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Can Non-Oil Exports boost Agriculture Sector Performance in Nigeria? A Tale for Oil Independency

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Abstract

The study examines the effect of non-oil export on the agricultural sector performance in Nigerian economy using empirical evidence and modern research analysis. The bulk of non- oil export of Nigeria comes from agriculture and pre-processed products. Hence, non-oil export from perspective of efficiency-seeking indicates that non-oil export always aim at taking advantage of poor-efficient production condition and boost the productive edge of resources. There is a general believe that non-oil exports commodities has nothing to do with sectoral growth in Nigeria, this role is therefore the major focus of this study. Modern econometric analysis is used to validate if there is any relationship between non-oil export and sectoral performance, we also conducted unit root test to detect the risk of non stationarity of any of the variables involve in the model specified. Having tested for unit root, the paper also considers cointegration test and a parsimonious result of the least square estimate is presented. Lastly, a causality analysis of the relevant variables was undertaken in order to verify the relevance of non-oil export on growth in Nigeria. Interestingly, non-oil export commodities fail to enhance growth of the economy in recent findings, while agriculture, openness and exports promote growth in both the short and long run in our dear country.

1. Introduction

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 (2001), Goldstein and Pevehouse (2008), Gibson and Michael (1992), McCombie and Thirlwall (1994)). In this context there are some challenges for countries with natural resource abundance such as oil in comparison with other countries. The main point is that in parallel with windfall of oil revenues these countries have to pay more attention to the development of the non-oil sector as well as its export performance (Sorsa, 1999)). Because in most of the cases, oil driven economic development leads to some undesirable consequences such as Dutch Disease in the oil rich countries like Nigeria.

In this regard Dutch Disease concept provides certain link between the real exchange rate and non-oil export. According to this concept the appreciation of a country's real exchange rate caused by the sharp rise in export of a booming resource sector draws capital and labour away from a country's manufacturing and agricultural sectors, which can lead to a decline in exports of agricultural and manufactured goods and inflate the price of non-tradable goods (Corden (1982) and Corden and Nearly (1984)). If we divide overall export of oil rich countries into oil and non-oil exports appreciation of real exchange rate which is specific for these countries negatively affects non-oil exports while export revenues of oil sector mainly depends on oil price in the world markets.

Above stated problem is also specific for Nigeria, one of the oil rich countries. According to official statistics the volume of non-oil export has decreased by 26.5 percent between 2004 and 2008 while appreciation of the real effective exchange rate has approximately doubled in the same period[3]. On the other hand, the share of non-oil export in the total export has decreased from 52.5 percent in 2004 to 4.7 percent in 2008. These facts indicate the worsening of non-oil export performance and urgency for its promotion.

The performance of the Nigerian non-oil export sector, as pointed out by the relevant statistics, has however been relatively impressive in recent times. Illustratively, the International Monetary Fund (IMF) 2008 is of the view that the robust non-oil sector growth in the 2007 fiscal year had offset the drag from a decline in oil production in the Niger Delta, thus boosting growth in the Nigerian economy.

[3] Statistical bulletin of Central Bank of Nigeria, 2008

Non-Oil Export is an important mandate of debate to every concerned citizenry given its implications for increase in export basket, creating more foreign earnings, expanding production base, uplifting the nation's export from mono to multi-cultural export base and poverty reduction in developing countries. Previous empirical studies on Non-Oil export and economic growth generate mixed results, but positive impact was noticed between Non-Oil export and growth Papanek (1973), Fajana (1979), Dowling and Hiemenz (1982), Gupta and Islam (1983), Hansen and Tarp (2000), Burnside and Dollar (2000), Oyejide (2001), Gomanee, *et al.* (2003), Dalgaard *et al.* (2004), Okoh (2004) and Karras (2006). Notable researchers believe that it is neither analytically defensible nor empirically credible to argue the outset that exports especially Non-Oil export never works (Hansen and Tarp (2000)).
It is quite amazing that with more than thirty five years of development aspiration, the people in the poorest African countries are facing the hard beat of poverty. Their real per capita income since 1965 has either declined or remained stagnant. The obvious question is: why could these countries not break the poverty trap despite amazing wealth of natural resources they had? This paper examines the effectiveness of Non-Oil exports on economic growth in the Nigeria, using modern empirical methodology.

