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DOES THE EXPORT-LED GROWTH HYPOTHESIS HOLD FOR NIGERIA? EMPIRICS FROM TODA-YAMAMOTO GRANGER-CAUSALITY FRAMEWORK

Richardson Kojo Edeme, Sunday Okubor Ijieh and Nkalu Chigozie Nelson

[1]Department of Economics, University of Nigeria, Nsukka, Enugu State, Nigeria
[2]Department of Economics, College of Education, PMB 2090, Agbor, Delta State, Nigeria
[3]Department of Economics, University of Nigeria, Nsukka, Enugu State, Nigera

ABSTRACT: *This study empirically analyzed the relationship between export and economic growth. Specifically, the study examined the validity of the Export-Led Growth Hypothesis in Nigeria employing the Toda-Yamamoto Granger Causality framework. The result shows that there is unidirectional causality running from export to economic growth. This implies that the causality running from export to economic growth is the strongest, revealing that export-led growth hypothesis holds for Nigeria. This suggests that encouraging export is necessary in stimulating growth. It is therefore imperative for government to put policies in place to stimulate the production in the non-oil sectors of the economy. This would assist in encouraging exports and discourage imports.*

KEYWORDS: Economic growth, Export, Import, Export-led growth hypothesis, Toda-Yamamoto Granger Causality Framework

JEL Classification: C55, F14, F43

INTRODUCTION

There are divergent opinions as whether export performance stimulates growth or growth stimulates export. A further examination of the relationship is therefore imperative since the determination of the causal pattern between export and growth is significant in the determination of the nature of policies to be adopted in nation's development strategies. Theoretically, different conclusions can be reached on the nexus between exports and economic growth. For instance, the standard neoclassical trade argument would express a substantial positive impact of export and trade on economic performance as a result of better allocation of resources. Also the two-gap models of development would suggest an important positive role of exports on economic development because of the existence of foreign reserve gap. To the Marxist however, trade is one mechanism through which industrialized nations adopts to exploit the developing countries. The literature on the relationship between export and economic growth prominently features two hypotheses: the export-led growth hypothesis and growth-led export hypothesis. The Export-Led Growth Hypothesis (ELGH) postulates that export expansion is the key determinants of economic growth, thus emphasizing the importance of export in engendering economic growth. Essentially, it reflects the view that export-oriented policies act as a catalyst for output growth through efficient resource allocation, greater capacity utilization, and exploitation of economies of scale, the stimulation of technological improvements and diffusion of technical knowledge through the international market competition. In support of this thesis, Mishra (2011) argued that causality runs from the growth of output to the growth of exports. The implication of this is that improved export engenders economic growth, proxied by gross domestic product (GDP). The two way causal hypotheses, which is bi-directional causality, revealed that export and

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economic growth complement each other that causality runs from both directions. Consequently, Maneschiold (2008) aptly suggested that policies geared towards the attainment of high economic growth should focus on output and export expansion. Agreement on export-led growth emerged among economists after the successful story of the newly industrialized countries of South Asia, hence, the notion among some researchers and policy makers that developing countries can achieve economic growth through export promotion, citing the case of the 'Gang of Four' that have been able to achieve a high and sustained rates of economic growth due outward-oriented economic policies (Yelwa and Diyoke 2013). As a result of the attainment of this feat, different policies and strategies have been put in place to encourage export in developing countries because of its importance in promoting price stability, and sustainable growth in output, income and employment. As succulently put by Ahmad and Harnhirum (2009), "*the economic success of the Asian newly industrializing countries has prompted all countries in the South East Asian Nations to pursue aggressive export promotion strategies*". Ideally, export activities stimulate growth in a number of ways including production and demand linkages, economies of scale due to larger international markets, increased efficiency, adoption of superior technology embodied in foreign-produced capital goods, learning effects and improvement of human resources, increased productivity through specialization (Liu, 2007, Giles and Williams, 2000, Sahni, 2012). While practical evidence in support of export-led growth (ELG) may not be universal, rapid export growth has been an important feature of East Asia's remarkable record of high and sustained growth.

