# IMPACT OF EXCHANGE RATE ON TOTAL EXPORT IN NIGERIA

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## ABSTRACT
This study investigates the impact of exchange rate on total export in Nigeria using a time series data from 1981 to 2019. The study employs ordinary least square after cointegration suggests non-existence of long run convergence among the variables; Total Export (TEXPT), Exchange Rate (EXRATE), Oil refining (OILREF) and Trade Openness (TROPNESS). The findings of this study reveal positive and significant relationship between exchange rate and total export in the short-run. It also finds that oil refining and trade openness are positively and significantly related to total export. The study finally recommend authority to manage the dynamics in exchange rate not to distort other macroeconomic variables' stability.

**Keywords:** Exchange Rate; Export; Nigeria

**JEL Classification:** C22; E53; F31

## 1. Introduction
It has been evident that no nation is an island that can survive alone without trading with other nations (Akanbi, Alagbe, Yusuf & Oluwaseyi, 2017). For development and improvement in living standard of citizens, a nation needs to harness enough resources for the production of goods and services, consume and export some finished products as well as raw materials that cannot be produced within the country. Exports (whether raw materials or finished products) are aimed at foreign exchange earnings as well as to keep a favourable balance of payment to maintain stable exchange rate. Unstable exchange rate does not only cause vagaries in the prices of oil which affect exports, but also other macroeconomic variables like inflation, employment, balance of payment equilibrium and national income. To avoid exchange rate volatility shock, nations seek to trade in resources they have comparative advantage over others in order to earn foreign exchange required to support production, infrastructural development and poverty reduction (Imoughele & Ismaila, 2015; Chaudhary, Hashmi & Khan, 2016).

Nigeria seems to have demonstrated her area of strength by the overdependence on the oil and gas export over the years for revenue and foreign exchange earnings. This is true as oil export contributes over 90 percent to Nigeria's total export (CBN, 2018). This is illustrated in figure 1 where in 1988, oil export contributes 91 percent to total export and since then, the contribution has increased and hovered around 95 to 98 percent except in 2006 to 2018 when downward trend is observed. Despite this large contribution of the oil sector to total export, the economy is yet to have impressive economic growth. This is not far from the Resource Curse or Dutch Disease syndrome in oil rich countries like Nigeria that tend to have less economic performance as it affects other sectors by causing inflation or exchange rate shock (Natural Resource Government Institute, 2015).

In Nigeria, exchange rate management has undergone significant changes over the past five decades. In the 1960s, Nigeria operated a fixed dollar in addition to restrictions on imports through strict administrative controls on foreign exchange. In 1978, the Nigerian monetary authorities pegged the naira to a basket of 12 currencies at par with the British pound and later the American major trading partners. The sharp fall in international oil price and consequent decline in foreign exchange receipts in the early 1980s as well as the difficulty for the country to meet her international financial commitments, led to the implementation of Stabilization Act of 1982 which led to accelerated depreciation of the naira. The failure of the Stabilization Act to address the economic problems (unpaid trade bills and accumulation of payment arrears consequent on the sharp fall in oil price) led to the adoption of the Structural Adjustment Programme (SAP) in 1986, aimed amongst others at the realization of a viable and realistic exchange rate, through a flexible arrangement. The adoption of the flexible exchange rate regime produced a significant volatility and uncertainty in the exchange rate of the naira against US dollar.

Some of the numerous studies reviewed include Ndidi and Alaba (2019) who explored the impact of exchange rate volatility on non-oil export performance in Nigeria and found that exchange rate is volatile and negatively significant on non-oil export performance. Other studies that found similar findings are Barguellil, Ben-Salha and Zmami (2018), Akanbi, Alagbe, Yusuf and Oluwaseyi (2017) and Imoughele and Ismaila (2015). Henry (2019) investigated crude oil price relationship on exchange rate in Nigeria and found that oil plays an important role in influencing exchange rate negatively and significant in the short run. It is evident from the literature reviewed that most studies focused on the exchange rate and non-oil export relationships with few studies in Nigeria. This study therefore, explores the relationship of exchange rate on total export in Nigeria to add and validate the existing studies. The rest of the paper has literature review in section two while section three discusses the methodology for the study. Section four presents the data analysis and the conclusion and recommendations are drawn in section five.