The paper is organized into five sections. Aside from section one which comprises of the introductory aspect of the report, section two consists of the review of related literature. In section three, explains the methodology and model specification related to the study. Section four reports and discusses the findings, and section five presents the conclusion and suggests some recommendations based on findings from the study.

2. Literature Review

Agricultural products constitute the bulk of Nigeria's non-oil exports. The shares of these products both processed and unprocessed in total value of non-oil exports is as high as 70 per cent. Other components of the non-oil exports include manufactured products and solid minerals. The agricultural products include cocoa, groundnut, palm produce, rubber (natural), cotton and yarn, fish and shrimps, while the manufactured products and solid minerals include processed agricultural products, textiles, tin metal, beer, cocoa butter, plastic products, processed timber, tyres, natural spring water, soap, detergent and fabricated iron rods. The non-oil commodities market experienced an export boom between 1960 and 1970. Their fortunes declined in the early 1980s when the international primary commodity markets collapsed with the associated deterioration in the terms of trade. Resulting mainly from the policies adopted during the structural adjustment programme, non-oil exports increased owing mainly to increase in the Naira price of the export commodities. This was, however, short-lived as international demand for Nigeria's non-oil exports remained weak (Okoh, 2004). The value of non-oil exports has been on the decline ever since. For instance, the share of agricultural products in total exports declined from 84% in 1960 to 1.80% in 1995 (CBN, 2000, Ogunkola and Oyejide 2001). Thus, contrary to the expectation of increase in non-oil exports, there was an overall decline in the export of these commodities. Manufactures decreased from 13.10% in 1960 (CBN, 2000) to 0.66% in 1995 and remained the same in 2002 (WTO, 2003).

There is huge number of studies that investigate the impact of non-oil export on economic growth. The paper tries mainly to focus on studies that investigate this relationship in case of oil dependent economies like Nigeria. Bernardina (2004) investigates impacts of the real exchange rate, real non-oil GDP, and the world income on Russian non-oil export by using an Error Correction Model over the period 1994-2001. Author finds that there is a robust and negative long run co-integration relationship between the real exchange rate and Russian non-oil exports. Furthermore, the world income has positive effect on Russian non-oil export while real non-oil GDP causes a decline in non-oil export.

By using Static OLS and Fix Effect based on Two Stage Least Square Masoud and Rastegari (2008) estimate effects of certain factors as well as real exchange rate on non-oil export over the period 1995-2005. Study concludes that Iran's non-oil exports positively related to increase in population, per capita income and consumer price index while negatively depends on appreciation of real exchange rate. Another study related to Iranian non-oil export comes from Sabuhi and Piri (2008). They explore the effects of exchange rate, export volume, domestic saffron production on price of saffron, Iran's major non-oil export good in the short- and long-run. Employing Autoregressive Distributed Lag (ARDL) model shows that appreciating exchange rate has statistically significant negative impact on export price of saffron while there is no significant relationship between export price and domestic production of Saffron in the long-run.

Sorsa (1999) analyzes Algerian non-oil export promotion issues in presence of oil sector dominancy over the period 1981-1997 and reveals that appreciation of real exchange rate is the major factor that impedes non-oil export growth and its diversification. The effects of real exchange rate, its movements and volatility on the growth of non-oil export in Nigeria are studied by Ogun (1998) over the period 1960-1990. The results show that

real exchange rate and also both its misalignment and volatility affect non-oil export growth adversely.

Oyejide (1986) examines effects of trade and exchange rate policies on Nigeria's agricultural export using Ordinary Least Squares (OLS) over the period 1960-1982 and concludes that appreciation of real exchange rate adversely influences to non-oil export especially during the oil boom. Another study that investigates relationship between exchange rate, non-oil export goods and economic growth in Nigeria comes from Yusuf and Edom (2007). By applying Johansen co-integration approach over the period 1970-2003 they reveal that depreciation of official exchange rate promotes export of round wood and sawn wood in Nigeria.

Adubi and Okunmadewa (1999) investigate impact of exchange rate and price indexes and also their volatilities on the agricultural export of Nigeria in the period 1986 to 1993. Results of ARIMA and OLS estimations indicate that appreciation of exchange rate and its volatility have negative impacts on agricultural export earnings.

