

Analysis of Exchange Rate and Export Performance in Nigeria

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Abstract

The study investigated exchange rate and its impact on export performance in Nigeria. Using secondary data spanning from 1986 – 2018, the study adopted the Error Correction Mechanism (ECM) and employed export as the dependent variable while foreign exchange rate, inflation rate, interest rate, gross capital formation as independent variables. The unit root test to ascertain the stationarity level of variables and the Johansen Cointegration test to check for long run relationship between variables were employed. Findings from the result showed that exchange rate had a significant and negative relationship with export performance in Nigeria both in the short and long run. The study therefore, recommends that exchange rate should be closely monitor and managed given the implications of its movements on exports. Also, government should propose and implement policies that will stabilise the exchange rate as this will help in the reduction of undesirable impact of exchange rate fluctuations on export performance.

Keywords: Exchange Rate; Export; Unit Root Test; ECM

JEL Classification: C5, F10, F31

1. Introduction

With the dawn of globalisation, cross border trade has become a predominant feature such that countries now live interdependently leading to a continuous increase in consumption choices of people due to the demand and supply of varieties of goods and services from different countries available to them. As a result, exports have become an important source of growth and development. Export, the movement of a country's locally produced goods and services both tangible and intangible is of vital importance to every nation due to its contribution to the economy, thus countries are interested in raising export. Government encourages exports as it is seen as an avenue for higher wages, increased job opportunities, improved standard of living and increase in a country's foreign exchange reserves which can be used to manage her currency value and liquidity thereby controlling inflation and other economic challenges. Also, apart from influencing the number of foreign exchange reserves as well as the level of import affordable by a country, it enhances societal prosperity, improves industrial productivity and output and aid in employment generation (Lages and Montgomery, 2004).

It is thus clear that export is a function of international trade such that countries are linked through international trade and foreign exchange activities. International trade is essential and necessary due to differences in production elements in different countries and the variation in production factors that lead to fluctuations in prices of goods and services which determines the level of export performance of countries. Most developing countries have subsequently embraced to a high degree the economic liberalisation movement and started competing in the international markets. This to some extent was triggered by the success stories of some countries who achieved a high level of industrialization and economic growth hinged on export-growth. Today Nigeria has become relatively linked and integrated with the global economic system through her external sector with the aims of improving globalisation and export (Ajudua & Okonkwo, 2014).

Exchange rate, the value of a country's currency in relation to another is an asset price and an important exogenous variable that determines the movement of other variables all centered on macroeconomic stability and resource flow in and out of a country (Emerenini & Ajudua, 2014). The importance of exchange rate cannot be overemphasized as it plays a key role in international trade by allowing for the comparison of prices of goods and services produced in different countries. Hence, while government are interested in its stability, household and firms are also keen on its stability as they use exchange rates in businesses and personal transaction by converting foreign price into domestic currency. This has led to a continuous clamour for a functional policy framework and management of exchange rate which will aid in the ease and efficient generation of revenue, enhanced expenditure inflow and outflow with regards assets, goods and services etc. without of this, a country run the risk of a balance of trade or payment problems (Emerenini & Ajudua, 2014).

In Nigeria, foreign exchange was brought about by several factors which among others include a structural shift in production, changing pattern of international trade, institutional changes in the economy etc (Emerenini & Ajudua, 2014). A continuous variation in the exchange rate since 1960 had pervasive effects on the Nigerian economy and thus led to macroeconomic reforms with the monetary authorities trying out series of exchange rate strategies. These strategies were geared towards ensuring a reliable and sustainable exchange rate such that it will impact on economic performance through savings, lending rate and inflation (Obi, Oniore & Nnadi, 2016).

