Effect of Exchange Rate Policy on Non-Oil Export in Nigerian Economy

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Abstract- ***This study investigated, empirically the effect of exchange rate policy on non-oil export in Nigerian economy 1981-2021. Ordinary least square (OLS) method of data analysis was adopted. The data used were sourced from Central Bank of Nigeria Statistical Bulletin. The variables were on non-oil export as the dependent variable, while trade openness, exchange rate and money supply as the independent variables. The study employed unit root test to determine the stationarity of the variables, co-integration approach to determine the long-run equilibrium relationship of the model and error correction model to correct the error of the model. From the model it was discovered trade openness has significant impact on non oil export in Nigeria. Exchange rate sector has significant impact on non oil export in Nigeria. Money supply has significant impact on non oil export in Nigeria .The study recommends that foreign exchange control should be adopted to determine appropriate exchange rate value. Government should adopt selective credit control to channel funds to the productive sectors of the economy. Restrictive policy is also recommended to reduce pressure on foreign currency.***

Indexed Terms- ***non-oil export, trade openness, exchange rate, money supply, Ordinary least square***

I. INTRODUCTION

Nigeria as a developing country has been grappling with the realities of developmental process not only politically and socially but also economically. Nigeria is today identified as one of the 30 of the World's most important economies and the 7th fastest growing economy in the world during 2009 with 6.9 percent (CBN, 2017). A large amount of Nigeria's exchange income has been provided by non-oil exports during last decade before this pattern changed when oil suddenly became of crucial importance to the world economy through its supply-price nexus.

Export earnings assume vital importance not only for developing, but also for developed countries. Developed countries mainly export capital and final goods, while the main part of export of developing countries consists of mining-industry goods especially natural resources. According to export-led growth hypothesis increased export can perform the role of "engine of economic growth "because it can increase employment, create profit, trigger greater productivity and lead to rise in accumulation of reserves allowing a country to balance their finances (Emilio (2012),

It is the primary objective of any development aspired country to be buoyant in international trade. But the extent to which this could be achieved reckons on the ability of such country to expand and sustain exports. The fact still remains that in this globalised world, no nation can live absolute independently since all economies are directly or indirectly connected through assets or/and goods markets. These linkages made possible through international trade and foreign exchange. An economy with more exports than imports will enjoy a favorable balance of payment as it receives more than it pays in her international transactions with the rest of the world. Among the factors that determine the volume of international trade, exchange rate plays an important role because it directly affects domestic prices, profitability of trading goods and services, allocation of resources and investment decision. Stability of exchange rate is therefore required for a better outcome of international trade and favorable balance of payment. However, exchange rate volatility was experienced by most countries around the world after the exit of Bretton Wood system of

fixed exchange rate regime in the 70s. The continuous increase in volatility of exchange rates over the years has been the source of concern for both researchers and policy makers around the globe (Hericourt and Poncet, 2013).

This development affected economies of most developing countries especially those with mono product economy in which Nigeria is inclusive. Fluctuation of exchange rate makes international transaction risky such that risk-averse agents tend to reduce the export import activities and reallocate production to domestic markets. Hooper and Kohlhagen (2016) argue that higher exchange rate volatility leads to higher cost for risk-averse traders and less foreign trade. In corroboration, Panda and Mohanty (2015) assert that high volatility in exchange rate usually have negative effect on price discovery, export performance and sustainability of current account balance. This is possible for country like Nigeria where the economy depends on the export of crude oil for survival. In this case, the economy is subjected to the vicissitudes and vagaries of the oil market such that shocks in international oil price were immediately felt in the domestic economy (Omojimite & Akpokodje, 2010).

Empirically, most existing studies have yielded conflicting results on the nature of the relationship between exchange rate volatility and trade. Wholesome studies found evidence of adverse exchange rate volatility on trade flows, others provided evidence of no effect at all. However, the general observation from the literature is that most studies on the impact of exchange rate volatility on trade flows have focused on developed and Asian economies

Although, studies based exclusively on African data exist on the subject matter; rarely is Nigeria considered. This gap could be as a result of the argument that since oil is a major part of Nigeria's exports which is priced in US dollars; fluctuation in the Naira-dollar rates might not have an impact on oil exports, thus no impact on total exports. Moreover, the relatively recent origin of flexible exchange rate system in the country, when compared with other countries in Latin America, Asia and other industrialized economies could be a factor. Interestingly, many studies have provided evidence of high exchange rate volatility in Nigeria arising from the deregulation of the exchange rate in mid 1986 (Yinusa & Akinlo, 2008; Yinusa, 2008). This has raised concerns on the impact of exchange rate volatility on exports especially the non-oil exports.

