The Exchange Rate and the Factors Affecting it- The Case of Albania

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Abstract: The purpose of this paper is to study the factors that influence the devaluation of the EURO/ALL exchange rate in Albania. The data are secondary and their source is the Ministry of Finance and Economy and the World Bank. The data obtained in the study are for the period 2000 - 2020. The variables considered are the EURO/ALL exchange rate, FDI, public debt stock, remittances, merchandise trade and exports. Since 2015, Albania has been experiencing a continuous devaluation of the EURO/ALL exchange rate. For a country like Albania, this has a significant impact on the country's economy, so it was interesting to conduct this study. The empirical testing of the data showed us a significant and positive relationship between the exchange rate and the stock of debt and merchandise trade. It also showed a negative and significant relationship between the exchange rate and remittances and FDI. While the relationship with exports was negative but not significant.

1. INTRODUCTION

Based on economic theories, there is a connection between the exchange rate of the local currency (ALL) and the import and export of this country. The devaluation of the national currency (ALL) in relation to the euro, for example, causes an increase in the price of imported goods. On the other hand, this would increase the value of exports. The opposite will happen if we have a devaluation of the euro currency. Imported goods become cheaper, but the value of exported goods also falls. In these conditions, the foreign exchange rate becomes an efficient regulatory mechanism in the competition in international trade between different countries, and such a thing is more pronounced among countries with a relatively important weight of international trade. This strong relationship is expected to occur when competition is perfect, when there is no currency circulation outside the banking system and illegally in the domestic market, and when the variables actually represent the trade volume and the market exchange rate.

In Albania, the volume of exports has a small weight and net exports are negative. The domestic market is dominated by imported goods. This means, in the case of devaluation of the local currency, an increase in the level of prices, i.e. inflation. It is also evident that foreign currency circulates outside the banking system and is illegal. But the problem lies in the fact that these reports have not been tested nor evaluated for the Albanian economy and therefore their effects on this economy are known. This causes real exchange rate distortions.

A balanced real exchange rate helps create a stabilized macroeconomic environment. Exchange rate fluctuations in developing countries can affect aggregate demand and investment expansion, while an overvalued currency negatively affects employment. On the other hand, the high level of external debt makes the debt itself sensitive to exchange rate movements. .A persistently overvalued real exchange rate is an early indicator of potential currency crisis.

The use of the free exchange rate regime means that the price of foreign currencies against the ALL currency is determined by exchange market conditions.

According to economic theory, exchange rates are affected by the supply and demand for a particular currency. Some of the factors that have an impact on the exchange rate are foreign direct investments, remittances, the current account deficit or the ratio of exports to imports. The euro exchange rate has shown a continuous devaluation trend, starting from the middle of 2015.

If we analyze the trend of exports and imports, what is observed is a continuous increase of both indicators, but the ratio between exports and imports has been almost constant and not increasing as the strengthening of the local currency would suggest.

Quarterly remittance data has had a slight increase in 2017 and 2018, compared to 2016. This may explain to some extent the strengthening of the local currency, although not at the rates found in the foreign exchange market.

Fig. (**3**) presents the progress of FDI in Albania for the period 2000-2020. FDI had the greatest value in the years 2009, 2013 and then we have a significant decrease in the period 2015-2017.

Fig. (**4**) shows the performance of the exchange rate for EURO/ALL and USD/ALL for the period 2002-2021. The USD/ALL exchange rate reached its highest value of 145 in May 2002. While the EURO/ALL exchange rate reached its highest value of 142 in May 2011 and June 2011.

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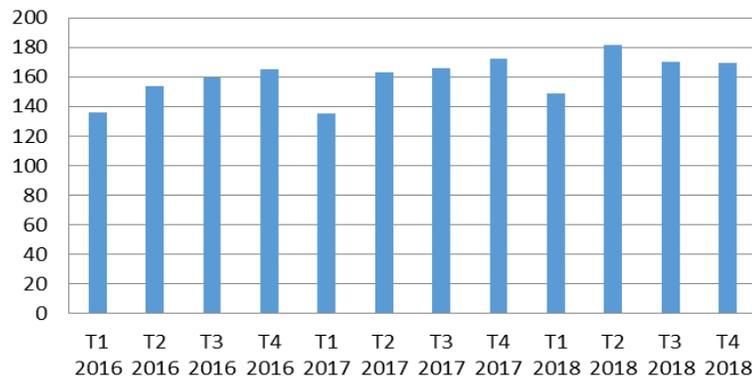**Fig. (1).** Export and import in Albania 2016-2018.