By applying OLS on the time series of relevant variables including exchange rate over the annual period of 1970-2005 Abolagba et al. (2010) find that appreciation of real exchange rate has statistically significant and negative impact on export of cocoa and rubber in Nigeria.

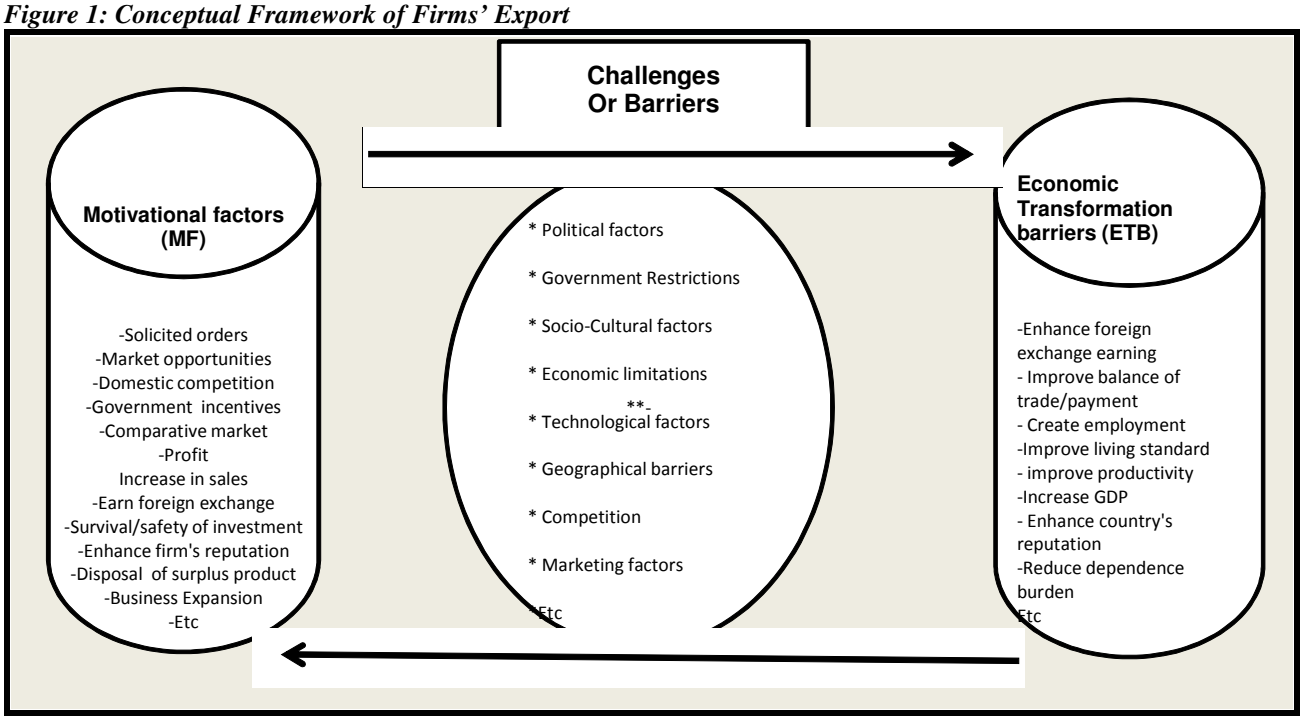
Ros (1993) analyzes Mexico's non-oil trade and industrialization experience during 1960-1990 and concludes that appreciation of real exchange rate due to oil revenues is harmful for non-oil export performance. The influences of trade and exchange rate policies on agricultural export which is the main part of non-oil export of Cameroon is studied by Amin (1996) over the period 1971-1992. Study concludes that current exchange rate policy especially appreciation of national currency impedes agricultural export which then have positive effect on growth.

