Iran. Econ. Rev. Vol. 22, No. 1, 2018. pp. 295-314

Time Series Analysis of Non-Oil Export Demand and Economic Performance in Nigeria

Adesoye, A. Bolaji[1], Adelowokan Oluwaseyi Adedayo[2], Alimi, Y. Olorunfemi*[3]

Received: February 27, 2017 Accepted: July 11, 2017

Abstract

This study examines the impact of non-oil export demand on economic performance in Nigeria using annual time series data between 1975 and 2013. The study tests for the unit root and co-integration to determine the time series properties of our variables before using Vector Error Correction (VEC) model for both short- and long- run estimates and possible policy inferences. The results show that non-oil export has a positive impact on economic growth suggesting that policies formulated towards improving the export of non-oil commodities in Nigeria will directly boost output growth of other sectors such as agriculture, manufacturing, services etc. The findings also reveal a uni-causal link from export to growth in Nigeria, thereby, supporting the export-led growth hypothesis. The policy implication of this finding is that failure on the part of policy makers to increase non-oil exports will directly hurt the economy of Nigeria. This is also consistent with the findings in the short-run. It was also found that capital and labor have direct and significant impact on output growth.

Keywords: Non-Oil Export Commodities, Capital, Labor, Government Spending, Output Growth.
JEL Classification: C32, E64, F11, F14, F43.

1. Introduction

The role of export on the economic growth and development of a nation cannot be over emphasized. In Africa, trade performance as a

1. Department of Economics, Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria (adesoye.bolaji@oouagoiwoye.edu.ng).
2. Department of Economics, Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria (adelowokan.seyi@oouagoiwoye.edu.ng).
3. Department of Economics, University of Lagos, Akoka, Yaba, Lagos state, Nigeria (Corresponding Author: 129081045@spgs.unilag.edu.ng).

whole was not immune to developments in the global economy (Africa's Pulse, 2013). For the first two quarters of 2012, export growth in the region was at a robust annualized pace of 20.5 percent and 52 percent respectively (World Development Indicator, 2014). Following the slump in global economic activity in the third quarter, export growth in Sub-Saharan Africa contracted at a 33.8 percent annualized pace (WDI, 2014). The Central Bank of Nigeria (CBN, 2013) also posited that African exports represent an estimate of 3.2% of total world exports. According to the International Monetary Fund's World Economic Outlook, the total Gross Domestic Product for all African countries amounted to about $5.2trillion in 2013. The world as a whole has benefitted from exchange of goods and services, and the speed at which the effect of global village is spreading is fast day by day and no nation can afford to be behind if such a nation is to maintain acceptable rate of growth and development (Peter, 2002). With liberalization of the global market, export-led growth strategy has become a major focus for many African countries including Nigeria.

The performance of the non-oil export sector in the past three decades leaves little or nothing to be desired, in spite of the efforts to promote non-oil exports in Nigeria. The assessment of the trend and patterns of activities in the non-oil sector of Nigeria revealed that despite the various policies, strategies and reform programs, the contributions of the sub-sectors of this sector have been dismal, disheartening and below its full potential and the share of non-oil export in the country's total export earnings has remained very low (Abogan, Akinola & Baruwa, 2014). Nigeria's export used to be predominantly non-oil commodities with agricultural commodities accounting for the lion's share and has been contributing greatly to the growth of the economy since independence. However, it fell from 48% in 1970 to 20.6% in 1980 and a slight increase to 23.3% in 2005 (CBN, 2009). The reason for the large differences is that Nigeria's exports are dominated majorly by oil (crude-petroleum) export and little on primary agricultural products. More so, most of the agricultural products are exported in primary form and low linkage with the manufacturing sector.

Furthermore, it is noteworthy that despite the policy thrust to widen

the non-oil export base, there are little empirical studies on its impact on economic growth and no satisfactory result from previous attempt. This study attempts to examine the effects of non-oil export on Nigerian growth rate as the country has been trying to shift from import dependent economy to export promotion economy as part of the Structural Adjustment Program (SAP) and programs of the present government. The other parts of the paper are divided into four sections. Part two of this study discusses the literature review, and the third part presents the methodology of the study. The fourth section presents the data analysis, results and discussion, and the last section discusses the conclusion and policy options.

