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Impact of trade openness on economic development in Nigeria

Umar Bala[1], Hawwa Adamu Ambi[2], Nazeef Bala Hadith[3], Yahaya Y.M. Baba[4]

[1,2&4]*Department of Economics, Faculty of Social Sciences, Bauchi State University, Gadau Nigeria*
[3]*National University Commission (NUC), Garki GPO, Maitama Abuja, Nigeria*
Email: ubul1@yahoo.co.uk

Abstract
The study explores the relationship between trade openness and economic growth in Nigeria. This study aims to suggest ways to utilize the substantial human resource we have in Nigeria in a productive way for wealth creation to increase the welfare and standard of living. The variables used were gross domestic product (GDP) as the dependent variable, real exchange rate, degree of trade openness (import and export as independent variables) within the period of 1980 to 2020. The study used Augmented Dickey-Fuller (ADP) and Philips Perron (PP) unit root test. The co-integration test of Autoregressive Distributed Lags (ARDL) bound test also utilized during estimation process. The result shows that there is positive and significant long-run impact of export and exchange rate on economic growth, while negative impact of import on economic growth in Nigeria. The results recommend that the government should focus on the other sectors in Nigeria, such as the agricultural and manufacturing sectors other than the petroleum sector alone. Additionally, the government should promote import liberalization by reducing import tariffs to prevent or discourage smuggling activities. The import of consumable and intermediate goods should be reduced for easy flow of imported goods and trade restrictions to encourage the local industries to produce such goods. Finally, the government should refocus its policies towards the external sector and make export more favorable.

Keywords: Economic Development, Trade Openness, ARDL, Augmented Dickey-Fuller

1.0 Introduction

The main aim of every economic policy by governments of various countries is to achieve economic growth and development. International trade policies and programs have been significant for governments to foster trade relations between other countries to promote economic growth and development. With globalization and trade liberalization, Economists have long been interested in factors that cause different countries to grow at a different rate and achieve different levels of wealth. One of such factors is trade openness. One of the fundamental interests in development and international economics is to check if trade openness promotes economic growth. Whether an international trade affects economic growth has long been the subject of considerable interest and debate. The predominant message from the intensive research is that policies toward international trade are conducive to improved growth performance. Increased global trade may facilitate the diffusion of knowledge and innovation from direct imports of high-tech

goods, from more significant interaction with the sources of innovation, or foreign direct investment (Mamingi & Perch, 2013; Ozturk & Acaravci, 2013; Xuan, Chin, & Ismail, 2018) Further, trade openness may create incentives for governments to adopt less distortionary policies and more disciplined types of macroeconomic management under pressures of international competition (Kenani, 2012; Xuan, Chin & Ismail, 2018). Despite so, the debate about the precise relationship between trade and growth is still far from being incontrovertible. Neither theoretical studies nor empirical analyses produce a positive and definite conclusion (Frankel & Romer, 1999; Yanikkaya, 2003). International trade in Nigeria has experienced mixed results on growth and development.

Presently there is virtually no country around the world that does not trade with another country. This has led to an increase in bilateral trade agreements and multilateral trade agreements across the globe. Trade openness may generate significant gains that enhance economic growth. The result means that it encourages lower prices of imported goods and services or prevents an increase in prices by preventing the growth of monopolies. Here, the country specializes in producing certain products, maximizing production costs, and keeping the price at a competitive level. Despite its advantages and economic benefits, it also has its shortcomings. Nigeria's relatively large domestic market can support growth but alone cannot deliver sustained growth. There is no doubt that Nigeria is blessed with vast natural resources that can make the country become a significant player in the international market and thus achieve economic growth through trade. Still, only crude oil constitutes the most considerable portion of Nigeria's export. Therefore, conducting a study on the effects of international trade on economic growth is of great significance in this globalized and technologically advanced era. Consequently, it becomes imperative to examine the relationship between trade openness and economic growth in Nigeria. In doing so, the study intends to check the impact of trade openness on the economic growth in Nigeria.