Mohamad et al. (2009) conduct panel data estimation to account for the role of the non-oil export, real exchange rate and other economic fundamentals such as macroeconomic stability, terms of trade, capital goods investment, external demand and human capital on the export performance of Indonesia, Malaysia, Singapore and Thailand. They find that non-oil export, and appreciation of real exchange rate and also its misalignment and volatility have strong negative impact on export performance. By employing Pooled Mean Group over the period of 1970 to 2003 Benbouziane and Benamar (2007) investigate the impact of exchange rate regime on the real sector in some Middle East and North Africa Countries including Algeria, Bahrain, Iran, Kuwait, Libya, Saudi Arabia, and Sudan which are oil rich. Study finds that as a whole, exchange rate overvaluation reduces competitiveness of manufactured goods in these countries.

Egert Balazs and Morales-Zumaquero (2005) estimates export functions both in nominal and real terms in the case of transition countries of Central and Eastern Europe including Russia over the period 1990-2005 by employing panel regression and ARDL modeling. They use domestic and foreign income, foreign direct investment, relative prices, the nominal exchange rate for nominal exports, the real exchange rate for real exports, and a volatility measure of the nominal and the real exchange rates respectively as explanatory variables and conclude that in general appreciation of exchange rate (nominal or real terms) and also its volatility are harmful for export earnings.

It is important to state that all the above discussed benefits that may accrue to Nigerian firms that engage in non-oil export (although not exhaustive), are by extension beneficial to the country where the exporting products are destined/consumed, and will have positive "spread effect" on both countries' economies and the well-being of the citizens.

Figure 1: Conceptual Framework of Firms' Export



Source: Own Computation

3. Methodology

The study shall estimate both long and short run relationship showing the relationship between non-oil export factors and agriculture sector performance proxy by growth of agriculture output. The two methods are different from each other in the sense that, while the long run captures the static relationships between the regressand and regressors, the short term mechanism calculates the dynamism presence in the model to measure the short term convergence of the explanatory power to equilibrium in the short run. In estimating the long run (static) analyses, the project work makes use of the ordinary least square result nothing the empirical measures guiding the OLS result. Looking at the long run result we shall extract the predictive power of the explanatory parameters on the dependent variable i.e. which is the growth of agricultural sector. For the sake of econometrics accuracy, and policy perspective, there is great need to estimate the short term analysis.

In the short term estimation, provisions are made for the non-stationary of the economic data. Time series data sets are often characterized with non-zero mean and large variance, some are computed with errors and vault manipulations which make most results coming from the data sets spurious and compounded for short term policy analysis. Furtherance to this, the paper shall make use of the sumptuous stationary tests namely Augmented Dickey Fuller (ADF test) and the Phillip-Perron (PP) test for all the series for both detection and correction stages of the stationary tests. The long term adjustment test for all variables involve in the model will also be conducted under the Johansen Jesselis (1991, 1995) co-integration test. Having established the co-integration test using the prescribed procedure above, an over-parameterized error correction model shall be estimated which initially consisted of 1 lag length of each of the variable and following the general to specific methodology, this was continually simplified and re-parameterized until a parsimonious and comprehensive representation of the data generation process shall be achieved.

In the presence of a co-integrating relationship among the variables, the error correction modeling that trace the short term adjustment can be formulated. Any co-integrated series must has an error correction representation (Engle and Granger, 1991), this suggests that cointegration analysis is a pre-requisite to error correction modeling. Detailed analyses on co-integration and error correction procedure can be deduced from the literature (Mizon, 1989; Phillip and Loretan, 1991). The model to be estimated is specified below;

$$\Delta LARGP_t = \alpha_0 + \alpha_1 \Delta LNOE_t + \alpha_2 \Delta LOPEN_t + \alpha_3 \Delta LEXCH_t + \alpha_4 \Delta LMAN_t + \alpha_5 ECM(-1) + \varepsilon_t \quad -(1)$$

Where:

Δ L = Order of difference of variable employed in the study before stationarity is attained

$ECM^{(-1)}$ = Short run equilibrium parameter or mechanism

NOE = Non Oil Export

OPEN = Trade Openness

EXCH = Exchange Rate

MAN = Manufacturing output

E = Random term

The paper also tests for causality using the Granger (1986) methodology. This allows for the establishment of the causal relationship between non-oil export parameter and agricultural sector performance captured with growth rate of agriculture sector output.