2. Literature Review

The theoretical foundation of this study lies on the export-led growth. According to Idowu (2005), export-led-growth (ELG) hypothesis stipulates the expansion and promotion of exports as an important factor in nurturing long run economic growth. This hypothesis has been put forward as the rationale for an efficient alternative to import substitution, which is an inward orientation strategy of development. Previously, developing countries had adapted inward oriented development strategies for enhancing industrial development that would translate into growth and development, which is designed to replace imported manufactures and merchandise with domestically produced merchandise in order to conserve foreign exchange and promote employment. Several studies have been conducted to verify if truly export-led growth hypothesis exist or not. Abou-Stait (2005) examines the Export Led Growth (ELG) paradigm for Egypt between 1977 and 2003 using the Augmented Dickey-Fuller unit root test, Granger causality test, vector auto regression (VAR) and the impulse response function (IRF). The study found out that exports, imports and GDP are not cointegrated but export growth granger cause GDP growth with shock to exports leading to significant response in GDP growth.

Awokuse (2007) employed the multivariate cointegrated vector autoregressive method to examine the impact of export and import expansion on growth in three transition economies namely Bulgaria, Czech Republic and Poland. The study found that the exclusion of

imports and the singular focus of many past studies on just the role of export as the engine of growth may be misleading. Hence, the author concludes that the role of imports to growth has to be emphasized in these countries. Also, Mahdavi and Fatemi (2007) employed the ordinary least squares method to investigate the impact of non-oil exports on economic growth in Iran from 1959 to 2003. The study found a weak impact of non-oil export on gross domestic product (GDP) and also low factor productivity in export sector relative to non-export sector and hereby recommended that government should not depend largely on oil and there should be a reasonable plan towards non-oil export promotion.

Kónya (2006) employs the Granger Causality test and the Seemingly Unrelated Regression (SUR) estimator to investigate the possibility of granger causality between the logarithm of real export and real GDP in 24 OECD countries from 1960 to 1997. The findings indicate uni-directional causality from export to GDP in Belgium, Demark, Iceland, Ireland, New-Zealand, Italy, Spain and Sweden. Awokuse (2007) uses the multivariate cointegrated Vector Auto-Regressive method to examine the impact of export and import expansion on growth in three transition economies, Bulgaria, Czech Republic and Poland. The study concludes that the exclusion of imports and the singular focus of many past studies on just the role of export as the engine of growth may be misleading.

Using the Cointegration Analysis and the Causality test, Pistoresi and Rinaldi (2012) investigate the relationship between real export, imports and GDP in Italy from 1863 to 2004. The result shows that the variables considered move together in the long run but the direction of causality varies over time. This indicates that exports alone are not the only driver of economic growth. Okodua and Ewetan (2013) employed Cointegration test, Grange Causality test and the Vector Autoregressive model to examine the applicability of the Export-Led Growth hypothesis for Nigeria in 1970 to 2010. The result indicates a uni-directional causality running from economic growth to export in Nigeria, rejecting the export-led growth hypothesis. Abogan, Akinola and Baruwa (2014) employed the Johansen Cointegration test, the Error Correction Mechanism and the Ordinary Least Squares (OLS) techniques to investigate the impact of non-oil export and economic

growth in Nigeria between 1980 and 2010. The study found that the impact of non-oil export on the economic growth was moderate i.e. 26% for the years of study.

Nwachuckwu (2014) used the Ordinary Least Squares (OLS) technique to investigate the impact of non-oil export strategies on economic growth in Nigeria between 1970 and 2010. The result indicated that infrastructure has a negative relationship with GDP while credits from commercial banks and tariffs have a positive relationship with GDP.

