes during the sample period. Econometric evidence obtained from panel data for a group of countries generalise the results about the relationship between GDP on one hand and remittances and FDI, on the other hand to all members of the group and can hide important country-specific

characteristics. In our analysis, we follow Sayan (2006) and treat the selected six SEE countries individually and as a group.

Since we are interested in studying the cyclical character of remittances and FDI at business cycle frequencies and want to validate if the inflow of remittances is more stable than the inflow of foreign direct investment over the business cycle, we should remove the estimated trend from the economic time series for real GDP, real REM and real FDI. That is essentially what the Hodrick-Prescott (HP) filter does (Hodrick & Prescott, 1980; Hodrick & Prescott, 1997; Phillips & Saynan, 2015; Phillips & Shi, 2019). It is one of the best known and most widely used de-trending methods in economics. The HP filter takes an economic time series y_t, and fits a trend τ_t to that raw time series, by solving a minimisation problem. The trend τ_t is chosen to minimise the sum of squared deviations of y_t, from τ_t, plus the sum of squared second differences, weighted by a smoothing parameter λ. The minimisation problem penalises changes in the growth trend, with the penalty increasing as λ increases. The larger is λ, the smoother will be the trend τ_t.

We break down the original economic time series y_t into two components-the trend component (τ_t) and the cyclical component (c_t), thus minimising the distance between the trend and the original time series and at the same time minimising the curvature of the trend series:

$$y_t = \tau_t + c_t \tag{1}$$

In its original form the trend estimate is a result of a minimisation of the following equation:

$$\underset{\tau_t}{min} \sum_t (y_t - \tau_t)^2 + \lambda \sum_t (\tau_{t+1} - 2\tau_t\tau_{t+1})^2 \tag{2}$$

where τ_t is the trend and y_t is the economic time series for GDP, REM FDI and ODA and λ is the smoothing parameter that determines the degree of smoothing of smoothed trend series.

It is necessary to choose the value of the smoothing parameter λ in the above minimisation equation[1]. The choice of the value of the smoothing parameter λ reflects the choice between a relatively smooth trend series and a trend series which is close to the actual observed time series. The decision about the value of the smoothing parameter also depends on the data frequency, the higher the frequency, the larger the smoothing parameter. For quarterly data, as is the case with our data, Hodrick &Prescott (1980, 1997), as well as other literature, suggest 1600 as a value for the smoothing parameter λ. For the monthly and annual data, there is no consensus on the value of λ.

By detrending each series (GDP, REM and FDI), we will separate fluctuations around the trend of each data series (the cyclical components), making examination of the statistical properties of the co-movements of deviations of real GDP and capital flows from their respective trends possible (Kydland & Prescott, 1990; Lucas et al., 1977; Sayan, 2006). Once the respective trends are properly removed from real GDP and real remittances and FDI series for each country or the group of countries, the remaining series (cyclical components) would be stationary (based on the ADF test results) with zero mean for each indicator (Sayan, 2006).

After extracting the cyclical component from each variable, we calculate the contemporaneous and asynchronous cross correlations (calculated after shifting the real

remittances and FDI series backward or forward by one, two, three and four quarters) between the cyclical components of respective series to identify cyclical characteristics of remittances in order to identify the behaviour of REM and FDI with respect to cyclical fluctuations (Sayan, 2006) i.e., if remittances and FDI inflows to the SEE6 countries in the analysed period are procyclical, countercyclical or acyclical. We calculate the correlations between GDP on one hand, and REM and FDI, on the other hand, for each country and also for all six countries in the sample (aggregate level).

According to Sayan (2006), Pallage and Robe (2001) asynchronous correlation coefficients make it possible to identify possible phase shifts by looking at how sooner or later the highest correlation occurs relative to the contemporaneous period. Based on the position of the largest (in absolute value) significant cross correlation between real remittances and output series, we can identify the timing and direction that remittance receipts respond to output decline. 'Procyclicality (countercyclicality) of remittances in this context refers to the tendency of real remittance receipts by each country to move above its trend, whenever the corresponding real output variable is above (below) its respective trend. In the absence of such a tendency, remittances and output are said to be acyclical.' (Sayan, 2006, p. 8)

According to Kydland and Prescott (1990), Pallage and Robe (2001) and De et al. (2016) capital flows are *procyclical* if the correlation between output and the cyclical component of flows is positive and statistically different from zero and *countercyclical* if it is negative and statistically different from zero. If the correlation is not statistically different from zero, they are classified as acyclical. This method would enable us to identify how the inflow of remittances and FDI react to cyclical fluctuations of output in the receiving countries.

After defining whether capital flows are procyclical, acyclical or countercyclical in relation to the GDP of remittance recipient countries, we will estimate the causal link between GDP and remittances using the Vector Autoregressive (VAR) model for panel data. To check for possible cointegration and analyse the relationship between the two variables on the short run as well as on the long run, we specify Vector Error Correction (VEC) model.

Given the miscellaneous results on the direction of Granger causality presented in the previous section, we will perform a causality test between remittances and economic growth in the panel framework using Dumitrescu and Hurlin (2012) test for Granger causality (DHG) in heterogeneous parameter models between remittances and domestic investment.

The test is based on the estimation of the following regressions:

$$fdi_{i,t} = \alpha_i + \sum_{k=1}^{k} \beta_{i,k}\, fdi_{i,t-k} + \sum_{k=1}^{k} \gamma_{i,k}\, rem_{i,t-k} + \varepsilon_{1i,t} \tag{3}$$

$$i = 1, \ldots N, t = 1, \ldots, T$$

$$rem_{i,t} = \alpha_i + \sum_{k=1}^{k} \beta_{i,k}\, rem_{i,t-k} + \sum_{k=1}^{k} \gamma_{i,k}\, fdi_{i,t-k} + \varepsilon_{2i,t} \tag{4}$$

$$i = 1, \ldots N, t = 1, \ldots, T$$

$$gdp_{i,t} = \alpha_i + \sum_{k=1}^{k} \beta_{i,k} gdp_{i,t-k} + \sum_{k=1}^{k} \gamma_{i,k} fdi_{i,t-k} + \varepsilon_{3i,t} \quad (5)$$

$$i = 1, \ldots N, t = 1, \ldots, T$$

$$gdp_{i,t} = \alpha_i + \sum_{k=1}^{k} \beta_{i,k} gdp_{i,t-k} + \sum_{k=1}^{k} \gamma_{i,k} rem_{i,t-k} + \varepsilon_{4i,t} \quad (6)$$

$$i = 1, \ldots N, t = 1, \ldots, T$$

whereas, α_i are individual effects and are assumed to be fixed, $\beta_{i,k}$ are the autoregressive parameters and $\gamma_{i,k}$ are regression coefficient slopes in Equations (3)-(6) and they differ across series.

