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# Non-oil export and economic growth in Nigeria: A disaggregated analysis

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**Abctract.** This study examined the role of non-oil exports in the economic growth of Nigeria. It determined how five selected independent variables (non-oil commodities); like vegetables, hides and skins; rubber and plastic export, and textile and textile articles contributed to Nigeria's GDP (Dependent Variable). Using quarterly times series data from 2010 to 2017, the ARDL result showed that hides and skins; rubber and plastic export, and textile and textile article shave positive but insignificant effect on real GDP which was used as a proxy for economic growth. Secondly, the result also shows that there is bi-directional flow of causality between the real GDP and the non-oil export items. The study, among other things therefore recommends that government should diversify their economy, by taking a deeper look in to de-emphasizing mono-economy system, pay more attention to heterogeneous economy and endeavour to provide intermittently courses, capacity building, training and retraining in industries, and agriculture for professional development. This will catalyse the non-oil sector output to export levels for the betterment of the Nigerian economy.
**Keywords.** Non-oil export, Economic growth, Nigeria, Disaggregated analysis.
**JEL.** O11, E20, Q13, C30.

## 1. Introduction

In the historical experience of the developing world, foreign trade has often played a central role. According to Todaro & Smith (2012), developing countries are typically more dependent on trade than developed countries. In foreign trade, there is import trade and export trade but between these two, export is more desirable and strongly advocated in every economy. For Abou-strait (2005), export is a catalyst necessary for the overall development of an economy. It increases the level of employment in the economy as a higher demand for exports will require more production which will in turn lead to employment of more people and growth in the GDP of the said country. Exportation is also believed to help a country to attain a favourable balance of trade and balance of payments position provided its exports reasonably exceed its imports.

The Nigerian economy is one that depends on export for growth. In Nigeria, exports are divided into oil export and non-oil export. Oil export refers to crude oil as a commodity sold in the international market while non-oil export refers to commodities apart from oil, which are sold in the international and national market. Nigeria's non-oil export is made up of

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agricultural exports, manufactured exports, solid mineral exports and services exports (Akeem, 2011). Nigeria exports agricultural products like vegetables, hides and skins, live animals, wood, rubber, textiles etc. Most of the vegetables include okra, ewedu, bitter leaf, carrots, lettuce, cucumber while hides and skins of animals which is in the form of raw hides, leather, foreskins and saddler are also part of agricultural exports in Nigeria.

Since the 1970s when the price of crude oil in the international market sky-rocketed, an over-dependence on crude oil has been the case in Nigeria. Attention was enormously shifted from the production and exportation of other commodities to crude oil. Crude oil became the highest foreign revenue earner of the country. For example, in 1981, a total oil export of N10.7 billion was recorded. This is against a total non-oil export of N300 million. In 1987, the total oil export rose to N28.2 billion while non-oil export came to N2.2 billion. In 1995, total oil export rose further to N927.6 billion and non-oil export, N23.1 billion. In 2000, the oil sector with a high export of N1, 920.9 billion outshone the non-oil sector which recorded an export of N24.8 billion. In 2007, total oil export in Nigeria stood at N8, 110.5 billion and non-oil export at N199.3 billion. This upswing of oil export over non-oil export continued up to 2014 (with a total oil export of N12,007.0 billion and total non-oil export of N953.5 billion) and also to 2016 which recorded an oil export of N8,178.8 billion against a non-oil export of N656.8 billion (Central Bank of Nigeria [CBN], 2016). Be that as it may, the over-dependence on oil has made the economy vulnerable to the vagaries of the international market. This is evident in the recent economic downturn Nigeria is facing. After trading at over $100 per barrel for some years, the price of oil began to tumble down around July, 2014, falling to below $30 per barrel.

The collapse of the price of crude oil created serious economic crisis for oil-reliant countries, including Nigeria. It was not unexpected that Nigeria became one of the countries most affected by the downturn (Adugbo, 2017). The situation of Nigeria in 2016 was described as the lowest economic performance in about 25 years with over four million jobs lost in one year (Nwachukwu, *et al.*, 2016). The Federal Government could no longer continue to lie about the true state of the economy as its sweet business lost its lucrativeness. Now that the oil has failed us, what do we do? This question therefore necessitated the reason for this research.