Jafari, Bakhshi-Dastjerdi and Moosavi-Mohseni (2014) estimate the effect of increase in Iran's non-oil exports on its economic growth as well as sectoral outputs. Using the Computable General Equilibrium (CGE) model, they found that 20.3% of targeted economic growth rate would be achieved by encouraging a 6% growth in exports, i.e. there is a positive and notable impact of increase in exports on sectoral outputs as well as economic growth. Michael (2014) employed the Kendall's taub Correlation Coefficient to examine the performance of non-oil export on the growth of the Nigerian economy. The study found a positive statistically insignificant relationship (0.025) between changes in both variables necessitating an inquiry into non-oil export financing. Ijirshar (2015) employed the Johansen Cointegration test and the Error Correction Mechanism (ECM) to analyze the effect of agricultural exports on economic growth in Nigeria. The study found that agricultural export contributes positively to the Nigerian economy.

Igwe, Edeh and Ukpere (2015) adopted the Export-Led Hypothesis and employed the Johansen Cointegration, Vector Error Correction model Granger Causality test to examine the impact of non-oil export on economic growth in Nigeria between 1981 and 2012. The Vector Error Correction analysis reveals that in both short and long-run, non-oil export determines economic growth. The Granger Causality test shows that there is no causality relationship between non-oil export and economic growth. Mohsen (2015) employed the Johansen Cointegration test, Granger Causality test, Impulse Response function (IRF) and Variance Decomposition (VD) analysis to investigate the role of oil and non-oil exports in the Syrian economy from 1975-2010. The study found a significant impact of oil-export on the gross

domestic product.

3. Methodology

The study relies on the supply side perspective of growth theory to examine the contribution of non-oil exports to economic growth. Following Solow (1975), it is assumed that output (Y) depends positively on both capitals (K) and Labor (L). Thus the production function is stated as:

$$Y = f(K, L) \tag{3.1}$$

Where; Y = Aggregate Real Output /Gross Domestic Product (GDP), K = Stock of Capital, L = Stock of Labor.

The aim of this study is to examine the impact of non-oil exports on economic growth in Nigeria. Therefore, the study augments the above traditional neo-classical production functions with non-oil export as additional input with government expenditure and exchange rate as control variables. Including non-oil exports as an additional variable is based on the claim of the export-led growth hypothesis that export drives growth (Faoud, 2005; Igwe et al., 2015). Therefore, equation (3.1) becomes:

$$Y = f(K, L, NX, GEX, ER) \tag{3.2}$$

Rewriting the model in a linear form, we obtain:

$$GDP = \alpha_0 + \alpha_1 K_t + \alpha_2 L_t + \alpha_3 NX_t + \alpha_4 GEX_t + \alpha_5 ER_t + \mu_t \tag{3.3}$$

Where; *GDP* = gross domestic product, *K* = stock of capital, *L* = stock of labor, *NX* = non-oil export, *GEX* = government expenditure, *ER* = exchange rate, $\alpha_0 \alpha_{1-5}$ = parameters, *t* = time and μ = error term.

A positive relationship is expected between non-oil export and GDP because more exports directly increases GDP since it is a component in the income identity. Specifically, more exports imply more income to households and firms which allows more investment, more consumption (both private and public). All these lead to increase in GDP. Labor and capital are considered as factor inputs of growth;

therefore, both have direct relationship with output. Moreover, government spending is considered as consumption of economic activities produced by different economic agents, leading to increase in overall consumption. The purchases by government lead to positive changes in investment, which invariably enhance output growth, hence, a positive relationship with GDP. Exchange rate also has a direct relationship with GDP as its depreciation induces foreign investment in terms of capital and labor, which drive growth. Depreciation makes a country's competitiveness leading to more exports and economic growth. These relationships are mathematically represented as thus:

$\alpha_1 > 0, \alpha_2 > 0, \alpha_3 > 0, \alpha_4 > 0$ and $\alpha_5 > 0$.

The study used the Augment Dickey test to verify the stationarity level of the data, while the Johansen cointegration test to examine the long-run relationship between non-oil export and economic performance. After establishing that there is long-run relationship between the indicators, the vector error correction model (VECM) was used to estimate both the long-run and short-run estimates of equation (3.3). The causality test was also conducted using the Granger causality test. This study used annual time series data for the period of 39 years (1975-2013). The study used secondary data published by the Central Bank of Nigeria (CBN) statistical bulletin, volume 26, 2015.

