DUTSE JOURNAL OF ECONOMICS AND DEVELOPMENT STUDIES (DUJEDS)
DEPARTMENT OF ECONOMICS AND DEVELOPMENT STUDIES
FEDERAL UNIVERSITY DUTSE
E-Mail: dujeds@fud.edu.ng

IMPACT OF REAL EXCHANGE RATE ON NON-OIL EXPORTS IN NIGERIA

IWUOHA, Jude Chukwunyere Ph.D — **Department of Economics, Enugu State University of Science and Technology, Nigeria**

AWOKE, Chigozirim Florence Ph.D — **Department of Economics, Ebonyi State College of Education, Ikwo, Nigeria**

Abstract
This study examined the impact of real exchange rate on non-oil export in Nigeria using Johansen's cointegration method and Vector Error Correction Model to analyze time series data from 1975 – 2017. The results indicate a long run relationship between non-oil exports, real exchange rate, trade openness and interest rate. The variables were found to be stationary at I(1) and cointegration confirmed after determining the lag length. The result of the vector error correction method showed a negative impact of real exchange and trade openness on non-oil export while interest rate impacted positively on non-oil export. Based on these findings, this study recommends that a full deregulation of the exchange rates should be pursued, while it is good to expose local industries to competition they should equally be protected and finally promotion of non-primary exports should be encouraged.

Keyword: Real Exchange Rate; Non-Oil Export; Nigeria's Economy; Trade Openness
JEL Classification: LO24

Introduction

Nigeria being an integral part of the world economy as an emerging market and a developing nation is often faced with dilemma of the exchange rate puzzle. Hence the ongoing debate regarding the appropriate exchange rate policy as it centers on the degree of fluctuations in exchange rate within the purview of internal and external shocks affecting exports, output growth and other variables in an economy. Real exchange rate which broadly means the ratio of foreign currency to domestic currency, is actually the purchasing power of a currency relative to another usually based at a certain exchange rates and prices. Any increase in real exchange rate actually means depreciation of a currency in nominal terms. Thus according to Udabah (2002), to the layman, real exchange rate is the ratio of the price level abroad and the domestic price level based on some broad based price indices such as consumer price index, CPI or gross domestic product, GDP deflator. It is usually expressed in a common currency using the current nominal exchange rate. Real exchange rate gives an idea of the competitiveness of local goods and services in the international markets. By illustration this means that a fall in the real exchange rate increases the competitiveness of the local output in the international market (Umar, Adewusi and Aminu, 2019; Khaled 2016; Edmira 2014; Udabah 2002; Aigbokhan 1995).

Theoretically, real exchange rate can be expressed as the ratio of the price of non-tradable goods to the tradable goods. Thus, once the price of tradable goods increases relative to the price of non-tradable goods, a real exchange rate depreciation occurs. Higher real exchange rates decreases exports and increases imports since relative price of goods at home will be higher than relative price of goods abroad (imported goods). Hence, in Nigeria today, prices of imported goods keep selling cheaper than locally produced goods (Udabah, 2002). Policy makers under various administrations in Nigeria have adopted various economic strategies to

address this by encouraging exports. The truth remains that all seems not to be working well. In essence, Nigeria's major export remains crude oil and surely, the fluctuations in its international prices affect the Nigerian economy. Efforts have been made to increase the non-oil exports of Nigeria. Exports are an efficient tool for growth and development and as such must be seen as a serious business by the developing nations. To achieve sustainable growth, developing countries must think outside the box, get out of their comfort zones to get things right.

Successive governments in Nigeria keep intervening in one way or the other through various policy trusts to encourage non-oil exports, however its intervention in the foreign exchange market seems to be impeding this progress. According to Akinmoladun (1990), government's intervention in the foreign exchange market (FEM) is yet to yield the desired results in Nigeria. Successive governments introduced various exchange rate control measures. The Second-Tier Foreign Exchange (SFEM) came into play in September 1986. SFEM ensured that the exchange rate was floated and rate was determined by auction at the SFEM. The rate was determined using the average rate pricing method and the marginal rate pricing method. In April 1987, the Dutch Auction System, DAS, got introduced. Under DAS, the Central bank of Nigeria, CBN was the main supplier and seller of foreign exchange. The foreign exchange market in Nigeria has passed through various reforms. 1992 saw the complete floating of the Nigerian currency. August 1993 birthed another fixed exchange rate regime. The Autonomous Foreign Exchange Rate, AFEM was introduced in 1995.

Perhaps the main straw of these policies is the parallel market and bureau de Change exchange rates. According to Obadan (1987), the exchange rate policies of the various Nigerian governments had profound impacts – positive and negative on efficient segments of the national economy. Capital inflow was one of the expected advantages of all these exchange rate reforms. Incidentally, the economy keep sliding into worse situations. In view of the above, foreign investors have not been impressed by the unstable political and economic environment. The exchange rate equally deters foreign investors as it is not stable. Little wonder though local industries are closing shops on daily basis according manufacturers association of Nigeria (Onuba & Okon, 2016).

