Long-Run and Short-Run Relationship Between Remittances and GDP Per Capita Growth, Evidence from Balkans Countries

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Abstract

This research study aims to explore the link between remittances as percentage of GDP and GDP *per capita* growth in six Balkans countries and Kosovo for the period 2007-2020. Panel cointegration based on dynamic ordinary least squares (DOLS) model was applied to check the magnitude of the potential long-run coefficients between the remittances as percentage of GDP and GDP *per capita* growth. In addition, the pairwise Granger causality tests were performed to capture the causal link among these two variables. The findings from the DOLS model indicate a positive association between remittance's inflows and GDP *per capita* growth in the long-run. DOLS short–run relationships showed that the value of variable-remittances as percent of GDP has predictable properties to be a leading and lagging factor for these countries in the coming years. Results from the Granger causality confirm causality in unilateral direction running from remittance's inflow to GDP *per capita* growth.

Keywords: remittances, GDP per capita growth, Balkans, Panel cointegration, DOLS

1. Background

Remittances have an essential role in an economy by increasing the income of the households, through gross domestic savings and investment and in the end economic growth (Sarkar et al., 2018). There is no doubt that remittance recipient countries may have a vast potential for their socio-economic development. In general, as defined by Cohen and Sirkeci (2012), remittances are economic transfers that follow unidirectional paths from an immigrant worker to his/her origin country and households. In other words, migrant remittances refer to income earned in the host, i.e., destination country of migration that is sent or brought to the origin country. The remittances and economic growth relation is a relatively new topic in the literature. Their link came to light in the last two decades, as the transfers of migrants achieved the highest levels in history and governments of both developing countries and emerging economies became aware of that. Sobiech (2019) considers that there is no consensus in the literature by now regarding the impact of remittances on economic growth originated from cross-country analyses.

Some empirical studies observe remittances to have *positive influence* on economic growth differently in the countries (Tabit, & Charaf-

Eddine, 2017). In the opinion of these scholars, understanding the effect of remittances on economic growth represents a major macroeconomics' research topic and also a main element of analysis of economic policy. A lot of studies, both theoretical and empirical, have considered positive effects of remittances on the economy (for instance, Mundaca, 2012; Peković, 2017; Brzozowski, 2012). In addition, a lot of other authors depose that remittances may increase economic growth through an increase in investment and human capital formation (Sobiech, 2019; Hosny, 2020; Tabit, & Charaf-Eddine, 2017; Ali, & Alpaslan, 2017; El Hamma, 2018), thereafter that remittances have considerable positive impact on capital accumulation and growth through spillover effects (e.g., Hosny, 2020; Ali, & Alpaslan 2017). Some other researchers claim that remittances may have a *negative impact* on growth by reducing labor supply (Tabit, & Charaf-Eddine, 2017; Ali & Alpaslan, 2017). Remittance flows may have negative effects on the recipient country through their adverse influences on income distributions, labor supply and savings rate (Ali & Alpaslan, 2017). Besides, remittances could adversely influence long run economic growth through the so-called "Dutch disease effect" (Barajas, et al., 2010; Ali, & Alpaslan, 2017). There are many ways by which remittances can have a negative impact on development, like through so-called "Dutch disease effect", a brain drain, or reduced incentives for family members to receive funds for a particular purpose (Shelburne, & Palací, 2008). Thus, it is important to know whether remittances respond positively or negatively to movements of the origin country's GDP. Their magnitude makes them an important factor affecting the cyclical fluctuations of the economy of a country (Akkoyunlu, & Kholodilin, 2008). According to Jovičić and Dragutinović-Mitrović (2006), remittances could be procyclical, indicated by positive correlation, countercyclical (negative) or even acyclical — no correlation with the GDP in the origin countries. Thus, procyclical fluctuations of remittances go in line with the business cycles, implicating that their spending is mostly investment-oriented. Contrary to this, countercyclical fluctuations of remittances can imply that they are mostly used to smoothen consumption and additionally to increase the income of migrants' families in periods of

crises. Imai et al. (2017) have pointed out that remittance's inflows at the macro-level have played an important role in lower-middle-income countries in terms of its volume and share in GDP and in low-income countries in terms of its share. According to Taylor (1999) it is undoubtedly that the direct and indirect effects of remittances on income potentially have important influences on production, income inequality, and poverty reduction in the origin countries.