Economic diversification has been projected to be the way forward. Therefore, this research looks away from the oil sector into the non-oil sector as a focus. The study seeks to find out how non-oil export will affect the growth of the Nigerian economy using some selected non-oil exports products, hence the notion of disaggregation. It is aimed at investigating the nature of the relationship between these non-oil exports products and economic growth and by the result make recommendations that are necessary for the revamping of the economy.

## 2. Statement of the problem

Nigeria is very blessed with agricultural resources and since the nation's independence in 1960, agriculture had been the economic mainstay, providing the largest chunk of foreign exchange inflow into the country (Lawal, 2011). Regrettably, since the oil price windfall of the early 1970s, the nation jettisoned the industrial and agricultural sectors of the economy. The nation was kicked downstairs to a mono-product economy with the lion share of government income emanating from oil exports which is vulnerable to volatility and shocks in the oil market internationally (Afolabi, Danladi, & Azeez, 2017). Today, the economy suffers a downturn, having been hit by the plunge/fall in the price of crude oil which started in 2014. Oil price crashed to less than $30 per barrel and by 2016, the then Nigeria finance minister, Kemi Adeosun reported, "Nigeria's economic situation is in its worst possible time" (Osalor, 2016). As a result of this, the Federal Government is now faced with the problem of redirecting the economy to the agricultural sector which is the non-oil sector in other to raise the production of non-oil product export and earn foreign exchange.

In a bid to proffer solution to this problem, the Nigeria Federal Government has formulated the Agriculture Promotion Policy (APP) plan which is expected to last for four years (2016-2020). This according to them is known as the Green Alternative. This APP is an offshoot of the Agricultural Transformation Agenda (ATA) which focused on increasing a sustainable basis of the income of smallholder farmers and rural entrepreneurs that are engaged in production, processing, storage and marketing of the selected commodities such as cassava, rice and sorghum. One of the guiding principles for the new policy (the APP) also includes the prioritization of crops for domestic consumption and for export. Crops such as cocoa, cassava, oil palm, sesame and gum, banana, avocado, mango, fish and cashew nuts are also part of the domestic crops according to the Federal Ministry of Agriculture and Rural Development [FMARD], 2016. Hence the Nigerian government have concentrates more on crops as non-oil export.

Hence, this study is on the move to search for some other agricultural product which the Nigerian nation can focus on such as vegetables, hides and skins; rubber and plastic export, and textile and textile articles which are commonly produced in the economy and are seen to be on high demand in the international market and so, can boost export earnings instead focusing solely on crops. In this regard, the present study has its objective of evaluating the impact and relationship that exist between these non-oil exports; vegetable, rubber and plastic export, textile and textile articles as well as the hides and skins on economic growth (RGDP) in Nigeria in order to provide an option for consideration in the efforts to diversify the Nigeria economy into the non-oil sector. Some questions such as to what extent will vegetable export impact on the Nigerian RGDP? To what extent will hide and skins exports impact on the Nigerian RGDP? What is the nature/rate of dependence of Nigeria's economic growth on

rubber and plastic export? And how will the textile industrial export impact on the Nigeria economy? These questions therefore call for immediate action and response.

## 3. Theoretical literature

Export-Led growth hypothesis theory was employed in this study as it identifies the importance of export as the key determinants of economic growth.

### 3.1. The export-led growth hypothesis (ELGH)

The export-led growth hypothesis which is the main determinant of overall economic growth of any country has its main arguments based on the fact that export growth may affect total factor productivity through dynamic spill over effects on the rest of the economy (Feder, 1983). According to the theory, there are several ways in which exports can potentially cause an increase in productivity. An expansion in exports may promote specialization in production of export products which in turn may boost productivity levels and may cause the general level of skills to rise in the export sector. This then leads to a reallocation of resources from the (relatively) inefficient non-trade sector to the higher productive export sector. This productivity change leads to output growth (Waithe, Lorde, & Francis, 2011).

