**EXTERNAL RESERVE MANAGEMENT AND ECONOMIC GROWTH: EMPIRICAL EVIDENCE FROM NIGERIA**

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**ABSTRACT**

*This study examines the impact of external reserves on economic growth in Nigeria. Alongside external reserves, other explanatory variables used in the study are exchange rate, inflation rate, and trade openness. The data employed were culled from several issues of the Central Bank of Nigeria's annual reports and statistical bulletins covering the period 1986-2020.The paper utilized autoregressive distributed lag (ARDL) model to explore the contemporaneous dynamics for the short and long-run approaches. Descriptively, the study observed that economic growth rate and external reserves witnessed fluctuations with the latter being relatively more pronounced. Specifically, the study revealed that in the long run, all the explanatory variables were key determinants of economic growth in Nigeria. However, in the short run economic growth was observed to be significantly and positively responsive to changes in external reserves, inflation rate and a one-period lag of GDP contrary to its negative response to changes in the exchange rate. The paper, therefore, recommended that the Nigerian government should have a deliberate policy to boost her external reserves, maintain a stable exchange rate policy and also try to achieve a tolerable low inflation rate.*

**Keywords: Economic growth, External reserves, ARDL, Trade Openness, Exchange Rate.**

**JEL Classification: C1, E6, H2**

**1. Introduction**

The amount of external reserves that a country should hold at any given time to provide a lifeline in the event of shock occasioned by critical economic challenges is simply a policy issue. This is based on the fact that the trade balance is usually determined by changes in the currency rates with an associated impact on the economy's external reserves. In an emerging country such as Nigeria, the monetary authority tries to hold enough reserves to control the value of the naira from depreciating. It must be stressed that external reserves are mostly valued in foreign currencies such as the United States dollar, the British pounds Sterling, the Japanese Yen, Euro and many other currencies. On the one hand, external reserves act as a cushion against shock, especially for a country like Nigeria whose main export is crude oil and prices are controlled by the global market demand and supply. In most countries, the apex bank usually manipulates the exchange rates through buying and selling of foreign currencies to stabilize the value of the local currency. In a period of instability in crude oil prices, the naira exchange rate is severely affected resulting in economic challenges. However, external reserves is the saving for the rainy day in a period of drastic revenue turn down and such are used to meet international payment obligations that are paid in foreign currencies (Akinwunmi & Adekoya, 2016).

Ojiako (2020) indicated some benefits that a country such as Nigeria stands to benefit from external reserves accumulation including but not limited to the settlement of foreign trade transactions in the balance of trade and balance of payments, cushioning the effect of shocks caused by volatility in oil price at the global market, holding the country’s Sovereign Wealth Fund (SWF) and improving the purchasing power of the naira to prevent it from avoidable depreciation.

Egbulonu and Akamike (2018) indicated that the decision to hoard foreign reserves is as result of the prevailing circumstances in the Nigerian economy as it does not make sense to keep scarce resources as a reserve when indeed significant sectors like road network, education, health as well as agriculture need to be attended to domestically. There are various reasons why countries hold external reserves but generally as a hedge against the rainy day. According to the International Monetary Fund (IMF), one of the reasons is to enable a country's financial balance of payment disequilibrium thereby stabilizing its exchange rate for sound macroeconomic objectives. Essentially, a country's level of external reserve provides a liquidity buffer against a market crash that may occur on the global financial stage (Nwosa, 2017). Although external reserves have a lot of positive impacts on the performance of the economy, the build-up of reserves is not without costs. Such costs become noticeable in areas such as return on foreign exchange reserve which is usually lower than domestic assets returns most especially for the emerging market as well as developing economies, all of which leads to significant loss of income for the central bank with associated impact on the country's economic growth (Mansur, 2013).

For instance, the level of external reserves in Nigeria in 1986 stood at $1,576.8 million representing an increase of 60.6% over the preceding year. However, the growth rate of external reserves between 1985 and1990 averaged 51.8% while the economic growth rate stood at 5.3%in the same period. In 1991-1995, there was a decline in external reserves to 12.3% and the economic growth rate averaged 1.1%. Similarly, external reserves further deteriorated averaging 3.6% in 2011-2015 while economic growth recorded 4.8%. Meanwhile, the outbreak of covid-19 pandemic further aggravated the growth performance of these key macroeconomic variables in 2020 as external reserves and economic growth rates averaged -15.3% and -1.9% respectively.