The revenue profile of Nigeria has consistently showed that crude oil earnings accounts for more than 80% of Nigeria's foreign exchange earnings. This accounts for the reason the budgets are bench-marked on the price of crude-oil. The economy is thus left at the mercy of prices of crude oil in the international market. Hence urgent need for diversification of the economy.

Diversifying the economy will engender economic growth through increased exports from the non-oil sector. Exports diversification is a sure way of avoiding the effects of volatility in prices of oil in the international market. This forms the main objective of this study which is; to determine the impact of real exchange rate on Nigeria's Non-Oil exports. This study besides contributing to existing literature is expected to assist policy maker in making policies that will assist in diversifying Nigeria's economy hence it compared how the Non-Oil exports fared under various regimes. This study is organized in five sections. Section 1 is the introduction, Section 2 presents the reviewed literatures; Section 3 outlines the methodology; Section 4 is the discussion of empirical results while Section 5 concludes the study.

Literature Review

Concept of Real Exchange Rate

Exchange rate determines how much o another. The exchange rate determines how much residents of a country receive for goods and services imported and how much they receive as payment for exported goods and services. When inflation effects are embodied in exchange rate. It is called real exchange rate (REER), and called nominal exchange rate (NER) when inflation influences is excluded (Danson, Ganesh, & Moses, 2012; Copeland, 1989; Lothian & Taylor, 1997).

Theoretical Literature

Mercantilist Theory

According to Enu, Havi and Hagan (2013), the main trust of this theory is that nations become rich by exporting more than importing. The goal of exporting more is supposedly, to achieve a "favourable" balance of trade that would bring gold and silver into the country. According to this theory, exports may be enhanced through domestic production. Mercantilism is economic nationalism for the purpose of building a wealthy and powerful state. Adam Smith coined the term "mercantile system" to describe the system of political economy that sought to enrich the country by restraining imports and encouraging exports.

Theory of Absolute Advantage

Udabah (2002) states that a country has an absolute advantage in producing a good if it can produce more goods with a given amount of resources than another country can. This theory was propounded by Adam Smith, in his book "wealth of Nation" 1776. Smith advocated for free trade as the best policy for nations of the world. According to him, with free trade each nation could specialize to

produce the commodity which she has absolute advantage over the other country. However, this theory is not realistic in the sense that trade would be carried out in a situation where a country can produce both commodity more than the other country since it will produce both commodities efficiently while the other country produces none.

Theory of Comparative Advantage

David Ricardo is said to be the father of this theory and it seems the theory of comparative advantage is perhaps the most important concept in international trade theory though it is also one of the most commonly misunderstood principles. A country is said to have a comparative advantage in the production of a good (say A) if it can produce A at a lower opportunity cost than another country. The opportunity cost of A production is defined as the amount of another good (say B) that must be given up in order to produce one more unit of A. Thus, country X would have the comparative advantage in A production relative to country Y if it must give up less B to produce another unit of A than the amount of B that country Y would have to give up to produce another unit of A. However, the reality of this theory on the basis of its core assumptions makes it difficult if not impossible to observe. According to Ray (2011), this does not necessarily mean that it is not relevant in trade relations between two countries.

Exchange Rate Determination Theory

There is yet no agreement by economists and financial experts on any single theory that defines the exchange rate. However, trade and financial flows are the basis on which some competing exchange rate theories are based upon. These theories include: the elasticity approach to exchange rate determination, the monetary approach to exchange rate determination, the portfolio balance approach to exchange rate determination and the purchasing power theory of exchange rate determination. The main focus of the modern approach being that it focuses on the importance of capital and international capital flows (Danson, Ganesh, & Moses, 2012).

Export Led Growth Theory

Governments are interested in encouraging exports as it helps improve their economies. Thus, having more exports translates to favourable balance of trade hence presenting the country in good limelight. The export-led growth hypothesis (ELGH) simply encourages countries to export more to expand as expansion is a major determinant of growth. Export led growth therefore holds that the overall growth of countries can be generated not only by increasing the amounts of labour and capital within the economy, but also by expanding exports. According to this theory, growing export sales provide revenues and profits for businesses. This increases capital investment making a country's productive capacity which then increases the potential for exports (Udabah, 2002).

Empirical Literature

Babatunde, Halimah and Hammed (2017) empirically investigated the impact of exchange rate volatility and non-oil exports in Nigeria using ARCH and ECM method to analyse quarterly data from 1986 to 2014. Their results confirmed the existence of exchange rate volatility that has a negative significant effect on non-oil exports. They recommended for a stable and reliable exchange rate with a conducive atmosphere for production and exportation.