The extent to which these exchange rate policies reforms have been effective in promoting export has remained unclear. Also, there has been no real agreement on the effects of exchange rate on the trade volume. While it has been posited by some findings that there exist a negative relationship between exchange rate and trade (Pozo, 1992; Chowdhury, 1993; Fountas & Aristotelous, 1999), others such as Doyle (2001), Bredin, Fountas and Murphy (2003), Kasman and Kasman (2005) posited a positive relationship between exchange rate and trade volume. With exchange rate a key factor in export and the export-led growth theory positing that an increase in export can be a stimulating catalyst for economic growth through the creation of employment, increased profit, improved productivity and rise in reserve accumulation, the study therefore, seeks to examine exchange rate and its relationship to export performance in Nigeria.

2. Literature Review

Exchange Rate Trend in Nigeria

In the pursuit of internal and external economic stability, Nigeria has in general operated several intervention exchange rate strategies which have been summarised into two major exchange rate policies. A fixed exchange rate involving the management and fixing of the exchange rate by the monetary authority was employed between 1970 -1986. The exchange rate level was put to be in uniform with the IMF per value system and was pegged to the British Pound Sterling (Emerenini & Ajudua, 2014). With the collapse of the IMF system in 1972, the Naira was pinned to currencies of the country's major trading partners with the aim being to protect and maintain the external reserves value and achieve a stable exchange rate (Emerenini & Ajudua, 2014). The nation had a high domestic productive capacity making her a huge exporter of primary commodities. This is attributed to the rationale behind a robust Naira/Dollar exchange rate relationship between 1970 to the early 1980s as seen by the graphical movement in Figure I below. During this period, there was an exchange control regulation, induced overvaluation of the naira which led to distortions in the economy (Obadan, 2006).

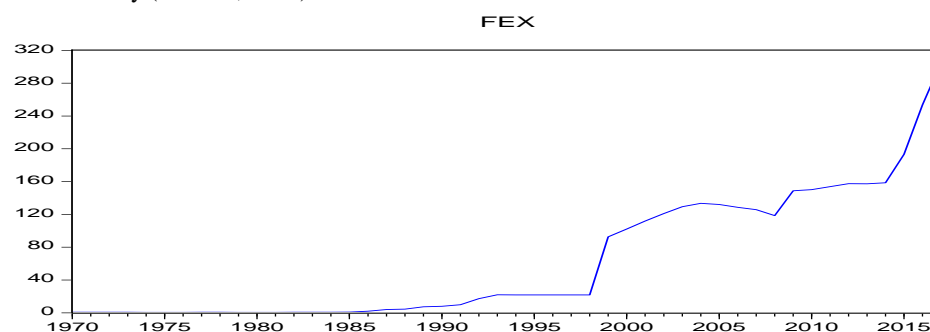


Figure 1: Annual Average Official Exchange Rate 1970-2017 (Naira/Dollar)

The Nigerian economy in the early 1980s suffered a financial depression. This was attributed to low direct investment occasioned by the lengthened use of direct controls, misallocation of resources, the fall in the world oil price, the upsurge in the demand for foreign exchange and the lack of a suitable mechanism for foreign exchange allocation. There was a fall in export and the country became import-dependent. After a series of budget deficit in Nigeria due to the global financial crisis of the early 1980s that led to huge government borrowing primarily to hold on to the fixed exchange rate of Naira/Dollar, there was the clamour by analysts to devalue the Naira through the deregulation of the Nigerian.

An economic restructuring policy was subsequently introduced in 1986 which was centred on the reliance of the market forces. The financial sector was reformed so as to mobilize capital needed for improved competition, investment and attain financial stability necessary for sustainable economic growth. A market-determined exchange rate whereby the market forces of demand for and supply of exchange rate hinged on the institutional framework of the Second-Tier Foreign Exchange Market (SFEM) was established (CBN, 2006). The objective of the SFEM was centred on the achievement of a realistic market exchange rate,

efficient resource allocation, enhanced government revenue, promotion of the exportation of non-oil products, enhancement of foreign exchange inflows and addressing and curtailing of outflow and ultimately improvement in the BOP position (Obadan, 2006).

