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An Empirical Examination of the Impact of Exchange Rate Fluctuation on Economic Growth in Sierra Leone

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Abstract

Exchange rate fluctuation is considered in the literature as an essential driver of economic growth. This paper aims to investigate the impact of exchange rate fluctuation on economic growth of the Sierra Leone economy. As a whole, the period under consideration is a thirty-nine year period spanning from 1980 to 2018 inclusive. Previous researches show that there can be both positive and negative impact of exchange rate fluctuation on economic growth of a nation's economy, and in this paper, we discovered that exchange rate fluctuation (depreciation of the Leones) has a positively significant relationship with economic growth in Sierra Leone. We used both ADF-test and PP-test to check for stationarity of the variables. The ordinary least square method was used to analyse data and results are based on regression analysis conducted from available data.

Keywords

Exchange Rate, Economic Growth, Export, Import and Foreign Direct Investment

1. Introduction

Exchange rate is a rate of one currency expressed in term of a currency of another country. The exchange rate dictated by the IMF in terms of the US dollar is the aggregation of two different words; *i.e.* rate and exchange. Rate is referred to the price or value at which a transaction takes place, while exchange is a process of Selling and/or buying of currencies or commodities. The process of selling and/or buying postulates the price to be determined for the exchange of

the goods and services to necessitate the exchange or transaction. Note that the prices of currencies do fluctuate like prices of any other commodity. The prices of commodities are usually determined in terms of value of money, (*i.e.*, in quantitative form).

There have been many exchange rate reforms in West Africa over the years. However, the inefficiency of the WACH system in the areas of operations and convertibility paved the way for a research proposal in 1984. The main reason for the proposal was to establish a single monetary zone within ECOWAS member countries, the study proposed was to conform to tax and monetary policies as a precondition for economic integration in the West African region. In the end, the research conducted at the time strongly proposed the creation of a single monetary zone known as ECO (Review of exchange rate mechanism, 2008) [1].

There has been significant development in Sierra Leone's exchange rate regime over the years, as there has been shift in managing the volatility of the Leone currency in other to tightly manage the exchange rate system. This paper looks at the exchange rate system and government objective in maintaining a steady fluctuation and reform over the period been studied, in a circumstance of thoughtful decisiveness of exchange rates.

1.1. Problem Statement

The continuing depreciation of the Leone currency against the US dollar and other currencies in recent years, made it possible to investigate what impact does exchange rate fluctuation has on economic growth in Sierra Leone. With the advent of globalization, exchange rate regimes have been a critical factor affecting developing economies particularly those that heavily depend of importation of basic commodities. Exchange rate fluctuation can have both positive and negation impact on the economy of a country. This can be seen from conclusions made by David O. (2021) [2], Dina E and Basma W. (2022) [3], Khandare V. B. (2017) [4], Adeniran J. O., *et al.* (2014) [5], Saleh M. and Shyamapada B. (2009) [6], Jelilov G. *et al.* (2016) [7]. With regards to this, we will try to highlight some effect of different exchange rate reforms and other macroeconomics factors that has affected economic growth in Sierra Leone.

1.2. Motivation of the Study

Exchange rate is a key player in a country's economy and thus have different effects based on the level of fluctuation in a country (Naiguta S. T. (2015) [8], Williams H. T. (2018) [9]). As such, it is worth examining the impact of that fluctuation in Sierra Leone against the US Dollar. We have to take into consideration that Sierra Leone is using its own currency and monetary policies which is been controlled by its own central bank. With the ECO currency in proposal, it is important to analyse the efficiencies and deficiencies and make some comparison to other systems around the world.

As stated earlier, exchange rate is deemed to be a major contributing factor in

the development of a country's economy. This impact is expected to have a positive or negative effect on economic growth. As such; it is worth examining the impact of exchange rate fluctuation and how it has contributed to economic development in Sierra Leone. This study intend to examine exchange rate fluctuation, foreign direct investment, imports of goods and services and Exports of goods and service as the independent variables; and how they affect the country's economic growth by considering growth of gross domestic product as the dependent variable. The expansion in the financial sector in Sierra Leone thus necessitates an investigation to establish how these variables have impacted economic growth in the past.

