TRADE OPENNESS AND NIGERIA'S ECONOMIC GROWTH (1990- 2015)

Dr. Egbulonu Kelechukwu Godslove and Ezeocha Joyce Adaku

[1]Department of Economics, Imo State University, Owerri
[2]PhD Student, Dept of Economics, Imo State University, Owerri

ABSTRACT: *This study examines empirically the relationship between Trade openness and Economic growth in Nigeria. The study covered the period 1990 – 2015, using ARDL approach to cointegration. The ARDL result confirmed the existence of a long-run relationship between Economic Growth, Trade Openness, Foreign Direct Investment and Gross Capital Formation. It was found that Trade Openness and Gross Capital Formation had positive and negative impacts respectively on growth rate of GDP in the short run. Therefore, this study concludes by recommending that; (i) trade openness should be regulated by government; from our result an increase in trade openness caused a decrease in our GDP (ii) FDI should be encouraged as it was seen to have significantly improved economic growth in Nigeria.*

KEYWORDS: Trade Openness, Economic Growth, Auto-Regressive Distributive Lag (ARDL), Nigeria.

INTRODUCTION

Trade openness refers to the degrees to which a country or economy permits or have trade with other countries or economies. The trading activities include that of import and export, foreign direct investment (FDI), borrowing and lending, and repatriation of funds abroad. The openness rate of a country is calculated as the proportion of foreign trade volume to GDP besides the usage of the proportion of import to GDP (Romer,2009) and the rate of export increase (chow, 2010).

Openness also indicates the dependence of the country on the foreign trade. Economists generally see the concept of trade openness as the integration among the nations of the world. It is likened to openness of the world economy where nations link together to the extent that they have free trade, free movement of capital and financial activities (Igudia, 2004). Thus openness to trade can be said to be the platform of globalization while trade, finance, investment and entrepreneurs constitutes the heart (Obadan, 2004).

Economic growth is defined as the increase of per capita gross domestic product (GDP) or other measures of aggregate income. Plainly, it is the annual increases in a country's total output of goods and services. With globalization and trade liberalisation, one of the basic interests in development and international economics is to check if trade openness promotes economic growth. The idea that trade openness affects economic growth is not new again. However, the nature of the effect is being seriously debated in the literature.

This study intends to contribute to literature by adopting a different approach. The study aims at investigating the impact of trade openness on the growth of Nigerian Economy using the aggregate production function as our theoretical framework.

This study is guided by these specific research objectives: To estimate the long run and short run dynamics of trade openness, foreign direct investment, exchange rate and economic growth

in Nigeria. To examine the causal associationship among trade open, foreign direct investment, exchange rate and economic growth in Nigeria.

LITERATURE REVIEW

The relationship between trade openness and economic growth has received a great deal of attention both in the theoretical and empirical literature during the last three decades. However, there is no consensus on whether greater openness to trade stimulates economic growth. According to the theory of comparative advantage, if a country wants to trade with another country, it will produce goods in which it has a comparative advantage. The country will specializes in the sector for which it has better factor endowments and produces goods on a larger scale. As a result, productivity and exports of the sector will go up and this will improvement the general economic growth. This theory has been further extended by other economists. Krueger (1978) and Bhagwati (1978) argue that trade liberalization

encourages specialization in sectors which have economies of scale that contribute to improve the efficiency and productivity in long-run. New endogenous growth models explain a positive relationship between trade openness and economic growth as the result of the international diffusion of advanced technologies (Coe & Helpman, 1995; Grossman & Helpman, 1991a; Romer, 1994).