The level of foreign exchange reserves in Nigeria has witnessed fluctuations in the last few decades. Specifically, the downward trend in the eternal reserves has been attributed to the significant reduction in foreign exchange inflow into the economy which of course is predicated on the sustained low crude oil prices thereby threatening the country's macroeconomic stability. Accordingly, low oil price implies declining oil revenues and a reduction in foreign exchange receipts and as a consequence, the level of external reserves over the years has dwindled. This is why Ditimi, Nwosa and Michelle (2011) observe that Nigeria is not close to anywhere in the realization of the potential for growth and poverty reduction since the country's Gross Domestic Product (GDP) is more often than not on a downward trend with increasing unemployment rate while there is underutilization of installed capacity.

Several extant studies carried out in the literature had stirred a series of controversies among economists as to the necessity of stabilization policies needed to guarantee stable performance in key macroeconomic variables such as the GDP, unemployment, exchange rate, interest rate inflation rate and so on (Abere&Akinbobola, 2020). The monetarists led by Freedman postulated that an economy is usually stable so advocating for further stabilization policies is unnecessary. While the non-monetarists proposed that instability is inevitable in any economy and that active stabilization is required to provide leeway (Modigliani, 1988). Meanwhile, despite the enormous volume of research in the field, neither the neoclassical nor the monetarists could proffer workable explanations for the less than satisfactory performance of macroeconomic variables in Nigeria in which external reserves is relatively more pronounced. Accordingly, the optimal performance required for the market economy suffers from a lack of effective policy coordination. Essentially, there is a lack of consensus in the extant literature concerning the impact of external reserves on economic growth in which some authors have pointed out a positive relationship (Ifurueze, 2014;Nwosa, 2017; Egbulonu&Akamike, 2018). Other groups of authors found a negative relationship (Osuji&Ebiringa, 2012; Eniekezimene&Apere, 2016; Ojiako, 2020) while some others could not find evidence of the relationship between the variables (Nwafor, 2017;Fapetu&Oloyede, 2014). Thus, there is an ongoing debate in this regard.

The above observations from the available studies suggest that it is not yet clear whether the level of less than satisfactory external reserves, rising unemployment, exchange rate or issues in several other macroeconomic fundamentals are the cause of GDP fluctuations in Nigeria. It is against this backdrop that the current paper is germane. The objective of the paper, therefore, is to evaluate the impact of foreign exchange reserves on the country's economic growth. Following introductory section one is section two containing related literature in the context of conceptual, theoretical and empirical issues. While section three is the model and technique of analysis, the presentation of the findings is in section four. Finally, section five contains the concluding remarks.

**2. Review of Literature**

**2.1 Conceptual issues**

External reserves as has been defined by the IMF (2009) as foreign currency deposits of central banks or other monetary authorities. The central banks of any economy control the assets which are held in different currencies as reserves like the United States Dollar, the British Pound Sterling, the Euro and the Japanese Yen etc. These currency reserves act as backup for the central bank's liabilities which include local currency issued, the reserves of deposits money banks (DMBs) as well as government or other financial institutions. To this end, foreign exchange held by banks, individuals, government agencies and corporate bodies do not become parts of a country's external reserves (Akinwunmi&Adekoya, 2016). Notably, over the years nations have made effort to accumulate foreign reserves, an effort which has been seen as a worthy one. This is because a country with reasonable foreign reserves is in a position to influence the exchange rate of the local currency thereby commanding global recognition in the world market (Nwafor, 2017). External reserves management therefore can be seen as the strategy adopted by an economy to optimize its external resources thereby making the economy sustainable. In Nigeria, the Central Bank of Nigeria (CBN) is the monetary authority that has the mandate to fine-tune the economy from the aspect of efficient foreign reserves management using such elements as monetary gold, sustainable reserve position at the IMF, holding of special drawing rights (SDRs) as well as other countries' currencies which can be converted through foreign exchange (CBN, 1997).

