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DISAGGREGATED EXPORTS AND ECONOMIC GROWTH IN NIGERIA: AN AUTOREGRESSIVE DISTRIBUTED LAG APPROACH

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Abstract

Nigeria's dwindling external reserves have constituted major threats to federally-collected revenue and citizens' welfare. This paper examines the influence of disaggregated exports on economic growth in Nigeria, using the Autoregressive Distributed Lag (ARDL) approach. Adopting a longitudinal research design, and secondary data obtained from the Central Bank of Nigeria Statistical Bulletin (2015) as well as from the World Bank's World Development Indicators, the paper utilizes annual time series data from 1981 – 2014. The paper tests the time series properties of the variables in order to confirm that no variable is I(2) before adopting the ARDL model. Economic growth is the dependent variable, which is proxied by Real Gross Domestic Product (RGDP) while results are tested at 5% level of significance. The paper establishes a long run relationship between RGDP and its selected determinants such as oil exports, non-oil exports, growth in labour force, capital formation, oil imports and non-oil imports while no short run causality is established among the variables. The restricted error correction model shows a low speed of convergence of output to its long run equilibrium as about 38.66 percent of the disequilibrium in the system is corrected within a year. The paper examines the long run elasticities and finds that oil exports do not significantly enhance economic growth while non-oil exports significantly hurt economic growth in Nigeria. Overall, the findings of this study cannot provide strong evidence to support the export-led hypothesis. Finally, the paper recommends, among others, that government should strengthen export-oriented policies; increase local refining capacity so that oil imports can be halted or minimized; enhance value-added non-oil exports; and adopt import-substitution strategy on consumer goods as these constitute the sine qua non for accelerating economic growth in Nigeria.

Keywords: Disaggregated Exports, Economic Growth, Unit Roots, ARDL.

1.0 Introduction

The idea that export expansion drives economic growth is rooted since the classical and neoclassical orthodoxy of Adam Smith, David Ricardo, John Mill, Cordon's Supply Driven Model, Variety Hypothesis of Walkins (1968) as well as the Staple Growth Theory (Nyong, 2005). Since then, the rationale for free trade and various indisputable benefits that international specialization brings to the productivity of nations have been widely discussed and documented in economic literature (Bhagwati, 1978; Krueger, 1978).

The export-led growth hypothesis is hinged on the idea that export expansion is one of the major drivers of economic growth. This school of thought holds the notion that economic growth (output expansion) of countries could be enhanced not only by increasing traditional inputs such as labour and capital, but also by expanding non-traditional factors of production, which include oil and non-oil exports. This hypothesis has become popular in the field of international trade and finance.

Many developing countries, at one period or another, have adopted a trade policy of either import substitution or export promotion in view of convictions that they foster economic growth and development. However, these beliefs have been a subject of debate in the economic literature as findings from regional as well as country-specific studies have remain less-consensual and inconclusive. This is the gap this study attempts to fill. Advocates of import substitution based their argument on the need for developing countries to carve a niche for themselves by developing trade policy that will encourage local technology development and expertise through 'learning by doing' in the real sector of the economy (Todaro & Smith, 2003). The policy of import substitution adopted in the 1950's and 1960's was later discontinued in Nigeria, as in most developing countries, in favour of export expansion. The proponents of export expansion argue that expanding exports benefits the domestic economy by: increasing efficiency in resource use and allocation, creating substantial economies of scale in production, generating employment and hence, enhancing economic growth (Udah, 2012).

Although the success story of the Asian Dragons (Taiwan, Singapore, Hong Kong and South Korea), lend credence to the desirability of outward oriented policy as agreed by neoclassical economists, Amsden (1989) avers that the success story of the Asian Tigers is highly attributed to a focused and strong state whose domestic policy is structured to protect domestic industries while also incentivizing foreign participation.

Paradoxically, total exports which stood at US$125.6 Billion in 2011 have dropped by 18.1% to about US$102.8 Billion as at 2014 (World Bank's Website, 2016). According to Olaleye, Edun and Taiwo (2013), the share of oil exports to total exports had begun to fall from 1990 to the 2000's; 91% in 2008, 70% in 2010 and 69.2% in 2012.

Oil exports represent about 75% of federally collected revenue and 95% of export earnings (Akande & Roberts, 2010) and Nigeria's over-reliance on it as a major source of revenue for the economy brings to fore the following research questions: Is there a long run relationship between economic growth and oil exports as well as other selected macroeconomic variables, and what is the influence of oil exports on economic growth in Nigeria? Findings from this study would enhance the extant literature on export-economic growth nexus in Nigeria, and enable major stakeholders such as government and policymakers to take more informed decisions in their quest to ensure sustainable economic growth in Nigeria.

Following this introduction, the rest of this paper is organized as follows: section two deals with brief review of empirical literature while section three discusses the methodology of the study. Section four presents the results and discusses findings of the study. Finally, section five concludes the paper and proffers recommendations.

2.0 Empirical Literature Review

The export-economic growth debate has attracted the attention of researchers across the globe in general, and Nigeria, in particular.

