

Albanian Macroeconomic Perspective Versus Covid – 19 Impact

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Abstract: This paper analyzes how the COVID-19 pandemic has affected various areas related to the economy of Albania. Covid-19 has affected many areas closely related to a country's economic performance. In this paper regarding the direct factors that have led to the economic decline for other countries in the Western Balkans. This is because the countries of the Western Balkans have similarities with Albania and do not share only a common geographical position but much more. Among other things, we are seeing how factors such as the reduction of tourism, foreign direct investments, remittances, or net exports because of COVID-19 had a great impact on the economic decline of Albania. The results of the econometric study demonstrate the direct connection between these macro elements and the GDP of Albania. For this research, we used as a data resource the information published by the Ministry of Finance and Economy, INSTAT, World Bank, Bank of Albania, IMF, etc.

Keywords: COVID-19, GDP, macro economy, perspective, serial regression, root tests, E-Views

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1. Introduction

The COVID-19 epidemic has been described as the biggest global health and socio-economic crisis and as the biggest challenge faced since the Second World War. Since its origin in Asia in 2019, the virus has spread to almost every continent of the globe. All aspects of life, such as education, politics, public safety, and economic activity, have been severely affected by this global health threat. Like the whole world, Albania was and is still seriously affected by this epidemic, and it is predicted to face recessions this year and possibly in the following years. The preventive measures that have been implemented to continuously prevent the massive spread of the pandemic, have had an impact on domestic demand and supply and significantly on the decline of economic

activity. Due to falling demand, exports across the region have been sharply reduced. The slowdown of public and private investments has negatively affected economic growth. Likewise, the reduction in foreign direct investment inflows has hurt job creation and future technological progress. One of the biggest challenges the country has faced is undoubtedly the drop in remittances. We already know that both most Western Balkan countries and our country rely heavily on the constant flow of remittances abroad, financing domestic demand and investment. Remittances, which account for about 10% of GDP (World Bank, 2020) for WB countries, have suffered a decline due to travel restrictions and rising unemployment. In response to the COVID-19 epidemic, the relevant authorities have put in place austerity

measures to contain it and have announced a temporary fiscal package aimed mainly at the areas most affected by the virus such as the health sector, social assistance, aid for private companies to pay employees who continued to work from home as well as support for small firms for non-payment of excessive taxes.

2. Methodology

This paper attempts to answer the following research questions: What are the main influencing factors in Albania's economy during these last two years that we have been affected by the pandemic (Measuring their impact)? [1] What is the relationship between some of the macroeconomic factors (independent), and the determining factor (dependent) of economic performance (GDP, as an important measure of the economic situation of Albania.)

This paper analyzes these factors through descriptive statistics, further looking at how they have been directly related to the economy, not only during these last two years that we have been affected by the pandemic.

Applying a serial regression, to study the exact relationship between macroeconomic factors and GDP (as one of the most frequent measures of a country's economy). (Here as macro factors to make the connection with the rest of the study and to be in a logical line with the basic purpose of the topic and with the topic of this study, Exactly the most affected factors during the pandemic that have led to the economic decrease throughout the pandemic (remittances, imports, foreign direct investments, tourism, net exports, etc.).

Serial regression analysis was performed using E-Views and Excel programs.

2.1 Data

To carry out a study on the impact of variables such as foreign direct investments, exports, imports, remittances, etc., in the economy of Albania (where it took GDP as a measure of the economy), secondary data was collected to create an analysis of serial regression. The data are mainly obtained from the database of INSTAT and the Bank of Albania. The database consists of a series of data covering the

time from 2013-2021, thus including an 8-year time interval, and a total of 30 observations.

2.2. Research model.

As mentioned above, to carry out this study, a serial regression analysis will be used using E-Views and Excel programs. The data were collected for a specific time interval in Albania (approximately the last 8 years),

2.3 Regression variables

variable sanatory (independent) variables that will be used to explain the dependent variable are:

Foreign direct investment (considered as a direct investment abroad, in the case of my study I received the FDI that other countries have made in Albania, where from the values of the results found, a considerable impact of IDH in our country can be observed)

Imports IMP (which, as we know, include foreign goods and services bought by the inhabitants of a country, whose values in our country could not be relatively high, since Albania is known as a country that imports a lot and these products the import also uses a lot for trade within the country)

Exports EKS (the opposite definition of imports explained above, and which obviously with the passage of time and the level of high domestic production has increased year after year) Remittances REM (when talking about remittances, the mind goes directly to their high impact and their direct connection with our economy since we already know well the low level of living resources that have a significant part of the population).