4. Data Analysis and Interpretation

4.1 Trend Analysis

This section of the study accesses the trend of non-oil exports and economic growth in Nigeria between fifteen years decade after independence till 2013. This enables to determine causal relationship among non-oil exports, other macroeconomic indicators (capital, labor, government expenditure and exchange rate), and economic growth proxy as growth rate of gross domestic product (GDP). The time series of these variables are plotted against GDP as shown in Figures 1, 2, 3, 4 and 5 respectively.

Figure 1: Growth Rate of GDP and Non-Oil Exports

Figure 1 above revealed the time series plot of non-oil exports and GDP in growth rate between 1975 and 2013. The Figures revealed that during the post-independence era till the end of structural adjustment program (SAP) to the global financial era, the trends fluctuate over the periods. The figure indicates that Nigeria recorded three peaks of non-oil exports in 1987, 1995 and 2002 with a growth percentage of 289.7, 331.8 and 238.2 respectively. The highest of all the peaks in 1995 also reported a corresponding growth in output at 114.9%. It also indicates that the Nigeria economy growth in puzzle form with fundamental

Figure 2: Growth of GDP and Capital

strong up and down spike at a slow rate. This indicates that non-oil exports is a significant driver of economic growth in Nigeria across the major considered economic eras.

Efforts made during the Structural Adjustment program (SAP) era to diversify Nigerian export sector by promoting non-oil exports was actually felt in the subsequent years. However, there is evidenced that both series flows maintained a zigzag trend throughout the periods under study. Figure 2 reports the time series plot of GDP growth and capital investment growth. The plot reveals a significant relationship between the capital and gross domestic product. The flow of capital growth shows that its current value depends largely on the previous output growth. Capital investment falls over a large substantial year under review. The highest growth value of capital is not up to 50%, whereas, output growth peaked 114.9%. Over this period, capital investment declines with a negative growth for 22 years.

Figure 3: Growth if GDP and Labour Force

Figure 3 shows the time series plot of GDP growth and labor force between 1975 and 2013. Labor force growth indicates that to some extent, it explains the growth movement of GDP growth. More so, the movement of government expenditure growth and GDP growth was reported in Figure 4. Nigerian economy is largely dependent on

government expenditure which crowds out private investment as it was depicted in Figure 2. Government expenditure recorded highest growth in 2002 with over 900% in nominal value during the Fourth republic under the regime of President Olusegun Obasanjo. There was high spending rate during this period as the President claimed that he wants to restore the lost glory of Nigeria within the international community. As at this time before the country secure debt pardon from Paris and London club amounting to some 18 billion dollars, the country was spending 3 billion dollars every year to pay interest on debts (CBN, 2002).

Figure 4: Growth if GDP and Government Expenditure

Figure 5 reveals the plot of GDP growth and exchange rate in Nigeria flow approximately together. It shows that sequel to the introduction of floating exchange rate system in mid-1986, Nigerian Naira depreciated against the major currency, the United States dollar. The average exchange rate over the period 1975-1985 was ₦0.67 = US$1.00. The rate depreciated to an average of ₦9.91, ₦17.30 and ₦22.05 = US$1.00 in 1991, 1992 and 1993 respectively. The exchange rate further depreciated to an average of ₦111.70, ₦126.26 and ₦134.04 = US$1.00 in 20001, 2002 and 2003 respectively. However, the exchange rate experienced little appreciation over the period 2004 and 2008 following the various monetary policy measures introduced by the monetary authorities. These measures include

among others the banking sector consolidation in 2004, strengthening of the Dutch Auction Market, and narrowing of the premium between the DAS, Bureau De Change and Inter-Bank rates and introduction of the Monetary Policy Rate as a replacement to Minimum Rediscount Rate.

Figure 5: GDP Growth and Exchange Rate

4.2 Unit Root Test

The stationary test results of the incorporated times series variables in our regression model were presented in Table 1 using the Augmented Dickey-Fuller (ADF) unit-root test.