Source: Bank of Albania.

Fig. (2). Remittances in million euro 2016-2018 in Albania.

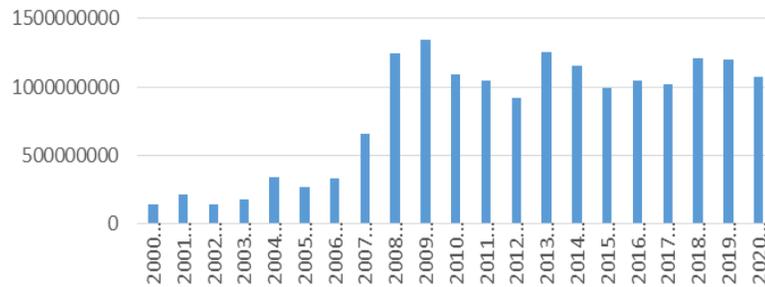Source Bank of Albania.

Fig. (3). Foreign direct investment, net inflows in Albania 2000-2020.

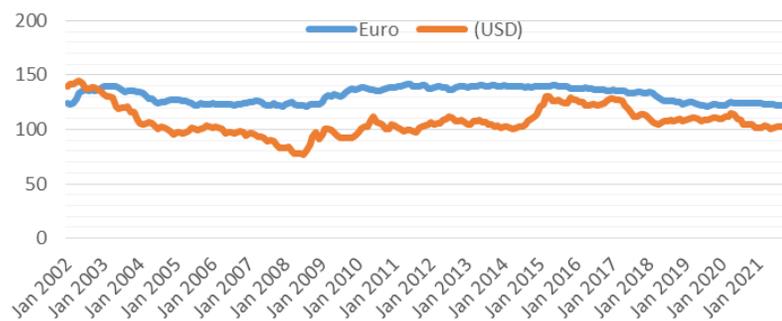Source: Data from database World Development Indicators.

Fig. (4). EURO/ALL and USD/ALL Exchange Rate Performance, January 2002- December 2021.

Source Bank of Albania.

2. LITERATURE REVIEW

In developing countries, the stability of the exchange rate is very important as it affects exports, imports, debt expenses, etc.

There are two schools of thought regarding the issue of the impact of the exchange rate on foreign debt. The classical school thinks that foreign debt is like a tax that damages the economy of a country. According to them, the citizens' perception of this tax, even though it will be paid in the future, will change their economic behavior as they feel obliged to pay it Barro (1990). While the Keynesians think that this debt has no negative effects, on the contrary, they create investments.

Many researchers have focused their research on public debt and exchange rates.

Milesi-Ferreti and Lane, 2000, discovered in their studies that the increase in foreign debt brings a bad adjustment of the exchange rate. They showed that the exchange rates of the borrowing countries are depreciating.

Alam and Taib (2003), empirically tested the relationship of external public debt, budget deficit, current account deficit with the devaluation of the exchange rate. The result of their study was finding a positive relationship between them. The object of the study was the Asian economy.

Patrawimolporn (2007), evaluates the effect of the exchange rate on debt, debt services and public debt management for the Thai economy. They come to the conclusion that the volatility of the exchange rate gives its effects on debt services. The differentiation method is used in their study

Sene (2004), studied the relationship between external public debt and the equilibrium real exchange rate in developing countries. They used the Obstfeld and Rogoff model. They found that debt overhang tends to appreciate the real exchange rate in the long run.

Todaro & Smith (2011) showed that external debt helps to solve internal deficits and stimulates foreign exchange savings.

Saheed, Zakaree S., Sani, Ibrahim E., Idakwoji, Blessing O., (2015) discovered in his study for Nigeria that the variables he had considered, External debt, Debt service payment and Foreign reserve have a statistically significant effect on exchange rate within the period of observation. Debt service payment has the strongest effect on exchange rate fluctuation in Nigeria.