The continuous increase in volatility of exchange rates over the years has been the source of problems for developing countries (Hericourt and Poncet, 2013). This development affected economies of most developing countries especially those with mono product economy in which Nigeria is inclusive. Fluctuation of exchange rate makes international transaction risky such that risk-averse agents tend to reduce the export-import activities and reallocate production to domestic markets. Hooper and Kohlhagen (2008) argue that higher exchange rate volatility leads to higher cost for risk-averse traders and less foreign trade.In corroboration, Panda and Mohanty (2015) assert that high volatility in exchange rate usually have negative effect on price discovery, export performance and sustainability of current account balance. This is possible for country like Nigeria where the economy depends on the export of crude oil for survival. In this case, the economy is subjected to the vicissitudes and vagaries of the oil market such that shocks in international oil price were immediately felt in the domestic economy (Omojimite&Akpokodje, 2010).

1.2 Objective of the Study

The broad objective of this study is to examine the impact of exchange rate policies on non-oil export in Nigeria. The specific objective includes:

i. To determine the impact of exchange rate on non-oil export in Nigeria

ii.To examine the impact of trade openness on non-oil export in Nigeria

iii.To evaluate the extend money supply affects non-oil export in Nigeria

1.3 Research hypotheses

The following are the hypotheses of this study

Ho: Exchange rate has no significant impact on non-oil export in Nigeria

Ho: Trade openness has no significant impact on non-oil export in Nigeria

Ho: Money supply has no significant impact on non-oil export in Nigeria

II. REVIEW OF RELATED LITERATURE

2.1 Theoretical Review

2.1.1 Purchasing Power Parity (PPP)

The purchasing power parity approach to the exchange rate determination was, and continues to be, a very influential way of thinking about the exchange rate. The PPP posits that the exchange rate between two currencies would be equal to the relative national level prices. The PPP derives from the assumption that in the world there exists the "law of one price". This law states that identical goods should be sold at identical prices. (Note this assumption not law). The law of one price implies that exchange rates should adjust to compensate for price differentials cross countries (Hoontrakul 1999). In other words, if we are in a bread-world(only bread exists), and a bread is sold in US at 1 Dollar, and the same bread is sold in Nigeria at 150 naira, then the exchange rate has to be 150 naira per Dollar.

2.1.2 Balance of Payments Approach

This approach of exchange rate determination is that there exists internal and external equilibrium. The internal equilibrium assumes that there is full employment: in it there is natural rate of unemployment. Or in other words, the unemployment is such that there are no pressures to change real wages. The external equilibrium refers to equilibrium in the balance of payments. This approach explains permanent deviations of PPP. The main problem with this approach is that in general it is extremely difficult to determine what is the exact natural rate of unemployment, or the exchange rate that is consistent with equilibrium of the external accounts. However, the model will determine where the exchange rate has to converge to; however, it provides very little guidance to the short term fluctuations (Hoontrakul 1999).

2.2. Empirical Review

Maizels (2016) carried out a study on the relationship between exports and economic growth in sixteen countries in estimating the relationship; he performed time series analysis of exports and GDP. Maizels found out that there is no strong association between export and the growth of the economy. He however, offered two explanations for this. First is the small sample size, and second the relative importance of exports in national income was not taken into account in each of the countries considered

Michaely (2007) carried out studies on international statistical comparison of export performance and economic growth. He also adopted a single equation model. He found the correspondence between growth in per capita income (a proxy of economic growth) and the ratio of export to GNP to be significantly positive for a sample of forty less developed countries. However, this evidence was significant only with respect to twenty-three less developed countries included in the sample.