Regarding the dependent variable in my study, I have taken GDP as one of the most frequent measures of a country's economy.

Based also on the fact that during these last years that we have been affected by COVID-19, factors such as foreign direct investments, tourism, remittances, import or export have been greatly affected by the pandemic, and have had a significant impact on the economy of our country during these three years and not only, so in analyze with the deepest analysis of my work precisely to the connection between these elements and GDP.

3. Literature Review

The COVID-19 pandemic has been described as a global manifestation, not national or regional, which has affected all areas of life. Not only in Albania, which is a small country and not very developed economically, but also in many other countries of the world, the pandemic took the economies by surprise and gave a strong blow. The authors highlight the fact that the economic damage caused by the COVID-19 pandemic is mainly observed in the obvious drop in demand. They also talk about an impact on one of the most affected sectors in the Albanian economy, which is the tourism industry. In 2020, this sector experienced a deep lack of foreign tourists, compared to previous years, followed by a slight increase in 2021. Undoubtedly, there are many other areas affected by COVID-19, among which it is worth mentioning the decrease in employment. On the reduction of the employment rate in Europe due to Covid-19 [2] the authors cited that in Albania, like many other European countries, the unemployment rate increased significantly. Their analysis described the impact of Covid-19 on the Albanian economy. They concluded that the pandemic affected almost every sector of the economy, specifically in the decrease in the GDP rate, the increase in the unemployment rate, the increase in the inflation rate, and the increase in interest rates.

In a short analysis of his study [3], touched on the fact that the Western Balkan Governments responded with immediate monetary policy tools and fiscal stimulus packages to combat the economic downturn by temporarily supporting firms with subsidies for employee salaries. The author emphasizes that these measures were the first step and among the most important for the economy of these countries to fall into deep review. In addition to various authors, large international organizations also talk about the current situation and the prospects of the situation. According to IMF [International Monetary Fund] statistics, Albania had a good economic performance before suffering the two biggest shocks of 2019-2021. As a result of

them [the earthquake of November 2019 and the pandemic], the IMF indicates that our country will face a payment imbalance for a while and further requests for monetary aid from abroad. Besides others. In a paper conducted by [4] [2]. The authors analyzed (based on data from the International Monetary Fund) that governments in Europe applied unprecedented fiscal support that acted as the main stabilizer of the situation, keeping almost half of the recession under control. From the mentioned data, the authors specified that in developed European countries, fiscal measures were on average 6.2% of GDP, while in developing countries these measures were weaker, on average 3.1% of GDP. In Albania they were even lower, constituting only 1% of GDP. The authors comment that this is a consequence of the fact that in developing countries such as Albania, aid packages were more limited due to space limitations from high public debt. In their study [5]. Albania Versus Challenges of COVID-19 and European Funds' Expectations for the Future, the authorities in Albania throughout 2021 suggested that they should limit non-priority expenses, to create space for sufficient expenses for care health related to the pandemic and social protection of the most vulnerable groups, as well as to maintain a stable level with few fluctuations in the economy. According to the authors, the strong support of the Albanian economy in tourism and close trade relations with Italy, which has been one of the most affected countries in the world by the pandemic, has made the country much more affected by this unprecedented crisis.

The impacts of epidemics go beyond morbidity and mortality, and this can be seen in many studies of world economies. Evidence shows that the effect of the pandemic has been transmitted to various sectors as widespread as travel, tourism, supply chains, stock market volatility, and oil price fluctuations [6] The often-delayed responses of national governments during previous crises have imposed significant economic costs on their countries. A similar scenario happened at the beginning of the current Covid-19 crisis. Then, after the ECB (European Central Bank) announced a new program to stabilize the situation in the European markets,

the latter began to calm down and the initial economy-living gap somewhat narrowed [7]. The WB countries also suffered a problematic situation for the economy. The Western Balkans rely heavily on steady inflows of remittances, domestic demand financing, and foreign direct investment. [8]. For Albania, COVID-19 has fundamentally changed its economic perspective. At the end of 2019, the economy was projected to grow by 3.5 percent in 2020, but in fact, GDP decreased by 3.5% in 2020. Demand for goods and services, both in domestic and foreign markets, has experienced a rapid decline. In 2020, exports decreased by 26.5% compared to 2019, and imports decreased by 16%.