Granger Causality Modeling:

Suppose that:

Y_t Granger causes x_t if,

Var (x_t x_{t-1}, x_{t-2} -----Y_{t-1}, Y_{t-2}----) < Var (x_t x_{t-1}, x_{t-2})

If x_t does not Granger cause y_t, then x_t is exogenous for y_t. Note that this statement does not apply to situation with contemporaneous correction, or economic causation. It only tells us the direction of influence through the F-test. Testing for the direction of causality between non-oil export and economic growth proxy with the growth rate of gross domestic product (GGDP), we shall consider the following simple bi-directional (NOE<->GDP), with this analogy the Granger causality models are presented below:

$$\left.\begin{aligned} ARGP_t &= \alpha_i \sum NOE_{t-i} + \beta_j \sum ARGP_{t-j} + \varepsilon_{1t} \\ NOE_t &= \delta_j \sum ARGP_{t-j} + \phi_i \sum NOE_{t-i} + \varepsilon_{2t} \end{aligned}\right\} \quad \cdots \quad (2)$$

Where:

$ARGP_t$ = Growth rate of Agricultural sector at time 't'

NOE_t = Non Oil Export growth at 't'

N = The extent of the Lag term in the models.

E_{it} = Stochastic random term in the models.

Data and Data Sources

The study directly looked into Nigerian economy using the country as proxy to developing nations around the globe. Data access and availability has been a critical issue to research but notwithstanding with the little credible data sources that we have in Nigeria, the paper is restricted to the time frame of 1980 – 2011. Prior to 1980 it is believed that our export basket was booming creating no limit to non-oil export. Between the periods under study the project believed that the advent of oil in the late seventies had made its way and swept the non-oil basket up till date.

- Gross domestic product (GDP): measures the monetary value of total output produce within the nation in a fiscal year. The trend of the data set is extracted from the Central Bank of Nigeria.

- Non-Oil Export (NOE): gives track of all non-oil commodities export abroad in Nigeria in a year. The time series of the variable is an annual observation and it is collected from Central Bank of Nigeria statistical Bulletin of various journals.

- Trade Openness (OPEN): the degree of trade openness is calculated using the difference between total export and total import deviated by gross domestic product. Data sets on export and import are sourced from National Bureau of Statistics (NBS) and data on gross domestic product comes from Central Bank of Nigeria statistical bulletin of various editions.

- Agricultural Production (AGRP): agricultural activities forms about 75% of individual income in the early seventies in Nigeria, and accounted for about 45% of the non-oil basket in the early eighties. Going by this agricultural production base will capture the contribution of agricultural sector to the GDP. This data set is computed by deflation the agricultural production by the GDP; the two data sets are sourced from the Central Bank of Nigeria statistical bulletin.

- Export (EXP): total export is extracted from the Central Bank of Nigeria statistical bulletin of various publications.

- Manufacturing Capacity Utilization (MANC): Capacity utilization in the manufacturing sector also plays significant role in measuring the productive capacity of a nation. The productive capacity produces export commodities (i.e. both oil and non-oil), by so doing one needs to capture the productive capacity of Nigeria; if it's able to fuel growth under the periods of the project. The manufacturing capacity utilization is going to be extracted from the Central Bank of Nigeria statistical bulletin of various publications.

4. Analysis and Interpretation of Results

This section is focused on the presentation of data set, estimation of results, empirical analysis and interpretation of results.

Stationary Test: Results and Meaning

Tablse 1 and 2 below shows the summary of the unit root results at level, and the Augmented-Dickey Fuller (ADF) test results which reveals the number or order of differencing each variable before stationarity is restored.

Table 1: STATIONARITY TEST OF ALL VARIABLES USED AT LEVEL

VARIABLES	ADF TEST Statistic value (AT LEVEL)	Mackinnon Critical Values at 1%	Mackinnon Critical Values at 5%
GGDP	-4.5854	-3.6463	**-2.9540**
NOE	-2.8702	-3.6394	**-2.9511**
OPEN	-1.5863	-3.6537	**-2.9571**
ARGP	-5.2558	-3.7378	**-2.9918**
MANC	-2.2321	-3.6463	**-2.9540**
EXP	**-2.5670**	**-3.6394**	**-2.9511**

Source: E-Views output

The result of the stationarity test for all the variables used showed the existence of unit root at levels for the variables except for GGDP (Growth rate of GDP) and ARGP (Growth rate of Agricultural Production) that was stationary at level (see Table 2) after comparing the at level value against the Mackinnon critical values of both one and five percent (5% and 1%). Table 3 showed the Augmented Dickey Fuller (ADF) test results and the exercise reported that Gross Domestic Product and Agricultural Production were stationary at levels while Non-Oil Export (NOE), Degree of trade openness (OPEN), Manufacturing capacity utilization (MANC) and Export (EXP) were stationary at first order of differencing I(1).