Bela (2008) in his comprehensive empirical studies of eleven countries with strong industrial base also found a significant and positive relationship between economic growth and export promotion for less developed countries. Bela's suggestion is that countries which neglect their export sector through discriminatory economic policies are likely to have to settle for lower rates of economic growth and He concludes that the export performance reflects export economic policies.

Krueger (2008) carried out a study on export growth relationship for ten countries covering 1954 through1971. He employed a simple log-linear specification for each country. One of the results from the study is that the relationship between GNP and export earnings is more correlated than the correspondence between GNP and total foreign exchange availability. A corollary result from this finding is a positive relationship between export performance and export-oriented policies.

Ilegbinosa, Uzomba, & Somiari, (2012) The study investigated the impact of macroeconomic variables on the performance of the Nigerian economy from 1986-2010. In carrying out the study we employed the ordinary least square (OLS) and co-integration test analysis based on the Engle Grenger (1987) co-integration analysis, in order to establish along run relationship among the variables employed in this study. The study was guided by four research objectives and hypotheses. Given the influences other

variables have on the performance of the Nigerian economy, we discriminately incorporated non-oil export, agricultural sector, manufacturing sub-sector and gross domestic product as the dependent variables while exchange rate, interest rate, government capital expenditure and government recurrent expenditure were the independent variables.

The result of our analysis indicates that exchange rate, government capital expenditure and government recurrent expenditure are positively related to non-oil export, agricultural sector, manufacturing sub-sector and gross domestic product, while interest rate is negatively related to non-oil export, agricultural sector, manufacturing sub-sector and gross domestic product. The four formulated null hypotheses were rejected while the alternative hypotheses were accepted. Based on the findings of this study, we therefore recommended that investment should be increased in the areas of non-oil exports, agricultural sector and manufacturing sub sector because our result shows that they are related to the macroeconomic variables used except interest rate.

Akinlo, & Adejumo, (2014) investigates the impact of exchange rate volatility on non-oil exports in Nigeria, 1986(1)–2008(4).The paper confirms the existence of statistically significant relationship between real exports and exchange rate volatility. The results show that exchange rate, exchange rate volatility and foreign income have significant positive effects on non-oil exports in the long run. Imports, on the other hand, have a statistically negative effect on exports in the long run. The ECM results show that lagged foreign income has significant positive effect on non-oil exports. The coefficient of imports is positive supporting the import compression hypothesis in the short run. The results show that short run impact of the exchange rate volatility is statistically insignificant. The positive coefficient of the exchange rate variable (though not significant) suggests that an appreciable depreciation of the exchange rate could lead to increase in non-oil exports in Nigeria. Essentially, the results suggest that the exchange rate volatility is only effective in the long run but not in the short run in the case of Nigeria.

Babatunde, Halimah, Hammed, & Musibau (2017) investigates the Exchange rate volatility and non-oil exports in Nigeria: An empirical investigation. The adoption of a flexible exchange rate system since 1986 in Nigeria has made the country witnessed varying rate of the naira vis-à-vis the U.S dollar. This paper examines exchange rate volatility with ARCH model and its various extensions (GARCH, TGARCH, and EGARCH) using quarterly exchange rate series from 1986-Q1 to 2014-Q4.The impact of exchange rate volatility on non-oil exports was also examined using Error Correction Model (ECM) with two different measures of volatility. The results obtained confirm the existence of exchange rate volatility and also found a significant negative effect on non-oil export performance in Nigeria. Therefore, the Nigerian government should ensure an appropriate policy mix that not only ensures a stable and realistic exchange rate but also conducive atmosphere for production and exportation.

Panda & Mohanty (2015) empirically examined the effect of exchange rate volatility on India's exports for the period 1970 - 2012. They used simple rolling standard deviation as a measure of exchange rate volatility and also found negative impact on exports. In 2012, Hericourt&Poncet investigated the impart of real exchange rate volatility and financial constraints on trade for China covering the period 2000 – 2006. Their results revealed that high exchange rate volatility reduces exports. They conclude that the magnitude of the export-deterring effect depends on the extent of firms' financial vulnerability.