Theoretical Framework: Theory of Trade and Economic Growth

Solow (1956) expanded the Harrod-Domar model by adding labor and technology. Thus, Solow thought that increases in the quantity and quality of labor and changes in technology lead to economic growth. In summary, theories of trade and economic growth include Mercantilist trade theory, Adam Smith's trade theory (Absolute advantage trade theory), David Ricardo's comparative advantage theory, Theory of Customs Unions and Free Trade Area, and Heckscher-Ohlin trade theory. Balance of payment constrained growth model, virtues circle model of Export-led Growth, Harrod-Domar Growth Model, Traditional Neo-classical Growth theory and New Endogenous Growth Model (NEGM). This work will build its argument under a theoretical framework under the Hecksher-Ohlin Trade theory.

Empirical Review

Providing conclusive empirical evidence on the intuitively positive causal effect of trade on growth has been a challenging endeavor, complicated by a diversity of factors. Hence, some researchers are skeptical about openness having a positive relationship with economic growth (Yanikkaya, 2003; Ulasan, 2012; Haddad, Lim, Pancaro, & Saborowski, 2013; Bala and Tahir, 2016; Adegboyega, Ibrahim, & Popoola, 2017; Manni, Siddiqui, Naser, & Afzal, 2017).

Few do not agree that trade openness has positive impacts economic growth Ahmad (2001) and Yanikkaya (2003) yet a few agree that transparency leads to increased economic growth. Meanwhile, some studies that used panel analysis Gilbert (2004) investigated trade openness policy, quality of institutions, and economic growth in Sub-Saharan African countries; the results show that openness has no significant impact on economic growth in any country. It is a result of low institutional quality. Kee and Looi (2008) developed a model allowing to link, across countries and over time, relative export variety to total factor productive using a GDP function. They tested this relationship based on exports to the US for a panel of 48 countries over the period 1980-2000 using three-stage least squares regressions. Bala et al. (2017) Study the four African OPEC members Algeria, Angola, Libya and Nigeria oil export found that oil exports, money supply, exchange rate and GDP are positively related to inflation.

Rahmaddi and Ichihashi (2011) investigated the relationship between exports and economic growth in Indonesia during 1971-2008, using a VAR model. Based on the analysis conducted in a VECM framework, the authors found that exports and economic growth exhibit a bi-directional causal structure and concluded that both exports and economic growth are significant to Indonesia's economy. Sarbapriya (2011) examined the relationship between foreign trade and economic growth in India, using annual data over 1972-2011. The co-integration and Granger causality tests confirmed that economic growth and foreign trade are cointegrated, implying the existence of a long-run equilibrium relationship between the two and the presence of bi-directional causality, which runs from economic growth to foreign trade and vice versa.

The studies concentrated in Nigeria are Chimobi (2010) investigated the causal relationship among financial development, trade openness and economic growth in Nigeria from 1970 to 2005. The results suggest that trade openness and financial developments have a causal impact on economic growth with feedback during the period studied. Atoyebi et al. (2012) reported that openness negatively affected economic growth from 1970 to 2010 in Nigeria. However, Nduka (2013); Adelowokan and Maku (2013) declared that openness positively affected economic growth in Nigeria from 1970 to 2008 and 1960 to 2011, respectively. Their empirical results indicated that there is a positive and significant relationship between export variety and average productivity. Chimobi (2010) investigated the causal relationship among financial development, trade openness and economic growth in Nigeria from 1970 to 2005. The results suggest that trade openness and financial development negatively impact economic growth with feedback effects during the period studied. Usman (2011), trying to access the 'Performance Evaluation of Foreign Trade and Economic Growth in Nigeria,' uses real GDP as a proxy to economic growth. He used export values, import values, per-capita income, export openness and foreign exchange rates as the explanatory variables. Using data from 1970 to 2005, he used the ordinary least squares (OLS) method. The result shows that export, import, foreign exchange rate and economic openness (a ratio of total trade to GDP) are negatively related to real GDP for the period reviewed. 1% change in export will lead to a 19 % reduction in real output. Per-capita income is positively related to real output for the

period studied. 1% change in per-capita income will lead to a 130% increment in real output.

