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RESEARCH ARTICLE

MODELING THE IMPACT OF EXTERNAL RESERVES ON ECONOMIC GROWTH IN NIGERIA: AN APPLICATION OF AUTOREGRESSIVE DISTRIBUTED LAG

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ABSTRACT

The article investigates the effect of foreign exchange reserves on Nigerian economic growth from 1970 and 2022. The methodology used to confirm the presence of a correlation between Nigeria's external reserves and economic growth was the Autoregressive Distributed Lag Model Bounds Test and Error Correction Model. It was revealed that an increase in the gross domestic product was positively and significantly correlated with external reserve. The findings suggest that, over the long term, Nigeria's external reserve, currency rate, export, import, and money supply all have a significant and beneficial impact on the country's gross domestic product growth. However, during the study period, import, money supply, and export had more positive effects on GDP growth than external reserve and exchange rate. At a 5% level, the coefficients are statistically significant. These findings have a key consequence that external reserves are crucial for economic growth in Nigeria since they have a positive and significant link with both short- and long-term GDP growth. Given that these macroeconomic indicator variables have a large impact on GDP development, the government and other relevant organizations should develop policies that would help Nigeria increase its external reserve and achieve a stable and favorable exchange rate. Government, however, ought to concentrate on maximizing reserve building. As a result, optimal reserve is recommended in relation to the shocks the economy will experience and the debt's existing value. The accumulation of reserves makes it necessary to pay for the importation of goods and services, infrastructural needs, agricultural needs, servicing of the country's external debt, and financing domestic fiscal expenditure. As a result, optimal reserves will balance both economic growth and external reserves.

KEYWORDS

ARDL Model, Error Correction Model, Economic Growth, Money Supply, Nigeria

1. INTRODUCTION

The importance of external reserves to any nation cannot be overemphasized. External reserve can be define as the official public sector foreign assets under a nation's central bank's jurisdiction. According to George (2007), Nigeria's reserve status at any one time reflects the conditions on the world oil market. The amount of Nigeria's foreign reserves has changed over time. The stock of reserves climbed by 127% to US$16.96 billion in 2004 from US$7.47 billion at the end of December 2003. The level of reserves increased by an extraordinary amount from USD4 0.98 billion in May 1999 to USD59.37 billion by March 28, 2020 as a result of the surge in global oil prices that started in 1999 (CBN, 2020). When compared to the $34.493 billion where it was at the start of 2015, the current level of foreign reserves which are primarily drawn from the results of crude oil earnings fell by 13.4% or $4.628 billion (by March 2015) (ThisDay, 2015). This has been ascribed to the country's FX inflow significantly declining as a result of the persistently low crude oil prices.

This decline has set off a domino effect that jeopardizes Nigeria's macroeconomic stability. While external reserves have decreased, oil and foreign exchange revenues are falling. These occurrences have necessitated financial and budgetary adjustments (ThisDay Newspaper, 2015). This study, therefore, intends to provide suggestive solutions to the above problems by bringing to limelight, the impact of external reserves on economic growth in Nigeria. Inclusively, the study analyzes the impacts of external reserves on economic growth and some macroeconomic variables such as gross domestic product growth, exchange rate, export, import and money supply.

2. REVIEW OF RELATED LITERATURE ON THE IMPACT OF EXTERNAL RESERVES ON ECONOMIC GROWTH IN NIGERIA

The management of external reserves and its impact on Nigeria's economic growth are examined by Akinwunmi and Adekoya (2016) using data on external reserves, the currency rate, the monetary policy rate, the inflation rate, the gross domestic product, and foreign direct investment from 1985 to 2013 (Akinwunmi and Adekoya, 2016). The results showed that there was a substantial association between the variables thanks to the multiple regressions. While the inflation rate and currency rate were statistically insignificant, the gross domestic product, monetary policy rate, and foreign direct investment were all highly statistically significant. A study investigate the connection between Nigeria's external reserve and economic growth from 1980 to 2016 (Nelson and Wilberforce, 2018). Real GDP, market capitalization, and agricultural output were employed in the study along with one explanatory variable (external reserve). Unit root, co-integration, ordinary least squares, and Granger causality tests were performed. The study found a positive and significant correlation between external reserves and Nigeria's real gross domestic product, a positive and significant correlation between external reserves and market capitalization, and a negative but insignificant correlation between external reserves and agricultural output. Using descriptive statistics and