To examine the Granger causality from remittances to gross fixed capital (GFC), they test the following null hypothesis:

$$H_0 : \beta_i = 0 \text{ for all } i = 1, \ldots N \quad (7)$$

against the following alternative hypothesis:

$$H_a : \beta_i \neq 0 \text{ for some } i \in \{1, \ldots, N\} \quad (8)$$

where $\left[B_i^{(1)}, \ldots, \beta_i^{k}\right]'$ is called the homogenous non-causality hypothesis because the hypothesis allows for the causality from remittances to investment for some, but not all individuals. To examine the Granger causality from domestic investment to remittances they test the following the null hypothesis:

$$H_0 : \gamma_i = 0 \text{ for all } i = 1, \ldots N \quad (9)$$

against the following alternative hypothesis:

$$H_a : \gamma_i \neq 0 \text{ for some } i \in \{1, \ldots, N\} \quad (10)$$

If we reject the null hypothesis, we can conclude the presence of DHG causality.

4. Empirical results

To analyse the cyclical properties of real remittances and FDI to the SEE6 countries (Albania, Bosnia and Herzegovina, Croatia, Montenegro, the Republic of North Macedonia and Serbia), relative to their real output, first we had to remove the possible linear trends from each actual observed time series (real GDP per capita, real remittances per capita and real FDI flows per capita). Using HP filter with a smoothing parameter λ = 1600, which is a typical choice for quarterly data where sample sizes are usually between 100 and 300 observations, we decomposed each of the above mentioned time series into trend and cyclical components.

After detrending the time series data, we calculated contemporaneous and asynchronous cross correlations between the cyclical components of respective series in order to identify the behaviour of REM and FDI with respect to cyclical fluctuations of home GDP (Sayan, 2006). By shifting the real remittances per capita and real FDI per capita series

backward or forward by one, two, three and four quarters, we calculated the correlations between real GDP per capita on one hand, and real REM per capita and real FDI per capita, on the other hand, for each country in the sample and also for all six countries as a group (on an aggregate level). The obtained results are reported in Tables 1 and 2. Correlation coefficients with the largest absolute value are shown in bold. Of those largest valued coefficients, the ones that are statistically significant at 90% level, 95% level, 99% level are marked with an asterisk (*;**;***), respectively.

The results in Table 1 regarding the whole sample indicate that real remittances received by the SEE6 countries in the sample together move procyclically with their aggregate output. Since the largest correlation coefficient between real GDP per capita and real remittances per capita for the whole sample was registered at *t* period, we can conclude that real remittances respond to drops in real GDP in the remittance recipient countries simultaneously. In other words, remittances would reach the trough of their own cycle in the same period when the aggregate economic activity in the home country hit its lowest point.

However, when looked at individually, we can identify two types of remittances co-movement: procyclical (in two countries, Bosnia and Herzegovina and Croatia) and countercyclical (in four countries, Albania, Macedonia, Montenegro and Serbia). Bosnia and Herzegovina and Macedonia have the highest correlation coefficients, 6.398 and 7.024, respectively, but in the opposite direction.

In the two countries where strong procyclicality is found (Bosnia and Herzegovina and Croatia), remittances receipts to Bosnia and Herzegovina are synchronous with the business cycle, i.e. they react to the economic activity in the country immediately and in the same direction, whereas remittances sent to Croatia reach the lowest point of their own cycle one quarter before Croatia's real GDP hit its trough.

Among the countries with a strong countercyclical comovement between real remittances and real output, receipts by Macedonia and Serbia lag the output cycle in these countries by a quarter, implying that migrants from Macedonia and Serbia, driven by the motive to smooth the consumption of their households, increase the remittances to their families during times of economic crisis at home. However, remittance receipts are asynchronous with the business cycle i.e. private transfers to these countries reach the peak of their own cycle within one quarter after aggregate economic activity in these two countries hit its trough. On the other hand, remittances sent by migrant workers to Montenegro reach the highest point of their cycle two quarters after Montenegro's real GDP hit its lowest level. Regarding the case of Albania, remittances reach their highest point within three quarters after Albania's GDP hit its lowest trough. The GDP and remittances cycles are displayed in Figures 3 and 4.

Regarding the foreign direct investment flows, the results reported in Table 2 indicate three types of foreign direct investment comovement: procyclical (for the whole sample and two countries individually Montenegro and the Republic of North Macedonia), countercyclical (for Albania, Bosnia and Herzegovina and Croatia), and acyclical (for Serbia). On an aggregate level, the largest correlation coefficient between real GDP per capita and real FDI per capita for the whole sample was registered at *t* period (5.353), implying that real FDI respond to drops in real GDP simultaneously.

At an individual level, the highest correlation coefficients were identified in Bosnia and Herzegovina (4.445) and in Croatia (3.354), but with a negative sign (countercyclical).

Table 1. The cross correlations between real GDP per capita and real remittances per capita in the SEE6 countries in the 2008q1-2021q2 period at $t+i$ ($i = -4, -3, -2, -1, 0, 1, 2, 3, 4$).