The core theoretical criticism of the export-led growth model among others is that it suffers from a fallacy of composition whereby it assumes that all countries can grow by relying on demand growth in other countries. When the model is applied globally in a demand-constrained world, there is a danger of a beggar-thy-neighbour outcome in which all try to grow on the backs of demand expansion in other countries, and the result is a global excess supply and deflation (Palley, 2002). Not with standing this criticism, the ELGH is still relevant to this study because it emphasizes export as the key determinant of economic growth.

### 3.2. Empirical literature review

Studies and have shown that maintaining a well- diversified economy will yield the most cost-effective level of risk reduction and economic growth in a country.

Abogan, Akinola & Baruwa (2014) investigated the impact of non-oil export on economic growth in Nigeria from 1980 to 2011. In achieving the objectives of their study, ordinary least squares method was adopted. The study reveals that the impact of non-oil export on the economic growth was moderate as a unit increase in non-oil export impacted positively by 26% on the productive capacity in Nigeria during the period. However, they encouraged the Government to strengthen the legislative and supervisory framework of the non-oil sectors in Nigeria.

Kawai (2017) analysed the impact of non-oil exports and economic growth in Nigeria using annual data from 1980 to 2016. He adopted the

Phillip Perron (PP) and Engel-Granger Model (EGM) for co-integration in the analysis. The research found a strong evidence of co-integration relationship of non-oil exports in influencing rate of change in the level of economic growth in Nigeria. He made some recommendations which include that Government should re-emphasize and strengthen industrial revolution plan with a clear strategy to develop sectorial plan that will work sector by sector for better outcomes.

A research conducted by Kromtit, *et al.*, (2017) on the contribution of non-oil exports to economic growth in Nigeria (1985–2015) reveals a positive and significant relationship between non-oil exports and GDP. In their analysis, they employed the autoregressive distributed lag (ARDL) model. The result also showed that exchange rate has a negative, though not significant relationship with GDP which is, according to the study, in line with economic theory. The study recommended the provision of credit at lower interest rate to the non-oil sectors and direct participation in developing these sectors by the Government.

Uzonwanne (2015) carried out a research on economic diversification in Nigeria in the face of dwindling oil revenue. The study employed descriptive statistics and data provided above shows that Nigeria's over dependency on oil has contributed to the poor management of human capital/resources which has led to the migration of many talented citizens of the country to other countries in search of better life. Furthermore, the data show that the neglect of agriculture has, in addition, led to the constant depreciation in GDP of the country. Hence this clarion calls for urgent diversification of the Nigerian economy. The study among other things recommends that Nigerian government, at all levels, should urgently create an enabling environment that will favour diversification of the economy that will de-emphasize mono-economy system and pay more attention to heterogeneous economy

From the works reviewed above, it is generally clear that an aggregate value of the non-oil export was used. In contrast to the other studies and as an addition to literature, this study shall adopt a disaggregated value of non-oil export by selecting some non-oil exports which was not used in any of the work reviewed. This approach provides a more effective and particular solution given the problem identified and the efforts of Government so far. As a matter of fact, in time like this, when the pillar (oil) holding the Nigerian economy has been perceived to become weak and the Nigeria economy at the brink of collapse, a study like this is of the essence. The Nigerian government is making immense efforts to revive the economy through the Agriculture Promotion Policy 2016-2020. Therefore, this work seeks to contribute to these efforts by drawing the attention of the government to some products such as (vegetables, hides and skins; rubber and plastic export, and textile and textile articles) which are deemed very profitable in the international market today and by improving their production will boost exports and hence, growth of the Nigerian economy.