Ozturk & Kalyancu (2009) empirically examined the impact of exchange rate volatility on the trade flows for six countries using Engle-Granger residual based cointegration technique. They found that the impact of exchange rate on trade flow was positively significant for Turkey and Hungary; and statistically significant negative impact for South Korea, Pakistan, Poland and South Africa. Using Autoregressive Distributive Lag (ADRL) bound testing approach,

III. RESEARCH METHODOLIGY

3.1 Model Specification

An economic model is the representation of the basic features of an economic phenomenon. In order to identify the nature of relationship between exchange rate and the non- oil exports, it is imperative to establish a model or paradigm for analysis, whereby the parameter estimates of exchange rate can be determined. Thus a linear regression model is stated in a functional form as, NOE = F(EX, TOP,MS)

Where

NOE = Non-oil export

EXR = Exchange rate.

TOP = Trade openness

MS = Money supply

F= functional notation

The above equation can be restated in a functional form as;

$Non = \beta_0 + \beta_1 EXR + \beta_2 TOP + \beta_3 MS + \mu$

Where;

β_0 = Autonomous or Intercept

β_1 = Coefficient of Parameter EXR

β_2 = Coefficient parameter TOP

β_3 = Coefficient of parameter MS

U = Stochastic variable or error term

The above can restarted in it log form as

$Log\ NOE = C + \beta_1 EXR + \beta_2 TOP + Log\beta_3 MS + \mu$

Where Log = logged values of the variables.

3.2 Justification of the Model

This work used the ordinary least square because of the following;

(i) The ordinary least square are expressed solely in terms of the observable (i.e. sample) quantifies (i.e. x and y)

(ii) They are a point estimate that is given. The sample, each estimator will provide only a sample point value of the relevant population parameters.

(iii) Once the OLS estimates are obtained from the sample data, the simple regression line can be easily obtained.

3.3 Method of Evaluation

In the evaluation of the research work, we shall employ some criteria such as economic, econometric and statistical criteria.

3.3.1 Evaluation Based on Economic Criteria

A' priori criteria

This is based on the principles of economic theory. The result can be used to check for the reliability with both the size and sign of economic a' priori expectation.

3.3.2 Evaluation Based on statistical Criteria

First order tests

i. Coefficient of multiple Regression (R^2) This is the summary measure that tells how well the sample line fits the data. It is a non- negativity and its limit are $0< r^2 >1$. An r^2 of zero means that there is no relationship between the regress and the regressor. Guajarati, 2001

ii. T- Statistics.

This shows the significance of the parameter estimates. The obtained value of the t- ratio will be compared with the tabulated value. The decision rule is that if t-test value is greater than 2, with probability value less that 0.05% level of significant, null hypothesis is rejected while the alternative is accepted.

iii. F- Statistics.

This measures the overall statistical significance of the entire regression plane. It aims at finding out if the entire influences of the explanatory variables do actually have any impact on the dependent variables. The simple rule of thumb implies that if f-test value is greater than 2 with less that 5% level of significant, null hypothesis is rejected, while the alternative is accepted

3.3.3 Evaluation Based No Econometric Criteria

i. Auto correlation test:

The term auto correlation may be defined as correlation between members of a series of observation ordered in time (as in time series) or space (as in Cross sectional data). Autocorrelation is that developed by statistician Durbin and Nation. It is popularly known as the Durbin- Watson d- statistically.

ii. Co integration Test:

Two variables may be co-integrated if they have a long run equilibrium relationship between them. Co-integration deals with relationship amongst a

group of variables (unconditionally) where each variable has a unit root.

iii. Error connection Mechanism:
Error connection mechanism is the systematic process by which a drift from equilibrium is prevented. Granger presentation thermo states that if two variables (x and y) are co-integrated, the relationship between them can be expressed as an error correction mechanism.

3.4 Sources of Data and Soft Ware
The study makes use of secondary data, the time series data on real gross domestic product, exchange rate, non- oil export, trade openness and money supply which was sourced from the central Bank of Nigeria statistical bulletin Vol 21, from 1981-2021

IV. PRESENTATION AND ANALYSIS OF RESULT

4.1 Unit Root Test
The time series variables when used in their explosive form, often leads to spurious regression results and this misleads policy makers, while making recommendation on the findings of the research. In other not to obtain spurious regression result the variables were first tested for stationary by employing the Augmented Dickey Fuller test (ADF). The Result obtained from the analysis is presented in the table below

Table 4.1 Unit Root Result

Variables	ADF	Integration	Significance
NOE	-6.060176	I (1)	1%
TOP	-5.614037	1 (1)	1%
EXR	-4.303366	1 (1)	1%
MS	-5.168866	1 (1)	1%

Source: E-view 9 version.