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other analytical techniques, Adam's (2009) study focuses on the role of governance in the utilization and management of external debt in Nigeria. The findings demonstrate that the legal framework for debt management is inadequate, that no clear debt management strategy has been implemented, that the government excludes the private sector from debt sourcing and utilization, that the majority of previous debt was obtained under harsh terms, that the financial requirements for projects were improperly determined, that there was a high level of corruption, that there was a lack of accountability, and that there was poor leadership. Using the Generalized Method of Moments (GMM) estimator, Carvalho and Fry-McKibbin (2014) evaluated the mercantilist motive hypothesis for the case of Brazil from 2009 to 2012. The results lend weight to the idea that reserve building is a byproduct of successful central bank intervention in the Brazilian foreign currency market (Carvalho and Fry-McKibbin, 2014).

The exchange rate, imports, exports, employment, interest rates, real gross domestic product, market capitalization, monetary policy rate, agricultural output, consumption, and investment are just a few of the major factors that have been identified as determining external reserves in Nigeria thus far. There are also numerous other studies by various researchers like; Hanson, *et al.*, 2017; Adams *et al.*, 2022; Nwosa, 2017; Zubair *et al.,* 2022; Michael, 2017; Charles-Anyaogu, 2012; Evans and Egwakhe, 2008; Pesaran *et al.*, 2001). It was observed that existing studies in literature have ignored the analysis of the impact of external reserves on economic growth in Nigeria while investigating the impact of foreign exchange reserves on the performance of the Nigeria economy. This study fills the lacuna and advances the existing literature by investigating an analysis of the impact of external reserves on economic growth in Nigeria.

3. Methodology

3.1 Autoregressive Distributed Lag (ARDL) Model

The limits test model, also known as the Autoregressive Distributed Lag (ARDL) model, was proposed by (Umeora, 2013). Regardless of the sequence in which the data are integrated, the ARDL technique is a legitimate asymptotic inference that looks at the co-integration relationships among variables. Based on the following three presumptions, the ARDL model was selected: First of all, regardless of whether the underlying regressors are stationary of 1(0), 1(1), or a combination of both, it produces a consistent estimate of the long-run coefficient. Third, it is very accommodating to small sample sizes. Second, it yields accurate t-statistics and unbiased estimates of the long-run model even when some of the regressors are endogenous, (Olatunji, *et al.*, 2010). The Vector Error Correction Model was selected as a more sophisticated and effective approach to examining relationships. It stays away from a common and well-known issue like multi-colinearity. In addition to being a vector auto-regressive model, the Vector Error Correction Model was chosen because it performs better in multivariate models, (Bamanga and Adams, 2023; Irefin and Yaaba, 2011). As a result, the vector error correction model emerges from a co-integration relationship. The model is based on research and uses the gross domestic product growth, external reserve, exchange rate, import, export, and money supply to scale down all variables by (Aizenman and Lee, 2006). The concept that stated that exports and exchange rates have a major impact on economic growth (GDPG) was previously evaluated in both theoretical and empirical literature.