The fact that the Balkan region belongs to the highest remittance recipients world-wide was well enough motivation for working on this topic. From the group of 24 countries that have remittance inflows above 10 percent of GDP, Shera and Meyer (2013) emphasized that seven countries belong to the region of Europe and Central Asia, while five of them including Kosovo belong to the Southeast Europe region (Moldova, Bosnia and Herzegovina, Albania and Serbia). This research tends to stick with macro approaches, i.e., the macro level impacts are analyzed. This article aims at studying the impact of worker's remittances on the GDP *per capita* growth of seven Balkan countries including Kosovo covering the period from 2007 until 2020. The topic is of great importance given the importance of the flows with respect to the size of the considered economies. The findings of this research have important implications for academic research as well as for creating a policy because they validate the views regarding the impact of remittance's inflows on GDP growth and thus expand this discussion. The rest of the paper is structured as follows. Section 2 summarizes the literature review closely related to this research study. Section 3 presents the data and method, and Section 4 outlines the empirical results. Finally, the main discussions and results as well as conclusions are presented in Section 5 and Section 6.

2. Literature Review

As Shera and Meyer (2013) point out, no general theory of remittances exists. According to these authors the studies that analyze this phenomenon provide useful descriptive evidence and results from empirical research, but these studies only explain it partially, and are characterized by certain geographical, socio-cultural and temporal limitations. The first theoretical frameworks in this area indicate that just altruism is not enough to

explain the motivation of migrants to send remittances. Thus, remittances are presumed in a mutual relationship to benefit both the migrant and their family in inter-temporal arrangements, considering remittances becoming more risk diverse strategies and self-interest (Silva, et al., 2021). Not long ago, it was found that altruism is the main motivation to send remittances, in contrast to some other scholars that find that the relationship between altruism and remittances is difficult to establish (Silva, et al., 2021). These scholars reveal that altruism is an intangible thing and interacts with a large number of other factors. Moreover, the present research studies in the area of experimental economics show that altruism is not fixed and that it differs strongly depending on the context. In addition, as explained by Silva et al. (2021) self-interest motivations may also be associated with the plans of the migrants to come back home in the future or as an insurance against unexpected shocks generating future income fluctuations.

According to Xinying et al. (2019) remittances have two major theoretical approaches: *family* approach and *portfolio* approach. The *family* approach is when there are altruistic reasons by the immigrants to send money back home for subsistence of the family. The *portfolio* approach is the readiness of remitters to invest in their countries of origin. These two approaches confirm that remittances foster economic growth and development in origin countries in order to increase consumption and production.

In line with the discussion about the economic implications of remittances, two contradictory approaches have been highlighted by Brzozowski (2012): *the optimistic* approach and *the pessimistic* approach. The first *optimistic* approach underlines that remittances can contribute to the formation of human capital through investments in education or health. This type of transfer could be labeled as productive remittances because the remittances can also increase private investment in physical capital, since migrants establish businesses and new jobs. Thus, according to this approach, instead of having an impact on the economy on a temporary basis, remittances are a significant factor for development in the long-run, increasing *per capita* income and reducing poverty. These

positive effects should be evident at both the microeconomic and macroeconomic level. The *pessimistic* approach indicates that it is doubtful whether remittances could cause positive effects in situations where "both state policies and market initiatives had failed systematically" (Brzozowski, 2012: 145). According to this approach, just a small part of funds transferred from abroad is used productively; the remittances are being mainly used for current day-to-day expenses, i.e., the money is used to purchase short-term consumer goods and the remittances help to maintain a minimum standard of living at the micro level.

At the *macrolevel*, the short-run effects of remittances have been analyzed largely within the structure of trade-theoretical models by considering a small open economy (Mundaca, 2012). Considering the conditions in which remittances occurs, especially if there is a cost-of-living difference between the country that receives remittances and the country that hosts the migrants sending remittances, these models discovered that remittances increase the welfare of the remaining residents and not only those receiving the remittances, because all the remaining residents will have new trading opportunities and higher buying power (Mundaca, 2012). The *macroeconomic* model of remittances explains the amount of remittances sent to the origin country by the levels and fluctuations of economic activities in the host, i.e., destination and origin countries (Akkoyunlu, & Kholodilin, 2008).