1.3. Objectives of the Research

The main objective of the study is to evaluate the impact of real exchange rate fluctuation on economic growth in Sierra Leone for the period 1980 to 2018 inclusive. Other objectives include:

- Firstly, to have a critical review of the exchange rates system and it relation to economic growth in Sierra Leone for the period under consideration.
- Secondly, assess what impact exchange rates fluctuation has on economic growth in the country.

1.4. Research Methodology

We are using empirical methods for data analyses; by using econometric models to evaluate how foreign exchange fluctuation impacts economic growth with specific attention to Sierra Leone economy. We are testing for unit root of the data to see if the variables are subject to stationarity, this is done with the use of both the Augmented Dickey-Fuller (ADF) unit root testing method and Philips-Peron (PP) unit root testing method. Data is collected from various reliable sources such as the World Bank database, World Development Index, the United Nations Conference on Trade and Development (UNCTD), Bank of Sierra Leone (BSL) database, the Ministry of Finance and Economic Development (Sierra Leone).

1.5. Research Hypothesis

We are considering the null hypothesis H_0, and in this case the H_0 states that there is an insignificant relationship between the exchange rate fluctuation and the dependent variable. Based on results attained, we will affirm or reject this hypothesis.

2. Literature Review

2.1. Theoretical Literature Review

In providing a conceptual framework in this study, we are presenting various theories relating to the topic and discussed some empirical literature reviewed. The main aim of presenting a review of empirical literature is to look into work

done by other researchers and the methods applied in this field and try to identify any existing gaps in literature area. Furthermore, this chapter is divided into two different parts. Firstly, the theoretical section which explains the link or relationship that exist between exchange rates fluctuation and economic growth in a country and secondly, the empirical literature to be reviewed. A brief summary is provided at the end of the chapter as well.

Exchange rates are determined by the forces of demand and supply of a currency. It can also be influenced by the governments in various ways. The level and nature of government involvement in the currency markets does define alternative systems of exchange rates and these systems have different implications on the economy.

There are two approaches to defining exchange rate. That is, nominal exchange rate and real exchange rate. Firstly, nominal exchange rate defines exchange rate as the price of one currency in terms of another. And secondly under real exchange rate, exchange rate refers to the rate at which goods and services are exchanged between the domestic economy and the world at large. For this study, we are defining exchange rate using real exchange rate.

In Sierra Leone, the official exchange rate is derived from data gathered on foreign exchange transactions from the commercial banks and foreign exchange bureaux for the past five business days ending Tuesday and transactions at the Bank of Sierra Leone Foreign Exchange Auction that is held on each Wednesday. The US Dollar is the anchor currency in the Sierra Leone currency market, this means only US Dollar transactions are considered when calculating the official rate.

All commercial banks and foreign exchange bureaux are required to report on a daily basis their foreign exchange transactions to the Central Bank (BSL). All Successful foreign exchange transactions on all competitive and non-competitive bids are taken into consideration during the calculation of the official exchange rate. Since April 1990 Sierra Leone has been using the fully flexible and market determined exchange rate system.

2.2. Approach to Exchange Rates

Below are some of the well known exchange rate approaches:

The traditional exchange rate approach: This approach holds that the depreciation of a currency has incremental or positive effects on economic growth. In this approach, it is believed that a devaluation of a country's local currency will lead to cheaper local goods abroad and thus this will increase their demand and can leading to an increase in exports of locally manufactured goods (Salvatore, 2005) [10]. An evidence of this view can be seen on the trade balance and balance of payments, as the devaluation of the currency will lead to the improvement of trade balance and relieve balance of payments difficulties. This will consequently lead to a boom in output and employment in the country as well (Acar, 2000) [11]. Generally it is said that when a country's local currency de-

preciate, it improves the cost of competitiveness of its exports which is a major component to the growth of a nation's economy (*i.e.*; gross domestic product).

The structuralist approach: This approach depicts how currency depreciation can cause a reduction in output. The increase in price of imports causes devastating effect and this requires great attention**.** With this approach, depreciation intends to increase the cost of imports and the cost of domestic production as well, through the importation of basic production inputs (Acar, 2000) [11]. When the costs of production inputs rises, the possibility of cost of production will as well increase and firms will definitely pass on this cost their prices of the product. Acar (2000) [11] stated that "a decreasing in imports in this context imply insufficient inputs necessary for production. And yet, because of the lack of enough inputs and the increasing costs; production will slow down, leading to a contraction in total supply". Moreover, in the structuralist approach, depreciation of a currency will be contractionary as it results to a decrease in the growth rate of output in the economy as a whole.