Methodology

The main aim of every economic research is to arrive at the conjunction of economic theory, actual measurement using the theory and techniques of statistical inferences as to the matching bridge. The economic theory makes a statement or postulates hypotheses primarily quantitative and some cases, qualitative in nature. It is the choice of the researcher to validate these hypotheses using appropriate models in line with current development and betting method of estimation and inference. Economic theory and some empirical research argue that openness (trade or financial) will increase Economic Growth, while others opened that the relationship between the two is ambiguous. To contribute empirically to the argument, this study will employ the econometric model as the research technique.

Model Specification

An economic model represents the basic features of an economic phenomenon; it is an abstraction of the real world. The specification of a model is based on the available information relevant to the study in question. The formulation of an economic model depends on available information on the study as embedded in standard economic theory and other major empirical works, or else, the model would be theoretical.

$GDP_t = f$ (Official Exchange Rates, Imports, Exports).

$GDP_t = f\ (\ EXR_t, IM_t, EX_t)$ .....(i)

The mathematical form of the model can be expressed as;

$GDP_t = \beta_0 + \beta_1 EXR + \beta_2 IM_t + \beta_3 EX + \mu_t$ ..... (ii)

But equations above are exact or deterministic in nature. To explore the inexact relationship among the variables, as in most economic variables, the stochastic error term "μt" is added to both equations. Thus, we can express the econometric form of the model.

ARDL Long-Run Cointegration Model

Based on equations (ii) we proceed to formulate our Autoregressive Distributed Lags (ARDL) that will be estimated in order to find the links among the variables under investigation

$$logGDP_t = \beta_0 logGDP_{t-1} + \beta_1 logEXR_t + \beta_2 logIM_t + \beta_3 logEX_t + \sum_{i=1}^{n} yi\Delta logEXR_t + \sum_{i=1}^{n} yi\Delta logIM_t + \sum_{i=1}^{n} yi\Delta logEX_t + \varepsilon_t \quad (iii)$$

Sources of Data

Data is an essential material for any economic research or analysis and very much indispensable to the field of econometrics indeed. Gugarati (2004) asserted that the success of any econometric analysis ultimately depends on the availability of appropriate and accurate data. In other words, the researcher should always keep in mind that the research results are as good as the quality of the data. The research study makes use of secondary data. It is a time series Annual data from 1980 to 2020 obtained from the United Nations Conference on Trade and Development

(UNCTAD) and the Central Bank of Nigeria (CBN) websites.

Estimation Techniques

The study adopts developed robust, reliable models that capture the relationship before trade openness and economic growth, the research work the econometric techniques of Non-Monotonic modeling. In building these models, the Autoregressive Distributed Lagged ARDL is used as the estimation technique. The model for postulation will be in real form, and the OLS techniques will be in linear form. The variables include Gross Domestic Product (GDP), Degree of Trade Openness, Official Exchange Rates, Exports Rate and Imports Rates.

Diagnostic Test

This evaluation is guided by economic theory. Tests shall be conducted to ascertain the a priori expectations, which examine the magnitude and signs of the parameter estimates. This test aims to confirm whether the parameter estimates conform to a priori expectation.

Test of Stationary (Pre-Estimation Test)

A stochastic process is stationary if its mean and variance are constant over time and the value is auto-covariance between the two times period depends only on the distance or lay between the two time periods and not the actual time at which covariance is computed (Gujarati, 2003). In other words, a stationary stochastic process is one with constant mean, variance and covariance. Hence, the stationary test is carried out to verify whether a time series is stationary or time-invariant to avoid a spurious regression.

The Augmented Dickey-Fuller (ADF) and Phillips-Person (PP) unit roof test are employed. The choice of this test is to correct for the Phillips-Person test use non-parametric statistical methods to take care of the serial correlation in the error terms without adding lagged difference terms. This test is specified thus:

$$\Delta Y_t = \delta + \alpha \Delta Y_{t-1} + \mu_t$$

Where Δ = difference operation

Y_t = time series

μ_t = pure white noise.