The subject of ELG can also be approached from the wider debate on trade openness and growth. Martin (2001) and Masson (2001) noted that what appears to be gaining prominence in recent years from cross-country growth differences is that most of them that have witnessed unprecedented growth have taken advantage of international trade. This evidence in favour of ELG and global trend towards trade liberalization appears to have influenced countries like Kenya to adopt an export-led growth strategy as embedded in Kenya's poverty reduction strategy framework. However, in many developing countries, there is often very low domestic demand so that exports remain one of the few channels that in the longer run would significantly contribute to higher income per capita growth rates of a country. Also evidence from some studies indicates that export diversification has positive effect on per capita income growth.

In the examination of the nexus between export and economic growth two notable hypotheses have emerged. They are the Export-Led Growth Hypothesis (ELGH), the Growth-Led Export Hypothesis (GLEH) and the two-way causal hypothesis and several studies have supported or opposed these hypotheses. To Jordan and Eita (2010), export accelerates growth through technological spill-over and other externalities. But this occurs when export industries are considered as key sector of the economy. The implication of this is that an export-led growth strategy aims at providing producers with incentives to export goods through various policies. This approach is aimed at increasing the capability of producing goods that can compete in the world market using advanced technology and make provision for foreign exchange needed to import capital goods. Exports allow domestic production to achieve a high level of economies of scale. Abdulnasser and Manuchehr (2000) and Taban and Aktar (2008) are of the view that export-support policies contribute to economic growth through various ways: First an increase in export leads to output expansion through foreign trade multiplier. Second, export relaxes the binding foreign exchange constraint to allow increases in imports of capital and intermediate goods which lead in turn to economic growth. Third, export increase

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efficiency through competition which in turn gives rise to economies of scale and diffusion of the technical knowledge in production, which is potentially an important source of growth. Giles and Williams (2000) contend that China's experience during the 1980s and 1990s tend to support the argument that openness to trade is a mechanism for achieving more rapid and efficient growth with better distribution of resources. In view of the above Krueger (1995); Chong, Yusop and Law, (2007); Rahmanddi and Ichinashi, (2011) and Veulemans (2012) supported Finlay and Watson (1996) and identified trade policy as the crucial element of economic policy in the growth equation. They argue that Hong Kong, Taiwan, Singapore and the Republic of South Korea, (referred here as the Gang of Four) have been successful in achieving high and sustained rates of economic growth because of their free-market, outward-oriented policies.

Several other studies have also come to conclusion that growth stimulates export. They however expressed fear that reliance on export to drive the economy may not result in desired sustained growth, especially in Less Developed Countries (LDCs) due to volatility and unproductive nature of the market. Beside, most of these countries are consumer nations rather than producer nations and therefore exposed to the vagaries of the world market. This view was supported by Veulemans (2012) when he asserts that growth causes exports when natural resources are in abundance and fully harnessed in domestic economies.

Arising from the above, theoretical insight would be valuable in the study of the link between export and growth, but despite series of studies conducted in Nigeria, it is difficult to generalize the outcome due to the methodology adopted. With the implementation of the new export policy and the quest to attain desired growth, it is imperative to examine the relationship between export and economic growth in Nigeria with a view to establishing if export-led growth hypothesis hold for Nigeria adopting the Toda-Yamamoto co integration framework. This approach would provide a better insight in providing appropriate and useful policy measure to address some of the export challenges facing the country especially in the face of the dwindling oil revenue.