With the introduction of the SFEM, the Naira was depreciated. The depreciation of Naira was envisaged would lead to a rise in the sourcing of raw materials, improve and increase manufacturing output while discouraging demand for import through the efficient allocation of resources (Nnanna, 2002; Adamgbe, 2006; Bakare, 2014;). However, despite the adoption of a market-driven exchange rate, there was a visible increase in demand for imports which led to a high dollar demand. This subsequently weakened the Naira. This was also not helped by the visible primary stage of production in the economy. The primary productive stage means that there is no value addition in chain of production such that the country has remained a producer of primary products (raw materials) which are exported at a cheap price and finished products imported at a higher cost. This accrues as deficits to the economy and becomes a burden on the value of the Naira (Sharehu, 2015).

From 1986, the Dollar kept appreciating against the Naira gradually at a steady rate up until 1994 when it became steady for about five years (CBN, 2006). The domestic currency had a sharp fall in value relative to the value of the Dollar in 1999. This was attributable to the political situation in the country where there was a transition from a military regime to a civilian regime. Between 2000 and 2017, there was instability in the exchange rate of the Naira as can be seen in figure I. There was a steady decline in the value of the Naira. However, the rising prices of crude oil led to surplus earning and basically provided the cushioning effect for the Naira to reverse the appreciation of Dollar against Naira. The adjustment in the demand for Dollar coupled with the quantitative easing policy pursued by the American economy made the Dollar regain more impetus against the Naira leading to an appreciation of the Dollar against the Naira (Sharehu, 2015).

Theoretical Underpinnings

The Purchasing Power Parity (PPP) Theory developed by Gustav Cassel is based on the law of one price and posits that the exchange rate between two nations rest on the purchasing power of their respective currencies (Krugman & Obstfeld 2009). What this entails is that identical goods must have one price. That is two currencies are in equilibrium when a basket of good is the same price in both countries, taking into account the exchange rates. This is subject to the absence of trade barriers, duties, etc., in such market. The theory is thus centred on the adjustments needed to be made in the exchange rates of two currencies to make them at par with the purchasing power of each other. The theory holds that in the long run, Q is constant, determined by real economic activity. Q may fluctuate in the short run; these fluctuations will be corrected in the long run. The nominal exchange rate therefore has a long run relationship to relative national price levels through the constant real equilibrium exchange rate (Mukhtar & Iliyasu, 2018).

The export-led growth hypothesis is a theory which sees export as the propelling factor for economic growth. It posits that increase in export is a major determinant of economic growth and holds that the growth of an economy is not dependent on the level of labour and capital within the economy alone, but also by the ability of the economy to expand exports (Medina-Smith, 2001). Over the years, economies have employed the export led growth

path and relied on exports as a major accelerator of economic growth considerable success recorded. In the 1950s and 1960s, developing countries held on to the notion of industrial bases being established by substituting domestic manufactured goods for imports. However, from the mid 1960s, the focus shifted as it became clear that the path to industrialization can be achieved through exports. This can be attributed to the impressive economic growth as seen in several countries in Asia including South Korea, Taiwan, Hong Kong, Malaysia, Thailand, China and India with these economies achieving economic growth at more than 10 percent annually (Krugman & Obstfeld, 2009; Bosupeng, 2015). These progresses and study from the World Bank (1987) has shown that export promotion strategy may benefit Less Developing Countries in their pursuit of economic growth (Bosupeng, 2015). This is held on the accrued possible positive externalities arising from exporting goods with comparative advantage that will arise from participation in world markets thereby speeding up an economy industrialization process (Medina-Smith, 2001). Furthermore, scholars have posited the role of government policies in promoting export including open trade policy, high trade ratios; policies favouring particular industries necessary for the production of exportable goods as key to perceived growth from export.