Table 2: AUGMENTED DICKEY-FULLER UNIT ROOT TEST: 1980 – 2011

VARIABLES	ADF Test Statistic Value	Mackinnon Critical Values at 1%	Mackinnon Critical Values at 5%	Order of Integration
GGDP	-4.5854	-3.6463	-2.9540	I(0)
NOE	-3.5702	-3.6394	-2.9511	I(1)
OPEN	-7.8226	-4.2732	-3.5577	I(1)
ARGP	-5.2558	-3.7378	-2.9918	I(0)
MANC	-3.8030	-4.2627	-3.5529	I(1)
EXP	**-5.7294**	**-4.2845**	**-3.5628**	I(1)

Source: E-views Computation

Cointegration Test Results

Johansen procedure is used to identify a long run economic growth amongst the co-integrating vectors. The result is depicted in the table below.

Table 3: RESULTS OF THE COINTEGRATION TEST 1980 – 2011

Source: E-Views Output , ***Note:*** *VAR include no lag on each variable and a constant term. The estimated period is 1980 – 2011. The Eigen value and trace test statistics are adjusted from Mackinnon-Haug-Michelis (1999). The ** indicates rejection of the hypothesis at 1% significance level and r is the number of cointegrating vectors.*

Co-integrating Tests						
Eigen Values	0.740**	0.613	0.357	0.279	0.164	0.145**
Hypothesis	r=0	r=1	r=2	r=3	r=4	r=5
Trace Test	102.298**	61.805	33.249	19.959	10.113	4.707**
95% Critical Value	95.75	69.81	47.85	29.79	15.49	3.84
Prob. Value	0.016	0.184	0.543	0.425	0.272	0.03

The Johansen cointegration procedure and standard statistics shows that the number of co-integrating vectors and the degree of freedom adjusted version of the Eigen value and trace statistics is used and these test statistics strongly rejects the null hypothesis of no co-integration in favour of all the co-integration relationships at the 1% significant level among the variables. Therefore, the variables used in the model all have long term characteristics with trend and strong relationship, thus, the model variables are co-integrated.

Presentation of Non-Oil Export and Agriculture Sector Performance' Results

This sub-section provides the results of model estimation and the various diagnostic tests given both dynamic and static regression estimates. The results of parsimonious and the least square models are reported in tables 5 and 6. The parameters estimate along with the standard errors, t-values and the corresponding critical values are given in the tables.

TABLE 4: THE PARSIMONIOUS ERROR CORRECTION MODEL

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	17.6210*	30.2899	2.5817	0.0321
D(NOEG,1)	-2.4904*	13.2758	-2.1875	0.0463
D(OPEN,1)	0.8507*	0.8173	2.0408	0.0482
D(EXPG, 1)	0.5748*	0.9017	2.6373	0.0302
D(MANC,1)	-0.4741*	0.3966	-2.1956	0.0452
ECM(-1)	-0.0652	0.2101	-2.3130	0.0423
R-squared	0.6587	Mean dependent var		26.42
Adjusted R-squared	0.6198	S.D. dependent var		24.63
S.E. of regression	23.11	Akaike info criterion		9.31
Sum squared resid	12285.41	Schwarz criterion		9.42
Log likelihood	-132.79	Durbin-Watson stat		2.16

Source: E-Views Output Note: * significant at 5 percent ** Significant at 1 percent

Having tested for cointegrating relationship among the regressor and the regressands, the residuals were found to be stationary; indicating the existence of a co-integrating relationship (see table 4), motivating the development of an Error Correction Model (Engle and Granger, 1982). The ECM (-1) was consistent in the parsimonious models by assuming a negative value and is also significant at 5% with the t-statistic value of -2.31 and its corresponding probability value of (0.04). The speed of convergence to equilibrium is 6.52 percent in the parsimonious result which showed that the actual adjustment level of Economic growth proxy by growth rate of GDP is adjusted 6.52 percent to equilibrium in the short run and a 1% change in the explanatory variable will adjust towards equilibrium at about 6.52% change in growth rate of the GDP.