## 2. Literature Review

### *2.1 Conceptual Review*

Ajinaja, Popoola and Ogunlade (2017) defined exchange rate as the price of one currency expressed in terms of another currency, or against a basket of other currencies. It is also regarded as the value of one country's currency in relation to another currency. In other words, it represents how many units of a foreign currency a consumer can buy with one unit of their home currency. Piana (2001) defined exchange rates as ratios that are used across all international markets, including finance, trading, and investment. Businesses and investors use these rates to compare their currency's purchasing power with another country. They also use this to determine the comparative strength of their domestic currency against foreign currencies. For Backman (2006), the exchange rate is defined as the price of one currency in terms of another currency. Ozturk (2006), defines exchange rate volatility as the risk associated with unexpected movements in the exchange rate. Economic fundamentals such as the inflation rate, interest rate and the balance of payments, which have become more volatile in the 1980s and early 1990s, by themselves, are sources of exchange rate volatility. Volatility is defined as an unobservable or latent variable, deterministic or stochastic. There have however been studies that try to make the exchange rate volatility an observable variable, with varied results (Bauwens and Sucarrat, 2005).

It is customary to distinguish nominal exchange rates from real exchange rates. Nominal exchange rates are established on currency financial markets called "forex markets", which are similar to stock exchange markets. Central bank may also fix the nominal exchange rate. Real exchange rates are nominal rate corrected somehow by inflation measures. In fact, higher prices mean an appreciation of the real exchange rate, other things equal. Another classification of exchange rates is based on the number of currencies taken into account. That is, bilateral exchange rates which relate to two countries' currencies and multilateral exchange rates which are computed in order to judge the general dynamics of a country's currency toward the rest of the world. In terms of currency regime, when the exchange rate is determined freely by the value of demand and supply, is called "freely floating exchange rate" or "flexible" exchange rate. However, If the central bank timely and significantly intervenes on the currency market, a "managed floating exchange rate regime" takes place. In "flexible" and "managed" exchange rate regimes, a loss in currency value is conventionally called a "depreciation", whereas an increase of currency's international value will be called "appreciation" (Jones and Kenen, 1990). On the other hand, when the central banks declare a fixed exchange rate, offering to supply or buy any quantity of domestic or foreign currencies at that rate is called a "fixed exchange rate" regime. Under this regime, a loss of value, usually forced by market or a purposeful policy action, is called a "devaluation", whereas an increase of international value is a "revaluation".

*2.2 Empirical Review*

There are numerous studies on the impact of exchange rate on export and economic performance all over the world and scholars have divided on the effect of exchange rate. In examining the effect of exchange rate on export, some arrived at negative relationship, other revealed positive effects using different methodologies. Ajinaja, Popoola and Ogunlade (2017) revisited the issue of fluctuating exchange rate and its impact on export performance in Nigeria. They used secondary data covering the periods from 1982 to 2015. Ordinary Least Square method was applied and arrived at positive relationship between exchange rate fluctuation and export performance in Nigeria. They recommended that the government should encourage the export promotion strategies in order to maintain a surplus balance of trade. Majidli and Guliyev (2020) addressed impact of oil price and exchange rate on non-oil Gross Domestic Product (GDP) growth of Azerbaijan. They applied Modified Ordinary Least Square method on data covering the period between 2005 and 2019. Zivot-Andrews unit root test is applied to deal with structural breaks in data and the Gregory-Hansen (GH) test for robustness. While conventional unit-root tests decision that the series are not stationary at their level, the Ziwot-Andrews test decision that the series is stationary with structural break. According to the GH test result, there is a structural break date in the long-run relationship between the real nonoil GDP growth and the oil price and the USD/AZN exchange rate in early 2009. According to Fully Modified Ordinary Least Squared results, the increase in oil price increases real non-oil GDP growth, and the increase in USD/AZN exchange rate has a decreasing effect on it. Obinwata, Owuru and Farayibi (2016) examined the exchange rate trends and export performance in Nigeria between 1970- 2015 using a descriptive approach. Particularly, the study emphasizes the impacts of exchange rate volatility on export demand in the country. Findings from their descriptive analysis showed that exchange rate volatility greatly affected the volume of export demand, hence adjudged to affect export performance in Nigeria. They recommended a deliberate exchange rate policy action that will have good implication for export growth in Nigeria.

Furthermore, Imoughele and Ismaila (2015) investigated the impact of exchange rate on non-oil export. They employed time series data for a period of 27 years, 1986 to 2013. They diagnosed the variables for stationarity using Augmented Dickey-Fuller (ADF) test and Johansen's co-integration test to establish long run relationships among the variables. They applied Ordinary Least Square methodology to analyse the model and found in the results, three co-integrating equations which established the existence of long run relationship among the variables; effective exchange rate, money supply, credit to the private sector and economic performance. They established that these variables have significant impact on the growth of non-oil export in the Nigerian economy and appreciation of exchange rate has negative effect on non-oil export. They recommended among others that monetary authority should ensure exchange rate stability in order to stem inflationary tendencies in Nigeria which have adverse effect on the growth of non-oil export. In the same line of research, Hasanov (2012) investigated the impact of the real exchange rate on the non-oil exports of