A review of off-shore literature indicates that there are many studies on the export-economic growth nexus. The earliest ones include Emery (1967, 1968); Syron and Walsh (1968); Serven (1968); Kravis (1970); Heller and Porter (1978); Bhagwati (1978) and Krueger (1978). They posit that export expansion is the single most important determinant of growth in a two variable framework. They used a bivariate correlation test in a cross-country format to show the superiority of export-led growth hypothesis.

Another set of researchers, such as Balassa (1978, 1985); Tyler (1981); Feder (1983); Kavoussi (1984); Ram (1985, 1987) and Moschos (1989) investigated the relationship between export and output within the neoclassical framework. Majority of these studies included the export variable to capture the productivity gains generated by the external sector which stimulated the domestic economy, and to deal with broad externality issues. The major

defect being that export was included as an explanatory variable in an ad hoc manner (Udah, 2012).

As observed by Kugler (1991), Henriques and Sadorsky (1996) studies that focus on individual developed countries such Canada, France, Switzerland, USA, among others, support the hypothesis that export expansion stimulates economic growth. However, Ram (1987) in his cross sectional analysis for low and middle income countries argues that export-led growth hypothesis is valid but caution that because of huge inter-country differences and diversity, the result should be interpreted with some restraint.

Majority of the earlier studies, which include Syron and Walsh (1968); Heller and Porter (1978) among others argue that the positive effect of exports on growth show clearly only after countries have achieved a certain level of economic development. Thus, their results indicate that countries heavily dependent on agricultural commodities are less likely to benefit from exports when compared to countries that have a high level development and whose exports contain high domestic value-added components. Other cross sectional studies that support the export-growth hypothesis include Fosu (1990) and lussier (1993) for African countries, and Kugler (1991) for industrialized countries.

Shihab and Abdul-Khaliq (2016) tested the casual relationship between exports and economic growth in Jordan, and observed a unidirectional causality running from economic growth to exports. Bwo-Nung and Chien-Hui (2002) identified the relationship existing between exports and economic growth in five East Asian countries, using multivariate threshold model (import-export ratio). Empirical evidence from the study supports export-led growth in the region except in Hong Kong where the researchers were unable to gather enough data to test the hypothesis.

In the Nigerian context, researchers have looked at the topic from different angles and scopes. For instance, Ugwuebe and Uruakpa (2013) study the impact of export trading on economic growth in Nigeria. The study which disaggregates oil exports from non-oil export trading, show significant influence of both on economic growth, which supports export-led growth hypothesis. Sheridan (2012) also examined relationship between exports, macroeconomic policy, and economic growth in Nigeria. Findings from the study revealed that macroeconomic policies affect exports and for this reason, economic growth could also be affected.

Oyatoye, Arogundade, Adebisi and Oluwakayode (2011) investigates the relationship among three macroeconomic variables − Foreign Direct Investment, Exports and Gross Domestic Product − in Nigeria between 1987 and 2006. The outcome of the study shows that Foreign Direct Investment has a very strong and positive relationship with exports in Nigeria. In another perspective, Olaleye, Edun and Taiwo (2013) examine export diversification and economic growth in Nigeria. The results show that agricultural exports exhibit bi-directional causality with economic growth.

Verter and Becvarova (2016) also examine the impact of agricultural exports on economic growth in Nigeria, and posit that there exists agricultural export-led growth in Nigeria in the long run. They however opine that primary products should not be exported unless they are processed to enable such a country attract a favorable balance of trade.

Olaleye, Edun, and Taiwo (2013) in their study on export diversification and economic growth in Nigeria aver that Less Developed Countries (LDC's) are known to export primary products in their raw forms compared to the developed countries that make huge amount of gains by adding values to their resources before exportation. For instance, as at 2005, the primary products (Natural resources) of Nigeria contributed about 98 percent to total exports, while the remaining 2 percent was contributed by the secondary and tertiary products (International Trade and Development Strategy, 2005), which is instructive.

Overall, the findings from the various studies reviewed indicate a mix of outcomes; some supporting the export-led growth hypothesis while other research results contrast same, thus making the export-growth debate less consensual and an ongoing one.

3.0 Data and Methodology

3.1 Data sources and Description of Variables

Annual time series data from 1981 to 2014 on economic growth, oil exports, non-oil exports, oil imports and non-oil imports were used in this study. This period was chosen due to availability of data on all the selected variables while the number of observations was considered large enough to produce reliable results. Other variables were gross fixed capital formation and labour force. Real gross domestic product (RGDP) was used as proxy for economic growth (output) - a measure of the overall economic activity in Nigeria. Oil exports (OILEXP), non-oil exports (NOILEXP), oil imports (OILIMP) and non-oil imports

(NOILIMP) were used as the disaggregated forms of international trade in Nigeria. Capital was proxied by Gross fixed capital formation (CAF) while labour force was proxied by annual population growth rate. While data on annual population growth rate was obtained from the World Development Indicators (2015) hosted on the Website of the World Bank, data on other variables were obtained from the Central Bank of Nigeria Statistical Bulletin (2015). The data were processed using EViews 8 software.