Previous Studies on the Relationship Between Export and Growth

Studies that provide support for the export-led growth hypothesis include Maneschiold (2008). The co-integration test results indicated that there is a long-run relationship between GDP growth and export for Argentina and Mexico. Applying both the Johansen co-integration approach and accounting, Mohammed, Saafi and Farhat (2014) also found significant evidence on export-led growth for Tunisia. The study by Whiteman, Sumer and Riezman (1995) employed measure of conditional linear feedback and found a causal ordering from export growth to income growth in 65 out of the 126 countries. More so, Shirazi and Manap (2004) used data from1960- 2003 for Pakistan and Sri-Lanka to analyze the relationship between export and economic growth based on co-integration and multivariate Granger causality framework and found a unidirectional causality from export to output. Similarly, Anwar and Sampath (2000) examined the export-led growth hypothesis for 97 countries from 1960-1992 and found evidence of unidirectional causality in the case of Pakistan and Sri Lanka and no causality for India. Shahbaz (2012) adopted the Mankiw framework and examined the effect of trade openness on Pakistan economic growth. The result of the Granger causality test supports the Growth-Led Hypothesis. Similarly, Bhati (1995) examined the exports-economic growth nexus for India, and found evidence of bi-directional causality between growth of exports and economic growth.

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Xu (1996) confirms the rejection of the export-led growth hypothesis for India and concludes that growth of export is caused by output growth in India. Similarly, Dreger and Hezer (2012) studied for the period 1961-1993 and found that growth in GDP causes growth in export while the causality that runs from export to GDP appears to be a short run phenomenon. Nain, and Ahmad (2010) employed the granger causality test and error forecast for 14 years to further support the growth-led Hypothesis in Indian. Using quarterly data from 1960Q1-2008Q3, Ziramba (2011) provide evidence of both the export-led growth hypothesis and the growth-led export hypothesis using the modified Granger causality test. Amavilah (2003) study for Namibia support the general importance of exports in stimulating growth but find no discernible sign of accelerated growth due to exports. Thurayia (2004) conducted a study on the relationship between exports and economic growth in Saudi Arabia and Sudan and found that the growth rate in total exports in Saudi Arabia had an active role in achieving economic growth, while it had a weak influence on the economy of Sudan. This result confirms the validity of the export-led growth hypothesis for Saudi Arabia and Sudan. Yousif Khalifa Al-Yousif (1997) investigated the relationship between exports and economic growth in Saudi Arabia, Kuwait, UAE and Oman for the period 1973-93 using panel data. Although the result indicates a positive and significant relation between the variables, no causality was established. Hamed and Devi (2012) investigated the causality between exports and economic growth of Pakistan through the application of econometric technique Granger causality by using real exports of Pakistan, real GDP and real terms of trade based on annual data from 1960 to 2009. The empirical results from Granger causality technique clearly indicated that there exists unidirectional causality from GDP to exports in Pakistan but not vice versa. A major conclusion arrived by this study is that policy makers need to promote export expansion policies with the aim of achieving high economic growth.

To others such as Boame (1998), Khalafalla and Webb (2001), Konya (2004), Nain et al., (2010), Samad (2011), Alam (2011), Antri (2012), export and economic growth complement each other. This implies that causality runs from both directions. This group of scholars asserts that policies and programmes for the attainment of high growth should focus on export expansion. For Nigeria, Omisakin (2009) analyzed the causal and dynamic relationship between foreign trade and growth of the economy with the Autoregressive distributed lag model (ARDL) technique. The results showed bi-directional relationship between export and output. Udube and Okulegbe (2012) employed co integration to determine whether there is bi-directional relationship between exports and economic growth and thence evaluated the significant impact of exports on the economic growth in Nigeria. The study found that there exist a long-run relationship between economic growth and export. Also, imports and exchange rate were positively correlated with GDP while export was negatively related with GDP.

The last strand of studies found no evidence of causal relationship between export and economic growth. Studies in this group include Darrat (1986), Jung and Marshall (1985) and Sharma Panagiotidis (2005).For Hong-Kong, South Korea and Singapore, the Granger causality tests found no causal effects running from exports to economic growth or vice-versa in three countries economic growth and export are causally independent, except for Taiwan

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METHODOLOGY

From empirical literature and in terms of methodology, studies in this area can be grouped into two. The first category employed the traditional econometric technique based on single equation or multiple equation models while the second group used econometric techniques based on vector autoregression (VAR) in which issues of co integration and causality are considered. In applying VAR, both the dependent and independent variables are treated on equal footing. Unlike the single equation model where the relationship has dependent and explanatory variable(s) and the value of the dependent variable id determined or influenced by the explanatory variable(s).