Table 1: Unit Root Table Using ADF

Variables	ADF Statistics	Critical Value	P-Value	Order of Integration
logGDP	-4.701931	-4.226815	0.0030	I(1)
logK	-6.729131	-4.234972	0.0000	I(1)
logL	-4.097601	-3.536601	0.0137	I(1)
logNX	-5.030913	-4.226815	0.0012	I(1)
logGEX	-6.518718	-4.226815	0.0000	I(1)
logER	-4.043880	-3.5333083	0.0154	I(0)

Source: Authors' computation (2017)

The test results indicate that exchange rate (ER) was found to reject the null hypothesis "*it has unit root*" at level. This implies that these

series are stationary at levels. Thus, the series is integrated of order zero i.e. I(0). However, gross domestic product (GDP), capital (K), labour force (L), non-oil export (NX) and government expenditure (GEX) are not stationary at level but integrated at order one [I(1)]. Therefore, they were found not to reject the null hypothesis "*no stationary*" at level but after several iterations based on the number of lag length and differencing, the series were found to reject the null hypothesis at first difference. This indicates that the first-difference of those series is *mean reverting* and stationary.

Table 2: Cointegration Test Results

Johansen Cointegration Test

Variables: LOGGDP LOGK LOGL LOGNX LOGGEX LOGER

Lags interval (in first differences): 1 to 4

Trend assumption: Linear deterministic trend

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob.**
none *	144.4070	95.7537	0.0000
at most 1 *	82.27650	69.8189	0.0037
at most 2	34.59729	47.8561	0.4694
at most 3	19.13174	29.7971	0.4835
at most 4	5.356297	15.4947	0.7699
at most 5	0.326365	3.8415	0.5678

* indicates 2 cointegrating equations at 5% level and rejection of the hypothesis at 5% level.
** MacKinnon-Haug-Michelis (1999) p-values.
Source: Authors' Computation (2017)

4.3 Cointegration Test

A cointegration test was performed using the Johansen (1988) approach to find out the existence or inexistence of a long-run relationship among the variables employed for this study and the results were presented in Table 2. The results above indicate two (2) cointegrating equations since the Trace Statistic (144.4070 and 82.27650) are greater that the Critical Values (95.75366 and 69.81889) at 5% significance level respectively. This indicates that

there exist two cointegrating vector equations among the considered variables in the order, gross domestic product (GDP), capital (K), labor force (L), non-oil export (NX), government expenditure (GEX) and exchange rate (ER). This implies long-run relationships between non-oil exports and economic growth in Nigeria during 1975-2013. This calls for estimation of vector error correction model (VECM) which captures both the long-run and short-run information.

4.4 Granger Causality Test

Having established the long-run relationship among the variables, the objective of this section is to determine the direction of causality between the dependent variable and the independent variables. The Pair-wise Granger Causality test result is presented in Table 3 below.

Table 3: Pairwise Granger Causality Tests

Sample: 1975 – 2013			**Lags: 2**
Null Hypothesis:	Obs	F-Statistic	Prob.
LOGER does not Granger Cause LOGGDP	37	11.7861	0.0001
LOGGDP does not Granger Cause LOGER		0.64731	0.5302
LOGK does not Granger Cause LOGGDP	37	1.25714	0.2981
LOGGDP does not Granger Cause LOGK		0.25038	0.7800
LOGL does not Granger Cause LOGGDP	37	3.35118	0.0477
LOGGDP does not Granger Cause LOGL		0.13520	0.8740
LOGNX does not Granger Cause LOGGDP	37	7.76400	0.0018
LOGGDP does not Granger Cause LOGNX		0.24058	0.7876
LOGGEX does not Granger Cause LOGGDP	37	0.04686	0.9543
LOGGDP does not Granger Cause LOGGEX		2.72174	0.0810

Source: Authors' computation (2017)

The granger causality test results in above Table 3 indicate that at lag 2 and 5% significance level, the null hypotheses of "LOGER does not Granger cause LOGGDP", "LOGL does not Granger cause LOGGDP" and "LOGNX does not Granger cause LOGGDP" rejected. However, the null hypothesis of "LOGGDP does not

Granger cause LOGGEX" was rejected at 10% significance level. This indicates a unidirectional relationship from gross domestic product to exchange rate; labor to gross domestic product; non-oil export to gross domestic product; and gross domestic product to government expenditure. However, there is no causal relationship between capital and gross domestic product. And, none of the economic growth indicators report a bi-causal relationship.