Furthermore, Brzozowski (2012) pointed out that the most apparent and observable economic effect of emigration for the country of origin was the influx of remittances. This influx is explained in migration theories, and especially in the *New Economics of Labor Migration* (NELM) which defines international migration as an instrument that households use to defeat local market failures. According to this theory, a household makes an investment by sending a family member to work abroad, which is recovered when the migrant's family members get their remittances. These remittances can compensate for the credits and weakly functioning local markets for capital or can be used for retirement and futures (Brzozowski, 2012). It can be argued that there are two initial postulates of the NELM (Carling, 2007): the

first postulate is that decisions about remittances are linked with decisions about migration; and the second postulate is that these decisions must be explained at the household level. These postulates differ from the *traditional, neoclassical approach* to labor migration as an individual investment in order to maximize lifetime earnings.

3. Data and Method

As known, there exist two main sources of data on migrant remittances: balance-of-payments statistics and sample surveys. Taylor (1999) points that estimation of international migrant remittance flows have been complicated by the fact that an unknown but probably large share of remittances is not channeled through formal banking systems. As known, the economists from the World Bank and International Monetary Fund recently attempted such an assessment using macroeconomic data. A dataset on the six Balkans countries and Kosovo [1] (United Nations, 2022; World Bank, 2022a; World Bank, 2022b), i.e., Serbia, Macedonia [2], Bosnia and Herzegovina, Croatia, Albania and Montenegro have been used in this paper to investigate the linkage between remittances and GDP *per capita* growth. Annual data for 2007-2020 periods has been gathered from the World Bank and UN datasets. This paper is based on a macro analytical approach. The estimation of the country's remittances is based on availability of the relevant data in the World Bank database (World Bank, 2022a). The time series annual data for the country's GDP *per capita* growth at constant 2015 prices in US Dollars were retrieved from the UN database (UN, 2022). The personal remittances received as proportion of GDP and GDP *per capita* growth (%) at constant 2015 prices-US Dollars variables are employed for empirical modelling. Thus, the GDP *per capita* growth (%) at constant 2015 prices in US Dollars is proxy for economic development in these countries. Figure 1 shows the personal remittances received as a proportion of GDP. Figure 2 presents annual GDP *per capita* growth (%) at constant 2015 prices in US Dollars within our countries of interest. In order to reveal the long-run and short-run effects of remittances on GDP *per capita* growth, panel cointegration model based on dynamic ordinary least squares (DOLS) has been estimated. In addition, Granger causality test was employed

to explore causal linkages among the two variables.

The analysis of long-run cointegrating relationships has received considerable attention in modern time series analysis[3]. The estimation of long-run relationships has been the focal point of wide research works in time series econometrics (Breitung, & Pesaran, 2005). The published works often focusses on residual based approaches where it is frequently assumed that there exists at most one cointegrating relation in the individual specific models[4]. Breitung and Pesaran (2005) do not explicitly consider deterministic terms such as individual specific constants or trends because the asymptotic theory also applies to mean or trend-adjusted variables. Pedroni (2004) also has considered the building of statistics which will be appropriate in the presence of heterogeneity in the dynamics and endogeneity of the regressors. According to him, the basic approach first should be to estimate the hypothesized cointegrating relationship for each unit separately, and then pool the resulting residuals in creating the panel test for the null of no cointegration. Precisely, in the first step, the proposed cointegrating regression for each individual unit of the panel can be estimated in the form of including idiosyncratic intercepts or trends as the particular model permits. Furthermore, Pedroni (2004) has developed a class of statistics that are designed to test for the null of no cointegration in the presence of heterogeneous slope coefficients. These statistics permit for heterogeneous fixed effects, deterministic trends and both common and idiosyncratic disturbances to the indicated variables. Beside the "fully modified OLS" (FM-OLS) approach, another known approach to obtain an asymptotically efficient estimator for homogenous cointegration vectors is "Dynamic OLS" (DOLS) estimator. The foundation of this estimator lays in the error decomposition:

$$u_{it} = \sum_{k=-\infty}^{\infty} \gamma_k' \Delta X_{i,t+k} + v_{it}. \qquad (1)$$

where v_{it} is orthogonal to all leads and lags of Δx_{it} and in the applications the infinite sums are shortened at some small numbers of leads and lags (Breitung & Pesaran, 2005, p.33). Within our research, cointegrating relationships using panel data and extensions of single equation Dynamic OLS (DOLS) method that produces asymptotically unbiased,