The econometric model is so constructed as follows:

$$GDPG = f(EXTR, EXR, IMP, EXP, M2) \quad (1)$$

$$GDPG = \beta_0 + \beta_1 EXTR_t + \beta_2 EXR_t + \beta_3 IMP + \beta_4 EXP + \beta_5 M_2 + \mu_t \quad (2)$$

GDPG = Gross Domestic Product Growth Rate
EXTR = External Reserves
EXR = Exchange Rate
IMP = Import
EXP = Export
M2 = Money Supply
μ = error term
β_0 = Constant
β_1 to β_5 = Coefficients of their respective variables
t = Time dimension

3.2 Error Correction Model (ECM)

Error correction model could be set up as simple, proportional, long-run equilibrium relationship between two variables, that is; $Y_t = KX_t$, and can be written in log form as, $Y_t = K + X_t$. The presence of co-integration between the variables proposes modeling the data by using a VECM, a set of multivariate linear models or ECM for univariate linear model. The details of the VECM to model GDPG and related variables are as follows:

$$Y_t = \beta_0 + \beta_1 x_1 + \beta_2 x_{t-1} + \beta_3 x_{t-1} + \beta_4 x_{t-1} + \beta_5 x_{t-1} + \alpha_1 y_{t-1} + \mu_t \quad (3)$$

$$\Delta y_t = \beta_0 + \beta_1 \Delta x_1 + \beta_2 \Delta x_{t-1} + \beta_3 \Delta x_{t-1} + \beta_4 \Delta x_{t-1} + \beta_5 \Delta x_{t-1} + \lambda(x_{t-1} - y_{t-1}) + \mu_t \quad (4)$$

μ_t are the residual terms of the model and the distribution assumption we place on the residuals will allow us later to do inference on the remaining model parameters, and interpret the meaning of the regression coefficients β_0, β_1, β_2, β_3, β_4, β_5 in this model.

The explicit form of Equation (4) is represented as follows:

$$\Delta GDPG_t = \beta_0 + \sum_{i=1}^{m} \beta_i \Delta GDPG_{t-i} + \sum_{i=1}^{n_1} \beta_{2i} \Delta EXTR_{t-i} + \sum_{i=1}^{n_2} \beta_{3i} \Delta EXR_{t-i} + \sum_{i=1}^{n_3} \beta_{4i} \Delta IMP_{t-i} + \sum_{i=1}^{n_4} \beta_{5i} \Delta EXP_{t-i} + \sum_{i=1}^{n_5} \beta_{6i} \Delta M2_{t-i} + \lambda_7 ECT_{t-1} + \varepsilon_{1t} \quad (5)$$

Δ is the first difference operator m, n_1, n_2, n_3, n_4 and n_5 are the lag lengths.

$$\Delta EXTR_t = \alpha_0 + \sum_{i=1}^{m} \beta_i \Delta EXTR_{t-i} + \sum_{i=1}^{n_1} \beta_{2i} \Delta GDPG_{t-i} + \sum_{i=1}^{n_2} \beta_{3i} \Delta EXR_{t-i} + \sum_{i=1}^{n_3} \beta_{4i} \Delta IMP_{t-i} + \sum_{i=1}^{n_4} \beta_{5i} \Delta EXP_{t-i} + \sum_{i=1}^{n_5} \beta_{6i} \Delta M2_{t-i} + \lambda_7 ECT_{t-1} + \varepsilon_{2t} \quad (6)$$

$$\Delta EXR_t = \omega_0 + \sum_{i=1}^{m} \beta_i \Delta EXR_{t-i} + \sum_{i=1}^{n_1} \beta_{2i} \Delta GDPG_{t-i} + \sum_{i=1}^{n_2} \beta_{3i} \Delta EXTR_{t-i} + \sum_{i=1}^{n_3} \beta_{4i} \Delta IMP_{t-i} + \sum_{i=1}^{n_4} \beta_{5i} \Delta EXP_{t-i} + \sum_{i=1}^{n_5} \beta_{6i} \Delta M2_{t-i} + \lambda_7 ECT_{t-1} + \varepsilon_{3t} \quad (7)$$

