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Exchange Rate and Economic Growth in Nigeria: Error Correction Mechanism (ECM) Approach (1990-2016)

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Abstract

The study examined Exchange Rate and Economic Growth in Nigeria for the period 1990-2016 using Ordinary Least Square (OLS) with Error Correction Mechanism (ECM). The Augmented Dickey-Fuller (ADF) test showed that the variables were found to be stationary at first difference I(1), while Johansen's Cointegration result indicates five cointegrating equations. Granger causality test revealed that there is bi-directional causality between real GDP and exchange rate. It was also revealed that export causes exchange rate and exchange rate in return causes export. However, there is unidirectional causality between Real GDP and import with the causality flowing from RGDP to import. This implies that RGDP Granger causes import. The result showed that the coefficient of Error Correction Mechanism (ECM) is negative and significant. The ECM result shows that about 24 percent disequilibrium in the previous period is being corrected to restore equilibrium in the current period. Assessing the overall significance of the parameters, the study concluded that exchange rate has significant impact on Nigeria economic growth. Hence, the study recommended that government should embark on massive importation of capital goods in order to boost domestic production and discourage the importation of consumer goods and services that can be produced locally; government should encourage exchange rate appreciation through aggressive export strategy towards strengthening the external reserves; and government should invest in productive activities and infrastructural development, towards generating employment and controlling inflation.

Keywords: Exchange Rate, Structural Adjustment Programme, Economic Growth and Error Correction Mechanism (ECM).
JEL Codes: O47

1. Introduction

The exchange rate plays a central role in the growth of any economy, whether developed or developing. As has been noted by the CBN (2016), the exchange rate plays a pivotal role in the economy because imports and exports constitute a large component of any national economy and it is the exchange rate regime that facilitates the interaction. Essentially, exchange rate changes affect the prices of imported goods, services and exports. When the value of a currency, for example, the Naira falls, imported goods become more expensive and there will be a tendency to reduce the volume of imports. At the same time, other countries will pay less for some of Nigerian products that are exported and that tends to boost export sales and foreign exchange earnings, as well as the country's export industries' competitiveness

in the international markets. This makes the exchange rate of a local currency the link between domestic and foreign prices of goods and services.

The significance of the exchange rate arose as a result of unequal resource endowments in different parts of the world, which necessitates the need for trade, exchange and inter-dependence. In international trade, transactions are carried out daily, where participants exchange goods and services, thereby necessitating payments. To effect such transactions, an international acceptable mode of payment is required and this brought about the idea of foreign exchange. According to Fapetu and Oloyede (2014), foreign exchange management is the technique that involves the generation and disbursement of foreign exchange resources so as to reduce destabilising short-term capital flows in an economy. Consequently, in order to ensure that foreign change allocation and utilisation are in consonance with economic priorities and the foreign exchange budget, the central monetary authority, usually the Central Bank, monitors the use of scarce foreign exchange resources.

Obaseki (1991) thus opined that whenever there is disequilibrium in the foreign exchange market caused by inadequate supply of foreign exchange, there may be undue pressure on the foreign exchange reserve. If the reserves are not adequate, this may deteriorate into balance of payments disequilibrium. There is therefore the need to manage a nation's foreign exchange resources so as to reduce the adverse effects of foreign exchange volatility. It is generally accepted that the exchange rate is an essential macroeconomic variable necessary for the management of economic policies and economic reforms in order to achieve stated macroeconomic goals. The central monetary authorities, usually represented by Central Banks, manage the foreign exchange markets and instruments to achieve a variety of overall macroeconomic objectives: to control inflation, maintain international competitiveness, foreign reserves and financial stability, thereby enhancing economic growth. The specific objectives of policy and how they are reflected in foreign exchange management depend on a number of factors, including the stage of a country's development, the degree of financial market development and integration, and the country's overall vulnerability to shocks (CBN 2016).

The exchange rate regime in developing countries remain a critical variable, with a number of countries embracing trade liberalization and structural adjustment as requisites for favourable balance of payments and economic growth(Obansa, Okoroafor, Aluko and Eze, 2013).It is noteworthy that exchange rate policies in developing countries are often sensitive and controversial, given the type of structural adjustments required (e.g. reducing imports or expanding non-oil exports),invariably suggesting a depreciation of the exchange rate. Domestic adjustments of this type are generally perceived as damaging to the economy given their short-run impact on prices and demand(Mordi, 2006).Evidence from the literature suggests that selection of appropriate exchange rate or maintaining relative rate stability is critical for both internal and external balance of payments and economic growth in the long run. On the other hand, inefficient and poor management of the exchange rate causes distortions in the patterns of consumption and production.