A country with a higher degree of openness has a greater ability to use technologies generated in advanced economies, and this capability leads them to grow more rapidly than a country with a lower degree of openness. Edwards (1998) argues that the cost of imitation also matters in the trade-growth relationship. If the imitation cost of innovation in the poorer countries is lower than that in advanced economies, the poorer countries will grow faster than the advanced ones and there will be a tendency toward convergence. All these arguments suggest that developing economies have much to gain from international trade with technologically advanced nations. However, some opposite arguments point out that trade openness may be detrimental to economic growth. This is the case when the country specializes in sectors where research and development activities are not

the core ones (Almeida & Fernandes, 2008). Moreover, trade composition in terms of goods also matters regarding its growth effect (Haussmann et al., 2007; Kali, Mendez, & Reyes, 2007). Whether or not a country gains from international trade also depends on the ease with which foreign technologies are mastered and adapted to the local environment (Grossman & Helpman, 1991).

On the empirical front, a growing literature has examined the relationship between trade and economic growth. The evidence from this literature is mixed and conflicting across methodologies and countries.

Tekin (2012), applied the quantile regression approach to explore the trade-growth nexus for 75 developing countries. Their results indicate that the effect of openness on economic growth is higher in low-growth countries relative to high-growth countries. The low-growth economies include countries from all the continents, but a majority is in Africa (Benin, Cote d'Ivoire, Madagascar, and Zambia) and Latin America. Kim, Lin, and Suen (2011) use instrumental variable threshold regressions to examine whether the trade-income relationship varies with the level of economic development. Their results show that trade openness has positive effects

on financial development, capital accumulation, and economic development in high-income countries. In low-income countries, however, the effect is negative and significant. Kim (2011) shows that openness to trade has positive effects on economic growth and real income in developed countries but negative effects in developing countries. Furthermore, the real effect of trade also depends on the level of financial development and inflation. Openness to trade has negative effect on growth in countries with low financial development, but has insignificant impact in countries with high financial development. Trade openness

is conducive to economic growth in low-inflation countries but has insignificant impact on growth in high-inflation countries. Kim, Lin, and Suen (2012) provide evidence that trade promotes economic growth in high-income, low-inflation, and non-agricultural countries but has a negative impact in countries with the opposite attributes. For a panel of 46 countries, Huang and Chang (2014) find that

the growth effect of trade depends on the extent of stock market development. Trade enhances economic growth only when the country reaches a threshold level of stock market development.

Sakyi, Villaverde, and Maza (2015) provide evidence of positive bi-directional causal relationship between trade and economic growth for a sample of 115 developing countries. Were (2015) finds that trade exerts a positive and significant effect on economic growth rate in developed and developing countries, but its effect is not significant for least developed countries which largely include African countries. In a study of China, Hye, Wizarat, and Lau (2016) show that trade openness is positively related to growth in the long and short run.

In a more recent work, Brueckner and Lederman (2015) employ the instrumental variable approach to a panel of 41 Sub-Saharan African countries. They find that trade openness increases economic growth both in the short and long run. Musila and Yiheyis (2015) investigate the case of Kenya and find that trade openness has positive effect on investment ratio but not on the rate of economic growth. Polat et al. (2015) find that trade openness impedes economic growth in South Africa. Finally, Lawal, Nwanji, Asaleye, and Ahmed (2016) applied the ARDL methodology to Nigeria and find a negative long-run impact of trade openness on economic growth but a positive growth effect in the short run. Further, a two-way causality was found between the two variables.

METHODOLOGY

Model Specification

The hypothesis to be tested in this study is that trade openness stimulates economic growth in Nigeria. To test this hypothesis, we start with Cobb–Douglas production function combining capital and labor as follows:

$$Y_t = A_t K_t^\alpha L_t^{1-\alpha} \quad \ldots \ldots \quad (1)$$

Where Y_t represents the aggregate production of the economy proxied by growth rate of GDP at time t, K is capital stock at time t, L is total labour force at time t and A is the technological progress. We expand this production function by assuming that technological progress can be

influenced by trade openness, foreign direct investment, exchange rate and other factors. This leads us to specify A as follows:

$$A_t = OP_t^{\phi} FDI_t^{\delta} ER_t^{\psi} Q_t \quad \ldots \ldots \ldots 2$$