Sunanah and Hemantha (2017) used vector error correction method (VECM) to empirically investigate the impact of real exchange rate and its misalignment on export performance in Sri-Lanka using quarterly data from 2001 to 2016. The results shows that real exchange rate undervaluation does not have long run significant impact on exports. However there is evidence of short run significant impact of real exchange rate on exports. Based on the findings, they advised that any policy direction pertaining to addressing the long run growth of exports needs to be associated with enhancement of production capacity through short run impulsion and could be provided through real exchange rate undervaluation.

Khaled (2016) in his opinion in a paper titled, "how exchange rate influences a country's import and export", he opined that G-7 countries exports and imports took the effects of currency fluctuations during the period of 1982-1997. He therefore concluded that depreciation in exchange rate increases the domestic currency value and decreases the value of the home currency as well. Thus, if the home country currency rate increases due to foreign exchange rate declines then the domestic country can import the goods at cheap prices. In contrast if the home country currency decreases due to an increase in exchange rate then the imports of the home country decreases due to increasing in other country prices as well. If the domestic currency appreciates due to declining in exchange rate the domestic country exports will bring the high foreign exchange for the country and vice versa.

Imoughele and Ismaila (2015) examined the impact of exchange rate on Nigeria's non-oil exports for the period 1986-2013 using ordinary least square (OLS) method. The results showed that effective exchange rate, money supply, credit to the private sector and economic performance have a significant impact on growth of the non-oil exports

while exchange rate appreciation has a negative impact on non-oil exports. They therefore recommended that monetary authorities should ensure exchange rate stability in order to stem inflationary tendencies that affects non-oil exports in Nigeria.

Hosni (2015) assessed the real exchange rate misalignment in Egypt for the period 1974 – 2012 using SVAR approach. He identified shocks and their impulse responses to be consistent with the theoretical priors stemming from the Mundell-Fleming model and that the main contribution to the fluctuations of the real effective exchange rate is caused by both real demand and supply shocks.

Adeniran, Yusuf and Adeyemi (2014) used the ordinary least square method to empirically study the impact of exchange rate fluctuation on Nigeria's economic growth from 1986 - 2013. Their result shows that exchange rate has non-significant positive impact on economic growth while interest rate and inflation rate have negative non-significant impact on economic growth. They recommended for the promotion of export strategies so as to maintain surplus trade balance, creation of conducive business environment, adequate security, provision of infrastructural facilities to attract foreign investors into the country.

Edmira (2014) using vector error mechanism (VECM) studied the impact of real exchange rate on economic growth in Albania using quarterly data for the period 2002Q1-2011Q4. From the result of his study, real exchange rate has no significant impact on the Albanian economy.

Dansen, Garnesh and Moses (2012) studied the impact of real exchange rate volatility on economic growth of Kenya for the period January 1993 – December 2009 using the Generalized Autoregressive Condition of Heteroskedasticity (GARCH) method and Generalised Method Moments (GMM). The result of their study suggests that real exchange rate was very volatile for the entire study period and that Kenya's real exchange rate exhibited a general appreciating trend. According to them, the implication of this result is that Kenya's international competitiveness deteriorated over the study period as it had a negative impact on economic growth of Kenya.

Abu (2010) using a bivariate Granger causality test studied real exchange rate behaviour and economic growth in Sierra Leone with quarterly data for the period 1970 - 2006. The results of his study reveals that real effective exchange rate correlates positively with economic growth having a positive significant coefficient. From the results also, monetary policy is relatively more effective than fiscal policy in the long run, and a strong evidence of the real effective exchange rate causing economic growth was found. However they concluded that the main determinants of real exchange rate in Sierra Leone are terms of trade, exchange rate devaluation, investment to GDP ratio and excessive supply of domestic credit.

Khan, Mohammad and Alamgir (2010) using Vector Auto-Regression, VAR, studied the sources of real exchange rate fluctuations in Pakistan for the period 1982 - 2007. The result of their study shows that nominal shocks are significantly responsible for the country's exchange rate fluctuations. They recommended for the Pakistani authorities to focus on the real side of the economy, such as improving the efficiency, technologies and productivity in order to improve its competitiveness.

There seems to be an agreement in all the studies reviewed here. It is evident that from all the literatures reviewed, fluctuations in exchange rate is as a result of the forces of demand and supply. Hence, as the international competiveness of any country improves so also its exchange rate and vice-versa.

Methodology

We specify the vector error correction model (VECM). The model will show the impact of real exchange rate on Nigeria's non-oil exports. We are of the assumption that succeeding government regimes inherit the current exchange rate policy of the outgoing regime in its first administrative year. We adopted real exchange rate, trade openness and interest rate as the independent variables, while real exchange rate is used as the dependent variable.