Aluko (2007) emphasizes the crucial role of external reserves in Nigeria over a couple of years which led to the enhancement of the level of money supply that has made more funds available for investment and productivity. He stated that external reserves made it possible for employment generation, an increase in output resulting in consumption being boosted, all of which led to the improved living standard of the citizens in Nigeria. Also, Obaseki (2007) indicated that external obligations among countries can only be settled in foreign exchange thereby making stocks of reserves not only necessary but a sufficient condition for the financing of external imbalances. While, Nwafor (2017) viewed external reserves as a tool that could be used to intervene in the foreign exchange market, prevent unnecessary volatility as well as ensure adequate conservation of the country's natural wealth for generations yet unborn.

**2.2 Theoretical literature**

The theoretical underpinning of the external reserve is anchored on different strides of the literature, some of which include the precautionary theory, the mercantilist theory, the neoclassical theory led by Solow (1956) as well as the endogenous growth theory of Romer (1990). From the precautionary perspective, the accumulation of foreign reserves could be directly linked to capital flight, sudden stops and volatility. But mercantilists view foreign reserves as a residual of an accumulated industrial policy where negative externalities are imposed on other trading partners (Aizenman& Lee, 2005). The mercantilist model augurs that countries try to accumulate external reserves to ensure effective management in their exchange rate alignment thereby providing a policy tool for the realization of low exchange rates that will promote trade and international competitiveness (Egwakhe, &Osabuohien, 2008). Also, the quest for the accumulation of foreign reserves in many countries is because they want to prevent a situation where the real exchange rate does not gain unnecessary appreciation which could hamper capital inflows. The core belief of the mercantilist is that overvaluation of the exchange rate should be avoided so as not to generate downside risks thereby ensuring competitiveness in international trade (Aizenman& Lee, 2005).

While, the neoclassical growth model argues that when some elements of development such as identical rate of depreciation, saving rates and population growth are present in some countries such economies tend to experience the same steady state and a convergence tend to result in the long run (Solow, 1956). This opinion held by the theory is occasioned by the fact that growth in poor countries with initial lower income tends to be faster than the level of growth in richer countries. On the other hand, the endogenous growth theorists who were sceptical of the neoclassical model aver that long-run convergence is not always the case as a result of variation in production functions across countries. Several factors said to be responsible for the differences in variations in the production functions include but are not limited to human capital, technological progress as well as public and social infrastructure including institutional infrastructures such as rule of law. In the view of endogenous growth theory, the economic growth rate is the result of an endogenous factor such as the economic system as against the result of external forces (Romer, 1994).

**2.3 Empirical literature**

From the empirical corridor, Abdullateef and Waheed (2010) examined how changes in external reserve affect domestic investment, inflation rate and exchange rate in Nigeria using vector error correction (VEC) and the OLS method. They observed that external reserves had a significant positive impact on foreign direct investment and exchange rates in Nigeria. Osuji and Ebiringa (2012) employed vector autoregressive (VAR), grange causality and ordinary least square (OLS) methods to investigate the degree of the impact that external reserves management had on macroeconomic stability in Nigeria for the period, 1981-2010. Accordingly, their findings indicated evidence of a negative relationship existing between external reserves and macroeconomic instability in Nigeria. In his study on the relationship between economic growth and foreign exchange reserves, Umeora (2013) using the OLS technique finds that foreign exchange reserves had a great influence on the level of economic growth in Nigeria. The data spans the period, 1986-2011. On his part, Ifurueze (2014) assesses the response of economic growth to changes in external reserves in Nigeria covering a data period, from 1970-2009. Using the OLS methodology, the study finds that external reserves had a significant positive impact on economic growth in Nigeria. Meanwhile, Fapetu and Oloyede (2014) assess the response of economic growth to changes in foreign exchange management in Nigeria covering the period, 1970-2012. The OLS methodology in the context of the error correction model (ECM) and Johansen co-integration was utilized by the study. The study finds a long-run co-integrating equilibrium among the variables. Also, the study finds that export and foreign direct investment were significant in explaining changes in economic growth in Nigeria in the period of review.