Export led hypothesis: the ELG hypothesis claim that export expansion is a significant factor in promoting long-run economic growth in a country. Various arguments can be put forward to justify the ELG hypothesis theory. First of all, from the demand-side perspective, it is argued that uninterrupted demand growth cannot be preserved in small local or domestic markets; this is because any economic motive based on the expansion of is bound to be exhausted quickly. While in case of export oriented markets, expansions are almost limitless and hence it is not affected by any growth restrictions on the demand side. Therefore, exports can be an accelerator for income growth in the exporting country and will serve as a major component of aggregate demand (Herzer *et al.*, 2008) [12]. The principal idea of the ELG hypothesis is that there is an increase in efficiency in producing for export markets, which in turn increases domestic productivity and hence leads to rise in revenue which then improves economic growth.

As reported by Hatemi-J and Iranoust (2000) [13], an export-oriented policy can contribute to economic growth in different ways. The major ways this can occur are as follows:

- Firstly, when a country is heavily involved in exportation, it will relax the constraint of binding for foreign exchange in the imports of capital and intermediate goods which will in turn lead to economic growth.
- Secondly, from the Keynesian perspective, it is argued that a growth or increase in exports will leads to foreign trade and expansion of output.
- Thirdly, exportation generally increases efficiency through competition. Healthy competition leads to greater economies of scale and natural spreading of the technical know-how or knowledge in production, which is an important source of economic growth.

2.3. Empirical Literature Review

There are many arguments on how to choose the most suitable exchange rate to

maintain economic stability in a country. The choice of appropriate should depend on specific features of the country. A Free floating exchange rate regimes adopted by developed countries might not be suitable for developing countries whose markets are not well developed and whose economy is not firm enough to absorb the risks from exchange rate volatility. If the right exchange rate regime is adopted, it will facilitate and enhance economic growth in the long run. Basically, economic theory does not clearly state how exchange rate regimes can affect economic growth, and there are few studies which have investigated this relationship. Below is highlight of a fraction of these studies.

Khan, Md. (2021) [14] investigated the impact of inflation, norminal exchange rate, FDI and unexpected shocks on economic growth from 1990 to 2020 using the OLS method. Results showed that exchange rate and FDI positively affected economic growth; while shocks like Covid-19 negatively affected the economy.

Touitou, Yacine and Ahmed (2019) [15] examined the empirical impact of exchange rate on economic growth using the vector autoregressive model (VAR) for the period 1990 to 2015. They found that a decline in the real effective exchange rate (*i.e.*: the Dinar) will result to an increase in economic growth.

Abdinur and Elmas (2022) [16] investigated the impact of fluctuation of exchange rate and inflation rate on economic growth of Sumalia using the ordinary least square from the year 2005 to 2020. They found that have a positive significance between independent variables and economic growth.

Huang and Malhotra (2005) [17] found two interesting trends in a study conducted for 12 developing Asian countries and 18 advanced European countries for the period of 1976-2001. They firstly discovered that the choice of exchange rate regimes does not have any significant impact on economic growth in the European nations, though more flexible regimes were associated with higher economic growth. And secondly, they found that developing countries in Asia which adopted managed float exchange rate system seemed to perform better than other countries which adopted different regimes in the same region. Therefore, it was concluded that exchange rates do impact economic growth and this growth may depend on how developed the economy is.

According to Levy-Yeyati and Sturzenegger (2002) [18], the implications of macroeconomic variables and choosing a particular exchange rate arrangement is by evaluating the impact of exchange rate regimes on inflation, money growth, real interest rates, and real output growth. It was found that there is a correlation between exchange rate and output growth, even though the influence is not clear.

Kandil, *et al.* (2007) [19], examined the effects of exchange rate fluctuations on economic activity in Turkey. From the theoretical model employed it was found that anticipated exchange rate appreciation does have significant adverse effects on growth of real output and the demand for investment and exports. On the other hand, unanticipated exchange rate fluctuations have asymmetric effects

on output growth and the growth of private consumption and investment, despite the country having an increase in export growth.