the Republic of Azerbaijan in the framework of cointegration and an asymmetric error correction. Threshold and Momentum Threshold Autoregressive methods are applied over the quarterly period 2000Q1-2010Q4. The main finding of the study is that there is a long-run relationship between the variables with symmetric rather than asymmetric adjustment towards the equilibrium level. Hasanov and Samadova (2011) analysed the impact of the real exchange rate on non-oil exports in Azerbaijan by applying Vector Error Correction Model. They used quarterly data from 2002 to 2009 and the estimated results suggested that real exchange rate has negative impact on non-oil export performance while non-oil GDP affects non-oil export positively in the long-run and short-run. The Error correction term indicated that short-run fluctuation can be adjusted into long-run equilibrium relationship. Based on their findings, they concluded that appreciating real exchange rate is one of major factors that impede non-oil export growth and recommended the study's usefulness for policymakers since promotion of non-oil export is one of the urgent issues of the strategic economic policy of Azerbaijan Republic.

Regarding exchange rate volatility, Ndidi and Alaba (2019) empirically investigated the impact of exchange volatility on non-oil export performance in Nigeria. They employed time series data from 1981 to 2017 and applied Augmented Dickey Fuller test of unit root to check for the stationarity of the variables. After applying the cointegration test for the possibility of the existence of long-run relationships among the variables in the model through Johansen methodology, Error Correction Model (ECM) analysis is run to determine the speed of adjustment. However, the volatility of exchange rate was also tested through the Autoregressive Conditional Heteroscedasticity (ARCH). Their results found that exchange rate has an ARCH effect on non-oil export performance in Nigeria and more so, significantly and negatively on it. They recommended that the managers of the economy should apply policies that can stabilize the exchange rate as the sector has the capability to generate jobs and reduce extreme poverty in the land. Barguellil, Ben-Salha and Zmami (2018) researched on the impact of exchange rate volatility on economic growth. They based the study on a sample of 45 developing and emerging countries over the period of 1985 to 2015 using the difference and system generalized method of moments estimators. Their Findings suggested that the generalized autoregressive conditional heteroskedasticity-based measure of nominal and real exchange rate volatility has a negative impact on economic growth. Also, the effect of exchange rate volatility depends on the exchange rate regimes and financial openness, that is, volatility is more harmful when countries adopt flexible exchange rate regimes and financial openness. Akanbi, Alagbe, Yusuf and Oluwaseyi (2017) examines exchange rate volatility on non-oil export in Nigeria using quarterly data covering the periods of 1986 to 2014. They applied ARCH, GARCH, TGARCH, and EGARCH models to test for the existence of volatility of the Naira-Dollar exchange rate as well as Error Correction Model (ECM) with two different measures of volatility. Their findings confirmed the existence of exchange rate volatility and also found a significant negative effect on non-oil export performance in Nigeria and recommended that government should ensure an appropriate policy mix that not only ensures a stable and realistic exchange rate but also conducive

atmosphere for production and export. Owuru and Farayibi (2016) examined the impacts of exchange rate volatility on export demand in Nigeria between 1970 and 2015 using a descriptive approach. They were motivated by the structural Adjustment Program (SAP) positive impact on agricultural and non-oil exports as well as the liberalization of external trade and exchange rate. They found that exchange rate volatility affected the volume of export demand in Nigeria. They recommended a deliberate exchange rate policy action that will have good implication for export growth in Nigeria.

Other studies relating to exchange rate are Shobande (2018) who investigated the impact of exchange rate policy on industrial growth in Nigeria between 1981 and 2016. He used Vector Error Correction Model (VECM) techniques and Johnansen Cointegration techniques to find the short and long-run relationship among the variables considered respectively. He found a long-run existence among the variables and revealed among other findings that the Exchange rate impacted negatively on industrial growth, suggesting that the issue of stability remained a challenge unresolved by the Apex bank. He recommended that the objective of exchange rate policy be align with broader macroeconomic goals is necessary for effective policy transmission mechanism to speed up the rate of industrial progress in the country. Delavari, Baranpour and Abdeshahi (2014) analyzed the effects of exchange rate on export of petrochemical products as a type of non-oil export in the economic development of Iran. They applied Johansen-Juselius co-integration and the error correction model on data from 1989 to 2012. Their findings showed that the real foreign exchange rate and the real value of total petrochemical products positively affect their export in the long run, and the effect of the former is greater than that of the latter. However, in the short run the effect of the foreign exchange rate on the export of petrochemical products is more significant. The study by Suleiman and Muhammad (2011) examined the long-run relationship between real oil price, real effective exchange rate and productivity differentials in Nigeria using annual data for over the period of 1980 to 2010. Their empirical results suggested that real significant and positive relationship between oil price exercise on the real exchange rate in the long run. Productivity differentials exercise a significant negative influence on the real exchange rate. They noted that, the real exchange rate appreciation of 2000-2010 was driven by oil prices and concluded that exchange rate policy is relevant to many developing economies where oil exports constitute a significant share of their exports. Rickne (2009) examined the relationship of oil prices and real exchange rate trends in oil exporting countries. In a simple theoretical model, strong institutions insulate real exchange rates from oil price volatility by generating a smooth pattern of fiscal spending over the price cycle. Empirical tests on a panel of 33 oil-exporting countries provide evidence that countries with high bureaucratic quality and strong and impartial legal systems have real exchange rates that co-move less with the oil price.

