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FOREIGN TRADE AND EXTERNAL RESERVES IN NIGERIA

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ABSTRACT*: This study empirically examined the effect of foreign trade and external reserves in Nigeria. The objectives of the study were to; examine the impact of oil import, non-oil import, oil export, non-oil export and exchange rate on external reserves in Nigeria. Time series data from 1980 to 2019 was collected from CBN statistical bulletin. The study employed the techniques of ADF unit root test, co-integration and Vector Error Correction Model. The results of the estimated model showed that all the time series were stationary at order one. Also, the model depicted by the co-integration result showed that there is a long run equilibrium relationship among the variables. Similarly, the vector error correction result showed that the coefficient of ECM has the hypothesized negative sign and statistically significant at 5% level. Furthermore, the Vector Error Correction result revealed that oil and non-oil exports impacted positively on external reserves although the impact of non-oil export was insignificant while oil imports, non-oil imports and exchange rate had significant negative impact on external reserves in Nigeria. Specifically, oil export, oil imports, non-oil imports and exchange rate were significant at 5 percent. This implies that they impacted significantly on external reserves in Nigeria during the period covered by the study. In addition, the granger causality test revealed that oil export had a uni-directional causal relationship with external reserve while there was a bi-directional relationship between exchange rate and external reserve. Based on these findings, the study recommended amongst others the diversification of the export base of the nation as a possible measure of improving external reserves in Nigeria. Also, the study suggests that importations be discouraged especially for commoditites that can be produced locally. Finally, the study recommends that the CBN as the custodian of Nigeria's foreign reserves, stabilize the value of local currency taking into cognizance the external shocks that stem from exchange rate volatilities.*

KEYWORDS*: external reserves, foreign trade, VECM, Nigeria.*

INTRODUCTION

Foreign trade refers to the aggregate of activities relating to the exchange of goods and services across borders by means of imports and exports. It creates a flow of goods and services from one country to another thereby providing consumers with a myriad of commodities to choose from depending on their prices which in turn leads to competition in the world market. There is also the exchange of knowledge, techniques and modern technology leading to the increase in business efficiencies and productivity (Chen and Gupta, 2006). Foreign trade creates avenues for resources to be transferred from rich nations to poor ones and also enhances efficiency in production of goods and services through allocation of resources in line with comparative advantage (Gbosi, 2011).The differentials in endowment in terms of natural resources, technical capabilities and human resources is a plausible reason why nations embark on trade with each other. The theory of comparative advantage gives credence to the fact that no country can entirely produce all the commodities it requires for consumption and further production hence the need for trade across it borders. Gonelli (1993) noted that countries trade with each other to acquire commodities with better quality, that are less expensive or that are simply different from the ones available at home. When nations engage in foreign trade, it creates an avenue for their local industries to be exposed to the international market. The importance of foreign trade to a nation's economy amongst other benefits includes the foreign capital and income flow. Trade openness increases the participation of foreigners in a country thereby improving her foreign reserve. Prior to the oil boom, agriculture was the main stay of the Nigerian economy, contributing enormously to her foreign reserve. However, the prime position occupied by agriculture was overtaken by the oil sector in the 1970's when the nation diverted to oil exports as the major source of her foreign exchange earnings. Ever since then, Nigeria's external reserve has majorly being from the earnings of crude oil production and sale making her reserve highly vulnerable to volatilities of crude oil price in international market.

International trade activities have been observed to improve External reserves. This reserve, alternatively referred to as foreign exchange or international reserve, consists of official external assets which are controlled by the monetary authorities for direct financing and payment imbalance regulation through exchange market intervention. According to CBN, external reserves are assets held on reserve by a monetary authority in foreign currencies. They include foreign bank notes, deposits, bonds, treasury bills and other government securities.

Nigeria's external reserve has experienced fluctuations over the years majorly as a result of the over reliance on crude oil earnings. As at 1981, the value of the country's external reserve was $2.4 billion. A sharp decline was observed after then as the reserve reduced to an all-time low value of $224.4 million in 1983. It gradually started picking up as the figures stood at $7.5 billion in 1987, $9 billion in 1994 and $9.4 billion in 2000. The reserve dropped again to $7.4 billion in 2003 on to peak to $53 billion in 2008 (CBN, 2010). The increase in non-oil export contributed to the remarkeable growth in the reserve. By 2009 however, the volume of the reserve fell to $42.4billion and further to $32.3 billion in 2010 representing a decline of about 21.15 percent. By 2012, the reserve picked up again to $43.8 billion only to drop to $26.9 billion in 2016, the lowest

value since 2005. This decrease was attributed to oil vandalisation in the Niger Delta region, decrease in crude oil prices and the restriction by the CBN on 41 items including toothpick (CBN, 2017). It was at this point that recession hit the Nigerian economy. Afterwards, the CBN introduced the SMIS window to deepen the foreign exchange market and accommodate all FX obligations for importers and investors. External reserve grew again to $42.6 billion in 2018 on the basis of increased oil price and production but however dropped to about $38.09 billion in 2019. The robust external sector activities, the high oil prices and the US –China trade deal raised hopes for external reserves to increase but this hope was dashed when the COVID 19 pandemic hit the world leading to a drop in oil prices and in turn, decreased the value of the reserve (CBN, 2020).