Basirat *et al.* (2014) [20], investigate the effect of exchange rate fluctuations on economic growth considering the rate of development of financial markets using panel data for 18 countries over the period 1986-2010. Result shows that the effect of financial markets development on economic growth and the effect of exchange rate fluctuation on economic growth are significantly negative. While on the other hand, the mutual effect of exchange rate fluctuations and financial markets development on economic growth is positive, although the effect in the countries studied is so small that it is not statistically significant.

Isola *et al.* (2016) [21], examined the impact of exchange rate fluctuation on economic growth in Nigeria, by employing the Autoregressive Distributed Lag (ARDL) model for the period of eleven years (from 2003 to 2013, inclusively). Empirical results showed that exchange rate fluctuation has no effect on economic growth in the long run, but in the short run a relationship does exist between the two.

Khandare (2017) [4] studied the impact of exchange rate on economic growth of India during 1987 to 2014, using multiple regression analysis (the ordinary least square). Final results showed that exchange rate fluctuation has a negative relationship with GDP growth in India during the study period.

Kandil (2004) [22] examined the effect of exchange rate fluctuations on real output growth and price inflation for twenty-two developing countries, with theoretical rational of both the anticipated and unanticipated components of exchange rate. From his conclusion, it was seen that exchange rate fluctuations (both anticipated and unanticipated components) generated an adverse effects on economic performance in most of developing countries.

Morina *et al.* (2020) [23] examined the effect of real effective exchange rate volatility on economic growth in the Central and Eastern European countries the period between 2002 and 2018, using the fixed effects estimation model. Result shows that exchange rate volatility has a negative but significant effect on economic growth in the Central and Eastern European countries

Tarawalie (2010) [24] examined the impact of real effective exchange rate on economic growth in Sierra Leone using quarterly data from 1990 to 2006. By using the ordinary least square, he found a positively significant relationship between fluctuation of exchange rate and economic growth in the country.

Jakob (2015) [25] studied exchange rate regimes and economic growth for 74 countries for year 2012 (36 developed and 38 developing countries). He found out that there is a significantly positive correlation between pegged exchange rate and growth in gross domestic products.

3. Methodology

This study uses data from various reliable sources; this includes national institutions such the Bank of Sierra Leone (BSL) annual reports, statistical information

and bulletin from the Ministry of finance and economic development (SL). We considered annual reports from World Bank, United Nations record books such as United Nations Conference on Trade and Development (UNCTAD). The scope of the study as stated earlier is a thirty-nine years period starting from 1980 to 2018 inclusive.

3.1. Model Specification

Xuan-Vinh V. and Jonathan A. B. (2006) [26] stated that it is common for economic growth to be modeled within a regression framework. They further explained that there is no specific explanation on how growth can be modeled within this framework. As a result, there is no clear guide as to what variables to include when specifying a regression equation.

Therefore, to specify our regression equation, we are considering the model used by Jelilov G. *et al.* (2016) [7], where a linear regression equation is used to formulate the growth model and explanatory variables used are considered independent and entered linearly to formulate the growth model assuming variables are in the multiplicative form.

We are firstly investigating the relationship between growth rate of GDP and Fluctuation of exchange rate using a graphical representation in establishing whether we have a relationship or not. If the Fluctuation of exchange rate is directly propositional to the growth rate of GDP, then we can establish that exchange rate is a determinant of growth of GDP in the country. The growth rate of GDP is calculated at any given period (time-t) by the equation:

$$GDP\_gr = \left(GDP_t - GDP_{t-1}\right)/GDP_{t-1} \tag{1}$$

Moreover, the same technique is applied for the growth rate or Fluctuation rate for exchange rate and this is represented by the equation

$$EXCH\_gr = \left(EXCH_t - EXCH_{t-1}\right)/EXCH_{t-1} \tag{2}$$

Based on results obtained on the relationship between the two variables, we are then going to conduct further statistical and econometric analysis from the data available.

The model in this paper is estimated using data available on the following variables: gross domestic product, exchange rate, foreign direct investment (stock) inflow (FDI inflow), Imports of goods and service and export goods and service, and these are represented as follows:

$$GDP_t = F\left(EXCH_t, FDI_t, IMPT_t, EXPT_t\right), \tag{3}$$

where, GDP is the total GDP in currency at current prices. EXCH refers to the exchange rate determined by central bank, and it is calculated as the yearly average based on monthly averages. FDI is the total stock inward in currency at current prices; we considered stock inward because the country under study has little or no investment outside its borders under the 39 years considered. This mean, we are considering the total amount of investment that is coming into the

country and not considering investments that short-down due to inability of investors to invest and withdrawing such investment in the future leading to net investment in some periods being negative.