Country	REM (t-4)	REM (t-3)	REM (t-2)	REM (t-1)	REM (t)	REM (t+1)	REM (t+2)	REM (t+3)	REM (t+4)	Nature of co-movement
Whole sample	1.192	0.988	2.814***	7.314***	**12.325***	5.974***	3.475***	3.084***	2.341***	Procyclical and synchronous
ALB	2.517**	−1.796*	2.224**	−2.638***	3.376***	−2.084**	1.733*	**−3.804*** **	3.231***	Counter-cyclical
BIH	5.204***	−1.069	−4.193***	0.323	**6.398*** **	0.808	−3.063***	−1.344	4.065***	Procyc. and synchronous
CRO	0.043	−2.364**	−0.096	**3.568*** **	0.602	−1.368	−0.421	1.673*	−0.528	Procyclical
MNE	2.351**	0.755	−3.693***	−0.272	2.545**	0.589	**-3.966*** **	−0.847	2.028**	Counter-cyclical
MKD	2.246**	−3.859***	−0.107	1.738*	0.066	**−7.024*** **	−1.176	1.699*	2.328**	Counter-cyclical
SRB	2.511**	−3.802***	−0.275	1.346	3.086***	**−4.073*** **	−0.735	1.224	2.732***	Counter-cyclical

***, ** and * represent 1%, 5% and 10% significance level.
Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10.

Table 2. The cross correlations between real GDP per capita and real FDI per capita in the SEE6 countries in the 2008q1-2021q2 period at $t+i$ ($i = -4, -3, -2, -1, 0, 1, 2, 3, 4$).

Country	FDI (t-4)	FDI (t-3)	FDI (t-2)	FDI (t-1)	FDI (t)	FDI (t+1)	FDI (t+2)	FDI (t+3)	FDI (t+4)	Nature of co-movement
Whole sample	1.974**	−0.655	−0.48	3.25***	**5.353*** **	0.637	0.236	3.807***	2.611***	Procyclical and syncronous
ALB	1.578	0.413	−1.187	-**1.683***	1.644	0.904	−0.986	−0.343	1.471	Countercyclical
BIH	−1.789*	1.155	2.143**	0.546	−1.075	0.145	1.945*	−0.083	-**4.445*** **	Countercyclical
CRO	−0.817	-**3.354*** **	0.020	3.378***	0.833	−3.069***	0.091	3.280***	0.268	Countercyclical
MNE	2.444***	−0.156	−2.160**	−0.068	2.260	−0.500	−2.301**	0.476	**2.650*** **	Procyclical
MKD	0.074	**2.972*** **	0.648	−2.573***	0.335	2.139**	1.698	−2.815***	−1.434	Procyclical
SRB	−0.424	0.645	0.958	−0.884	0.634	1.022	−0.421	−1.385	0.655	Acyclical

***, ** and * represent 1%, 5% and 10% significance level.

Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10.

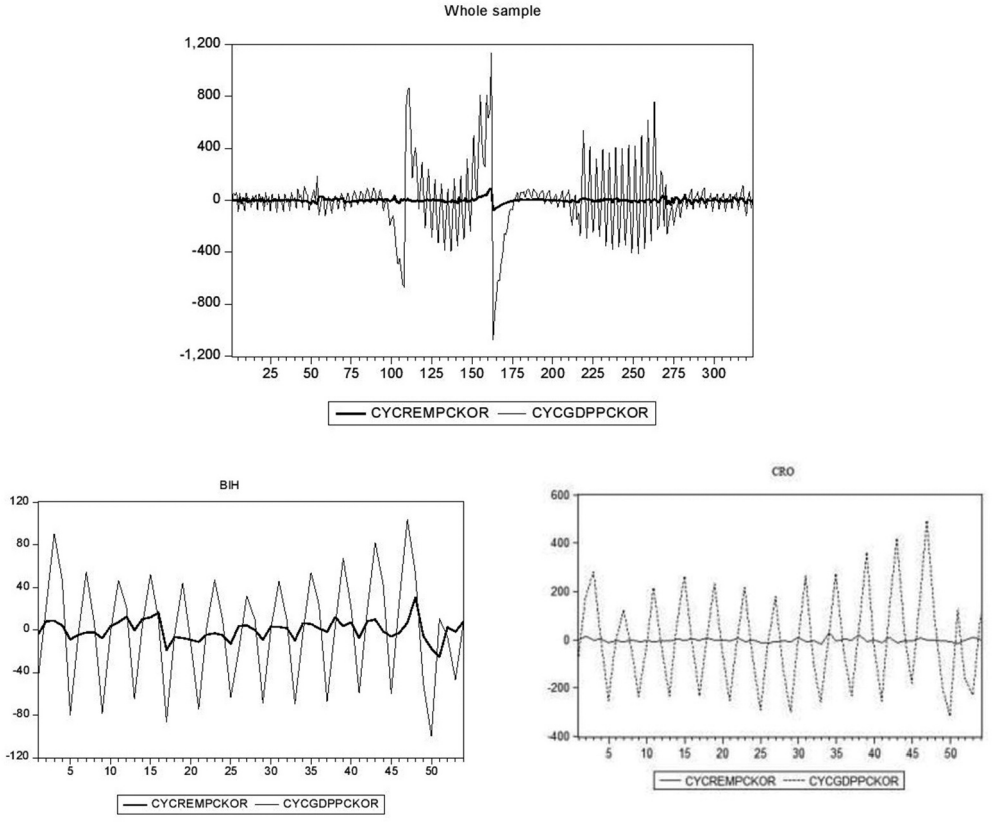

Figure 3. The procyclical movement of real GDP per capita and remittances per capita in the SEE6 countries in the 2008q1-2021q2 period. Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10

While real FDI flows to Bosnia and Herzegovina reached their peak four quarters after the domestic real GDP hit its lowest level, real FDI flows to Croatia reached the maximum point of their cycle three quarters before Croatia's real GDP hit its trough.

The FDI flows to the Republic of North Macedonia and Montenegro exhibited a strong procyclical and asynchronous co-movement with the domestic real output. While FDI flows to Montenegro reached the lowest point of their own cycle within four quarters after domestic economic activity hit its trough, FDI flows to the Republic of North Macedonia reached their minimum level three quarters before Macedonia's real GDP hit its trough. On the other hand, FDI flows to Serbia displayed no cyclical behaviour. The GDP and FDI cycles are displayed in Figures 5, Figures 6 and 7.

Next, we will estimate the causal relationship between economic output (GDP per capita) and the remittances using the VAR model for panel data. For that purpose first, we are going to test the stationarity of the series. Since we are dealing with panel data, we will implement the test of Im et al. (2003). The results of this test are shown in Table 3. According to these results, we can conclude that all the series are stationary, i.e. they are integrated of order zero I(0).