Theoretical framework

The theoretical underpinning of this study is Heckscher-Ohlin theory which proposes that countries export what they can most efficiently and plentifully produce. The Heckscher-Ohlin model emphasizes the export of goods requiring factors of production that a country has in abundance. The Heckscher-Ohlin theory considered two goods say A and B, and two factors say K and L. Hence considering the production process for one of the goods in one of the countries say:

$$A = F^A(K^A, L^A) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where: F^A = Neoclassical production function for country A.

K^A = Capital for country A

L^A = Labour for country A

Data Sources and Description

The variables used for this empirical study are sourced from various editions of the Central Bank of Nigeria (CBN) statistical bulletin, 2017, and National Bureau of Statistics (NBS), annual report 2017. The time series data are:

- *ExpNoil = Non-Oil exports measured in Naira*
- *Rexr = Real exchange rate of the Naira to US dollar*
- *Top = Trade Openness defined by [(Export + Import)/GDP]as a percentage*
- *Int = Interest rate measured in perecntage*

Model Specification and Justification

The researcher built an econometric model based on a remodeled variant of production model. This is to assist us provide a better understanding of the relationship between real exchange rate and Non-oil exports in the Nigerian economy. Here, we used the variables real exchange rate, trade openness and interest rate as the determinants of nonoil export in Nigerian economy.

We are specifying the following model in its functional form:

ExpNoil = *f*(Rexr, Top, Int) ……..…….(2)

Where: ExpNoil = Non-Oil exports
Rexr = Real exchange rate
Top = Trade Openness defined by [(Export + Import)/GDP]
Int = Interest rate

$ExpNoil_t = \alpha_0 + \beta_0 Rexr_t + \beta_1 Topen_t + \beta_2 Int_t + u_t$ ……..(3)

Where:
μ = stochastic or random error term
B_0- β_2 = coefficients of the variables
α= constant intercept

Our a'priori expectation is that: (a) $\beta_0>0$, $\beta_1<0$, $\beta_2< 0$

Estimation Techniques

The annual time series data for 1975-2017 are expressed in nominal terms. We will first analyse the time series properties of the data using the unit root (Augmented Dickey-Fuller and Phillips Perron) test to determine the order and level of difference stationarity of the variables. The ADF having a two variable relationship assumes:

$\Delta Y_t = \beta\acute{\alpha}0 + \acute{\alpha}_1 \Delta Y_t + \acute{\alpha}_2 (Y - \beta X)_{t-1}$ ……... (4)

Where: Y_t is the dependent variable; X_t is a vector of independent variables (real exchange rate, trade openness and interest rate) which were found to be cointegrated with the dependent variables. If all the variables are I(1) and are cointegrated, we use a special form of vector autoregressive model (VAR) to estimate the error correction model. In doing this, we determine the lag length, we modified the system of equations to allow for the cointegrating relationship between the I(1) variables. This choice helps us retain the use of valuable information and to ensure that the best technique that takes into account the properties of the econometric techniques of Johansen cointegration and the vector error correction analysis.

Results and Discussion

Descriptive Statistics

The probability value of Rexr and Int are above 0.05, hence we accept the null hypothesis. A look at the descriptive statistics output below, nonoil export, trade openness and interest rate can be said to be mesokurtic, while real exchange rate and trade openness are assymetric series.

Table 1: Descriptive Statistics

	EXPNOILT	*REXR*	*TOPEN*	*INTT*
Mean	*195.0877*	*1.701549*	*0.117626*	*15.70628*
Median	*23.09610*	*1.417100*	*0.081100*	*16.85000*
Maximum	*1130.171*	*3.920800*	*0.450900*	*29.80000*
Minimum	*0.203200*	*0.084900*	*0.000500*	*5.820000*
Std. Dev.	*323.6549*	*1.135896*	*0.138855*	*6.010671*
Skewness	*1.548748*	*0.367899*	*0.956381*	*-0.007795*
Kurtosis	*3.993288*	*1.996034*	*2.577682*	*2.508057*
Jarque-Bera	*18.95781*	*2.775909*	*6.874644*	*0.434032*
Probability	*0.000076*	*0.249585*	*0.032151*	*0.804917*
Sum	*8388.771*	*73.16660*	*5.057900*	*675.3700*
Sum Sq. Dev.	*4399603.*	*54.19089*	*0.809789*	*1517.383*
Observations	*43*	*43*	*43*	*43*

Source: Author's computation using E-views 9

Lag length and its selection criterion

From table 2 below, the result for the VAR Lag Order Selection Criteria considering: Sequential modified LR test statistic (LR), Final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC), Hannan-Quinn information criterion (HQ).

Table 2: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-401.4867	NA	7501.573	20.27433	20.44322	20.33540
1	-294.6336	186.9930	80.27252	15.73168	16.57612*	16.03700*
2	-280.1128	22.50722	88.71800	15.80564	17.32563	16.35522
3	-260.5213	26.44842*	79.23193*	15.62607*	17.82161	16.41991

Source: Author's computation using e-views 9

** indicates lag order selected by the criterion*
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

From the table 2 above that sequential modified LR test statistic (LR), Final prediction error (FPE) and Akaike information criterion (AIC) all indicate lag three (3) while the Schwarz information criterion (SC) and Hannan-Quinn information criterion (HQ) indicate two (2) lag. Three (3) lag is chosen for the estimation of the model since most of the criteria suggest three (3) lag.