3.2 Model Specification and Estimation Procedure

The model built to investigate the influence of exports on economic growth in Nigeria was based on the augmented Cobb-Douglas production function. The uniqueness of augmented Cobb-Douglas production function is that it permits the addition of non-traditional inputs such as exports and imports to the traditional factors of production such as capital and labour with a view to capturing their influence on economic growth. This model has been used by Feder (1983) and Fossu (1990), among others. Sequel to the adoption of the augmented Cobb-Douglas production function, the general model to be estimated for Nigeria is defined as follows:

RGDP= *f* (OILEXP, NOILEXP, OILIMP, NOILIMP, GILF, CAF)

The semi-log economic growth equation is explicitly specified as follows:

$$LNRGDP = ß_0 + ß_1OILEXP + ß_2GILF + ß_3CAF + ß_4NOILEXP + ß_5OILIMP + ß_6NOILIMP + \varepsilon_t \quad (1)$$

Where $LNRGDP_t$ is the natural log of economic growth proxied by Real Gross Domestic Product (output) at period t while other variables are as previously defined. The parameters to be estimated are $ß_0$ (constant) and βi (i=1…6), which are the slope parameters; ε_t is the error term at period t that is assumed to be identically and independently distributed with zero mean and constant variance (σ^2).

The method employed in the study was based on recent advancements in the theoretical and empirical Trade - Growth literature. As the study employed time series data, various tests such as unit root test and co-integration test were performed. The cointegration test was determined by using Autoregressive Distributed Lag (ARDL) modeling approach. The model was estimated by using Ordinary Least Square (OLS) method.

3.3 Unit Root Test

It is usually assumed that the underlying variables are stationary when building and testing economic models, but this is not always true when time series data are involved. Hence, before estimating the ARDL model in equation (2), we tested the time series properties of the data to ensure that the univariate series were either I(0) or I(1) but not I(2) − a prerequisite for the adoption of ARDL approach. Hence, the time series properties of the data were examined using Augmented Dickey Fuller (ADF) test at 5% level of significance. The ADF test conducted on each of the variables is based on the null hypothesis of non stationarity. The non-rejection of the null hypothesis implies the need for appropriate differencing to induce stationarity.

3.4 ARDL Approach

The autoregressive distributed lag (ARDL) model is a seminal contribution with single cointegration originally pioneered by Pesaran and Shin (1999) and further extended by Pesaran, Shin and Smith (2001). The ARDL approach has edge over the Johansen framework as it does not require all variables to be I(1) and therefore applicable when we have a mix of I(0) and I(1) variables in our series.

The ARDL method cointegration has certain econometric advantages in comparison to other methods of cointegration which are: all variables of the model are assumed to be endogenous; applicable irrespectively the order of integration of the variable - I(0) and I(1) variables but not I(2); and the short-run and long-run coefficients of the model are estimated simultaneously [Dritsakis, (2011)].

An ARDL representation of equation (1) is formulated as follows:

$$\Delta LnRGDP = \alpha_0 + \alpha_{1i} \sum_{i=1}^{n} \Delta LnRGDP + \sum_{i=1}^{n} \alpha_{2i} \Delta OILEXP_{t-i} + \sum_{i=1}^{n} \alpha_{3i} \Delta NOILEXP_{t-i} + \sum_{i=1}^{n} \alpha_{4i} \Delta GILF_{t-i} +$$

$$\sum_{i=1}^{n} \alpha_{5i} \Delta CAF_{t-i} + \sum_{i=1}^{n} \alpha_{6i} \Delta OILIMP_{t-i} + \sum_{i=1}^{n} \alpha_{7i} \Delta NOILIMP_{t-i} + ß_1 lnRGDP(-1) + ß_2 OILEXP(-1) +$$

$$ß_3 NOILEXP(-1) + ß_4 GILF(-1) + ß_5 CAF(-1) + ß_6 OILIMP(-1) + ß_7 NOILIMP(-1) + \mu_t \qquad (2)$$

Where:

Δ denotes the first difference operator;

α_0 is the drift component

α_0 is the usual white noise residuals.

The left-hand side is the Real GDP (output), which serves as the proxy for economic growth. The first seven expressions with the summation sign (α_1–α_7) on the right-hand side represent the short run dynamics of the model while the last seven expressions ((β_1 –β_7) correspond to the long run relationship.

To investigate the presence of long-run relationships among the RGDP, OILEXP, NOILEXP, GILF, CAF, OILIMP, and NOILIMP, bound testing under Pesaran, *et al*. (2001) procedure was used. The bound testing procedure is based on the F-test. The F-test is actually a test of the hypothesis of no cointegration among the variables against the existence or presence of cointegration (long run relationship) among the variables, denoted as:

H_o: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = 0$
i.e., there is no cointegration among the variables.

H_a : $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq \beta_7 \neq 0$
That is, there is cointegration (long run relationship) among the variables**.**

The paper adopted the Akaike Information Criterion (AIC) and the Schwarz (Bayes) Criterion to select the optimal lag structure for the model. The ARDL (bound test) was based on the Wald-test (F-statistic) used to check the joint significance of the coefficients on the lagged-level terms of the unrestricted (or conditional) error correction model (UECM) in order to determine the existence (or otherwise) of a long-run relationship [Ho: (14)=C(15)=C(16)=C(17)=C(18)=C(19) =C(20)=0]. Two asymptotic critical value bounds developed by Pesaran *et al.* (2001) provide a test for cointegration when the independent variables are I(d) (where $0 \leq d \leq 1$). The lower bound assumes that all the independent variables are I(0) and the upper bound assumes that they are I(1). If the test statistics exceed the respective upper critical value, the null is rejected and we can infer that a long-run relationship exists. From the UECM, we can determine the long-run elasticities, which are the coefficient of the one lagged explanatory variables (multiplied with a negative sign) divided by the coefficient of the one lagged dependent variable. If the test statistic falls below the lower critical values, we cannot reject the null hypothesis of no cointegration. However, if the

F-statistic is significant yet lies within the band, the statistical inference would be inconclusive.