In addition, it is worth mentioning the fact that Albania has faced unique challenges, making it more vulnerable to the economic downturn. The pandemic follows the severe earthquake that devastated the country and its economy in November 2019. Likewise, Albania is facing numerous external and internal shocks that complicate the situation. Decrease in demand (decrease in income due to activity restrictions, decrease in exports, decrease in remittances), decrease in supply (forced closures, disruption of supply chains), and decrease in financing (deterioration in credit profiles of corporates, liquidity pressures, low/unexpected capital inflows) [1] have put the budget and balance of payments under significant pressure. Increasing the fiscal deficit and public debt will be the necessary measures to enter the path of recovery and reconstruction [9]

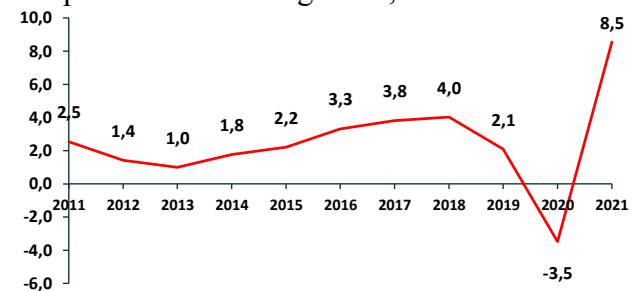
During this period of the global pandemic, several measures have been taken to prevent the spread of COVID-19 [10]. Such control measures include quarantine, travel bans, and restrictions, enforcement of social distancing, and closure of public places. These control measures put in place in every country of the world to reduce the health outcomes of the global pandemic have significantly affected the environment, sustainability, and economic development [11]. Economically, the impacts of epidemics go beyond morbidity and mortality, and this can be seen in many studies of world economies. Evidence shows that the effect of the pandemic

has been transmitted to various sectors as widespread as travel, tourism, supply chains, stock market volatility, and oil price fluctuations [12]. The often-delayed responses of national governments during previous crises have imposed significant economic costs on their countries. A similar scenario happened at the beginning of the current Covid-19 crisis. Then, after the ECB (European Central Bank) announced a new program to stabilize the situation in the European markets, the latter began to calm down and the initial economy-living gap somewhat narrowed [13]. The WB countries also suffered a problematic situation for the economy. The Western Balkans rely heavily on steady inflows of remittances, domestic demand financing, and foreign direct investment. [14].

4. The impact of the Covid-19 on the Albania economy.

In Albania, the total number of COVID-19 cases was initially relatively low, following strong control measures imposed by the Government. However, they have increased significantly since then. As in every country in the world, the control measures have disrupted the normal functioning of the economy and health services as people could not go to work. Large parts of the manufacturing sector also faced shutdowns and borders closed to travel and tourism. For Albania, COVID-19 has fundamentally changed its economic perspective. At the end of 2019, the economy was predicted to grow by 2.1 percent in 2020, but GDP decreased by 3.5% in 2020. Demand for goods and services, both in domestic and foreign markets, has experienced a rapid decline.

Graphic 1. Real GDP growth, in %



Source: Ministry of Finance and Economy. Directorate of Macroeconomic Analyzes and Statistics "2021

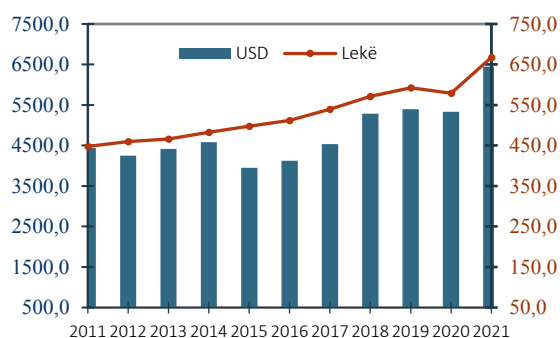
Table 1: The main macroeconomic indicators

<i>MACROJ 2021/2020</i>	<i>In percentage</i>
Nominal GDP growth	15
Real GDP growth	8.5
Increase in GDP per capita to ALL	15
Average annual inflation	2.0
Inflation at the end of the year	3.7
Unemployment rate (15 years)	12.0
Increase in exports of goods	59.4
Exports (in % of GDP)	8.2
Increase in goods imports	34.9
Imports (in % of GDP)	-33.0
Current account balance (in % of GDP).	-7.7

Source: Ministry of Finance and Economy. Directorate of Macroeconomic Analyzes and Statistics "2021

Graphic 2. Income per capita.

