A Statistical Analysis of the Impact of Remittances on Economic Growth in the Balkans

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Abstract: - Remittances have been the positive consequences of the painful phenomena of poor countries. Emigration has been in the past of the European Continent and continues to be a significant feature in many countries of Eastern and South-Eastern Europe. The states of the Western Balkans have been interested in this phenomenon in a sustainable way in the last 20 years due to war, changes in economic systems, or political instability. In the various studies related to the effects of Remittances in the countries of origin, direct and positive impacts on GDP have been observed, but in other cases, these impacts are questioned since Remittances also mean that the workforce or human resources are not active in the country of origin and at the same time create a lack of GDP growth. For this reason, remittances and their fluctuations have never had a positive impact on the GDP of the countries of origin. The objective of this paper is to identify if there is a positive and direct impact between the level of remittances in relation to the Gross Domestic Product and economic growth for the five countries of the Western Balkans (Serbia, Bosnia Herzegovina, Montenegro, North Macedonia, and Albania) during the period 2000-2021 with annual data according to World Bank data.

Key-Words: - remittances, economic growth, GDP, Covid 19, Western Balkans, human resources, investments

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1 Introduction

Migrant remittances are a vital resource for many developing countries. After exports, they are the main source of external financing both in absolute terms and in relative weight to the Gross Domestic Product.

Remittances are a transfer of money from a foreign worker to an individual in his country. Remittances from immigrants compete with international aid as one of the major financial inputs for developing countries. Migrant remittances are an important part of international capital flows, especially about exporting jobs.

According to the classification, [1], to which, [2], refers, we can distinguish four types of remittances: potential remittances, constant remittances, additional remittances, and saved remittances.

Remittances are classified as internal remittances and external remittances. Inward remittances or inflows are inflows of funds, while outward remittances or outflows are outflows of funds.

According to, [3], a remittance transaction consists of the following steps:

- The money transfer is made from the migrant sender to the sending agency using cash, a check, a credit card, a debit card, or a debit instruction transmitted via email, telephone, or the Internet (transfer).

- The sending agency directs its agent to the consignee's country to deliver the shipment.
- The paying agent pays the receiver.

For a long time now, remittances have been one of the most important inflows in the economy of countries still developing, such as the countries of the Western Balkans. Thus, remittances dominate the inflows of these countries, which are located in strategic points of location and resources. natural, the current economic policy has brought financial instability

Remittances have grown significantly over the past few decades and may be a more stable and consistent source of foreign inflows than foreign direct investment (FDI) or official development assistance (ODA), [3].

Available data make it clear that these monetary inflows are essential from an economic perspective, [4].

These flows can moderate consumption, fight poverty, and facilitate investment that can lead to the formation of human and physical capital, [5].

The objective of this paper is to identify if there is a positive and direct impact between the level of remittances in relation to the gross domestic product and the economic growth of the five countries of the Western Balkans (Serbia, Bosnia and Herzegovina, Montenegro, North Macedonia, and Albania), during the period 2000-2021 with annual data according to World Bank data. Kosovo is missing from the analysis because the declaration of independence in 2008 meant that we have official figures for this country only after 2010, [6].

On the other hand, the two primary concerns in the literature are dependency, along with lower labor force participation, and conspicuous consumption. At the household level, the most widely cited concern has been that remittances may breed dependency by discouraging receiving household members from working. Remittances may ease budget constraints, raise reservation wages, and through an income effect, reduce the employment likelihood and hours worked by individuals receiving remittances. However, remittances might also be accompanied by a substitution effect if household members have an incentive to cut back on their labor supply to continue to receive the non-labor income flows, which is a distortion of household labor supply decisions. It is this substitution effect that preoccupies many researchers and policymakers, [7].

On a macroeconomic level, Moral hazard problems are related to the potential reduction in labor supply, the development of conspicuous consumption patterns, and the inability to develop a culture of saving that can enable future investments and growth. Another impact of remittance flows at an aggregate level that has long received attention is their effect on exchange rates through increases in the prices of domestically produced goods. Reminiscent of the effects shown by Dutch disease or resource boom models, some researchers have argued that remittances can increase the consumption of non-tradable goods and the prices of domestically produced goods, reduce exports, and damage the country's competitiveness in world markets, [7].