Countries attach so much importance to the holding of large volumes of external reserves for some reasons which include; evening out of random and temporary balance of payments shocks, the protection of the value of the local currency, sustenance of the exchange rate parity, the settlement of international payment responsibilities, the levelling out of exchange rate instability in illiquid foreign exchange markets and improving the credit worthiness of an economy. For most African countries, the aggregation of reserves is seen as a protective policy to serve as a form of self-indemnity hastened by high level of world-wide financial and economic instability and the lack of international crisis management.

External reserves are used by nations to aid monetary and exchange policies in a bid to ensure the stability of the local currency. Studies by Aizenman and Lee (2005), Soludo (2005), Elhiraika and Ndikumana (2007), Drummond, Mrema, Roudet, and Saito (2009) & World Bank (2019) have given credence to the fact that international trade activities depends largely on external reserves. It is important to note that despite the benefits that foreign trade has on external reserves, the former could be seen as a constraint to the later because of the high level of import dependence prevalent in the country which constitutes a leakage to external reserves. Nigeria as a nation has a disturbing track record of being import dependent, with a lot of her residents preferring and referring to imported goods as more superior to locally produced ones. In addition, its dependence on technologically advanced countries for the importation of products like automobiles, machinery and other equipment of which it lacks the capacity and technical know-how to produce has aggravated the situation. This has led to different findings on the contribution of foreign trade to external reserves. In addition, there still exists an inconclusive debate concerning the channel of causality of foreign trade and external reserve in a developing country like Nigeria. This premise has spurred the curiosity to investigate the relationship between foreign trade and external reserves in Nigeria. The study disaggregated foreign trade into oil and non-oil imports, as well as oil exports and non-oil exports. The ration behind this was to detangle their individual effects on Nigeria's external reserve so as to make specific policy statements. The rest of this study is sectioned into literature review, methodology, results and discussions and finally, conclusion and recommendations.

LITERATURE REVIEW

Theoretical Review

Trade theories

Mercantilism is an old theory which provided the earlier idea on foreign trade that was highly nationalistic and considered the welfare of the nation of prime importance. According to the theory, a country's export has to supersede its imports for that nation to become rich and powerful and that the excess should be stored as foreign currency reserves plus silver and gold reserves. Mercantilism did not favour free trade and as such urge their government to impose tariffs on foreign goods to restrict import trade and grant subsidy to improve export prospects for domestic goods. The theory represented the elevation of commercial interest to the level of national policy which made the proponents practice the zero sum game, meaning that world wealth was limited and that countries could only increase their share at the expense of their neighbours. The argument therefore arose that mercantilism had destructive traits and this led to the criticism by Adam Smith.

Adam Smith, opposing the mercantilists view, proposed the theory of Absolute advantage with the argument that the stock of human and natural resources is what makes up the wealth of a nation and not the stock of precious metals in its possession (Debel, 2002). According to Smith, a country that has an absolute advantage produces greater output of a good or service than other countries using the same amount of resources. He argued that a country should concentrate on the production of goods in which it holds an absolute advantage. Adam Smith viewed foreign trade as a positive – sum game because there are both gains from the countries. Thus, a nation need not gain at the expense of other nations. The absolute advantage theory however failed to explain the situation in which a country has absolute advantage in the production of all goods than all other countries. This led to the development of the comparative advantage theory by David Ricardo.

The theory proposes that a country should specialize in the production and export of commodities in which she uses a lower opportunity cost than her trading partner (Gbosi, 2003). They argued that external trade arises not just from the difference in absolute advantage but from the difference in comparative advantage.

The Modern Theory of Factor Endowment, also known as Hecksher-Ohlin (H-O) theory explains that the main determinant of the pattern of production and export in a country is the relative availability of factor endowment (Todaro, 2011). According to the theory, countries are differently endowed with various proportions of factors of production. It further emphasized that each country has a comparative advantage in that commodity which uses the country's abundant factor. The model identified the difference in pre-trade product prices between nations as the immediate basis for trade (Usman, 2011).

Theory of demand for international reserves

The works of Frenkel and Jovanovic, 1981; Aizenman and Marion, 2003; Kim *et al*., 2005; Aizenman and Lee (2006); Rodriguez and Funk, 2012 and Tule *et al*., 2015 explains that the two motives for holding international reserves are precautionary and mercantilist motives. The

precautionary motive is the holding of reserves to intervene in situations of shortage of funds which usually occurs during financial crises to serve as self-insurance against exposure to sudden stops. The motive also is to stabilize currency volatility in periods of external shocks. The mercantilist view on the flip side proposes that external reserve accumulation is geared towards facilitating export competitiveness by slowing appreciation of the local currency and also direct investment to the export industries (Aizenman and Lee, 2005, Calvo *et al* 2012; Shijaku, 2012).