USD *in thousand lek¹*



Source: Ministry of Finance and economy. Directorate of Macroeconomic Analyzes and Statistics "2021

In 2020, exports decreased by 26.5% compared to 2019, and imports decreased by 16%. In addition, it is worth mentioning the fact that Albania has faced unique challenges, making it more vulnerable to the economic downturn. The pandemic follows the severe earthquake that devastated the country and its economy in November 2019. Likewise, Albania is facing numerous external and internal shocks that complicate the situation. Decrease in demand (decrease in income due to activity restrictions, decrease in exports, decrease in

remittances), decrease in supply (forced closures, disruption of supply chains), and decrease in financing (deterioration in credit profiles of corporates, liquidity pressures, low/unexpected capital inflows) have put the budget and balance of payments under significant pressure. Increasing the fiscal deficit and public debt will be the necessary measures to enter the path of recovery and reconstruction [15]

Table 2: The main fiscal indicators

<i>Fiscal indicators</i>	<i>% of GDP</i>
Budgetary income	27.0
Tax revenue	25.2
Income from taxes and customs	17.9
Budgetary expenses	31.5
Current expenses	24.4
Capital expenditure	5.2
deficit	-4.5
Internal financing of the deficit	-1.0
External financing of the deficit	5.5

in thousand lek²

NR	2019	2020	2021
TOTAL WORSHIPERS	460,349	425,905	510,572
Aids	10,609	8,294	12,671
Tax revenues	426,271	398,658	475,612
From taxes and customs	304,758	278,984	338,074
Local government	23,102	21,975	26,666
Special funds	98,411	97,699	110,872
Non-tax income	23,469	18,953	22,289
TOTAL EXPENDITUR E	491,897	536,279	595,969
Current Expenses	416,852	421,366	461,075
Personnel	76,962	76,895	83,268

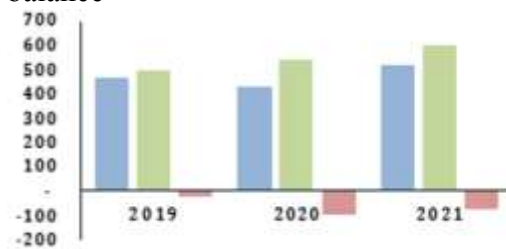
¹ Albanian currency ALL

² Albanian currency, ALL

Interest	35,143	34,393	35,822
Operation and maintenance	47,215	48,906	59,365
Subsidies	1,421	1,478	1,422
Special funds	175,628	179,364	199,457
Local budget	56,227	51,626	52,593
Other expenses	24,257	28,703	29,149
Capital Expenditure	74,993	85,081	98,203
Reconstruction Fund	0	16,591	29,521
<i>FISCAL BALANCE</i>	-31,549	-110,374	-85,397

Source: Ministry of Finance and economy. Directorate of Macroeconomic Analyses and Statistics "2021

Graphic 3. Income, expenditure, and fiscal balance



Source: Ministry of Finance and economy. Directorate of Macroeconomic Analyses and Statistics "2021

5. Analyze of the result

In this part, the analysis will be performed through a simple linear regression. The steps to be followed start with:

Step 1: Testing the stationarity of our series, which is a prerequisite for applying further econometric analyses.

Step 2: Testing for Granger causality to see the direction of causality between variables.

Step 3: Building the econometric model, testing the coefficients and the global significance of the model.

Step 4: Consists of other tests to look in more detail at important model parameters such as the

normal distribution of residuals and the heteroscedasticity test.

5.1. Stationarity of the series

Stationarity refers to a random process that creates a time series, where the probability of a series does not change over time, i.e. the mean, variance and covariance of the series are constant over time (i.e. there is no trend in our series). Stationarity is important in time series analysis because a predictable distribution enables further forecasting. Regression of non-stationary series is questionable, so it poses a problem.