normally distributed coefficient estimates was estimated. Panel DOLS involves augmenting the panel cointegrating regression equation with cross-section specific lags and leads[5] of ΔX_{it} to eliminate the asymptotic endogeneity and serial correlation. The issue with endogeneity bias and serial correlations may be adjusted with the techniques of DOLS and for that reason these estimators permit for standard normal conclusions. Accordingly, DOLS is a parametric model where the lagged first-differenced coefficients are estimated in a clear and detailed manner (Kirikkaleli, et al., 2018). In addition, with application of DOLS, the errors are extended with lags, leads and contemporaneous values of the variables. A panel is said to be *balanced* when every cross section is observed for the same time period (Startz, 2015). Within our research, data are balanced, since there are observations for both variables from 2007 through 2020 for each of the countries. Therefore, a panel structure for the $n+1$ dimensional time series vector process (y_{it}, X'_{it}) with cointegrating equation was considered; (see more, e.g. IHS, 2017, p.973):

$$y_{it} = X'_{it}\beta + D_1 it'\gamma_1 i + u_{1\,it} \qquad (2)$$

for cross-section i and periods t, where $D_{it} = (D_{1\,it'}, D_{2\,it'})'$ are deterministic trend regressors and the n stochastic regressors X_t are governed by the system of equations:

$$X_{it} = \Gamma_{21\,i}'D_{1\,it} + \Gamma_{22\,i}'D_{2\,it} + \epsilon_{2it} \qquad (3)$$

$$\epsilon_{2it} = u_{2\,it}$$

The $p_1 -$ vector of $D_{1\,it}$ regressors enter into both the cointegrating equation and the regressors equations, while the $p_2 -$vector of $D_{2\,it}$ are deterministic trend regressors which are included in the regressors equation but excluded from the cointegrating equation (IHS, 2017, p. 973). Therefore, it is assumed that the cointegrating relationship between y and X is homogeneous across cross-sections as well as that the specification permits for cross-section specific deterministic effects. The long run covariance matrices for the errors in cross-section are defined as: $u_{it} = (u_{1it}, u_{2it}')'$ and they are strictly stationary and relating to zero mean, contemporaneous covariance matrix Σ_i, one-sided long-run covariance matrix Λ_i, and long-run covariance matrix Ω_i, each one of which dividing up in conformity with u_{it}. Thus, the long-run average covariance matrices can be denoted as: $\Lambda = E(\Lambda_i)$, and $\Omega = \Omega_i$ (IHS, 2017).

Considering this starting point of the panel structure, panel estimators of the cointegrating relationship coefficient β may be defined using different variants and extensions of single-equation FMOLS and DOLS methods depending on the assumptions made about the long-run covariances and on how to use the panel structure of the data. The panel method used within our DOLS model was pooled estimation. When first removed the deterministic components from the dependent variable as well as from the regressors, pooled estimation performs typical DOLS on the pooled sample of data. The pooled DOLS estimator in which ordinary least squares is used to estimate an augmented cointegrating regression equation has been described in eq. (4):

$$\hat{y}_{it} = \hat{X}'_{it}\beta + \sum_{j=-q_i}^{r_i} \Delta \hat{X}_{it}' + j\delta_i - \hat{v}_{1it} \qquad (4)$$

where $\hat{y}_{it}$ and $\hat{X}_{it}$ are the data removed from the individual deterministic trends, and in addition, the short-run dynamics coefficients δ_i are permitted to be cross-section specific (IHS, 2017). The asymptotic distribution of the DOLS estimator is not different from the pooled FMOLS. Thus, the asymptotic covariance matrix of the $\hat{\beta}_{DP}$ may be estimated using the relating sub-matrix of:

$$\hat{V}_{DP} = \hat{\omega}_{1.2} \cdot \hat{M}_{DP}^{-1} \qquad (5)$$

$$\text{where, } \hat{M}_{DP} = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{1}{T^2}\sum_{t=1}^{T}\tilde{W}_{it}\tilde{W}'_{it}\right) \qquad (6)$$