Under the null hypothesis that α=1 for stationary, we will use the PP test statistics to verify the presence of unit root in the series.

Results and Discussion

The unit root test has been conducted to determine the series's stationary conditions and to know their order of integration. The results of the test are given in the table below. The unit root test result shows that almost there is combination of stationarity levels of variables. We cannot reject the null hypothesis of unit root for all variables in the level form except for EX (export) and IM (import) that is stationary at level. The results confirm that these variables' ADP and PP test statistics are less negative critical values at 5%. The p-values are more than 0.05, respectively, indicating non-rejection of the unit root at the 5% significance level. Subjecting these variables to a first difference test revealed that they are stationary. At their first difference, the ADP and PP test statistics for some variables are now more than the critical value at their 5% and their p-values being less than 0.5 indicating rejection of the unit root.

Table 1 Unit Root Test

Variable	ADF Test Statistics				Phillips Perron Test Statistics			
	Constant		Trend		Constant		Trend	
	Level	First Difference	Level	First Difference	Level	First Difference	Level	First Difference
GDP	-1.5468	-4.2926***	-1.7459	-3.7568***	-0.8757	-4.3443***	-3.7150**	-3.6974**
EXR	2.2374	-4.1577***	-0.3938	-4.7822***	2.4959	-4.1047***	-0.5733	-4.5763***
IM	-2.7421*	-7.8296***	-3.7397**	-7.6746***	-2.7421*	-16.670***	-3.7667**	-15.268***
EX	-2.9855**	-8.6132***	-3.0736	-5.1342***	-3.1807**	-10.228***	-3.3218*	-13.855***