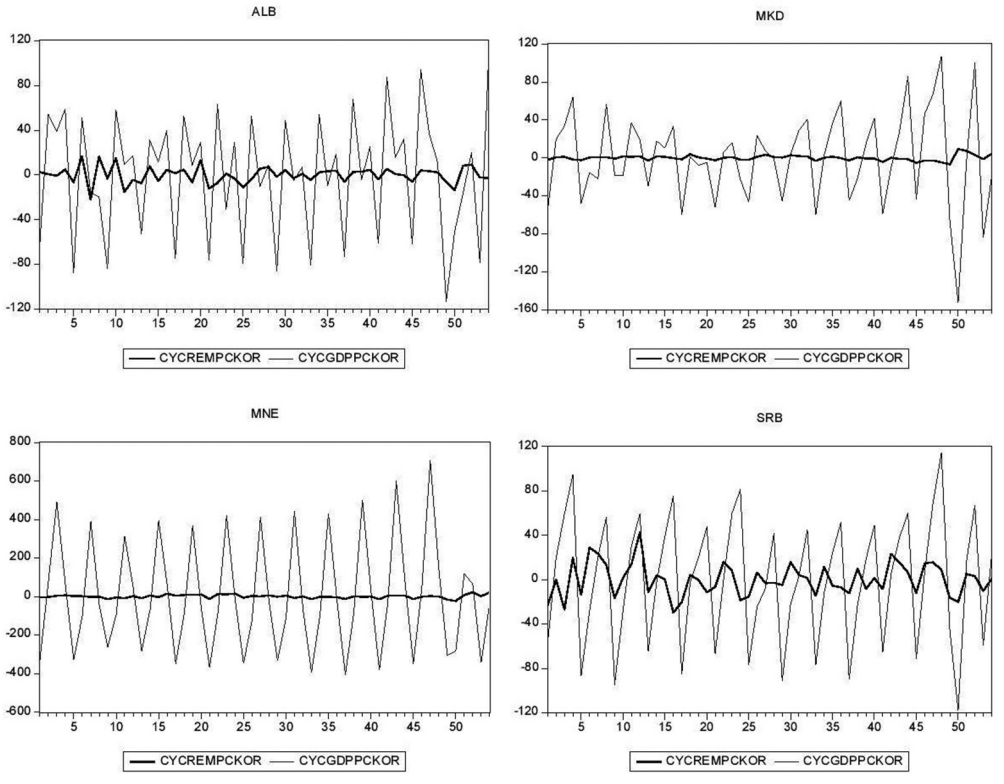

Figure 4. The countercyclical movement of real GDP per capita and remittances per capita in the SEE6 countries in the 2008q1-2021q2 period. Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10

We are proceeding now on estimating the following panel VAR model:

$$gdppc_t = \alpha_0 + \alpha_1 gdppc_{t-1} + \alpha_2 gdppc_{t-2} + \alpha_3 rempc_{t-1} + \alpha_4 rempc_{t-2} + \alpha_5 fdipc_{t-1} + \alpha_6 fdipc_{t-2} + u_{1t} \quad (11)$$

$$rempc_t = \beta_0 + \beta_1 rempc_{t-1} + \beta_2 rempc_{t-2} + \beta_3 gdppc_{t-1} + \beta_4 gdppc_{t-2} + \beta_5 fdipc_{t-1} + \beta_6 fdipc_{t-2} + u_{2t} \quad (12)$$

The results for the lag length are shown in Table 4. In response with the results from the Table 4 based on Schwarz-Bayes information criteria, we are choosing to include 3 lags in the model.

Accordingly, the estimated panel VAR model with three lags is shown in Table 5.

After we have estimated the panel VAR model, we would like to test for its dynamic stability. For that purpose, we are going to check if the characteristic roots are within the unit circle. The values of the characteristic roots are given in Table 6 and they are graphically presented in Figure 8.

No root lies outside the unit circle. The above results show that VAR satisfies the stability condition.

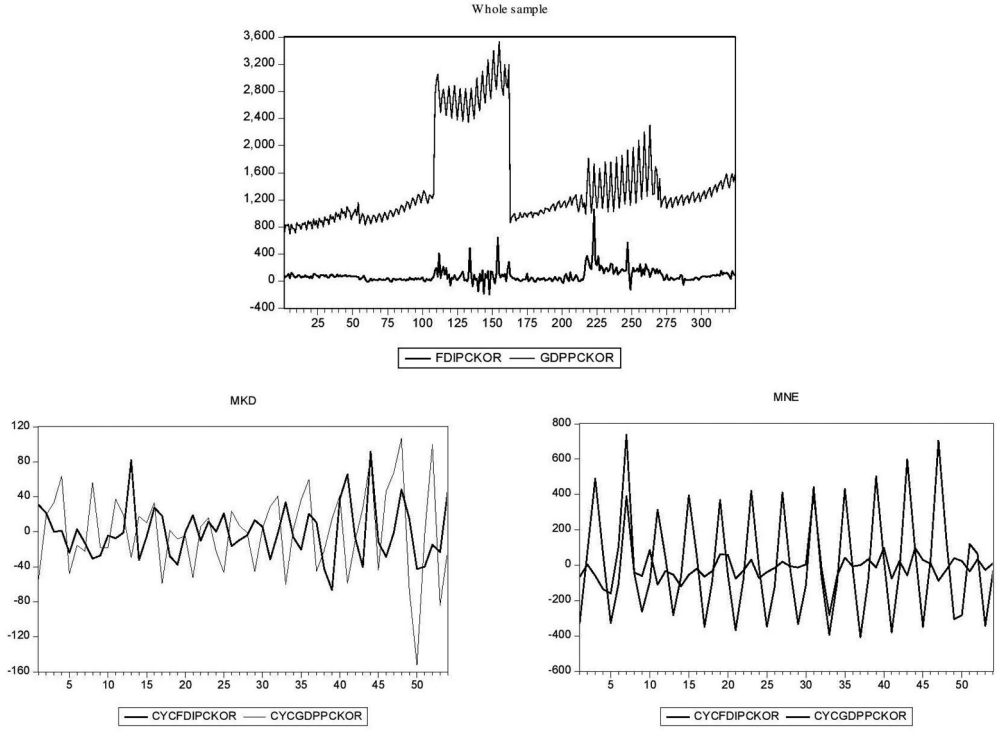

Figure 5. The procyclical movement of real GDP per capita and FDI per capita in the SEE6 countries in the 2008q1-2021q2 period. Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10

In order to analyse the dynamic effects of the model responding to certain shocks as well as how the effects are between the two variables, we have employed the impulse response functions. We have examined the impulse response functions for a unit change in GDPPC on dynamic reaction of REMITPC, while results are presented in Figure 9. As we can see from the figures, the remittances respond positively to unit shock in GDPPC and although this response is quite persistent, it is small, and not statistically significant.