I did my testing regarding the stationarity of the series with the Philip Pearson Test and in the following analysis, all the independent and dependent variables will all be stationary.

From the results were with the first, that is, with the level testing, we get variables that do not have a unit root, so they are stationary, we no longer need to perform the testing at the first or second level.

H_0 : GDP has unit roots (non-stationary). (1)

H_a : GDP does not have a unit root (stationary)

Table 3: Unit Root Test (GDP) Source: Author, Eviews8

Null Hypothesis: GDP has a unit root				
Exogenous: Constant				
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel				
	Adj. t-Stat	Prob.*		
Phillips-Perron test statistic	-4.045581	0.0041		
Test critical values:				
1% level	-3.679322			
5% level	-2.967767			
10% level	-2.622989			
*MacKinnon (1996) one-sided p-values.				
Residual variance (no correction)			6.86E+08	
HAC corrected variance (Bartlett kernel)			6.83E+08	
Phillips-Perron Test Equation				
Dependent Variable: D(GDP)				
Method: Least Squares				
Date: 09/18/21 Time: 23:10				
Sample (adjusted): 2 30				
Included observations: 29 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.

From the table we see that $p = 0.0041 < 0.05$, so, the basic hypothesis falls, *GDP does not have a unit root; the series is stationary*. For exported.

H_0 : EKS have unitary roots (non-stationary). (2)

H_a: EKS do not have unitary (stationary) roots)

Table 4: Unit Root Test (EKS) Source: Author, Eviews8

Null Hypothesis: EKS has a unit root Exogenous: Constant Bandwidth: 9 (Newey-West automatic) using Bartlett kernel				
		Adj. t-Stat	Prob.*	
Phillips-Perron test statistic				
Test critical values:	1% level	-3.475858	0.0162	
	5% level	-3.679322		
	10% level	-2.967767		
*Mackinnon (1996) one-sided p-values.				
Residual variance (no correction)		3.53E+08		
HAC corrected variance (Bartlett kernel)		3.94E+08		
Phillips-Perron Test Equation Dependent Variable: D(EKS) Method: Least Squares Date: 09/18/21 Time: 23:08 Sample (adjusted): 2 30 Included observations: 29 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.

From the table we see that $p=0.0162 < 0.05$, So, the basic hypothesis falls, EKS do not have unit roots, the series is stationary.

H₀: REM have unit roots (non-stationary). (3)

H_a: REMs do not have unitary (stationary) roots
Table 5: Unit Root Test (REM) Source: Author, Eviews8 variable remittance

Null Hypothesis: REM has a unit root Exogenous: Constant Bandwidth: 11 (Newey-West automatic) using Bartlett kernel				
		Adj. t-Stat	Prob.*	
Phillips-Perron test statistic				
Test critical values:	1% level	-4.119431	0.0034	
	5% level	-3.679322		
	10% level	-2.967767		
*Mackinnon (1996) one-sided p-values.				
Residual variance (no correction)		389,3184		
HAC corrected variance (Bartlett kernel)		433,8926		
Phillips-Perron Test Equation Dependent Variable: D(REM) Method: Least Squares Date: 09/18/21 Time: 23:11 Sample (adjusted): 2 30 Included observations: 29 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.

From the table we see that $p=0.0034 < 0.05$, so the basic hypothesis falls, REMs do not have unit roots, the series is stationary. Variable Imports

H₀: IMPs have unit roots (non - stationary). (4)

H_a: IMPs do not have unit (stationary) roots
Table. 6: Unit Root Test (IMP) Source: Author, Eviews8

Null Hypothesis: IMP has a unit root Exogenous: Constant Bandwidth: 6 (Newey-West automatic) using Bartlett kernel				
		Adj. t-Stat	Prob.*	
Phillips-Perron test statistic				
Test critical values:	1% level	-4.205776	0.0027	
	5% level	-3.679322		
	10% level	-2.967767		
*Mackinnon (1996) one-sided p-values.				
Residual variance (no correction)		4.32E+08		
HAC corrected variance (Bartlett kernel)		5.07E+08		
Phillips-Perron Test Equation Dependent Variable: D(IMP) Method: Least Squares Date: 09/18/21 Time: 23:10 Sample (adjusted): 2 30 Included observations: 29 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.