Aizenman and Marion (2003) considered the theory of precautionary savings as best applicable in Nigeria because of the wide gaps between actual and potential outputs in Nigeria which pose serious constraints to economic growth in the country. Because of the difference in various countries, there are no specific amount of foreign reserves that is generally considered to be either sufficient or most favorable. That is why developed economies with highly liquid and floating currencies and also stable financial markets do not lay much emphasis on huge precautionary reserve holdings. In situations where there are less liquid currencies, foreign reserves may reduce both the risk and impact of current account shocks or capital account crises (Kyereboah-Coleman, 2009).

Empirical Literature

There exists a number of studies on the external reserve and its relationship with foreign trade in Nigeria. For example, Narayan and Smyth, (2006) employed the bounds testing approach to cointegration. The bounds testing procedure tests for the absence of any level relationship. From their results, they found the existence of a unique long-run relationship among variables. Specifically, the real exchange rate has a statistically significant positive effect on foreign exchange reserves in the long run.The study by Adam and Leonce (2007) showed that the demand for foreign exchange reserve in Africa is determined by export trade, real national income growth and forgone cost of holding reserves.

Abdullateef and Waheed (2010) using the Ordinary Least Square (OLS) and vector error correction (VEC) estimation techniques, examined the effect of variation in external reserve positions of Nigeria on domestic investment, price level, and exchange rate for the period 1986 to 2006. Their findings revealed that change in foreign exchange reserves affected only foreign direct investment (FDI) and exchange rates but not local investment and price level. They therefore recommended the need for efficient foreign reserve management strategies that is geared towards maximizing the full benefits from oil exportation.

Chin-Hong, *et al* (2011), using the Cointegration approach, examined the relationship between international reserves and its determinant such as, economic size, exchange rate, balance of payments and the opportunity cost of reserves holding from 1975 to 2007 in Malaysia. Empirical findings from their results revealed a cointegration between the international reserves and the specified determinants.

Charles-Anyaogu (2012) employed the VAR and Wald test techniques to investigate the relationship between selected macroeconomic factors and external reserve in Nigeria. They

discovered that past values of gross domestic product explain the current values of foreign exchange reserves significantly. In addition, their result found that only inflation has serious implication on external reserves while balance of trade and exchange rate where insignificant effects.

Kevin *et al*, (2013), set out in their study to investigate the macroeconomic effects of foreign exchange reserves on 13 countries from 1980 to 2012 using balanced panel. The result revealed that foreign exchange reserves impacted negatively on consumption and debt maturity while exports and economic growth on the other had a positive impact on external reserves.

In analysing the impact and factors that influences external reserves, Umeora (2013) employed the ordinary least squares regression analysis to investigate the accumulation of external reserves and its effects on exchange rates and inflation in Nigeria. From their study, it was found that foreign exchange reserves did not have significant effect on foreign exchange and Inflation rate in Nigeria.

Bayat *et al*. (2014) investigated the relationship between foreign exchange reserves and nominal and real exchange rate in the Turkey using monthly data spanning from January 2003 to January 2014. They found that there was a positive causal relationship running from nominal exchange rate to foreign exchange reserves in the short run and a positive causality running from real exchange rate to foreign exchange reserves in both the short and the long run although foreign exchange reserves did not influence nominal and real exchange rates in Turkey at any period.

Chowdhury *et al* (2014) analyzed the factors influencing foreign exchange reserves in Bangladesh, using the Engle Granger residual based cointegration test. Findings from their results showed the presence of strong relationship among foreign exchange reserves, exchange rate, remittances, domestic interest rate, and broad money, United Payment Interface (UPI) of export and import, and per capita income. The study therefore recommended an efficient exchange rate administration, strong remittance related policies, quality products for exports trade and sustainable national income level as possible measures geared towards enhancing healthy amount of foreign exchange reserves in Bangladesh.

Osigwe, *et al*, (2015) modeled the determinants of foreign reserves in Nigeria using the Johansen cointegration approach to establish a long run relationship among the determinant variables. The result of the study indicated that real gross domestic product and oil exports are positive and significant determinants of foreign reserve in Nigeria. Exchange rate was found to be a significant but negative determinant while foreign direct inflows positively and significantly determined foreign reserve. The coefficient of non-oil exports, thogh positive, was not a significant determinant of foreign reserve.

Nteegah and Okpoi (2016) analysed external trade and its implications on foreign exchange reserves in Nigeria using the cointegration and Vector Error Correction Model for the period 1980 to 2015. Their findings revealed that oil and non-oil export had positive implication on foreign reserves while oil and non-oil imports retarded foreign reserves in Nigeria. Their recommendations

based on their findings were the diversification of the country's export base and the elimination of frivolous imports in order to improve foreign reserves in Nigeria.