Unit Root Test Results

Table3: Unit root test results of yearly data on variables with Trend 1981-2017

Variables	Unit root test statistic		5% Critical value		Integration order	
	ADF	PP	ADF	PP	ADF	PP
ExpNoilt	-3.160686	-5.461413	-2.941145	-2.935001	I(1)	I(1)
Rexr	-5.831037	-5.674474	-2.935001	-2.935001	I(1)	I(1)
Topen	-5.607447	-5.831037	-2.935001	-2.935001	I(1)	I(1)
Intt	-10.15312	-10.25933	-2.935001	-2.935001	I(1)	I(1)

Source: Authors computation using E-view 9.

Table 3 above shows the result of the Augmented Dickey Fuller (ADF) and Phillip Perron (PP) in which all the variables are stationary at I(1). In these instances the value of the test statistic is greater than the critical value that all the variables are stationary at I(1). With this affirmation, we now go on to test if the variables are cointegrated using the Johansens cointegration test method.

Johansen Cointegration Results

Table 4: Cointegration Test Result

Hypothesized No of CE(s)	*Eigenvalue*	*Trace Statistic*	*0.05 Critical Value*	*Prob.***
*None **	*0.634118*	*70.81515*	*47.85613*	*0.0001*
*At most 1 **	*0.415240*	*31.60284*	*29.79707*	*0.0306*
At most 2	*0.193720*	*10.67723*	*15.49471*	*0.2321*
At most 3	*0.056775*	*2.279574*	*3.841466*	*0.1311*
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No of CE(s)	*Eigenvalue*	*Max-Eigen Statistics*	*0.05 Critical Value*	*Prob.***
None	*0.634118*	*39.21231*	*27.58434*	*0.0010*
At most 1	*0.415240*	*20.92561*	*21.13162*	*0.0534*
At most 2	*0.193720*	*8.397657*	*14.26460*	*0.3397*
At most 3	*0.056775*	*2.279574*	*3.841466*	*0.1311*

Source: Author's Computation using E-views 9

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level;
Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level;
** denotes rejection of the hypothesis at the 0.05 level;*
***MacKinnon-Haug-Michelis (1999) p-values*

We have used the Johansens Cointegration test to establish the existence of a long run relationship among the variables of the model. The result output as presented above showed that the Trace statistic is greater than the critical value in two (2) instances, while the Maximun Eigen value is greater than the critical value in one (1) instance.

Real Exchange Rate and Non-oil Export

Table 5 and 6 gives the short run and long run output respectively.

Table 5: Distributed Lag Result for Model – Short run Result

Variables	**Coefficients**	**Std. Error**	**t-Statistic**
D(LOG(REXR(-3)))	-0.213368	0.23084	-0.92433
D(LOG(TOPEN(-3)))	-0.232626	0.27708	-0.83957
D(LOG(INTT (-3)))	0.226074	0.46123	0.49015
ECM(-1)	-0.982869	0.44196	-2.22389
C	0.056514	0.08285	0.68216
R^2=0.692090; Adj. R^2=0.504666; F-Stat.=3.692650			

Source: Author's Computation using E-views 9

From table 5 above, the error correction coefficient has a value of -0.982869. This shows that the speed of adjustment from the short-run disequilibrium to long-run equilibrium is a high speed of 98% which is very significant. The R^2 value of 0.692 is an indication that about 69.2% of the changes in the level of Non-Oil export in the country from 1975 to 2017 are explained by the variables – real exchange rate, trade openness and interest rate. The value of the F-statistics suggests an overall significant relationship between non-oil export and the variables – real exchange rate, trade openness and interest rate in Nigeria. The degree of responsiveness of non-oil export to real exchange rate, trade openness and interest rate is -0.213368, -0.232626 and 0.226074 respectively. In line with our a'priori expectation, a 1% increase real exchange rate and trade openness reduces non-oil export by 21.3% and 23.3% respectively, while a 1% increase in interest rate increases non-oil export by 22.6% within the period under the study. This result is consistent with the findings of Imoughele and Ismaila (2015) whose study found that increase in exchange rate reduces non-oil export in Nigeria. However, interest rate did not follow our a'priori expectation by bearing a positive sign. This may not be unconnected to the fact that most exporters depend on bank loans for which the rate of interest may not really affect their determination to export but rather affects the quantity to be exported.

Diagnostics Tests

L.M Test

Diagnostic test is carried out using the LM test to ascertain if there is the existence of serial correlation in the model. From the table below, all the probabilities are greater than 5% critical value (0.05), hence the model does not serially correlate confirming that the model is not a spurious model.