Other relationship between the predictors reveals a uni-directional relationship from non-oil export to exchange rate, non-oil export to government expenditure, and non-oil export to labor. Additionally, there is no causality relationship between: capital and exchange rate, labor and exchange rate, capital and gross domestic product, capital and government expenditure, labor and government expenditure, labor and capital, non-oil export and capital. Nonetheless, bi-directional relationships exist between government expenditure and exchange rate.

4.5 Vector Error Correction Estimates

The long-run estimates from the VEC model are shown on Table 4 and the short-run estimates are presented on Table 5.

Table 4: Long-Run Cointegrating Estimates

Cointegrating Equation 1: gdp			
	Coefficient	**Std. Error**	**t-Statistics**
k	0.050547	(0.05351)	[0.94466]
l	0.124436	(0.05493)	[2.26520]**
nx	0.016694	(0.04754)	[0.35116]
gex	-0.858802	(0.06536)	[-13.1392]*
er	-0.317548	(0.04504)	[-7.04962]*
c	-3.373493		

[see] results appendix for details
* denotes significance at 1%; ** denotes significance at 5%
Source*:* Authors' Computation (2017)

The long-run estimates in Table 4 reveals that capital (K), labor (L) and non-oil export (NX) have positive relationship with economic

growth in Nigeria, and all these effects follow theoretical expectation. In magnitude, it reveals that a 10% change in capital (K), labor (L) and non-oil export (NX) enhance growth by 0.51%, 1.2% and 0.17% respectively. Among the three factor inputs, only labor was significant at 5% significance level. Government expenditure (GEX) and exchange rate (ER) have negative significant impact on economic growth, which negates a'priori expectation. Thus, GDP deteriorates by 8.5% and 3.2% due to 10% changes in government expenditure (GEX) and exchange rate (ER) respectively.

For the second part of the estimated VEC model, the short-run dynamic relationship between non-oil export and economic growth in Nigeria are presented in Table 5. The reported estimates indicates that first and second lags of changes in gross domestic product exert significant positive and negative effect on current GDP growth respectively at 10% significance level. Table 5 below reveals the short-run relationship between non-oil exports, other macroeconomic variables and economic growth in Nigeria.

Table 5: Short-run Cointegrating Estimates

Standard errors in ( ) & t-statistics in [ ]

	Δ **gdp**	$\Delta_{\mathbf{k}}$	$\Delta_{\mathbf{l}}$	$\Delta_{\mathbf{nx}}$	$\Delta_{\mathbf{gex}}$	Δ **er**
lag 1	0.319***	0.229***	0.5997***	0.164**	-0.341**	-0.272**
	(0.215)	(0.155)	(0.321)	(0.074)	(0.147)	(0.102)
	[1.482]	[1.479]	[1.867]	[2.233]	[-2.325]	[-2.679]
lag 2	-0.310***	-0.055	0.177	0.160**	-0.126	0.450*
	(0.183)	(0.114)	(0.291)	(0.082)	(0.101)	(0.098)
	[-1.692]	[-0.481]	[0.609]	[1.954]	[-1.254]	[4.596]

	Coeff.	**Std. Error**	**t-statistic**
C	0.156*	(0.057)	[2.727]
ECT	-0.828*	(0.246)	[-3.362]

R-squared	0.684	**Adj. R-squared**	0.497	**S.E. equ.** 0.121	**F-stat.**	3.659*

[see] results appendix for details

* denotes significance at 1%; ** denotes significance at 5%; *** denotes significance at 10%.

Source: Authors Computation (2017)

The results also indicate that the first and second lags of changes in non-oil exports exert significant positive effects on the current GDP growth respectively at 5% significance level. In magnitude, a 10% changes in the first and second lags of changes in non-oil exports enhances the current output growth by 1.64% and 1.60% respectively. However, the distortion correction rate or non-oil export adjustment rate stood at 82.8% and found significant at 0.01 critical levels as indicated by the error correction term (ECT) estimates. This implies that 82.8% of any distortion in non-oil export growth was corrected in the first year back to its long-run equilibrium.