The achievement of a realistic exchange rate for the Nigerian Naira continue to generate great challenges to macroeconomic policy formulators, given its significance in stimulating economic growth. Over the years, Nigeria has experienced chronic deficit on her balance of payments account and confront many challenges in monetary actions due to her mono-product economy and over-dependency on imported capital and manufactured goods. The Nigerian budget relies heavily on revenues from oil exports; at the same time, massively importing refined petroleum and other related products (Abdullahi, Abubarkar, Fakunmoju & Giwa, 2016).

The significance of foreign exchange in the macroeconomic management of the Nigerian

economy gives impetus to carrying out this study. Since the commencement of the liberalisation of the foreign exchange system that came with the Structural Adjustment Programme (SAP) in 1986, the Nigerian economy has continued to witness severe distortions. It is the quest to examine the impact of exchange rate on the Nigerian economic growth for the period 1990 to 2016 and consider the significance of import, export, inflation rate and foreign reserves in determining the exchange rate and its impact on economic growth in Nigeria. It is obviously difficult to isolate the impact of exchange rate on the macro economy of any nation since other factors contribute to its workings. Therefore, through this analysis, the study intends to identify the impact of exchange rate on the Nigerian economy by relying on existing literature and data provided by national agencies for the assessment. From these, deductions, summary, conclusion and recommendations will be made.

Following from this introductory Section, the paper proceeds with the literature review by examining conceptual, empirical and theoretical Issues. Section three is devoted to identifying the Research Methodology designed for this study. Section four contains results presentation and discussion, while the concluding section five deal with conclusion and recommendations.

2. Literature Review

Conceptual Issues

Exchange Rate

Mordi (2006) has defined exchange rate as the price of one currency in terms of another as it indicates the values of two currencies against each other. Soderstine (1998) views exchange rate as the price of one currency in terms of another, which is the amount of foreign currency that may be bought for one unit of the domestic currency or the cost in domestic currency purchasing one unit of the foreign currency. It is thus the required amount of units of a national currency that can buy another amount of units of another country's currency. The nominal exchange rate is the rate at which the monies of different countries can be exchanged for one another. The real exchange rate is the rate at which the goods and services produced in different countries can be exchanged for one another (Inam & Umobong, 2015).

The nominal exchange rate (NER) is a monetary concept which measures the relative price of two countries' moneys or currencies, e.g., Naira in relation to the U.S. dollar (e.g., N360: US$ 1) and vice versa. But the real exchange rate (RER), as the name implies, is a real concept that measures the relative price of two tradable goods (exports and imports) in relation to non-tradable goods (goods and services produced and consumed locally) (Obadan, 2006).

Anifowose (1994) opines that foreign exchange, as a monetary asset is used on a daily basis to settle international transactions and to finance deficits in a country's balance of payments. He stresses that in addition to holdings of monetary gold and special drawing rights (SDRs), foreign exchange is an important component of a country's stock of external reserves. Obaseki (1991) observes that foreign exchange can be acquired by a country through exports of goods and services, Foreign Direct Investment (FDI) inflows or external loans, aids and grants which can be used in settling international obligations.

The strength of a country's currency depends on a number of factors, including the state of the economy in terms of its competitiveness and volume of its exports, the level of domestic production, and the quantum of foreign reserves. Where the importation of essential goods and services becomes costly, as a result of increase in prices of domestic goods, the purchasing power of the domestic currency reduces– a depreciation of the domestic currency. Exchange rate can either appreciate or depreciate. Appreciation in the exchange rate occurs if less unit of domestic currency exchanges for a unit of foreign currency while depreciation in exchange rate occurs if more unit of domestic currency exchanges for a unit of foreign currency. For the purpose of this study, we adopt the nominal definition of exchange rate, that is

the accepted value of local Naira against a major international currency, the US Dollar.