However, Bosupeng (2015) posited that there can be cases of a reverse relationship between exports and economic growth. While exports of goods and services by an economy are injections into the flow of income which lead to a rise in aggregate demand and an expansion of output, subsequently raising per capita incomes, it may lead to over-dependence on trade partners such that any economic shocks will have an impact on both economies. Export-led growth hypothesis implies opening domestic markets to foreign competition. Thus a floating exchange rate mechanism is usually employed to facilitate exports, increase employment and overall economic development in an economy. However, this is seen as not workable in developing economies that are deficient in real, globally competitive export base (Gibson and War, 1992). Furthermore, scholars have argued whether economic growth is driven by exports or that economic growth has led to improved export performance. This has echoed the growth-driven exports hypothesis which postulates economic growth as an influence of trade flows. With growth comes sectoral comparative advantage which will drive specialization and expedite production of export commodities in an economy (Konya, 2006).

Empirical Review

Vohra (2001) studied economic growth in India, Philippines, Pakistan, Malaysia, and Thailand, focusing on the part export performance in these countries play. He concluded and reported that export was a key component affecting economic growth of a country undergoing a stage of economic development. Employing Vector Error Correction Model, Hasanov and Samadova (2010) studied real exchange rate and its impact on non-oil exports in Azerbaijan. They concluded that appreciated real exchange rate is a major factor hindering non-oil export growth. Callabero and Corbo (1989) examined real exchange rate uncertainty on exports for Chile, Colombia, Peru, Philippines, Thailand and Turkey. They concluded that the uncertainty surrounding real exchange rate negated on the economy and has led to the reduction of exports in the short-run. The reduction was significantly magnified in the long-run. Hwang and Lee (2005), in their study concluded that there was

no significant link between exchange rate volatility and export performance during the period under study.

Investigating the relationship between exchange rate volatility and export performance in South Africa, Wilson and Choga (2015) employed a GARCH approach and concluded based on the variables employed that a negative relationship exists between exchange rate volatility and exports. Focusing on Nigeria and Ghana economy, Jonathan and Ugochukwu (2016) examined the implications of exchange rate variations on economic performance of countries in West Africa Monetary Zone (WAMZ) between 1980 and 2013. The study concluded that exchange rate volatility had an effect on growth which was significant and negative. Investigating the causal relationship between exchange rate and export growth in Nigeria, Aro-Gordon (2017) revealed in his study that a long-run equilibrium relationship does not exist between exchange rate and export as they exhibited no cointegration properties during the period of study. He thus concluded that devaluing the currency will not lead to increase in export in Nigeria. The relationship between exchange rate volatility on non-oil exports in Nigeria was queried by Akinlo and Adejumo (2014). Based on their investigation, they concluded that there exist a positive impact and significant long run relationship between exchange rate volatility and non-oil exports; however, the impact was not significant in the short run. Adaramola (2016) employed the use of econometric techniques to investigate real exchange rate volatility on the quantity of export in Nigeria. He concluded that exchange rate was volatile and its uncertainty had significant and positive impact on the quantity of trade in the Nigerian economy. Investigating the effects of price and exchange rate fluctuations on Agricultural exports in Nigeria with focus on cocoa, Ettah Akpan and Etim (2010) reported from findings in their study that exchange rate fluctuations had a positive and significant effect on cocoa exportation in Nigeria.

3. Methodology

The study adopted an econometric approach; precisely the ordinary least square regression method (OLS) so as to understand and ascertain the existing relationship between export performance and selected economic variables in Nigeria. Secondary time series data covering the period 1985 - 2018 were employed in the study and was sourced from the annual Central Bank of Nigeria (CBN) Statistical Bulletin, United Nation Conference on Trade and Development database and World Investment Reports (various issues). In line with theoretical framework, the basic model with the inclusion of other control variables is stated thus

$$EXP = f(FEX, INF, INT, GCF) \dots\dots\dots(1)$$

In line with the linear assumption of the variables, the model is specified econometrically thus:

$$EXP = \beta_0 + \beta_1 FEX + \beta_2 INF + \beta_3 INT + \beta_4 GCF + \mu \dots\dots\dots(2)$$