5. Conclusion

The study examined the contribution of non-oil export to economic growth in Nigeria within 1975-2013. The stationarity tests of all the time series variables are not stationary at levels except for exchange rate. This indicates that the time series variables trend with time. The result also confirm the findings by Okodua and Ewetan (2013), Abogan, Akinola and Baruwa (2014), Michael (2014), Nwachuckwu (2014), Igwe et al. (2015) and Ijirshar (2015) etc. that most macroeconomic time series in Nigeria exhibited a non-stationary properties. The co-integration result using the Johansen test indicated a long-run relationship between non-oil export and economic growth in Nigeria. This corroborated the findings of studies such as Pistoresi and Rinaldi (2012), Okodua and Ewetan (2013), Abogan, Akinola and Baruwa (2014) etc. Drawing from the co-integration test, there exist a long-run relationship between non-oil export and economic growth in Nigeria.

The findings also indicate a uni-directional causality running from export to growth in Nigeria, thereby, supporting the export-led growth hypothesis. This is in line with the finding by Abou-Stait (2005) conducted for Egypt. However, it negates the findings of Okodua and Ewetan (2013) and Igwe et al. (2015) of the non-existence of ELG hypothesis in Nigeria. The VECM results indicated that non-oil export has a positive impact on economic growth suggesting that policies that are aimed at improving the export of non-oil commodities in Nigeria will directly boost output growth of other sectors such as agriculture, manufacturing, services etc. This supports the findings of Pistoresi

and Rinaldi (2012), Abogan, Akinola and Baruwa (2014), Michael (2014), Jafari et al. (2014) etc. The implication of this finding is that failure on the part of policy makers to increase non-oil exports will directly hurt the economy of Nigeria. It is also consistent with the findings in the short-run.

The study also reveals a significant positive relationship between labor force and economic growth in Nigeria. It however supported the policies of harnessing the abundant labor supply in Nigeria to boost output growth. Capital investment also report similar positive impact on output. This is quite consistent with theoretical prediction and is interestingly, a reassertion of the role of investment as a traditional source of economic growth in every economy. Government expenditure and exchange rate have significant negative impact on growth in Nigeria. This is not consistent with theoretical expectation. The negative impact of government expenditure support the notion that government spending crowds out private investment.

This study concluded that non-oil export have significant effect on output growth in Nigeria. The application of the VECM technique in investigating the research problem has proved quite intuitive and immensely suitable. The governments of Nigeria should embark on policies that facilitate non-oil exports of local industries by providing and ensuring enabling environment for ease production and distribution as their activities is germane to output growth in Nigeria. Also, the government should strengthen her fiscal policies in order to stabilize exchange rate. Stable exchange rate would go a long way in enhancing output growth in Nigeria. In addition, they should put in place policies that will assist in the production of local industrial commodities to compete globally since the performance of these industries remains insignificant due to uncompetitive nature of their products. Assistances such as tax relief, subsidies, research and development etc. should be given to local exporters. This will go a long way in cushioning the effects of high cost of production over time.

References

Abogan, O., Akinola, E., & Baruwa, O. (2014). Non-Oil Export and Economic Growth in Nigeria. *Journal of Research in Economics and International Finance, 3*(1), 1–11.

Abou-Stait, F. (2005). Are Exports the Engine of Economic Growth? An Application of Cointegration and Causality Analysis for Egypt, 1977 – 2003. *Economic Research Working Paper Series*, Retrieved from https://ideas.repec.org/p/adb/adbwps/211.html.

Awokuse, T. O. (2007). Causality between Exports, Imports, and economic Growth: Evidence from Transition Economies. *Economics Letters, 94*(3), 389–395.

Central Bank of Nigeria and Nigeria Export and Import Bank. (1999). A Diagnostic Study of the Nigerian Non-Oil Export Sector: Findings and Recommendations. Retrieved from http://library.cbn.gov.ng:8088/cgi-bin/koha/opac-detail.pl?biblionumber=4169&shelfbrowse_itemnumber=6760" http://library.cbn.gov.ng:8088/cgi-bin/koha/opac-detail.pl?biblionumber=4169&shelfbrowse_itemnumber=6760#.