## 4. Methodology

The theoretical framework of this study is based the export-led growth hypothesis growth which this study reviewed above. The export-led growth theory as modelled by Waithe *et al.,* (2011) starts with a simple neoclassical production function:

$$Yt = At\ K\alpha t\ L\beta\neg t \quad (1)$$

where Yt denotes the aggregate production of the economy at time t; At is the level of total factor productivity; Kt and Lt are the levels of the capital stock and the stock of labour respectively; and $\alpha$ and $\beta$ are constants between zero and one that measure capital and labour's share of income respectively. This function was modified to include exports and also imports. The inclusion of exports as an input provides an alternative procedure to capture total factor productivity growth. On the assumption that total factor productivity (At) can be rewritten as a function of exports (Xt), imports (Mt), and other exogenous factors (Ct) assumed to be uncorrelated with Xt and Mt, hence the following equations result:

$$At = f\ (Mt, Xt, Ct) = M^{\delta}tX^{\gamma}t\ Ct \quad (2)$$

Combining equation (2) with (1), we obtain:

$$Yt = Ct\ K\alpha t\ L\beta\neg t\ M^{\delta}tX^{\gamma}t \quad (3)$$

Where the superscript terms are the elasticities of production with respect to Kt, Lt, Mt and Xt.

Model Specification: The model of this study is derived from the model of Waithe *et al.,* (2011) seen above. This is done with some modifications as a result of the variables of the study.

Equation (4) shows that:

$$Yt = f\ (C_t, K_t, L_t, M_t, X_t) \quad (4)$$

But for this study, RGDP represents $Y_t$ whereas, $X_t$in the framework will be disaggregated to capture the selected non-oil export components in Nigeria being Hides and Skins exports (HNS), plastic and rubber exports (PLAS) and Vegetable Export (VEG), Textiles and textiles articles (*LTXT*). The model here excludes all other variables in equation (4) to include other independent variables chosen for the study. Thus, the functional form of the model in this work is stated as follows:

$$RGDP = f\ (HNS, PLAS, TXT, VEG) \quad (5)$$

From equation (5), we can have the mathematical form as follows:

$$RGDP = \beta_0 + \beta_1 HNS + \beta_2 PLAS + \beta_3 TXT + \beta_4 VEG \quad (6)$$

We linearise and transform equation (6) into an econometric equation thus:

$$RGDP = \beta_0 + \beta_1 HNS + \beta_2 PLAS + \beta_3 TXT + \beta_4 VEG + u \quad (7)$$

Where RGDP is the dependent variable; HNS, PLAS, TXT and VEG are the explanatory variables and u is the error term or stochastic disturbance term. The expected signs of coefficients or a priori expectations are: $\beta_1 > 0$; $\beta_2 > 0$; $\beta_3 > 0$; $\beta_4 > 0$; $\beta_0 > 0$.

The autoregressive distributed-lag (ARDL) model is employed because of the small sample size of the study as a sample of 32 observations using quarterly data from 2010 to 2017 are employed. In practice, ARDL models are least squares regressions using lags of the dependent and independent variables as regressors and they are known to have better small sample properties. In this study, the E-Views (version 9) software is used in doing the analysis and it is chosen because it supports various time series analysis methods. Unit root tests, Causality test, Bound Tests, Breusch-Godfrey Serial Correlation LM Test, etcare also carried out on the data using the same software with data sourced from the Central Bank of Nigeria Statistical Bulletin (2017).

## 5. Presentation and analysis of results

Table 1 above showed that the means and medians of all the variables lie within the maximum and minimum values indicating that the variables had high tendency to be normally distributed. The skewness statistic showed that Hides and Skins exports (LHNS), plastic and rubber exports (LPLAS) and Vegetable Export (LVEG) were positively skewed while Textiles and textiles articles ($LTXT$) and real Gross domestic products (LRGDP) were negatively skewed. The kurtosis statistics showed that were platykurtic, suggesting that their distributions were flat relative to normal distribution while LPLAS was leptokurtic, suggesting that it distribution was peaked relative to normal distribution.