Table 7: Residual Serial Correlation LM Tests results

Lags	LM-stat	Prob
1	7.696751	0.9574
2	10.87627	0.8171
3	18.65297	0.2871

Source: Author's Computation using E-views 9

Variance Decomposition (VD)

From table 8 below, the variance decomposition (VD) for 1-year to 10-year forecast period is applied in this study. This will show us the extent to which variables are dependent on each other as it provides information about the relative importance of each random innovation in affecting the variables in the model during the forecast horizon. Variance decomposition in this case indicates the amount of information each variable contributes to the other variables in the autoregression. It therefore determines how much of the forecast error variance of each of the variables can be explained by exogenous shocks to the other variables. From the 10-year forecast horizon below, Non-Oil export shocks contribute 59% of the forecast variance. Real exchange rate, trade openness and interest rate shocks explain 7%, 20% and 14% respectively of the forecast error variance of Non-Oil export.

Table 8: Variance Decomposition (VD) Analysis Results

Period	S.E	D(Log(ExpNoil))	D(Log(Rexr))	D(Log(Topen))	D(Log(Int))
1	0.460476	100.0000	0.000000	0.000000	0.000000
2	0.481767	93.44714	0.637695	2.261016	3.654147
3	0.533183	82.59632	1.395017	2.773689	13.23497
4	0.596347	68.83673	1.361144	19.14085	10.66128
5	0.614382	64.96220	2.415483	20.70265	11.91967
6	0.634852	62.08896	6.515293	19.61929	11.77647
7	0.642333	60.74026	7.130914	20.59492	11.53390
8	0.660431	60.13866	7.319867	19.49868	13.04279
9	0.664915	59.33408	7.234670	20.53002	12.90123
10	0.670632	58.82291	7.152457	20.18194	13.84270

Source: Author's Computation using E-views 9

Impulse response Functions (IRF) Test Result

This allows us to study the dynamic effects of a particular variable's shock on the other variables that are included in the same model. From figure 1 below, for every negative shock on trade openness, Non-Oil exports responds positively and vice versa.