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the Estimators for Autoregressive Time Series with a Unit Root. *Journal of the American Statistical Association, 74*(366a), 427–431.

Asteriou, D., & Hall, S. G. (2007). *Applied Econometrics*. China: Palgrave Macmillan.

Engle, R. F., & Granger, C. W. (1987). Co-Integration and Error Correction: Representation, Estimation, and Testing. *Econometrica: Journal of the Econometric Society, 55*(2), 251–276.

Engle, R. F., & Yoo, B. S. (1987). Forecasting and Testing in co-Integrated Systems. *Journal of Econometrics, 35*(1), 143–159.

Granger, C. W. (1969). Investigating Causal Relations by Econometric Models and Cross-Spectral Methods. *Econometrica: Journal of the Econometric Society, 37*, 424–438.

Granger, C. W. (1981). Some Properties of Time Series Data and Their Use in Econometric Model Specification. *Journal of Econometrics*, *16*(1), 121–130.

Gujarati, D. N., & Porter, D. C. (2013). *Basic Econometrics* (5th Ed.). New York: McGaw-Hill Companies.

Idowu, A. (2005). Export-led Growth (ELG). *Economic and Financial Review*, *43*(3), 31–37.

Igwe, A., Edeh, C. E., & Ukpere, W. I. (2015). Impact of Non-Oil Sector on Economic Growth: A Managerial Economic Perspective. *Problems and Perspectives in Management*, *13*(2), 170–182.

Ijirshar, V. U. (2015). The Empirical Analysis of Agricultural Exports and Economic Growth in Nigeria. *Journal of Development and Agricultural Economics*, *7*(3), 113–122.

Jafari, S., Bakhshi Dastjerdi, R., & Moosavi Mohseni, R. (2014). Studying the Effects of Non-Oil Exports on Targeted Economic Growth in Iranian 5th Development Plan: A Computable General Equilibrium Approach. *Iranian Journal of Economic Studies*, *3*(1), 111–130.

Johansen, S. (1988). Statistical Analysis of Cointegration Vectors. *Journal of Economic Dynamics and Control*, *12*(2), 231–254.

Kónya, L. (2006). Exports and Growth: Granger Causality Analysis on OECD Countries with a Panel Data Approach. *Economic Modelling*, *23*(6), 978–992.

Mahdavi, A., & Fatemi, M. (2007). An Investigation of the Impact of Non-Oil Exports on Economic Growth-Case of Iran. *Iranian Economic Review*, *12*(19), 37–59.

Michael, N. B. (2014). Growth in Nigeria's Non-Oil Export Finance and Non-Oil Export Performance: A Correlational Analysis. *International Journal of Business and Social Research*, *4*(2), 31–39.

Mohsen, A. S. (2015). Effects of Oil and Non-Oil Exports on the Economic Growth of Syria. *Academic Journal of Economic Studies*, *1*(2), 69–78.

Nwanchuckwu, P. (2014). The Impact of Non-Oil Export Strategies on Economic Growth in Nigeria. *Journal of Economics and Sustainable Development*, *5*, 24–33.

Okodua, H., & Ewetan, O. O. (2013). Econometric Analysis of Exports and Economic Growth in Nigeria. *Journal of Business Management and Applied Economics*, *2*(3), 1–14.

Olorunshola, K. (1996). Export-Led Growth in Economics Development: Lessons of Experience. *Central Bank of Nigeria Bullion, 20*(4), 51–61.

Pistoresi, B., & Rinaldi, A. (2012). Exports, Imports and Growth: New Evidence on Italy: 1863–2004. *Explorations in Economic History*, *49*(2), 241–254.

Rahmaddi, R., & Ichihashi, M. (2011). Exports and Economic Growth in Indonesia: A Causality Approach Based on Multi-Variate Error Correction Model. *Journal of International Development and Cooperation*, *27*(2), 53–73.

Saibu, O. M., Omoju, O., & Nwosa, P. I. (2012). Trade Openness and the Dynamics of Unemployment and Poverty Incidence in Nigeria: A Multivariate Cointegration Analysis. *Nigerian Journal of Economies and Social Studies, 54*, 367–388.