$$\Delta IMP_t = \phi_0 + \sum_{i=1}^{m} \beta_i \Delta IMP_{t-i} + \sum_{i=1}^{n_1} \beta_{2i} \Delta GDPG_{t-i} + \sum_{i=1}^{n_2} \beta_{3i} \Delta EXTR_{t-i} + \sum_{i=1}^{n_3} \beta_{4i} \Delta EXR_{t-i} + \sum_{i=1}^{n_4} \beta_{5i} \Delta EXP_{t-i} + \sum_{i=1}^{n_5} \beta_{6i} \Delta M2_{t-i} + \lambda_7 ECT_{t-1} + \varepsilon_{4t} \quad (8)$$

$$\Delta EXP_t = \eta_0 + \sum_{i=1}^{m} \beta_i \Delta EXP_{t-i} + \sum_{i=1}^{n_1} \beta_{2i} \Delta GDPG_{t-i} + \sum_{i=1}^{n_2} \beta_{3i} \Delta EXTR_{t-i} + \sum_{i=1}^{n_3} \beta_{4i} \Delta EXR_{t-i} + \sum_{i=1}^{n_4} \beta_{5i} \Delta IMP_{t-i} + \sum_{i=1}^{n_5} \beta_{6i} \Delta M2_{t-i} + \lambda_7 ECT_{t-1} + \varepsilon_{5t} \quad (9)$$

$$\Delta M2_t = \delta_0 + \sum_{i=1}^{m} \beta_i \Delta M2_{t-i} + \sum_{i=1}^{n_1} \beta_{2i} \Delta GDPG_{t-i} + \sum_{i=1}^{n_2} \beta_{3i} \Delta EXTR_{t-i} + \sum_{i=1}^{n_3} \beta_{4i} \Delta EXR_{t-i} + \sum_{i=1}^{n_4} \beta_{5i} \Delta IMP_{t-i} + \sum_{i=1}^{n_5} \beta_{6i} \Delta EXP_{t-i} + \lambda_7 ECT_{t-1} + \varepsilon_{6t} \quad (10)$$

However, the dynamic features of a VECM are examined by conducting two types of structural analysis namely the variance decomposition and impulse response function. The variance decomposition analysis defines the proportional contribution in a variable's variance explained by all the variables after a shock is observed in the system. The impulse response function deals with the measures of the effect of an impulse in one variable on the other variable in later periods. This is the characteristic "error correction" specification, where the change in one variable, and the gap between the variables in the previous period

4. Empirical Results

4.1 Descriptive Analysis

The descriptive statistics which generally investigate the features of the data include; the mean, median, maximum, minimum, standard deviation, skewness, kurtosis, Jarque-Bera, probability as well as number of observations for each variable. The deviations from the averages of these magnitudes indicate that the gross domestic product growth of Nigeria is not stagnant, but varies year in year out. Also the same for external reserve, exchange rate, export, import and money supply (Table 1).

4.2 Trends Analysis

Figure 1 presents the observation at level while Figure 2 shows the difference data. It is observed that stationarity was achieved by differencing the data and this is confirmed by the result of the Augmented Dickey-Fuller Test given the p-value below, which is statistically significant at all levels. The differencing was done to remove the trend component of the data. The observation now moves irregularly but reverts to its mean value and having a constant variance.

4.3 Unit Root Test for Stationarity

Table 2 presents the six variables (GDPG, EXTR, EXR, EXP, IMP, and M_2) tested for stationarity using unit root test and three variables GDPG, EXP, and IMP were found to be non-stationary at levels but EXTR, EXR and M_2 were stationary at level. The three variables were found to be stationary after first difference. D(GDPG) and D(M_2) were statistically significant at 5% level of while DEXTR, D(EXR) and D(IMP) were highly statistically significant at 1% level. D(EXP) was statistically significant at 10%. The

result of the Augmented Dickey-fuller test shows that the variables were stationary at first difference because the p-value for all the variables was less than 5% level of significant except EXP that the p-value was not statistically significant at 5% but significant at 10% level.