Exchange Rate Regimes

An exchange rate regime refers to the method or system adopted by a country's monetary authority (usually the Central Bank) to determine the value of its currency in relation to other currencies (CBN 2016). It can also be defined as the exchange rate system by which the value of a domestic currency is determined vis-à-vis foreign currencies. Based on each country's practices and the degree of monetary policy independence, IMF (2008) has classified the regimes into three broad categories:

1. The hard exchange rate peg (or fixed exchange rate) which ties a country's foreign exchange regime to an anchor country, thereby effectively taking away the management from the Central Bank. Examples of such regimes include Currency/Monetary Union, Formal Dollarisation and Currency Board.
2. The soft exchange rate peg, which is a hybrid between the hard peg (or fixed) and floating exchange rate regimes, which allows the Central Bank limited flexibility over its domestic monetary policy. Such regimes include: Conventional Fixed peg, Horizontal Band, Crawling Peg, Crawling Bands and Tightly Managed Float.
3. Flexible (Floating) exchange rate regime occurs where the international value of a national currency, at any point in time, is determined by the interaction of the market forces of demand and supply of foreign exchange. Flexible exchange rate regimes can be classified according to their degree of flexibility, which in turn depends, to a large extent, on the degree of foreign exchange intervention. Under this are Free Floating or Managed Floating as sub-types.

Exchange Rate Management in Nigeria

In Nigeria, the Central Bank of Nigeria (CBN) maintains the stability of the Naira exchange rate in order to achieve its objective of maintaining price stability because domestic prices (inflation and interest rates) are very responsive to exchange rate fluctuations. There are two main types of exchange rates in Nigeria; official and market exchange rates. The official exchange rate is determined by the CBN, while the market exchange rate is basically determined by market forces of demand and supply. When the demand for foreign exchange exceeds supply, the value of the Naira will go up, and if exchange rate supply exceeds demand, the value of the Naira will go down (CBN 2016).

Prior to the establishment of the CBN in 1958 and the enactment of the Exchange Control Act in 1962, agriculture was the major foreign exchange earner. Foreign exchange at this time was earned by private companies and the foreign exchange balances were maintained in foreign banks by commercial banks, which acted as agents for local exporters. The Nigerian exchange rate management has undergone substantial transformation from the immediate post-independence period, when the country maintained a fixed parity with the British pound, through the oil boom of the 1970s, to the floating of the currency in 1986, following the near collapse of the economy between 1982 and 1985.In each of these eras, the economic and political considerations underpinning the exchange rate policy had important repercussions for the structural evolution of the economy, inflation, the balance of payments and real income.

However, a major policy reversal was effected in September 1986 when the flexible exchange rate regime was put in place following the adoption of the Structural Adjustment Programme (SAP). During SAP, there was absence of foreign exchange allocation and import licensing procedures and transactions in foreign exchange were market based. This exchange rate regime helped solve the overvaluation of naira but devalued the naira. Exchange rate depreciation had since increase the naira price of imports and this is expected to discourage importation (Oyejide & Ogun, 1995).

According to Amassoma and Odeniyi (2016)and Nwude (2012) in the year 1986 when SAP commenced, exchange rate stood at N2.02: U. S$1.00, but by 1987, 1990, 1991, it had depreciated to an average of N4.02, N8.04 and N9.91 to US$1.00 respectively. Again, in 1992 and1993 it depreciated to N17.30 and N22.05: US$1.00. In 1994, there was a need for the complete reversal of exchange rate policy due to the continuous depreciation of the exchange rate with there-introduction of a fixed exchange rate regime which made N21.8861 = US$1.00. The dismal performance of the economy as at the end of 1994 led to the re-introduction of the market-based approach under the autonomous foreign exchange market (AFEM) from January 1995 until October1999.

The exchange rate depreciated further from the fixed rate of N21.8881: US$1.00 in 1994to N81.00:US1.00 in 1995, and in less than a year after it was fixed, to N84.38: US$1.00 andN92.65: $15$1.00 in 1998 and 1999 respectively. The rate depreciated further to N128.75 between 2002 and2005. However, it was relatively stable in 2003 and between 2005 and 2008Naira appreciated. The Naira –dollar exchange rate as at 2011 was ₦162.30 but fell to ₦156.15 in2012 and a further decline to ₦155.73 in 2013. The Naira-Dollar exchange value was highly volatile towards the end of 2014 and in 2015with ₦168 for 1USD, ₦204 for 1 USD in February 2015 but later reduced to ₦197 for 1USD as at August 2015 (Amasomma & Odeniyi, 2016).

Nigeria's exchange rate has been more volatile in the post-SAP period due to its excessive exposure to external shocks. The effect of the recent global economic meltdown on Nigerian exchange rate was phenomenal, as the Naira exchange rate vis-à-vis the Dollar rose astronomically from about N120/$ to more than N180/$ (about 50% increase) between 2008 and 2009. This is attributable to the sharp drop in foreign earnings of Nigeria as a result of the persistent fall of crude oil price, which plunged from an all-time high ofUS$147 per barrel in July 2007 to a low of US$45 per barrel in December 2008 (Onuorah & Osuji, 2014).