In a bid not to run into a case of heteroskedasticity, the scale of employed variables will be compress and equalize. This is done by transforming the variables into a linear form and stated symbolically as below

$$LnEXP = \beta_0 + \beta_1 FEX + \beta_2 INF + \beta_3 INT + \beta_4 LnGCF + \mu \dots\dots\dots(3)$$

Where

LnEXP	=	Natural Logarithm of Export
FEX	=	Foreign Exchange Rate
INF	=	Inflation Rate
INT	=	Interest Rate
LnGCF	=	Natural Logarithm of Gross Capital Formation
μ	=	Error term
β_0	=	Intercept
$\beta_1 - \beta_4$	=	Parameters to be estimated.

Equation 3 above is the long run model of a linear relationship between the dependent variable and independent variables. In the model, Export is the dependent variable, while Foreign Exchange Rate, Inflation Rate, Interest Rate and Gross Capital Formation serve as the independent variables. Furthermore, the study adopted the Augmented Dickey Fuller unit root test to ascertain the characteristics of the variables employed in the study. This is important so as to avoid the case of spurious data in the estimated coefficients thereby eliminating the possibility of autocorrelation in the error term. Furthermore, the Johansen Cointegration test was conducted so as to ascertain the existence of long run relationship amongst variables employed in the study. While the variables were cointegrated and exhibited a long run relationship, it was observed that these variables were not stationary at level, thus there arose the need a short run model. The preference of the Error Correction Model (ECM) stems from the fact that all included variables became linearly integrated at first difference, and they are equally cointegrated, implying that the long-run and short-run model of the study are relevant and meaningful since all short run drift will eventually converge to long run equilibrium.

4. Results

Preliminary Test

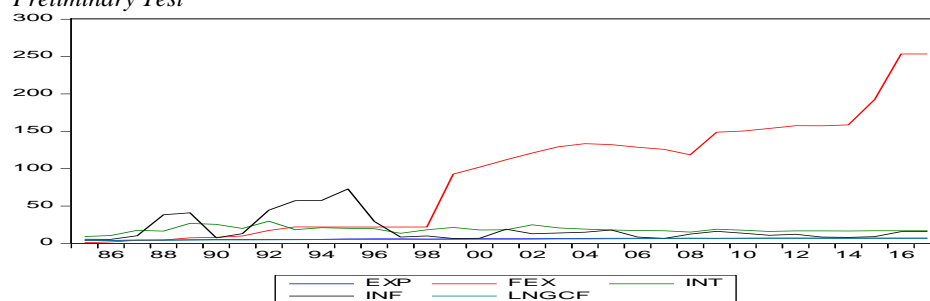


Figure 2: Graphical Trend Illustration of all Variables

Source: Author's Computation (2020)

Figure 2 illustrates the graphical structure of the variables employed in the study. The variables are well behaved and could converge in the long run notwithstanding the existence of unit root at level, except for foreign exchange rate that is a bit volatile. It can be further explained that all the included variables except foreign exchange rate demonstrated a long run convergence trend.

Long Run Estimation

The result in Table 1 below is the long run estimation showing the linear relationship between export as the dependent variable and the independent variables. This result is valid if a long run relationship exists between the variables employed in the model.

The ordinary least square result in Table 1 shows a significant negative constant implying that the model is robust and key variables that influences export in Nigeria was well captured. The key independent variable exchange rate appeared with the expected sign and is insignificant. The implication of this is that exchange rate depreciation has no robust effect on export in Nigeria. The size of the coefficient is -0.123288, implying that an increase in exchange rate by one percent will lead to 0.123288 percent decrease in export in Nigeria. Interest rate does not conform to expectation as it is not rightly signed. Also, it is not statistically significant.