The variance decomposition (see Table 7) shows that the forecast errors of GDPPC after 10 quarters are mainly explained by its own impact, 97.92%, while only small part is explained by REMPC. The forecast errors of REMPC after 10 quarters are mainly explained by their own impact 92.45%, while the impact of GDPPC is small and enriches 7.35%.

To test for the presence of heterogeneity in our panel, we have implemented Hsiao (2014) test, an EViews add-in that calculates homogeneity in panel data (Khouiled, 2018). The results of this test are shown in Table 8. Based on these results we can conclude that we are not dealing with homogenous panel. Therefore, we proceed to testing for Granger causality using Pairwise Dumitrescu – Hurlin Panel Causality Tests. The results of these tests are given in Table 9. According to these results, we can conclude that in most of the sample countries GDP Granger causes remittances and vice versa, i.e. there is a bidirectional causality between these two variables. That implies that remittance inflows per capita contribute to economic growth of the analysed SEE6 countries.

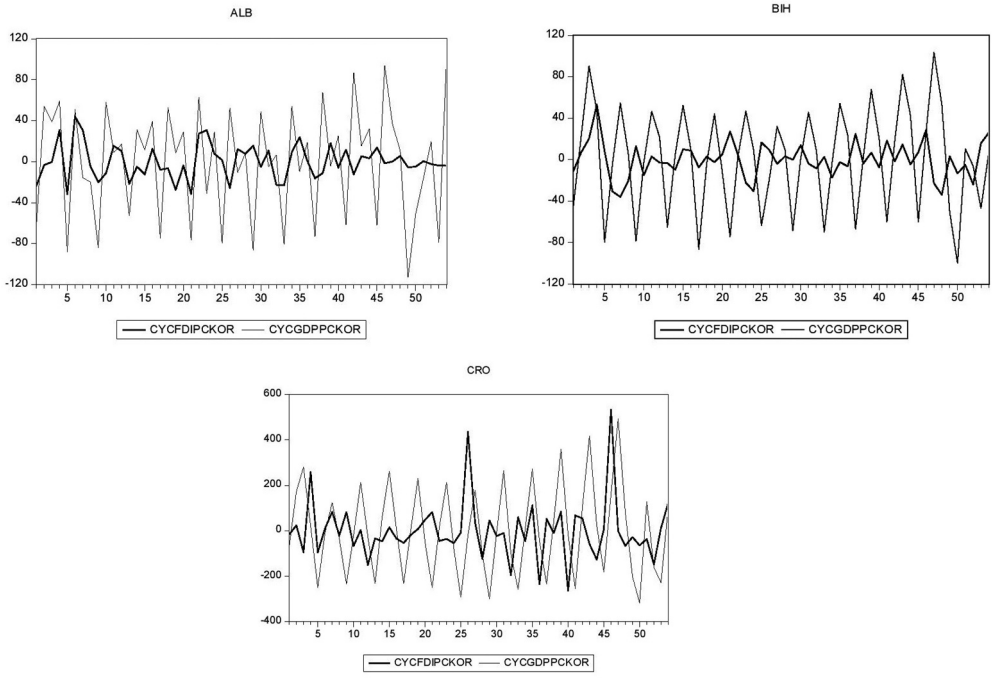

Figure 6. The countercyclical movement of real GDP per capita and FDI per capita in the SEE6 countries in the period 2008q1-2021q2. Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10

The Dumitrescu-Hurlin Panel Granger causality test shows different results among countries in the sample. While there is a unidirectional causality from GDP per capita to remittances per capita in the case of Albania and Bosnia and Herzegovina, for most of the countries in the sample (Croatia, North Macedonia, Montenegro and Serbia) we find a bidirectional causal relationship, implying that remittances inflows contribute to economic growth. These findings are in line with previous empirical studies (Ahmed & Hakim, 2017; Ali et al., 2018; Jouini, 2015; Kumar & Vu, 2014; Siddique et al., 2012) who also provide an evidence for a two-way causal relationship between the remittances and economic growth. The results obtained for Albania and Bosnia and Herzegovina indicate that remittances depend on the income level of the remittance recipient country (Stojanov et al., 2019), and suggest that economic growth in the home country could encourage remittance inflows from abroad (Ali et al., 2018; Olayungbo & Quadri, 2019).

The results for causality from GDP per capita to remittance per capita suggest that economic growth encourages continuous remittance inflows.

5. Conclusions

This article analyses the cyclical characteristics of remittances and FDI flows to the SEE6 countries (Albania, Bosnia and Herzegovina, Croatia, Montenegro, the Republic of North Macedonia and Serbia) during their business cycles in the 2008q1-2021q2 period and the causal relationship between remittances and economic growth. To evaluate if remittances