Although various internal and external factors accounted for the poor performance of the Nigerian economy, it is necessary to understand the growth process of Nigeria under the various exchange regimes that had been adopted in the country, the effects of production, unemployment, inflation, interest rate, import and export. However, it is worthy of note that Nigeria's over-dependence on importation of capital and manufactured goods and less emphasis on diversification from oil to concentrate on the manufacturing local goods and services, greatly contributed to the depreciation of the value of the Naira over the years.

Theoretical Review

Economic scholars and researchers are yet to agree on a single theory that defines the exchange rate. There are numerous competing theories of the exchange rate concept which evolved over time. Any succeeding theory is usually a critique of an earlier one. Extending from this, the theoretical literature on the impact of exchange rate on the economy is replete with varying positions. There are several exchange rate models, theories and the relative pricing methods that are in use in the determination of foreign exchange rate. Four of the important models or theories can be identified:

The Mint Parity Theory

This is associated with the working of the international gold standard. Under this system, the currency in use was made of gold or was convertible into gold at a fixed rate (Brooks, 2014). Here, the value of the currency unit was defined in terms of certain weight of gold and the Central Bank of the country concerned was always ready to buy and sell gold at the specified price. The rate at which a national currency could be converted into gold is called the mint price of gold.

The Purchasing Power Parity Theory

This theory was first enunciated by Gustav (1918, cited in Kadochnikov, 2013), a Swedish economist. He wrote that the

purchasing power of a currency is determined by the amount of goods and services that can be purchased with one unit of that currency. If there are more than one currency, the exchange rates between them should be such that they provide the same purchasing power to different currencies. That is, the exchange rate between two countries is determined by their relative price levels.

Theory of Interest Rate Parity (IRP)

The basic premise of this theory is that in an open economic system, the real future worth of a monetary asset should be the same irrespective of the currency in which it is invested. As per the Fisher Effect (Korab & Kapounek, 2013), the nominal rate of interest is related to real rate of interest and inflation by the equation: $(1 + in) = (1 + ir)(1 + r)$,

where: in = nominal rate of interest, ir = real rate of interest and r = rate of inflation.

The market rate of interest is the nominal rate. The real rate of interest or real rate of return corresponds to increase of purchasing power. The theory of Interest Rate Parity and Fisher effect have been tested. It is found that the countries that have higher rate of inflation have higher nominal interest rates.

The Balance of Payments Theory

This theory stipulates that under free exchange rates, the exchange rate of the currency of a country depends upon its balance of payment. According to Brooks (2014), a favourable balance of payments raises the exchange rate, while an unfavourable balance of payments reduces the exchange rate. Thus the theory implies that the exchange rate is determined by the demand for and supply of foreign exchange. Hence, balance of payment equilibrium is the focus of this study. This will accommodate some important variables such export, import, external reserve, oil revenue and so on that determine exchange rate in every economy.

Empirical Review

There is a vast body of literature on empirical studies which are concerned with the nexus between exchange rate and economic growth. Yet there is no unanimity regarding the exact impact of exchange rate on economic growth. Kandil (2004) examined the effects of exchange rate fluctuations on real output growth and price inflation in a sample of 22 developing countries. The author argued that depending on the degree of openness, exchange rate volatility and depreciation in particular, hurts economic performance by contracting output growth and inflation. In the long-run, anticipated exchange rate fluctuations significantly increased and decreased inflation and output growth respectively.

A key study by Linjouom (2007) argued that overvaluation of exchange rates resulted in a major setback in the recovery process of Nigeria and Benin Republic. In addition, the author suggested that devaluation accompanied with well-targeted measures alongside an upward adjustment in the domestic price of tradable goods, could restore exchange rate equilibrium and improve economic performance. Fapetu and Oloyede (2014) examined foreign exchange management and Nigerian economic growth from 1970 to 2012, using the ordinary least square estimation technique within the error correction model (ECM) framework. The study revealed that managing the economy's foreign exchange rate does affect quite a number of economic variables, which in turn affects growth in the economy.

In a study carried out by Afolabi, Uwasejike, Ekpeyong, and Ehinimen (2016), they examined the linkage between exchange rates and economic growth in Nigeria between 1978 and 2014, by analysing OLS regression and discovered that over 66% variations in exchange rates were caused by the regressors included in their model. They also discovered that there was long run equilibrium relation between exchange rates and the explanatory series in the selected time period. Using unit root tests, they ascertained the presence of stationarity in all variables of interest at 1st difference. The Granger causality revealed the short-run causality between exchange rates and economic growth during the period under study. Hence, they concluded that economic

growth of Nigeria is inelastically influenced by exchange rates.