Adegboyo, et al (2019) employed the ARDL Bound test approach to examine the relationship between external reserve and trade in Nigeria for the period 1981 to 2017. Their result showed that exchange rate, oil export and non-oil export had positive impact on external reserve while oil import and non-oil import had negative effect on external reserve. By recommendation, they suggested that more effort be put into the non-oil export for the country to have a huge and stable external reserve.

Oyeniran and Alamu (2020) adopted the ARDL approach in line with the 'buffer stock model' advanced by Frenkel and Jovanovic (1981) to estimate the optimal level of foreign reserves for Nigeria. According to their findings, Nigeria's optimal reserves level responded to adjustment cost of holding reserves and exchange rate volatility while import and opportunity cost of reserves holding had insignificant impact on Nigeria's optimal foreign reserves. Specifically, their result showed that the short run and long run estimates of the buffer stock model proved foreign reserves holding in Nigeria to be more sensitive to the precautionary motive than the mercantilist's. They therefore recommended the implementation of effective foreign reserves policies by the CBN.

METHODOLOGY

This study used a time series data from Central Bank of Nigeria (CBN) statistical bulletin spanning from 1980 to 2019. This scope was chosen because of the availability of relevant data and sufficient scope to influence policy decisions in the country. This study adopted the econometric analysis of ADF unit root test, Johansen co-integration test and Vector Error Correction Method (VECM) to determine the impact of foreign trade on external reserves in Nigeria. Also, post estimation tests were carried out to determine the direction of causality. Specifically, the granger causality test was applied.

Model Specification

Theoretically, this study specified its model based on the mercantilist theory explained above. The theory is functionally stated as; EXRV = f(OMP, NOMP, OXP, NOXP, EXCR)…….……(1)

Conversely, the model was based on the one proposed by Nteegah and Okpoi (2016) and Adegboyo *et al* (2019) who decomposed foreign trade into oil import (OMP), non-oil imports (NOMP), oil export (OXP), non-oil exports (NOXP) while introducing exchange rate.

The econometric form of equation (1) is stated thus;

$EXRV_t = \beta_0 + \beta_1 OMP_t + \beta_2 NOMP_t + \beta_3 OXP_t + \beta_4 NOXP_t + \beta_5 EXR_t + e_t$ …….…..(2)

The log –linear form of both sides of equation 2 is stated as follows:

$LnEXRV_t = \beta_0 + \beta_1 lnOMP_t + \beta_2 lnNOMP_t + \beta_3 lnOXP_t + \beta_4 lnNOXP_t + \beta_5 EXR_t + e_t$ …….(3)

Where:

EXRV = exchange reserve
OMP = oil import
NOMP = non-oil imports
OXP = oil export
NOXP = non-oil exports
EXCR = exchange rate of the naira to the US Dollar
$\beta 0$ = Autonomous components of external reserve
$\beta 1 - \beta 5$ = the slopes of oil imports, non-oil imports, oil exports, non-oil export, and exchange rate.
Ln = natural logarithm
e = error term
t = time frame

On the *a priori*, it is expected that $\beta 1<0$, $\beta 2<0$, $\beta 3>0$, $\beta 4>0$, and $\beta 5<0$.

RESULTS AND DISCUSSION

The section provides empirical tests and analysis of relevant data, and a discussion of the findings.

Descriptive Statistics

The summary of the descriptive statistics for the variables in the study are presented in the table 1 below.

Table 1: Descriptive Statistics of variables

Statistics	EXRV	OMP	NOMP	OXP	NOXP	EXCR
Mean	18392.34	841.3990	2848.103	4722.968	339.9475	93.61033
Maximum	53599.28	3686.890	16914.40	17282.20	3207.020	307.5000
Minimum	224.4000	0.100000	5.100000	7.200000	0.200000	0.54678 0
Std. Dev.	18114.12	1144.408	3913.907	5644.319	612.9612	95.75104
Skewness	0.639931	1.225080	1.595136	0.864867	2.884579	0.880122
Kurtosis	1.761945	3.091360	5.349008	2.300475	13.09600	2.940366
Jarque-Bera	5.284708	10.01939	26.15945	5.802191	225.3541	5.170024
Probability	0.071193	0.006673	0.000002	0.054963	0.000000	0.075395
Sum	735693.4	33655.96	113924.1	188918.7	13597.90	3744.413
Observations	40	40	40	40	40	40