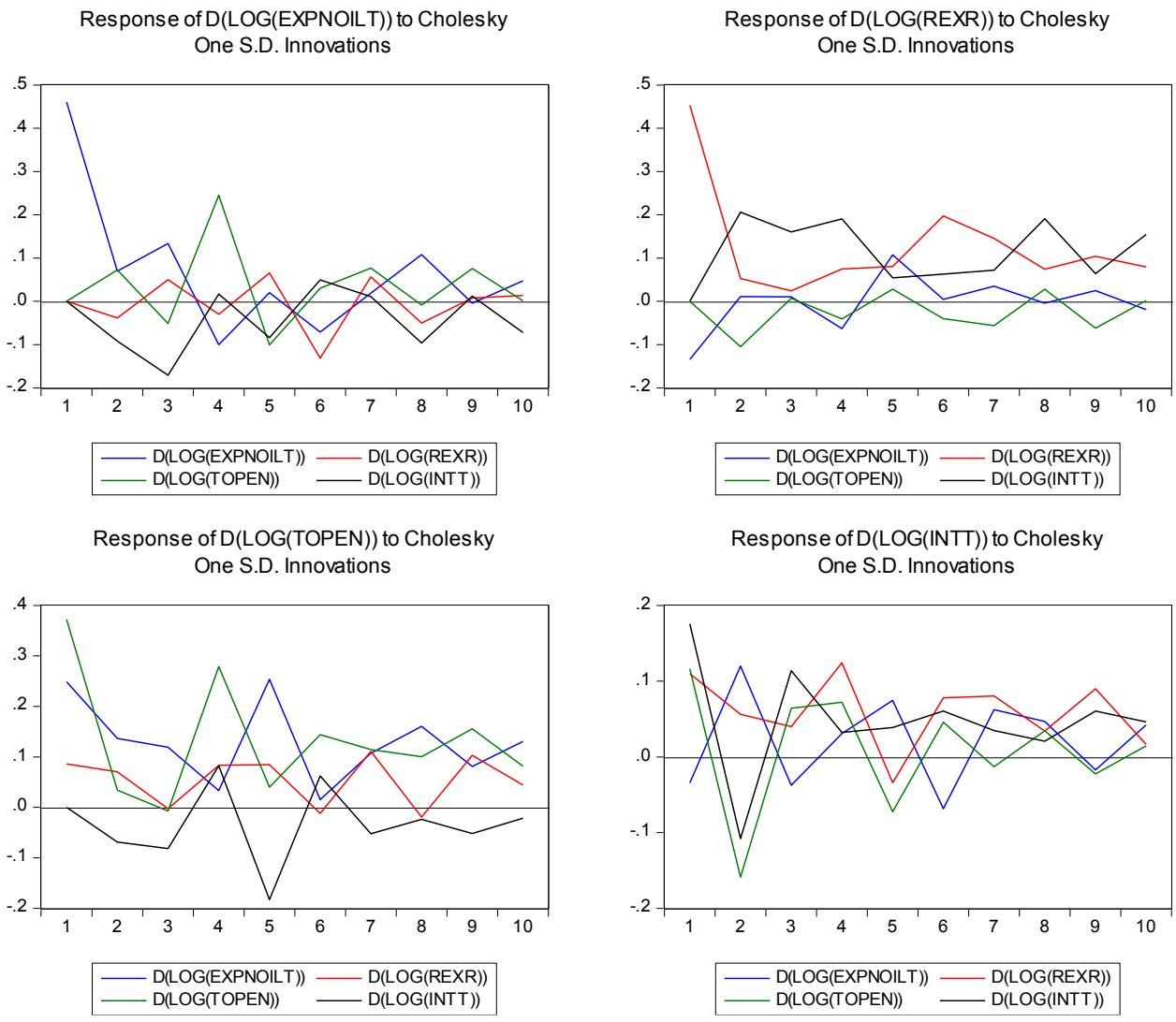

Fig. 1: Impulse Response Functions (IRF) Results

Policy Implications

From the analyses made in this study, evidence of both short-run and long-run relationship among the variables abides. The sign and magnitude of real exchange rate impact on non-oil export within the period under the study is not far-fetched. This can be attributed to the fact that Nigeria's non-oil exports are inelastic in supply and so, cannot respond to changes in exchange rate in the short-run in addition to the high volatility of exchange rate which is as a result of the instability in the foreign exchange market. This result is consistent with the findings of Imoughele and Ismaila (2015) who examine the impact of exchange rate on non-oil export in Nigeria using time series data from 1986 to 2013, and found that exchange rate depreciation has no robust effect on non-oil export in Nigeria.

The non-oil exports still play very important role in Nigeria's economy even though since the late 1970's Nigeria's exports is determined by oil exports. Therefore the policy direction should be to further strengthen the non-oil sector as it has a more than enough potential of getting Nigeria out of the present unemployment crises and further increase its economic growth rate. Increased financial and technical support at lower interest rates should be extended to the players in the non-oil sector, especially manufacturing to further strengthen them to international competitiveness.

Furthermore, the high positive response of trade openness to non-oil export has exposed the fact that the world is now a global village. However, local industries should be protected using tariffs and other incentives to discourage indiscriminate dumping of goods into the Nigerian markets. However, the spectacle of non-oil sector must be broadened to include human capital development through youth skill acquisition especially technical and professional skills. It is a viable option to earn

foreign exchange in this information age and also reduce youth unemployment and restiveness.

Conclusion and Recommendations

We have been able to empirically investigate the impact of real exchange rate on Nigeria's non-oil exports using time series data from 1975 – 2017 based on the vector error correction method. All the variables were found to be stationary at I(1) and existence of cointegration among the variables was confirmed. The result suggests the existence of a longrun but negative relationship between trade openness, interest rate and non-oil export respectively. It also suggested a longrun negative relationship between non-oil export and real exchange rate.

Therefore it is recommended that there is the need for efforts geared towards the development of Nigeria's non-oil export to widen the revenue base of the country. Motivation of local firms in the non-oil export sector by government is key. Provision of enabling environment that will encourage, attract and sustain investments should be in place while the promotion of non-primary exports – manufactured goods, processed agricultural products should be made a priority. Policy makers should ensure and encourage exports in the sub-regional context by harnessing the country's strengths in the region based on regional economic integration. The central bank of Nigeria should continue to pursue the full deregulation of the exchange rate.

References

Abu B.T. (2010).Real exchange rate behaviour and economic growth: Evidence from Sierra Leone. *South African Journal of Economic and Management Sciences 13(1). 8-25.*

Adel, .S.M. (2015). Effects of oil and non-oil exports on the economic growth of Syria. *Academic Journal of Economic Studies, 1(2). 69-78.*

Adeniran, J.O; Yusuf, S.A. & Adeyemi, O.A. (2014). The impact of exchange rate fluctuations on the Nigerian economic growth: An empirical investigation. *International Journal of Academic Research in Business and Social Sciences, 4(8)*

Akinmoladun, O. (1990). An appraisal of foreign exchange management in Nigeria since the introduction of the Structural Adjustment Programme. *Proceedings of the 1990 one–day seminar published by the Nigerian Economic Society, pp. 29-69*.

Central Bank of Nigeria (2016) *Annual report and financial statement for the year ended 31st December*. Abuja: Central Bank of Nigeria.

Central Bank of Nigeria (2015) Statistical Bulletin. Abuja: Central Bank of Nigeria.

Copeland, L., 1989. *Exchange rates and international finance, University of Manchester Institute of Science and Technology, Wokingham, England:* Addison-Wesley publishing company Inc.