Arize, Osang and Slottje (2000) examined the relationship between exchange rate and economic growth in Nigeria between 1970–2010. The result indicated that exchange rate has a strong impact on economic growth. They concluded that exchange rate liberalisation was good for the Nigerian economy as it stimulates economic growth. Onourah and Osuji (2014) used secondary data which were obtained from the World Bank database and adopted the Ordinary Least Square (OLS) method of estimation for data covering the period between 2000 and 2010. The results from the econometric analyses impact of exchange rate on economic growth showed that there was a short-run relationship between exchange rate, inflation rate, interest rate and GDP. The result obtained from the unit root analysis indicated that at least one-time series variable property is stationary. The study concluded that in Nigeria, the factors that influence the level of growth rate are the extent of exchange rate movements and its variables. Obansa,*et al.*, (2013) also examined the relationship between exchange rate and economic growth in Nigeria between 1970 – 2010. The result indicated that exchange rate has a strong impact on economic growth. They concluded that exchange rate liberalisation was good to Nigerian economy as it promotes economic growth.

Yaqub (2010) investigated the effect of exchange rate on output of different sectors in Nigeria. The study adopted the modified IS-LM framework and estimated the behavioural equations. Data on Nigeria from 1970-2007 were utilised. The results obtained indicated that exchange rate had significant contractionary effects on agricultural and manufacturing sectors while it had expansionary effect on services sector. The author concluded that the existing structures in Nigeria could not support an expansionary depreciation argument in the basic sectors during the period of study.

Akpan and Atan (2011) investigated the effect of exchange rate movements on real output growth in Nigeria. Based on quarterly series for the period 1986 to 2010, the paper examined the possible direct and indirect relationship between exchange rates and GDP growth. The relationship was derived in two ways using a simultaneous equations model within a fully specified (but small) macroeconomic model. On the whole, the paper provided empirical estimates of the relation between exchange rate and economic growth in Nigeria. The results suggested that there was a statistically significant direct relationship between the two variables. The vector auto regression results also demonstrated that real exchange rate and real income are significantly cointegrated.

Inam and Umobong (2015) analysed the relationship between exchange rate movements and economic growth in Nigeria using annual data spanning 1970-2011. Employing the Ordinary Least Square (OLS) technique and the Granger Causality Test, the study revealed the existence of a positive and insignificant relationship between exchange rate and economic growth in Nigeria. The results also indicated that there is no causality between exchange rate and economic growth in Nigeria. In view of the fact that exchange rate stability is absolutely imperative for macroeconomic stability, the study recommended, amongst others, that government should adopt appropriate monetary and fiscal policies that will not only ensure a realistic and stable exchange rate, but will also serve to foster economic growth in Nigeria.

The analysis of the results of empirical studies carried out on the impact of foreign exchange on economic growth in Nigeria are far from being unanimous. The results are vary widely. Therefore, this study is designed to probe further the impact of foreign exchange on economic growth in Nigeria over the study period.

3. Methodology

Theoretical Framework

The Theoretical Framework for this study is premised on the Balance of Payments Theory described above. The theory suggests that the exchange rate is determined by the demand for and supply of foreign exchange. Therefore, the study will accommodate some important macroeconomic variables such export, import, external reserve, oil revenue, etc. that combine to determine the foreign exchange in Nigeria.

Sources of Data and Estimation Technique

The study period for this research is the 27-year period from 1990 to 2016. This period represents the immediate post - Structural Adjustment Programme (SAP) era in Nigeria, when the effects of the liberalisation programme ought to have become manifest and thus amenable for study. The data utilised is secondary in nature and sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and National Bureau of Statistics for the period 1990 to 2016. The Ordinary Least Square (OLS) with Error Correction Mechanism (ECM) were used in the study to establish a relationship among the variables.

The choice of ECM was predicated upon the need to examine the short-run and long run effects of these independent variables on the Nigerian economy. This involved conducting the unit root test using Augmented Dickey Fuller (ADF) test in order to determine the stationarity of the data. The Johansen cointergation test was used to determine the long run relationship among the variables, since cointegration is a necessary condition for testing the ECM. The Pairwise Granger Causality Test was then used to establish the direction of causation among the major variables. These methods were selected as they were necessary to determine both the short run and long run impacts of exchange rate on economic growth in Nigeria.