Where OP, FDI, ER represent trade openness, foreign direct investment and exchange rate respectively and Q represents other factors that may influence the state of technology. Substituting Equation (2) into Equation (1), gives:

$$Y_t = Q_t^{\rho} K_t^{\alpha} L_t^{1-\alpha} OP_t^{\phi} FDI_t^{\delta} ER_t^{\psi} \quad \ldots \ldots . 3$$

Diving both sides by labor and taking logs, Equation (3) can be modeled as follows:

$$Y_{it} = \theta_0 + \theta_1 K_{it} + \theta_2 L_{it} + \theta_3 OP_{it} + \theta_4 FDI_{it} + \theta_5 ER_{it} + \mu_{it} \quad \ldots \ldots 4$$

where Y, K, L, OP, FDI, ER, now represent the growth rate of real GDP, log of gross capital formation, log of labor force, trade openness, log of foreign direct investment and exchange rate respectively.

Model Estimation: The empirical investigation involves three steps. The first step examines the stationarity of the variables using unit root tests. The second step is to test for causal relationships among the variables using Granger causality tests. The third step tests for the presence of long-run relationships between the variables. The ARDL approach to cointegration developed by Pesaran et al. (2001) is used to depict the long-run and short run relationship among the variables. Compared to other cointegration procedures, the bounds testing approach estimates both the long run and short run properties simultaneously.

The ARDL bounds testing approach to cointegration is based on the following error-correction model:

$$\Delta GRGDP_t = \phi_0 + \phi_1 GRGDP_{t-1} + \phi_2 OP_{t-1} + \phi_3 FDI_{t-1} + \phi_4 ER_{t-1} + \phi_5 T_{t-1}$$
$$+ \sum_{i=1}^{m} y_{1i} \Delta GRGDP_{t-1} + \sum_{i=0}^{n} y_{2i} \Delta OP_{t-1} + \sum_{i=0}^{o} y_{3i} \Delta FDI_{t-1} + \sum_{i=0}^{p} y_{4i} \Delta ER_{t-1}$$
$$+ \sum_{i=0}^{q} y_{5i} T_{t-1} \quad \ldots \ldots \ldots \quad (5)$$

Where Δ is the difference operator and T = (K,L) equation (5) is estimated using each variable as the dependent variable.

RESULTS, FINDINGS AND DISCUSSION

The Unit root test precedes the analyses. This is very important in order to avoid a spurious regression. The result is summarized below.

SERIES	CRITICAL VALUE @ 5%	ADF T-STATISTIC	ORDER OF INTEGRATION
GRGDP	-2.991878	4.180545	$I(0)$
OP	-2.998064	-6.809654	$I(1)$
LOGFDI	-2.998064	-7.270895	$I(1)$
ER	-2.998064	-4.499706	$I(1)$
LOGGCAPF	-2.998064	-4.287061	$I(1)$
LOGLF	-3.004861	-5.376354	$I(2)$

Table 1: Unit Root Test

Table one presents the result of stationarity test using the Augmented Dickey-Fuller test of stationarity. The result indicated that only the growth rate of GDP (GRGDP) was integrated of order I(0) at 5 % level of significance meaning stationarity at level, while other variables OP, LOGFDI, LOGGCAPF and ER were stationary after the first difference that is I(1). The log of Labour force (LOGLF)is integrated of order I(2) at 5 % level of significance, this cannot be used in our ARDL estimation.