In a related development, Akinboyo, Omotosho, Oladunni and Owolabi (2016) document the relationship existing between economic growth and foreign reserves in Nigeria using quarterly data, 2000Q1-2013Q2. The study uses causality and co-integration tests. Accordingly, the study finds unidirectional causality which shows that external reserves granger cause economic growth in Nigeria. Also, the study finds evidence of a long-run relationship among the variables. Specifically, the study observes that external reserves had a significant positive impact on economic growth in Nigeria. Eniekezimene and Apere (2016) examine the relationship between external reserve management and economic growth in Nigeria. Employing the ordinary least square technique, the study finds that in the short run economic growth is significant and negatively responsive to changes in external reserve contrary to its positive response in the long run. In what appears to be contrary to prior studies, Akinwunmi and Adekoya (2016) assess the response of external reserve management to changes in economic growth and other macroeconomic variables such as exchange rate, monetary policy rate, inflation rate and foreign direct investment in Nigeria for the period of 1986-2013. Employing co-integration and ordinary least squares, the study finds a long-run relationship between external reserves and macroeconomic variables. Specifically, the study finds that gross domestic product, monetary policy rate and foreign direct investment had a positive and statistically significant impact on external reserves in Nigeria during the review period. Nwafor (2017) examines the impact of external reserves on economic growth in Nigeria. Utilizing the ordinary least data covering 2004-2015, the study finds that external reserves had no significant positive impact on economic growth in Nigeria.

Furthermore, Nwosa (2017) investigates to what extent economic growth responds to changes in external reserves in Nigeria. The study spans the period, 1981 to 2014 and utilizes OLS methodology for the analytical technique. The study indicates that the impact of external reserves on economic growth in Nigeria is positive and statistically significant. Egbulonu and Akamike (2018) examine the impact of external reserve management on the level of economic growth in Nigeria, from 1990-2015. The study uses autoregressive distributed lag to assess the contemporaneous relationship between economic growth and three macroeconomic variables namely, external reserve, inflation and exchange rate. The bounds test result indicates a long-run relationship existing between the variables. Specifically, the study finds that the impact of external reserve on economic growth is positive but statistically insignificant while exchange rate and inflation exert a negative effect. In a more recent study, Ojiako (2020) explores the relationship existing between external reserves and economic performance in Nigeria covering a data period of 1981-2018. The study uses the bounds test approach to co-integration through the application of the ARDL model. Accordingly, the study establishes that a long-run relationship exists between economic performance and external reserves. Also, the study finds that economic performance had a significant and negative response to changes in external reserves in Nigeria. Abere and Akinbobola (2020) assess the extent of the impact of external shocks and institutional quality on macroeconomic performance in Nigeria, 1986-2016. Using Structural Vector Autoregressive (SVAR), the study finds that external shocks had a dominating influence on macroeconomic performance in Nigeria.

**3. The Model**

The model is specified in line with Ojiako (2020) that permits the estimation of the impact of external reserves on economic growth in Nigeria as follows:

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In long stochastic form, equation (1) becomes:

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Where: GDP = gross domestic product at 2010 constant price, EXTR = external reserves, EXCR = exchange rate ($/N), INFR = inflation rate, TRDP = trade openness (i.e. export + import/GDP). It is expected that a positive relationship should exist between economic growth and external reserves as well as trade openness. And whilst inflation should exert a negative impact, the exchange rate is expected to turn on either side.

**Technique of Analysis**

The study employed the ARDL model developed by Pesaran and Pesaran (1997) and expanded by Pesaran, Shin and Smith (2001) which is noted in testing for short and long-run analysis. The procedure starts by obtaining F-statistics from the Wald test that is used for the bound test for the null hypothesis. Using the critical value tabulated by Pesaran et al (2001), if the F-statistic falls below the lower bound it will be concluded that the variables are I(0) and so no co-integration is possible by definition. If the F-statistic exceeds the upper bound, there is co-integration and evidence of the long-run relationship between the variables. Finally, if the F-statistic falls between the bounds, the test is inconclusive. The first step in estimating the model is to determine the lag orders suggested by Schwarz Information Criteria (SBC) and Akaike Information Criteria (AIC) using a vector autoregressive (VAR) model. This is then followed by ARDL estimation. Thus, the ARDL model of equation (2) is estimated below.