IMPT represent the value of all goods and other market services received from the rest of the world. This includes the value of merchandise, freight, insurance, transport, royalties, license fees, and other services, excluding compensation of employees and investment income and transfer payments. EXPT is the total trade in goods and services as reported in the balance of payment accounts. Goods include general merchandise, non-monetary gold values; services are intangible transactions such as royalties, travels, and business services, etc.

Assuming function $F(\cdot)$ to be a multiplicative one, linearizing it through logs, and adding the error term, we come to the following econometric model.

$$\log gdp_t = \alpha + \beta_1 \log exch_t + \beta_2 \log fdi_t + \beta_3 \log impt_t + \beta_4 \log \exp t_t + \varepsilon_t \quad (4)$$

where α, β_1, β_2, β_3, β_4 are coefficients; and they are expected to be greater than zero. Each of the betas is a multiplier to a variable in Equation (4).

The expected result from the empirical analysis is that exchange rate must have a positive relationship with economic growth in Sierra Leone, and the null hypothesis that was states earlier says that there is no relationship between the two variables. This hypothesis can be accepted or rejected based on results obtained from the regression result.

3.2. Unit Root Testing

The ADF test usually has three possible ways of using the model, and all of them yield the same result. In this case, we are using the method that uses the intercept only (instead of the models with trend and intercept or model with no trend and no intercept).

Let suppose that $y_t = \alpha + \lambda_1 y_{t-1} + \cdots + \lambda_n y_{t-n} + \varepsilon_t$ is an intercept form of an AR(n) model, where y_t is the variable under consideration, α is the intercept, $\lambda_1 \cdots \lambda_n$ is the coefficient of the variable, t is any given time, n is number of lags, and ε_t is the error term. Then the intercept form of the model under the unit root process of the ADF test will be as follows: $\Delta y_t = \alpha + \lambda_1 y_{t-1} + \cdots + \lambda_n \Delta y_{t-n} + \varepsilon_t$, where Δ is the differencing operator.

Usually, not all variables become stationary at level or first differencing, and if this happens, then we should apply the second differencing. In this paper, we are applying these two models to capture whether λ is significant or not;

$$\Delta \log GDP_t = \alpha + \Delta \log \lambda EXCH_t + \varepsilon_t \quad (5)$$

And

$$\Delta \log GDP_t = \alpha + \Delta \log \lambda EXCH_{t-1} + \varepsilon_t, \quad (6)$$

The later model assumes a one year lag period. $\Delta \log GDP_t$ and $\Delta \log EXCH_t$ is calculated as follows: $(\Delta \log y_t \equiv \log y_t - \log y_{t-1})$ at the base year and $(\Delta \log y_{t-1} \equiv \log y_{t-1} - \log y_{t-2})$ at one year lag. From these two equations, we will check whether λ is significance or not.

The PP test is similar to the ADF test as it is also built on the Dickey-Fuller test (1979) [27] in other to address the problem of high order autocorrelation. The PP test makes a non-parametric correction to t-statistic and requires bandwidth parameters which tend to create a finite sample problem, as opposed to the associated lag lengths in ADF test that rely on parametric transformation. Basically, lags are omitted in the PP test to adjust standard error in order to correct autocorrelation and heteroskedasticity. The Phillip-Perron is thus similar to the ADF test and is specified as follow:

$$\Delta y_t = \alpha + \lambda_1 y_{t-1} + \cdots + \lambda_n \Delta y_{t-n} + \varepsilon_t \tag{7}$$

4. Analysis and Discussion of Results

4.1. Relationship between Growth Rate of GDP and Fluctuation Rate of Exchange Rate

Before we go into assessing the relationship between the two variables, let us firstly look at the flows of the variables and make some comparison. (See **Figure 1**)

The growth rates of both variables have been moving in the same direction from 1980 to 2000. After the civil war (2000), the two have been moving in opposite direction unto 2018. From the graph, we see that it is likely possible for a depreciating currency to positively impact economic growth in Sierra Leone. When the Leones depreciated from 1984, 1985 and 1986 (from 33%, 103% and 216% respectively), the economy grew the following years by 60%, 81% and 185% respectively. In 2012 and 2013, exchange rate was steady and this can be attributed huge activities in the mining sector although GDP was on the decline. GDP decreased to about −6% in 2015 during the Ebola crisis while during this period, the national currency loosed it value to around 24% in 2016.