2 Literature Review

The trend of remittances is increasing every day. This is helped by the countercyclical nature of remittances (they tend to increase in times of economic crisis or natural disaster in the homeland). They act as a kind of social insurance by helping families with basic things. remittances go for consumption or investment, they are more stable and reliable than capital flows.

The way remittances are used shows the impact these inflows have on the economic expansion of the recipient countries. Theoretically, remittances can stimulate economic growth in host countries, [8]. Remittances affect growth by increasing the three main contributing factors of production:

- accumulation of capital (physical and human),
- labor productivity total factor productivity (TFP)

Authors of the, [9], and, [10], created two similar theoretical frameworks that show how remittances affect economic growth by promoting these three factors of production. Structures the flow by distinguishing two main uses of remittances and identifying possible pathways through which these uses can be transformed into growth-stimulating factors, [9].

Remittances have grown significantly over the past few decades and may be a more stable and consistent source of foreign inflows than foreign direct investment (FDI) or official development assistance (ODA), [3]. Available data make it clear that these monetary inflows are essential from an economic perspective, [5]. These flows can moderate consumption, fight poverty, and

facilitate investment that can lead to the formation of human and physical capital, [4].

Given the increasing size of remittance flows in recent years, some researchers have examined the impact these external flows have on the economic development of the recipient countries. Studies have shown conflicting results. This section of our paper summarizes influential studies that have analyzed the relationship between remittances and economic growth. According to, [11], there are three main hypotheses on the effect of remittances on growth. The first hypothesis gives a positive perspective on the effect of remittances on economic growth. The second hypothesis is pessimistic. According to the third view, the relationship between migrant remittances and economic development is neither purely positive nor purely negative, but rather multifaceted.

In, [12], conducted extensive research and concluded that remittances can improve a country's growth prospects, maintain macroeconomic stability, and soothe the struggling economy during the crisis while also being countercyclical. Based on a statistical analysis of 538 assessments from 95 separate investigations, [13], found that about 40% of studies claim a positive benefit, 40% show no effect, and 20% report a negative effect.
Analyzing remittance data in Mexico and the United States of America, [3], concluded that the increase in income in the host countries of immigrants increases the tendency and percentage of labor income sent home to family insurance as well as self-insurance.

After the bias was corrected, the study found positive effects are more pronounced than negative or ambiguous ones, but these positive effects have an insignificant impact on growth, [13]. However, the authors note that results varied across regions. The authors in, [14], conducted research using the PMG Approach and the distinction between short-term and long-term economic impacts of remittances for financial development. Using three types of panel data varying by income level found that for developing economies there is a positive long-run relationship between migrant remittances and financial growth alongside a significant (and somewhat positive) short-run relationship, [14].

In, [15], authors investigate the relationship between remittances and economic growth in the Western Balkans. The authors' results based on OLS, random, and all fixed-effects models support the effects of growth in remittances. In the paper, [16], [17], distinguished between direct remittances and indirect effects on growth. Jongwanich found that remittances have small indirect effects on growth through investment and human capital development. Rao and Hassan also found that remittances have no direct impact on growth but moderate indirect growth effects. The authors estimated the effects using the SGMM approach, which reduces biases due to the endogeneity of variables and weak instrument effects. They found that among the multiple channels through which remittances can have indirect economic impacts, output volatility had the largest absolute impact on growth. In contrast, the exchange rate had the least effect, [14].

3 Empirical Analysis

3.1 Methodology and Data

The research considered in the article has a descriptive, explanatory, and analytical character. Descriptive research aims to elaborate on the event and serves as a platform and basis for explanatory research, [18], as it tries to bring the current situation into focus. Sampling is the process or technique of selecting a suitable sample for the purpose of determining parameters or characteristics of the whole population, [6].