3.5 Restricted Error Correction Model

We can do a further check for cointegration by running the restricted ECM. If the Error Correction Term lag 1 [ECT(-1)] in the restricted ECM is negative and statistically significant, we can conclude that cointegration exists among the variables. Thus, equation (2) in the ARDL version of the error correction model can be referred to as the UECM. In the meantime, the restricted error correction version of ARDL model relating to the variables in equation (2) is as follows:

$$\Delta LnRGDP = \alpha_0 + \alpha_{1i} \sum_{i=1}^{n} \Delta LnRGDP + \sum_{i=1}^{n} \alpha_{2i} \Delta OILEXP_{t-i} + \sum_{i=1}^{n} \alpha_{3i} \Delta NOILEXP_{t-i} + \sum_{i=1}^{n} \alpha_{4i} \Delta GILF_{t-i} + \sum_{i=1}^{n} \alpha_{5i} \Delta CAF_{t-i} + \sum_{i=1}^{n} \alpha_{6i} \Delta OILIMP_{t-i} + \sum_{i=1}^{n} \alpha_{7i} \Delta NOILIMP_{t-i} + \omega ECT(-1) \quad (3)$$

Where ω is the speed of adjustment parameter and ECT is the vector of residuals obtained from estimated cointegration model of equation (2).

4.0 Results and Discussion

4.1 Tests for Unit Root

Table 1 presents the results of the Augmented Dickey-Fuller (ADF) unit root tests conducted on the included variables. While four variables (LNRGDP, OILEXP, NOILEXP and OILIMP) are stationary at first difference, the other three (GILF, CAF, and NOILIMP) are I(0). Since none of the variables is integrated of I(2), the associated model is amenable to ARDL (bounds testing) approach.

Table 1: Results of Augmented Dickey-Fuller Unit Root Test

Variable	Level ADF Test Statistic	First Difference ADF Test Statistic	Decision
LNRGDP	0.298652	-5.619375	I(1)
OILEXP	-1.768264	-5.677354	I(1)
NOILEXP	-2.380645	-6.085736	I(1)
GILF	-3.311297	Not Applicable	I(0)
CAF	-4.340094	Not Applicable	I(0)
OILIMP	-2.266023	-7.079610	I(1)
NOILIMP	-2.983138	Not Applicable	I(0)

MacKinnon (1996) Critical Value at Level at 5% level of significance = -2.954021
MacKinnon (1996) Critical Value at First Difference at 5% level of significance = -2.957110
Source: Computed by the Authors

4.2. Results of Cointegration Test

Using the AIC and the SC, lag 2 was selected as the optimum lag for our model. Table 2 presents the results of the ARDL model with LNRGDP as the dependent variable.

Table 2: Results of ARDL Estimations

Panel A: Dependent Variable: D(LNRGDP)			
Variable	**Coefficient**	**t-Statistic**	**Prob.**
C	-17.87591	-0.967401	0.3541
D(LNRGDP(-2))	-0.186946	-0.728068	0.4818
D(OILEXP(-2))	0.02699	1.037255	0.3219
D(NOILEXP(-1))	-1.576032	-2.34081	0.0391
D(NOILEXP(-2))	-0.984754	-1.487489	0.165
D(GILF(-1))	15.60617	0.501475	0.6259
D(GILF(-2))	-19.74282	-0.699126	0.499
D(CAF(-1))	0.015149	0.125386	0.9025
D(CAF(-2))	-0.078597	-0.825483	0.4266
D(OILIMP(-1))	-0.208482	-0.86442	0.4058
D(OILIMP(-2))	-0.193174	-1.036493	0.3222
D(NOILIMP(-1))	0.02446	0.181635	0.8592
D(NOILIMP(-2))	0.033908	0.472223	0.646
LNRGDP(-1)	-0.408526	-1.410784	0.186
OILEXP(-1)	-0.061393	-2.388793	0.0359
NOILEXP(-1)	0.686721	0.682999	0.5087
GILF(-1)	10.93167	1.828678	0.0947
CAF(-1)	0.059425	0.283117	0.7823
OILIMP(-1)	0.605246	1.626839	0.1321

NOILIMP(-1)	0.002983	0.014932	0.9884
R-squared	0.815	**F-statistic**	2.56
Adjusted R-squared	0.496	**Prob(F-statistic)**	0.047
Durbin-Watson stat		2.468	
Panel B: Diagnostic Tests			
Breusch-Godfrey Serial Correlation LM	Obs * R Squared: 3.78	0.1511	
Breusch-Pagan-Godfrey Hetero-scedasticity	Obs*R-squared : 23.67	0.2090	

Source: Computed by Authors

With an R^2 of about 0.815, it indicates that the independent variables explain about 81.5% of the variation in the dependent variable while an F-statistic of about 2.56 (Prob. F-stat: 0.047) imply the overall model is significant at 5% level.