From the result in table 4.1 above, it is well observed that none of the variables was found to be significant at level, but the entire variables were stationary at 1^{st} difference. This implies that all the variables are stationary and at 1% level of significant and this result gives us a lead way to test co-integration analysis.

4.2 Co-integration Test
The second step is the testing of the presence or otherwise of co-integration between the variables of the same order of integration through forming a co-integration. if in the long run two or more variables move closely together, co-integration is emerge. A lack of co-integration suggests that such variables have no long-run relationship.

Table 4.2 Johansen Co-integration Test

Hypothesized no of (ECS)	Eigen value	Trace statistics	5% Critical value	Prob**
None*	0.643487	57.76455	40.17493	0.0004
At most 1	0.349291	22.69747	24.27596	0.0780
At most 2	0.160169	8.087902	12.32090	0.2299
At most 3	0.061361	2.153041	4.129906	0.1678

Source: E-view 9 version

Max-eigen value test indicates 2 co-integration equations at 0.05 *denotes rejection of the hypothesis at 0.05 level. **Mackinnon-Haug-Michelis (1999) p-values.

- Unrestricted Co-integration Rank Test (Trace)

Hypothesized no of (ECS)	Eigen value	Trace statistics	Critical value	Prob**
None	0.643487	35.06708	24.15921	0.0011
At most 1	0.349291	14.60957	17.79730	0.1417
At most 2	0.160169	5.934862	11.22480	0.3572
At most 3	0.061361	2.153041	4.129906	0.1678

Source: E-view 9 version

Max-eign value test indicates 1 co-integrating equation(s) at the 0.05 level. *denotes rating of the hypothesis at the 0.05 level **Mackinnon – Haug-Michelis (1999) p-values. Since co-integration is a pre-requisite for the Error correction Mechanism, and

following our co-integration result, there is a long-run equilibrium relationship among the variables.

Table 4.3: Regression Result of the Study

Variables	Coefficient	Std. error	T-statistics	Prob**
C	2.606903	1.242397	2.098284	0.0441
TOP	0.015623	0.005029	3.106834	0.0040
EXR	-0.004246	0.003192	-2.330252	0.0031
LMS	0.294149	0.113733	2.586308	0.0146
ECM(-1)	-0.740361	0.136695	-5.416169	0.0000

Source: E-view 9 version

R^2 = 0.952943
Adjusted R^2 = 0.946871
F-Statistics = 156.9431
Durbin-Watson = 1.780117

The R^2 which is the coefficient of determination or the measure of goodness of fit shows the degree of variation in the dependent variables, as explained by the independent variables all taken together. The closer R^2 is to 1, the better the goodness of fit of the model. From the result in table 4.3 above, we have R^2 as 0.952943. This is closer to 1 and thus indicates that our model displayed a good fit. The adjusted R^2 = 0.95 this implies that despite the adjustment in the degree of freedom our variables can still explain about 95% of the changes or variation in the model. Thus, it is in line with the result of the goodness of fit of the model.

The f-statistics is used to test for the overall statistical significance of our parameter in the model. If the probability of in the computed model is greater than the desired level of significance (0.5) we accept the null hypothesis and reject the alternative. From the result in table 4.3 above the computed value of f is 156.9431while its probability is 0.00000. Since its probability is less than 0.05 we accept alternative hypothesis which states that the independent variables are jointly statistically significant in explaining the dependent variable.

The Durbin Watson statistic is used to test for the presence or otherwise of autocorrelation in our regression model. When the value of our d-w statistics is 1.7, it means the absence of autocorrelation among the explanatory variables in the model.

The a'priori expectation is determined by the existing economic theory and it indicates the signs of the economic relationship under consideration. From the result of our estimated model it was discovered that trade openness has a positive sign given its value as 0.015623. This implies that increase in trade openness increase the non oil export by 15%.