Table 1: Descriptive Statistics

	DGDPG	DEXTR	DEXR	DEXP	DIMP	DM2
Mean	-0.465250	774.2069	7.332449	1.279184	1.782245	857392.2
Std. Dev.	6.762530	5277.073	1727076	15.94271	8.346837	1191666.
Skewness	-0.331067	0.438689	2.504971	-0.895383	-0.235190	2.262480
Kurtosis	3.281156	3.629651	8.108633	6.733836	6.687201	8.483103
Jarque-Bera	1.056503	2.381101	104.5285	35.01127	28.20911	103.1852
Probability	0.589635	0.304054	0.000000	0.000000	0.000001	0.000000
Observations	49	49	49	49	49	49

Source: Computation from E-view 9

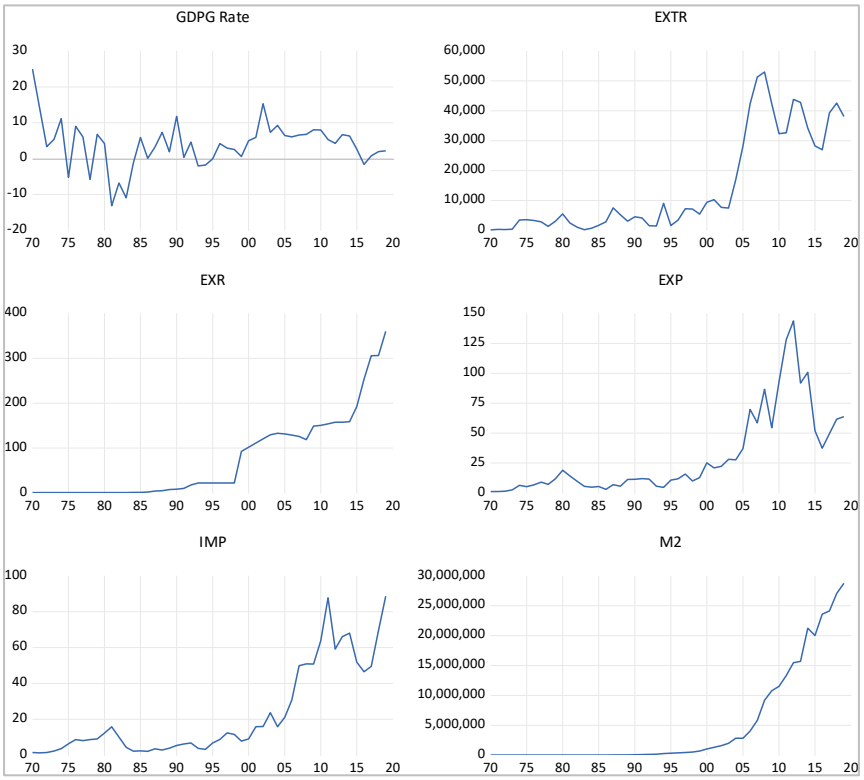

Figure 1: Time plot of the observations at level

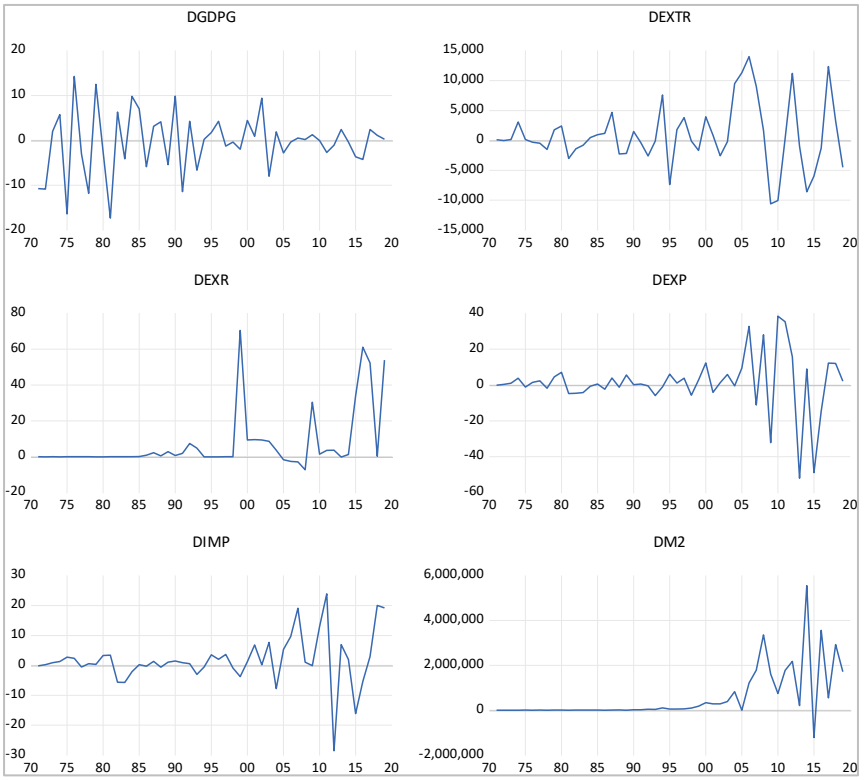

Figure 2: Time plot of the observations after first differencing

Table 2: Unit Root Test

Variables	ADF Statistics	Critical Value	P-Value	Order of Integration
D(GDPG)	-3.8352	-4.1985 (1%) -3.5236 (5%) -3.1929 (10%)	0.0245	I(1)
D(EXP)	-2.7899	-3.6156 (1%) -2.9411 (5%) -2.6091 (10%)	0.0692	I(1)
D(EXR)	-5.4022	-4.1611 (1%) -3.5063 (5%) -3.1830 (10%)	0.0003	I(0)
D(IMP)	-4.5376	-3.6156 (1%) -2.9411 (5%) -2.6091 (10%)	0.0008	I(1)
D(EXTR)	-5.8174	-4.1654 (1%) -3.5085 (5%) -3.1842 (10%)	0.0001	I(0)
D(M_2)	-3.7582	-4.2191 (1%) -3.5331 (5%) -3.1983 (10%)	0.0302	I(0)

Source: Computation from E-view 9

4.4 ARDL Model

Table 3 shows that the variables have a long-term relationship with one another. At the 5% level, the F-statistic is greater than the upper-bound critical value (3.38). This suggests that the option of a cointegrating connection in the model is preferred above the null hypothesis