## 3. Methodology

### *3.1 Theoretical framework*

This study is premised upon the balance of payments (BOP) theory of exchange rate. This theory was first discussed by Locke (1692) and later developed by Hume (1752b), Smith (1776), Thornton (1802) and Ricardo (1811b). Locke (1692) made a contribution to the theory of foreign exchanges and remarked that silver 'is not of the same value, at the same time, in several parts of the world, but is of the most worth in that country, where there is the least money, in proportion to its trade'. He concluded that this would 'make our native commodities vent very cheap' and 'make all foreign commodities very dear'.

The theory maintains that rate of exchange of the currency of one country with the other is determined by the factors which are autonomous of internal price level and money supply. It emphasizes that the rate of exchange is influenced, in a significant way, by the balance of payments position of a country. A deficit in the balance of payments of a country signifies a situation in which the demand for foreign exchange (currency) exceeds its supply at a given rate of exchange. The demand for foreign exchange arises from the demand for foreign goods and services. The supply of foreign exchange, on the contrary, arises from the export of goods and services by the home country to the foreign country. In other words, the excess of demand for foreign exchange over the supply of foreign exchange is coincidental to the BOP deficit. The demand pressure results in an appreciation in the exchange value of foreign currency. As a consequence, the exchange rate of home currency to the foreign currency undergoes depreciation.

A balance of payments surplus signifies an excess of the supply of foreign currency over the demand for it. In such a situation, there is a depreciation of foreign currency but an appreciation of the currency of the home country. The equilibrium rate of exchange is determined, when there is neither a BOP deficit nor a surplus. In other words, the equilibrium rate of exchange corresponds with the BOP equilibrium of a country. The equality between the demand for and supply of foreign exchange signifies also the BOP equilibrium of the home country. The excess supply of foreign exchange lowers the exchange value of foreign currency relative to home currency. The appreciation in the exchange rate of home currency reduces exports and raises imports. In this way, the BOP surplus gets reduced and the system tends towards the BOP equilibrium and also the equilibrium rate of exchange. The depreciation of the exchange value of home currency leads to a rise in exports and a decline in imports. Thus the BOP deficit gets reduced and the exchange rate appreciates to approach finally the equilibrium rate of exchange where the BOP is also in a state of equilibrium.

If there are changes in demand or supply or both, the rate of exchange will be accordingly influenced. Apart from the changes in demand and supply, the rate of exchange is affected by the foreign elasticity of demand for exports, the domestic elasticity of demand for imports, the domestic elasticity of supply of exports and the foreign elasticity of supply of

imports. The stability of the equilibrium rate of exchange requires that the demand elasticities should be high whereas the supply elasticities should be low.

### 3.2 Model Specification

This study uses secondary data sourced from National Bureau of Statistics (NBS) and Central Bank of Nigeria (CBN) statistical bulletin of 2019. The study employs annual data covering the periods of 1981 to 2019 and decomposes the analysis into three layers. That is, the preliminary analysis, empirical analysis and robustness check. the preliminaries include graphical representation, summary statistic, stationarity test and cointegration tests. Thereafter, the study uses ordinary least square to analyze the short-run relationship of the model and finally subject the result to reliability test through linearity test, serial correlation test, and CUSUM stability test. It is worth noting that the decisions for these tests are to accept the null hypotheses for better outcome otherwise further checks and perhaps more information may be needed for re-estimation. To estimate the reaction of exchange rate on total exports, this study adapts the model in Akanbi, Alagbe, Yusuf and Oluwaseyi (2017) study to test the underlying hypothesis. According to the study, the following variables are applicable in estimating trade and exchange rate relation:

Non-oil Exports = *f*(Real Gross Domestic Product, Broad Money Supply, Trade Openness, Terms of Trade, and Exchange rate volatility)

The above model is also in line with Imoughele and Ismaila (2015) which proposed that the volume of non-oil export (NOE) is affected by the following variables: exchange rate (EXR), real gross domestic product (RGDP), inflation rate (INFR) and degree of economic openness (OPEN). broad money supply (M2) and credit to the Private sector (CPS).