Model Specification

The paper adopts the models of Onuorah & Osuji (2014); and Fapetu & Oloyede (2014) for this study. These were, in turn premised on the earlier work of Sarkar & Amor (2009). This research extended Fapetu & Oloyede's empirical analysis from 2012 to 2016, and also extended Onuorah & Osuji's work from 2010 to 2016. In addition, a number of the variables that were omitted in the earlier works are now included in this study in order to have a better fit.

The basic functional model in its general form is specified as follows:

$$GDP = f(EXR, IMP, EXP, IFR, ORV, EXRS) \quad 3.1$$

Where:
GDP = Gross Domestic Product
EXR = Exchange rate
IMP = Import
EXP = Export
IFR = Inflation rate
ORV = Oil Revenue
EXRS = External Reserves

In order to make the model more robust, oil revenue and external reserves were introduced as part of the explanatory variables. This will also ensure there is no problem of omitted variables. These other variables were included as they may have influence on the exchange rate and at the same time affect the Nigerian economy.

The model in its econometric form is stated as follows:

$$GDP=\beta_0+\beta_1EXR+\beta_2IMP+\beta_3XP+\beta_4IFR+\beta_5ORV+\beta_6EXRS+U \quad 3.2$$

Where:
U = Error Term, which is assumed to be normally distributed with zero mean and constant variance
β_0 = constant term
$\beta 1$, $\beta 2$, β_3, β_4, β_5, and β_6 are parameters to be estimated.

A-Priori Expectations:
$\beta_1 < 0$, $\beta_2 < 0$, $\beta_4 < 0$; $\beta_3 > 0$, $\beta_5 > 0$, $\beta_6 > 0$

4. Results Presentation and Discussion

The variables used in this study underwent unit root test using the Augmented Dickey Fuller (ADF) test.

Table 4.1: Unit Root Stationarity Result

Time Series	ADF Statistics	Critical Value		Stationary Status
		-4.394309	1% level	(1)
RGDP	-6.402972	-3.612199	5% level	
		-3.243079	10% level	
		-3.724070	1% level	(1)
EXR	-4.146501	-2.986225	5% level	
		-2.632604	10% level	
	-4.134593	-3.724070	1% level	(1)
IMP		-2.986225	5% level	
		-2.632604	10% level	
	-3.655449	-2.660720	1% level	(1)
XP		-1.955020	5% level	
		-1.609070	10% level	
	-4.054620	-3.724070	1% level	(1)
IFR		-2.986225	5% level	
		-2.632604	10% level	
	-3.736689	-2.660720	1% level	(1)
ORV		-1.955020	5% level	
		-1.609070	10% level	
	-5.379498	-4.394309	1% level	(1)
EXRS		-3.612199	5% level	
		-3.243079	10% level	

The critical values for rejection of hypothesis of unit root were from MacKinnon (1991) as reported in Eviews; Source: E-view Output, 2018.

The variables were found to be stationary at first difference I(1).This implies that all the variables were differenced of I(1) as revealed in Table 4.1 which justify the adoption of error correction technique.

Table 4.2: Johansen's Cointegration Result

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.993102	301.6765	125.6154	0.0000
At most 1 *	0.911124	177.2629	95.75366	0.0000
At most 2 *	0.896455	116.7501	69.81889	0.0000
At most 3 *	0.683188	60.05637	47.85613	0.0024
At most 4 *	0.490420	31.32019	29.79707	0.0331
At most 5	0.338187	14.46600	15.49471	0.0710
At most 6 *	0.152842	4.146699	3.841466	0.0417

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level; Source: E-view Output, 2018

The Johansen's Cointegration Result shown in Table 4.2 revealed that the variables are cointegrated which indicates five cointegrating equations since likelihood ratios of (301.6765, 177.2629, 116.7501, 60.05637 and 31.32019) are all greater than their respective critical values (125.6154, 95.75366, 69.81889, 47.85613 and 29.79707) at 5 percent level of significance. This implies that there is long run relationship among the variables under investigation.