The R^2 is 65.8% in the parsimonious error correction model showing that the explanatory variables has good explanatory power of the quantum of growth process recorded in Nigeria during the researched sample size. It remained strong even after adjusting for the degrees of freedom to 61.9% (0.6198). This means that in Nigeria, these variables are strong in explaining economic growth and performance in the short term. The F-statistic which measures the joint statistical influence of the explanatory variables in explaining the dependent variable was found to be statistically significant at 5% level when its F-statistic figure is 1.65 and the corresponding probability value of 0.04 is examined from the result in table 5. It is interesting to note that though the parsimonious result showed the existence of no autocorrelation, a case supported by the static regression model as it showed 1.85 which fell within the acceptance range in applied research of no autocorrelation.

The intercept was found to be consistent with the apriori expectation as it assumed a positive sign. This indicates that there is an autonomous component of growth in the agricultural sector not explained by the independent variables, which supports the theory as there are several variables that explain the computation of growth of the sector (i.e. agriculture sector) in Nigeria. The positive response reported by the result of the intercept signifies that there will be positive growth in the economy when tested for statistical significant at 97 percent level of confidence.

The coefficient of Non-oil export growth (NOEG) which stood at -2.49 in the parsimonious model have a negative sign and performed well in the terms of apriori expectation as it turned out to have a negative value. This implies that there exist an inverse effect between non-oil export growth and agricultural sector growth. The coefficient was also found to be statistically significant when tested at 95 percent confident level as evidenced by an examination of the t-statistics (2.18) and the corresponding probability value of (0.04). In the short run, therefore a unit increase in growth of non-oil export (NOEG) will generate about 2.49 percent decrease in the growth rate of agricultural sector growth (ARGPG) which will by connection lead to sectoral growth. Again, this

may contradict economic theory but it worked with the Nigerian exceptional case as the further increase in the decay level of the non-oil export in Nigeria the deteriorating impact on growth of this sector widens.

The Openness (OPEN) was found to be consistent on a priori implying that there exist a positive relationship between the degree of openness and agriculture growth. The parsimonious model revealed that an hundred percent increase in rate of Openness result in 85.07 percent increase in economic growth. On statistical significance stand, the coefficient is statistical significant at 95 percent confidence level while the t-statistic stood at (2.04) with corresponding probability Value of (0.05), see table 5.

Furthermore, growth of export (EXPG) coefficient was found to be consistent on a priori. An indication that there exists positive relationship between export value and agriculture sector growth, therefore, an increase in export growth in the short run will bring about a more than proportionate increase growth of the agriculture sector. In other words, a unit increase in the value of export in Nigeria will lead to a 0.57 unit increase in the value of growth which in turn leads to increase in economic growth by exactly amount in the short run. On statistical significance, the coefficient is statistical relevant in the model at 97 percent confidence level when the t-statistic value of (2.63) and the corresponding probability value of (0.03) is also observed from the result In the table 5.

The coefficient of capacity utilization in the manufacturing sector stood at -0.47 was found to be inconsistent on a priori expectation as it assumed a negative relationship between manufacturing sector utilization rate and agriculture sector growth in the short run. In the long run, if proper support is not directed to improving the rate of utilization in this sector, then the negative impact will bite harder as portrayed by the static result which stood at 0.586 which heightens by 11% within the short and the long term (see table 6). The negative relationship with growth rate of GDP shows that if we neglect this sector overtime it will surely hinders growth of the economy with its multiplier effect. The implication of this finding is that, in Nigeria manufacturing sector will promotes agriculture sector growth in both the long and short run, if proper management is put in place to help the sector to discharge its duty as a growth promoting instrument. On the statistical significant stand, the coefficient was found to be significant in the parsimonious short run model and long run static model. The corresponding probability value of the parsimonious model is (0.04) and the t-statistic value is (-2.19) all in the short run result depicted in table 5, while the probability and t-statistic values in the long-run are (-1.75) and (0.09) (see table 6).