Secondary data were used in the creation of this article. The secondary data is the result of a review of a wide and contemporary literature. Our paper includes panel data from the World Bank during the years 2000-2020 for the five countries of the Western Balkans. Panel data allow us to analyze a significant number of economic questions that cannot be addressed using either cross-sectional or time-series data alone, [19]. Combining time series with cross-sectional observations, provides more information, more variation, and more degrees of freedom, creating heterogeneity and diversity in the subject, [11], [20], [21]. R software was used for data processing and model evaluation.

3.2 Trends in the Balkans

In the countries of the Western Balkans, remittances represent an important source of external financing, [5]. A major contributor to this phenomenon is the large diaspora created due to massive waves of emigration from the Western Balkans over the past decades. By 2020, almost 4.77 million individuals from the Western Balkans

(excluding Kosovo) have moved abroad, [8].This proportion equates to an emigration rate of about 21% in 2020 for an area with a population of 17.6 million. With an emigration rate of 28%, Albania is the country with the highest rate, followed by Kosovo (22%), Bosnia and Herzegovina (20%) and North Macedonia (18%). Serbia and Montenegro have lower but still significant emigration rates of 10% and 9%, respectively, [8].

Consequently, significant sums of money have been returned to their countries of origin. In 2020, the countries under study received over $8.3 billion in remittances, with the proportion of each country they represented ranging from 12.6% in Montenegro to 3.4% in North Macedonia, [5].The staggering regional economic support of diaspora remittances is reflected in these figures, which are still much higher than foreign direct investment inflows, which were approximately $5.5 billion in 2020, [5].

3.3 Descriptive Analysis

Data for Economic growth and rate of remittances in relation to GDP for Albania and Bosnia and Herzegovina are given in the Table 1 below:

Table 1. Economic growth and rate of remittances in relation to GDP for the Western Balkans 2000-2020 (Albania and Bosnia & Herzegovina)

	Albania		Bosnia & H.	
Year	GDP growth	(REM/GDP)%	GDP growth	(REM/GDP)%
2000	6.9	17.2	12.8	28.4
2001	8.3	17.8	2.4	25.9
2002	4.5	16.9	5.0	22.2
2003	5.5	15.8	3.9	20.5
2004	5.5	16.2	6.3	20.2
2005	5.5	16.0	3.9	18.2
2006	5.9	15.3	5.4	16.7
2007	6.0	13.7	5.9	17.0
2008	7.5	14.5	5.4	14.2
2009	3.4	14.3	-3.0	12.1
2010	3.7	13.3	0.9	10.6
2011	2.5	12.0	1.0	10.5
2012	1.4	11.5	-0.8	10.7
2013	1.0	10.0	2.3	10.8
2014	1.8	10.7	1.2	11.4
2015	2.2	11.3	3.1	11.1
2016	3.3	11.0	3.1	10.9
2017	3.8	10.1	3.2	11.2
2018	4.0	9.6	3.7	11.2
2019	2.1	9.6	2.8	11.5
2020	-3.5	9.7	-3.1	9.6

Source: World Bank

Data for Economic growth and rate of remittances in relation to GDP for North Macedonia, Montenegro, Serbia are given in the Table 2 below:

Table 2. Economic growth and rate of remittances in relation to GDP for the Western Balkans 2000 - 2020 (North Macedonia, Montenegro, Serbia)

	North Macedonia		Montenegro		Serbia	
Year	GDP growth	(REM/GDP)%	GDP growth	(REM/GDP)%	GDP growth	(REM/GDP)%
2000	4.5	2.1	3.1	n.a.	6.1	n.a.
2001	-3.1	2.0	1.1	n.a.	6.9	n.a.
2002	1.5	2.6	1.9	n.a.	6.4	n.a.
2003	2.2	3.5	2.5	n.a.	4.4	n.a.
2004	4.7	3.7	4.4	n.a.	9.0	n.a.
2005	4.7	3.6	4.2	0.0	5.5	0.0
2006	5.1	3.9	8.6	0.0	5.1	0.0
2007	6.5	4.1	6.8	5.3	6.4	8.7
2008	5.5	4.1	7.2	6.6	5.7	6.8
2009	-0.4	4.1	-5.8	7.3	-2.7	10.3
2010	3.4	4.1	2.7	10.0	0.7	9.8
2011	2.3	4.1	3.2	11.2	2.0	8.0
2012	-0.5	4.0	-2.7	12.4	-0.7	8.2
2013	2.9	3.5	3.5	12.2	2.9	8.3
2014	3.6	3.2	1.8	11.8	-1.6	7.9
2015	3.9	3.0	3.4	11.6	1.8	8.5
2016	2.8	2.7	2.9	11.0	3.3	7.9
2017	1.1	2.8	4.7	10.8	2.1	8.1
2018	2.9	2.7	5.1	10.7	4.5	8.8
2019	3.9	2.5	4.1	10.5	4.3	8.2
2020	-6.1	3.4	-15.3	12.6	-0.9	7.3