From the table we see that $p=0.0027 < 0.05$, so the basic hypothesis falls, IMPs do not have unit roots, the series is stationary.

H₀: FDI have unitary (non-stationary) roots. (5)

H_a: FDIs do not have unitary (stationary) roots
Table 7: Unit Root Test (FDI) Source: Author, Eviews8

Null Hypothesis: FDI has a unit root
Exogenous: Constant
Bandwidth: 12 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-4.804998	0.0006
Test critical values:		
1% level	-3.679322	
5% level	-2.967767	
10% level	-2.622989	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	1506.966
HAC corrected variance (Bartlett kernel)	1425.404

Phillips-Perron Test Equation
Dependent Variable: D(FDI)
Method: Least Squares
Date: 09/18/21 Time: 23:09
Sample (adjusted): 2 30
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
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From the table we see that $p=0.0006 < 0.05$, so the basic hypothesis falls, FDI does not have a unit root, the series is stationary.

5.2. The Johansen test for Cointegration.

In continuation of the above analysis of unit roots, I did the next test to show whether the variables taken in the analysis Cointegration Test with each other or not.

Conducting a co-integration (co-integration) test is necessary to establish a long-term relationship. That is, can we assume a long-run relationship in the model even though the series are diverging or moving up or down.

The following cointegration test performed is called the Johansen Cointegration Test.

H_0 : We do not have a cointegrated equation. (6)

H_a : We have a cointegrated equation. (H_0 falls)

Table 8: Johansen Cointegration test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.753029	83.21991	69.81889	0.0029
At most 1	0.632404	44.06235	47.85613	0.1087
At most 2	0.354295	16.04078	29.79707	0.7094
At most 3	0.090138	3.793232	15.49471	0.9195
At most 4	0.040181	1.148300	3.841466	0.2839

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.753029	39.15756	33.87687	0.0107
At most 1 *	0.632404	28.02157	27.58434	0.0440
At most 2	0.354295	12.24755	21.13162	0.5234
At most 3	0.090138	2.644932	14.26460	0.9675
At most 4	0.040181	1.148300	3.841466	0.2839

Since the Trace Statistic is higher than the Critical Value, then H_0 falls, i.e. we have cointegration between the variables.

Likewise, the probability value is less than 0.05. Even at the level of 'at least 1 cointegration equation' we can say that H_0 falls.

5.3. Granger causality test (Causal relationships between variables)

To find out empirically if there is a causal relationship between two variables and when there is, what is its direction, we use the Granger test.

The optimal lag according to the selection criteria was lag 2 for the causal relationship between GDP and ESK, GDP and FDI/FDI, GDP and IMP, GDP, and REM.

So the test of causality between the variables will be looked at to determine if the independent variables cause an impact on GDP so that the econometric model can be continued further.

From the following tests we see that:

H_0 : EKS do not cause GDP. (7)

H_a : EKS causes GDP.

Table 9: Granger Casualty Test (EKS vs GDP and vice versa)

Pairwise Granger Causality Tests
Date: 09/18/21 Time: 23:58
Sample: 130
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
D(EKS) does not Granger Cause D(GDP)	27	25.0076	2E-06
D(GDP) does not Granger Cause D(EKS)		10.9960	0.0005

From the Granger causality test we see that H_0 falls because probability =0.0002<0.05 or probability =0.0002<0.1 with explanatory power of 5 and 10 %. That is, there is a causal relationship between GDP and EKS.

H_0 : FDI does not cause GDP. (8)

H_a : FDI causes GDP

Table 10: Granger Casualty Test (IDH vs GDP and vice versa)

Pairwise Granger Causality Tests
Date: 09/19/21 Time: 00:05
Sample: 130
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
D(FDI) does not Granger Cause D(GDP)	27	4.19616	0.0286
D(GDP) does not Granger Cause D(FDI)		5.96431	0.0085

From the Granger causality test we see that H_0 falls because probability =0.02 < 0.05 or probability =0.02 <0.1 with explanatory power of 5 and 10 %. That is, there is a causal relationship between GDP and FDI.