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A crucial element of the ARDL model is the estimation of the long run and the short run together in a single model. Thus in equation (3), the component α is the short run and β is the long run. Accordingly, the null hypothesis of no co-integration H0: α1 = α2 = α3 = α4 = α4 = 0 is tested against the alternative hypothesis H1: β1 ≠ β2 ≠ β3 ≠ β4 ≠ 0. If a stable long-run relationship is supported by the Wald test from Pesaran et al (2001) Table of value, then the second stage is the estimation of the short-run by replacing all the components of βin equation 3 by ECM as follows.

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Where the ECMt−1is the error correction term resulting from the verified long-run equilibrium relationship and λ signifies the speed of convergence to the equilibrium process. Pesaran et al. (2001) submitted that the constancy of the long-run multipliers should be ascertained by testing for stability of the parameters in the ECM using the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of the square of recursive residuals (CUSUMSQ) the equation of which is detail in Brown, Durbin and Evans (1975).

**Unit Root Test**

The Augmented Dickey-Fuller (ADF) test is conducted to ensure that none of the series is an integration of order 2 which could result in a breakdown of the model and also to avoid spurious regression. The ADF test is estimated as follows:

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Where yt = relevant time series; Δ = first difference operator; t = a linear trend and εt = error term. The null hypothesis of the existence of a unit root is Ho: ω=0. Failure to reject the null hypothesis leads to conducting the test on further differences in the series. Further differencing is conducted until stationarity is reached and the null hypothesis is rejected.

**4. Data and Discussion**

The performance of the Nigerian economy has not been palatable over the last few decades, a development which has prompted stakeholders in the Nigerian project to cite some factors as responsible. They argued that the downward trend of the country's foreign reserves is one of the key factors. The dismal performance of the external reserves themselves was affected by fluctuation in crude oil receipts occasioned by many factors such as crude oil theft and pipeline vandalism. Table 1 and Fig 1 indicate that the growth of the economy is normally affected by the happenings in the external reserves.

**Table 1: Structure of External Reserves and Economic Growth in Nigeria**

|  |  |  |
| --- | --- | --- |
| Year | Growth Rate (%) | |
| External Reserve | Economic Growth |
| 1986-1990 | 51.8 | 5.3 |
| 1991-1995 | 12.3 | 1.1 |
| 1996-2000 | 40.5 | 3.1 |
| 2001-2005 | 33.5 | 9.6 |
| 2006-2010 | 12.8 | 7.8 |
| 2011-2015 | 3.6 | 4.8 |
| 2016 | -4.6 | -1.5 |
| 2017 | 45.8 | 0.8 |
| 2018 | 13.1 | 1.9 |
| 2019 | -5.1 | 2.3 |
| 2020 | -15.3 | -1.9 |

*Source: CBN Statistical Bulletin (2020)*

**Fig 1: Trend of External Reserves and Economic Growth in Nigeria**

Source: Authors’ Computation

For instance, when external reserves growth was 51.8% in 1986-1990, the economic growth rate averaged 5.3% but a decline in external reserves to 12.3% in 1991-1995 saw the economic growth rate plummet to 1.1%. In 2016, as external reserves entered the negative territory of -4.6% the growth rate of the economy became embarrassing as it recorded -1.5% and the Nigerian economy find its way into a recession. The covid-19 pandemic did not spear the economy rather external reserves and economic growth recorded -15.3% and -1.9% respectively in 2020. The analytical approach of the study begins with the stationarity test. Thus, Table 2 indicates that the variables were stationary at both integration of order 0 and 1 at a 5% level of significance in the ADF and the PP tests. This implies that the use of the ARDL techniques is more appropriate for further analysis.