Table 1: The Ordinary Least Square Regression Result

Variable	Dependent Variable: LNEXP			
	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.636107	0.361601	-2.159143	0.0491
FEX	-0.123288	0.000819	-2.351651	0.0476
INT	0.011440	0.007924	1.443701	0.1595
INF	-0.000581	0.001996	0.290943	0.7732
LNGCF	1.173019	0.072538	16.17110	0.0000
R-squared	0.865967	Mean dependent var		6.146163
Adjusted R-squared	0.842652	S.D. dependent var		1.010834
S.E. of regression	0.167164	Akaike info criterion		-0.604629
Sum squared resid	0.810371	Schwarz criterion		-0.580164
Log likelihood	15.27870	Hannan-Quinn criter.		-0.528080
F-statistic	9.144168	Durbin-Watson stat		1.770179
Prob(F-statistic)	0.003411			

Source: Authors' Computation

Inflation rate (INF) is negatively signed but not statistically significant. This means that higher inflation should be avoided as higher inflation makes domestic goods more expensive since inflation will have a direct hit on input costs such as materials and labour. These costs can subsequently have an effect on the competitiveness of exports of the economy since outputs from the economy becomes costlier in the global market. Gross domestic investment as an independent variable is rightly signed and statistically significant. From the result, one percent increase in gross domestic investment will lead to 1.173019 cent increase in export in Nigeria.

The R Square (R^2) which determines the goodness of fit of the model is 87%. This means that 87% variation in export in Nigeria is explained by all included independent variables while the remaining 13% are explained by other variables not captured in the model. Also, the adjusted R-square which measures the fitness of the model with the inclusion of other missing variables is 0.84. This implies that 84% variation in export would still be explained

by the exogenous variables. Also the general fit of the model measured using the F-statistics and its probability value shows that the entire model is robust and statistically significant at 5% level of significance. This means that the model used in the study is reliable at 95% level of confidence. There is the absence of serial autocorrelation in the model as shown by the value of the Durbin Watson statistics. This means that the model has no case of spuriousity as the dependent variable has no relationship with the error term of the model. As such any inferences made with regards the model is reliable and justifiable. In furtherance, we next test the model to check for cases of stationarity among variables employed in the model and possibly subject the variables to a cointegration test if the variables have cases of stationarity.

Unit Root Test

Table 2: Summary of Augmented Dickey Fuller (ADF) Unit Root Test Results

Variables	Level				First Difference			
	ADF Test Statistic	5% Critical Value	Prob	Status	ADF Test Statistic	5% Critical Value	Prob	Status
LnEXP	-2.2042	-2.9571	0.2087	I(0)	-6.2960	-2.9604	0.0000	I(1)*
FEX	0.6811	-2.9571	0.9898	I(0)	-4.8585	-2.9604	0.0005	I(1)*
INT	-2.1603	-2.9571	0.7022	I(0)	-3.4865	-2.9810	0.0167	I(1)*
INF	-1.9503	-2.9810	0.3055	I(0)	-3.5467	-2.9762	0.0143	I(1)*
LnGCF	2.7585	-2.9571	0.0756	I(0)	-4.6821	-2.9604	0.0007	I(1)*

Source: Authors' Computation

The ADF stationarity tests at both levels and first differencing for all the variables employed in the study is summarised in the table above. The study included constant, intercept and trend term in these tests. The optimal lag length of each variable is chosen, using the Schwarz information criteria (SIC). From the table, none of the variable was stationary at level (I(0)). However, all variables became stationary after the first differencing (I(1)) as indicated by the values of the ADF Test Statistic when compared with that of the 5% critical value. The study further carried out a co-integration test, using the Johansen cointegration technique. This result is shown below.