Source: World Bank

From the tabular data, as well as from the graph, it is clear that the countries of the Western Balkans are part of the continental economy of Europe. In all the countries of the region, the negative inflection created by the crisis of September 11, 2001, was observed, except for Albania and Serbia, countries which were in a phase of economic recovery. Albania due to overcoming the political and institutional crises in 1997 and 1998, while Serbia was being rebuilt and opened to foreign markets with the fall of Slobodan Milosevic's regime.

The global financial and economic crisis also hit the region one year later than the USA. All countries had an economic recession, that is, except for Albania, which in any case experienced a halving of the rate of economic growth.

The graph also clearly shows the depth of the impact on the regional economy of the global COVID-19 pandemic. Countries that have had a more developed tourism sector, such as Montenegro, had a significant recession (-15.3%) due to the blockage of the passenger transport sector.

The consequences of COVID-19 on Serbia, Bosnia Herzegovina, and Albania have been lighter since in these countries the economic structure has been more diversified between agriculture, industrial activities, energy, and services. The measures to close activities due to the pandemic have also changed in each country.

Data for Economic growth (GDP) of Western Balkan Countries are given in the Figure 1 below:

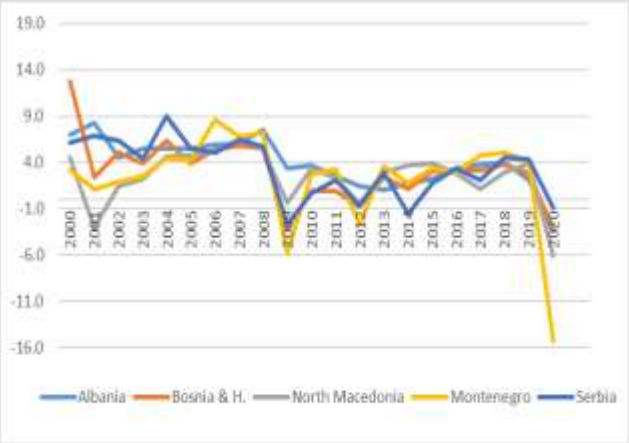

Fig. 1: Economic growth (GDP) of Western Balkan Countries 2000-2020
Source: By the Authors

In the fourth graph, two countries stand out (Albania and Bosnia Herzegovina) which have had particularly high rates of Remittances in relation to the Gross Domestic Product for two reasons.

First, these two countries have had a lower Gross Domestic Product per capita than other countries, and as a result, the impact of remittances was felt more, while the second reason is related to the historical features of the two countries.

Bosnia began its reconstruction in 1996 and the new immigration after the war, as well as the Bosnians who fled during the 90s, had a significant contribution to the reconstruction of the country, the stimulation of consumption, and the revitalization of economic life.

After the internal unrest in 1997 and 1998, a second wave of emigration was created in Albania after that of the early 90s. Remittances to the country have gradually decreased in relation to GDP as emigration from the country to Eastern Europe has continued.

The data for Serbia and Montenegro start from 2007, since until 2005 both countries were united and were separated by Referendum.

Except for North Macedonia, which has had stable rates of remittances to GDP around the 3% rate, the other four countries in the region from 2011 and beyond have brought their data closer to the 10% rate.