As can be observed from panel B of Table 2, the ECM passed all diagnostic tests against serial correlation (Breusch-Godfrey test), heteroscedasticity (Breusch-Pagan-Godfrey test). The plot of cumulative sum of squares of recursive residuals indicates the absence of any instability in the coefficients and a confirmation of normality of errors because the plot of the CUSUM statistic fell inside the critical bounds of the 5% significance level of parameter stability (Appendix 1).

The results of the coefficient diagnostics (Wald Test) are presented in Table 3. The F-Statistic of 3.16 $\leq$ 0.05 indicates that the null hypothesis H_o: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = 0$ [or C(14)=C(15)=C(16)=C(17)=C(18)=C(19)=C(20)] should be rejected. In other words, coefficients of output, oil export, non-oil export, capital formation, labour force, oil imports and non-oil imports are jointly significant in the long run. However, the F-statistic of 3.16 (k=6) is higher than the lower bound (2.45) but lower than the upper bound (3.61) of the Pesaran *et al* (2001) critical values. The relevant critical value bounds were obtained from Table C1.iii (with an unrestricted intercept and no trend). Hence, the statistical inference of cointegration is inconclusive. Consequently, we estimated the restricted ECM in order to confirm the existence of cointegration. Long run relationship (cointegration) was confirmed as the error correction term [ECT(-1)] was negative and statistically significant at 5% level (Table 4).

Table 3 : Coefficient Diagnostics: Wald Test

Null Hypothesis: C(14)=C(15)=C(16)=C(17)=C(18)=C(19)=C(20)=0			
Test Statistic	**Value**	**df**	**Probability**
F-statistic	3.16272	(7, 11)	0.0432
Chi-square	22.1390	7	0.0024

Source: Computed by Authors

4.3 Elasticities of the Explanatory Variables

Elasticities of the variables were calculated from the long run estimates provided in Table 2. From the UECM, the long-run elasticity of each variable was determined, which is the coefficient of the one lagged explanatory variable (multiplied with a negative sign) divided by the coefficient of the one lagged dependent variable. The corresponding long run ARDL model for economic growth (output) equation based on the elasticities computed from Table 2 is presented as follows (probabilities in parentheses):

$$\underset{[0.000]}{LNRGDP = -17.8759} + \underset{[0.441]}{0.15030}\mathbf{OILEXP_t} - \underset{[0.050]}{1.6810}\mathbf{NOILEXP_t} - \underset{[0.000]}{26.7588}\mathbf{GILF_t} - \underset{[0.443]}{0.1455}\mathbf{CAF_t} -$$

$$\underset{[0.074]}{1.4815}\mathbf{OILIMP_t} - \underset{[0.497]}{0.0073}\mathbf{NOILIMP_t} + \mu_t \qquad (4)$$

Where μ_t is the usual white noise residuals.

From equation (3), the oil exports elasticity is 0.15 but insignificant at 5 % level. That is, one percent increase in oil exports would increase economic growth (output) by 0.15 percent. This is an indication that over-reliance on oil exports would, in the long run, not add significant value to economic growth in Nigeria. This is probably compounded by the export of crude oil meant for refining into petroleum products such as Premium Motor Spirit (PMS) and Automotive Gas Oil (AGO) hitherto refined within the country, which are imported back into Nigeria for domestic consumption. The non-oil exports elasticity is -1.68 and statistically significant at 5% level. This implies that a one percent increase in non-oil exports would trigger about 1.68% reduction in output

in the long run. This might probably be due to the preponderance of primary products, with little or no value addition, in the country's non-oil exports. Thus, this study does not have strong evidence to support the export-led growth hypothesis. Also, the finding on non-oil exports agrees with Syron and Walsh (1968) as well as Heller and Porter (1978), among others, who averred that the positive effect of exports on growth flourish only after countries have achieved a certain level of economic development. Thus, their results indicate that countries heavily dependent on primary products such as agricultural commodities and mineral products (as in the Nigerian case) are less likely to benefit from exports when compared to countries that have a high level development and whose export contains a high domestic value added. The elasticity of growth in labour force is -26.76 and statistically significant at 5% level, which indicates that a one percent growth in labour force tends to reduce output by 26.76 percent in the long run. This could be partly attributed to poorly skilled labour force and the increase in unemployment rate which aggravates violence and social unrest that disrupt productive activities in the economy. The elasticity of capital formation is -0.15 but statistically insignificant. This might be partly due to high number of abandoned projects and underutilization of capital assets in the country. The elasticities of oil imports and non-oil imports stand at -1.48 and -0.007 respectively but are statistically insignificant in their individual negative influence on economic growth in Nigeria.

In terms of *a priori* expectation, the oil exports elasticity is positive and in tandem with theoretical expectation but the insignificance of its coefficient contradicts the export-led hypothesis. The non-oil exports elasticity is negative and contrasts the *a priori* expectation because of preponderance of primary products in Nigeria's non-oil exports component. Furthermore, the elasticities of growth in labour force, and capital formation are negative, and are in contrast with *a priori* expectations. Lastly, elasticities of oil imports and non-oil imports are negative, which also agree with theoretical expectations.