Table 4.3: Granger Causality Tests

Lags: 2				
Null Hypothesis:	Obs	F-Statistic	Prob.	Decision Rule
EXR does not Granger Cause GDP	25	0.06771	0.9347	Rejected
GDP does not Granger Cause EXR		1.70262	0.2076	Rejected
IFR does not Granger Cause GDP	25	0.01886	0.9813	Rejected
GDP does not Granger Cause IFR		1.28122	0.2995	Rejected
IMP does not Granger Cause GDP	25	0.02115	0.9791	Rejected
GDP does not Granger Cause IMP		6.05809	0.0088	Accepted
ORV does not Granger Cause GDP	25	9.93883	0.0010	Accepted
GDP does not Granger Cause ORV		7.80462	0.0031	Accepted
XP does not Granger Cause GDP	25	12.1407	0.0004	Accepted
GDP does not Granger Cause XP		7.50529	0.0037	Accepted
IFR does not Granger Cause EXR	25	0.61269	0.5518	Rejected
EXR does not Granger Cause IFR		1.35109	0.2816	Rejected
IMP does not Granger Cause EXR	25	1.46948	0.2538	Rejected
EXR does not Granger Cause IMP		0.93849	0.4078	Rejected
ORV does not Granger Cause EXR	25	1.92300	0.1722	Rejected
EXR does not Granger Cause ORV		0.93743	0.4082	Rejected
XP does not Granger Cause EXR	25	2.35360	0.1208	Rejected
EXR does not Granger Cause XP		0.82177	0.4540	Rejected
IMP does not Granger Cause IFR	25	0.67592	0.5199	Rejected
IFR does not Granger Cause IMP		0.25248	0.7793	Rejected
ORV does not Granger Cause IFR	25	1.16512	0.3322	Rejected
IFR does not Granger Cause ORV		0.20678	0.8149	Rejected
XP does not Granger Cause IFR	25	1.18119	0.3274	Rejected
IFR does not Granger Cause XP		0.20179	0.8189	Rejected
ORV does not Granger Cause IMP	25	4.47784	0.0247	Accepted
IMP does not Granger Cause ORV		0.03444	0.9662	Rejected
XP does not Granger Cause IMP	25	4.88900	0.0187	Accepted
IMP does not Granger Cause XP		0.04120	0.9597	Rejected
XP does not Granger Cause ORV	25	0.84088	0.4460	Rejected
ORV does not Granger Cause XP		0.38917	0.6826	Rejected

Source: E-view Output, 2018

The result in Table 4.3 indicates that there is bi-directional relationship between real GDP and exchange rate. This implies that real GDP causes exchange rate as well as exchange rate causes real GDP in Nigeria. Also, inflation causes Real GDP and Real GDP causes inflation in Nigeria. In related development, there is bi-directional relationship between inflation rate and exchange rate. It was also revealed that export causes exchange rate and exchange in return causes export while there is unidirectional causality between Real GDP and import. The causality flows from RGDP to import. This implies that RGDP Granger causes import.

Table 4.4: Regression Result: Long Run Estimation

Dependent Variable: RGDP(1)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	386751.9	33772.33	11.45174	0.0000
EXR(1)	-176.5262	362.2949	-0.487245	0.6317
IMP(1)	44.27184	10.28925	4.302727	0.0004
XP(1)	302.2777	57.57560	5.250101	0.0000
IFR(1)	-999.3969	775.6847	-1.288406	0.2131
ORV(1)	-256.4560	52.77620	-4.859312	0.0001
EXRS(1)	-3.05E-06	1.67E-06	-1.829953	0.0830
R-squared	0.946438			
Adjusted R-squared	0.929524			
F-statistic	55.95517	Durbin-Watson stat	2.221318	
Prob(F-statistic)	0.000000			

Source: E-view Output, 2018.

Having established a cointergration among the variables, the Ordinary Least Square can then be used, based on the order of intergration as has been carried out in Table 4.1. The result in Table 4.4 shows that exchange rate, inflation, oil revenue and external reserve have inverse relationship with Real Gross Domestic Product in Nigeria. However, import and export have direct relationship on Real Gross Domestic Product. This implies that a unit change in exchange rate, inflation, oil revenue and external reserve on average, holding other variables constant, will lead to 176.5262, 999.3969, 256.4560 and 3.05E-06 decrease in real GDP respectively. On the other hand, a unit change in import and export on average holding other variables constant will lead to 44.27184 and 302.2777 increases in real GDP respectively. The result further revealed that export and import have positive significant impacts on the Economic Growth in Nigeria with P-values of 0.0004 and 0.0000, which is less than 0.005 respectively while oil revenue has negative significant impact on Nigeria economic growth with P-value of 0.0001.