and where $\hat{\omega}_{1.2}$ is the estimator of the long-run residual variance (IHS, 2017).
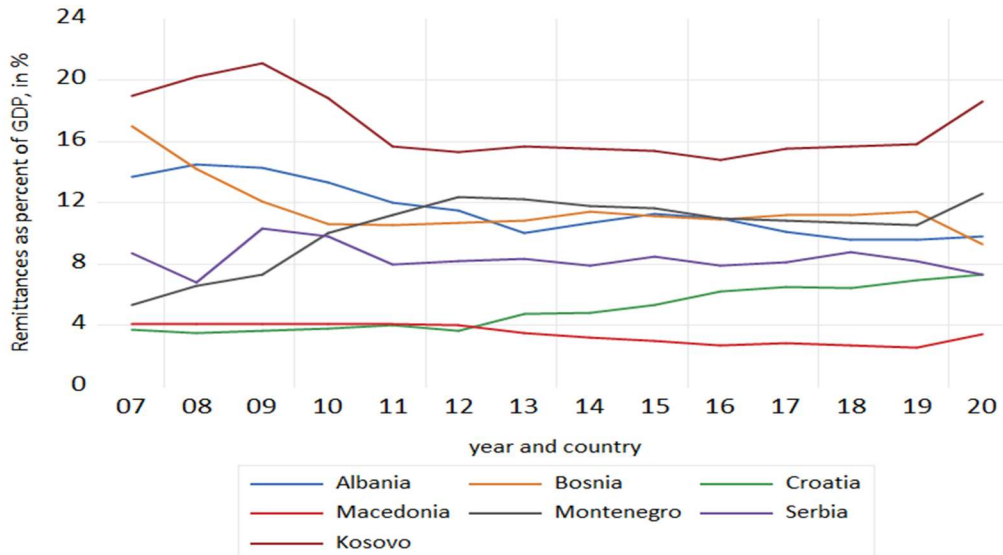
Figure 1. Personal remittances received as proportion of GDP

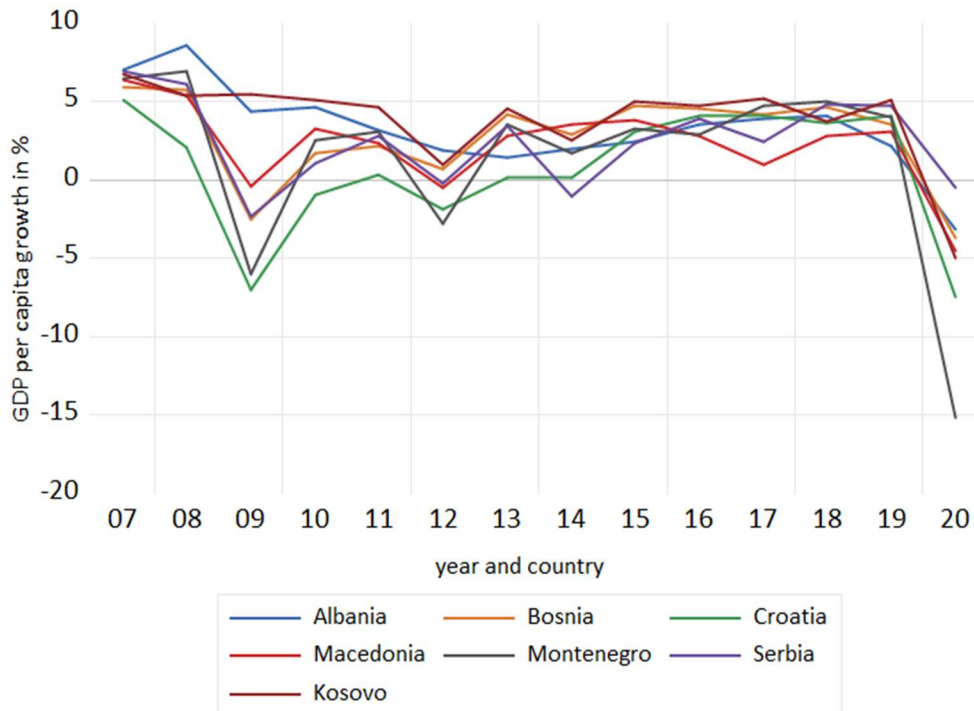Source: Author's design based on World Bank database

Figure 2. Annual GDP per capita growth (%) at constant 2015 prices-US Dollars

Sources: Author's design based on UN database

4. Empirical Results

The null hypothesis about no cointegrating of remittances received as proportion of GDP and the annual GDP *per capita* growth (%) at constant 2015 prices in US Dollars was tested. The results of the estimated equation with weighted DOLS method is displayed in Table 2.