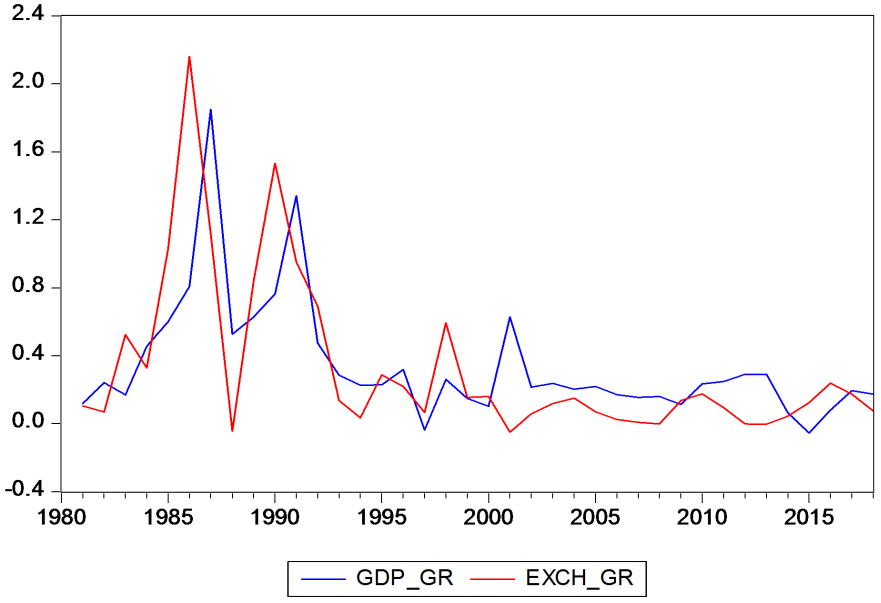

Figure 1. Growth rate of GDP and Fluctuation rate of exchange rate. Source: World Bank data (Computed by author, 2022. E-views 8).

4.2. Unit Root Testing

In the ADF test, if the absolute critical values at level are greater than the absolute t-test statistic value, then we accept the null hypothesis that the variable is non-stationary.

From the result, we can see that at level the absolute t-statistic for exchange rate is less than all it absolute critical values, which means we reject the null hypothesis and accept that the variable is stationary. With a significant P-value of 0.22%, it means there is less chance of error in estimating the t-statistic value in the model. As for GDP, the variable is stationary at both 5% and 10% absolute critical values. At the 1% critical value, its little bit complicated, although we have a P-value of 0.0142 level of significances. (See Table 1)

In the Phillip-Perron test, the same null hypothesis is applied, that is, the series is non-stationary at level. Note that this test is a non-parametric. We can see that from the results obtained; we cannot reject the null hypothesis for GDP. With a P-value of 8.81% for GDP (that above the 5% set criteria), there is a greater chance of error in estimating the t-statistic value in the model. We can also see that the adjusted t-statistics is greater that the critical values at both 1% and 5%. At the first differencing, GDP's absolute t-statistics value is less than the absolute critical values at both 5% and 10% levels and with a P-value of 4.07%, we can now firmly accept the alternative hypothesis that series is stationary. While for exchange rate, the variable is stationary at all levels with chance of an error occurring in estimating the t-statistic in the model at less than 1%. (See Table 2)

Table 1. Result for unit root test.

Results from test of stationarity using Augmented Dickey-Fuller unit root Test				
Augmented Dickey-Fuller Test Statistics				
Level/Δ level	Lag length**	Adj. t-statistic	Prob*	Inference
Level Log GDP	0	−3.475478	0.0142	Stationary
Test critical values:	1% level	−3.615588		
	5% level	−2.941145		
	10% level	−2.609066		
Level log EXCH	2	−4.208196	0.0022	Stationary
Test critical values:	1% level	−3.626784		
	5% level	−2.945842		
	10% level	−2.611531		

Source: author's computation, 2022. Note: *MacKinnon (1996) one-sided p-value; **Automatically generated (based on AIC) and Δ - first difference.

Table 2. Result for unit root test.