**Table 2: Results of unit root test**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Augmented Dickey-Fuller Test | | | | Phillips-Peron Test | | |
| Variable | Level | First Dif | Order | Level | First Diff | Order |
| LGDP | -0.82 | -3.79 | I(I) | -2.81 | -6.28 | I(1) |
| LEXTR | -2.53 | -4.71 | I(I) | -2.20 | -4.31 | I(1) |
| EXCR | -3.88 | -6.13 | I(0) | -4.61 | -7.12 | I(0) |
| INFO | -2.13 | -4.32 | I(I) | -2.38 | -4.50 | I(1) |
| TRDP | -2.51 | -4.63 | I(I) | -2.19 | -6.18 | I(1) |
| C.V = 5% | -3.55 | -3.56 |  | -3.55 | -3.56 |  |

*Source: Authors’ computation using Eview 8.0*

In Table 3, the ARDL model is estimated using lag length 1 as suggested by AIC and SBC from the VAR estimation. The robustness of the model was subjected to several diagnostic tests such as the ARCH LM test, serial correlation LM test and model stability test. The tests show that the model passes all the diagnostic tests and is satisfactory. However, the estimation at this level requires no interpretation except for obtaining F-statistic from the bounds co-integration test.

**Table 3: ARDL model of estimation**

**Dependent variable: DLGDP**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Coefficient | Std error | t-statistic | Probability |
| Constant | 0.13 | 0.04 | 3.25 | 0.00 |
| ∆LGDP(-1) | 0.10 | 0.32 | 1.67 | 0.07 |
| ∆LEXTR(-1) | 0.72 | 0.26 | 2.77 | 0.02 |
| ∆LEXCR(-1) | -0.63 | 0.31 | -2.03 | 0.06 |
| ∆LINFR(-1) | 1.07 | 3.78 | 0.28 | 0.86 |
| ∆LTRDP(-1) | -0.91 | 1.38 | -0.69 | 0.67 |
| LGDP(-1) | 0.09 | 0.03 | 3.00 | 0.00 |
| LEXTR(-1) | 0.85 | 0.25 | 3.40 | 0.00 |
| LEXCR(-1) | 1.81 | 2.68 | 0.68 | 0.58 |
| LINFR(-1) | 0.32 | 0.26 | 1.23 | 0.54 |
| LTRDP(-1) | -0.14 | 0.05 | -2.80 | 0.01 |
| Diagnostic Test | | | | |
| R2 | | 0.79 | | |
| DW | | 2.0 | | |
| F-stat | | 4.12 | | |
| Serial correlation LM F-Test | | 2.03 (0.24) | | |
| ARCH LM F-Test | | 0.74(0.41) | | |

*Source: Author’s computation using Eview 9.0*

In Table 4, the bound co-integration test demonstrates that the null hypothesis of no co-integration is rejected at the 5% significance level. The computed F-statistic of 6.22 is greater than the upper critical bound value of 4.01 obtained from Narayan (2005)’s Table. This indicates the existence of a steady-state long-run relationship between economic growth and the explanatory variables most especially external reserves.

**Table 4: ARDL Bound test for cointegration**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 5 % Level | | 10 % Level | |
| K | I(0) | I(1) | I(0) | I(1) |
| 4 | 2.86 | 4.01 | 2.45 | 3.52 |
| Computed F-Statistics = 6.22 | | | | |

*Source: Narayan (2005) Table CI (iii) Case III: Unrestricted intercept and no trend*

Table 5 is the short-run error correction model in which the speed of adjustment term between the short and long run is introduced. The diagnostic tests and the CUSUM plot in Fig 2 that checked the validity of the model were carried out. The F-statistic is presented with its corresponding p-values in parenthesis.