Data for Remittances to G.D.P. ratio for Western Balkan Countries are given in the Figure 2 below:

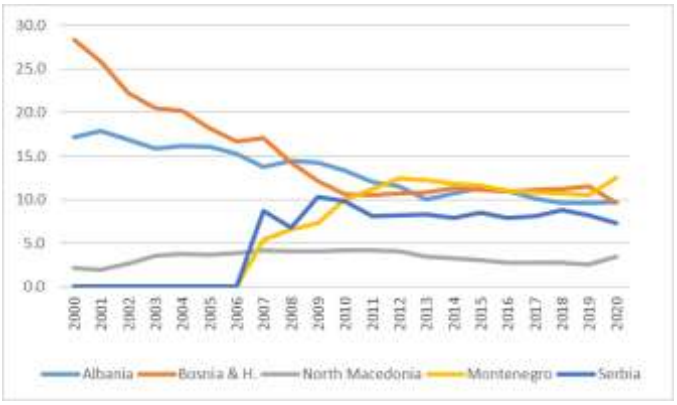

Fig. 2: Remittances to G.D.P. ratio for Western Balkan Countries 2000-2020
Source: By the Authors

Below, in the analysis carried out, you can see the data of the 5 countries of the Western Balkans, starting from the level of heterogeneity, in terms of economic growth and the level of remittances in relation to the Gross Domestic Product.

Data from the 5 countries of the Western Balkans, starting from the level of heterogeneity, in terms of economic growth and the level of remittances about the Gross Domestic Product. are given in Figure 3 below:

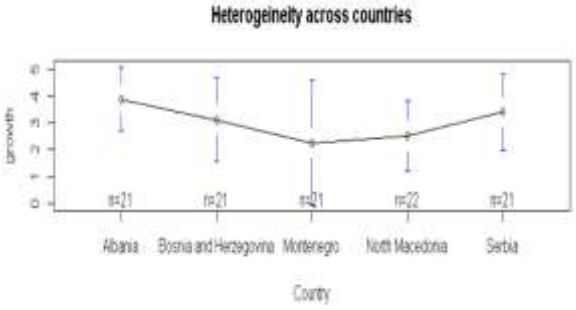

Fig. 3: Analysis of means
Source: author calculation by R software

Analyzing the heterogeneity by country, it can be seen that Montenegro has the lowest average and the highest volatility in terms of economic growth.

Data from the 5 countries of the Western Balkans, starting from the level of heterogeneity

across countries, in terms of economic growth and the level of remittances about the Gross Domestic Product, are given in Figure 4 below:

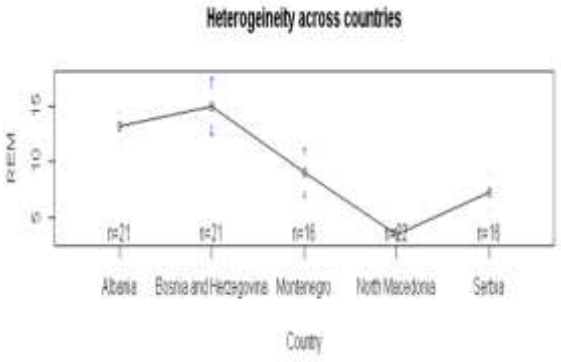

Fig. 4: Heterogeneity by country

Regarding remittances as a percentage of GDP, it can be seen that North Macedonia has the lowest average among the countries of the region, while Bosnia and Herzegovina has the highest values.

Data regarding remittances as a percentage of GDP are given in Figure 5 below:

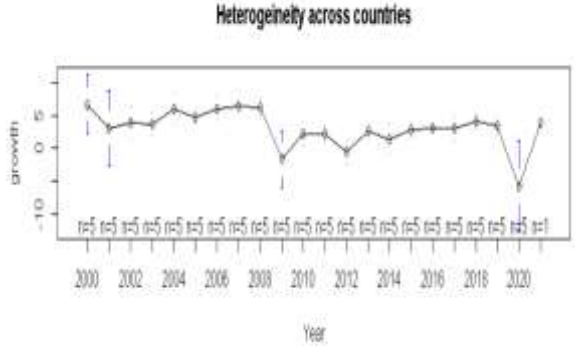

Fig. 5: Heterogeneity by country

As far as economic growth is concerned, we have the biggest fluctuations in the years 2001, 2009, and 2020, the latter being related to the crisis of the Covid 19 pandemic.