**Table 1.** *Descriptive Statistics of the Indicators*

| | LHNS | LPLAS | LRGDP | LTXT | LVEG |
|---|---|---|---|---|---|
| Mean | 5.270520 | 5.065765 | 9.917157 | 5.350604 | 5.829589 |
| Median | 5.107860 | 5.008433 | 9.940352 | 5.260228 | 5.595017 |
| Maximum | 6.538791 | 5.986125 | 10.35059 | 6.142854 | 7.352672 |
| Minimum | 4.372355 | 4.645160 | 9.440142 | 4.205140 | 4.764990 |
| Std. Dev. | 0.528771 | 0.258301 | 0.246498 | 0.399783 | 0.860727 |
| Skewness | 0.574565 | 1.330782 | -0.202515 | -0.097837 | 0.404425 |
| Kurtosis | 2.482974 | 6.078891 | 2.146408 | 3.776516 | 1.702462 |
| Jarque-Bera | 2.117089 | 22.08466 | 1.190225 | 0.855020 | 3.117124 |
| Probability | 0.346960 | 0.000016 | 0.551501 | 0.652131 | 0.210439 |

**Source:** Author's compilation, 2019

Finally, the Jarque-Bera statistic rejected the null hypotheses of not normally distributed for LPLAS at five percent critical value while the null hypotheses of not normally distributed for the other variables were accepted at the same critical value.

### 5.1. Correlation Matrix

Result in Table 2 above gives a preliminary idea of the relationship among the variables. A brief look at the table shows that all the dependent variables (LHNS, LPLAS, LTXT, LVEG) have positive relationships with LRGDP; LHNS has positive relationships with LPLAS, LTXT, and LVEG; LPLAS has positive relationship with LTXT and LVEG; whereas LVEG and LTXT are positively related.

**Table 2.** *Correlation Matrix of the Indicators*

| | LRGDP | LHNS | LPLAS | LTXT | LVEG |
|---|---|---|---|---|---|
| LRGDP | 1.000000 | | | | |
| LHNS | 0.657810 | 1.000000 | | | |
| LPLAS | 0.680736 | 0.696157 | 1.000000 | | |
| LTXT | 0.514521 | 0.693772 | 0.629353 | 1.000000 | |
| LVEG | 0.638231 | 0.781496 | 0.597450 | 0.571371 | 1.000000 |

### 5.2. Time series properties of the variables

The ADF test is used to test for stationarity of the data. The ADF test consists of estimating the following regression.

$$\Delta Y_t = \alpha + \beta_t + \delta Y_{t-1} + \sum_{i=1}^{m} \varphi i \Delta Y_{t-i} + \varepsilon_t \quad (8)$$

Where $\alpha$ represents the drift, $t$ represents deterministic trend and m is an optimal lag length ample enough to ensure that $\varepsilon_t$ is a white noise error term.

**Table 3.** *Unit Root Test: Augmented Dickey-Fuller Test (ADF)*

| Variables | *ADF T-Stat* | *Critical Value @ 5%* | *ADF T-Stat* | *Order of Integration* |
|---|---|---|---|---|
| *ln(RGDP)* | -22.38462 | -2.967767 | 0.0001 | I(1) |
| *ln(HNS)* | -9.636820 | -2.967767 | 0.0000 | I(0) |
| *ln(PLAS)* | -7.488263 | -2.963972 | 0.0000 | I(1) |
| *ln(TXT)* | -6.520013 | -2.963972 | 0.0000 | I(1) |
| *ln(VEG)* | -6.273580 | -2.963972 | 0.0000 | I(1) |

The time series properties of the variables were conducted using Augmented Dickey-Fuller (ADF) test and the results from this test showed that all the indicators are stationary at I(1) except HNS which is stationary at level. The appropriate modus operandi of analysis that captures the combination of I(1) and I(0) stationary variables, according to Pesaran *et al.*, (2001), is the ARDL model.

The primary form of the ARDL model is given as:

$$\Delta RGDP_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} \Delta RGDP_{t-1} + \sum_{i=1}^{n} \beta_{2i} \Delta HNS_{t-1} + \sum_{i-1}^{n} \beta_{3i} \Delta PLAS_{t-1} + i=1n\beta 4i\Delta TXTt-1 + i=1n\beta 5i\Delta VEGt-1 + \alpha 1RGDPt-1 + \alpha 2HNSt-1 + \alpha 3PLASt-1 + \alpha 4TXTt-1 + \alpha 5VEGt-1 + \mu t \quad (9)$$

Where $\Delta$ is the first difference operator, $\beta_0$ is the drift component and $\mu_t$ is the white noise error term.