Table 1. Pedroni Cointegartion results

	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	6.0716	0.0000	4.6525	0.0000

Panel rho-Statistic	-3.7531	0.0001	-3.2410	0.0006
Panel PP-Statistic	-3.0081	0.0013	-3.1184	0.0009
Panel ADF-Statistic	-2.4106	0.0080	-2.8879	0.0019
Group rho-Statistic	-1.8680	0.0309		
Group PP-Statistic	-2.6656	0.0038		
Group ADF-Statistic	-2.4949	0.0063		

Source: Author's calculations

Table 2. Panel DOLS results

Method: Panel Dynamic Least Squares (DOLS)				
Dependent variable: GDP *per capita* growth				
	Coefficient	Std.Error	t-Statistic	Prob.
Remittances as percentage of GDP	0.6434	0.3169	2.0301	0.0479
R-squared		0.5088		
Adjusted R-squared		0.2222		
S.E.of regression		2.1787		
Long-run variance		2.9348		
Mean dependend var		2.4545		
S.D. dependent var		2.4705		
Sum squared resid		227.85		

*Panel method: Pooled estimation. **Cointegrating equation deterministics: C

***Fixed leads and lags specification (lead =1; lag=1). ****Coefficient covariance computed using default method

*****Long-run variance (Bartlett kernel, Newey-West fixed bandwidth) used for coefficient covariances

Source: Author's calculations

Table 3. Panel individual deterministic and short-run coefficients – DOLS results

	C	D(Remittances(1))	D(Remittances)	D(Remittances(-1))
Albania	-4.1603	0.1785	-0.2918	0.1613
Bosnia and Herzegovina	-3.3566	0.8139	0.0532	1.4452
Croatia	-4.6697	1.2978	3.5012	3.0954
Macedonia	-0.7476	1.5997	-3.9185	-2.8284
Montenegro	-4.2906	-0.2642	-0.1229	-1.0951
Serbia	-3.5115	-0.6155	-1.3407	-0.2449
Kosovo	-6.1206	0.5748	-0.3789	0.4148

Source: Author's calculations

The stationarity properties of the two variables were checked by applying panel unit root tests. The outcomes have clearly demonstrated that the order of integration of remittances as percent of GDP and GDP *per capita* growth is not I(0). For the variable of remittances as

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percent of GDP, all of the unit root tests point out that the variables are not I(0) and for the GDP *per capita* growth variables the half of the tests indicate I(0). At the first difference, it was indicated that both investigated variables are I(1). Thus, these results permit further the Pedroni cointegration test in order to check if there is a cointegration equation among the variables or not. As known, Pedroni panel cointegration test has been used for the reason of exploring the long-run relationships between the variables. The outcome of the Pedroni panel cointegration test indicates that 11 out of 11 statistics in the model are significant at the 5 % level (see Table 1). This points out that no cointegration null hypothesis for the DOLS model can be rejected. Hence, results from the Pedroni test confirm the existence of a long-run cointegration relation between remittances inflows and the GDP *per capita* growth within these countries.

In addition to the DOLS model, the pairwise Granger panel causality tests were also applied to detect whether there is a relation of causality between remittances as a percent of GDP and GDP *per capita* growth. The pairwise Granger panel causality test reveals that the null hypotheses of remittances as a percentage of GDP do not cause GDP *per capita* growth can be rejected at the 5% level (F Statistic = 4.1653 and Prob. value = 0.0191). This implies that the variations in remittances inflows in these Balkans countries significantly lead to changes in GDP *per capita* growth. Thus, performing Granger Causality test it was found one-way direction causality from remittances as percent to GDP to GDP *per capita* growth at 5% level of significance. This simply means that the first variable (remittances as percent of GDP) contains statistically significant information for the future values of GDP *per capita* growth for these countries.

Table 2 illustrates the outcomes and summary statistics of the DOLS estimates. Also Table 2 shows that the estimates are based on pooled estimation using the constant C as deterministic regressor which is included in the regression equation but excluded from the cointegrating equation. The coefficient covariance matrix computation uses an estimator of the long-run variance weights using a Bartlett kernel and fixed Newey-West

bandwidth. It can be noted that the "Long-run variance" which shows $\widehat{\omega}_{1.2}$, and the estimated long-run average variance of $u_{1\,it}$ conditional on $u_{2\,it}$, are obtained from the DOLS residuals. The square root of this variance, 1.712, is little less than the "S.E. of the regression" value of 2.179, which is based on pooled estimator of the residual variance. The remittance inflows in the DOLS model have a statistically significant and positive effect on GDP *per capita* growth in these Balkans countries in the long-run (Table 2).