H_0 : IMPs do not cause GDP,

H_a : IMPs cause GDP

Table 11: Granger Casualty Test (IMP vs GDP and vice versa) Source: Author, Eviews8

Pairwise Granger Causality Tests
Date: 09/19/21 Time: 00:08
Sample: 130
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
D(IMP) does not Granger Cause D(GDP)	27	25.8941	2E-06
D(GDP) does not Granger Cause D(IMP)		13.1211	0.0002

From the Granger causality test we see that H_0 falls because probability=0.0002<0.05 or probability =0.0002 <0.1 with explanatory power of 5 and 10 %. That is, there is a causal relationship between GDP and IMP.

H_0 : REM does not cause GDP. (9)

H_a : REM cause GDP

Table 12: Granger Casualty Test (REM vs GDP and vice versa)

Pairwise Granger Causality Tests
Date: 09/19/21 Time: 00:09
Sample: 130
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
D(REM) does not Granger Cause D(GDP)	27	4.38357	0.0250
D(GDP) does not Granger Cause D(REM)		4.99580	0.0163

From the Granger causality test, we see that H_0 falls because probability =0.02< 0.05 or probability =0.02<0.1 with explanatory power of 5 and 10 %. That is, there is a causal relationship between GDP and REM.

5.4. Model testing.

Significance of the model and independent variables. After we have realized the following models which, as we mentioned above, constitute a prerequisite to build the model, since otherwise our model would not be important, and its construction would not make sense. The linear regression econometric model used in this paper will be with dependent variables: REM, IMP, EKS and FDI, and we will look at the effect of each of these variables and their importance. First, we estimate the equation based on the database we have provided.

$$GDP = 189,141.7 + 0.12* EKS + 0.2* IMP + 7.31* REM - 0.6* FDI \quad (10)$$

Table 13 Simple linear regression Source: Author, Excel

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,788453161							
R Square	0,621658387							
Adjusted R Square	0,561223729							
Standard Error	18854,61539							
Observations	30							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	4	14669032472,3690758138	3667258118,166712978	10,2694623	4,64074E-05			
Residual	25	8887413094,355496521	355496521,382298604					
Total	29	23493445596						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	189141,7094	35211,4096	5,37160288	1,42093E-05	116622,4538	261660,965	116622,4538	261660,9649
X Variable 1 (EK)	0,12770673	0,342238382	0,3731534	0,01718114	-0,57794641	0,83255987	-0,57794641	0,832559872
X Variable 2 (IMP)	0,209280913	0,304518997	0,68725075	0,00825124	-0,4378877	0,83644953	-0,4378877	0,836449526
X Variable 3 (REM)	7,3130868	1,867907453	3,91512427	0,00061593	3,466062388	11,1601172	3,466062388	11,16011721
X Variable 4 (FDI)	-0,69055959	0,833034483	-0,8289688	0,31496704	-2,40622623	1,02510704	-2,40622623	1,02510704

5.5. Interpretation of the model and its importance.

The equation is of the lin-lin form. There is a direct relationship between three of the independent (and dependent) variables, and an inverse relationship between one independent and dependent variable (GDP).

If Exports increase by one unit, then GDP will increase by 0.12 units, if imports increase by one unit, then GDP will increase by 0.2 units, if Remittances increase by one unit, then GDP will increase by 7.3 units, while if FDI increases by one unit then GDP will decrease by 0.69 units.

5.6 Significance of partial coefficients and significance of the model

Further, following the analysis, we will take each of the independent variables which must be tested for their importance through two hypotheses, H_0 and H_a ,

$H_0: B_2=0$ which means that the variable X_2 is not statistically significant,

$H_a: B_2 \neq 0$ which means that variable X_2 is statistically significant.

$$(12)$$

If we look at the above table generated from our data, we see that: probability = 0.017 < 0.05 which means that the hypothesis H_0 falls and the hypothesis H_a stands that the variable X_2 (Exports) is statistically significant. From the probability values for the other variables analyzed with the same logic, we see that both Imports and Remittances are statistically significant, while for FDI we cannot say the

same since the probability value as seen is greater than 5 %.

Also, after checking the significance of the variables, the significance of the model is checked, where through it is seen if the raised model stands or not. Again, this is done through two hypotheses H_0 and H_a .

$H_0: B_1= B_2 = B_3 = 0$ (the model is not statistically significant)

$H_a: Any B$ different from zero (statistically significant model). (13)

In the evaluated model, the explain ability is at the level of 62.16% and the built model is statistically significant since $F=10.26 \geq$ critical F , thus rejecting the basic hypothesis that the built model is not significant.