**Table 5: Estimated ECM**

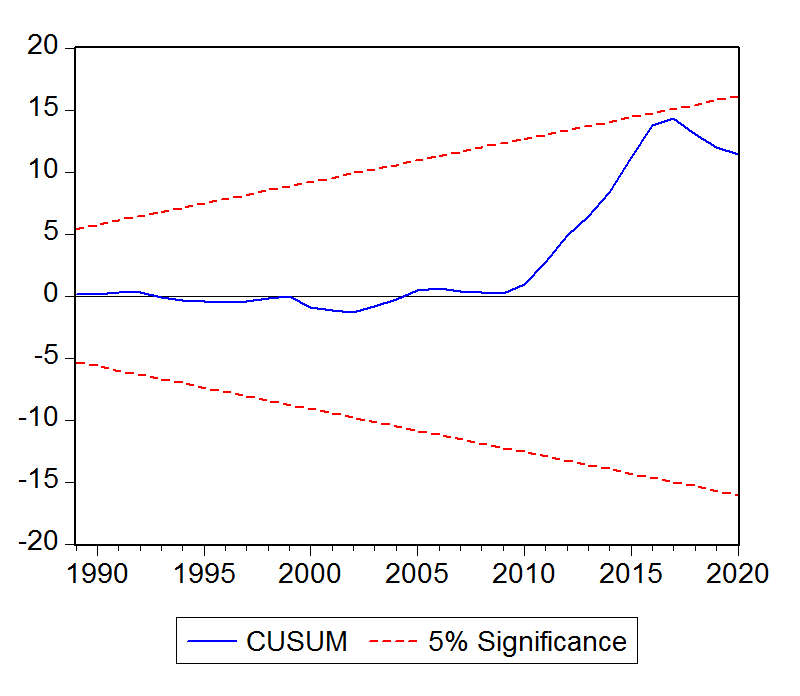
**Dependent variable: DLGDP**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Coefficient | | Std error | t-statistic | Probability |
| Constant | 0.12 | | 0.10 | 1.20 | 0.34 |
| ∆LGDP(-1) | 0.21 | | 0.06 | 3.50 | 0.00 |
| ∆LEXTR(-1) | 0.22 | | 0.09 | 2.44 | 0.04 |
| ∆LEXCR(-1) | -0.10 | | 0.04 | -3.00 | 0.00 |
| ∆LINFR(-1) | 0.08 | | 0.03 | 2.66 | 0.04 |
| ∆LTRDP(-1) | 0.23 | | 0.13 | 1.76 | 0.07 |
| ECM(-1) | -0.27 | | 0.08 | -3.38 | 0.00 |
| Diagnostic Test | | | | | |
| R2 | | 0.62 | | | |
| DW | | 2.03 | | | |
| F-stat | | 3.11 | | | |
| Serial correlation LM F-test | | 0.32(0.54) | | | |
| ARCH LM F-test | | 0.23(0.72) | | | |

*Source: Author’s computation using Eview 9.0*

The tests indicate that the model passes the diagnostic tests and is satisfactory. Accordingly, Table 5 reveals that only trade openness is statistically insignificant in the short run whilst other variables such as the first lag of GDP, external reserves, exchange rate and inflation rate are statistically significant in explaining changes in economic growth in Nigeria. However, the impact of the exchange rate on economic growth is negative. For instance, a unit increase in external reserves increases economic growth by 0.22% why a 1% increase in exchange rate led to a 0.10% decrease in economic growth in the period under review. Abdullateef and Waheed (2010), Umeora (2013), Akinboyo et al (2016) and Akinbobola (2020) had earlier reached similar findings.

**Fig 2: CUSUM Test**



In the long run, the impact of all the explanatory variables on economic growth is significant in that the ECM which is the residual from the long-run model is significant. This is what is expected if there is a co-integration between the dependent and explanatory variables. The magnitude of this coefficient implies that it takes approximately a speed of about 27% for any disequilibrium between economic growth and external reserves inclusive of other explanatory variables to be corrected within a year. Observably, the ECM is dynamically stable as the plots of CUSUM) lie within the 5% critical bounds thereby confirming the stability of the model.

**5. Concluding Remarks**

The study examines how variation in external reserves affects economic growth in Nigeria, using data covering 1986-2020. To have robust findings other macroeconomic variables such as exchange rate, inflation rate and trade openness were added to the model. The study uses descriptive and econometric analysis. Among other things, it was observed by the study that external reserves are a key determinant of economic growth in Nigeria during the period of review. This is because external reserves form part of the money supply which is one aspect through which the government fine-turns the economy. The other aspect is fiscal policy. As was noted in Table 1 Fig 1, the performance of the economy is to a larger extent dictated by the availability of foreign reserves which affects the exchange rate. Therefore, it is recommended that government should spear no effort to shun up its external reserves. Also, the government must avoid a situation of exchange rate misalignment while the inflation rate must be controlled within a single digit.

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