of no cointegration among the variables serial numbers 1, 2, 3, 4, and 5. As a result, the above-mentioned ARDL limits test result for co-integration indicates or validates the existence of co-integration among the variables. We can therefore draw the conclusion that external reserves and economic growth in Nigeria have a long-term link.

4.5 Error Correction Term Models

Table 4 and 5 shows the short-run and long-run coefficients, it is clear that the previous period's deviation from long-run equilibrium is corrected in the present period at an adjustment speed of 4.8%, and that, generally speaking, in the short run, the percentage change in DEXTR is associated with a decrease in DGDPG of 0.000995 on average. In the near run, the average loss in DGDPG due to changes in DEXR is 0.1966, ceteris paribus. Average gains in DGDPG of 0.4235 are caused by changes in DEXP by a certain percentage, ceteris paribus, in the short term. In the near run, ceteris paribus, the percentage change in DIMP is linked to average drops in DGDPG of 0.1745, while the percentage change in DM2 is linked to average increases in DGDPG of 2.92E-06. The calculated equation for the error correction model (ECM) shows the short-run relationship between the six variables. Positive coefficients and statistically significant correlations between EXP and M2 and GDPG were observed. Therefore, it can be inferred that in the short run, EXP and M2 influence GDPG in Nigeria. There was a strong but adverse association between GDPG and IMP, EXR, and EXTR.