NOTE: ***, **, * Indicate Stationary at 1%, 5% and 10%

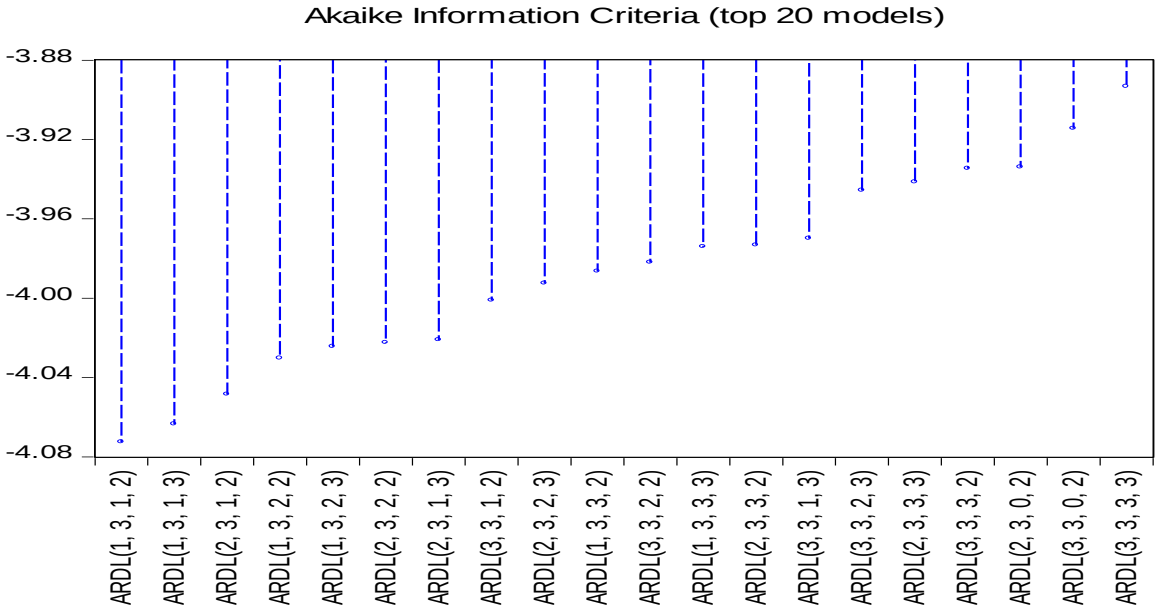

Figure 1 Lag selection criteria

Cointegration Test

Table 3 below reports the bound test results. It can be observed that the value of F-statistics is greater than the lower bound as well as the upper bound at 1 percent level of significance. Which therefore, confirmed the existence of long run relationship and the null hypothesis of no cointegration has to be rejected given the F-statistics in both the three models. The ARDL Bound test to cointegration the results indicate the existence of long run relationship between economic growths and trade openness in Nigeria. The F-statistics 11.41 is greater than upper bound of the ARDL critical values of 4.66 as stated below.

Table 2 ARDL Bound Tests

Models	F-stats	Lag	Level of significance	Bounds critical values [Unrestricted intercept and no trend] I(0)	I(1)
$GDP_t = \beta_0 + \beta_1 EXR + \beta_2 IM + \beta_2 EX + \varepsilon_t$	11.41	3	10%	2.37	3.2
			5%	2.79	3.67
			2.5%	3.15	4.08
			1%	3.65	4.66

In the long-run the trade openness indicators have different sign export (EX) has positive sign while import (IM) has negative sign. The coefficient of export is positive 0.7288 while the coefficient of import is negative -1.1783. The coefficient of exchange rate (EXR) is 0.2814 positive and significant. The sign of the export coefficient is positive this confirms the theoretical a priori expectation, means that throughout the study, The coefficient of 0.7288 means that a one percent increases in export on average leads to an approximately 72 percent increase in growth. The sign of the import coefficient is negative this confirms the theoretical a priori expectation. The coefficient of -1.1783 means that a one percent increases in import on average leads to an approximately 117 percent decreases in growth which is dangerous. The results conform to the theoretical a priori expectation, a one percent increase in a real exchange rate on average leads to an approximately 28 percent increase in growth (GDP). From the table above, it could be observed that the positive relationship between exports and economic growth holds in Nigeria, implying that the higher the export, the higher the economic growth. Moreover, the findings confirm the finding of Atoyebi et al. (2012) and Usman (2011), who reported that trade openness exerted a negative impact on economic growth during the period of study in Nigeria but did not conform to the findings of some other researchers.

Table 3 Estimated Short-run and Long-run Coefficients

Variables	**Short-run**		**Long-run**	
	Coefficient	**T-ratio**	**Coefficient**	**T-ratio**
LEXR			0.2814***	4.875281
LEX			0.7288**	2.190783
LIM			-1.1783***	-3.051628
C			7.4573***	23.371956
D(LEXR)	-0.001407	-0.099696		
D(LEXR(-1))	-0.027300	-1.702577		
D(LEXR(-2))	-0.049824***	-3.170379		
D(LEX)	0.036312**	2.339634		
D(LIM)	-0.053936**	-2.675209		
D(LIM(-1))	0.065266***	4.344334		
CointEq(-1)	-0.122302***	-8.092493		

The stability of the model's long-run coefficient and short-run dynamics is tested based on the cumulative sum of recursive residuals (CUSUM) and the cumulative sum

of squares of recursive residuals (CUSUMSQ) as highlighted by (Pesaran and Shin, 1998)