Given two variables *X* and *Y* having *K* lag values of *X* (as measured by X_1) in which *X* influences *Y* and *Y* influences *X*, then each of the relationship can be modeled as:

$$X_{it} = \omega + \sum_{j=1}^{k} bi_j X_{t-j} + \sum_{j=1}^{k} \delta_j Y_{t-j} + U_{1t} \qquad \text{\_\_\_\_\_} (i)$$

$$Y_t = \omega 1 + \sum_{j=1}^{k} \varphi_j Y_{t-j} + \sum_{j=1}^{k} \delta_j Y_{t-j} + U_{2t} \qquad \text{\_\_\_\_\_} (ii)$$

where ω, *b* and φ = parameters to be estimated; $X_t - X_{t-j}$ (ΔX_t) =first difference of the series; $U's$= stochastic error terms, known as impulses or shocks; *k* = lag length and *t* = time period (year). As a requirement, the stationarity of the series are conducted, employing one or combination of two of such test as Augemented Dickey Fuller (ADF) test, Philip-Perron (P-P) test. Such test can be performed on both the level and first differenced observation by estimating three different models under three conditions as: No constant and no trend; Constant and no trend and Constant and trend. In specific terms, these models can be stated separately as;

$$\Delta X_t = \delta X_{t-1} + \sum_{i=1}^{k} F_i \Delta X_{t-1} + Ut \qquad \text{\_\_\_\_\_} (iii)$$

$$\Delta X_t = \beta_0 + \delta X_{t-1} + \sum_{i=1}^{k} F_i \Delta X_{t-1} + Ut \qquad \text{\_\_\_\_\_} (iv)$$

$$\Delta X_t = \beta_0 + \beta_2 t + \delta X_{t-1} + \sum_{i=1}^{k} F_i \Delta X_{t-1} + Ut \qquad \text{\_\_\_\_\_} (v)$$

where $X_t - X_{t-1} = \Delta Xt$ (first difference of the series); *F*, δ *and* β = parameters to be estimated k, *t and U's* as previously defined.

Model Specification

The standard methodology of growth model begins with the neoclassical function in which aggregate real output determined by capital stock, labour and their efficiency. But the

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emergence of endogenous growth theory and model (eg, Romer 1986 and Barro 1991) suggests that other endogenous factors such as government policies (government spending and tax, import policies) can also affect economic growth. Accordingly, several studies have attempted to integrate exogenous forces with endogenous forces in explaining economic growth across countries. To explain the association between economic growth and export, this study has postulated a specification based on Shirazi and Manap (2004) as:

$ECG_t = f\,(EXP_t)$ …….. vi

Given that production activities in a developing country like Nigeria heavily depends on imported inputs, equation (6) is augmented with import variable to become:

$ECG_t = f\,(EXP_t, IMP_t\text{-}GDP_t)$ ……. vii

When liberalized, we have:

$logECG_t = \alpha_0 + \beta_1 logEXP_t + \beta_2 log(IMP_t\text{-}GDP_t) + e_t$ viii

where ECG = economic growth (proxied by gross national product (GNP) (Y-X)., EXP = export, IMP-GDP = import-GDP, e = error terms which captures the effect of other variables not included in the model

Estimation Technique

Various techniques can be adopted in conducting the co integration analysis among time-series variables such as the residual-based approach proposed by Engle and Granger (1987) and the maximum likelihood-based approach proposed by Johansen and Julius (1990) and Johansen (1992). This paper adopts the autoregressive distributed lag (ARDL) bounds method. This approach is superior to other co integration procedures because it is applicable irrespective of the degree of integration of the variables and thus avoids the pre-testing of the order of integration of the variables. Also it allows the simultaneous estimation of the long-run and short-run parameters since it takes into consideration the error correction term in its lagged period and third, the ARDL approach is more robust and performs better for small sample sizes. The ARDL approach requires estimating the conditional error correction version of the ARDL model for variables under estimation. In line with our model specified above, the ARDL version is expressed as:

$$\Delta ECG_t = \beta_1 + \beta di\hat{\delta}_{t-1} + \sum_{i=1}^{k} \beta_1(i)\Delta EXP_{t-1} + \sum_{i=1}^{k} \beta_2(i)\,\Delta EXP + \sum_{i=1}^{k} \beta_3(i)\; ECG_{t-1} + IMPt - 1 + U_1 t \; + \; \beta 4ECG + Uit \quad \ldots\ldots\ldots\ldots \quad)$$