However, this study modifies these models to replace nonoil export with total export as dependent variable and reduces the explanatory variable to exchange rate, oil refining and trade openness. This is to specifically account for the impact of the hypothesized variable without flooding the model with unnecessary variables. Hence, the study's model is functionally stated as follows;

TEXPT= *f*(EXRATE, OILREF, TROPNESS) (1)

The long-run and short run ordinary least square econometrics model are given as:

$$Log(TEXPT_t) = \alpha_0 + \alpha_1 Log(EXRATE_t) + \alpha_2 Log(OILREF_t) + \alpha_3 Log(TROPNESS_t) + \mu_t \quad (2)$$

$$\begin{aligned} \Delta Log(TEXPTt) = {} & \alpha_0 + \beta_1 \Delta Log(TEXPT_{t-i}) + \beta_2 \Delta Log(EXRATE_t) + \\ & \beta_3 \Delta Log(EXRATE_{t-1}) + \beta_4 \Delta Log(OILREF_t) + \\ & \beta_5 \Delta Log(OILREF_{t-1}) + \beta_6 \Delta Log(TROPNESS_t) + \\ & \beta_7 \Delta Log(TROPNESS_{t-1}) + \varepsilon_t \end{aligned} \quad (3)$$

Where:

$\Delta$ = first difference operator

$TEXPT_t$ = Total export at time t

$EXRATE_t$ = Exchange rate at time t

$OILREF_t$ = Oil refining at time t

$TROPNESS_t$ = Trade Openness of the Economy at time t

$\varepsilon_t$ = Error Term.

Log = Natural logarithm

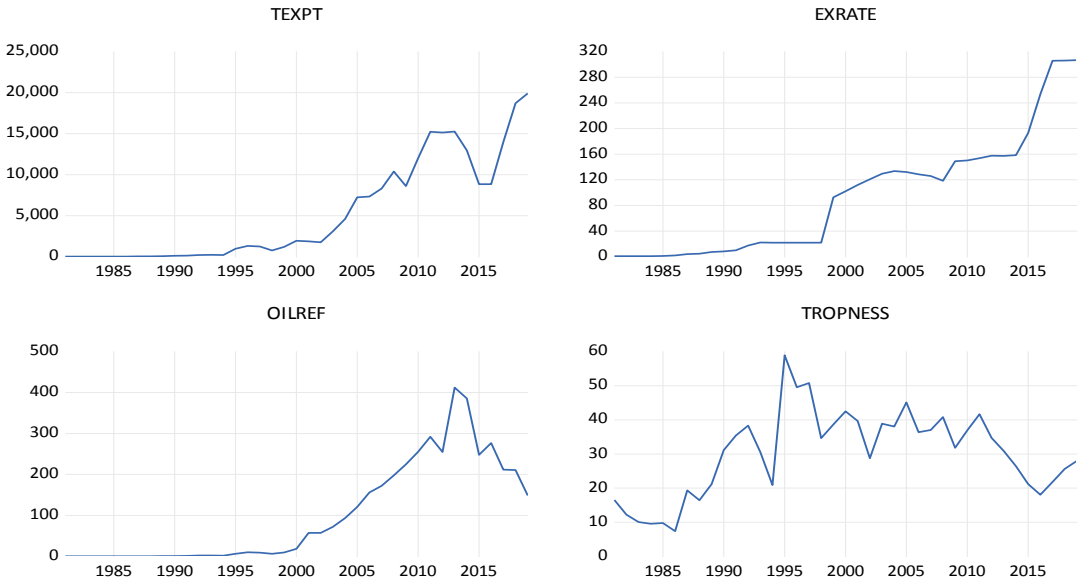
$\alpha$, $\beta_1$,$\beta_2$,$\beta_3$, $\beta_4$, $\beta_5$, $\beta_6$, $\beta_7$ are parameters.

## 4. Results and Discussion of Findings

### *4.1. Data Analysis*

This section presents the preliminary diagnostic analysis (graph, descriptive statistics, unit root and correlation matrix) and regression analysis.

Figure 2: graphical representation of variables




Source: Extract from Eviews 11 Output, 2021

Figure 2 presents the graphical representation of the variables showing their trends' patterns. It is observed that total export (TEXPT) is insignificantly different from zero until year 1994 when it started rising. In 2011, it reaches a peak and begins to fall from 2013 to 2015 when another upward trend is observed. Oil refining (OILREF) has a similar movement with OILEXPT except that it continues falling from 2015. Exchange rate (EXRATE) has always been on the increase while trade openness (TROPNESS) increases from 1986 and had break at 1992 and 1995 for a downward sloping trend.