Ume and Ndubuaku (2019) in their study found a significant positive relationship between real exchange rate and reserves in Nigeria.

Bunescu, Liliana. (2014). He studied whether the foreign debt had an impact on the exchange rate in Romania. The econometric model created by it was not taken into consideration because it has no statistical significance. Therefore, the fluctuations of the RON / EUR exchange rate cannot be predicted taking into account the evolution of public and private external debt.

In different literature and studies we find explanations for the positive and negative sides of remittances in a country. The study done by Adams and Page (2005) has provided some evidence that remittances are associated with lower poverty indicators and high growth rates.

Mandelman (2012), studied the stabilizing role and welfare implications of monetary and exchange rate policies in a small open economy with fluctuating remittances. The study shows that a fixed exchange rate regime provides a better outcome for households facing rising remittances, while a flexible regime works better when taking into account unforeseen business cycle shocks.

Ball, Christopher P., Claude Lopez and Javier Reyes, (2013) studied the short-term dynamics of remittance growth in different exchange rate regimes. Theoretical predictions show that in a fixed exchange rate regime, an increase in remittances leads to an increase in gross domestic product (GDP), an increase in the inflation rate and an appreciation of the real exchange rate, while those in the study of they generate an increase in GDP, an appreciation of the real exchange rate and a decrease in the inflation rate under a flexible exchange rate regime.

Lartey, Emmanuel (K.K. 2016) studied 135 developing and transition countries, spanning 1970-2007. The result of their study was that a 1 percent increase in remittances increases per capita growth by about 0.79 percent under a fixed exchange rate regime, and that this effect increases by about 0.13 percent for a 1-point increase in the exchange rate flexibility index. Also, the result of the study suggested that the effect of remittances under a fixed exchange rate regime is positive in less financially developed countries as well.

3. METHODOLOGY

The data taken into consideration are secondary and belong to the period 2000-2020. Their source is the Ministry of Finance and Economy of Albania, and the World Bank. The dependent variable is the EURO/ALL exchange rate. The independent variables are remittances, FDI, exports, stock of debt to GDP, merchandise trade. Merchandise trade data are from customs reports of goods moving into or out of an economy or from reports of financial transactions related to merchandise trade recorded in the balance of payments[1].

We have test the data for normality. In our study, we decide to use the Shapiro-Wilk normality test (Samuel Sanford Shapiro and Martin Wilk1965) since this test is more suitable for observations smaller than 30. The data are normal.

The data are test for collinearity. If the independent variables in the regression model are related to each other then it is said that there is multicollinearity.

The variance inflation factor was computed for each predictor in a predictive model with equation: $VIF = 1/(1-R^2)$.

Multiple linear regressions are a statistical technique that uses several explanatory variables to predict the outcome of a response variable. The goal of multiple linear regressions is

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[1]https://databank.worldbank.org/metadataglossary/world-developmentindicators/series/TM.VAL.MRCH.CD.WT

to model the linear relationship between independent variables and dependent variables.

Statistically, the relationship between some independent variables (x) and one dependent variable (y) is expressed as $Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + ... + \beta_p X_{ip} + \epsilon$. Y_i is the dependent variable, X_i is the independent variable, β_0 is the intercept on the vertical axis and β_p is the coefficient for each independent variable.

All data series are processed by differences of 1st order before building the linear regression.

The first difference of a time series is the series of changes from one period to the next. If Y_t denotes the value of the time series Y at period t, then the first difference of Y at period t is equal to $Y_t - Y_{t-1}$.

$Y_{it} = x_{it} \beta + c_i + u_{it}$, t=1… T

$Y_{it-1} = x_{it-1} \beta + c_i + u_{it-1}$, t=2… T

$\Delta Y_{it} = Y_{it} - Y_{it-1} = \Delta x_{it} \beta + \Delta u_{it}$, t=2… T

Y_{it} – is a dependent variable

x_{it} – is independent variables for a set of individual units i=1,…N, and time periods t=1,…,T.

The estimator is obtained by running a pooled ordinary least squares estimation for a regression of ΔY_{it} on Δx_{it}.