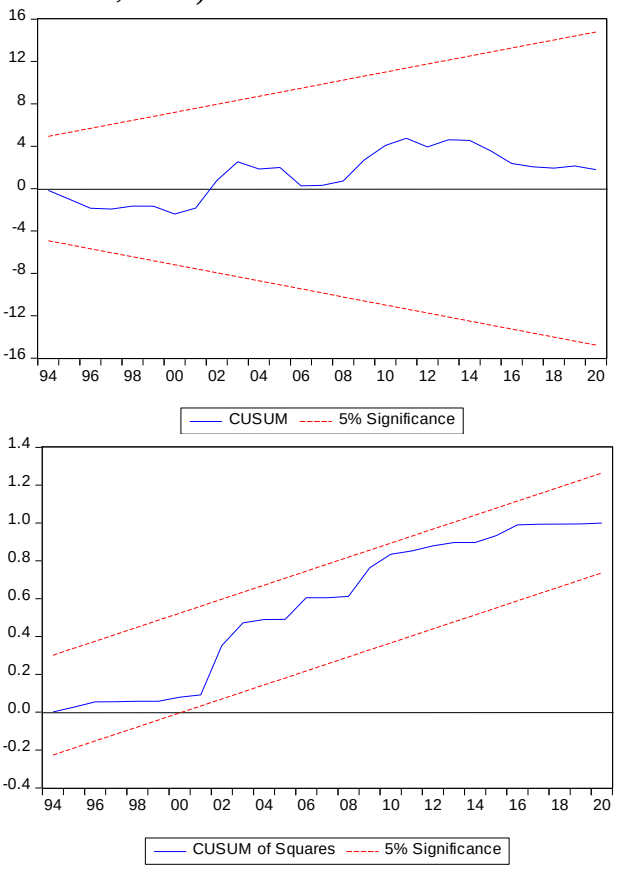

Figure 2 CUSUM and CUSM of Square

Conclusion and Recommendation

The study reviews several pieces of literatures, both theoretical and empirical; the theoretical framework adopted for the study was the Hecker-Ohlin trade theory. The study further studies the trends of Nigeria's trade performance over the study period. The regression results of the model show that there is indeed a strong negative relationship between trade openness and economical in Nigeria. The above explanation is reflected in the coefficient of determination and the negative coefficient of the degree of trade openness. In addition, the exchange rate was statistically significant at a 5% level of significance, and it has a significant positive impact on the economy throughout the study. For example, the opening of Nigerian borders for free trade shows that the local or domestic industries are not functioning enough, and Nigeria is importing more than exporting. The main export basket of the Nigerian economy is oil, and it is exported in its raw form (not refined). The export of oil is very cheap in recent times, evidently from the volatility of oil prices in the international market. Furthermore, the high rate of insecurity and political instability due to ethno religious conflicts in the country has reduced foreign investment in the country and lead to a shutdown of many industries and the manufacturing sector in the economy.

On the other hand, the exchange rate in the model, which is reported to be positive against the a priori expectation, is also statistically significant. The stress that a foreign currency, say (Dollar), appreciates against the domestic currency (Naira), exports will become cheaper while imports will become more expensive. But this is supposed to lead to economic growth, but the Nigerian economy only exports primary raw products at a very cheap rate since they are not refined or finished; instead, Nigeria imports more refined and finished goods from abroad, which are expensive. Hence that may explain why trade openness leads to low economic growth. After undertaking various tests and regression, we found out that trade openness has a significant impact on economic growth. Over the study period 1980 to 2020, it leads to low growth in the Nigerian economy.

Recommendations

Based on the findings of this research work, it is necessary to provide a set of policy

recommendations that would apply to the Nigerian government and the economy.

i) Export promotion strategy should be reviewed, and import substitution strategy should also be reviewed so that import and export will change their dimension.

ii) The government should also encourage export diversification. Non-oil sector export should be enabled, and concentration on the non-oil sector should be minimal. Nigerians should obtain from excessive consumption of foreign goods and services to cut off their imports.

iii)Manufacturing industries should be improved on their products so that their production and their output would be competitive in the global market.

iv)Excise duties should be cowered to encourage local industries to export their goods and services. The introduction of new ions should not follow the lifting of trade barriers on local output. Only the importation of essential capital goods should be encouraged since not all importation is necessary for economic growth.

v) Such as the provision of adequate infrastructural facilities, because inadequate infrastructural facilities negatively impact the export because of the high costs of transportation, low electricity generation, and other costs. The revenue generated from crude oil export can be used to develop the basic infrastructural facilities and essential social amenities needed in the country.

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