Data of remittances as a percentage of GDP have the greatest fluctuations in the years 2000-2006 are given in Figure 6.

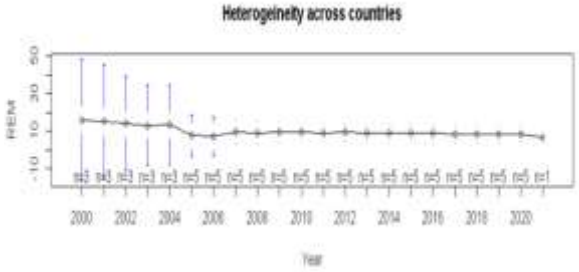

Fig. 6: Heterogeneity by country

While remittances as a percentage of GDP have the greatest fluctuations in the years 2000-2006 and after that, it seems a stability of its values in the region in general.

The empirical model
The general OLS model is:

The empirical model The general Ordinary Least of Squares model is:

$$Growth_{it} = \beta 1 + \beta 2\ REM\ it + u_{it}$$
$$i=1,2,\ldots,5 \text{ and } t=1,2,..,\ 21 (1)$$

Where:

-Growth is economic growth

- REM is remittances as a percentage of GDP

- β1 is the model intercept

- β2 is the slope of the model

- U is the residual of the model and the residual has a normal distribution $u \sim N(0,\sigma^2 I_n)$ During the construction of the models we used for hypothesis testing Prob (F-Statistics): is the p-value of the F-test, which is the significance level of Fvalue, and is used to determine whether the simultaneous effect of the predictor variable and the response variable is statistically significant. If the p-value is less than the critical limit, such as 0.05, then the null hypothesis (H1) is accepted, which also indicates that the influence of the predictor variable on the R^2 the variable was statistically significant. Conversely, if the p-value is greater than the critical value, the null hypothesis is accepted that the influence of the predictive factors on the response variable is not statistically significant, [22].

The relationship between economic growth and remittances as a percentage of GDP is shown

in the graph below together with the pooled regression which is shown in red, [23].

Data regarding the relationship between economic growth and remittances as a percentage of GDP are given in Figure 7 below:

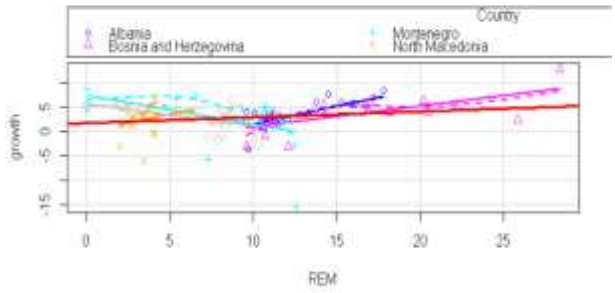

Fig. 7: Regression of the combined data

As you can see, the regression with the combined data is not a good regression to present this relationship, [24].
However, we use the Fisher test
F statistic.

data: growth ~ REM
F = 7.0919, df1 = 4, df2 = 86, p-value = 5.537e-05
alternative hypothesis: instability

Since the value of p is less than 5%, the basic hypothesis falls down and therefore the hypothesis on a stable pooled model falls, so the model must have at least fixed effects.

Models with fixed effects are given in the Table 3 below:

Table 3. Summary for fix effect model estimate

	Dependent variable:		
	growth		
	(FEC)	(FET)	(FECT)
REM	0.157	0.091**	0.101
	(0.235)	(0.038)	(0.100)
Observations	96	96	96
R2	0.025	0.059	0.026
F Statistic	2.278 (df = 1; 90)	4.570** (df = 1; 73)	1.817 (df = 1; 69)

*Note: *p<0.1; **p<0.05; ***p<0.01*

At the 5% level, the models are significant, but in the fixed effect by country and fixed effect by country model, it is not a significant independent variable. In the fixed effect by time model, we have REM with a positive impact on economic growth.