For hypothesis testing for coefficients β_1, β_2... β_p, we can test all coefficients β_1, $=\beta_2=....\beta_p$, $=0$

H0: β_1, $= \beta_2=….\beta_p$, $=0$ so the independent variables X1, X2….Xp do not affect the evaluation of Y.

If the H0 hypothesis is rejected, then the alternative hypothesis will be accepted, meaning that not all parameters are 0.

In standard multiple regression, all independent variables are simultaneously entered into the model. The estimate of R and R^2 determine the strength of the association between the independent variables and the dependent variables.

The hypotheses of the research are:

H0: There is no significant relationship between remittances, FDI, exports, stock of debt to GDP, merchandise trade on exchange rate.

H1: There is a significant relationship between remittances, FDI, exports, stock of debt to GDP, merchandise trade on exchange rate.

3. RESEARCH RESULTS AND CONCLUSIONS

Value of R Square = 0.754 means that 75.4 % of our model is explained by the variables used. The variables used were tested for multicollinearity and the VIF value is between 1.00-1.549.

To test the data for normality, we use the Shapiro-Wilk test. P-value of the test for all variables used is > 0.05, so they are normal.

The tested model is significant since P-value <0.001. The value of F =8.574. Merchandise trade has a positive effect on the exchange rate and this impact is significant as P-value =0.002 <0.05. The increase by one unit of the merchandise trade will increase the exchange rate by 0.892 units .FDI has a negative impact on the exchange rate and this impact is significant for 10% (P value =0.08 < 0.1). The increase by one unit of FDI will bring a negative impact on the exchange rate by 2.039 units. The variable export negatively since B =-0.065 but this does not affect it is significant since the p value is 0.13. The stock of debt has a positive effect on the exchange rate and this impact is significant as p-value =0.02. This is in accordance with the works of Milesi *et al.* (2000), Patillo et al (2002).

Remittances have a negative impact as the coefficient is -17.57 and this impact is significant as the value = 0.04 < 0.05. This is consistent with the work of Lartey, Emmanuel (K.K. 2016).

Our model would be represented by the equation:

$Y = -1.926 + 0.892X_1 - 2.039X_2 + 54.912X_3 - 17.57X_5$

Table 1. Result of the Multiple Regressions Model

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.868[a]	.754	.666	2.487381662906647
a. Predictors: (Constant), RemitanceX5, ExportX3, stockdebtX4, Merchandise tradeX1, FDIX2				

ANOVA[a]						
	Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	265.249	5	53.050	8.574	<.001[b]
	Residual	86.619	14	6.187		
	Total	351.868	19			
a. Dependent Variable: Exchange rate Y						
b. Predictors: (Constant), RemitanceX5, ExportX3, stockdebtX4, Merchandise tradeX1, FDIX2						

Coefficients[a]								
		Unstandardized Coefficients		**Standardized Coefficients**			**Collinearity Statistics**	
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
1	(Constant)	-1.926	.617		-3.123	.007		
	Merchandise tradeX1	.892	.231	.596	3.866	.002	.739	1.354
	FDIX2	-2.039	1.082	-.301	-1.885	.080	.690	1.450
	ExportX3	-.065	.041	-.241	-1.580	.136	.755	1.324
	stockdebtX4	54.912	20.940	.405	2.622	.020	.736	1.360
	RemitanceX5	-17.575	5.079	-.571	-3.460	.004	.646	1.549
a. Dependent Variable: Exchange rate Y								

Collinearity Diagnostics[a]									
Model	**Dimension**	**Eigenvalue**	**Condition Index**	**Variance Proportions**					
				(Constant)	**MerchandisetradeX1**	**FDIX2**	**ExportX3**	**stockdebtX4**	**RemitanceX5**
1	1	1.968	1.000	.01	.06	.09	.00	.08	.11
	2	1.354	1.205	.02	.10	.09	.28	.05	.00
	3	1.255	1.252	.38	.10	.00	.07	.05	.01
	4	.564	1.868	.31	.10	.13	.00	.43	.28
	5	.441	2.113	.00	.07	.69	.34	.36	.11
	6	.418	2.168	.28	.58	.01	.30	.02	.49
a. Dependent Variable: Exchange rate Y									