The equation above connotes the term with the summation sign represents the error correction dynamics i.e.$\beta_{1-5}$, while the second part $\alpha_{1-5}$ represents the long-run relationship. Accounting for the short term relationship, the primary form becomes;

$$\Delta RGDP_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta RGDP_{t-1} + \sum_{i=1}^{n} \alpha_{2i} \Delta HNS_{t-1} + \sum_{i-1}^{n} \alpha_{3i} \Delta PLAS_{t-1} + i=1n\alpha 4i\Delta TXTt-1 + i=1n\alpha 5i\Delta VEGt-1 + \delta ECTt-1 + \varepsilon t \quad (10)$$

Where:$ECT$ is the error correction term which is the residuals retrieved from the estimated long-run relationship.

## 5.3. Lag length selection

The next step in our analysis is to select the optimal lag length for the co-integration equation based on the hypothesis that the residuals are serially orthogonal. The lag length which minimises the Akaike Information Criterion (AIC) and Schwarz Criterion (SC) and at which the model does not have autocorrelation is the optimal lag length. For this analysis, we would make use of the SC as the choice for the selection of our optimal lag length.

**Table 4.** *Lag Length Result*

| Lag Length | AIC | SC | HQ |
|---|---|---|---|
| 0 | 2.051026 | 2.284559 | 2.125735 |
| 1 | -1.059810* | 0.341388* | -0.611555* |
| 2 | -0.271598 | 9.548337 | 0.550203 |

Based on the result in table 4, the lag length which minimises SC, AIC and HQ is lag one and thus our optimal lag length. Given our optimal lag length, we proceed to test for long-run relationship among the variables.

## 5.4. Bound test

To investigate the presence of long-run relationships among the variables, the bound testing under Pesaran, *et al.* (2001) procedure is used. The bound testing procedure is based on the F-test. The F-test is basically a test of the assumption of no co-integration among the variables against the premise of its existence, denoted as:

$$H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$$

i.e., there is no co-integration among the variables.

$H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$

i.e., there is co-integration among the variables.

**Table 5.** *Bound Test Result*

| F-Statistics | 1% | | 5% | | 10% | |
|---|---|---|---|---|---|---|
| 0.840822 | Lower bound | Upper bound | Lower bound | Upper bound | Lower bound | Upper bound |
| | 3.74 | 5.06 | 2.86 | 4.01 | 2.45 | 3.52 |

Given the result of the Bound Test, the F-statistic value should be compared with the Pesaran critical value at traditional levels of significance. It is noted by Narayan (2005), the current critical values reported in Pesaran *et al.*, (2001) cannot be used for small sample sizes because they are predicated on the premise of the existence of large sample sizes. Narayan (2001) provided a set of critical values for sample sizes ranging from 30 to 80 observations. They are $2.496 - 3.346$ at 10% level of significance, $2.962 - 3.910$ at 5% level of significance and $4.068 - 5.250$ at 1% level of significance.

Since the F-statistic 0.840822, is lesser than the upper bound critical value at 1% level of significance (5.06), we thus reject the null hypothesis and conclude that real gross domestic products, hides and skin export, plastic and rubber export, textiles and vegetable exports have no co-movements in the long-run in Nigeria. From the result, we can hence estimate only the short-run relationship between real gross domestic product and the explanatory variables.