Results from Test of Stationarity Using Phillip-Parron Unit Root Test				
Phillip-Perron Test Statistics				
Level/Δ Level	Bandwidth**	Adj. t-statistic	Prob*	Inference
Level Log GDP	3	−2.672486	0.0881	Non-stationary
Test critical values:	1% level	−3.615588		
	5% level	−2.941145		
	10% level	−2.609066		
Δ Level Log GDP	2	−3.036783	0.0407	Stationary
Test critical values:	1% level	−3.621023		
	5% level	−2.943427		
	10% level	−2.610263		
Level log EXCH	0	−3.77236	0.0067	Stationary
Test critical values:	1% level	−3.615588		
	5% level	−2.941145		
	10% level	−2.609066		

Source: author's computation, 2020. Note: *MacKinnon (1996) one-sided P-value; **(Newey-west automatic) using Bartlett Karnel And Δ - first difference.

4.3. Regression Analysis

The result above is obtained from Equation (4) and it shows that the coefficients for exchange rate and imports of goods and services are positively significant, while FDI and exports are positively insignificant. This means a unit increase in the Leones (*i.e.*; depreciation against the US dollar) will approximately increase GDP by 0.4747 and with a probability value far less than 0.05 we can now reject the null hypothesis and accept that there is a positively significant relationship between GDP and exchange rate fluctuation in Sierra Leone. (See **Table 3**) This result is in line with the findings of Abdinur M. and Elmas B. (2022) [16], Touitou M. Yacine L. and Ahmed B. (2019) [15], Tarawalie A. B. (2010) [24], Huang and Malhtora (2004) [17], David O. (2021) [2], Khandare V. B. (2017) [4], Khan, Md Fazlul. (2021) [14], Guechati I. and Chami M. (2021) [28], Adeniran J. O., *et al.* (2014) [5], Saleh M. and Shyamapada B. (2009) [6], Jelilov G. *et al.* (2016) [7] and it support the theoretical notion of the traditional approach to exchange rate which holds that a depreciation of a currency has positive effects on economic growth of a nation.

Also, a unit increase in inflow of FDI (attracting investments in the country) will increase the dependent variable by 0.2299, while importation of goods and services and exportation of goods and services will approximately increase GDP

Table 3. Results from OLS regression.

Dependent Variable: LOG_GDP				
Method: Least Squares				
Sample: 1980 2018				
Included observations: 39				
Independent Variables: Log EXCH, Log FDI, Log IMPT, Log EXPT				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.0347	1.3066	4.6187	0.0001
Log EXCH	0.4747	0.0938	5.0607	0.0000
Log FDI	0.2299	0.1259	1.8261	0.0766
Log IMPT	0.4145	0.1149	3.6082	0.0010
Log EXPT	0.1150	0.0962	1.1961	0.2399
R-squared	0.9964			
Adjusted R-squared	0.9959			
Prob (F-Statistics)	0.0000			

Source: author's computation, 2022.

by 0.4145 and 0.1150 respectively. FDI is slightly insignificant while export of goods and services is basically insignificant at a P-value of 0.2399. With an R-square and adjusted R-square of 99.64% and 99.59%, it means that we can rely on the notion that the independent variables fully explains GDP in our model.

5. Conclusions

In this paper we investigated the impact of exchange rate fluctuation on economic growth and considered a thirty-nine year period spanning from 1980 to 2018. The continuing depreciation of the Leones against the US dollar in recent years paved the way for the research problem. We considered data from the World Bank, Bank of Sierra Leone and UNCTAD statistical database, etc. We applied a multiple linear regression model for statistical analysis and used the Augmented Dickey-Fuller test and Phillip-Perron test to test for stationarity of the variables.

From results obtained, it was found that there was a positively significant relationship between exchange rate fluctuation, imports of goods and services and economic growth during the period considered. This result supports the traditional approach to exchange rate. Furthermore, it was found that there is an insignificant positive relationship between FDI, exports of goods and services and GDP. This is because most of the investment that came into the country during this period was concentrated to the countries rich-mining sector and in a form

of backward vertical FDI with no value addition before being exported. The weak educational structure and low level of human capital in the country to accommodate spillover in managerial knowledge, technological and production processes can be seen as some of the setbacks for FDI and exports to significantly impact GDP in the country. In conclusion, this study is in line with previous results obtained based on literature reviewed, especially for developing countries.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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