5.7. Testing for multi-collinearity

Since in the analysis we see that one of the independent variables turned out to be statistically insignificant, under these conditions we can doubt the presence of multi-collinearity in the model. For this reason, we look at the correlation coefficients.

H_0 : The model does not suffer from multi-collinearity,

H_a : The model suffers from multi-collinearity, as can be seen from the table below, there is a high correlation between the independent variables.

So, as we suspected at the beginning, we have the problem of multi-collinearity.

Table 14: Multi-collinearity test, Excel sheet

	GDP	EKSPORTET	IMPORTET	REMITANCAT	INVESTIMET E HUAJA DIREKTE
GDP	1				
EKSPORTET	0,586477716	1			
IMPORTET	0,602694778	0,840494968	1		
REMITANCAT	0,764785037	0,637093453	0,622571519	1	
INVESTIMET E HUAJA DIREKTE	0,171098195	0,433709352	0,305689152	0,30597684	1

One of the ways we can eliminate the problem of multi-collinearity in a model is precisely by eliminating the variable that we found insignificant in the test, that is, we can continue the test by eliminating X_4 (FDI) obtaining the following table:

Table 15: Simple linear regressions, after eliminating one of the variables (Elimination of Multi-collinearity)

H_0 : The variance of the residuals is a finite number (The model does not suffer from heteroscedasticity), H_a : The variance of the residuals is not a finite number (The model does not suffer from heteroscedasticity).
(16)

Table 17: Heteroscedasticity test

Regression Statistics	
Multiple R	0,489860461
R Square	0,239963271
Adjusted R Square	0,152266725
Standard Error	503941711,6
Observations	30

ANOVA					
	df	SS	MS	F	Significance F
Regression	3	2,0847E+18	6,94901E+17	2,736291027	0,073885558
Residual	26	6,60289E+18	2,53957E+17		
Total	29	8,68759E+18			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	1316210278	841463870,3	1,564191077	0,129863964	-413443480,1	3E+09	-4,1E+08	3E+09
X Variable 1	-17754,27358	8677,624458	-2,04598317	0,050996696	-35591,38621	82,839	-35591,4	82,839
X Variable 2	8397,775482	8067,388881	1,04095335	0,030748073	-8184,979855	24980,5	-8184,98	24980,5
X Variable 3	-22911,29233	49802,93772	-0,46003897	0,649312368	-125282,6949	79460,1	-125283	79460,1

In this case, the only element we are most interested in looking at is the Significance F, which, as can be seen from the table, is less than 0.05, which means that H_0 holds, and our model does not suffer from Heteroscedasticity.

6. Conclusions

The Covid-19 pandemic has had a very big impact on the economy of Albania and of the countries of the Western Balkans.

The most affected sectors remain tourism, exports and imports, foreign direct investments and remittances.

These macro-economic factors have declined throughout the last three years and have directly affected the decline of Albania's economy.

So, the economy during these three years has been right (as expected since the aforementioned factors are an integral part of the GDP formula) but in a downward direction.

Regarding the connection between these macro factors and GDP (as a good indicator of the economy), in the long term we can say that there is still a fair connection.

What we conclude by looking at the empirical analysis is the fact that, as expected, the GDP formula itself did not change. So, in the pandemic, the influencing factors fell, the economy also fell.

In the long run, we remain in the same GDP formula and most of the increasing factors lead to an increase in GDP as well (only FDI is an exception).

The empirical analysis shows that our series has stationarity, that is, the variables have a relationship between them in the long run.

Also, from further tests the results showed us that in our series the variables cause each other and what is more important the independent variables each cause the dependent variable.

At the end of the analysis the linear model, what remains to be emphasized is that in the built model it results that if exports increase by one unit then GDP will increase by 0.12 units, if imports increase by one unit then GDP will increase by 0.2 units, if remittances increase by one unit then GDP will increase by 7.3 units, while if FDI increases by one unit then GDP will decrease by 0.69 units. Remittances have a greater impact. Even in the second constructed equation, after removing the insignificant FDI variable, it turned out that remittances still had the highest impact (their increase by one unit increases GDP by 7.2 units).

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