4.4 Results of the Restricted Error Correction Model

The results of the restricted error correction model are presented in Table 4. With an R^2 of about 0.564, it indicates that the independent variables explain about 56.4% of the variation in the dependent variable while an F-statistic of about 2.03 (Prob. F-stat: 0.050) imply the overall model is significant at 5% level.

As can be observed from panel B of Table 3, the restricted ECM passed all diagnostic tests against serial correlation (Breusch-Godfrey test), heteroscedasticity (Breusch-Pagan-Godfrey test). The plot of cumulative sum of squares of recursive residuals indicates the absence of any instability in the

coefficients and confirmation of normality of errors because the plot of the CUSUM statistic also fell inside the critical bounds of the 5% significance level of parameter stability (Appendix 2). The results reveal that the lagged error correction term [ECT(-1)] is negative and statistically significant, which is a confirmation that long run relationship exists between RGDP and its selected determinants.

The coefficient of the ECT(-1) is -0.3866 and is statistically significant at 5% level. It also means that about 38.7 percent departure from long run equilibrium is corrected in the short run. It also indicates that about 38.7 percent of the disequilibrium in the previous year is corrected in the current year. The implication is that it takes approximately two years, seven months and four days to fully restore a departure from long run equilibrium. That is, the speed of adjustment is low.

Table 4: Restricted Error Correction Model

Dependent Variable: D(LNRGDP)			
Variable	**Coefficient**	**t-Statistic**	**Prob.**
C	0.264444	2.024654	0.0589
D(LNRGDP(-2))	0.126036	0.597914	0.5578
D(OILEXP(-2))	-0.019	-0.86701	0.398
D(NOILEXP(-1))	-0.72534	-1.63949	0.1195
D(NOILEXP(-2))	-0.51199	-0.96771	0.3468
D(GILF(-1))	3.167365	0.276964	0.7851
D(GILF(-2))	-0.6487	-0.07688	0.9396
D(CAF(-1))	0.034819	0.777781	0.4474
D(CAF(-2))	-0.00573	-0.12358	0.9031
D(OILIMP(-1))	-0.28281	-1.48312	0.1563
D(OILIMP(-2))	-0.28727	-1.57936	0.1327
D(NOILIMP(-1))	-0.0026	-0.04902	0.9615
D(NOILIMP(-2))	0.035244	0.722317	0.4799
ECT(-1)	-0.38661	-2.16971	0.0445

R-squared	0.564273	**F-statistic**	2.03482
Adjusted R-squared	0.23107	**Prob(F-statistic)**	0.05028
Durbin-Watson stat			1.628797
Panel B: Diagnostic Tests			
Breusch-Godfrey Serial Correlation LM	Obs * R Squared: 2.62	0.2694	
Breusch-Pagan-Godfrey Hetero-scedasticity	Obs*R-squared : 20.32	0.0876	

Source: Computed by Authors

4.5 Short Run Causality Test

Table 5 presents the results of short run causality between the dependent and independent variables.

Table 4: Results of Wald Test for Short Run Causality

Dependent Variable: D(LNRGDP)				
Variable	**Null Hypothesis**	**Chi- Square Statistic**	**Probability**	**Decision**
D(LNRGDP(-2))	C(2)=0	0.357501	0.5499	Accept Ho
D(OILEXP(-2))	C(3)=0	0.751705	0.3859	Accept Ho
D(NOILEXP(-1))	C(4)=C(5)=0	3.083105	0.2140	Accept Ho
D(NOILEXP(-2))				
D(GILF(-1))	C(6)=C(7)=0	0.106903	0.948	Accept Ho
D(GILF(-2))				
D(CAF(-1))	C(8)=C(9)=0	0.629426	0.73	Accept Ho
D(CAF(-2))				
D(OILIMP(-1))	C(10)=C(11)=0	3.285011	0.1935	Accept Ho
D(OILIMP(-2))				

D(NOILIMP(-1))				
D(NOILIMP(-2))	C(12)=C(13)=0	0.894278	0.6395	Accept Ho

Source: Computed by Authors

The Wald test results indicate that the null hypotheses cannot be rejected at 5% significance level, which indicate that there is no short run causality running from: RGDP(-2) to current output; oil exports to current output; non-oil exports to current output; growth in labour force to current output; capital formation to current output; oil imports to current output; and from non-oil imports to current output.

5.0 Conclusion and Recommendations

In spite of the growing literature on export-led growth hypothesis at both regional and national levels, there is no empirical research (to our knowledge) that disaggregated exports and imports while at the same time adopted ARDL approach to this topic over the study period (1981-2014) in Nigeria. This paper seeks to investigate the influence of disaggregated (oil and non-oil) exports on economic growth in Nigeria and thereby tests the validity of the export-led growth hypothesis. The results indicate the existence of long-run relationship between RGDP and oil-exports, non-oil exports, labour force, capital formation, oil imports and non-oil imports. That is, the results indicate that the variables under consideration are co-integrated.