Table 6 indicated that DGDPG is positioned as the dependent variable; the sign of the coefficients are reversed in the long-run. In the long run, DEXTR has a positive impact of (-0.002108) on DGDPG, DEXR has a positive impact of (-0.089633) on DGDPG; DEXP has a positive impact on DGDP; DIMP has a negative impact of (1.848158) on DGDPG and DM2 has a positive impact on DGDPG, on average, ceteris paribus. The coefficient is statistically significant at the 1% level.

Table 3: ARDL Bounds Test for Co-integration

S/N	Dependent Variable	Model Selection	F-Statistic	Cointegration	Decision
1	GDPGr	ARDL (4,1,4,1,4,3)	3.4989*	Yes	Estimate ECM (long-run model)
2	EXTR	ARDL (1,4,4,3.4,4)	5.7267*	Yes	Estimate ECM (long-run model)
3	EXR	ARDL (1,0,1,0,1,4)	4.2654*	Yes	Estimate ECM (long-run model)
4	EXP	ARDL (4,1,4,0,4,4)	6.1325*	Yes	Estimate ECM (long-run model)
5	IMP	ARDL (4,4,3,4,4,4)	8.2670*	Yes	Estimate ECM (long-run model)
6	M2	ARDL (4,1,3,0,4,3)	7.3932*	Yes	Estimate ECM (long-run model)

Source: Computation from E-view 9

Note: indicates significant at 0.05 level (that is, F-Statistic>3.38 Critical Value)*

Table 4: Long – run Model

Variables	Coefficient	Standard Error	t- Statistic
Constant Intercept	15.9215	-	-
ΔGDPG (-1)	1.0000	-	-
ΔEXP (-1)	5.7365	1.4351	3.9972
ΔEXR (-1)	-2.1228	0.5606	-3.7870
ΔIMP (-1)	4.1739	3.6947	1.1297
ΔEXTR (-1)	-0.0127	0.0029	-4.4425
ΔM_2 (-1)	-5.46E-06	7.5E-06	-0.7293

Source: Computation from E-view 9

Table 5: Short - Run Model

Variables	Coefficient	Standard Error	t- Statistic
Constant Intercept	0.6780	1.0839	0.6256
ΔGDPG (-1)	-1.2156	0.15899	-7.6455
ΔEXP (-1)	0.4235	0.1689	2.5079
ΔEXR (-1)	-0.1966	0.1256	-1.5651
ΔIMP (-1)	-0.1745	0.1783	-0.9786
ΔEXTR (-1)	-0.000995	0.0005	-2.1385
ΔM_2 (-1)	2.92E-06	1.9E-06	1.5111
ECT_{t-1}	-0.0475	0.0251	-1.8918

Source: Computation from E-view 9

Table 6: Normalize Equation

Cointegrating Equation: Loglikelihood				-1484.337		
Variables	DGDPG	DEXTR	DEXR	DEXP	DIMP	DM2
Coefficient	1.000000	-0.002108	-0.089633	-0.806150	1.848158	-2.00E-06
Std. Error	-	0.00033	0.04106	0.12795	0.29041	4.5E-07

Source: Computation from E-view 9

5. Discussion of Findings

In this study, impacts of external reserves on economic growth and some macroeconomic variables such as gross domestic product growth, exchange rate, export, import and M2 was investigated. The collected data was tested for reliability and accuracy using the appropriate preliminary data analysis techniques. Thus was done to measure the correctness of the parameter estimates as well as the suitability and fitness of the estimated equation models, all in an effort to solving the research problems and achieving the research objectives.

The Jarque-Bera statistic indicated that gross domestic product growth (DGDPG) and external reserve are normally distributed with the p-value (DGDPG = 0.589635), (DEXTR =0.304054), while exchange rate (DEXR = 0.000000), export (DEXP = 0.000000), import (DIMP = 0.000001) and money supply (DM2 =0.000000). The results show that all the variables are stationary at first difference. GDPG is positioned as the dependent variable. In the long-run, EXP, IMP, M2 have a positive impact on GDPG while, EXTR and EXR have a negative impact on GDPG on average, ceteris paribus.