*Table 1: Summary of Statistics*

| | TEXPT | EXRATE | OILREF | TROPNESS |
|---|---|---|---|---|
| Mean | 5192.364 | 94.25879 | 100.4155 | 30.13845 |
| Median | 1744.178 | 102.1052 | 18.18600 | 31.14093 |
| Maximum | 19909.75 | 306.9206 | 412.3001 | 58.91781 |
| Minimum | 7.502500 | 0.610025 | 0.045442 | 7.362417 |
| Std. Dev. | 6194.222 | 92.86517 | 122.4220 | 12.46407 |
| Skewness | 0.910806 | 0.806529 | 0.934572 | -0.022127 |
| Kurtosis | 2.479217 | 2.846207 | 2.704040 | 2.422573 |
| Jarque-Bera | 5.832915 | 4.266615 | 5.819597 | 0.544992 |
| Probability | 0.054125*** | 0.118445 | 0.054487*** | 0.761476 |
| Sum | 202502.2 | 3676.093 | 3916.204 | 1175.400 |
| Sum Sq. Dev. | 1.46E+09 | 327709.7 | 569511.4 | 5903.412 |
| Observations | 39 | 39 | 39 | 39 |

Source: Extract from Eviews 11 Output, 2021. NB: *, ** and *** indicate 1%, 5% and 10% level of significance respectively.

The summary of statistic conducted under individual samples reveals the magnitude and spread of the variables. The major statistics are the mean, standard deviation and Jarque-Bera. The average values for TEXPT is 5192.364, EXRATE is 94.25879, OILREF is 100.4155 and TROPNESS is 30.13845, while the dispersal level is 6194.222, 92.87, 122.42 and 12.46 for TEXPT, EXRATE, OILREF and TROPNESS respectively. It is worth noting that the variables are normally distributed except OILEXPT and OILREF as depicted in the Jarque-Bera probabilities.

*Table 2: Correlation Matrix*

| VARIABLES | TEXPT | EXRATE | OILREF | TROPNESS |
|---|---|---|---|---|
| TEXPT | 1 | | | |
| EXRATE | 0.882 | 1 | | |
| OILREF | 0.875 | 0.756 | 1 | |
| TROPNESS | 0.132 | 0.120 | 0.098 | 1 |

Source: Extract from Eviews 11 Output, 2021

The correlation results of the variables in table 2 shows direct linear relationship between variables TEXPT-EXRATE and TEXPT-OILREF. However, TEXPT-TROPNESS is free from correlation. This means there is possibility of the presence of collinearity between variables EXRATE and TEXPT. It is not surprising as the Nigeria oil sector contribute majorly to export.

Table 3: Stationarity Test

| | **LEVEL** | | | **FIRST DIFFERENCE** | | | |
|---|---|---|---|---|---|---|---|
| **Variable** | **ADF** | **PP** | **KPSS** | **ADF** | **PP** | **KPSS** | **I(d)** |
| TEXPT | -1.6880*** | -1.1519 | 0.1948** | -5.4864* | -3.9661** | 0.0877 | I(1) |
| EXRATE | -2.0776 | -1.5171 | 0.1427*** | -3.7419* | -4.2581* | 0.0622 | I(1) |
| OILREF | -1.6437 | -1.8533 | 0.1322*** | -6.6043* | -6.4996* | 0.1374*** | I(1) |
| TROPNESS | -2.3758 | -2.1772 | 0.1994** | -8.1681* | -19.8117* | 0.4766* | I(1) |

Source: Extract from Eviews 11 Output, 2021. NB: *, ** and *** indicate 1%, 5% and 10% level of significance respectively. The null hypothesis for ADF, PP, is that an observable time series is not stationary (i.e. has unit root) while that of KPSS tests for the null hypothesis is that the series is trend stationary.

*Table 4: Single Equation Cointegration Test*

| | Engle-Granger Test | | Philip Ouliaric Test | |
|---|---|---|---|---|
| Dependent | z-statistic | Prob.* | z-statistic | Prob.* |
| TEXPT | -40.58431 | 0.0008* | -15.57698 | 0.5850 |
| EXRATE | -25.68212 | 0.1084 | -23.31293 | 0.1788 |
| OILREF | -25.49511 | 0.1130 | -24.32536 | 0.1455 |
| TROPNESS | -33.12127 | 0.0146** | -30.75150 | 0.0298** |

Source: Extract from Eviews 11 Output, 2021. NB: *, ** and *** indicate 1%, 5% and 10% level of significance respectively.

The Engle Granger and Philip Ouliaric results in Table 4 are mixed for the *z*-statistics, with the residuals from the TEXPT and TROPNESS equations rejecting the unit root null at the 5% level of significance. The null hypothesis is "no cointegration" and on balance, however, the test statistics suggest that we cannot reject the null hypothesis. Meaning there is no long-run relationship among the variables, therefore, the study estimate for short-run relationship only.