The individual deterministic coefficients obtained from the regression equation are shown in Table 3. All of them are with negative signs, the most negative value has been found for Kosovo (-6.13) and the least negative value is found for Macedonia (-0.75), (Table 3). Since in our case a dynamic OLS model was run, also 1 lead and 1 lag have been added to the differenced level of all variables that are I(1). Therefore, our findings observe remittance's volume to have affected both positively and negatively on GDP *per capita* growth on the short-run differently in the countries.

5. Main Discussion and Findings

Understanding long-run, short-run and causal links between remittances inflows and economic growth plays a decisive role in policy creation. This paper examines the link between these variables in six Balkans countries and Kosovo and therefore fills this gap in the literature. First of all, the causality that was found within our model is relevant for this research. From the causality results it can be concluded that remittances as percentage of GDP causes GDP *per capita* growth. Accordingly, this claim based on the causality test is much stronger. Indeed, this tells us that the remittances as percentage of GDP is a Granger cause of GDP *per capita* growth because past values of these remittances inflows explain GDP *per capita* growth and also contains statistically significant information about the future values of GDP *per capita* growth in these countries within our model.

From Table 2 it can be seen that the overall coefficient of the remittances as percentage of GDP is 0.643, indicating that a 1% increase in remittances inflow's leads to 0.643% increases in GDP *per capita* growth. Thus, Table 2

demonstrates that there is a positive and statistically significant relationship between GDP *per capita* growth and remittances as percent of GDP in these Balkan countries in the long-run, suggesting that higher remittance's inflows is associated with larger growth of GDP *per capita* in the long-run and *vice versa*. When the remittance's inflow increases within these Balkan countries providing more money for the families and relatives of those who remit, therefore, GDP *per capita* in these countries increases. In terms of the economic implications of remittances, the research results support the feedback hypothesis of Brzozowski (2012). Hence, our findings are in parallel line with the optimistic and pessimistic approach of Brzozowski (2012). Thus, according to the optimistic approach, instead of having an impact on the economy on a temporary basis, remittances will be a significant factor for development of these countries in the long-run, hence, increasing *per capita* income as well as reducing poverty.

The results from Table 3 show that in the short-run, past differences in remittances inflows and their lagged-effects have both positive and negative impact on GDP *per capita* growth. This indicates that the lagged values of remittance inflows will have significant (positive and negative) individual effects over the GDP per capita growth in these countries in the coming years. The short-run coefficients of the remittances, i.e., D (Remittances) have a strong positive effect on GDP *per capita* growth only for Croatia (3.50), and with a very less positive effect for Bosnia and Herzegovina. For the other countries, its effect is negative, mostly negative for Macedonia (-3.92). In addition, the first difference lagged coefficient of D (Remittances (-1)) may have a positive significant effect in the short-run on GDP *per capita* growth for Croatia, Bosnia and Herzegovina, Albania and Kosovo. In Serbia, Macedonia and Montenegro it is expected a negative impact of remittances inflows on their economic growth for the coming years. The mostly negative effect is expected for Macedonia (-2.83).

The statistics from Table 3 also imply that the remittances inflow as a percentage of GDP is leading factor across a lot of the countries within the model. This short-run relationship also shows that remittance inflows will have both individual positive and/or negative impacts on GDP *per capita* growth in the countries within our model in the coming years. The statistics from Table 3 also imply that the remittances inflows as percent of GDP are leading factors across these countries within the model. This short-run relationship shows that they will have both individual positive and/or negative impacts on GDP *per capita* growth within some countries in our model. The most explanatory power can be explained when the cointegrating regression is performing on the first lead of independent variables. The first lead differenced level of the remittances, i.e., D (Remittances (1)) should be considered as the leading indicator of GDP *per capita* growth, with positive effect in Macedonia, Croatia, Bosnia and Herzegovina, Albania and Kosovo. The most positive effect in coming years of the coefficient of D (Remittances (1)) on economic growth would be Macedonia (1.60) and Croatia (1.30). Only for Serbia and Montenegro in the short-run there will be a negative effect of D (Remittances (1)) on GDP *per capita* growth, with mostly negative effects for Serbia.