The Granger Causality test is also carried out on the data as shown below:

Table 2: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
OP does not Granger Cause GRGDP	23	1.25187	0.3097
GRGDP does not Granger Cause OP		0.65971	0.5291
LOGFDI does not Granger Cause GRGDP	23	0.19945	0.8210
GRGDP does not Granger Cause LOGFDI		14.7924	0.0002
ER does not Granger Cause GRGDP	23	1.03298	0.3761
GRGDP does not Granger Cause ER		0.16881	0.8460
LOGGCAPF does not Granger Cause GRGDP	23	1.21955	0.3186
GRGDP does not Granger Cause LOGGCAPF		2.20857	0.1387
LOGFDI does not Granger Cause OP	23	2.54569	0.1063
OP does not Granger Cause LOGFDI		3.68125	0.0457
ER does not Granger Cause OP	23	0.80305	0.4634
OP does not Granger Cause ER		0.29762	0.7462
LOGGCAPF does not Granger Cause OP	23	7.49439	0.0043
OP does not Granger Cause LOGGCAPF		0.20139	0.8194

ER does not Granger Cause LOGFDI	23	0.89312	0.4268
LOGFDI does not Granger Cause ER		0.05202	0.9495
LOGGCAPF does not Granger Cause LOGFDI	23	2.61037	0.1011
LOGFDI does not Granger Cause LOGGCAPF		0.22658	0.7995
LOGGCAPF does not Granger Cause ER	23	0.32535	0.7264
ER does not Granger Cause LOGGCAPF		3.69529	0.0452

Causality Test: The causality result is presentenced in table 2, the essence of this test is to establish a causal relationship among trade openness, foreign direct investment, exchange rate, gross capital formation and the growth of Nigerian economy. This test gives us the direction of causality among these variables. There is usually two outcome of this test; unidirectional or bidirectional relationship. In this study, it was observed that there was no bidirectional relationship among the variables only a unidirectional relationship existed, that is, growth rate of GDP causes FDI, trade openness causes FDI, gross capital formation causes trade openness and exchange rate causes gross capital formation.

Table 3, ARDL Bounds Test
Sample: 1992 2014
Included observations: 23
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	5.279510	4

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.2	3.09
5%	2.56	3.49
2.5%	2.88	3.87
1%	3.29	4.37

Cointegration Test: From Table 3 above, the calculated F-statistic of the variables is 5.279510 and is higher than the upper bound critical value of 3.49 at the 5% level of significance using restricted intercept and no trend. This implies that the null hypothesis of no cointegration cannot be accepted at the 5% level of significance and this therefore confirms the existence of long-run relationship among the variables.

Short Run Error Correction Model

Table 4, ARDL Error Correction Regression
Dependent Variable: D(GRGDP)
Selected Model: ARDL(1, 1, 0, 1, 2)
Case 2: Restricted Constant and No Trend
Date: 12/07/17   Time: 01:37
Sample: 1990 2015
Included observations: 23

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OP)	-0.321775	0.084639	-3.801739	0.0022
D(ER)	-0.037372	0.057225	-0.653068	0.5251
D(LOGGCAPF)	-3.312222	3.165304	-1.046415	0.3144
D(LOGGCAPF(-1))	11.19357	3.282418	3.410159	0.0047
ECT(-1)*	-1.049029	0.155039	-6.766234	0.0000
R-squared	0.742999	Mean dependent var		0.096477
Adjusted R-squared	0.685887	S.D. dependent var		8.597494
S.E. of regression	4.818530	Akaike info criterion		6.172475
Sum squared resid	417.9281	Schwarz criterion		6.419321
Log likelihood	-65.98346	Hannan-Quinn criter.		6.234556
Durbin-Watson stat	2.105311			

The ECM result presented in table 4 above shows a trade openness is significant and negatively correlated with the growth rate of GDP at 5% level in the short run. The value of the coefficient of trade openness is -0.321775, which depicts that a 1 percent increase in trade openness will bring about 0.314408 percent decrease in growth rate of GDP, The negative effect of OP on growth is probably due to the excess of import over export in the country Similarly, gross capital formation has a significant positive relationship with output at 5% level of significance after one lag. A 1 percent increase in gross capital formation will bring about 11.19357 percent increase in the growth rate of GDP. Exchange rate remained negative and insignificant. The statistical fitness of the model is confirmed by the Adjusted R-squared which is 0.685887. This means that 68.58% of the variation in GRGDP is explained by variations in the explanatory variables.