Exchange rate has negative sign given its value as -0.004245, this means that decrease in Exchange rate increase the non-oil export by 0.4%, and this conforms to our a'priori expectation. Money supply has a positive sign given its value as 0.294149. This suggests that positive sign also increases the non-oil export product by 0.29%. This conforms to our theoretical expectation.

The t-statistics, this helps in detecting the individual statistical significance of parameter from the model. It was discovered that trade openness and money supply are statistically significant, which implies that they contributed to non-oil export in Nigeria. However, exchange rate is significant and has contributed significantly to non-oil export in Nigeria. The coefficient of the error correction term carries the correct sign and it is statistically significant at 5 per cent level with the speed of convergence to equilibrium of 74 per cent.

4.4 Hypothesis Testing

In a bid to carry out the necessary empirical analysis a hypothesis were formulated and have to be tested to verify the validity or otherwise of such proposition.

Hypothesis One

Ho: Exchange rate has no significant impact on non-oil export in Nigeria

From the above regression result, it was observed that t-test on Exchange rate is statistically significant; this led us to rejection of null hypothesis and acceptance of alternative hypothesis, this suggest further implies that Exchange rate has significant impact on non-oil export in Nigeria

Hypothesis Two
Ho: Trade openness has no significant impact on non-oil export in Nigeria

From the above regression result it was observes that t-test on trade openness is statistically significant, with its values as 3.106834 (0.0040) this led us to rejection of null hypothesis and acceptance of alternative hypothesis. Which state that trade openness has significant impact on non-oil export in Nigeria

Hypotheses Three
Ho: Money supply has no significant impact on non-oil export in Nigeria

From table 4.3 above we find out that the computed value of t- test for Money supply is 2.586308, while it's probability is 0.0146 since it's probability is less than 0.05% level of significance, we reject the null (H0) hypothesis and accept the alternative (H1) hypothesis which says that Money supply has significant impact on non-oil export in Nigeria

V. SUMMARY OF FINDING, RECOMMENDATION AND CONCLUSION

5.1 Summary of Findings

The research explores the impact of exchange rate policies on non-oil export in Nigeria, from the empirical evidence done in this work it was realize that exchange rate policies has significant effect on non-oil export. This finding is against the condition of null hypothesis, the study employ co integration and Error Correction Model (ECM). The research reveals the followings

- The regression result show that trade openness has significant impact on non oil export in Nigeria
- Exchange rate sector has significant impact on non oil export in Nigeria
- Money supply has significant impact on non oil export in Nigeria
- The variables are co integrated at order one I(1).they are also co- integrated, which suggest the presence of long-run equilibrium relationship between them.

5.2 Recommendation

i. Foreign exchange control policies should be adopted in order to help in determination of appropriate exchange rate value. This will go a long way of strengthening the naira.
ii. Trade liberalization policy of the country should be carefully pursued in a way that the country's level of trade openness should favour non-oil export trade performance, while diversification of the country's economy from that of oil dependence is necessary to checkmate the adverse effect of the county's trade balance on non-oil export performance
iii. Lastly, Government needs to adopt selective credit control so as to channel funds to the productive sectors of the economy, which will increase production for local consumption and export. Restrictive policy is also recommended to reduce pressure on foreign currency.

5.2 Conclusion

The Nigeria financial system has been unfair to importers and exporters in international trade transactions. The importers bear the entire burden of the foreign exchange rate risks, which arise due to inefficiency of the financial system. We should remember that the exporters already has the exchange rate to him aerated a situation of double jeopardy. For instance, if the foreign business is lower than total costs, then the addition of losses due to exchange rate fluctuations increase probability of bank "let those who create the inefficiency in the form of remittance lag bear the brunt of their acts". However, the paralyzed stroke on the Nigeria economy as being deeply felt primarily because of the excess dependence on oil revenue which account for over 90 percent of the national revenue. Finally, the Nigerian experience is typical of the struggle by developing economy to grow out of chronic balance of payment disequilibrium, reoccurring inflationary conditions neglected agricultural sector and in-aptitude of local infant industries. But the needed development cannot be achieved without restrictions and proper

management of international trade and payments and above all, a sound diversification of agricultural resources.

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