**Table 6.** *ARDL short-run relationship*
Dependent Variable: (*LRGDP*)

| Variable | Coefficient | Std. Error | t-Statistic | Probability |
|---|---|---|---|---|
| C | 0.736834 | 0.679062 | 1.085076 | 0.2882 |
| LRGDP(-1) | 0.870440 | 0.078099 | 11.14530 | 0.0000* |
| LHNS | 0.013119 | 0.046300 | 0.283346 | 0.7792 |
| LPLAS | 0.094679 | 0.076225 | 1.242097 | 0.2257 |
| LTXT | 0.008653 | 0.045552 | 0.189968 | 0.8509 |
| LVEG | -0.003617 | 0.026862 | -0.134633 | 0.8940 |
| R-squared = 0.596131 | Adjusted R-squared= 0.788344 | | F-stat(prob)= 6.396219 (0.000000) | Durbin-Watson stat= 2.005427 |

**Notes:** ** significant at 5% * insignificant at 1%

The result in the table above shows that in the short-run, gross domestic output has a cogent relationship with its one period lag value i.e. economic growth depends on its previous value in the short-run. The result also shows that hides and skin export (HNS), rubber and plastic export (PLAS), and textile and textile articles (TXT) do not have significant effect on economic growth (RGDP) in the short run in Nigeria but does on the long run. This indicates that the diversification from oil export to non oil export of these products will make a great contribution to the Nigerian economy

(RGDP) only when the Nigerian government focuses on it at the long run and not on short run basis. From the result, a percentage increase in gross domestic product at year $t_{-1}$ is precursory to a 0.87 percentage increase in growth at year $t_{+1}$ in the short run while a percentage increase in vegetable exports at year $t$ would lead to a 0.36 percentage decrease in economic growth at year $t+1$. From the result, it can also be seen that a unit increase in hides and skin, rubber and plastic, textile and textile articles will lead to increments in RGDP of about 1.3%, 9.5% and 0.9% respectively. This thus, lends credence to the findings of Abogan, Akinola & Baruwa (2014) who also declared positive nexus between non-oil export and economic growth of Nigeria at the long run. The R-squared value of 0.93 indicates that about 93% percent of the variations in economic growth is explained by the regressors in the model, and after taking cognisance of the degree of freedom, the adjusted R-squared value of 0.91 indicates that 91% percent of the variation in economic growth is explained by the regressors and the F-statistic probability value of 0.000000 indicates that all the explanatory variables have a joint significant consequence on output growth in Nigeria in the short-run. The Durbin-Watson value of 2.4 indicates that this model is free from serial correlation. We go further by using the LM test to confirm the non-existent of serial correlation in our model.

**Table 7.** *Serial Correlation Test*

| Breusch-Godfrey Serial Correlation LM Test: | | | |
|---|---|---|---|
| F-statistic | 3.351129 | Prob. F(2,23) | 0.0528 |
| Obs*R-squared | 6.995091 | Prob. Chi-Square(2) | 0.0303 |

Given the probability value of 0.0528 percent, we fail to accept the alternative hypothesis which states that there is a significant relationship between the hides and skin export (HNS), rubber and plastic export (PLAS), and textile and textile articles (TXT) and economic growth (RGDP) in the short run, rather we accept the null hypothesis which states that there is no significant relationship between these variables in short run but at the long run and conclude that our short run model is free from serial correlation.

This study is running Cusum tests because it assess the stability of coefficients ($\beta$) in a multiple linear regression model of the form $y = X\beta + \varepsilon$. The inference of the test is based on a sequence of sums, or sums of squares, of recursive residuals (standardized one-step-ahead forecast errors) computed iteratively from nested subsamples of the data.