The model with a fixed effect by time is presented in

Coefficients:

Estimate Std. Error t value Pr(>|t|)
Models with fixed effects by time are given in the Table 4 below:

Table 4.The estimate model with fix effect by time

```
Coefficients:
                Estimate Std. Error t value Pr(>|t|)
REM              0.09125    0.04269   2.138 0.035893 *
factor(Year)2000  6.63551    1.41397   4.693 1.23e-05 ***
factor(Year)2001  1.16070    1.40020   0.829 0.409835
factor(Year)2002  2.41641    1.37513   1.757 0.083072 .
factor(Year)2003  2.66218    1.36346   1.953 0.054712 .
factor(Year)2004  4.28444    1.36534   3.138 0.002454 **
factor(Year)2005  4.08198    1.01346   4.028 0.000136 ***
factor(Year)2006  5.37093    1.00835   5.326 1.06e-06 ***
factor(Year)2007  5.41902    1.04774   5.172 1.95e-06 ***
factor(Year)2008  5.41648    1.03839   5.216 1.64e-06 ***
factor(Year)2009 -2.58270    1.04439  -2.473 0.015730 *
factor(Year)2010  1.40478    1.04421   1.345 0.182691
factor(Year)2011  1.38359    1.03768   1.333 0.186562
factor(Year)2012 -1.50898    1.04079  -1.450 0.151386
factor(Year)2013  1.72593    1.03409   1.669 0.099395 .
factor(Year)2014  0.52903    1.03470   0.511 0.610692
factor(Year)2015  2.04035    1.03651   1.968 0.052811 .
factor(Year)2016  2.32606    1.03004   2.258 0.026921 *
factor(Year)2017  2.19155    1.02819   2.131 0.036417 *
factor(Year)2018  3.25740    1.02855   3.167 0.002249 **
factor(Year)2019  2.67113    1.02664   2.602 0.011221 *
factor(Year)2020 -6.56810    1.02692  -6.396 1.34e-08 ***
factor(Year)2021  3.38008    2.16555   1.561 0.122886
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Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 2.148 on 73 degrees of freedom
  (10 observations deleted due to missingness)
Multiple R-squared:  0.8323,    Adjusted R-squared:  0.7794
F-statistic: 15.75 on 23 and 73 DF, p-value: < 2.2e-16
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Based on the p-values of the student statistics, it can be seen that the years that have a significant impact are the years 2000, 2004-2008, 2018, and 2020.

In 2020, it is clear that the negative effect that the COVID-19 pandemic has had on the economies of countries, as here we have the most significant negative effect on economic growth. Meanwhile, other years with significant influence have positive effects.

However, it should not be forgotten that the links between Remittances to GDP and economic growth are fragile and not significant for at least 8 years in the time frame 2000-2020. This means that the relationship between the two variables is never certain and should not be taken for granted. As a result, we must say that as it has been observed in various studies for the positive contribution to the economic growth of remittances, on the other hand, this contribution does not always do the economy good, but also creates effects that are related to the deviation of the labor market and as a consequence to a inhibition of economic growth. The unclear results in the following show that these phenomena were also present in the countries of the Western Balkans.

The modeling showed that models with fixed effects are suitable for this case, but the impact of remittances is not always positive in the Western

Balkan Countries.

4 Conclusions and Recommendations

Remittances dominate the inflows of these countries and because they are located in strategic points due to their location and natural resources, the current economic policy has brought financial instability. The trend of remittances is increasing every day.

The modeling showed that models with fixed effects are suitable for this case, the impact of remittances is positive in the countries of the region.

Beyond the statistical models of the analysis, we must say that the connection between remittances and economic growth cannot be raised to the level of economic law, since the positive effects that are visible in one part of the analyzed years disappear in the other part of the time frame.

This means that the impact of remittances on the economy does not constitute a guarantee of stimulating the economic growth of developing countries such as those of the Western Balkans.

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- Doris Doda was responsible for the Statistics. Mateo Spaho carried out the simulation and the optimization.
- Valentina Sinaj has implemented the calculation by R software
- Moana Gorezi has organized and executed the experiments.

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