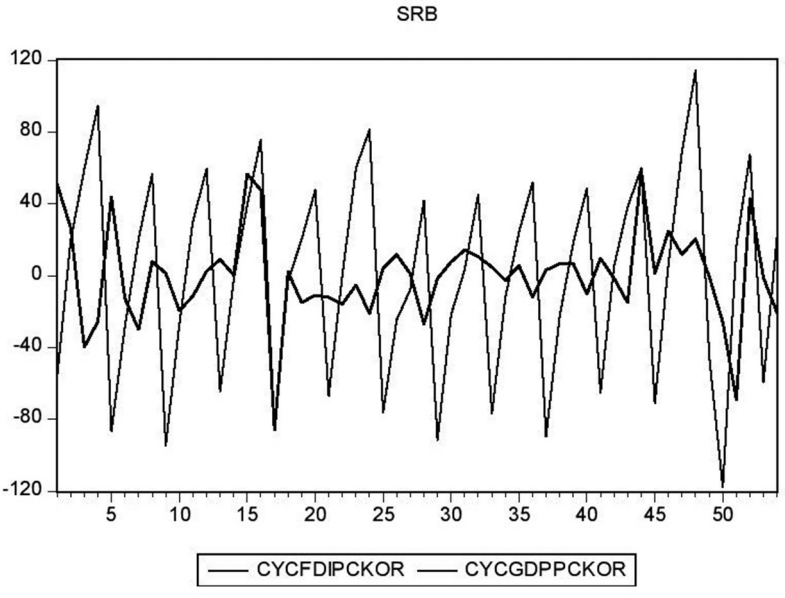

Figure 7. The acyclical movement of real GDP per capita and FDI per capita in Serbia in the 2008q1 -2021q2 period. Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10 In summary, although remittances and FDI flows to the SEE6 countries are procyclical in relation to their business cycles at the aggregate level, there are significant variations across countries, not only in terms of their cyclical patterns but also in terms of synchronicity. While in some of the SEE6 countries remittance and FDI lead the home GDP cycle by a different time period, in other countries they lag real GDP with a different time lag. The results for the SEE6 countries are in line with the ones obtained by Sayan (2006), Lueth and Ruiz-Arranz (2008), Giuliano and Ruiz-Arranz (2009), Neagu and Schiff (2009), Constantinescu and Schiff (2014), Hildebrandt and Moder (2015), Isakovic and Ilgun (2015), and Cismaş et al. (2020).

Table 3. Results of Im et al. (2003) test for unit root.

Series	GDPPC	REMITPC	FDIPC
Im, Pesaran and Shin test	−5.93440	−2.54174	−10.1090
Probability	0.0000	0.0055	0.0000

Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10.

and FDI inflows are procylical, countercyclical or acyclical, first we detrended real GDP, remittances and FDI time series and after that calculated contemporaneous and asynchronous correlations between real GDP per capita and real remittances and FDI flows per capita.

The obtained results for the whole sample indicate that real remittances per capita move in the same direction with the real domestic output of SEE6 countries per capita (procyclical) and are synchronous. This undermines the expected usefulness of remittances as a buffer against crises and shocks. When looked on a country-by-country basis, the results reveal considerable variations both in cyclicality and synchronicity of remittances across countries. We identified procyclical behaviour of remittances in two

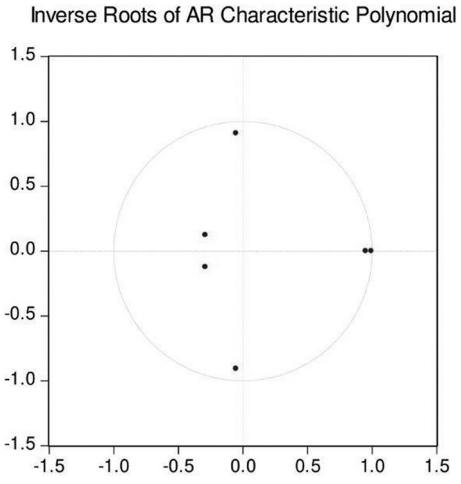

Figure 8. Inverse Roots of AR Characteristic Polynomial. Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10

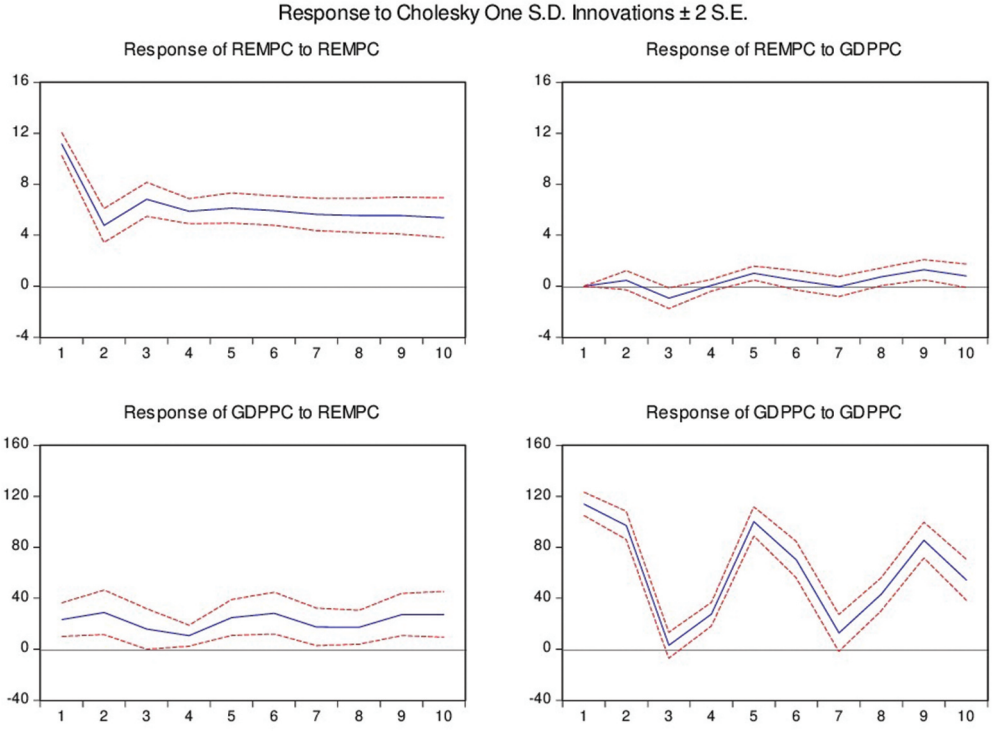

Figure 9. Impulse Responses. Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10

Table 4. VAR Lag Order Selection Criteria.