Here, β_i, are parameters to be estimated

The error correction (EC) representation of the ARDL model can be obtained by writing Equation (3) in terms of the lagged levels and the first differences of the variables under consideration is given by:

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$$\Delta ECG_t = \beta_1 + \beta di\hat{\delta}_{t-1} + \sum_{i=1}^{k} \beta_1(i)\Delta EXP_{t-1} + \sum_{i=1}^{k} \beta_2(i)\,\Delta EXP + \sum_{i=1}^{k} \beta_3(i)\,ECG_{t-1} + IMPt - 1 + U_1 t \;+\; \beta 4ECG + Uit \;+\; \chi ECMi - j$$

where χ the speed of adjustment and ECM_{t-1} is error correction term lagged by one-time period.

Although, different approaches can be used to conduct Granger causality test, Phillips and Toda (1993, 1994) argue that VAR estimation often entails nuisance parameters and therefore no satisfactory basis for mounting a statistical test of causality test applies since the F-test statistic does not have a standard distribution when variables are integrated. To overcome this problem, we adopted the modified Granger causality methodology developed by Toda and Yamamoto (1995) causality approach. It is a procedure requiring the estimation of an 'augmented' VAR, which guarantees the asymptotic distribution of the MWald statistic. Zapata and Rambaldi (1997) provided evidence that the MWALD test has a comparable performance in size and power to the LR and WALD tests. The basic idea behind the TYDL is to artificially augment the correct VAR order, k with dm extra lags, where dm is the maximum likely order of the time series in the system. In line with the foregoing, equation (ii) above can be re-specified using the lag augmented VAR representation as:

$$l\_ECG_t = \beta_{10} + \sum \varepsilon_{\pi 1} il\_ECG_{t-1} + \sum \phi_{1i} l\_ECG_{t-1} + \sum \eta_{1i} l\_EXP_{t-1} + \sum \lambda_{1i} l\_EXP_{t-1} + \sum \psi_{1i} l\_IMP_{t-1} + \sum \rho_{1i} l\_IMP_{t-1} + \varepsilon 1t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad Xa$$

$$l\_EXPt = \beta_{20} + \sum \varepsilon_{21} il\_ECG_{t-1} + \sum \phi_{2i} l\_ECG_{t-1} + \sum \eta_{2i} l\_EXP_{t-1} + \sum \lambda_{2i} l\_EXP_{t-1} + \sum \psi_{2i} l\_IMP_{t-1} + \sum \rho_{2i} l\_IMP_{t-1} + \varepsilon 2t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad Xb$$

$$l\_IMPt = \beta_{30} + \sum \varepsilon_{31} il\_ECG_{t-1} + \sum \phi_{3i} l\_ECG_{t-1} + \sum \eta_{3i} l\_EXP_{t-1} + \sum \lambda_{3i} l\_EXP_{t-1} + \sum \psi_{3i} l\_IMP_{t-1} + \sum \rho_{3i} l\_IMP_{t-1} + \varepsilon 3t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad Xc$$

where $\varepsilon, \phi, \eta, \lambda \psi$ and ρ are parameters, p is the true lag length, $\varepsilon_{1t}, \varepsilon_{2t}$, and ε_{3t} are the residuals. Equations (Xa), (Xb) and (Xc) are to determine the direction of causality between export and economic growth.