Cointegration Test

Table 3: Johansen Cointegration: Test Unrestricted Cointegration Rank Test (Trace)

Hypothesised No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.683689	83.55772	69.81889	0.0027
At most 1 *	0.533020	49.87578	47.85613	0.0498
At most 2	0.328679	24.27022	29.79707	0.1893
At most 3	0.281431	11.91647	15.49471	0.1610
At most 4	0.052482	1.671185	3.841466	0.1961

Note: Trace test indicates 2 cointegrating eqn(s) at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values

Source: Authors' Computation

Table 4: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesised No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.683689	35.68194	33.87687	0.0301
At most 1*	0.533020	30.60556	27.58434	0.0491
At most 2	0.328679	12.35375	21.13162	0.5131
At most 3	0.281431	10.24528	14.26460	0.1963
At most 4	0.052482	1.671185	3.841466	0.1961

Note: Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values

Source: Authors' Computation

From the result in Table 3, we reject the null hypothesis of no cointegration because at 5% level of significance, the trace test revealed two cointegrating equations among the variables employed with their Max-Eigen Statistic value greater than the 0.05 Critical Value. Furthermore, the result from Table 4, supports the long run relationship between the dependent and independent variables employed as the maximum eigen value showed two cointegrating equations at 5% level. With all variables in the model achieving stationarity after first difference(I(1)), then the error correction mechanism (ECM) is a possibility and it equally indicates that the long run static OLS is not spurious and meaningful since the short run dynamic model will at the end adjust to long run equilibrium after overcoming the short run drift. The Parsimonious ECM result is thus presented below

Error Correction Mechanism

The ECM result above is the short run model. The result has put into consideration the structural instability of individual variables and the adjustment process to long run equilibrium since they are linearly integrated. The result reveals that foreign exchange rate (FEX) has adverse effect on export level, and it is rightly signed; just as it was in the long run model. Also, interest rate, inflation rate and gross capital investment all appear with the expected sign. These depict real life situation of indirect/direct relationship. The higher the foreign exchange rate, interest rate and inflation rate, the lower the export level; also, the higher the rate of investment, the higher the export level.

Statistically, the R-squared shows that 65% variation in export level (EXP) is accounted for by the independent variables in the model with the remaining 35% explained by variables not captured in the model. Also, the adjusted R-squared is 0.56. This implies that about 56% variation in export is explained by other variables influencing export level were put into consideration. The F-statistics which shows the robustness of the general model is significant at 5 per cent level of significance. The Durbin Watson statistics tends towards 2 showing that there is no case of autocorrelation or serial correlation in the model. The ECM(-1) is negative and significant. The speed of adjustment indicates a 31% annual adjustment from the short-run equilibrium to the long-run equilibrium at five per cent level of significance. Going by this, it is estimated that it will take roughly three years to correct all disequilibrium (errors/deviations) and return the economy back to equilibrium.

Table 5: The Parsimonious Error Correction Model

Dependent Variable: LNEXP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.409910	1.185271	6.251658	0.0000
D(LNEXP(-1))	-0.679792	0.961945	-0.706685	0.4883
D(FEX(-1))	-0.006402	0.009209	0.695174	0.4954
D(FEX(-2))	-0.000281	0.010332	-0.027192	0.9786
D(INT(-1))	-0.077800	0.043540	-1.786875	0.0899
D(INT(-2))	-0.060440	0.045051	-1.341612	0.1955
D(INF(-1))	-0.011633	0.010086	-1.153397	0.2631
D(INF(-2))	0.006294	0.011576	0.543712	0.5930
D(LNGCF(-1))	0.381149	1.956305	0.705999	0.4888
D(LNGCF(-2))	0.723908	1.813525	3.919596	0.0388
ECM(-1)	-0.314757	1.153820	3.306801	0.0481
R-squared	0.650706	Mean dependent var		6.309723
Adjusted R-squared	0.561604	S.D. dependent var		0.829433
S.E. of regression	0.759462	Akaike info criterion		2.564162
Sum squared resid	10.95887	Schwarz criterion		3.077934
Log likelihood	-27.46243	Hannan-Quinn criter.		2.728522
F-statistic	9.558985	Durbin-Watson stat		1.784301
Prob(F-statistic)	0.044245			

Source: Authors' Computation

Stability Test

Figure 3 shows the CUSUM stability test for the model employed in the study showing the CUSUM plot. From the graph, the plots did not cross the 5 percent critical lines as shown by the two bound lines. The implication is that during the period of study, the employed parameters had no case of any structural instability. Therefore, it can be concluded that the estimated parameters for the study are stable over the period of study and are useful for policy decision.