Endogenous variables: GDPPC REMPC
Exogenous variables: C FDIPC
Sample: 2008Q1 2021Q2
Included observations: 276

Lag	LogL	LR	FPE	AIC	SC	HQ
0	−5065.986	NA	1.80e+12	36.73179	36.77114	36.74758
1	−4530.411	1055.626	3.96e+10	32.91602	33.07343	32.97919
2	−4487.737	83.18468	3.10e+10	32.67200	32.94747	32.78254
3	−4319.627	324.0367	9.80e+09	31.51904	**30.59378***	31.67695
4	−4139.969	342.3919	2.85e+09	30.28239	31.91256	30.48767
5	−4087.052	99.69876	2.07e+09	29.96415	30.79396	30.21681
6	−4074.685	23.03101	2.02e+09	29.93975	30.68744	30.23979
7	−4062.102	23.16118	1.97e+09	29.91378	30.77953	30.26119
8	−4035.754	47.92289*	1.74e+09*	29.78807*	30.77188	30.18285*

* indicates lag order selected by the criterion.
LR: sequential modified LR test statistic (each test at 5% level).
FPE: Final prediction error.
AIC: Akaike information criterion.
SC: Schwarz information criterion.
Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10.

Table 5. Results of the estimated panel VAR(2,3) model.

Sample (adjusted): 2008Q4 2021Q2
Included observations: 306 after adjustments

	GDPPC	REMPC
GDPPC(−1)	0.843491	0.005264
	[23.5784]	[1.52666]
GDPPC(−2)	−0.708787	−0.013565
	[−15.1285]	[−3.00388]
GDPPC(−3)	0.841929	0.012277
	[24.4975]	[3.70637]
REMPC(−1)	0.850103	0.412522
	(0.60924)	(0.05872)
	[1.39535]	[7.02514]
REMPC(−2)	0.385971	0.450009
	[0.64445]	[7.79560]
REMPC(−3)	−0.914104	0.086720
	[−1.48860]	[1.46520]
C	28.80122	−1.050263
	[1.35201]	[−0.84743]
FDIPC	0.089038	−0.005356
	[1.35201]	[−0.84743]
R-squared	0.970154	0.914890
Adj. R-squared	0.969246	0.912302
Sum sq. resids	3985025.	37020.06
S.E. equation	116.0298	11.18337
F-statistic	1069.062	353.5376
Log likelihood	−1883.789	−1167.927

(*Continued*)

Table 5. (Continued).

Sample (adjusted): 2008Q4 2021Q2 Included observations: 306 after adjustments		
	GDPPC	REMPC
Akaike AIC	12.37771	7.698867
Schwarz SC	12.49939	7.820553
Mean dependent	1431.688	76.74039
S.D. dependent	661.6406	37.76396
Determinant resid covariance (dof adj.)		1623909.
Determinant resid covariance		1540108.
Log likelihood		−3048.237
Akaike information criterion		20.02769
Schwarz criterion		20.22239

Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10.

Table 6. Roots of Characteristic Polynomial.

Endogenous variables: GDPPC REMPC Exogenous variables: C FDIPC Lag specification: 1 3	
Root	Modulus
0.994506	0.994506
0.954623	0.954623
−0.060441−0.904536i	0.906553
−0.060441 + 0.904536i	0.906553
−0.281973−0.134387i	0.312360
−0.281973 + 0.134387i	0.312360
0.999506	0.999506
0.954623	0.954623
−0.060441−0.904536i	0.906553

Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10.

countries (Bosnia and Herzegovina and Croatia) and countercyclical pattern of remittances in four countries (Albania, Republic of North Macedonia, Montenegro and Serbia). Among the sample countries, Bosnia and Herzegovina and the Republic of North Macedonia showed the highest correlation coefficients. Except for Bosnia and Herzegovina, where remittances were synchronous with the business cycle, remittances to Croatia led the home GDP cycle by a quarter, and remittances to Albania, Montenegro, the Republic of North Macedonia and Serbia lagged real GDP with a different time lag.

Regarding cyclicality of FDI flows per capita, the results are also heterogeneous. While on an aggregate level, we found a procyclical co-movement between real FDI flows per capita and real domestic GDP per capita simultaneously, this result cannot be generalised to individual countries. Procyclical comovement was confirmed only in two countries (Macedonia and Montenegro), while three countries (Albania, Bosnia and Herzegovina and Croatia) have shown countercyclical behaviour, and only Serbia displayed acyclical

Table 7. Variance decomposition.

Variance Decomposition of GDPPC:			Variance Decomposition of REMPC:	
Period	GDPPC	REMPC	GDPPC	REMPC
1	100.000	0.0000	4.2205	95.7795
5	99.03	0.9645	5.4957	94.2076
10	97.92	2.075	7.3561	92.4512

Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10.

Table 8. Specification Tests of Hsiao (2014).

Pairwise Dumitrescu Hurlin Panel Causality Tests Date: 05/24/22 Time: 14:59					
Country	Null Hypothesis:	W-Stat.	Zbar-Stat.	Prob.	Causality
Albania	REMPC does not Granger cause GDPPC	6.10954	1.08997	0.2757	Unidirectional
	GDPPC does not Granger cause REMPC	8.98012	2.14464	0.0320	
Bosnia and Herzegovina	REMPC does not Granger cause GDPPC	6.33382	1.17238	0.2410	Unidirectional
	GDPPC does not Granger cause REMPC	9.04345	2.16790	0.0302	
Croatia	REMPC does not Granger cause GDPPC	27.1248	8.81109	0.0000	Bidirectional
	GDPPC does not Granger cause REMPC	8.72634	2.05140	0.0402	
North Macedonia	REMPC does not Granger cause GDPPC	14.9746	4.34703	1.E-05	Bidirectional
	GDPPC does not Granger cause REMPC	40.9489	13.8901	0.0000	
Montenegro	REMPC does not Granger cause GDPPC	38.7781	13.0926	0.0000	Bidirectional
	GDPPC does not Granger cause REMPC	25.4488	8.19530	2.E-16	
Serbia	REMPC does not Granger cause GDPPC	18.1576	5.51649	3.E-08	Bidirectional
	GDPPC does not Granger cause REMPC	17.0501	5.10958	3.E-07	

Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10.

Table 9. Pairwise Dumitrescu - Hurlin Panel Causality Tests.