However, the exchange rate, inflation and external reserve do not have significant impact on economic growth in Nigeria with P-values of 0.6317, 0.2131 and 0.0830 respectively greater than 0.005. The value of R-Square shows that about 95 percent change in Real GDP was explained by the explanatory variables. This implies that the model has a good fit. The *Adjusted* R^2 is given as 0.929524 (or 93 percent). This means that 93 percent of the variations in the in real GDP are accounted for by the included variables, after the co-efficient of determination (R^2) has been adjusted to make it insensitive to the number of included variables. The results showed that F- statistic is given as 55.95517 with p-value of 0.00000 which is less than 0.05 indicates that independent variables jointly have significant impact on economic growth in Nigeria at 5% level of significant Finally, given the value of DW as 2.221318 shows that the model is free from autocorrelation, which by implication means that the model can rise to forecast power with strong degree of certainty.

Table 4.5: Error Correction Mechanism (ECM): Short -Run Estimation

Dependent Variable: RGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	332566.7	38006.50	8.750259	0.0000
EXR	573.2668	331.3456	1.730118	0.1041
IMP	42.22662	7.072498	5.970539	0.0000
XP	58.42134	28.44598	2.053764	0.0579
IFR	-127.3780	434.4279	-0.293209	0.7734
ORV	-54.90718	25.99495	-2.112224	0.0518
EXRS	1.83E-06	1.08E-06	1.694675	0.1108
ECM	-0.235275	0.092659	-2.539154	0.0227
R-squared	0.992458			
Adjusted R-squared	0.988436			
F-statistic	246.7335	Durbin-Watson stat		1.600881
Prob(F-statistic)	0.000000			

Source: E-view Output, 2018

The result in Table 4.5 revealed that the coefficient of Error Correction Mechanism (ECM) is negative and significant. This indicates that about 24 percent disequilibrium in the previous period is being corrected to restore equilibrium in the current period. The independent variables were both positive and negative related to RGDP.

Exchange rate, import, export and external reserve have positive impact on RGDP while inflation and oil revenue have negative impact on RGDP. This implies that a unit change in exchange rate, import, export and external reserve on average holding other variables constant will give 573.2668, 42.22662, 58.42134 and 1.83E-06 increase in RGDP respectively while a unit increase in inflation and oil revenue will lead to 127.3780 and 54.90718 decreases in RGDP respectively.

In addition, Export, import and oil revenue have significant impact in RGDP with p-value of 0.0000, 0.0579 and 0.0518 respectively. On the other hand exchange rate, inflation and external reserve have insignificant impact on RGDP with p-value of 0.1041, 0.7734 and 0.1108 respectively. The value of R-square indicate that the model has a good fit with about 99% variation in RGDP was explained by independent variables while 1% was not capture in model due to effect of extraneous variables.

Adjusted R-squared also indicates that 99 percent of the variations in the in real GDP are accounted for by the included variables, after the co-efficient of determination (R^2) has been adjusted to make it insensitive to the number of included variables. Lastly, the value of DW implies that the model is absent of autocorrelation. It means the forecasting power of the model is reliable with high degree of certainty. Giving F- statistic as 246.7335 with p-value of 0.00000 which is less than 0.05 indicates that independent variables jointly have significant impact on economic growth in Nigeria at 5% level of significant.

5. Conclusion and Recommendations

Conclusion

The empirical evidence in this study revealed that export and import have positive significant impact on economic growth in Nigeria, while inflation, external reserves and exchange rate have insignificant impact on economic growth in Nigeria. However, oil revenue has negative significant impact on the economic growth in the short run, but in the long run it has insignificant impact. In terms of the overall significance of the parameters, the study concluded that

exchange rate has significant impact on Nigeria economic growth and development. Import was statistically significant both in the long run and short run. By implication, increases in importation and export of goods and services will have positive and significant impact on economic growth in Nigeria. This means that importation of capital goods will boost Nigeria economy and lead to favourable balance of payment equilibrium. This will, in turn lead to the value of the Naira to appreciate. Other relevant variables to be considered are oil revenue and external reserves which are some of the determinants of exchange rate, As revealed in this study, oil revenue has negative significant impact on Nigeria economy. The funds generated from oil are supposed to have positive impact on the Nigerian economy, but the reverse was the case. This may be due to ineffective utilisation of oil proceeds and lack of investment in productive activities that possess the capacity to boost economic growth.

Recommendations

Based on the findings, the following recommendations were made.

i. Government should embark on massive importation of capital goods in order to boost domestic production and discourage the importation of goods and services that can be produced locally.
ii. Government should enhance the exchange rate regime through aggressive export promotion strategies towards strengthening the external reserve.
iii. Funds generated from oil should be invested in productive activities and infrastructural development, towards generating employment and controlling inflation.

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