*4.2 OLS Regression Analysis*

*Table 5: Short-run Results*

| Dependent Variable: DLOG(TEXPT) | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| DLOG(TEXPT(-1)) | -0.225474 | 0.124861 | -1.805796 | 0.0807 |
| DLOG(EXRATE(-1)) | 0.187958 | 0.090088 | 2.086380 | 0.0453 |
| DLOG(OILREF) | 0.249369 | 0.063671 | 3.916551 | 0.0005 |
| D(TROPNESS) | 0.032525 | 0.003566 | 9.121784 | 0.0000 |
| D(TROPNESS(-1)) | 0.013439 | 0.005821 | 2.308452 | 0.0278 |
| C | 0.156964 | 0.037747 | 4.158320 | 0.0002 |
| R-squared | 0.876097 | Mean dependent var | | 0.210650 |
| Adjusted R-squared | 0.856112 | S.D. dependent var | | 0.398501 |
| S.E. of regression | 0.151162 | Akaike info criterion | | -0.793542 |
| Sum squared resid | 0.708344 | Schwarz criterion | | -0.532312 |
| Log likelihood | 20.68053 | Hannan-Quinn criter. | | -0.701446 |
| F-statistic | 43.83895 | Durbin-Watson stat | | 1.983598 |
| Prob(F-statistic) | 0.000000 | | | |

Source: Extract from Eviews 11 Output, 2021. NB: * indicates 1%, ** 5% and *** 10% level of significance

**Post Estimation Test**

Table 6: Linearity Test

| Table 5: Ramsey RESET Test | | | |
|---|---|---|---|
| | Value | df | Probability |
| t-statistic | 0.070667 | 28 | 0.9442 |
| F-statistic | 0.004994 | (1, 28) | 0.9442 |
| Likelihood ratio | 0.006598 | 1 | 0.9353 |

Source: Extract from Eviews 11 Output, 2021

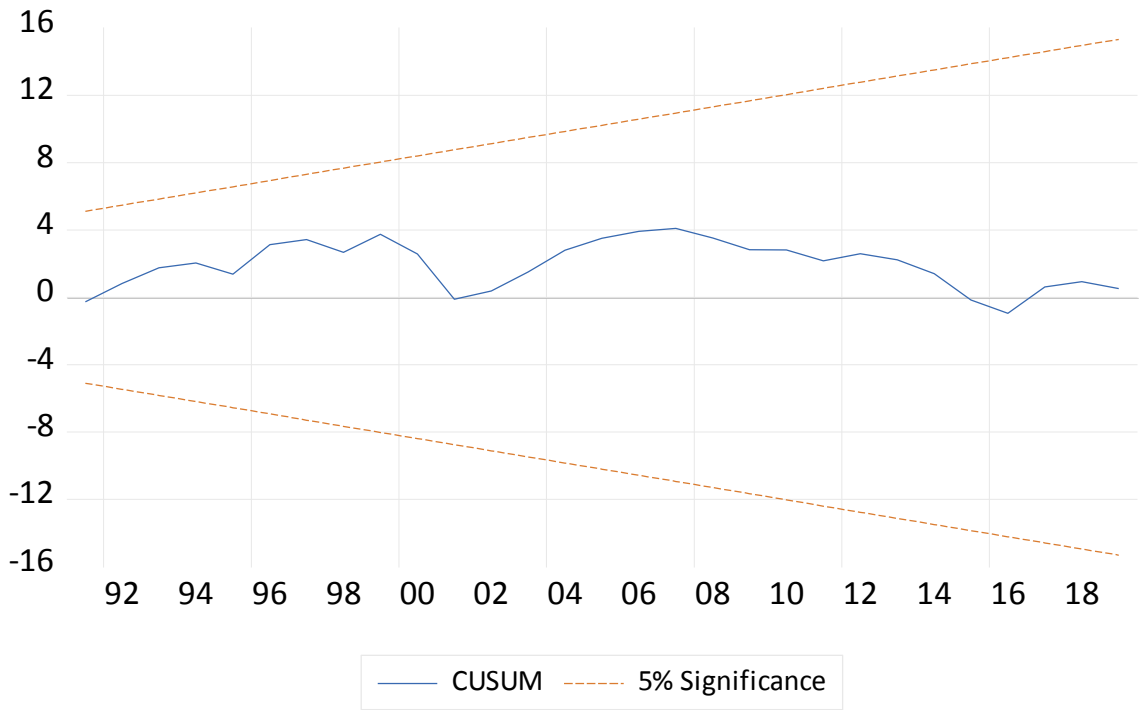
Table 6 shows that the model is linearly

Table 7: Serial Correlation Test

| Breusch-Godfrey Serial Correlation LM Test: | | | |
|---|---|---|---|
| Null hypothesis: No serial correlation at up to 2 lags | | | |
| F-statistic | 1.092519 | Prob. F(2,27) | 0.3497 |
| Obs*R-squared | 2.770133 | Prob. Chi-Square(2) | 0.2503 |

Source: Extract from Eviews 11 Output, 2021.

Figure 3: CUSUM Test




Source: Extract from Eviews 11 Output, 2021.