H1 = Null Hypothesis : panel is homogeneous vs Alternative Hypothesis : H2
H2 = Null Hypothesis : H3 vs Alternative Hypothesis : panel is heterogeneous
H3 = Null Hypothesis : panel is homogeneous vs Alternative Hypothesis : panel is partially homogeneous

Hypotheses	F-Stat	P-Value
H1	120.0347	2.3E-118
H2	2.567328	0.005399
H3	338.1954	1.7E-124

Source: Author's own calculations based on Eurostat data, available on 2022 and using the software EViews 10.

behaviour of FDI flows. We have also found differences in synchronicity of real FDI and GDP cycles on a country-by-country basis. While real FDI to Albania, Croatia, Republic of North Macedonia and Serbia ledthe domestic GDP cycle by a different number of quarters, FDI flows to Bosnia and Herzegovina and Montenegro responded to the home GDP business cycle fluctuations with a time lag of four quarters. The above country-specific cyclical patterns of remittances and FDI flows should not be neglected because different patterns of cyclical behaviour have opposite implications on the capacity of recipient

countries to cope with macroeconomic shocks (Sayan, 2006) and as such, require designing different policies for attracting remittances and FDI flows.

The direction of causality is the most important issue in designing an economic policy that will effectively utilise remittances. Therefore, we applied the Dumitrescu-Hurlin Panel Granger causality test. The obtained results for all sample countries (except Albania and Bosnia and Herzegovina) suggest that there is a bidirectional causal link from real remittances per capita to real GDP per capita, and vice versa, i.e. economic growth is caused by remittances, and the real GDP per capita also 'causes' remittance inflows. These results are consistent with results from similar studies.

Our results have important policy implications for the SEE6 countries. Although the analysed SEE6 economies have taken steps towards development of migration strategies and dedicated legal and policy frameworks, our empirical results indicate that there is a need for a more systematic government approach and further development of the institutional and policy frameworks to enhance the positive impacts that remittances and FDI can bring to the economies of the SEE6 countries. Since remittances are a significant source of external financing in the SEE6 countries, policymakers in the SEE6 countries should continue facilitating remittance inflows from migrant workers by creating and implementing adequate policies, through which remittances can be made more productive and their benefits maximised, not only to migrants and their families in the countries of origin but also to the economies of these countries by determining the channels through which remittances can influence economic growth (Bayar, 2015) and designing such economic policies that will channel remittances into profitable investments (Ghosh Dastidar, 2017). The productive use of remittances can help the economies of these countries to be stable in times of crises and shocks, and improve the economic growth through enhanced level of aggregate expenditures.

The main obstacles to remittance transfer through formal channels in the SEE6 countries are high costs of transfer and lack of confidence in the traditional banking sector. Therefore, policymakers in the SEE6 countries should focus on creating measures to encourage that more remittances be sent through formal channels, through increasing financial inclusion of the remittance receivers in the formal banking sector and financial institutions, while facilitating their transfer. Remittance transfers could be facilitated through exploiting new technologies, promoting competition for transfer of remittances and reducing the costs of transfer.

The lack of tailor-made financial services to return migrants is another important obstacle. Therefore, policymakers in the SEE6 countries should pay particular attention to developing new products and services tailored to the needs of both the remittance senders and remittance receivers.

To reduce the vulnerability of migrant workers, policymakers in the SEE6 should facilitate investment and promotion of entrepreneurship among migrants and stimulate their return to the country of origin and their employment in efficient and remunerative businesses, including FDI companies (Vasile et al., 2020). But above all, they should continue improving the business climate, as complex regulatory and administrative frameworks still hamper migrant workers from engagement and investment. To motivate migrant workers to invest more strategically in their countries of origin, i.e. to invest remittances in long-term investment projects, policymakers in the SEE6 countries should create and implement such policies that will increase information about and enable

access to investment options, through developing dedicated platforms that gather information in one place and provide easy access to information about legal and regulatory issues, financing options, choice of location, recruitment, investment opportunities etc. that helps to facilitate investment, both domestic and foreign. At the same time, they should continue to invest in financial education of remittance senders and remittance recievers.

As FDI inflows proved to be a robust and significant driver of output growth (Aizenman et al., 2011) policy makers in the SEE6 countries should create and implement policies to draw FDI. The FDI inflows to these countries are still hampered by excessive regulations and a challenging investment climate, high levels of corruption and relatively weak linkages between foreign direct investment (FDI) sectors and the local economy, which restrain potential spillover effects into know-how and technology. Such an investment climate hinders the potential for increased economic growth and job creation, which in turn can reinforce emigration. To attract FDI investments for boosting job creation, policymakers in the SEE6 countries should continue improving the investment climate as a good investment climate is one which provides opportunities not only for foreign but also for domestic investors. They should focus on creating measures to improve the capacity, efficiency and independence of the domestic court systems, and continue streamlining administrative procedures, reinforcing the investment policy framework, notably in the areas of conflict resolution, contract enforcement and intellectual property rights and strengthening FDI linkages with the local economy to boost competitiveness and the integration in the global value chains (2020).

As with any study, this study is not free of limitations. A particular limitation of our article relates to the measurement of the remittances inflows as large amount of remittances to SEE6 are transferred through informal channels. In addition, due to quarterly data unavailability, it was not possible to extend our analysis over a longer period and a larger sample to increase the consistency of the obtained results. A direction for future research would be to expand our research over a longer period and a larger sample (to all European countries, rather than only in the SEE countries). We could also improve the existing econometric model by introducing new variables that could lead to new insights. Since all countries in the sample (except Croatia) are EU candidate and potential candidate countries, an important direction for future research would be to cluster European countries in three panels depending on their current EU status membership: EU member states, EU candidate and potential candidate countries and EU non-member states to investigate how the progress achieved towards EU integration affect remittances and FDI inflows. Lastly, to determine the magnitude of impact of each independent variable on predictors over the analysed period, we might consider estimating a dynamic econometric model.

Note

1. If λ is small, the estimated trend series varies closely to the actual time series and is a more volatile. A large value of λ decreases the elasticity of the trend series, causing the estimated trend to be smoother and close to a linear trend line. If λ is equal to 0, the trend component is equivalent to the original series, and if λ diverges to infinity, the trend component approaches a linear trend.

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