Source: *Computed Result Using E-Views 10*

From Table 1, the result of the descriptive statistics showed that external reserve, oil import, non-oil import, oil export, non-oil export and exchange rate averaged $18.39 billion, N841.4 billion, N2.8 trillion, N4.7 trillion, N339.9 billion and $93 respectively. External reserve grew to a maximum of $53.6 billion with a standard deviation of $18.11 billion. Oil import recorded a maximum value of N3.7 trillion and a standard deviation value of N1.1 trillion. non-oil import grew to a maximum of N16.91 trillion alongside a standard deviation value of N3.9 trillion. Oil export recorded a maximum value of N17.3 trillion coupled with a standard deviation of N5.6 trillion. Non-oil export peaked at N3.2 trillion with a standard deviation of N612.96 billion while the exchange rate of the naira to the US dollar grew to a maximum rate of N307.5 to a dollar coupled with a standard deviation of $95.75. The calculated values for the skewness statistics showed that all the variables were positively skewed, suggesting that their distributions have a long right tail. Also, the kurtosis statistics of external reserve, oil export and exchange rate were

platykurtic, suggesting that their distributions were flatter than a normal distribution while that of oil import, non-oil import and non-oil export were leptokurtic suggesting otherwise. The Jarque-Bera statistic accepted the null hypothesis of normal distribution for all the variables at five percent critical value. These observations suggest the existence of a unit root in the series. Thus, estimating these variables at level might not give good results. It is therefore imperative to conduct the unit root test to check the stationarity characters of the variables. In this study, the Augmented Dickey Fuller (ADF) unit root test procedure was adopted.

Unit Root Test

This involves testing for the stationarity properties of each of the variables using the Augmented Dickey Fuller
(ADF) test to find the existence (or otherwise) of unit root in each of the time series. The results of the unit root test
are presented in the table 2 below.

Table 2: Unit Root Test for Stationarity (Augmented Dickey Fuller)

Variables	ADF Statistic	1% Critical Value	5% Critical Value	10% Critical Value	Order of Integration
EXRV	-5.455596	-3.621023	-2.943427	-2.610263	I(1)
OMP	-5.531744	-3.615588	-2.941145	-2.609066	I(1)
NOMP	-5.321848	-3.670170	-2.963972	-2.621007	I(1)
OXP	-5.484117	-3.621023	-2.943427	-2.610263	I(1)
NOXP	-5.231122	-3.670170	-2.963972	-2.621007	I(1)
EXCR	-5.415744	-4.219126	-3.533083	-3.198312	I(1)

Source: *Computed Result Using E-Views 10*

The stationarity test reported in Table 2 showed that the time series did not attain stationarity at levels. External reserve, oil import, non-oil import, oil export, non-oil export and exchange rate however attained stationarity after first difference. In absolute terms, the ADF value of each of the variable became greater than their critical values at 5 percent significance level. Having established the stability of the variables, we went further to establish the existence (or otherwise) of a long run cointegrating relationship among the variables by using the Johansen procedure as demonstrated in the table below.

Co-Integration Test

The results of the co-integration test using the Johansen procedure are presented in the table 3 below.

Table 3: Johansen Co-integration Test Results

Eigen value	Trace Statistics	5% critical value	Eigen value	Max-eigen Statistics	5% critical value
0.899035	175.3533	95.75366	0.899035	87.13335	40.07757
0.578303	88.21993	69.81889	0.578303	32.81178	33.87687
0.524164	55.40815	47.85613	0.524164	27.22190	27.58434
0.338893	27.18625	29.79707	0.338893	15.72593	21.13162
0.257667	11.46033	15.49471	0.257667	11.32240	14.26460
0.003623	0.137925	3.841466	0.003623	0.137925	3.841466

Source: *Computed Result Using E-Views 10*

The Johansen cointegration tests indicates that the trace and maximum eigen value statistics show the existence of three (3) and one (1) cointegrating equations respectively between external reserve and the variables influencing it at 5 percent significance level. The implication of this result is that there exists a unique long run relationship between foreign reserves, oil import, non-oil import, oil export, non-oil export and exchange rate. Given the existence of co-integrating equations, the requirement for fitting in an error correction model is satisfied.

The Error Correction Test

The existence of cointegration among the series presents strong evidence of long-run relationship among the variables. The vector error correction model was then used to determine the short-run behavior of the variables.

Table 4: Vector Error Correction Test Result

Dependent Variable: DLOG(EXRV)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.541943	0.261476	2.072629	0.0496
DLOG(EXRV(-1))	1.613685	0.745516	2.164522	0.0371
DLOG(EXRV(-2))	1.813634	7.437822	0.243839	0.8088
DLOG(OMP)	-0.333627	0.173019	-1.928269	0.0615
DLOG(OMP(-1))	-0.541943	0.261476	-2.072629	0.0496
DLOG(NOMP)	-0.197790	0.074078	-2.670033	0.0113
DLOG(OXP)	1.058720	0.400224	2.645317	0.0151
DLOG(NOXP)	0.075387	0.515661	0.146194	0.8852
DLOG(NOXP(-1))	0.064625	0.160854	0.401765	0.6904
D(EXR)	-0.319033	0.097657	-3.266861	0.0024
D(EXR(-1))	0.670279	0.292246	2.293539	0.0313
ECM(-1)	-0.419401	0.154533	-2.713995	0.0104
R-squared	0.786416	**Durbin-Watson stat**		1.970451
F-statistic	8.591310	**Prob(F-statistic)**		0.000027