APENDIX

Tests of Normality						
	Kolmogorov-Smirnov[a]			**Shapiro-Wilk**		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Exchange rate Y	.149	20	.200[*]	.965	20	.650
Merchandise tradeX1	.112	20	.200[*]	.974	20	.842
FDIX2	.159	20	.200[*]	.933	20	.177
ExportX3	.128	20	.200[*]	.955	20	.458
RemitanceX5	.132	20	.200[*]	.964	20	.631
stockdebtX4	.182	20	.081	.934	20	.183

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction.
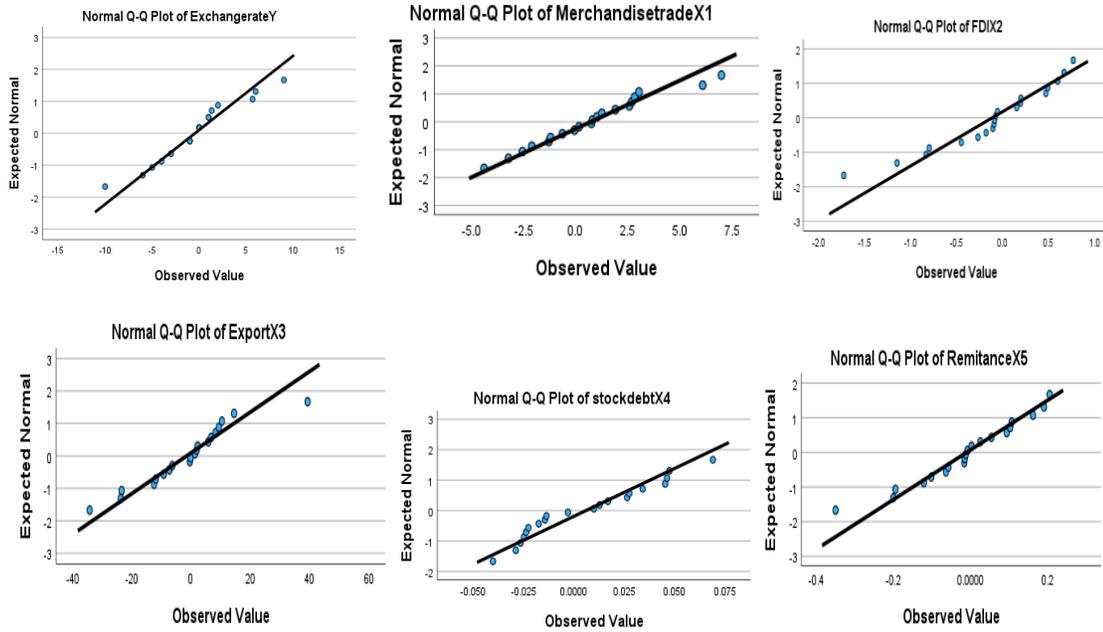
Correlations							
		ExchangerateY	**MerchandisetradeX1**	**FDIX2**	**ExportX3**	**stockdebtX4**	**RemitanceX5**
Exchange rate Y	Pearson Correlation	1	.123	-.487[*]	-.045	.516[**]	-.550[**]
	Sig. (1-tailed)		.303	.015	.425	.010	.006
	N	20	20	20	20	20	20
Merchandise tradeX1	Pearson Correlation	.123	1	.157	.160	-.359	.424[*]
	Sig. (1-tailed)	.303		.254	.251	.060	.031
	N	20	20	20	20	20	20
FDIX2	Pearson Correlation	-.487[*]	.157	1	-.332	-.266	.442[*]
	Sig. (1-tailed)	.015	.254		.076	.129	.026
	N	20	20	20	20	20	20
ExportX3	Pearson Correlation	-.045	.160	-.332	1	-.218	-.156
	Sig. (1-tailed)	.425	.251	.076		.178	.256
	N	20	20	20	20	20	20
stockdebtX4	Pearson Correlation	.516[**]	-.359	-.266	-.218	1	-.336
	Sig. (1-tailed)	.010	.060	.129	.178		.074
	N	20	20	20	20	20	20
RemitanceX5	Pearson Correlation	-.550[**]	.424[*]	.442[*]	-.156	-.336	1
	Sig. (1-tailed)	.006	.031	.026	.256	.074	
	N	20	20	20	20	20	20

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflict of interest.

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