**4.3. Discussion of Findings**

Table 5 presents the short run result arising from the fact that the variables do not converge in the long-run. Next, the study reports the parsimonious result resulting from remover of the insignificant variables through redundancy test. The above result shows that EXRATE has a significant and positive relationship with TEXPT. That is, for every one percentage rise in EXRATE, TEXPT rises by 18.8 percent and vice-versa. This result suggests that, an appreciation of Naira over US Dollar will reduce inflation, boost domestic export of goods and services and grow the economy. So the need to pay more attention to exchange rate fluctuation. This finding conforms with the study of Delavari, Baranpour and Abdeshahi (2014) which found that, in the short run, the effect of the foreign exchange rate on the export of petrochemical products is positive and significantly related. Also the study of Ajinaja, Popoola and Ogunlade (2017) supports the finding of this study as they arrived at positive relationship between exchange rate fluctuation and export performance in Nigeria. OILREF and TROPNESS also depict significant and positive relationship with TEXPT in the short-run. This means, TEXPT rises (or falls) by 24.9 percent and 3.2 percent respectively for every one percentage rise (or fall) in OILREF and TROPNESS. The adjusted $R^2$ is 0.856, suggesting that the variation of the total export is jointly explained by 86 percent of the explanatory variables and model is adequate (significant F-statistic).

Further robustness checks for reliability present insignificant values of the F-statistic in tables 6 and 7 which show that the model is free from specification errors, and no serial correlation respectively. The figure 3 indicates that the plot of CUSUM for the model under consideration is within the five per cent critical bound. By implication it suggests that the parameters of the model do not suffer from any structural instability over the period of study. That is, all the coefficients in the error correction model are stable.

## 5. Conclusions and Recommendations

The study sought to analyse the impact of exchange rate on total export in Nigeria using ordinary least square to affirm the proposition. It is observed that exchange rate (EXRATE) is positively and significantly related to total export (TEXPT) in the short-run. That is, an increase in exchange rate would strengthen the Naira against the Dollar, thus enhancing total exportation and growth. The significance of the result showed that exchange rate is important in determining the level of export in Nigeria. Therefore, this study recommends authority to manage the dynamics in exchange rate not to distort other macroeconomic variables stability.

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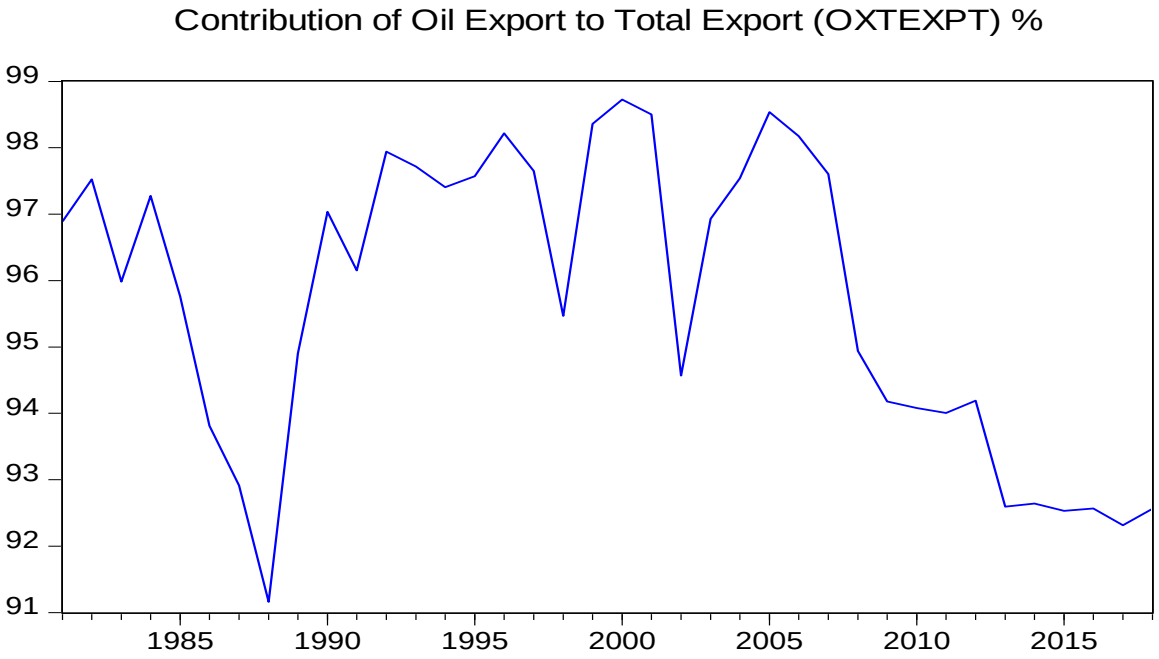
## APPENDIX

Figure 1: Oil Export as a Percentage of Total Export




Source: Author's Computation from CBN, 2018 Data.