Source: *Computed Result Using E-Views 10*

The results of the Vector Error Correction Model presented in Table 4 showed that in the short-run, the current year's value of oil imports (OMP) has a negative and significant effect on external reserves in Nigeria at 10 percent level. Oil imports at lag one period and non-oil imports in the current period equally had a negative and significant effect but that at 5 percent significant level. The non-impact of oil and non-oil imports on external reserves is in corroboration with the works of Nteegah and Okpoi (2016) and Adegboyo *et al*, (2019) and it is consistent with theoretical expectation implying that increase in importation depleted external reserves in Nigeria over the period of this study. Oil export in the current period impacted positively and significantly on external reserves while non-oil export in the current and one lagged period impacted positively but insignificantly on external reserve, supporting the position of Osigwe (2015), Nteegah & Okpoi (2016) and Adegboyo *et al*, (2019). Exchange rate showed mixed impact on external reserves in Nigeria for the period covered by the study. While the rate showed a negative relation with external reserve at levels, a positive relationship was observed at lag one. The variable was however significant at 5 percent level for both the level and lag one periods. The implication of this is that exchange rate has significant negative and positive implications on external reserve of Nigeria. It is pertinent to note that a fall in domestic exchange rate boosts export trade in an export based country thereby boosting external reserves while the depreciation in exchange rate in an import dependent country leads to the retardation of external reserves.

The works of Adegboyo *et al* (2000); Oyeniran (2000); Osigwe (2000) and Narayan (2000) showed significant relationship between exchange rate and external reserves while that of and Akinwunmi (2000), Irefin (2000), Senibi *et al* (2000) indicated insignificant relationships. Furthermore, the error correction term has the hypothesized negative sign and statistically significant in the external reserve function at 5 percent level indicating a moderate convergence to long run equilibrium after the short run shocks. Specifically, 41.9 percent of the previous year's disequilibrium in external reserve is been corrected by oil import, non-oil import, oil export, non-oil export, and exchange rate. The R^2 value was 0.786 showed that that about 79 percent of the total variation in Nigeria's external reserves is influenced by changes in oil import, non-oil imports, oil export, non-oil export and exchange rate over the period under investigation representing a good fit. The F-statistic, showed that the overall explanatory variables are significant in explaining external reserves in Nigeria. The Durbin Watson value of 1.97 suggests the absence of autocorrelation in the model

Causality Test

Granger causality test is used to analyze the causal relationship between two variables in a model. The null hypothesis is rejected if the probability value is greater than 5 percent. Conversely, if the probability value is less than 5 percent, we accept the null hypothesis of no causality. A unidirectional causality exists between two variables when either of the null hypothesis is rejected. Similarly, bi-directional causality occurs if both null hypotheses are rejected and no causality exists if neither of the null hypothesis is rejected. In this study, Granger causality test was conducted to find out the direction of causality between foreign trade and external reserve in Nigeria.

Table 5. Pairwise Granger Causality Tests

Sample: 1980 2019
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
OMP does not Granger Cause EXRV	38	1.69570	0.1991
EXRV does not Granger Cause OMP		1.61780	0.2137
NOMP does not Granger Cause EXRV	38	1.31317	0.2827
EXRV does not Granger Cause NOMP		0.64733	0.5300
OXP does not Granger Cause EXRV	38	3.39452	0.0456
EXRV does not Granger Cause OXP		0.92900	0.4050
NOXP does not Granger Cause EXRV	38	0.18065	0.8355
EXRV does not Granger Cause NOXP		0.89268	0.4192
EXCR does not Granger Cause EXRV	38	4.62790	0.0169
EXRV does not Granger Cause EXCR		2.60469	0.0891
NOMP does not Granger Cause OMP	38	9.72252	0.0005
OMP does not Granger Cause NOMP		3.72267	0.0348
OXP does not Granger Cause OMP	38	1.66700	0.2043
OMP does not Granger Cause OXP		0.12329	0.8844
NOXP does not Granger Cause OMP	38	1.34970	0.2733
OMP does not Granger Cause NOXP		2.57593	0.0913
EXCR does not Granger Cause OMP	38	5.08524	0.0119
OMP does not Granger Cause EXCR		2.25953	0.1203
OXP does not Granger Cause NOMP	38	4.88746	0.0138
NOMP does not Granger Cause OXP		6.35861	0.0046
NOXP does not Granger Cause NOMP	38	9.22775	0.0007
NOMP does not Granger Cause NOXP		0.29001	0.7501
EXCR does not Granger Cause NOMP	38	5.13839	0.0114
NOMP does not Granger Cause EXCR		5.33619	0.0098
NOXP does not Granger Cause OXP	38	0.23106	0.7950
OXP does not Granger Cause NOXP		2.83932	0.0728
EXCR does not Granger Cause OXP	38	11.4947	0.0002
OXP does not Granger Cause EXCR		8.31876	0.0012
EXCR does not Granger Cause NOXP	38	1.59212	0.2187
NOXP does not Granger Cause EXCR		6.00593	0.0060