The Toda and Yamamoto procedure is applied by using MWald tests to verify if the coefficient of the lagged values is significantly different from zero in the above equations. This test restricts the associated parameters of the explanatory variables to zero. It is often imperative to know the response of one variable to an impulse in another variable in a system that involves a number of further variables as well which also requires the determination of the impulse response relationship between two variables. To this end, generalized impulse response which is invariant to the ordering of the variables in the VAR has been used. To infer the degree of erogeneity of the variables beyond the sample period, the decomposition of variance which measures the percentage of a variable's forecast error variance that occurs as the result of a shock from a variable in the system is considered. Data for this study are

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annual time series generated from Central Bank of Nigeria Statistical Bulletin and National Bureau of Statistics Annual Abstract of Statistics.

PRESENTATION AND DISCUSSION OF RESULTS

Unit Root Test Result

Using ADF and PP unit root tests, the result in Table 1 below shows that the variables are non-stationary at their levels but stationary at their first differences, being integrated of order one, I(1).

Table 1: Unit root Test Results

	Test	ADF		PP	
Variables		Intercept and no Trend	Intercept and Trend	Intercept and no Trend	Intercept and Trend
Level	ECG	-0.1201,[1] (-2.931)	-1.6226, [1] (-3.518)	-0.1201, [1] (-2.931)	-1.7891, [1] (-3.518)
	EXPT	0.8579, [1] (-2.143)	-3.3224, [1] (-3.523)	0.7422, [1] (-2.931)	-3.5000, [1] (-3.518)
	IMP	0.9542, [1] (-2.082)	-3.5181, [1] (-8.585)	0.8721, [1] (-2.798)	-8.8543, [1] (-3.652)
First Difference	ΔECG	-6.5523, [1] (-3.521)	-6.5571,[1] (-3.521)	-6.5523, [1] (-2.933)	-6.5571, [1] (-3.521)
	ΔEXPT	-8.6866, [1] (-2.933)	-8.6866, [1] (-3.521)	-9.9507 , [1] (-2.933)	-8.5852, [1] (-3.524)
	ΔIMP	0.9542, [1] (-2.821)	-8.5853, [1] (-1.011)	-8.8543, [1] (-3.652)	-8.3690, [1] (-2.753)

Co integration Test

Economic growth, export and import are stationary of I (1) and hence co-integration analysis is needed. Before doing this, it is necessary to perform the ARDL estimates through the diagnostic tests. A two-step procedure is used in estimating the long-run relationship. As can be seen from the result in Table 2, R^2 is 95 percent and it is statistically significant at 1 percent level, implying that the model fits is well established.

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Table 2: Estimated Long Run Coefficients using the ARDL Approach

Estimated Long Run Coefficients using the ARDL Approach ARDL(1,1,0,0,0) selected based on Schwarz Bayesian Criterion			
Dependent variable is lnECG			
Regressor	Coefficient	Standard Error	t-Ratio[Prob]
l_EXP_t	2.4556	0.4561	3.5671[.000]**
l_IMP_t	-0.2311	0.0231	2.4872[.001]**
C	-5.3464	3.6299	-1.03561[.031]
R^2	.95243		
S.E. of Regression	.05412	F-Stat. F(2,84)	351.7733[.000]
Diagnostic Tests			
Test Statistics	**LM Version**		
A: Serial Correlation	χ^2_{auto} (1) = .24590[.552]		
B: Functional Form	χ^2_{RESET} (1) = .0112082[.298]		
C: Normality	χ^2_{Norm} (2) = .3452[.670]		
D: Heteroscedasticity	χ^2_{Het} (1) = .28902[.221]		

*Note: ** and * denote significant at 1percent and 5percent level. Figures in parenthesis are p-values*

Table 2 shows that economic growth, export and import are co-integrated when lagged value of economic growth is taken as dependent variable. This is evidenced in F-statistic which is greater than both the 95 percent Upper Bound critical value of 4.000 and 4.78 respectively. However, the lagged value of export and import as a dependent variable never establishes co-integration because the calculated F-statistic is less than the 95 percent Lower Bound critical value. The existence of single co-integrating equation suggests that there is long-run relationship among the variables. The estimated coefficients showed that export has positive impact on economic growth while import is negatively related to economic growth. In specific terms, a 1 percentage increase in export leads to 2. 56 percent increase in economic growth, keeping other things constant. Also, a 1 percent rise in import decreased economic growth by about 0.23 percentage point.