The result also show that the ECT(-1) is negative and significant. The significant of ECT is evidence that causality runs in at least one direction. The ECT(-1) of -1.049029 is the speed of adjustment from the short-run equilibrium to the long-run equilibrium. This means that 104% of the error is corrected in each time period. This high speed of adjustment implies that it will take approximately one year to correct all errors/deviations and bring the economy back to equilibrium.

The model is checked for autocorrelation using the Breusch-Godfrey Serial Correlation LM Test which is shown in table 5 below.

Table 5, Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.946540	Prob. F(2,11)	0.4175
Obs*R-squared	3.377070	Prob. Chi-Square(2)	0.1848

The Table above presents the result of the Breusch-Godfrey test for autocorrelation. From the value of the prob. Chi-Square of 0.1848, we cannot reject the null-hypothesis of no auto correlation which is desirable in the model. This therefore indicates the absence of autocorrelation in the model. Furthermore, the model is subjected to a stability test using the CUSUM test which result is shown in figure 1 below
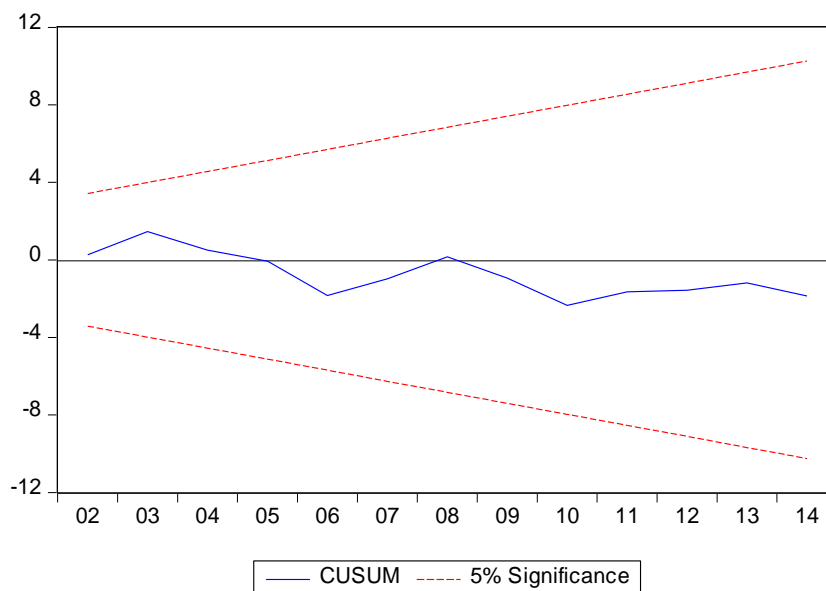

Figure: CUSUM test

The figure above shows the outcome of the CUSUM test of stability which shows the model to be stable, given that the CUSUM line is within the 5% significance boundary.

CONCLUSION AND POLICY IMPLICATIONS

This paper attempts to investigate the impact of trade openness on Nigeria's economic growth, over the period 1990 – 2015. To this effect we employed the aggregate production model. Using an ARDL bound testing approach; we were able to establish a long-run relationship among the variables. The results confirmed the existence of a long-run relationship between economic growth, trade openness, foreign direct investment and gross capital formation. It was found that trade openness and gross capital formation have positive and negative impacts respectively on growth rate of GDP in the short run. Our causality test revealed a unidirectional causality running from GDP growth Rate (GRGDP) to Foreign Direct Investment (LogFDI),

Trade Openness (OP) to Foreign Direct Investment (LogFDI) and Capital Formation (LogCAPF) to Trade Openness (OP).

Therefore, this study concludes by recommending that; (i) trade openness should be regulated by government, from our result an increase in trade openness caused a decrease in our GDP, it can be inferred that trade openness decreases GDP through reduction in the supply of domestic goods as a result the killing of infant industries. (ii) FDI should be encouraged as it was seen to improve the economic growth.

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