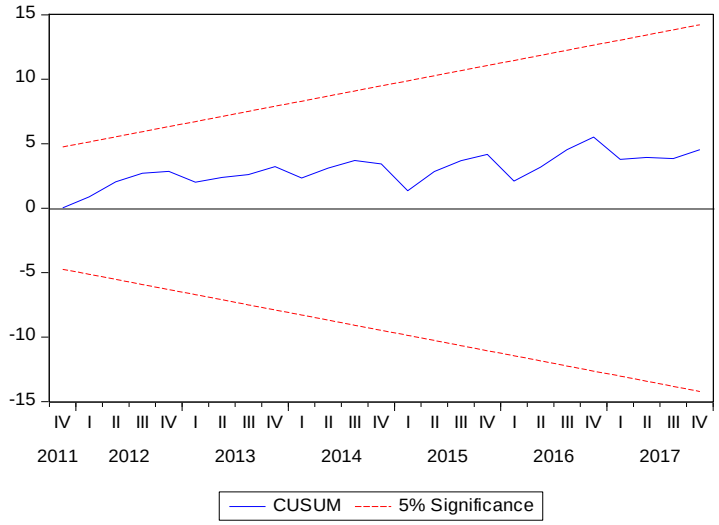


**Figure 1.** *CUSUM Stability Test*

The above figure shows that the CUSUM line is within the critical bounds of 5 percent level of significance which indicates that the model has structural stability.

### 5.5. Causality test

Table 8 below is the summary of the Granger Causality test result which is aimed at detecting the flow of causation among the chosen variables. The result indicates clearly that there is bi-directional flow of causality between the non-oil trade components and economic growth in Nigeria at the long run.

**Table 8.** *Granger Causality Test Result*

| Null Hypothesis: | F-Statistic | Prob. | Decision |
|---|---|---|---|
| LPLAS does not Granger Cause LRGDP | 0.44306 | 0.6470 | Do not reject $H_0$ |
| LRGDP does not Granger Cause LPLAS | 1.11190 | 0.3447 | Do not reject $H_0$ |
| LHNS does not Granger Cause LRGDP | 1.74622 | 0.1950 | Do not reject $H_0$ |
| LRGDP does not Granger Cause LHNS | 2.20210 | 0.1316 | Do not reject $H_0$ |
| LTXT does not Granger Cause LRGDP | 0.55727 | 0.5797 | Do not reject $H_0$ |
| LRGDP does not Granger Cause LTXT | 0.59244 | 0.5606 | Do not reject $H_0$ |
| LVEG does not Granger Cause LRGDP | 0.53603 | 0.5916 | Do not reject $H_0$ |
| LRGDP does not Granger Cause LVEG | 0.88901 | 0.4237 | Do not reject $H_0$ |

**Notes:** NB: * means rejection of the null hypothesis of non-Granger causality.

## 6. Conclusion and recommendations

In the study, Nigeria's non-oil export strategy has been reviewed vis-à-vis the export of various traded non-oil commodities needed for augmenting economic growth in Nigeria. Economic growth as induced by Hides and Skins exports; plastic and rubber exports; and Vegetable Export, Textiles and textiles articles in Nigeria has been estimated using the Autoregressive and Distributed Lag (ARDL) model technique to co-integration. The empirical result reveals that there exists no short run relationship among the non-oil export commodities in the Nigerian economy. The result also shows that in the short-run model, the interaction

between vegetable export and real GDP growth does not follow apriori expectations. However, Hides and Skins exports; plastic and rubber exports; and Textiles and textiles articles were consistent, this is drawn from their positive coefficients which portray the sector as having the potential to boost economic growth if given adequate attention, hence the long run attention. However, further findings revealed that the traded non-oil exports do not have significant impact on the economic growth of Nigeria in the short run as reviewed in the work.

Implication of the finding alludes that the oil sector have attracted the chunk of the attention of the government to the admiration of both local and international investors at the expense of the non-oil sector which is laden with potential to propel economic growth. It is therefore recommended that short run policies by the government should be tailored towards the improvement of the non-oil sector by encouraging the textile industries, livestock farming, rubber farming with subsidised factor inputs, which will catalyse increments in non-oil output to export levels for the betterment of the Nigerian economy at the long run. The government should endeavour to make agriculture and industrial textile attractive, government should, as a matter of concern, put in place policies that will favour subsidy for agriculture. The implication is that government should incentivize farmers and subsidize their produce. Many farmers in Nigeria are still making use of crude and un-mechanized methods that favour low productivity. Therefore, there is an urgent need to introduce at all levels mechanized system of agriculture to increase productivity in all these sectors and to reduce strenuous human labour. Government should package programmes in this sector to be attractive and have the political will to pay attractive salaries to workers.

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