Our findings also contribute to explain the origin economy's business cycle that was observed in the previous literature. The findings are especially accurate with existing literature. Consistent with the available empirical research from our seven Balkans countries including Kosovo on a short-run and also from the theoretical literature it could be understandable that remittance's volume has been found to be procyclical in the coming years for Bosnia and Herzegovina and Croatia in most part and for Albania, Kosovo and Macedonia in some part. This is consistent with the findings explaining that the positive effect of remittances on economic growth may be seen on poverty reduction and/or alleviation (Đekić, Ravić, & Vesić, 2022) and then on increase of investments and human capital formation as well as through its spillover effects (Mundaca, 2012; Peković, 2017; Brzozowski, 2012; Hosny, 2020; Ali, & Alpaslan 2017). Furthermore, the empirical results show that it is expected that remittance's volume will have countercyclical effect in the coming years for Serbia and Montenegro. These findings of DOLS results are also consistent with the findings of Tabit and Charaf-Eddine, 2017; Ali and Alpaslan,

2017. These phenomena may be due to reduction of the labor supply within these countries.

This study comes at a moment when the economic impact on remitting migrants and on recipient households are influenced by the COVID-19 pandemic and such a shock is needed to be understood fully because it is affecting in different ways both developed and developing countries. The COVID-19 pandemic outbreak from January 2020 onwards has apparently changed many parameters in the world economy and societies. There is no doubt that for a long while, the researchers will be occupied with analyzing and understanding the causes, processes and outcomes of the pandemic in regards of remittance sending, trends and volumes. There have been many reports predicting a significant decline in remittances, and that the poorest countries seemingly will suffer worse (Sirkeci, 2020). In that direction, the data from our research show that during 2020 compared to 2019 there is a trend of decrease of remittances inflows in Bosnia and Herzegovina and Serbia. An increasing trend of remittances during these two years was noticed for Croatia, Macedonia, Kosovo and Montenegro and almost the same was found for Albania.

6. Conclusions

Understanding the long-run and causal link between remittance's inflows and economic growth plays a determining role in policy creating. This paper examines the link between remittances as percentage of GDP and GDP *per capita* growth variables in six Balkans countries and Kosovo. Therefore, this research fills the gap in the literature as well as contributes to the literature in regard to its research focus with the countries included. The analysis was made based on the World Bank dataset and covers the period 2007-2020. Advanced panel econometric technique has been used to investigate this link. Findings from DOLS estimators reveal that the link between remittances as percentage of GDP and GDP *per capita* growth is positive and notable in these Balkans countries and Kosovo in the long-run. These results would imply a policy that remittance's inflows would accelerate the economic growth within these countries. It is also usual to find a positive impact of remittances as percentage of GDP on GDP *per capita* growth. A higher remittance's inflows would more likely expand the domestic economic growth and increase consumption as well in return. The pairwise Granger panel causality tests reveal a one-way causality from remittances as percent to GDP to GDP *per capita* growth at 5% level of significance. As new data come out, further research should be made to examine the link between the remittances as percentage of GDP and GDP *per capita* growth in order to find whether these findings are consistent. This study could be carried out for other similar countries, especially in lower and upper middle income countries throughout the world, to perceive the link between remittance's inflows and economic development.

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[1] XK - Kosovo (under United Nations Security Council Resolution 1244/99)

[2] This research refers to the political entity known as Republic of Macedonia, which declared independence in 1991, and therefore was one of the successor states after the disintegration of the Yugoslav federation.

[3] Engle and Granger (1987) note that a linear combination of two or more I(1) series may be stationary, or I(0), in which case it is said that the series are cointegrated. Such a linear combination defines a cointegrating equation with cointegrating vectors of weights characterizing the long-run relationship between the variables. See more at: IHS Global Inc. (2013). *EViews 8 User's Guide II*. IHS Global Inc, pp.231- 257.

[4] Remarkable contributions to this element of the literature include Kao (1999), Pedroni (1999, 2001, 2004), and not long ago Westerlund (2005). Source: Breitung and Pesaran (2005, p.29).

[5] The purpose of including leads and lags is to remove long-run dependence.