The results of the short-run dynamic growth model and the various diagnostic tests are presented in Table 3.

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Table 3: Short Run Dynamics Result for the Selected ARDL Model

Error Correction Representation for the Selected ARDL Model ARDL(1,1,0,0,0) selected based on Schwarz Bayesian Criterion			
Dependent variable is Δl_ECGt			
Regressor	Coefficient	Standard Error	t-Ratio [Prob]
Δl_EXP_t	0.3456	.3422	2.0072[.0003]**
Δl_IMP_t	-0.1309	.09082	2.3422[.0000]**
ECM_{t-1}	-0.4579	.02567	-3.1230[.0001]**
R^2	.78930		
S.E. of Regression	.071209	F-Stat. F(6,74)	10.8922[.000]
Diagnostic Tests			
Test Statistics	**LM Version**		
A: Serial Correlation	χ^2_{auto} (1) =	.2012[.398]	
B: Functional Form	χ^2_{RESET} (1) =	2.4453.[.077]	
C: Normality	χ^2_{norm} (2) =	.45760[.298]	
D: Heteroscedasticity	χ^2_{Het} (1) =	.032901[.677]	

Note: Figures in parenthesis are p-values. Δ represents the first difference operator;

*. **and * denote significant at 1percent and 5percent level respectively*

As revealed in Table above, about 78 percent of the variation in economic growth is explained by explanatory variables. The result further shows that the estimated coefficients of export and import are statistically significant, although export has not impacted on economic growth at least in the short-run.

Toda-Yamamoto Non-Causality Test

For Toda-Yamamoto non-causality test, the lag length of the variables was first determined and the result is presented in Table 4 below:

Table 4: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	55.5210	NA	1.51e-08	-2.09921	-2.1234	-1.1234
1	135.1903	201.0022*	0.09e-11*	-7.0234*	-6.9012*	-8.3211*
2	167.2099	22.3409	1.7120	-7.1098	-5.3242	-7.5120
3	189.2331	20.5509	2.9022	-7.0998	-4.2122	-6.0823

Note: indicates lag order selected by the criterion.*

As evidenced in Table 4, the optimal lag length is 1 since all variables become stationary after the first difference. From the result, a system of VAR can be estimated in levels with a total of (d_m +k=1+1) which is 2 lags. Thus, the VAR model is adequate and can therefore be used for Granger causality test. Following the TYDL approach, the augmented VAR of order

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2 is estimated and the Wald test is performed only on the coefficients of the first lag. The result of three variables VAR model is presented below.

Table 5: Estimates of Long-run Granger Causality Based on TYDL Approach

Dependent Variables	Source of Causation		
	l_ECG	l_EXP	l_IMP
	χ^2 (1)	χ^2 (1)	χ^2 (1)
l_ECG		2.9801	5.2901**
l_EXPT	0.2110		5.2901**
l_IMP	0.0120	6.4726**	

Note: ** *implies significant at 5 percent level*

The result depict that the Granger causality between economic growth and export is un-directional, implying that export Granger causes economic growth, thus confirming the export-led growth hypothesis for Nigeria.

CONCLUSION

This study has demonstrates that both export and import plays a role in economic growth of Nigeria. The ARDL Bounds Test indicates that relationship exists among economic growth, export and import, only when economic growth was taken as a dependent variable implying the existence of unique co-movement among the variables. As variables that determine growth, export and import are statistically significant at 1 percent level. The findings revealed that on the average, a 1 percentage increase in export stimulates economic growth by 2.45 which 1 percentage increase in import decreased economic growth by 0.23. The direction of causal relationship based on the TYDL framework suggests that there is unidirectional causality running from export to economic growth suggesting the existence of export-led growth hypothesis for Nigeria. A major policy implication from the findings is that Nigeria has to encourage export towards the attainment of the desired growth. It is therefore imperative for government to put policies in place to stimulate the production in the non-oil sectors of the economy. This would assist in encouraging exports and discourage imports.

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