The restricted ECM shows no short run causality running from any of the explanatory variables to output (economic growth). The long run elasticities indicate that oil exports do not significantly enhance economic growth while non-oil exports significantly hurt economic growth in the long term. This might probably be due to the preponderance of primary products, with little or no value addition in the country's non-oil exports. Furthermore, labour force elasticity exerts a significant negative influence on economic growth due probably to the poorly skilled labour force and the increase in unemployment rate, which aggravates violence and social unrest that disrupt productive activities in the economy. The elasticity of capital formation is negative but statistically insignificant, which might be partly due to high number of abandoned projects and underutilization of capital assets in the country. The elasticities of oil imports and non-oil imports are negative but statistically insignificant. The reasons are not far-fetched; oil imports are avoidable, irrational and rent-seeking for an oil-producing economy such as Nigeria while non-oil imports involve higher volume of consumer goods rather than investment goods such as machinery and equipment required for production. The

coefficient of the error correction term [ECT(-1)] at -0.3866 implies a low speed of convergence of output to its long run equilibrium as about 38.7 percent of the disequilibrium in the system is corrected within a year.

Overall, the findings of this study cannot provide strong evidence to support the export-led hypothesis, while also reinforcing the outcomes of some previous works such as Walsh (1968) as well as Heller and Porter (1978), among others, who averred that the positive effect of exports on growth flourish only after countries have achieved a certain level of economic development. Findings from this study confirm their argument that countries heavily dependent on primary products such as agricultural commodities and mineral products (as in the Nigerian case) are less likely to benefit from exports when compared to countries that have a high level development and whose export contains a high domestic value added. Results from the study also confirm that traditional as well as non-traditional factors of production could influence economic growth.

It is therefore recommended that government should overhaul and expand domestic refining capacity; strengthen export-oriented policies; enhance value-added non-oil exports; adopt import-substitution strategy for consumer goods; enhance human capacity building; and ensure effective project management in order to turnaround, and/or minimize abandoned projects. Effective implementation of these strategies seems the *sine qua non* for accelerating economic growth in Nigeria.

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References

Akande, S.O. and Roberts, F.O.N. (2010). “Nigeria: Profile of a Giant in the Sun” in Akande, S.O. and J.A. Kumuyi (eds) Nigeria at 50: Accomplishments, Challenges and Prospects, Ibadan: NISER

Amsden, L. (1989), Asia’s next Giant: South Korea and Industrialization. New York: Oxford University Press.

Balassa, B. (1978), “Exports and Economic Growth: Further Evidence”, *Journal of Development Economics*, 5, 2, pp 181-89.

Balassa, B. (1985), “Exports, Policy Choices, and Economic Growth in Developing Countries

after the 1973 Oil Shock", *Journal of Development Economics*, 4, 1, pp 23-35.

Bhagwati, J. (1978), Anatomy and Consequences of Exchange Controls Regime: Liberalization
Attempts and Consequences. Cambridge, M. A: Ballinger.

Bwo-Nung H. and Chien-Hui L. (2002). The Relationship between Exports and Economic Growth in East Asian Countries: A Multivariate Threshold Autoregressive Approach. *Journal of Economic Development, 27*(2).

Dritsakis, N. (2011). Demand for Money in Hungary: An ARDL Approach. *Review of Economics & Finance,* Vol. 5, pp 1-16. Better Advances Press.

Emery, R. F. (1967), "The Relation of Exports and Economic Growth", *Kyklos*, 20, 2, 470-60

Emery, R. F. (1968), "The Relation of Exports and Economic Growth: A Reply", *Kyklos*,21, 4,
757-60.

Feder, G. (1983), "On Exports and Economic Growth". *Journal of Development Economics*, 12,
2, 59-73.

Fosu, A. K. (1990), "Exports and Economic Growth: The African case", World Development, 18, 6, 831-35.

Heller, P. S. and Porter, R. C. (1978), "Exports and Economic Growth: An Empirical Re-Investigation", *Journal of Development Economics,* 5, 2, 191-93.

Henriques, I. and Sadorsky, P. (1996), Exports-led Growth or Growth-Driven Exports? The Canadian case", *Canadian Journal of Economics*, 29, 3 541-55.
International Trade and Development Strategy (2005). Retrieved from www.unctad.org

Kavoussi, R. M. (1984), "Exports Expansion and Economic Growth: Further empirical evidence", *Journal of Development Economics,* 7, 3, 241-50.

Kravis, I. B. (1970), "Trade as a Handmaiden of Growth: Similarities between the Ninetieth and
Twentieth Centuries", *Economic Journal*, 80, 320, 850-72.

Krueger, A. O. (1978), Foreign Trade Regimes and Economic Development: Liberalization Attempt and Consequences. Cambridge, M. A.: Ballinger.

Kugler, P. (1991), "Growth, Exports and Co-integration: An Empirical Investigation", Weltwirtschaffliches Archiv, 127, 1, 73-82.

Lussier, M. (1993), "Impact of Exports on Economic Performance: A Comparative Study",

Journal of African Economics, 2, 1, 106-27.

Moschos, D. (1989), "Exports Expansion, Growth and the Level of Economic Development: An
Empirical Analysis", *Journal of Development Economics*, 30, 1, 93-102.

Nyong, M. O. (2005), International Economics: Theory, Policy and Applications. Wusen Press
Limited-Calabar-Nigeria.