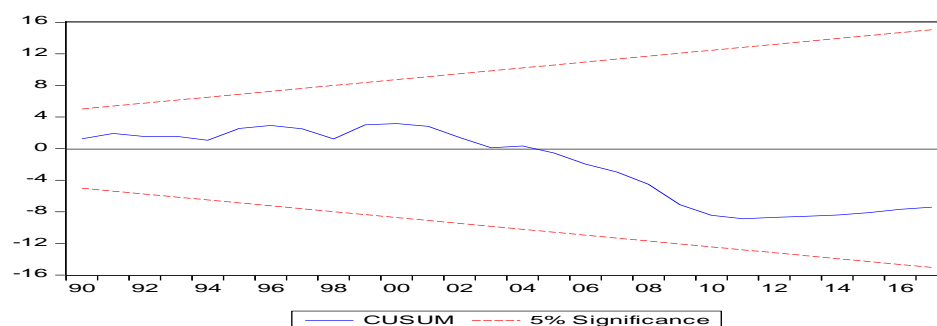


Figure 3: CUSUM Test of Stability

Ramsey Linearity Test

The Ramsey Reset Test is employed to test for linear relationship between the dependent and independent variables in a model. If the t and f statistic is significant at 5% level of significance, the null hypothesis is rejected. The test is presented below

Table 6: Ramsey Linearity Test

	Value	Df	Probability
t-statistic	0.579315	28	0.5680
F-statistic	0.335605	(1, 28)	0.5680
Likelihood ratio	0.449069	1	0.5028

Source: Authors' Computation

Table 6 shows the result of Ramsey Reset Test. The result indicates an acceptance of the null hypothesis. This is so because the t-statistics, the F-statistics and the likelihood ratio are not statistically significant at 5% level of significance.

Autocorrelation Test

The Breusch-Godfrey Serial Correlation LM Test was employed to test for the existence of autocorrelation. The null hypothesis is that there is no serial autocorrelation

Table 7: Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	3.129314	Prob. F(2,27)	0.0637
Obs*R-squared	6.865779	Prob. Chi-Square(2)	0.0723

Source: Authors' Computation

The result in Table 7 shows absence of autocorrelation since the F-statistics is not significant at 5% level of significance. Therefore, we shall accept the null hypothesis of no serial correlation in the model.

Heteroskedasticity Test

The Breusch-Pagan-Godfrey serial heteroskedasticity test was employed to test for the existence of interdependence of error terms across time in the model. The null hypothesis is that there is no heteroskedasticity

Table 8: Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.690105	Prob. F(4,29)	0.6597
Obs*R-squared	4.561360	Prob. Chi-Square(4)	0.6012
Scaled explained SS	3.647156	Prob. Chi-Square(4)	0.7243

Source: Authors' Computation

The result in Table 8 is the heteroskedasticity test. From the test, we accept the null hypothesis as there is the absence of heteroskedasticity revealed by the F-statistics which is insignificant at 5% level of significance.

5. Conclusions and policy implication

From the results of this study, it is clear that while exchange rate is volatile, it has a significant and negative relationship with export performance in Nigeria. Based on the findings, it is recommended that the monetary authorities should closely monitor and manage the exchange rate given the implications of its movements on exports. In furtherance, exchange rate stability will cushion out the effect of inflationary tendencies which have the tendency to affect the growth of export. The government should thus propose and implement policies that will stabilise the exchange rate given its significant

impact on exports in Nigeria. This will help in the reduction of the undesirable impact that exchange rate fluctuations have on the performance of export in Nigeria.

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