Source: *Computed Result Using E-Views 10*

The result of the Pairwise Granger causality test in table 5 shows that oil export granger caused external reserves while external reserves did not granger cause oil export. This implies that there is a uni-directional causality from oil export to external reserves at 5 percent level of significance. This result is consistent with the short run error correction result where oil export improved external reserves. It was also observed from the result that no causality exists between oil import and external reserves, non-oil import and external reserves and also between non-oil export and external reserves. Finally, there was a bi-directional causality between exchange rate and external reserves at 10 percent level of significance.

CONCLUSION AND RECOMMENDATIONS

This study examined foreign trade and external reserves in Nigeria for a 40-year time period spanning from 1980 to 2019. Relevant literatures to the subject matter were thoroughly reviewed. The analysis started by examining stochastic characteristics of each time series by testing their stationarity using Augmented Dickey-Fuller test which showed that all the variables were integrated at order I(1). The Johansen cointegration test showed a stable long run relationship between external reserves, oil imports, non-oil imports, oil exports, non-oil exports and exchange rate. The regression estimate from the vector error correction model showed that oil exports had positive and significant impact on external reserves in Nigeria. Non-oil export also impacted positively on external reserves but insignificantly. This situation is in accordance with the fact that Nigeria is a mono cultural economy, depending strongly on oil revenue. Oil import, non-oil import and exchange rate impacted negatively on external reserve in Nigeria within the period covered by the study. This is a clear reflection of the present situation in Nigeria where both oil and non-oil export increases the external reserve while oil and non-oil import constitute a leakage to the reserve of the economy. In addition, the granger causality test revealed that oil export had a uni-directional causal relationship with external reserve while there was a bi-directional relationship between exchange rate and external reserve. In recommendation therefore, the study suggests that the diversification of the export base of the nation as a possible measure of improving external reserves in Nigeria should be given paramount attention. Also, importations should be discouraged especially for commoditites that can be produced locally and restricted to essential intermediate goods. Finally, the CBN as the custodian of Nigeria's foreign reserves should stabilize the value of local currency taking into cognizance the external shocks that stem from exchange rate volatilities.

References

Abdullateef, U & Waheed, I. (2010). *External reserve holdings in Nigeria: Implications for investment, inflation and exchange rate.* University, Ilorin, Nigeria: *Journal of Economics and International Finance.* 2(9),183-189.

Adam E. & Leonce N. (2007). Reserves Accumulation in African Countries-Sources, Motivation and Effects. *African Economic Conference.*

Adegboyo, O. S., Efuntade, O. O., & Efuntade A. O. (2019). The Relationship between External Reserve and Trade: Evidence from Nigeria. *Journal of Economics and Finance*. 10(5), 21-27.

Aizenman, J., Lee, J. (2005), International reserves: precautionary vs. Mercantilist views, Theory and Evidence. *IMF Working Paper Working Paper* /05/198.

Aizenman, J., Lee, J. (2006), "Financial Versus Monetary Mercantilism-Long-Run Views of Large International Reserves Hoarding." *National Bureau of Economic Research, Working Paper* No. 12718.

Aizenman, J., Marion, N. (2003), The High Demand for International Reserves in the Far East: What Is Going On? *Journal of the Japanese and International Economies,* 17, 370-400.

Akinwunmi, A. A. & Adekoya, R. B. (2016). External reserves management and its effect on economic growth of Nigeria. *International Journal of Business and Finance Management Research.* 4(6) 36-46

Azar S. A. & Aboukhodor, W. (2017). Foreign Exchange Reserves and the Macro-economy in the GCC Countries. *Accounting and Finance Research*. 6(3).....

Bayat, T., Senturk, M., & Kayhan, S. (2014). Exchange rates and foreign exchange reserves in Turkey: nonlinear and frequency domain causality approach. *Theoretical & Applied Economics*, *21*(11), 27-42

Carlos, B., C. Pierre, C. Joachim, X. D. Francis, and M. Simone, (2004): Risk Management for Central Bank Foreign Reserves. *European Central Bank, April*.

CBN, 2010. *Statement of Accounts and Annual Reports*. Abuja: Central Bank of Nigeria.

CBN (2017). Foreign Exchange Reserves report. Central Bank of Nigeria, Abuja.

Central Bank of Nigeria (CBN). Central Bank of Nigeria: Reserves Management. http://wwwcenbank.org/intops/reservesmgmt.asp retrieved 29/9/2020.