Olaleye, S. O., Edun, F., and Taiwo, S. B. (2013). Export Diversification and Economic Growth in Nigeria:An Empirical Test of Relationship Using a Granger Casualty Test. *Journal of Emerging Trends in Economics and Management Sciences, 5*(1), 70-79. Retrieved from jetems.scholarlinkresearch.org

Oyatoye, E. O., Arogundade, K. K, Adebisi, S. O & Oluwakayode, E. F. (2011). Foreign Direct Investment, Export and Economic Growth in Nigeria. *European Journal of Humanities and Social Sciences, 2*(1), 66-86.

Pesaran, M. H, Shin, Y. (1999), "An Autoregressive Distributed Lag Modelling Approach to Cointegration analysis". In: Strom, S., Holly, A., Diamond, P. (Eds.), Centennial Volume of Rangar Frisch, Cambridge University Press, Cambridge.

Pesaran, M. H, Shin, Y, Smith, R. J. (2001), "Bounds Testing Approaches to the Analysis of Level Relationships". *Journal of Applied Econometrics*, 16: 289-326. 22

Ram, R. (1985), Exports and Economic Growth: Some Additional Evidence", *Economic Development and Cultural Change*, 33, 2, 415-25.

Ram, R. (1987), Exports and Economic Growth in Developing Countries: Evidence from Time-
Series and Cross Sectional Data", *Economic Development and Cultural Change*, 36, 1, 51-63.

Serven, A. K. (1968), "The Relation of Exports and Economic Growth: Comment", *Kyklos*, 21,
3, 546-48.

Sheridan, B. J. (2012). Three Essays Concerning the Relationship Between Export, Macro-economic Policy, and Economic Growth. Theses and Dissertations--Economics, University of Kentucky, Economics. Retrieved from http://uknowledge.uky.edu/ economics_etds/7

Shihab, R. A and Abdul-Khaliq, T.S. (2014). The Causal Relationship between Exports and Economic Growth in Jordan. *International Journal of Business and Social Science, 5*(3). Retrieved from www.ijbssnet.com

Syron, R. F. and Walsh, B.M. (1968), "The relation of exports and growth: A note", *Kyklos*, 21,

3, 541-45.

Todaro, P. and Smith, S. C. (2003), Economic Development. Eight Edition, Addison, Wesley, Singapore.

Tyler, W. G. (1981). "Growth and Exports Expansion in Developing Countries: Some Empirical
Evidence". *Journal of Development Economics*, 9, 1, 121-30.

Udah, E.B. (2012). Export-Growth Hypothesis: An Econometric Analysis of the Nigerian Case.
Interdisciplinary Journal of Research in Business, Vol. 2, Issue. 4, pp.39- 49.

Ugwuebe S.O and Uruakpa P.C. (2013). The Impact of Export on Economic Growth in Nigeria. *International Journal of Economics, Business and Finance, 1*(10), 327-341.

Verter N. and Bečvářová V. (2016). The Impact of Agriculture Export on Economic Growth in Nigeria. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 64*(2), 691–700. doi:http://dx.doi.org/10.11118/actaun201664020691

Watkins, M. H. (1963), "A Staple Theory of Economic Growth", *Canadian Journal of Economics and Political Science*, XXIX, 141-53.

World Bank's Website (2016). www.worldbank.org. Accessed on 15th August, 2016.

World Development Indicators (2015). www.worldbank.org. Accessed on 15th August, 2016.
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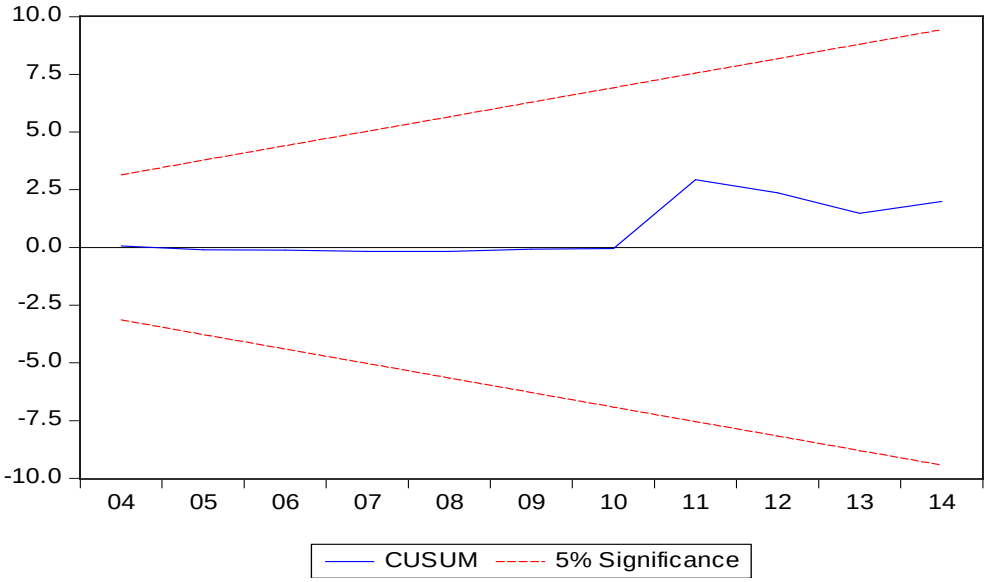
Appendix 1: Plot of Cumulative Sum of Squares of Recursive Residuals–ARDL Estimations



Appendix 2: Plot of Cumulative Sum of Squares of Recursive Residuals – Restricted Error Correction Model