The previous period derivation from long-run equilibrium is corrected in the current period in an adjusted speed of 4.8%; a percentage change in EXP is associated with a 29.13% increase in GDPG in an average ceteris paribus in the short-run; a percentage change in EXR is associated with a 19.66% increase in GDPG in an average ceteris paribus in the short-run; a percentage change in EXTR is associated with a 0.09% increase in GDPG in an average ceteris paribus in the short-run, a percentage change in IMP is associated with a 17.45% increase in GDPG in an average ceteris paribus in the short-run and a percentage change in M2 is associated with a 0.000292 increase in GDPG in an average ceteris paribus in the short-run. This findings corroborated with those from (Akaninyene, 2016; Akpan, 2009; Adams and Paul, 2023; Durdu, *et al.,* 2007; Fapetu and Oloyede, 2014). Result from the short-run indicated that, a percentage increase in EXTR would bring about a 0.0009 percentage increase in GDPG; a percentage increase in EXR would bring about a 0.1966 percentage increase in GDPG; a percentage increase in EXP would bring about a 0.2913 percentage increase in GDPG; a percentage increase in M2 would bring about a 2.92E-06 percentage increase in GDPG; while a percent increase in IMP would bring about a 0.1745 percentage increase in GDPG. In the same layer, a percentage decrease in EXTR would bring about a 0.0009 percentage decrease in GDPG; a percentage decrease in EXR would bring about a 0.1966 percentage decrease in GDPG; a percentage decrease in EXP would bring about a 0.2913 percentage decrease in GDPG; a percentage decrease in M2 would bring about a 2.92E-06 percentage decrease in GDPG, while a percent increase in IMP would bring about a 0.1745 percentage decrease in GDPG. This result is agreement with the findings from (Ibrahim, 2011; Ajayi et al., 2019; Fukuda and Kon, 2007; Iwueze et al., 2013). All the variables in the short-run have statistically significant impact on GDPG in Nigeria both in terms of the t-statistic and p-value within the study period as discovered from studies by (Kashif and Thiyagarajan, 2016; Olawoyin, 2007).

According to the (VECM) results, an R2 of 0.825823 indicates that the independent variable GDPG accounts for 82.6% of the dependent variable, and an R2 of 0.896402 indicates that the independent variable EXP accounts for 89.6% of the dependent variable. Again, an R^2 of 0.775297 indicates that the independent variable EXTR explains 77.5% of the dependent variable, while an R^2 of 0.721264 indicates that the independent variable EXTR explains 72.1% of the dependent variable. Additionally, R^2 of 0.958970 simply indicates that the independent variable IMP accounts for 95.9% of the dependent variable, while R^2 of 0.936469 indicates that the independent variable M2 accounts for 93.6% of the dependent variable. From the result above, the degree of the impact of EXTR on GDPG is relatively higher than that of EXR, EXP, IMP and M2. This result conforms to a' priori expectation as observed in the studies by (Udo and Antai, 2014; Adams and Bello, 2022; Wijnholds, and Kapteyn, 2001).

6. Conclusion

This study has demonstrated a link between external reserves and Nigeria's economic growth that is favorable. The relationship between external reserves and economic growth has been demonstrated empirically by the study. The research's findings indicate a negative correlation between external reserves and GDP growth, a positive correlation between export and GDP growth, a positive correlation between import and GDP growth, a positive correlation between money supply and GDP growth, and a negative correlation between exchange rate and GDP growth. At a 5% level, the coefficients are statistically significant. The inverse relationship may be brought about by fluctuations in the external reserve and the exchange rate as a result of insurgency, banditry, Boko Haram, herdsmen, kidnappers, and poor government economic policies. Resonance policies that would be suggested ought to be put into practice in order to promote quick economic growth in Nigeria.

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