Charles-Anyaogu, .N. (2012). External reserves: causality effect of macroeconomic variables in Nigeria (1980-2009). *Kuwait Chapter of Arabian Journal of Business and Management Review,* 1 (12)

Chen, P and Gupta, R. 2006. "An Investigation of Openness and Economic Growth using Panel Estimation," *University of Pretoria*, Working Paper no. 2006-22.

Chin-Hong, P., Mohamad, J., Affendy, A., and Oi-Khim, .L. (2011). Determinants of International Reserves in Malaysia. *International Journal of Business Research,* Vol. 11(4).

Chowdhury N.M, Uddin M.J, & Islam M.S. (2014). An Econometric Analysis of the Determinants of Foreign Exchange Reserves in Bangladesh. *Journal of World Economic Research.* 3(6), 72-82.

Debel, G. (2002). Exports and Economic Growth in Ethiopia, An empirical investigation.

Drummond, P., Mrema A., Roudet S. & Saito M. (2009). Foreign Exchange Reserve Adequacy in East African Community Countries. *I n t e r n a t i o n a l M o n e t a r y F u n d.*

Elhiraika, A., Ndikumana, L. (2007), Reserves Accumulation in African Countries: Sources, Motivations, and Effects. Department of Economics, *University of Massachusetts, Amherst, USA Working Paper* 2007-12.

Frenkel, J.A., Jovanovic, B. (1981), On Transactions and Precautionary Demand For Money, *NBER Working Papers* 0288, National Bureau of Economic Research, Inc.

Gbosi, A.N. (1995). *Managing the Naira.* Port Harcourt: Springfield Publishers.

Gbosi, A. N. (2011). *International Trade in Theory and Practice*. Port Harcourt: Amethyst & Colleagues Publishers.

Goneli A. (1993). The basics of foreign trade and exchange. Federal Reserve Bank of N. Y.

Irefin, D & Yaaba, B. N. (2012). Determinants of Foreign Reserves in Nigeria: An Autoregressive Distributed Lag Approach. *CBN Journal of Applied Statistics.* 2(2).

Kim, J. S., Li, J., Rajan, R., Sula, O., & Willett, T. D. (2005). Reserve adequacy in Asia revisited: new benchmarks based on the size and composition of capital flows. In Claremont-KIEP Conference Volume on Monetary and Exchange Rate Arrangements.

Kyereboah-Coleman, A. (2009), Reserves and Foreign Exchange in the Macroeconomic Context. *Presentation at Regional Course on Optimising Reserves and Foreign Exchange Management for Income Generation organised by WAIFEM*, May 11–15, 2009, Accra, Ghana.

Narayan, P. K., & Smyth, R. (2006). The dynamic relationship between real exchange rates, real interest rates and foreign exchange reserves: empirical evidence from China. *Applied Financial Economics*, *16*(9), 639-651.

Nteegah, A. & Okpoi, G. E. (2016). External Trade and its implications on Foreign Exchange Reserves in Nigeria. *West African Journal of Industrial and Academic Research*. 17(3), 108-119

Osigwe, A. O., Okechukwu, A. I. & Onoja, T. C. (2015). Modeling the Determinants of Foreign Reserves in Nigeria. *Developing Country Studies.* 5(19), 72-77.

Oyeniran, I. W. & Alamu S. A. (2020). Determination of Optimal Level of Foreign Reserves in Nigeria. *CBN Journal of Applied Statistics*. 11(1), 65-85.

Sanusi .L. (2013). Depleting the Excess Crude Account (ECA), A Report. Retrieved from www.investorwords.com/17647/international_reserves.html#ixzz3gd7mNgtd

Senibi, V., Oduntan, E., Uzoma, O., Senibi, E. & Oluwaseun, A. (2016). Public Debt and External Reserve: The Nigerian Experience (1981–2013). Economics Research International, http://dx.doi.org/10.1155/2016/1957017

Shijaku, G. (2012). Optimal level of reserve holding: an empirical investigation in the case of Albania. *MPRA Paper 79091*, University Library of Munich, Germany.

Soludo, C.C. (2005). The Challenges of Foreign Reserves Management in Nigeria. A Keynote Address delivered at the UBS Eleventh Annual Reserves Management Seminar, Wolfs.

Todaro, M. P. & Smith, S. C. (2011). Economic development (11th edition). Boston, MA: Addison-Wesley.

Tule M. K., Egbuna, E.N., Sagbamah, J.E.L., Abdusalam, S.A, Ogundele, O.S,. Oduyemi A.O, & Oladunni, S.(2015). Determination of optimal foreign exchange reserves in Nigeria. Central Bank of Nigeria Working Paper Series CBN/WPS/01/2015/06.

Umeora C. E. (2013). Foreign exchange reserves accumulation and macro-economic stability: The Nigerian experience. Int. J. Bus. Manage. Invent. 2(9): 150-157.

World Bank (2019). Inaugural Reserves Advisory and Management Program (**RAMP**) Survey on the Reserve Management Practices of Central Banks: Results and Observations