The coefficient test proxy by the variance inflation factor (VIF), the white heteroskedasticity test and serial correlation test (see Appendix 12) show that our estimations were free from all these econometrics problems. Therefore, this result and the corresponding analyses are reliable as most of the variables are consistent in terms of a priori expectations, more so they were all found to be statistical relevant. The R Squared which measures the goodness of fit of the explanatory variables was found to be strong even when adjusted for the degree of freedom as well as the F-statistic. Interestingly, there was no indication of violation of econometric assumptions as there were no autocorrelation, heteroskedasticity etc. Therefore, in the short run, this result is reliable for policy formulation and in the long-run can best be used for forecasting.

CAUSAL RELATIONSHIP BETWEEN NON-OIL EXPORT AND AGRICULTURAL SECTOR PERFORMANCE

The tables below report the test of direction of causality between growth of non-oil export (NOEG) and agriculture sector performance proxy by the Growth of agriculture output.

TABLE 5: PAIRWISE GRANGER CAUSALITY TEST (PROBABILITY)

	Probability (Value) No of Lags			
Null hypotheses	**2**	**3**	**4**	**6**
$(NOEG)_t$ does not Granger cause $(AGRP)_t$	**0.965**	**0.428**	**0.050****	**0.035****
$(AGRP)_t$ does not Granger cause $(NOEG)_t$	**0.406**	**0.599**	**0.319**	**0.418**
No of Observations	**32**	**31**	**30**	**28**

Source: E-Views Output Note: (**) significant at 5 percent

In table 5, Lagging by two and three periods the output report that the null hypothesis formulated are insignificant and revealed an inconclusive case of causality. Lagging by four and six periods the probability values are (0.047) and (0.017) respectively. This result is significant telling that the first null hypothesis should be rejected, this means that growth of non-oil export causes growth of agriculture sector looking back for four and six years while that of the Second still shows an inconclusive range.

Therefore, the results show that a case unidirectional causality exists between non-oil export growth and agricultural sector growth proxy by growth of output of the sector. Conclusively, the non-oil export trend do Granger cause agriculture sector, however (i.e. agriculture sector performance does not Granger cause non-oil export growth) in Nigeria under the period of 1980 to 2011.

5. Conclusion and Suggestions for Further Studies

The purpose of this analysis was to determine the effects of the growth of non-oil export on the growth rate of agriculture sector by extension economic growth. The model developed in this paper provides evidence supporting the contention that non-oil export negatively impacted on agriculture sector performance in Nigeria. Moreover, as Gunning (2006) points out, it would be extremely difficult for a nation to neglect the possibility of promoting non-oil sector of the economy and sustain growth simultaneously.[4]

The model also shows, however, that the effects of non-oil exports on agricultural sector growth are magnificent, and "buying" economic growth through agriculture exports would be incredibly efficient and diversification of the economy. For instance, using non-oil export alone to increase output of the agriculture sector by 1% in a country would require a 2.49% of the total export basket. This also assumes that the negative effect of capacity utilization in the manufacturing sector and agricultural sector growth, these readings cannot be left out of the conclusion as the coefficient was quite significant in the model, and ignores the potential problems of corruption and bureaucratic erosion that research has associated with high levels of non-oil export analysis.

The aforementioned studies by Burnside and Dollar (2007) and others have shown non-oil exports are more effective in sound economic policy environments. Thus, governments and multilateral institutions should continue to push economic reforms and trade liberalization on governments. Not only will this improve the effectiveness of production according to these studies, but it will also result in increasing volume of exports base as non-oil export claims a section with the export sphere in any nation.

Suggestion for Further Studies

Future research should explore the role of sound economic policies and good governance in promoting non-oil exports effectiveness. Scholars should also look into other ways of quantifying climate, tropical geography, and governance and political instabilities to provide for additional testing of potential impacts on the effectiveness of exports. Finally, studies on exports and non-oil exports should also investigate its effects on economic fundamentals, instead of growth. Doing so will shed light on the question of whether promoting exports and non-oil export will better the life of the masses in the short and medium terms.

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