Chukuigwe E. C. and Abili I. D. (2008) An econometric Analysis of The Impact of Monetary and Fiscal Policies on Non-Oil Exports in Nigeria: 1974-2003. *African Economic and Business Review*, Vol.6, No.2

Danson, .M, Ganesh P. P, and Moses .P. (2012). The Impact of Real Exchange Rate Volatility on Economic Growth: Kenyan Evidence. *BEH – Business and Economic Horizons. Vol. 7(1).Pp.59-75*

Edmira .C. (2014). The Impact of Real Exchange Rate on Economic Growth in Albania. *Acta Universitatis Danubius. Economica 10(1)*

Enu, P., Havi, E.D.K. and Hagan, E. (2013). The Impact of Foreign Trade on Economic Growth in Ghana (1980 – 2012). *International Journal of Academic Research in Economics and Management Sciences, 2(5), Pp.174-191*.

Hosni, R. (2015). An Assessment of the Real Exchange Rate Misalignment in Egypt: A Structural VAR Approach. *Applied Economics and Finance 2(3).*

Imoughele, L. E. and Ismaila, M. (2015) The Impact of Exchange Rate on Nigeria Non-Oil Exports. *International Journal of Academic Research in Accounting, Finance and Management Sciences*. Vol. 5(1). pp. 190–198

Khaled .A. (2016). How Exchange Rate Influences a Country's Import and Export. *International Journal of Scientific and Engineering Research, 7(5)*

Khan, M. L., Mohammad, S. D. and Alamgir (2010) "The Sources of Real Exchange Rate Fluctuations in Pakistan". *European Journal of Social Sciences*, Vol. 14(1).

Kifle .W. and David .P. (2016). The Impact of the Real Exchange Rate Changes on Export Performance in Tanzania and Ethiopia. *African Development Bank Group, Working Paper Series, No.240.*

Lothian, J. and Taylor, M., 1997. Real exchange rate behavior. *Journal of International Money and Finance, Vol.116, No.6, pp.945-54*

Musibau H.O, Babatunde S.A, Halimah A.A and Hammed A.Y (2017). Exchange Rate Volatility and Non-Oil Exports In Nigeria: An empirical Investigation. *Journal of Global Economics 5(1). Pp1-5.*

Nwanne, T.F.L.(2014). Assessing The Relationship Between Diversification of Non-Oil Export Product and Rconomic Growth In Nigeria. *European Journal of Accounting and Finance Research, Vol.2 (10), pp. 136-146.*

Obadan M. I (1994). An Econometric Analysis of Rubber Export. *NCEMA Occasional Paper*.

Onayemi, S. O. and Akintoye, I. R. (2009) "Diversifying the Productive Base of Nigeria, an Econometric Approach to the Assessment of Non-Oil Export Promotion Strategies". *International Research Journal of Finance and Economics*. Issue 24.

PUNCH Newspaper – *24 th August, 2016 . 272 firms shut down in one year – MAN.*

Ray, S. (2011). Exploring Co integration and Causality between Foreign Trade and Economic Growth: Econometric Evidence from India. *International Journal of Contemporary Business Studies, Vol 2, No. 10, pp. 53 – 69*

Sakyi, D. (2011). Trade Openness, Foreign Aid and Economic Growth in Post Liberalisation Ghana: An application of ARDL bounds test. *Journal of Economics and International Finance*, 3(3).

Stilianos .F. and Kyriacos .A. (2005). The Impact of the Real Exchange Rate Regime on Exports: Evidence from the European Monetary System. *Journal of Economic Integration, 20(3).*

Sunanda .O. and Hemantha K.J.E. (2017). The Impact of Real Exchange Rate and Its Misalignment on Export Performance in Sri-Lanka. *Central Bank of Sri-Lanka-Staff Studies; 46(1&2)*

Thirlwall, A. P. (2000). Trade Liberalisation and Economic Growth: Theory and Evidence. *The African Development Bank Economic Research Papers*. No. 63, Abidjan.

Todaro, M. P. (2000). *International Business: Environments and Operations 9th ed*. Prentice Hall.

Trefler, Daniel & Zhu, Susan Chun (2000). Beyond the Algebra of Explanation: HOV for The Technology Age. *American Economic Review, 90(2):145-149.*

Udaba, S.I. (2002). *Economic Development, Growth and Planning.* Linco Press, Enugu, Nigeria.

Ude, D.K and Agodi, J.E. (2014). Investigation of The Impact of Non-Oil revenue on Economic Growth in Nigeria. *International Journal of science and resrrach, 3(11). Pp.271-277.*

Umar, M.B, Adewusi, O.A & Aminu, U. (2019). An Analysis of The Impact of Purchasing Power Parity (PPP) on Non-Oil Exports in Nigeria. *Dutse Journal of Economics and Development Studies (DUJEDS), Vol. 7(2). Pp 48-56.*